APPLICABLE TO INSTRUMENTS
WITH SERIAL NUMBERS 841
AND ABOVE.

CE-50A; CE-50A-1; CE-50A-1 /TG
COMMUNICATIONS MONITOR

INSTRUCTION MANUAL

Cushman
Electronics, Inc.

5601-0075-2

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CUSHMAN INSTRUMENT WARRANTY

All instruments manufactured by Cushman Electronics, Inc. are warranted against defects in material and workmanship for one year from the date of original shipment from the factory. Cushman Electronics will repair or replace, at its discretion, instruments which prove to be defective in manufacture or materials.

The customer must notify Cushman Electronics of any defects prior to the expiration of the warranty period.

- During the first three months after the date of original shipment, there will be no charge for parts, replacement printed circuit boards, labor, or transportation charges for instruments serviced at an authorized Cushman Service Center within the customer's country. Method of transportation shall be designated by an authorized Cushman representative or Service Center.

- During the fourth through the 12th month after the date of original shipment, there will be no charge for parts, replacement printed circuit boards, or labor for instruments serviced at an authorized Cushman Service Center. All transportation charges for instruments, parts, or replacement printed circuit boards shall be paid by the customer during this period.

- During the first year, replacement printed circuit boards are warranted only when the defective boards have been identified by an authorized Cushman Service Center and the defective printed circuit board is returned in accordance with Cushman's exchange board policy.

The foregoing policy does not apply to repair service or parts sales, nor does it apply to instruments or parts of instruments which, in the opinion of Cushman Electronics, have been altered or misused.

Cushman Electronics, Inc. limits its responsibility to the repair or replacement of defective products as the sole and exclusive remedy provided to the customer and it will not be liable for any direct, indirect, special, incidental, or consequential damages. This warranty statement is in lieu of any other warranty either express or implied. Cushman Electronics disclaims any implied warranties of merchantability or fitness for a particular purpose.

Cushman
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EXTENDED LIMITED WARRANTY

There will be no charge for parts used by an authorized Cushman Service Center to repair a Cushman product covered by this Extended Limited Warranty for a period beginning the 13th month and continuing through the 36th month from the date of original shipment from the factory. Batteries, cathode ray tubes, and crystal oscillator ovens are excluded. All transportation charges shall be paid by the customer during this period. The conditions and limitations of the Cushman Instrument Warranty apply also to the Extended Limited Warranty policy.

Cushman Electronics, Inc.

CE-50A-1 and CE-50A-1/TG

SPECTRUM MONITOR OPERATIONAL AIDS

1. Whenever the scan width of the CE-50A-1 HORIZ (per div) switch, or the 10 MHz or 100 MHz Frequency (MHz) Select switches are changed, the CRT display will blank for a few seconds while the automatic centering circuits recalibrate the signal position to the center of the CRT. This is a normal procedure. Blanking prevents the reading of incorrect input data while the phase-lock sweep circuits are unlocked for the calibration procedure.

   The phase-locked sweep circuit is used in the CE-50A-1 to provide a stable and accurate display over a spectrum as narrow as 10 kHz per division. The swept phase-lock feature eliminates any noticeable drift on the CRT display in this narrow scan width, and achieves precise frequency tuning while sweeping.

2. If the FUNCTION switch is in one of the SIG GEN positions, the oscilloscope, deviation meter, and Frequency Error meter will not function if the FINE control is in the OFF position.

3. Whenever the INTEN control is in the OFF position while in the SPECTRUM MONITOR mode, the unit will unlock.

4. While in the SPECTRUM MONITOR mode in CE-50A-1/TG Communications Monitors, the signal generator section FINE control should be OFF.

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UNPACKING AND INSPECTION

When unpacking the Model CE-50A FM Communications Monitor, inspect the packing box and the instrument for possible damage. The instrument was carefully inspected before shipment and should be ready to operate properly when received. Confirm satisfactory performance by following the procedures given in the Operating section of the Instruction Manual. If the equipment is damaged or fails to operate properly, file a claim with the transportation agency, or if insured, with the insurance company.

SECTION 1
GENERAL

INTRODUCTION

1.01 The Cushman CE-50A Communications Monitor is a portable test instrument designed to aid in the repair of two-way radios operating in the VHF/UHF range to 1000 MHz. Besides measuring carrier frequency and modulation characteristics of transmitted signals, it can measure SINAD receiver sensitivity, transmitted RF power, and display demodulated audio frequencies on its internal oscilloscope for visual-signal monitoring. The unit is automatically self-calibrating in the monitor mode, and its full-service power supplies allow its use at unpowered remote sites (by vehicle power or optional battery) as well as in the shop.

1.02 The CE-50A monitor section is a sophisticated triple conversion superheterodyne receiver. The input has an adjustable sensitivity for monitoring signals of 2 μV to 500 mV in level. This allows the testing of a transmitter output signal at any distance from a few feet to several miles.

1.03 The CE-50A also generates accurate RF signals for testing sensitivity, alignment, and performance of radio receivers. The generated RF can be transmitted as a CW signal, or can be AM or FM modulated by an audio frequency tone synthesizer. It can also be Pulse Frequency modulated by an external signal. Modulation can be selected in continuous or timed interval (burst)

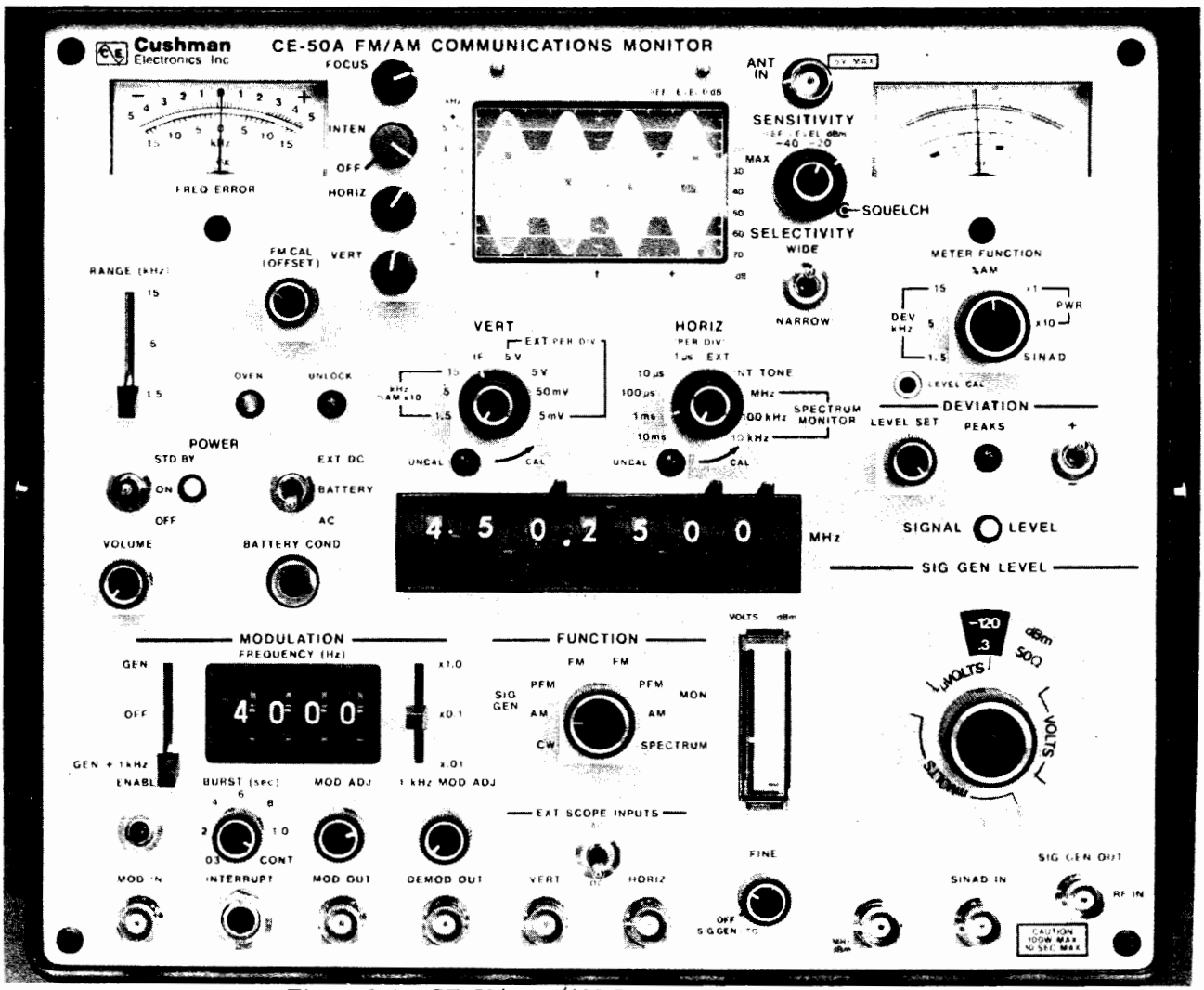


Figure 1-1. CE-50A FM/AM Communications Monitor

durations. There is also a simultaneous 1 kHz + Tone Generator modulation capability to help with signal tracing and receiver alignment.

1.04 The signal generator section is a highly accurate frequency synthesizer with a frequency range of 100 kHz to 999.999 MHz. Its output can be connected directly to a transceiver, and is protected from accidental transmitter keying by an automatic electronic circuit breaker. An output level from .1 µV to 300 mV rms is selectable at the front panel through precision attenuator switching.

1.05 There are also front panel switch positions on the CE-50A for the CE-50A-1 Spectrum Monitor functions. The CE-50A-1 will be a version of the CE-50A with added Spectrum Monitor features. The switch positions used for Spectrum Monitor functions are identified in yellow, and should be avoided when making measurements unless called for.

DESCRIPTION

1.06 The CE-50A is a portable test instrument designed to monitor the frequency characteristics of transceivers operating in the VHF/UHF range to 1000 MHz. It combines in one instrument the functions of an RF signal generator, frequency comparator, audio generator and modulator, RF power meter, FM modulation deviation meter, % AM modulation meter, oscilloscope, and SINAD receiver sensitivity meter.

1.07 In the SIG GEN mode, a 10.7 MHz VCO output is modulated by the audio frequency selected by the MODULATION Frequency (Hz) switches to make the CE-50A signal generator First IF. The type of modulation is selected by the front panel FUNCTION switch. The signal goes to two places. In the DEMOD section, the modulating frequency is removed and displayed on the front panel meter and oscilloscope. The signal is also mixed with a 200 MHz reference to make the 210.7 MHz Second IF. This signal is mixed with an 1865 MHz L.O. and then again with the 2080 MHz YIG (Yittrium, Iron, Garnet) local oscillator to make the 0-1000 MHz RF output signal. The RF is directed to the front panel SIG GEN OUT connector through a 0-120 dB precision attenuator.

1.08 To monitor signals, the CE-50A FUNCTION switch is placed in the MON mode. This allows signals picked up at the antenna input to be processed by the unit. The 0-100 MHz input signal to be monitored is selected on the front panel MHz (Frequency Select) switches. The input signal is mixed with the 2080 MHz-3070 MHz YIG LO frequency to make the 2075 ±5 MHz 1st receiver IF. This is in turn mixed with the 1865 MHz LO to produce the 210.7 MHz IF. When the signal is mixed with the 200 MHz reference frequency, the final 10.7 MHz receiver IF is produced. This frequency is sent to the DEMOD section where the type of modulation selected by the FUNCTION switch is removed and displayed on the meter and oscilloscope displays. The 10.7 MHz IF is also mixed with a 10 MHz reference. The 700 kHz difference frequency is removed and used to drive a frequency error dis-

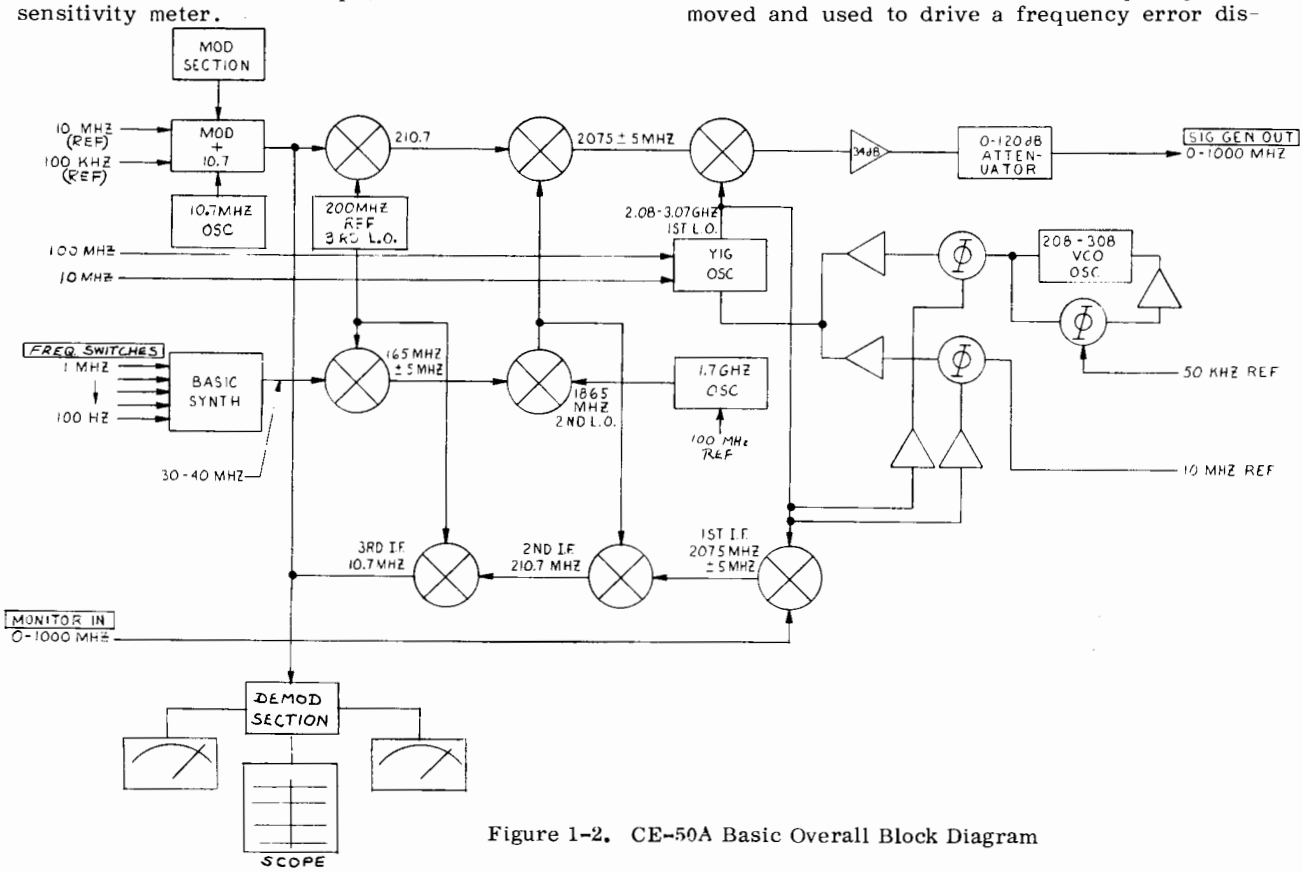


Figure 1-2. CE-50A Basic Overall Block Diagram

criminator. The discriminator output is displayed by the frequency error meter to show the error of the received signal from the dialed frequency.

1.09 Transmitted RF power is measured by the CE-50A in two ranges, 0-10 watts and 10-100 watts. Power is measured at the SIG GEN OUT/PWR MTR IN jack on the front panel, so automatic protection circuitry prevents input power from damaging the CE-50A monitor input circuits. An added advantage to this input/output circuitry is that with only two cable connections the transmitter/receiver functions of a transceiver can be completely checked.

1.10 The CE-50A can also be used to measure the SINAD sensitivity of receivers. The word SINAD is an acronym for the ratio $\frac{\text{Signal + Noise + Distortion}}{\text{Noise + Distortion}}$ (measured in decibels). This is an accurate measurement of the useful sensitivity of a receiver as the measurement includes the receiver audio output stage.

ACCESSORIES AND OPTIONS

1.11 Each CE-50A is shipped with an accessories package containing a telescoping whip antenna which connects to the ANT input connector, a 74" coaxial cable, a hood for improved CRT viewing, a power cord, a front cover, a service manual, and left and right chassis extender boards for maintenance. Accessories also offered include a shipping trunk, a soft zippered cover with shoulder strap, and a cigarette lighter power cord.

1.12 Options available include an oven-controlled crystal oscillator reference (OCXO) to replace the standard temperature-compensated crystal oscillator reference (TCXO), and an internal rechargeable battery for portable operation.

1.13 Also available are the CE-50A-1 and the CE-50A-1/TG Communications Monitors. The CE-50A-1 contains all the capabilities of the CE-50A plus the added Spectrum Monitor function with visual CRT display.

1.14 The CE-50A-1/TG Communications Monitor (with tracking generator) provides in a single portable instrument all the capabilities of the CE-50A-1 plus continuous swept frequency coverage from 450 kHz to 999.9999 MHz. Sweeping is done in three ranges (100 kHz, 1 MHz, and 10 MHz) for precise dynamic measurement of frequency-sensitive circuit elements. The flatness and accuracy of the CE-50A-1/TG is normally found only in combinations of expensive, non-portable laboratory-type precision tracking generator/spectrum analyzer systems.

1.15 The addition of the tracking generator function to the basic CE-50A-1 is accomplished with no degradation in the Communications Monitor's capabilities. All specifications published for the CE-50A are applicable to the CE-50A-1/TG also. See Table 1-1.

TABLE 1-1

CE-50A SPECIFICATIONS

ITEM	CHARACTERISTIC
RF SIGNAL GENERATION	
Frequency	
Range	100 kHz to 999.9999 MHz (usable to 10 kHz)
Resolution	100 Hz
Accuracy	
CW and AM Modes	±0.00001% ± Time Base (with OCXO)
FM Mode	±50 Hz additional
Level	
Range	.06 μV to 300 mVrms, continuous
Accuracy	±3 dB overall; ±2 dB typical for level ≤-13 dBm
Modulation	FM, AM, Pulsed FM, CW
FM	
Internal	
1 kHz	1000 Hz ± Time Base stability
GEN	30.00 Hz to 9999 Hz ±0.005%
GEN + 1 kHz	Simultaneous 1 kHz tone + GEN frequency
Aging	20 PPM/Yr.
Deviation	
Ranges	1.5, 5, and 15 kHz peak deviation full scale ranges on meter and CRT
Accuracy	±5%
External	
Deviation Range	
Sine (30 Hz - 10 kHz rate)	15 kHz maximum
Square (5 Hz - 300 Hz rate)	2 kHz maximum
AM	
Internal	
1 kHz	1000 Hz ± Time Base stability
GEN	30.00 Hz to 9999 Hz 10.005%
GEN + 1 kHz	Simultaneous 1 kHz tone + GEN frequency
Aging	20 PPM/Yr.
Range	0-100% full scale on meter; ±15%, ±50%, and ±150% full scale ranges on CRT
External	
Frequency	30 Hz to 10 kHz
Pulsed FM - External only	
Frequency Range	5 Hz to 300 Hz (5% to 95% duty cycle)
Deviation Range	≥2 kHz
Spurious Outputs	
Harmonics (Carrier Freq. >1 MHz)	≥40 dBc (Fine level set to <0 dB)
Non-harmonic Products	≥35 dBc (60 dB typical)
Residual FM	≤50 Hz typical
MOD OUT level range	0-2 Vp-p into 1 kilohm typical. Separately adjustable controls for GEN and 1 kHz
Frequency Offset	±15 kHz about the dialed-in frequency
Automatic Overload Protection	SIG GEN OUT/RF IN port protected against keyed transmitters to 100W for 10 seconds.

Table 1-1 CE-50A Specifications (cont'd)

ITEM	CHARACTERISTIC
MONITOR	
Functions	Frequency error, FM deviation, % AM, Power, SINAD, audio frequency (Lissajou)
Frequency	
Range	0.45 MHz to 999.9999 MHz (usable to 50 kHz)
Resolution	100 Hz
Inputs	2 BNC connectors: a high sensitivity (2 μV) antenna input and a high power input/output for direct connection to transceivers of up to 100 W transmitter power.
Sensitivity (Selectivity NARROW)	
FM, PFM (10 MHz to 999.9999 MHz)	2μV (0.6μV typical) for SINAD = 10 dB (PFM Mode)
AM	2μV (typically) for S/N = 10 dB. Frequency ≥10 MHz
Squelch	A concentric adjustment on the SENSITIVITY switch.
IF Bandwidth	
-3 dB Bandwidth (Selectivity NARROW)	22 kHz typical
(Selectivity WIDE)	220 kHz typical
FM Residual Noise (20μV input; Selectivity NARROW)	≤100 Hz (measured in PFM; f_c≥10 MHz)
DEMOD Output	
Level	2V p-p for 15 kHz FM deviation, typical
DISPLAYS	
Frequency Error Meter	
Ranges	±1.5 kHz, ±5 kHz, ±15 kHz
Resolution	50 Hz
Accuracy	±1 x 10^{-7} ± Time Base stability
Functions Meter	
Peak Deviation	1.5 kHz, 5 kHz, and 15 kHz ranges
% AM	
Range	0 - 100%
Accuracy	±5% of full scale on meter for <80% modulation
Power	
Frequency	10 - 500 MHz (usable to 1000 MHz)
Ranges	1-10, 10-100 watts
Maximum level	100 watts for 10 seconds
Accuracy	±10% of full scale
SINAD	
Frequency	1 kHz
Scope Display	7 divisions high x 10 divisions wide
Frequency Range (±3 dB BW)	DC to 1 MHz - Usable to 3 MHz
Vertical Inputs, Internal Mode	
Vert. Sensitivity (adjustable)	Continuous adjust between vert. ranges
Vert. Sensitivity (calibrated)	
±1.5 kHz FM/15% AM	±5%
±5 kHz FM/50% AM	±5%
±15 kHz FM/150% AM	±5%

Table 1-1 CE-50A Specifications (cont'd)

ITEM	CHARACTERISTIC
Vertical Inputs, External Mode	
Vert. Sensitivity (Adjustable)	Continuous adjust between vert. ranges
Vert. Sensitivity (Calibrated)	5 mV/DIV, 50 mV/DIV, 500 mV/DIV, and 5 V/DIV; ±5%
Vertical Impedance	1 MΩ, ±5% in parallel with 30 pF
Horizontal Inputs, Internal Mode	
Sweep Rate (Calibrated)	
10 ms/DIV, 1 ms/DIV, 100 µs/DIV, 10 µs/DIV	±5%
1 µs/DIV	±10%
Vernier Range	Continuous adjust between sweep rates
TIME BASE	
TCXO	
Stability	±1 x 10^{-6} per year
Warm-up Time	30 seconds
OCXO (Optional)	
Stability	2 x 10^{-7} per year after 25 minutes at 25°C
Warm-up Time	Less than 5 min. from 20°C to 1 x 10^{-6} Less than 10 min. from 20°C to 1 x 10^{-7} after 1 hour on power.
SPECTRUM MONITOR (CE-50A-1)	Same instrument as the CE-50A with the addition of a spectrum monitor.
Frequency Range	10 to 999.9999 MHz
Dynamic Range	+0 to -115 dBm (usable to -130 dBm)
RF Attenuator	40 dB in 20 dB steps
Display Range	70 dB (10 dB/division)
Level Accuracy	±4.5 dB (S/N >20 dB) after cal at 200 MHz
Scan Widths	10 kHz/DIV, 100 kHz/DIV, 1 MHz/DIV
Minimum Resolution (2 equal level signals)	2 kHz
Calibration Signal	200 MHz at -20 dBm ±1 dB
POWER REQUIREMENTS	115 or 230 VAC, ±10%, 50-400 Hz, 48W max. 11-15 VDC at 3 Amps (External power) Internal rechargeable battery (Optional)
DIMENSIONS	9 5/8" (24.4 cm) H x 11 1/8" (28.3 cm) W x 18 1/4" (46.3 cm) D
WEIGHT	38 lbs. (17.3 kg) With optional internal battery, 43 lbs (19.5 kg)
ENVIRONMENTAL	
Temperature	
Operating	0°C to +55°C (32°F to 131°F)
Storage	-40°C to +75°C (-40°F to 167°F)

ADDITIONAL CE-50A-1/TG SPECIFICATIONS	
Frequency Range	10 MHz to 999.9999 MHz, usable from 450 kHz
Display Range	60 dB, typical
Dynamic Range	100 dB typical
Vertical Display Accuracy (after cal)	±1.5 dB relative to 0 dB reference
Horizontal Accuracy	±5% of full sweep width
Warm-up Time	Instantaneous
Frequency Resolution (in 10 kHz/Div)	3 kHz, typical

SECTION 2
INSTALLATION

ENVIRONMENTAL REQUIREMENTS

Temperature

2.01 The CE-50A is designed to operate between 0°C and +55°C (ambient). In the field these temperatures can easily be exceeded if proper precautions are not taken. For instance, the internal temperature of a closed automobile trunk may exceed 65°C during summer daylight hours. Also, care should be taken not to block the cabinet's ventilating ports. Exceeding the upper or lower temperature limits for extended periods may not result in noticeable damage to the instrument, but may cause poor performance or actual malfunctioning.

RF Fields

2.02 Where extremely high RF radiation fields exist (such as when the CE-50A is used near a transmitter) the telescoping antenna should be pushed together to reduce pickup. Where many high-power transmitters are in use adjacent-channel interference may be experienced. In such cases the SELECTIVITY switch on the front panel should be placed in the NARROW position. If satisfactory measurements still cannot be made, direct connection between the transmitter to be monitored and the CE-50A through a suitable RF attenuator may be required. For further information, contact the Cushman Electronics Customer Service Department.

NOTE

In the NARROW position the bandwidth is reduced so that Deviation readings may be degraded unless the sum of the modulation frequency plus the frequency deviation is less than 11 kHz.

POWER REQUIREMENTS

2.03 The CE-50A may be operated from a 115V AC ±10% or 230V AC ±10%, 50 to 400 Hz AC source, an external +12V DC source, or optionally, with an internal 12V battery. The AC and EXT DC voltages are fuse protected at the rear panel. The type of source voltage (EXT DC, BATTERY, or AC) is selected at the CE-50A front panel, while the AC voltage level is selected at the rear panel switch. The rear panel switch should be set so that the voltage of the AC source shows on the switch. The instrument consumes a nominal 50 watts of power in the AC position of the front panel switch, and a nominal 40 watts in the EXT DC or BATTERY position.

BATTERY CONNECTION

2.04 To install the CE-50A battery, proceed as follows:

a) Make certain the instrument is disconnected from the AC source. Remove the battery compartment cover on the rear panel by removing the four retaining nuts.

b) The optional 12V rechargeable battery offered (Cushman Part Number 1046-0010) will have a connector and cable assembly attached to the battery terminals when received. Place the battery near the CE-50A rear panel battery compartment.

c) Locate the harness connector inside the battery compartment and plug it into the connector attached to the battery.

d) Insert the battery into the battery compartment with the terminals down, and replace the cover on the battery compartment.

NOTE

Federal Regulations prohibit shipping instruments with the batteries connected. Always disconnect the batteries before shipping the instrument.

BATTERY CHARGING

2.05 The CE-50A optional battery will charge when the POWER-EXT DC/BATTERY/AC switch is in the following position (the POWER-STD BY/ON/OFF switch may be in any position):

a) If the CE-50A is connected to AC power, the POWER-EXT DC/BATTERY/AC switch must be in the AC position for charging.

b) If the CE-50A is connected to external DC power, the POWER-EXT DC/BATTERY/AC switch must be in the EXT DC position for charging.

c) The battery will not charge in other positions of the POWER switches.

SERVICE OR REPAIR

2.06 In the event that factory service or repair is required, contact Cushman Electronics Customer Service Department for further service information or to make arrangements for shipment

to the factory or to a Service Center. The factory address is:

Cushman Electronics, Inc.
Customer Service Department
2450 North First Street
San Jose, California 95131
Telephone: (408) 263-8100

2.07 Cushman Electronics repair service is also available from regional Service Centers listed in the Appendix of this manual. Factory warranty and other services may be performed at these locations. It is to your advantage to use the Service Center nearest you in order to speed the return of your equipment and lessen your shipping costs, when applicable. You must contact either the factory or the regional Service Center nearest you before you ship any equipment for repair. Service of your equipment will be scheduled at that time and you will be advised of the best method of shipment and other information.

PREPARATION FOR SHIPMENT

2.08 It is recommended that the shipping box and foam packaging be kept in case it becomes necessary to ship the instrument to the Service Center or to the factory for service or repair.

2.09 The following is a general guide for repackaging the instrument for shipment:

NOTE

If the instrument is to be shipped, attach a tag to the instrument identifying the owner and indicate the service or repair to be accomplished. Include the model number and full serial number of the instrument. In any correspondence, always identify the instrument by model number and serial number.

2.10 If the original container is to be used, proceed as follows:

a) Place the instrument in the original container. (If the original container is not available, one can be purchased from Cushman Electronics.)

b) Make sure that the container is well sealed with strong tape.

2.11 If the original container is not used, proceed as follows:

a) Wrap the instrument in plastic or heavy paper before placing in an inner container.

b) Place packing material around all sides of the instrument.

c) Place the instrument and inner container in a heavy carton or wooden box and seal with strong tape or metal bands.

d) Mark the shipping container "DELICATE ELECTRONIC INSTRUMENT", "FRAGILE".

SECTION 3
OPERATION

GENERAL

3.01 The CE-50A Front Panel Controls, Indicators, and Connectors are shown in Figure 3-1 and listed in Table 3-1 with a brief description of the function of each.

3.02 When received, the CE-50A can be operated immediately on AC or external DC power. If optional battery powered operation is desired it is necessary to obtain a battery assembly (Cushman Part Number 7041-0026) and install it as per instructions given in Section 2, paragraph 2.04.

TURN-ON AND WARM-UP

3.03 For AC operation, plug the power cord into a 115/230V ±10% 50-400 Hz source receptacle. For external DC operation, connect the rear panel external DC receptacles into a +12V DC source (positive to positive and negative to negative). There is no connection necessary for battery operation. The battery recharge circuit is operational in any position of the POWER OFF/ON/STD BY switch as long as the AC/BATTERY/EXT DC switch is in AC or EXT DC. To fully charge the optional battery, assure that the Power switch is on OFF and connect the CE-50A to an external AC or DC source for a minimum of 12 hours. A fully charged, battery powered CE-50A can be operated for approximately 30 minutes (typical) before recharging is required.

NOTE

When the CE-50A is used with an internal battery source, be sure the battery power indicator registers in the green area before operating. Fully discharging the battery may cause it to be damaged and require replacement.

3.04 Select the power source used with the AC/BATTERY/EXT DC switch and turn the OFF/ON/STD BY switch to ON and allow the instrument to warm up as specified in Table 1-1 (Specifications) under TIME BASE.

3.05 The standard CE-50A contains a temperature compensated crystal oscillator (TCXO) time base. The maximum time required for warm-up is 30 seconds. Placing the OFF/ON/STD BY switch in the STD BY position will not reduce this time. The position functions only when the optional thermostatically controlled oven crystal oscillator (OCXO) is used in place of the TCXO. Also, the OVEN LED is not functional unless the CE-50A is equipped with the OCXO option.

3.06 If the OCXO is used in place of the TCXO a longer warm-up period is required before CE-50A measurements can be made. See the entry in Table 1-1 (Specifications) TIME BASE under OCXO Warm-up Time. This warm-up period can be eliminated if the STD BY position of the OFF/ON/STD BY switch is used instead of OFF (see NOTE below). The OCXO will maintain the master oscillator crystal at a constant temperature for optimum CE-50A measurement accuracy. If the instrument has been stored at a temperature below 0°C (32°F), additional warm-up time may be required.

NOTE

Oven operation is independent of the positions of either the OFF/ON/STD BY or AC/BATTERY/EXT DC switches while the CE-50A is connected to an AC power source. However, if a battery or external DC power source is used, the AC/BATTERY/EXT DC switch must be in the position indicating the power source, and the OFF/ON/STD BY switch in the STD BY or ON position for oven operation. To conserve battery power, the initial OCXO warm-up should be done with the unit connected to an external power source.

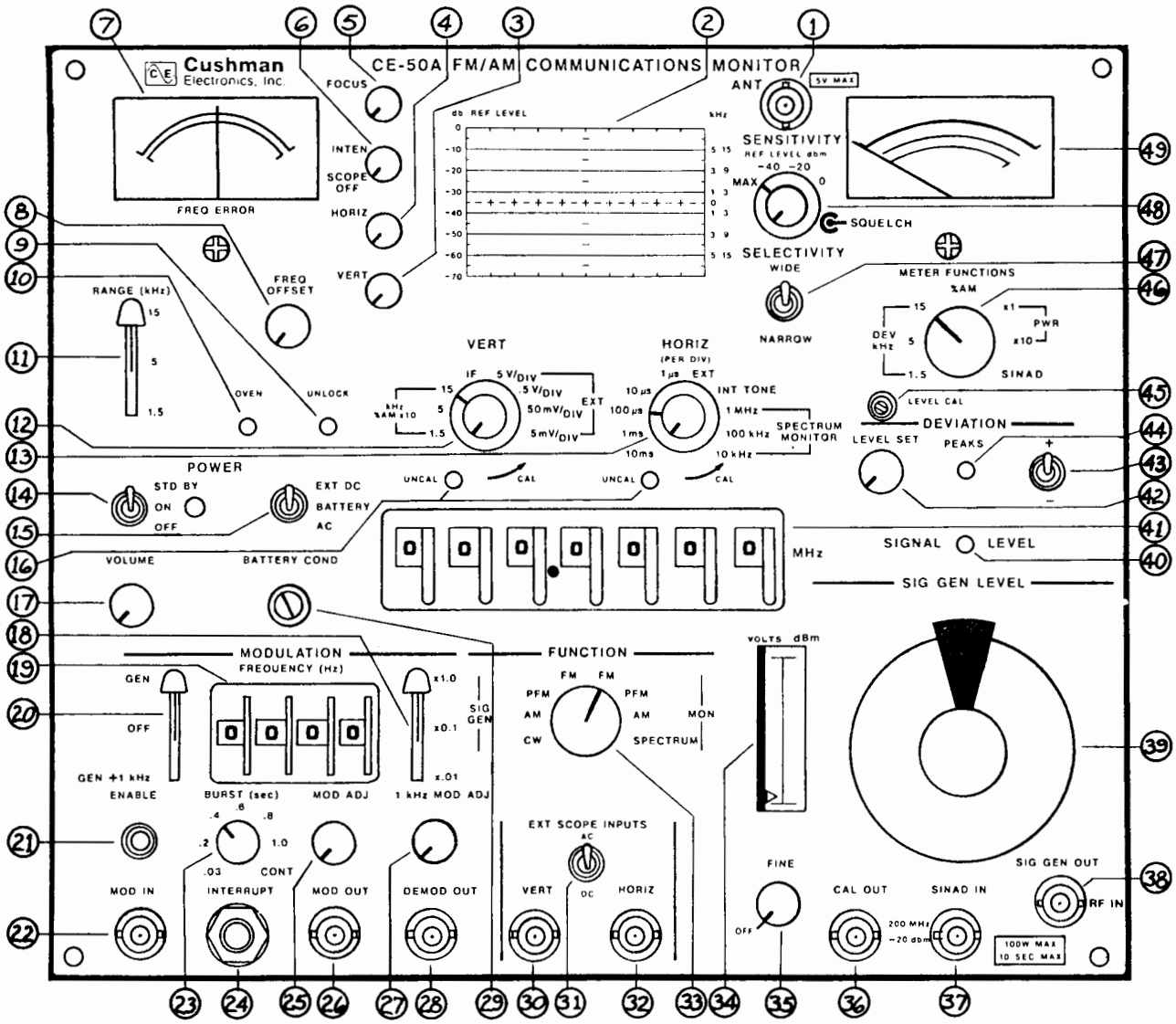


Figure 3-1. CE-50A Front Panel Controls, Indicators, and Connectors

Table 3-1. CE-50A Front Panel Controls, Indicators, and Connectors

1.	ANT	Antenna or high sensitivity input to monitor.
2.	CRT DISPLAY	In normal oscilloscope mode, displays the modulated signals received or generated by the monitor. Using EXT SCOPE INPUTS, can also be used as a 1 MHz oscilloscope. An automatic sync circuit locks the sweep to the incoming signal. In the CE-50A-1 spectrum monitor mode, it displays signal spectrums up to 1 GHz in frequency over a 115 dB dynamic range.
3.	VERT	Controls the vertical position of the CRT display.
4.	HORIZ	Controls the horizontal position of the CRT display.
5.	FOCUS	Adjusts sharpness of trace.
6.	INTEN/SCOPE OFF	In the SCOPE OFF (detented) position, removes CRT display power. In other than SCOPE OFF, adjusts the brilliance of the CRT trace.
7.	FREQ ERROR	Meter indicates the difference in frequency between the received or generated frequency and the CE-50A dialed frequency.
8.	FREQ OFFSET	Adjusts the signal generator output ± 15 kHz about the dialed frequency.
9.	UNLOCK	LED lights when the frequency synthesizer is not locked on frequency.
10.	OVEN	LED lights to show that the optional OCXO temp. is not yet stabilized. Not operational with TCXO.
11.	RANGE (kHz)	Range selection switch for FREQ ERROR meter.
12.	VERT	The outer 8-position switch selects calibrated vertical sensitivities for the CRT display. The inner detented vernier control increases the sensitivity (detented position) and the next higher (CCW) sensitivity of the switch.
13.	HORIZ	The outer 10-position switch selects calibrated time frames (in time per division) for the CRT oscilloscope display. When the optional SPECTRUM MONITOR positions are used, the CRT display is calibrated in frequency per division with the CE-50A dialed-in frequency displayed at the CRT center. The inner detented vernier control increases the time per division continuously from selected (detented position) to the next higher time per division.

Table 3-1. CE-50A Front Panel Controls, Indicators, and Connectors (cont'd)

14.	POWER (STD BY/ON/OFF)	Applies power to instrument. In STD BY position, power is allowed to maintain the optional OCXO heater temperature while power to the remainder of the unit is off. Lighted LED signifies power is ON. See paragraphs 3.05 - 3.06.
15.	POWER (EXT DC/BATTERY/AC)	Selects the input power source for the CE-50A.
16.	UNCAL (VERT/HORIZ)	LEDs indicate that the VERT and HORIZ vernier controls are not in the detented (calibrated) position.
17.	VOLUME	Adjusts the volume of the CE-50A internal speaker.
18.	MODULATION (X1.0, X0.1, X.01)	Three-position lever switch selects the multiplier for the MODULATION-Frequency (Hz) switches. This sets the modulation frequency range. For example, the maximum modulation frequency in X1.0 is 9999 Hz; in X0.1 it is 999.9 Hz; in X.01 it is 99.99 Hz.
19.	MODULATION-Frequency (Hz)	The four thumbwheel switches select the audio frequency (to 9999 Hz) used in the CE-50A. The audio is used for internal modulation and for the MOD OUT signal as either a continuous tone or for selected tone bursts.
20.	MODULATION (GEN/OFF/GEN + 1 kHz)	Modulation source select switch. GEN position selects dialed in frequency. The OFF position turns off the internal audio generators. The GEN + 1 kHz position causes a 1 kHz tone to be added to the dialed frequency.
21.	ENABLE	Pushbutton switch turns on the audio oscillator for a period of time selected by the BURST control.
22.	MOD IN	Input BNC for an external modulation source.
23.	BURST (SEC)	Selects the duration of the audio tone dialed on MODULATION-Frequency (Hz) switches and turned on by the ENABLE switch.
24.	INTERRUPT	Used with BURST (SEC) switch in CONT position, the INTERRUPT phone jack allows external control of the modulation frequency duration.
25.	MOD ADJ	Adjusts the audio generator output level for internal modulation or external output at the MOD OUT jack.
26.	MOD OUT	BNC jack makes the modulation signals available for external use.

Table 3-1. CE-50A Front Panel Controls, Indicators, and Connectors (cont'd)

27.	1 kHz MOD ADJ	Adjusts the level of the 1 kHz tone generator.
28.	DEMOD OUT	Makes the recovered audio from the RF signal available for external use.
29.	BATTERY COND	Meter indicates battery status. Arrow in green area means battery is charged, and red area indicates recharge is necessary before using unit on battery power.
30.	EXT SCOPE INPUTS (VERT)	External input for vertical CRT deflection. Used when the CRT is used as an external oscilloscope.
31.	EXT SCOPE INPUTS (AC/DC)	Selects AC or DC coupling on the EXT SCOPE INPUTS (VERT) jack.
32.	EXT SCOPE INPUTS (HORIZ)	External input for horizontal CRT deflection. Used when external control is needed for the CE-50A oscilloscope horizontal deflection.
33.	FUNCTION	Eight-position switch selects either signal generator or monitor mode of operation and the type of modulation (SIG GEN) or demodulated signal (MON) desired. Also used to select the Spectrum Monitor function in the CE-50A-1.
34.	SIG GEN LEVEL (Meter)	Meter has three scales and is used directly with the SIG GEN LEVEL attenuator. The left scale is marked 0-10, and is used with the attenuator positions marked with µVolt, mVolt, or Volt levels of 1, .1, or .01. The center scale is marked 0-3, and is used with the µVolt, mVolt, or Volt levels of 3, .3, or .03. The right scale is marked from -10 dB to +3 dB, and gives a vernier reading of the SIG GEN output level between the 10 dB attenuator steps as adjusted by the FINE (OFF) control.
35.	FINE (OFF)	Provides an adjustment of the SIG GEN OUT level between the 10 dB settings of attenuator to give continuous coverage of output level. The OFF position turns off the output RF.
36.	CAL OUT (200 MHz/ -20 dBm)	BNC output provides a precise internal 200 MHz signal at -20 dBm to be used for calibrating the CE-50A-1 Spectrum Monitor display, and as a troubleshooting aid for CE-50A monitor functions.
37.	SINAD IN	BNC input to measure the 12 dB SINAD sensitivity of a receiver under test. Reading is made on the FM deviation/% AM/POWER/SINAD meter.
38.	SIG GEN OUT/RF IN	BNC connector for the output RF signal generated by the CE-50A, or the input power to be measured. Protected against accidental transmitter keying into connector by automatic overload protection.

Table 3-1. CE-50A Front Panel Controls, Indicators, and Connectors (cont'd)

39.	SIG GEN LEVEL (attenuator)	RF output attenuator adjusts the SIG GEN OUT level in 10 dB steps from a .1μV to 300 mV rms.
40.	SIGNAL LEVEL	LED lights when selected RF signal at ANT input (in MON mode) exceeds the squelch level set and is capable of being measured, or when unit is in SIG GEN mode.
41.	MHz (FREQUENCY SELECT)	Switches used to select the frequency of interest (in MHz) for frequency monitor, spectrum monitor, and signal generator modes of operation.
42.	DEVIATION (LEVEL SET)	Potentiometer sets a preset level above which peak deviations in FM modulation will cause the PEAKS LED to light.
43.	DEVIATION (+, -)	Selects whether positive or negative peak deviations are to be measured.
44.	DEVIATION (PEAKS)	When lighted, the LED indicates when FM modulation deviation has exceeded the level preset on the LEVEL SET pot.
45.	LEVEL CAL	This screwdriver adjustment sets the IF gain (is for Spectrum Monitor use only).
46.	METER FUNCTIONS	Seven-position switch selects the functions to be measured on the DEV (kHz)/% AM/PWR/ SINAD meter.
47.	SELECTIVITY (50 kHz WIDE, 22 kHz NARROW)	Selects the receiver IF bandwidth for AM, FM, or PFM MONITOR functions.
48.	SENSITIVITY (SQUELCH)	The outer knob selects RF input attenuation (increase sensitivity, decrease attenuation) for MONITOR SIGNALS. The inner concentric knob adjusts the receiver squelch.
49.	FUNCTION METER	Meter measures DEV (kHz)/%AM/PWR/SINAD when functions are selected by the METER FUNCTIONS switch.

MONITOR OPERATION

Carrier Frequency Measurements

3.07 Make the following connections and control settings:

a. Turn on the instrument and allow it to warm up as shown in paragraphs 3.03-3.06.

b. Connect an external antenna, or the telescoping antenna supplied with the instrument, to the ANT connector on the front panel.

c. Set the MHz (Frequency Select) switches to the frequency to be monitored.

d. Set the FUNCTION switch to any MONITOR position other than SPECTRUM.

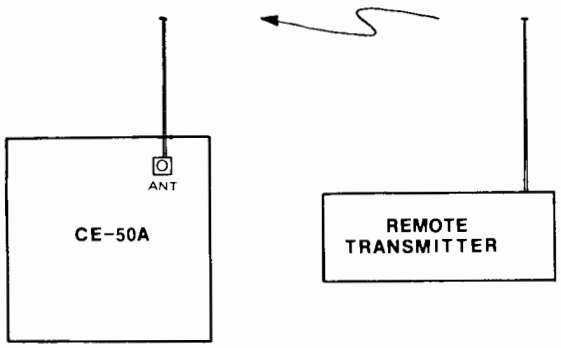


Figure 3-2. Remote Monitoring set-up.

e. Turn the Squelch control (the concentric control on the SENSITIVITY switch) to maximum sensitivity. Adjust the SENSITIVITY switch from 0 dBm REF LEVEL position to the sensitivity position in which the SIGNAL LEVEL LED lights when the transmitter under test is keyed. Adjust the squelch control until the SIGNAL LEVEL LED just lights when the transmitter is keyed.

f. Set the RANGE (kHz) switch to the lowest frequency range which will give an on-scale reading of the FREQ ERROR meter. The reading is a difference between the dialed frequency and transmitter carrier frequency.

Frequency Deviation Measurements

3.08 FM or Pulsed FM frequency deviation can be measured as follows:

a. Repeat steps a-c of paragraph 3.07.

b. Set the FUNCTION switch to MONITOR FM or PFM position as required.

NOTE

For narrow band (3 kHz peak deviation) radios, the PFM mode has the best sensitivity.

c. Adjust the SENSITIVITY control (from the least sensitive position) until the SIGNAL LEVEL LED just lights as the transmitter under test is keyed.

d. Set the METER FUNCTIONS switch to the lowest DEV kHz range which will give an on-scale reading of the FUNCTIONS meter.

e. If it is desired to view the demodulated FM or PFM on the oscilloscope, turn on the oscilloscope with the INTEN/SCOPE OFF control. Adjust the INTEN and FOCUS controls for a sharp, clear trace on the CRT. Center the trace on the CRT with the HORIZ and VERT oscilloscope controls.

f. Key the transmitter and read the FM deviation on the FUNCTIONS meter or on the oscilloscope. On the oscilloscope CRT, peaks appear above and below the horizontal center line of the display. The FUNCTIONS meter indicates either positive or negative peaks depending on the setting of the DEVIATION (+, -) switch. Deviation peaks exceeding the level set by the DEVIATION LEVEL SET control will cause the DEVIATION PEAKS LED to light. Refer to paragraph 2.02 for use of the WIDE/NARROW positions of the SELECTIVITY switch in the presence of strong RF fields.

g. Adjust the VOLUME control for the desired level output of the demodulated FM through the speaker. The demodulated output is also available at the DEMOD OUT connector.

AM Measurement

3.09 Measure the % of AM modulation as follows:

a. Repeat steps a-c of paragraph 3.07.

b. Set the FUNCTION switch to the MONITOR AM position.

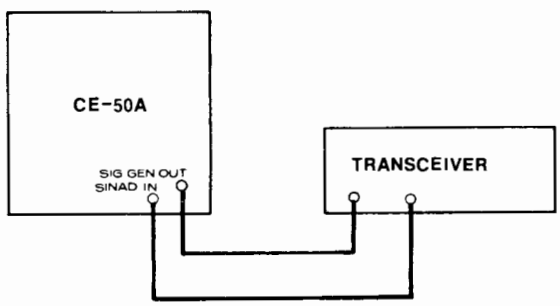


Figure 3-3. Bench test set-up.

c. Adjust the SENSITIVITY control (from the least sensitive position) until the SIGNAL LEVEL LED just lights as the transmitter under test is keyed.

d. Set the METER FUNCTIONS switch to the % AM position.

e. If it is desired to view the demodulated AM on the oscilloscope, turn on the oscilloscope with the INTEN/SCOPE OFF control. Set the VERT switch to the IF position, and adjust the INTEN and FOCUS controls for a sharp, clear trace on the CRT. Center the trace on the CRT with the HORIZ and VERT oscilloscope controls.

f. Key the transmitter and read the % AM on the FUNCTION meter or on the oscilloscope.

g. Adjust the VOLUME control for the desired level output of the demodulated AM through the speaker. The demodulated output is also available at the DEMOD OUT connector.

Modulation Measurement Using INT TONE

3.10 The following procedure is to be used to measure transmitter modulation using the CE-50A in INT TONE.

a. Set the CE-50A controls as in paragraph 3.09 a-d.

b. Turn on the oscilloscope with the INTEN SCOPE OFF control. Adjust the INTEN and FOCUS controls for a sharp, clear trace on the CRT.

c. Set the MODULATION-Frequency (Hz) thumbwheel switches to the modulation frequency to be measured.

d. Center the trace with the VERT oscilloscope control and turn the HORIZ control to INT TONE.

e. Turn the MOD ADJ control until a circular or elliptical Lissajou pattern can be seen on the CE-50A CRT.

f. Adjust the MODULATION-Frequency (Hz) switches until a steady, non-rotating Lissajou pattern is observed. The input modulation frequency is that frequency selected on the MODULATION-Frequency (Hz) switches when the Lissajou pattern is steady.

SIGNAL GENERATOR OPERATION

CW Mode

3.11 Make the following connections and control settings:

a. Turn on the CE-50A (refer to paragraphs 3.03 - 3.06).

b. Set the FUNCTION switch to SIG GEN, CW and set the seven MHz (Frequency Select) switches to the desired frequency.

c. Turn the MODULATION, GEN/OFF/GEN + 1 kHz switch to the OFF position, and make certain there is no connection to the MOD IN connector.

d. Set the SIG GEN LEVEL 10 dB attenuator to the level desired between -120 dBm and 0 dBm. To set the level between 10 dB attenuator steps, adjust the FINE/OFF control.

NOTE

The OFF position of the FINE/OFF control removes the output signal from the SIG GEN OUT connector. The control cannot be in the OFF position for signal generation.

e. The level at the SIG GEN OUT/RF IN connector is displayed as a combined reading of the SIG GEN LEVEL 10 dB attenuator setting and SIG GEN LEVEL meter, which displays the additional attenuation produced by the FINE/OFF control setting.

f. Connect the SIG GEN OUT connector to the instrument to be tested. The CE-50A is protected against inadvertent transmitter keying by an automatic switching circuit which directs transmitted power to the power measuring circuits.

AM Mode

3.12 Make the following connections and control settings:

a. Turn on the CE-50A (refer to paragraphs 3.03 - 3.06).

b. Set the FUNCTION switch to SIG GEN AM and select the desired RF output frequency on the MHz (Frequency Select) switches.

c. Set the MODULATOR-GEN/OFF/GEN + 1 kHz switch to the GEN position.

d. Set the MODULATION-Frequency (Hz) switches to four figures representing the desired audio frequency. Set the multiplier switch (MODULATION-X1.0/X0.1/X.01) to place the decimal point in the four figure setting. For example: set the thumbwheel switches to 4677. Set the multiplier switch to X.01. The modulating frequency will be 45.67 Hz.

e. The amount of AM modulation can be set from 0-90 percent by the MOD ADJ control. To set it to the level desired, place

the METER FUNCTIONS SWITCH to the % AM position and monitor the FUNCTIONS meter while adjusting the MOD ADJ control. The modulating signal can be monitored by turning on the oscilloscope as shown in paragraph 3.09 e. and viewing the displayed signal.

f. For continuous modulation, set the BURST (SEC) control to the CONT position. The modulated RF output frequency will be available at the SIG GEN OUT connector. The modulating frequency is also available at the MOD OUT connector.

g. If tone bursts are desired, set up as above but set the BURST (SEC) control for the length of tone burst. Settings are in fractions of seconds to a maximum of 1 second. Each time the ENABLE pushbutton is pressed, a tone burst of the length to which the BURST (SEC) control is set will be delivered.

h. For external modulation, connect an external signal source to the MOD IN connector. Both the internal modulating signal and the external frequency will modulate the output RF if the MODULATION-GEN/OFF/GEN + 1 kHz switch is in the GEN position. In the OFF position, only the external source will modulate the RF signal.

i. An INTERRUPT connector is available to allow an external source to control the duration of the modulating frequency generated by the CE-50A. This interrupt function is available when the BURST (SEC) control is in the CONT position and a modulating frequency is selected (either AM or FM).

j. To simultaneously modulate the CE-50A output RF with an audio frequency plus a constant known frequency, place the MODULATION-GEN/OFF/GEN + 1 kHz switch in the GEN + 1 kHz position. The audio frequency is selected by the MODULATION-FREQUENCY (Hz) switches, while the 1 kHz is constantly applied. The 1 kHz modulation level can be changed from 0-100 percent by the 1 kHz MOD ADJ control.

FM Mode

3.13 Make the following connections and control settings:

a. Turn on the CE-50A (refer to paragraphs 3.03 - 3.06).

b. Set the FUNCTION switch to SIG GEN FM and select the desired RF output frequency on the MHz (Frequency Select) switches

c. When the FUNCTION switch is set to SIG GEN-FM the FREQ ERROR meter may peg. Allow 10 - 15 seconds for the meter to return to zero before proceeding. If the meter does not return to zero, adjust the FREQ OFFSET control. This calibrates the FM center frequency to the same frequency as that dialed on the MHz (Frequency Select) switches for error-free meter readings.

d. Set the MODULATION-GEN/OFF/GEN + 1 kHz switch to the GEN position.

e. Set the MODULATION-FREQUENCY (Hz) switches to four figures representing the desired audio frequency. Set the multiplier switch (MODULATION-X1.0/X0.1/S.01) to place the decimal point in the four figure setting. For example: set the thumbwheel switches to 4567. Set the multiplier switch to X.01. The modulating frequency will be 45.67 Hz.

f. The amount of FM modulation can be set from 0-15 kHz deviation by the MOD ADJ control. To set it to the level desired, place the METER FUNCTIONS switch to the DEV kHz 15 position (if less deviation is needed, a lower deviation frequency position may be used). Monitor the FUNCTIONS meter while adjusting the MOD ADJ control to the desired FM frequency deviation. The modulating signal can also be monitored by turning on the oscilloscope as shown in paragraph 3.09 e. and viewing the displayed signal.

g. For continuous modulation, set the BURST (SEC) control to the CONT position. The modulated RF output frequency will be available at the SIG GEN OUT connector. The modulating frequency is also available at the MOD OUT connector.

h. If tone bursts are desired, set up as above but set the BURST (SEC) control for the length of tone burst. Settings are in fractions of seconds to a maximum of 1 second. Each time the ENABLE pushbutton is pressed, a tone burst of the length to which the BURST (SEC) control is set will be delivered.

i. For external modulation, connect an external signal source to the MOD IN connector. Both the internal modulating signal and external frequency will modulate the output RF if the MODULATION-GEN/OFF/GEN + 1 kHz switch is in the GEN position. In the OFF position, only the external source will modulate the RF signal.

j. An INTERRUPT connector is available to allow an external source to control the duration of the modulating frequency

generated by the CE-50A. This interrupt function is available when the BURST (SEC) control is in the CONT position and a modulating frequency is selected (either AM or FM).

k. To simultaneously modulate the CE-50A output RF with an audio frequency plus a constant known frequency, place the MODULATION-GEN/OFF/GEN + 1 kHz switch in the GEN + 1 kHz position. The audio frequency is selected by the MODULATION-FREQUENCY (Hz) switches, while the 1 kHz is constantly applied. The 1 kHz modulation level can be changed from 0-100 percent by the 1 kHz MOD ADJ control.

EXTERNAL OSCILLOSCOPE OPERATION

General

3.14 The CE-50A oscilloscope can be operated separately from normal monitor operation as a DC-1 MHz oscilloscope. To operate, make the following connections and control settings:

a. Turn on the CE-50A (refer to paragraphs 3.03 - 3.06).

b. Turn on the oscilloscope with the INTEN/SCOPE OFF control. Adjust the INTEN and FOCUS controls for a sharp, clear trace on the CRT. Center the trace on the CRT with the HORIZ and VERT oscilloscope controls.

CAUTION

Prolonged display of a stationary signal or trace of high intensity may damage the CRT phosphor coating. The intensity should not be set higher than necessary for comfortable viewing.

c. Set the EXT SCOPE INPUTS (AC/DC) switch to the position corresponding to the type of signal being measured.

Internal Horizontal Sweep

3.15 For oscilloscope operation using internal horizontal sweep function, make the following connections and control settings:

a. Place the VERT switch to the EXT 5V/DIV position and the HORIZ switch to the 1μs to 10ms position which gives the best signal for viewing.

b. Connect the external signal to the VERT input connector. The signal level or VERT switch may now be changed to display a signal on the CRT of sufficient amplitude for viewing.

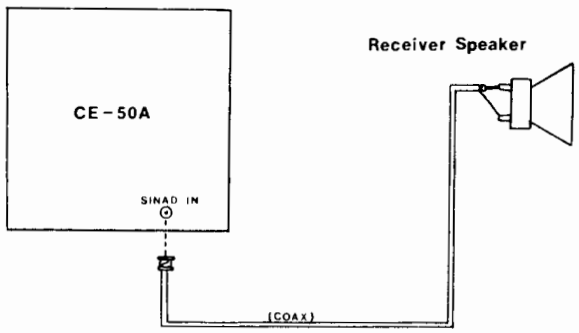


Figure 3-4. SINAD test set-up

External Horizontal Sweep

3.16 For external horizontal sweep (x-y) operation of the oscilloscope, set the VERT controls as in paragraph 3.14 above, and make the following additional connections and control settings:

a. Set the HORIZ switch to the EXT position.

b. Connect the external horizontal signal to the HORIZ input connector. If it is necessary to adjust horizontal gain, it must be done at the external signal source.

SINAD MEASUREMENTS

3.17 The SINAD measurement of receiver sensitivity is actually a measurement of the quality of the output signal delivered to the speaker, and can be a useful tool in performing receiver alignment. To make SINAD measurements using the CE-50A, make the following connections and control settings:

a. Turn on the CE-50A (refer to paragraphs 3.03 - 3.06).

b. Set the CE-50A FUNCTION switch to SIG GEN FM and tune the MHz (Frequency Select) switches to the receiver frequency. Place the four MODULATION-Frequency (Hz) thumbwheel switches to 1000 and MODULATION-GEN/OFF/GEN + 1 kHz switch to GEN. Set the MODULATION X1.0/X0.1/X.01 switch to X1.0. Turn the FINE/OFF control to minimum (before OFF), and adjust the SIG GEN LEVEL attenuator to the 1 mVOLTS position.

c. Connect the two conductors of a coaxial cable (such as RG-55) across the speaker terminals of the receiver to be tested (center conductor to the positive side, and shield to the negative side). Make sure that there is no DC voltage on the speaker terminal, and connect the other end of the

cable to the CE-50A SINAD BNC input connector. This allows the receiver speaker to be used as an audio load for the measurement.

d. Adjust the receiver volume control until the output power to the speaker is at its rated level.

e. Set the CE-50A METER FUNCTIONS switch to the SINAD position. The SINAD meter should deflect full scale to the right. Adjust the FREQ OFFSET control until the FREQ ERROR meter shows zero error.

f. Reduce the CE-50A RF output level by increasing the SIG GEN LEVEL attenuator setting until the CE-50A FUNCTIONS meter shows a -12 dB SINAD reading. This level is the -12 dB SINAD reference sensitivity, and at this level the receiver audio power output should be at least 50 percent of its rated value.

g. If the receiver audio power output is less than 50 percent of its rated value, increase the CE-50A RF output level (by decreasing the SIG GEN LEVEL attenuator setting) until it is 50 percent.

h. For precise measurements of SINAD sensitivity, the operator should refer to the Electronic Industries Association's Standard #RS-204-A titled, "Minimum Standards for Land Mobile Communications FM or PM Receivers, 25-470 MHz".

TRANSMITTER POWER MEASUREMENTS

3.18 The CE-50A can read transmitted RF power on the FUNCTIONS meter from 10 MHz to 500 MHz in two ranges: 0-10 watts and 0-100 watts. For power measurements make the following connections and control settings:

a. If the signal to be read is known to be less than 10 watts power, set the METER FUNCTIONS switch to the PWR x 1 position. If the signal level is greater than 10 watts, or is unknown (but less than 100 watts), set the METER FUNCTIONS switch to the PWR x 10 position.

b. Connect the signal to be measured to the SIG GEN OUT/RF IN jack.

NOTE

Anytime an RF input is sensed at the SIG GEN OUT/RF IN connector when the FUNCTIONS switch is in other than the PWR x 1 position, the circuits will automatically switch to the PWR x 10 level and display the power level on the FUNCTIONS meter.

c. Read the input power level displayed on the FUNCTIONS meter.

CAUTION

To prevent circuit damage, observe the following precautions during power measurements.

For P in not greater than 5 watts, power can be applied for three minutes maximum with 10 minutes between measurements.

For P in greater than 5 watts, but less than 100 watts, a maximum 10 second power measurement can be made with a minimum of 90 seconds between measurements.

SPECTRUM MONITOR OPERATION (CE-50A-1 only)

General

3.19 The CE-50A-1 Monitor has the identical functions of the CE-50A with the added capability of a spectrum monitoring function. When in the spectrum monitor mode, the CE-50A-1 has selectable scan widths of 10 kHz, 100 kHz, and 1 MHz per division, and can read RF levels to at least -115 dBm. For spectrum monitor operation, perform the following procedures.

Calibration

3.20 Make the following connections and control settings:

a. Set the FUNCTION switch to the SPECTRUM position. This will disable all front panel controls not connected with the spectrum monitor function (printed on the front panel in yellow characters) except for FOCUS, INTEN/SCOPE OFF, and Frequency (MHz) Select switches. It will also cause the UNLOCK LED to light and remain on to alert the operator that the CE-50A-1 is not fully in the spectrum monitor mode until Step (b) is completed.

b. Place the HORIZ (per div) switch to the SPECTRUM MONITOR position (scan width) of 10 kHz, 100 kHz, or 1 MHz desired for signal monitoring.

NOTE

Whenever the CE-50A-1 HORIZ (per div) switch scan width, or the Frequency (MHz) Select switches are changed, the CRT display will blank for a few seconds while the automatic centering circuits recalibrate the signal position to the center of the CRT. Blanking prevents the reading of incorrect input data during this calibration period.

c. Set the Frequency (MHz) Select switches to 200.0000 MHz.

d. Set the SENSITIVITY/RF LEVEL dBm switch to the -20 position. The level selected will be the level at the REF LEVEL dB "0" line on the CRT, and the other CRT readings will be from that reference. For example, if the SENSITIVITY/RF LEVEL dBm switch is placed in the -20 position, the CRT REF LEVEL dB "0" line will be -20 dBm. Then the -10 dBm line would be at -20 plus -10 dBm, or -30 dBm, and so on to -70 (would be -20 plus -70, or -90 dBm).

e. Connect the CAL OUT (200 MHz/-20 dBm) jack to the ANT input connector. A 200 MHz signal should appear at the center of the CRT on the baseline trace, and extend from the baseline to the REF LEVEL dB "0" line on the CRT. The signal amplitude can be adjusted by the recessed LEVEL CAL adjust on the front panel. Calibration is now complete.

Spectrum Monitoring

3.21 Make the following connections and control settings:

a. Set the FUNCTION switch to SPECTRUM.

b. Set the HORIZ (per div) switch to the SPECTRUM MONITOR position (scan width) of 10 kHz, 100 kHz, or 1 MHz desired for signal monitoring. See the note following paragraph 3.20 (b).

c. Set the Frequency (MHz) Select switches to the frequency of the signal to be monitored.

d. Set the SENSITIVITY/RF LEVEL dBm switch to the level necessary for monitoring the signal spectrum.

e. Connect the signal to be measured to the ANT connector on the CE-50A-1 front panel.

f. The absolute level of the input signal will be the RF level selected on the SENSITIVITY/RF LEVEL dBm switch plus the signal level measured on the CRT. For example, if the switch setting is -40, and the signal amplitude is at the -15 level on the CRT, the signal amplitude is -40 plus -15 dBm, or -55 dBm.

g. The amount by which the input frequency differs from the frequency selected on the Frequency (MHz) Select switches can be determined by multiplying the scan width selected on the HORIZ (per div) switch by the number of major divisions from center at which the input signal appears on the CRT. For example, if the frequency selected is 300 MHz, and the scan width is at 1 MHz per div, then a signal two divisions to the left or right of CRT center would be 2 MHz away from the 300 MHz center frequency (f_o). To determine the frequency of the off-center signal, algebraically add the amount by which the signal differs from the selected center frequency to the center frequency (f_o). If signals to the left of f_o on the CRT are negative, and those to the right are positive, then in the example above, a signal two major divisions to the left (-2 MHz) of the 300 MHz f_o would be at 298 MHz, while the signal to the right (+2 MHz) is at 302 MHz. Typically, a frequency with ±5 kHz accuracy can be read directly from the CRT. If a more precise frequency determination is needed, switch the FUNCTION switch to the FM or PFM position and read the frequency deviation on the FREQ ERROR meter. This reading can then be algebraically added to the center frequency as described above to determine the signal frequency.

TRACKING GENERATOR OPERATION (CE-50A-1/TG)

General

3.22 There are no additional front panel controls, indicators, or connectors used for the CE-50A-1/TG Tracking Generator function. Existing connectors and controls are assigned additional functions as follows:

a. The SIG GEN OUT/RF IN connector becomes the tracking generator output connector when the FUNCTION and HORIZ switches are both in the SPECTRUM MONITOR position.

b. The HORIZ display switch, besides setting the Spectrum Monitor dispersion rate of 1 MHz, 100 kHz, or 10 kHz per division, also sets the tracking generator sweep range of 10 MHz, 1 MHz, or 100 kHz. The center of the tracking generator sweep range is still the frequency selected on the front panel FREQUENCY (MHz) Select switches.

c. The tracking generator output level is set by the 0-120 dB STEP ATTENUATOR, with the FINE (OFF) control for vernier level settings.

d. All other functions remain as listed in Table 3-1 of the Instruction Manual.

Tracking Generator Operation

Sweep Measurements

3.23 Except for the frequency and output level settings, the CE-50A-1/TG control settings and connections for tracking generator sweep operation are the same for all applications. See Figure 3-5.

a. Set the HORIZ display switch to the 1 MHz, 100 kHz, or 10 kHz per division Spectrum Monitor dispersion rate as needed.

b. Set the FUNCTION switch to the SPECTRUM MONITOR position and set the

FREQUENCY (MHz) Select switches to the center frequency needed for the application.

c. Set the CE-50A-1/TG SENSITIVITY control for the approximate output level (0, -20, or -40 dB) needed from the tracking generator for the circuit element test. The MAX position may be used for uncalibrated, relative measurements.

d. Tune the CE-50A-1/TG to the test frequency of operation and connect the SIG GEN OUT/RF IN connector to the ANT input. Set the SENSITIVITY switch to -20, RF Attenuator to -10 dB, and adjust the FINE control for -10 dB on the SIG GEN LEVEL meter. If the trace on the CRT is not on the 0 dB REF LEVEL, set the LEVEL CAL adjustment. To maintain calibration, this adjustment should be checked any time the frequency is changed more than 100 MHz. Response level measurements are made from this reference, and measured in dB.

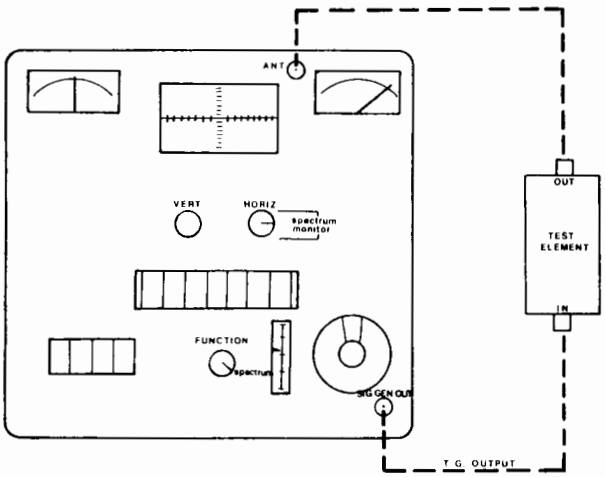


Figure 3-5. Two-port element test connection

e. Connect the input of the circuit element to be tested to the SIG GEN OUT/RF IN connector on the CE-50A-1/TG.

f. Connect the circuit element output to the CE-50A-1/TG ANT connector.

g. The trace on the CRT will outline the frequency response of the circuit under test around the selected center frequency.

3.24 The procedure given in Steps a. - g. above will test most two-port circuit elements. To accurately test three-port elements (such as duplexers) the unused port must be properly terminated.

Return Loss (VSWR) Measurements

3.25 Voltage Standing Wave Ratio (VSWR) measurements can be made with the CE-50A-1/TG indirectly, but accurately, by measuring the return loss of the circuit under test. Return loss is a measurement of the decrease in reflected signal power from the level of a signal which is 100% reflected (0 dB return loss). The higher the return loss, the lower the VSWR. If VSWR must be known, the measured return loss can be converted to VSWR by the chart of Figure 3-6.

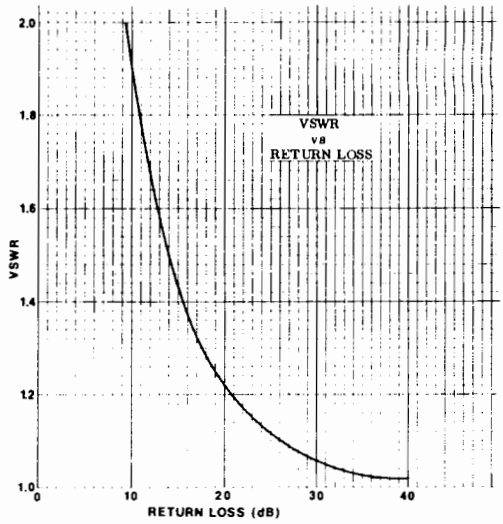


Figure 3-6. Chart to convert return loss to VSWR

3.26 Return loss can be measured by connecting a directional coupler or VSWR bridge (such as the Anzac RB-3-50) between the CE-50A-1/TG and the circuit to be tested. See Figure 3-7.

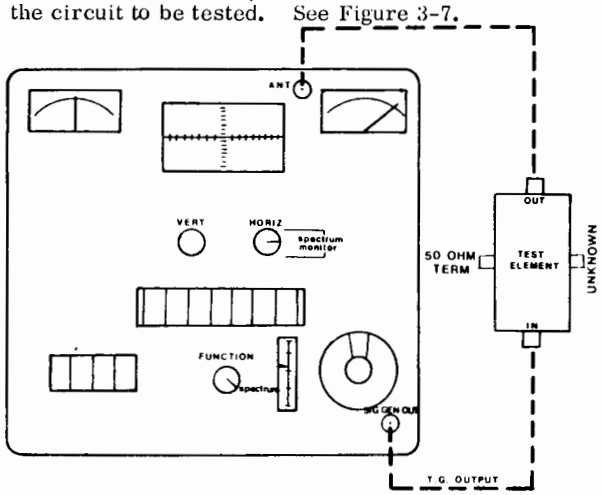


Figure 3-7. Return loss measurement connection

3.27 Return loss measurements are made as follows:

a. Set the CE-50A-1/TG controls as in Steps a. - c. of the Sweep Measurements paragraph 3.23 above.

b. Connect the directional coupler or VSWR bridge as shown in Figure 3-7. Place a short on the "unknown" test port of the bridge and terminate the remaining port in its characteristic impedance (for impedance reference - normally 50 Ohms).

c. Adjust the output level of the tracking generator to place the Spectrum Monitor trace at the 0 dB reference (top line of the display). This is the 0 dB return loss (or infinite VSWR) line to which the following measurement is referenced.

d. Remove the short from the bridge and connect the circuit element whose return loss is to be measured to the "unknown" port. The trace will now show the return loss of the element for all frequencies over the sweep range displayed on the CRT.

Antenna Isolation

3.28 For maximum isolation of system antennas, proceed as follows:

a. Connect the tracking generator output (SIG GEN OUT/RF IN connector) to one of the antennas, and the ANT connector to the other antenna to be isolated.

b. Set the CE-50A-1/TG FREQUENCY (MHz) Select switches to the center frequency of the antenna on the tracking generator output connector.

c. Set the 0 - 120 dB STEP ATTENUATOR to 0 dB. The Spectrum Monitor trace will now display the antenna isolation on the CRT directly for the dispersion rate selected. Adjust the antenna positions as required for maximum isolation at the frequency of interest.

SECTION 4
THEORY OF OPERATION

INTRODUCTION

4.01 The Theory of Operation section is divided into four sub-sections. The first is a description of the Circuit Reference Series which is used for circuit and component identification. The second is a general overview of the instrument operation. The third describes the overall functioning of the instrument from a block diagram viewpoint. The fourth is a description of the operation of the circuits as mounted on the circuit boards.

CIRCUIT REFERENCE SERIES

4.02 The Circuit Reference Series is a series of numbers assigned to the circuits of the instrument to make it possible to relate the actual circuit board or assembly to the schematic diagrams, the parts lists and the text of the manual with a minimum of effort.

4.03 The series of numbers assigned to the CE-50A are as follows:

10000 Front Panel

20000 Main Chassis, Left side

30000 Main Chassis, Right side

40000 Scope Module

50000 Receiver Casting

60000 Main Casting, top

70000 Main Casting, bottom

80000 RF Output Casting

90000 Rear Panel

Right and left sides refer to the instrument viewed from the front in an upright position. Board circuits of the 50000 through 80000 series are mounted in three microwave castings, although individual components associated with the castings can be located elsewhere on the instrument. Figure 5-1 shows the CE-50A circuit board locations.

4.04 Under each main grouping the circuits are further divided into 10000 number groups (e.g., 41000, 42000, 43000), each of which represent circuit boards. On each circuit board the components are individually numbered in a series starting with 1, each type of component having a separate series as designated by a letter or letters. The complete reference to any component includes the circuit reference number, the individual component number and the letter type indicator. For example, the first resistor, R1, in the 21000 circuit will be R21001, the second transistor, Q2, will be Q21002, and so on. The

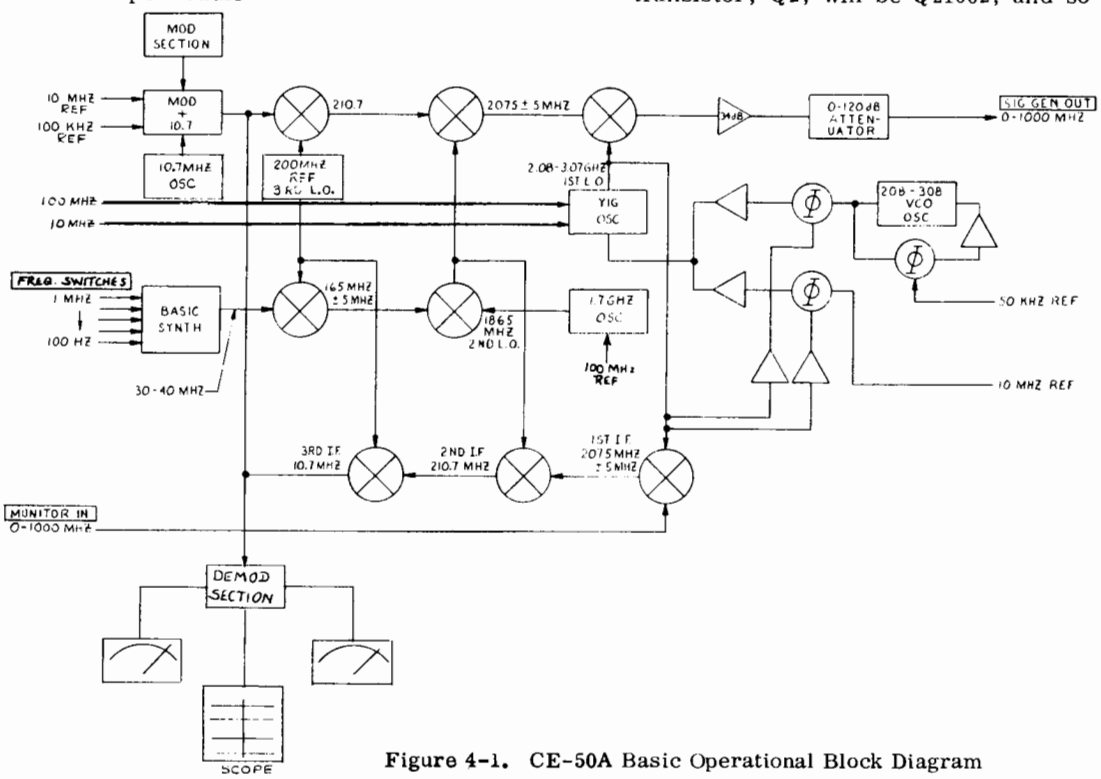


Figure 4-1. CE-50A Basic Operational Block Diagram

printed circuit board plugs and connectors are similarly designated with pin numbers following the component reference as a dashed number. For example, the first plug for the 21000 circuit would be P21001, and pin 4 of that plug P21001-4.

4.05 When the individual circuits are described in the Circuit Description the component references will be abbreviated for convenience. Thus, R1 will refer to the first resistor on the board under consideration only. If reference is made to a component outside that board or when more than one circuit is being described, the full reference designation will be used.

4.06 In order to identify each board a cross reference table is given at the beginning of Section 6 listing the basic board numbers in sequence. These numbers are etched on each board. Also listed are the board title, assembly number, circuit reference number and the figure and page number of the schematic diagram. The basic board number is the 1780-xxxx series. In cases where the board is too small for the complete number, only the last four digits are used. The basic number, along with the assembly number and the circuit reference number, also appears in the parts list for each board.

GENERAL OVERVIEW

4.07 Operated as a Communications Monitor, the CE-50A functions as a triple-conversion superheterodyne receiver over the VHF/UHF frequency range to 1000 MHz. See the CE-50A Basic Operational Block Diagram, Figure 4-1. Fixed internal frequencies are derived from a stable and accurate temperature compensated crystal oscillator (TCXO), or optional Oven Controlled Crystal Oscillator (OCXO) Time Base.

4.08 The first Local Oscillator (L.O.) is a YIG oscillator. Its 2.08-3.07 GHz frequency is set by the position of the Front Panel MHz (Frequency Select) 10 and 100 MHz switches when the FUNCTION switch is in one of the MONITOR positions.

4.09 The 1859.3-1869.3 MHz second L.O. is derived from mixing the 30.7-40.7 MHz Basic

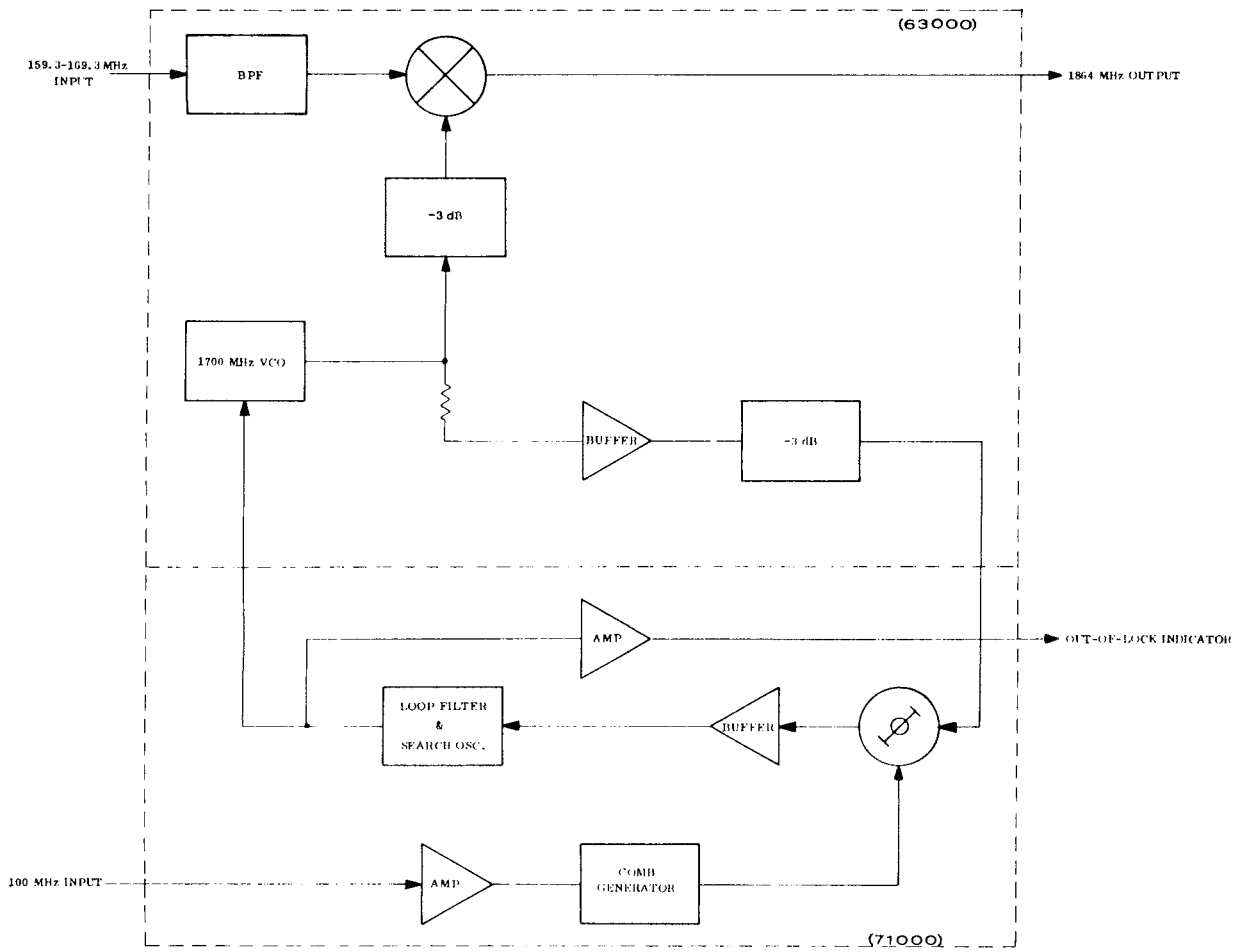


Figure 4-2. 1859.3 - 1869.3 MHz Second L.O.

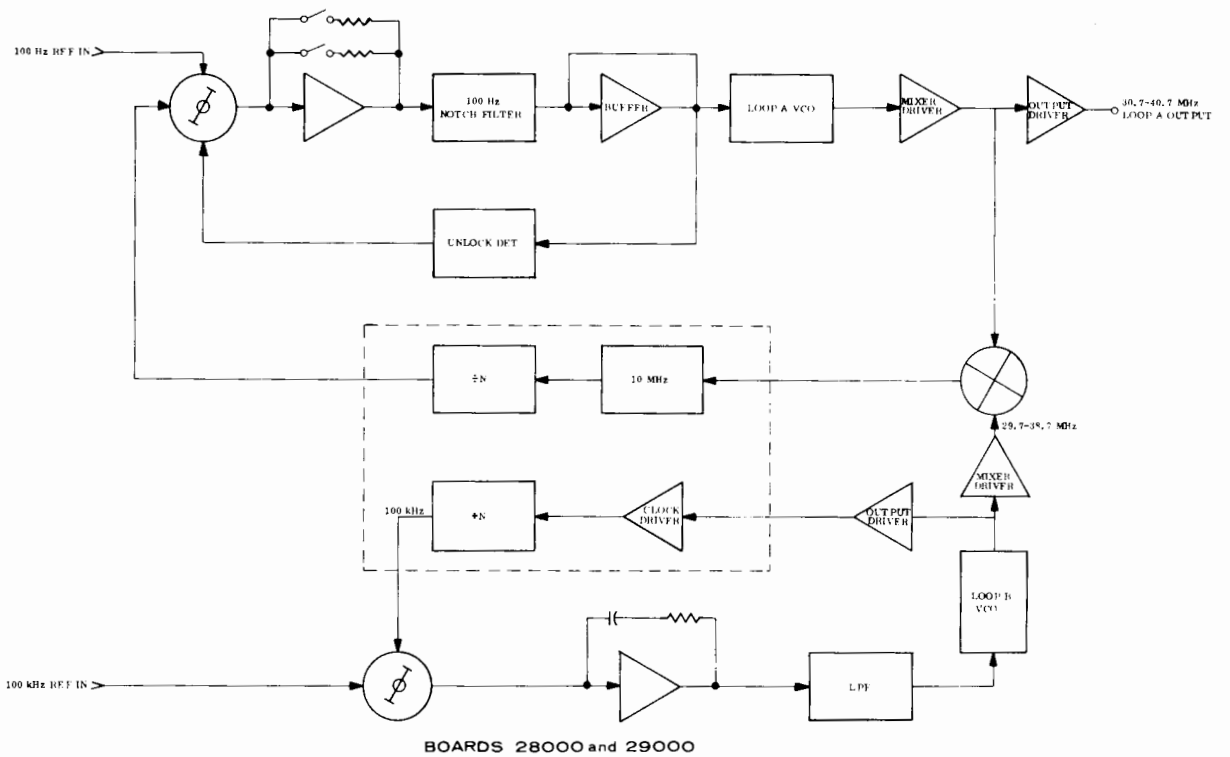


Figure 4-3. Basic Synthesizer Loop Block Diagram

Synthesizer output with a 200 MHz reference and then mixing it again with the 1.7 GHz oscillator frequency. The Basic Synthesizer frequency is determined by the setting of the 100 Hz to 1 MHz Front Panel MHz (Frequency Select) switches.

4.10 When the second L.O. (1859.3 - 1869.3 MHz) is mixed with the 2070-2080 MHz first I.F., the second I.F. of 210.7 MHz is formed. This frequency is then mixed with a 200 MHz third L.O. and the difference frequency becomes the third and final 10.7 MHz I.F.

4.11 This final I.F. is sent to the demodulation section where the signal characteristics are removed for display on the oscilloscope and meter circuits. Since all CE-50A L.O. frequencies used to achieve the final I.F. frequency are very stable and accurate, the signal characteristics present on the 10.7 MHz I.F. are the same as those on the original signal and not just equivalents.

4.12 Signal generation is achieved by a reverse process of the monitoring sequence. A 10.7 MHz VCO output is modulated by an audio frequency selected by the MODULATION Frequency (Hz) switches to make the first signal generator I.F. The type of modulation is selected by the Front Panel FUNCTION switch, and applied to the 10.7 MHz signal.

4.13 Part of the modulated 10.7 MHz signal is sent to the Demodulation circuits and displayed by the oscilloscope and meter circuits while the remainder is mixed with a 200 MHz L.O. to make a 210.7 MHz signal. The 210.7 MHz is then mixed with the 1859.3 MHz - 1869.3 MHz L.O. to make a 2-75 ±5 MHz intermediate frequency This I.F. is then mixed with the 2.08 - 3.07 GHz YIG oscillator frequency and the difference used to make the output 0 - 1000 MHz RF signal. This output RF is amplified and then applied to the Front Panel SIG GEN OUT connector through a 0 - 120 dB attenuator to make an RF output level selectable from +3 dBm to -127 dBm.

FUNCTIONAL DESCRIPTION

4.14 The PC boards of the CE-50A are here divided into eight basic functional groups for ease of explanation. The groups are: (1) Frequency Entry; (2) Reference Frequencies; (3) Frequency Loops; (4) Monitor Section; (5) Signal Generator Section; (6) Audio Synthesizer; (7) Display Conversion, and (8) Power Supplies. Each of these groups contain PC boards and circuits which together perform all the CE-50A functions.

Frequency Entry

4.15 Because it is used in many different CE-50A functions, the RF FREQ SELECT SW MTG

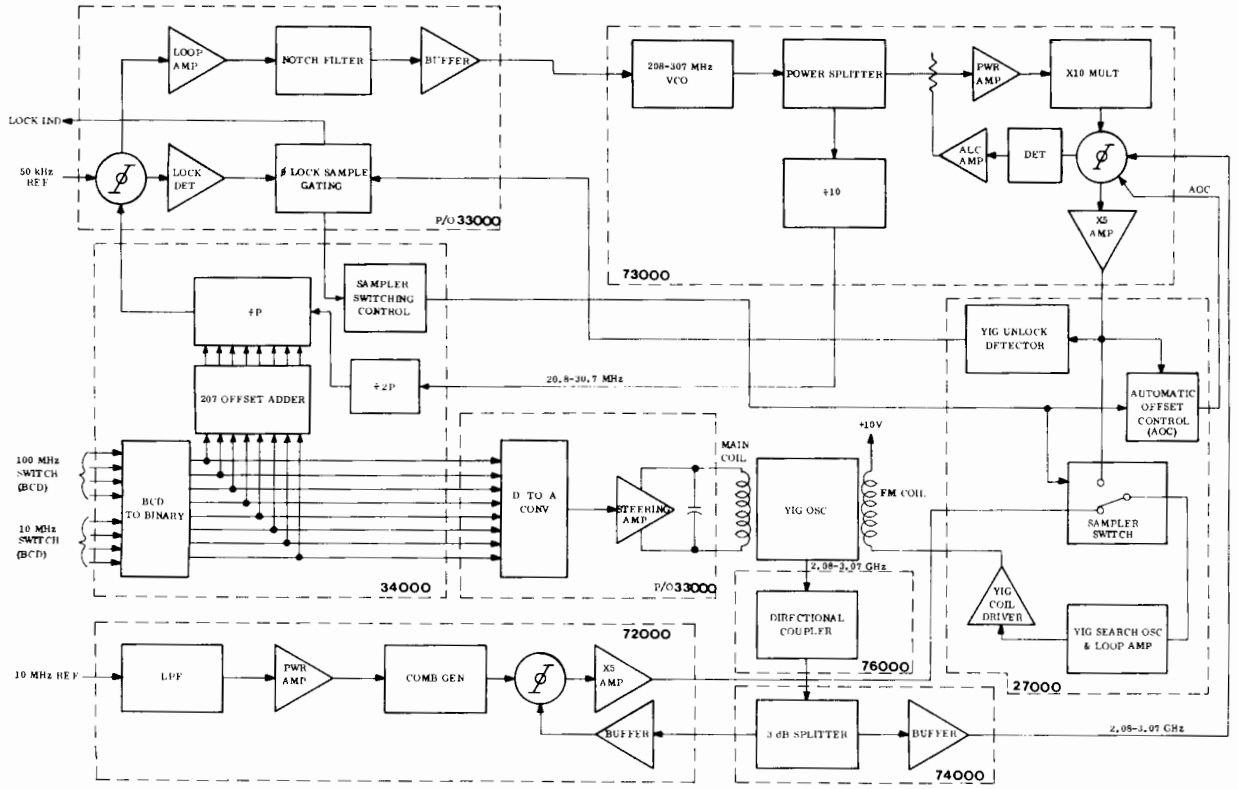


Figure 4-4. CE-50A YIG Frequency Loop

P.C. board (11000) is considered separately. The seven MHz (Frequency Select) switches are mounted on this board with the switch terminals connected by traces to a plug. The plug is attached to a connector which directs the switch coding through a flexible P.C. board to other circuits requiring frequency code data.

Reference Frequencies

4.16 All CE-50A reference frequencies are derived from the 10 MHz TCXO or optional OCXO Time Base (94000). This 10 MHz is input to the REF FREQ GENERATOR (37000) PC board where it is buffered and output to other circuits. It is also multiplied to obtain 200 MHz and 100 MHz reference frequencies.

4.17 One of the 10 MHz outputs of the REF FREQ GENERATOR board is also sent to the REF FREQ DIVIDER/SINAD (35000) board, where it is divided into reference frequencies of 100 kHz, 50 kHz, 1 kHz, and 100 Hz. This board also contains circuits for measuring the Sinad sensitivity of RF receivers.

Frequency Loops

4.18 The major frequency determining circuits in the CE-50A Communications Monitor are the 1859.3-1869.3 MHz circuits, the 1.7 GHz Loop, the Basic Synthesizer Loop, and the YIG Frequency Loop.

4.19 The 1859.3-1869.3 MHz frequency is used as the CE-50A Second L.O. (Figure 4-2). After being generated on the VCO & 1865 MHz UP-CONVERTER (63000) board, it is sent to the 1865 MHz FILTER & AMPL (66000). The 1859.3-1869.3 MHz is derived from the summation of the 1.7 GHz Loop, and the Basic Synthesizer output mixed with a 200 MHz L.O. on the 159.3-169.3 MHz I.F. board (61000).

4.20 The 1.7 GHz Loop is on two boards: The VCO & 1865 MHz UPCONVERTER (63000) and the 1.7 GHz PLL (71000). The loop output goes to the VCO & 1865 MHz UPCONVERTER board (63000) mixer where it is mixed with the output of the 159.3-169.3 MHz IF (61000) board to make the 1859.3-1869.3 MHz sent to the 66000 board. The 159.3-169.3 MHz IF (61000) board output is derived from the mixing of a 200 MHz L.O. signal with the 30.7-40.7 MHz Basic Synthesizer output.

4.21 The Basic Synthesizer Loop is primarily contained in the LOOPS A & B DIV-BY-N (28000) and LOOPS A & B VCO/PHASE DET (29000) boards. The MHz (Frequency Select) 1 MHz switch controls the frequency set by the LOOP B DIVIDE-BY-N circuits, and the 100 Hz to 100 kHz switches control the Loop A frequency. The 30.7-40.7 MHz output

from the Basic Synthesizer goes from the LOOPS A & B VCO/PHASE DET (29000) board to the 159.3-169.3 MHz IF (61000) board.

4.22 The CE-50A YIG Frequency Loop is the largest of the frequency loops and includes seven PC boards and the 2.08-3.07 GHz YIG oscillator assembly.

4.23 The YIG oscillator frequency is coarsely set by the position of the 10 MHz and 100 MHz Front Panel MHz (Frequency Select) switches. The BCD code of the switches is input to the DIGIT DECODE/DIV-BY-P (34000) board where it is processed and sent to the YIG MAIN COIL DRIVER (33000) board in two parts. One part goes to the YIG oscillator Main Coil where it coarse tunes the oscillator frequency.

4.24 The second part is amplified and filtered and then used to set the frequency of the 208-307 MHz VCO on the 208-307 MHz VCO/DIV 10/SAMPLER (73000) board. The VCO output is multiplied X10 and applied to a phase comparator where it is compared with the output of the YIG OSC (69000) as sent to the comparator through the DIRECTIONAL COUPLER (76000) and 3 dB PWR SPLITTER/BUFFER AMPL (74000) boards.

4.25 The amplified output of the 2.08-3.07 GHz phase comparator now goes to the YIG FM COIL DRIVER (27000) board. If the signal is within the lock range of the 208-307 MHz phase lock loop, the loop will lock. If not, the search oscillator will sweep the YIG to steer it within the lock-up range. Once the 208-307 MHz phase lock loop is locked, the sampler switching circuits on the board will switch to the 10 MHz SAMPLER (72000) board. The YIG loop will now lock to the 10 MHz SAMPLER output for fine tuning of the YIG frequency.

Monitor Section (Figure 4-5)

4.26 In the monitor mode of the CE-50A Communications Monitor, the 0-1000 MHz input signal is received at the RF ANT input and routed through the sensitivity select circuit on the RF ATTENUATOR (51000) board where pin diode attenuators set the input sensitivity of the unit.

4.27 The signal then goes to the 1st CONVERTER (52000) board where it is mixed with the 2.08-3.07 GHz output of the DIRECTIONAL COUPLER (76000) board.

4.28 The resultant mixer frequency output of 2.08-3.07 GHz goes through a bandpass filter to the 2nd CONVERTER (53000) board. Here it is mixed with 1859.3-1869.3 MHz from the 1865 MHz FILTER & AMPL (66000) board to produce a 210.7 MHz IF. The IF is mixed again with a 200 MHz reference L.O. to make the final IF frequency of 10.7 MHz, and sent to the 10.7 MHz IF (23000) and (for CE-50A-1 only) to the BPF (25000) boards.

4.29 In the CE-50A, the output of the 10.7 MHz IF board goes to the FM/AM DETECTOR NO. 1 (24000) board where the signal is demodulated and sent to the FM/AM DETECTOR NO. 2 (32000) board. Here the signals are conditioned and sent to the meters and CRT for display.

4.30 In the CE-50A-1, the 2nd Converter 10.7 MHz output also goes to the BPF (25000) board (in the SPECTRUM MONITOR mode) which

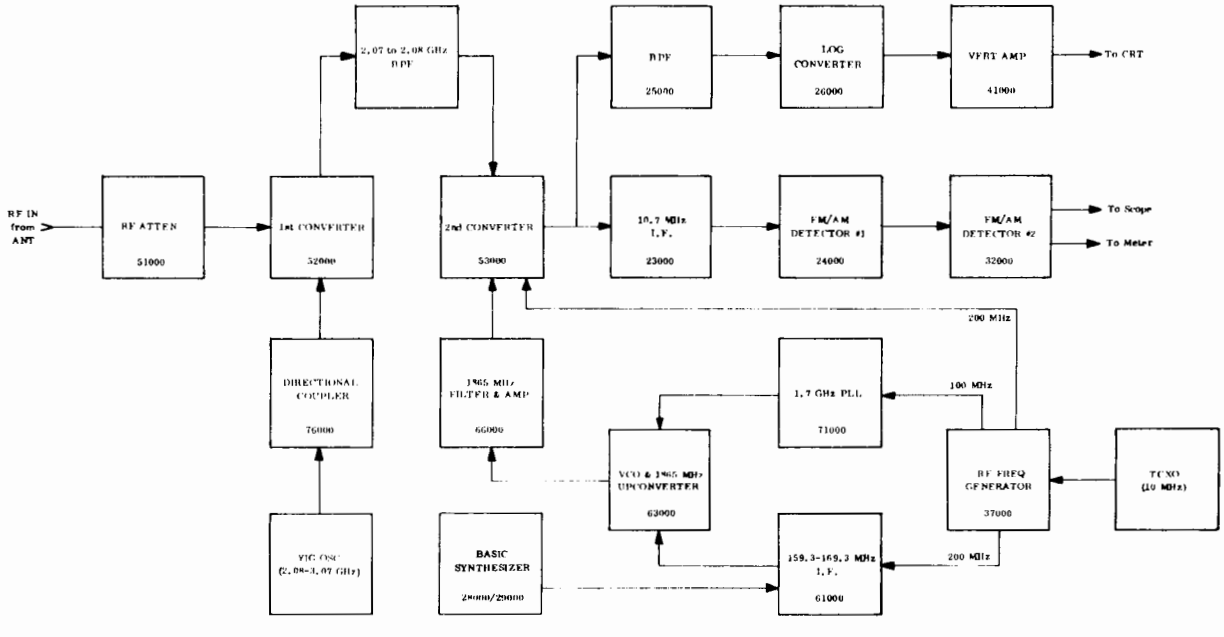


Figure 4-5. CE-50A Monitor Section

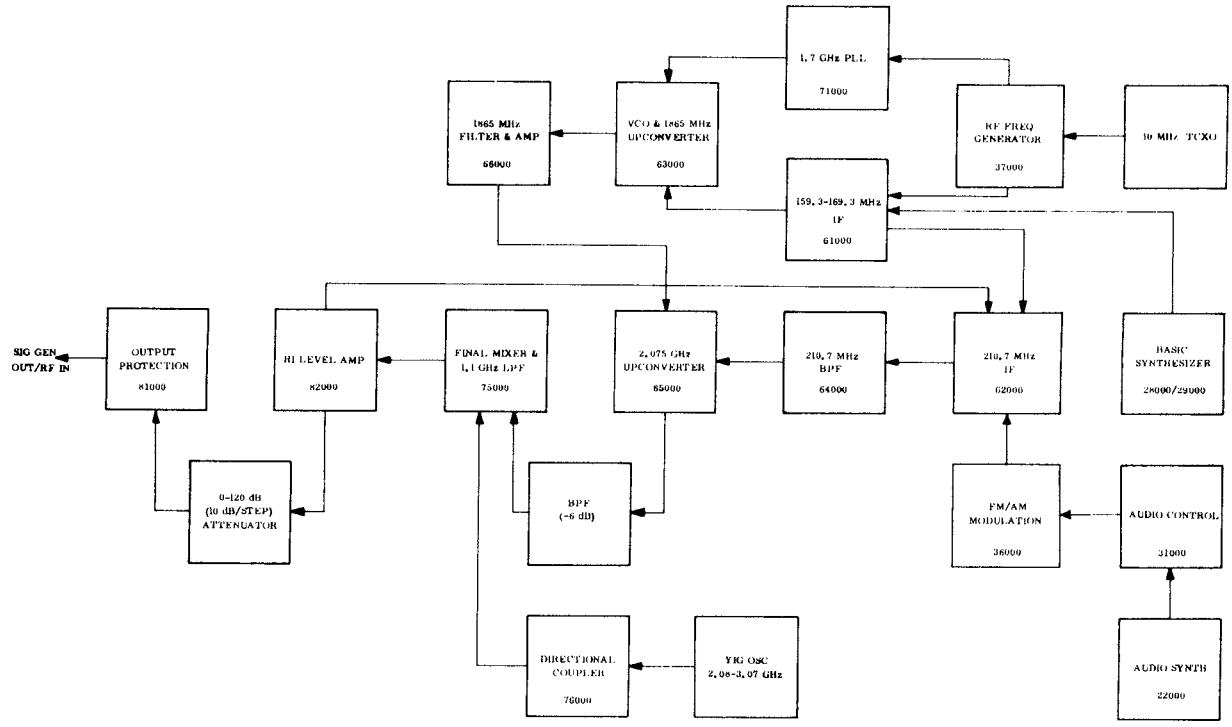


Figure 4-6. CE-50A Signal Generator Section

sets the IF bandpass of 2 kHz, 15 kHz, or 100 kHz. The signal then goes to the optional LOG CONVERTER (26000) board where the signal is conditioned for a Spectrum Monitor display on the CRT.

Signal Generator Section (Figure 4-6)

4.31 In the Signal Generation mode, the generation of the RF output signal begins at the FM/AM MODULATION (36000) board. Here, a 10.7 MHz IF is generated, and modulated by the frequency and type of modulation selected at the switches on the TONE GEN SW MTG/DC PWR CONTROL (12000) board. It is then sent to the 210.7 MHz IF (62000) board where it is then mixed with a 200 MHz reference to make the 210.7 MHz board output.

4.32 The output is sent to the 210.7 MHz BPF (64000) board and then to the 2.075 GHz UPCONVERTER (65000) board. Here it is mixed with 1859.3-1869.3 MHz from the 1865 MHz FILTER & AMPL (66000) board.

4.33 The 2.075 GHz signal then goes through a BPF to the FINAL MIXER/1.1 GHz LPF (75000) board where it is mixed with the 2.08-3.07 GHz YIG Oscillator output from the DIRECTIONAL COUPLER (76000) board.

4.34 The output of the FINAL MIXER/1.1 GHz LPF board is the modulated 0-1000 MHz RF frequency selected at the MHz (Frequency Select) switches. It is now sent through the Hi Level Amplifier (82000) board to the OUTPUT PROTECTION/PWR DET (81000) board through a 0-120 dB attenuator which sets the output signal to the desired level. The output of the PROTECTION board then goes to the Front Panel SIG GEN OUT connector.

Audio Synthesizer

4.35 The Audio Synthesizer section of the CE-50A generates the internal modulation and MOD OUT signals used by the unit. The MODULATION Frequency (Hz) switch codes are used to generate an audio output from the AUDIO SYNTHESIZER (22000) board. The output goes to the AUDIO CONTROL (31000) board and from there to the Front Panel MOD OUT connector and the FM/AM MODULATION board input.

Display Conversion

4.36 There are four different circuit types on the ALC/SQUELCH/DC CONTROL (21000) board. The first is the Power Meter Driver circuit for measuring input power levels. There is also a Meter Driver circuit containing 10 frequency calibrating potentiometers for the SIG GEN output level meter. A third type is the ALC circuit, which takes the output of the Output Level Cal circuit (through the FINE adjust on the Front Panel) and uses it to hold the output level of the HI LEVEL AMPL (82000) board to within 1 dB of the output level set. The fourth circuit type is the Function Monitor LED circuits which are used in troubleshooting CE-50A problems.

4.37 The SPEAKER DRIVER (93000) board has two circuits. The first is the circuit to amplify the audio frequency output to go to the speaker. There is also a current sensing circuit on the board to light the OVEN LED if the optional OCXO temperature is low.

4.38 The HORIZ DEFLECTION SW MTG (44000) board serves as an interface to transfer the HORIZ (per div) deflection switch and associated vernier CAL potentiometer information to the CRT circuits.

4.39 The VERT DEFLECTION SW MTG (43000) board also serves as an interface. It transfers the VERT deflection switch and associated vernier CAL potentiometer information to the CRT circuits.

4.40 Vertical deflection of the CRT display is done by circuits on the VERT AMPL (41000) board. Likewise the TIME BASE & HORIZ AMPL (42000) board controls the horizontal deflection of the CRT display.

Power Supplies (Figure 4-7)

4.41 Power supplied to the CE-50A is converted to different voltages by four PC boards in the unit. The input AC supply voltage comes into the AC/DC SWITCHING SUPPLY NO. 1 (91000) board where it is converted to +12 VDC.

4.42 The AC/DC SWITCHING SUPPLY NO. 2 (92000) board takes the input +12 VDC from SUPPLY NO. 1, the +12V battery or the input External DC. Here the +6 VDC and -7 VDC are developed as well as the +14.1 VDC battery charging voltage.

4.43 The +12 VDC from the AC/DC SWITCHING SUPPLY NO. 1, battery, or External DC is also routed to the 10V/5V REGULATORS (39000) board. This board has voltage regulators and the battery charge status meter circuit.

4.44 The final power supply board is the DC/DC CONVERTER (45000) board which develops the high voltages for the CRT deflection circuits.

CIRCUIT DESCRIPTION

4.45 The Circuit Description of the CE-50A boards follows the outline set in the Functional Description of the unit operation. It begins with the RF Freq Select Sw Mtg (11000) board and goes through the 10V/5V Regulators (39000) board.

RF Freq Select Sw Mtg (11000), Figure 6-2

4.46 On this board are mounted the seven MHz (Frequency Select) switches. The frequency position code from the switches is transferred by traces to the board connector. This connector is on a flexible PC board which carries the switch coding to other circuits requiring frequency code data.

Ref Freq Generator (37000), Figure 6-23

4.47 The TCXO (or optional OCXO) Time Base (94000) frequency of 10 MHz comes into the board at J1 and is applied to the base of input buffer Q1. Taken from the emitter of Q1, the 10 MHz signal is buffered by emitter-followers Q15, Q16 and Q17 for output to other boards. At the collector of Q1 the 10 MHz signal is detected by U1 and lights LED CR2 if 10 MHz is not present. It is also buffered by emitter-follower Q2 and applied to the input of the differential pair Q3, Q4 acting as a limiter to assure a constant output level. The limited output goes from the collector of Q4 to the Q5, Q6 differential pair input. The emitter current to Q5, Q6 is controlled by R32, and the input symmetry altered by R33 to increase the harmonic content at the Q6 collector output of the differential pair.

4.48 The 10 MHz and its harmonics are taken from the collector of Q6 and the 10th harmonic (100 MHz) extracted by the filter made up of R37, C25, L7, C26, C27, C28 and L8. The 100 MHz signal is amplified by Q7, Q8 and emitter coupled to the bases of Q9 and Q10. From the collector of amplifier Q10 the 100 MHz signal goes through rectifier CR7 to detector U1 which lights LED CR8 when the 100 MHz signal is not present. It is also coupled through C67 for off board use.

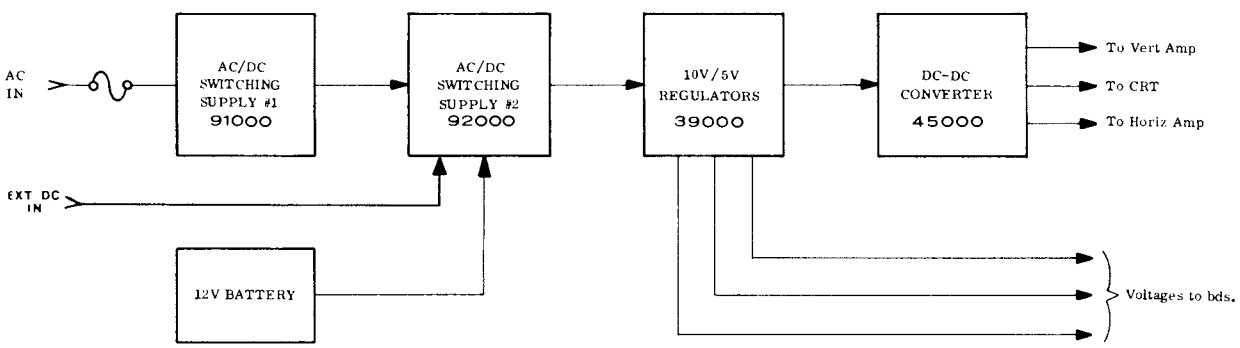


Figure 4-7. CE-50A Power Supplies

4.49 At the Q9 collector, the 100 MHz signal is coupled to the base of emitter-follower Q11. Base bias for Q11 is controlled by R54, which also controls the input symmetry of the signal to Q12, Q13 differential pair through Q11. R62 controls the Q12, Q13 pair emitter current and output harmonics. The second harmonic of 100 MHz (200 MHz) is removed in the filter formed by C47, L11 and C49-C54 with L12, and input to the base of buffer Q14. The signal is taken at the collector of Q14, rectified by diode CR5, and input to detector U1. The output of U1 lights LED CR6 as an indication that the 200 MHz circuit is not working. The 200 MHz is also output from the emitter of Q14 to provide three 200 MHz outputs to other boards.

Ref Freq Divider/Sinad (35000), Figure 6-21

4.50 The input to the Ref Freq Divider circuits is 10 MHz at P1-13,P. The 10 MHz input is amplified by buffer Q1 and converted to a TTL compatible square wave at U1 pin 3. The output of U1 pin 6 is reinverted (to original phase) for input to the U2 Divide-By-10 circuit. The 1 MHz output of U2 pin 12, goes to Divide-By-10 U3. The 100 kHz output of U3 pin 12 goes to buffer U4, whose pin 6 output goes to P1-L and pin 3 output to P1-M, 11 for distribution to other PC boards. The 100 kHz also goes to the buffer inverter U4 pin 12, 13. Inverter output U4 pin 8 reestablishes the original phase of the signal for input to the ÷2 input of U5, pin 14. The 50 kHz output of U5 pin 12 is buffered by the double inverter U6, whose pin 8 output goes to P1-10 for distribution of the signal to other PC boards. The 50 kHz output also goes to the double inverter U6 pin 1, 2 whose pin 6 output is the 50 kHz input to the U5 pin 1 Divide-By-5 section. This gives a 10 kHz output at U5 pin 11 for input to Divide-By-10 U7 pin 1. The 1 kHz output at U7 pin 12 goes to buffer U8 pin 12, 13 whose pin 3 output is sent to P1-7, H for distribution to other PC boards. The 1 kHz also goes to buffer U8 pin 9, 10. The U8 pin 6 buffer output drives the 1 kHz Divide-By-10, U9 which has an output at pin 11 of 100 Hz going to P1-8,J.

4.51 The sinad circuits input signal comes in at P1-3, C from the front panel SINAD IN jack. The input consists of the required 1 kHz tone output of the receiver being tested, plus all additional frequencies of noise harmonics, and other distorting signals generated in the receiver. This composite signal of 1 kHz tone, noise and distortion goes to pin 3 of dual operational amplifier U10. The two U10 amplifiers are connected in cascade, so that the output of the first drives the second, and amplifies the input. The output signal is positive limited by CR1 and used to control the current through Q2. This causes Q2 to act like a variable resistance, controlling the gain through the cascade amplifier pair and keeping the output level constant regardless of input level changes from .03-3 volts RMS from the receiver under test. Another automatic gain control (AGC) circuit consisting of the four cascaded amplifiers contained in dual operational amplifiers U11 and U12, provides additional leveling of the SINAD input signal to assure there is no level change in the signal to give erroneous readings. The output of U12 pin 7 is fed back through AGC control potentiometer R38 to the U11 pin 5 second amplifier. It is also used to drive the Q3 gate, causing Q3 (like Q2) to operate as a variable resistor controlling the U11 pin 1 output level.

The output of U11 pin 1 is now a constant level composite signal of 1 kHz, with components of the receiver noise and distortion. It is applied to the 1 kHz Notch filter, U13 where the 1 kHz signal is removed, leaving only noise and distortion in the signal. The noise and distortion components are then amplified and rectified in the U13 precision average value rectifier circuit, and the U13 pin 7 output to P1-5, E (Meter +) and P1-4, D (Meter -) used to drive the indicating meter.

VCO & 1865 MHz Upconverter (63000), Figure 6-38

4.52 The VCO & 1865 MHz Upconverter board contains the 1.7 GHz VCO circuit, a filter for the 159.3-169.3 MHz input signal, and a mixer circuit. The 1.7 GHz VCO is composed of Q1 and associated circuitry. The VCO tuning is controlled by the VCO Control Voltage input, from the 1.7 GHz PLL (71000) board, to varicap CR3. The VCO bias voltage is controlled by on-board regulator Q2 which prevents external line variations on the +10V input from being transferred to the VCO output frequency. The 1.7 GHz VCO output goes to buffer amplifier Q3 for output through 3 dB pad R14, R15, R16 to the 1.7 GHz PLL (71000) board. The VCO output also goes through 3 dB pad R10, R11, R12 to the mixer circuit where it is mixed with the filtered 159.3-169.3 MHz IF (61000) board input. Resistors R1, R2, R3 and R17, R18, R19 are 10 dB pads used only for test purposes. The mixer output is the sum of the 1.7 GHz VCO and 159.3-169.3 MHz frequencies, of 1859.3-1869.3 MHz to the 1865 MHz Filter & Amplifier board (66000).

1.7 GHz PLL (71000), Figure 6-43

4.53 The 1.7 GHz PLL has two signal inputs and two outputs. The first input is 100 MHz from the Ref Freq Generator (37000) board. The signal is amplified by Q1, Q2 100 MHz amplifier, while U1 provides a negative feedback which maintains the amplifier output level constant. The output of the 100 MHz amplifier is taken from the collector of Q2 and applied to step recovery diode CR5 which acts as a 100 MHz harmonic comb generator. The second input to the 1.7 GHz PLL board is the VCO Input from the VCO & 1865 MHz Upconverter (63000) board. This 1.7 GHz signal is compared with the 17th harmonic of the 100 MHz comb generator in the CR4, CR6 phase detector circuit. If the signals are 90° out of phase, there will be no input to U2 pin 2, and the VCO control voltage output of U4 will be a steady-state voltage with no signal imposed. If the phase detector does detect a frequency difference between the

100 MHz reference 17th harmonic and 1.7 GHz VCO input, there will be a signal at U2 pin 6 whose frequency is determined by the amount of difference, and whose level will be greater than or less than +6V depending on whether the VCO is higher or lower than the reference frequency. The signal passes through Q3 FET, which is connected as a loop switch, and goes to the loop filter, U4 pin 2, where the signal is filtered and then amplified. The VCO control voltage output is at U4, pin 6, and goes to the 1.7 GHz VCO tuning diode on the VCO & 1865 MHz Upconverter board. The U4 pin 6 output also goes to the "Out of Lock Indicator" drivers, Q4 and Q5, to drive the loop UNLOCK indicator.

4.54 The U2 pin 6 output signal also goes to the loop lock-out circuit comprised of Q6, Q7, Q8, and U5. If the frequency at U2 pin 6 is greater than approximately 80 kHz, the C38 coupling capacitor from Q6 emitter to the base of Q7 will pass the signal. It is detected and rectified by CR7, CR8 and if the C42 averaging capacitor level causes U5 pin 2 to exceed the pin 3 reference level, U5 pin 6 will go low and switch off Q3. This opens the 1.7 GHz PLL and causes the U4 pin 6 control voltage to be driven through its search range. When the signal at U2 pin 6 is less than approximately 80 kHz, or near lock, the Q6 emitter coupling capacitor C38 will not pass the signal. The U5 pin 2 input will then be less than the pin 3 reference and U5 pin 6 will go positive, turning on switch Q3 and closing the 1.7 GHz PLL to enable loop lock-up.

A +6V reference voltage is generated on the board using U3 as a regulator, and deriving the reference from the +10V input supply.

159.3-169.3 MHz IF (61000), Figure 6-36

4.55 The 200 MHz input from the Ref. Freq. Generator (37000) board is coupled through C6 to a 3 dB impedance matching pad made up of R7, R8, R9. The signal is then split. One output of the power splitter is coupled through C13 to the 200 MHz output (-4 dBm) going to the 210.7 MHz IF (62000) board. The other power splitter output is coupled through C4, and passed through C5, L2 lowpass to the base of Q1, a 200 MHz amplifier. The collector output of Q1 is filtered through inductor L10 and coupled through C11 to the LO input of mixer Z1 at approximately +6 dBm. The RF input to Z1 is the 30.7-40.7 MHz output of the Loops A & B VCO/Phase Detector (29000) board. It is coupled through C1 to the 50 MHz lowpass filter made by C2, L1, C3. The filter output is then passed through the 5 dB impedance matching pad composed of R1, R2, R3 to the mixer RF input. The Z1 mixer output is applied to the lowpass filter made by C16, L5, C17 which selects the difference frequency component of the composite mixer output, on 159.3-169.3 MHz. The diplexer circuit C14, C15, R14, L6 at the Z1 mixer output is used for impedance matching. It holds the IF mixer port at 50 ohms impedance for products above the 159.3-169.3 MHz frequency of the lowpass filter to prevent reflected products causing spurious outputs. The 159.3-169.3 MHz signal is coupled by C18 to the base of amplifier Q2, Q3. The collector output of Q3 is filtered by the tuned lowpass C20, L9, C24. It is then coupled through C26 and the 159.3-169.3 MHz output is sent to the VCO & 1865 MHz Upconverter (63000) board.

1865 MHz Filter & Amplifier (66000), Figure 6-41

4.56 The input to the 1865 MHz Filter and Amplifier is from the VCO & 1865 MHz Upconverter (63000) board. The 1865 MHz signal enters the board at terminal 1 and goes to a three-pole microstrip interdigital bandpass filter. The filter removes mixing products from the signal which might still remain from the Upconverter output. The filter output goes through a microstrip impedance match section to the base of amplifier Q1. The output of Q1 is taken from the collector and coupled through C7 to another microstrip filter which can be tuned by C8 to center the 1865 MHz signal in the bandpass. This filter output is also impedance matched into the base of Q2, which together with Q3 make a (nominally) 18 dB amplifier. The collector output of Q3 is coupled through C21 to terminal 3, where it goes to the Receiver Casting when the CE-50A FUNCTION switch is turned to the MONITOR position. When the FUNCTION switch is in SIG GEN, +10V is applied to terminal 5. This turns on Q4. The collector output of Q3 is then transferred through a directional coupler to the base of Q4. The 1859.3-1869.3 MHz output frequency is then coupled through C23 to the 2075 MHz UPCONVERTER (65000) board.

Loops A & B Divide-By-N (28000), Figure 6-14

4.57 There are two divide-by-N circuits on the Loops A & B Divide-By-N board. The divide-by-N associated with counters U1, U2, U3, and U4 is used to provide the correct Loop A frequency output, while counters U13, U14, and U15 are part of the Loop B divide-by-N circuitry. The purpose of each divider is to divide the output frequency of a VCO by a number, determined by the setting of the Front Panel Frequency select switches, which will make the divided output frequency equal to a constant reference frequency when compared in a phase detector circuit. Each setting of the Front Panel Frequency select switches changes the division number in the divide-by-N, so to keep the divided output equal to the reference, the VCO frequency must change by the correct amount to maintain a zero frequency error. Loop A VCO output frequency is mixed with the Loop B VCO output to obtain the correct division frequency for the Loop A divide-by-N to equal the reference. So while Loop B can achieve

phase lock by itself, Loop A requires the Loop B VCO output frequency to be mixed with its own before phase lock can be achieved. See Block Diagram, Figure 4-3.

4.58 The Loop B counters U13, U14, U15 are preset to the 9's complement of the 297-387 ÷ N number by the output of code converter U9, U10, U11 and U16, which derives the code from the setting of the Loop B 1 MHz Frequency Select switch. If the Loop B VCO input frequency to the counters is correct, the divide-by-N output at P1-T will be exactly 100 kHz. The Loop B VCO input frequency comes into the Divide-By-N board at P1-S. The signal is amplified by clock drives Q2, Q3 and converted to a TTL compatible signal in U12 to be applied to flip-flop U19B, pin 13 clock input. The flip-flop U19B is used as a divide-by-2 together with the divide-by-5 portion of presettable decade counter U13 to make one of 3 divide-by-10's in the circuit. The other two divide-by-10's are U14 and U15. Counters U13, U14 and U15 will count the input signal pulses, with the input signal being divided by 10 in U19B/U13, by 100 in U14, and by 1000 in U15. As the counters count, reset flip-flop U19A is held reset by the "LOW" clear input from U12 pin 4, so that the clocked inputs to the J side are not allowed to change its state. The count of the counters U15, U14, U13 increases to 9-8-9 (respectively) and then, on the next clock pulse, to 9-9-0. At this time the 9 counts in U15, U14 cause U20, pin 8 to go "LOW", forcing U20, pin 6 "HIGH" and the output of U12 pin 1 goes "LOW". With a "LOW" at pins 5 and 6 (U17 and U18 are held reset by the clear input from the Q output of U19 pin 5) the output of U12 pin 4 will go "HIGH", enabling the U19 pin 3 (J) input. When U13 has increased to count from "0" to "4", the input at U19, pin 3 will be enabled so that at the next clock time U19 pin 5 will be "HIGH". When U19 pin 5 goes "HIGH", pin 6 will go "LOW". This causes the clear input to U19B, pin 14, to stop the input signal from going to the U13, U14, U15 counters, and the "HIGH" at U19 pin 5 enables U17, U18 delay clock so the input signal is input to the delay, which now takes up the final count of the counters to 9-9-9. The U19 pin 6 "LOW" also enables the pin 1 preset loading circuits on U13, U14, U15 so the output of the code converter circuits is input to the counters. Now when the counters are next enabled for counting, the count will start from the count they hold from the code converter circuits. At the time the 3 clock delay circuit took over the count, it was 9-9-6 (the J input to U19 was at 9-9-4, and was at the Q output the next clock period, which is twice the input clock period, or at the count of 9-9-6). The next clock time, when the count would have been 9-9-7, U17 is set. At clock count 9-9-8, U18B (pin 9) is set, and at count 9-9-9 time, flip-flop U18A (pin 5) is set. When U18 pin 5 goes "HIGH", it causes the U12 pin 4 output to go "LOW" clearing (resetting) U19A Reset F/F. The "HIGH" at U19 pin 6 removes the clear signal from U19B pin 14 and the preset counter load signal from U13, U14, U15 which now begins counting (with the next clock pulse, which is time "zero) the input signal pulses from the preset count held by the counters to 9-9-9 again. This causes P1-T output from Reset F/F U19 to be a pulse of 3 clock times duration which, because of the code converter preset count (divide-by-N), recurs at a 100 kHz rate.

4.59 The Loop A divide-by-N circuits operate identically to the Loop B circuits, except Loop A doesn't require code conversion or clock delay. Also, its divide-by-N frequency output is 100 Hz (when the VCO is locked) instead of 100 kHz as in Loop B. The inverted BCD code from the 100 Hz, 1 kHz, 10 kHz, and 100 kHz Front Panel frequency select switches is input to presettable decade counters U1, U2, U3, and U4. The Loop A is buffered by Q1, converted to TTL at U8 pin 6 and input to the first divide-by-10, U1. The count increases from the preset count until the counters are all 9's. This 9-9-9-9 count causes U7 pin 8 to go "LOW", and applies a "HIGH" to U8 pin 10. The signal at U8 pin 9 is from the flip-flop U6 pin 12, which will be "HIGH" from a count of 9 (in U4)-0-0-0 to 9-9-9-9. At the count of 9-9-9-9 U8 pin 8 will go "LOW", triggering both U5 one-shot multivibrators. The 100 ns one-shot output, U5 pin 9, enables U1, U2, U3 and U4 preset inputs to accept the frequency switch setting code (divide-by-N), while U5 pin 7 is "HIGH" for 1 ms, and is the 100 Hz divide-by-N output to the VCO/Phase Detector board circuits.

Loops A & B VCO Phase Detector (29000), Figure 6-15

4.60 The Loop A divide-by-N output frequency is input to the loop phase detector at P1-6/F along with the 100 Hz reference frequency at P1-5/E. If the two frequencies are equal, the signals will be in phase, and when input to U1 pin 5 and U1 pin 1 will cause both flip-flops to be set simultaneously. When this happens, NAND gate U3 pin 6 will go "LOW", resetting both flip-flops. As long as these 100 Hz signals are in phase (same frequency), the U1 flip-flops will be set and reset at the same time. The pin 9 (Q) output of U1 passes through low leakage diode Q5 to averaging capacitor C5. The U1 pin 13 ($\bar{Q}$) output goes to C5 through diode Q6. Since U1 pin 9 is "HIGH" when U1 pin 13 is "LOW", the net result will be no change in the normal bias of approximately 2.5V on C5. However, if the divide-by-N input is either higher or lower in frequency than the reference 100 Hz, the bias on C5 would be more positive or more negative as the U1 pin 9 output occurs before (frequency is higher) or after (frequency is lower than) the 100 Hz reference. The C5 bias input is amplified in low noise operational amplifier U4. The gain of U4 is controlled by the setting of the 100 kHz frequency select switch. When 0-5 is selected on the switch input P1-9 or P1-10 turns on switch Q1, which turns on Q2 gating bias and in turn gates on FET Q3. When Q3 is turned on it effectively shorts across gain resistor R10 and reduces the U4 amplification. The short is removed (Q3 turned off) in the

higher 100 kHz switch positions. This increases the U4 gain to compensate for the frequency roll off caused by the Loop A divide-by-N range of 10000-19999. The output of amplifier U4 goes through a notch filter, C10, C11, C12, R12, R32 and R33 to remove the 100 Hz component from the amplified output. Additional filtering is done in the 50 Hz, 3 pole active filter made up by the U5 circuit. The very stable dc voltage is now buffered and linearized through U6 to the CR4, CR5 tuning input of the Loop A VCO, Q9, where it tunes the VCO to the correct output frequency. The U6 output is also fed to voltage comparator U9. As long as the U6 output is above $\approx$ + .7V DC, the comparator U9 will hold switch Q8 on and inhibit the 100 Hz trigger input. However, if the U6 output is below + .7V DC, indicating a false, or incorrect, lock mode, U9 will allow the trigger to be applied through Q8 to the U8 triggering input, and the "HIGH" one-shot output is inverted by Q7 and holds U1 pin 6 in reset (clear) for 1.1 seconds. This forces the Loop A circuit out of the false lock mode so lock can be reacquired when the "Clear" signal to U1 pin 6 is removed. Now that it is locked to the correct 30.7000-40.6999 MHz frequency, the Loop A VCO output goes to two places. One output goes through driver Q10 and output matching circuit R49, C24, L12 to the 159.3-169.3 MHz IF (61000) board. The other output goes through buffer Q12 to the Q15, Q16 L.O. driver amplifier where it is used to drive the M1 LO input port.

4.61 The RF input port on mixer M1 is driven from the Loop B VCO output circuit. Loop B phase detector U2 operates identically to the Loop A U1 phase detector except that the input reference frequency and divide-by-N frequency are at 100 kHz instead of 100 Hz. The bias on averaging capacitor C37 is fed from the phase detector through diodes CR7 and CR8, and input to loop amplifier U7 doesn't require gain switching as was used in Loop A. The U7 pin 6 output is filtered by the C41-44, L4-6 lowpass and applied to the Loop B VCO tuning diodes CR9, CR10 to tune the Q11 29.7-38.7 MHz VCO to the correct frequency. The VCO output then goes to two places. One output goes through Q14 output driver to P1-15, S where it is sent to the Loop A & B Divide-by-N (28000) board as the Loop B VCO input. The other VCO output is through Q13 mixer driver to the M1 mixer RF input, where it is mixed with the Loop A VCO output and the difference frequency of 1-2 MHz sent to the Loop A & B Divide-by-N (28000) board as the Loop A VCO input.

Digit Decode/ ÷P (34000), Figure 6-20

4.62 The Digit Decode and Divide-by-P circuits have inputs from the 10 MHz and 100 MHz front panel Frequency Select switches, and the Divide-by-10 output of the 208-307 VCO/÷10/ Sampler (73000) board. The frequency code from the 10 MHz switch (P1-4, L, 8, 9) and 100 MHz switch (P1-H, J, 5, 6) are input to the BCD to Binary code converter U8 and U9. The binary coded output of U8 and U9 is input to adders U10 and U11 where it is added with a 9's complement preset code of 2 (in the U10 100's adder) and 8 (in the U11 10's adder) for a total preset of a 9's complement 208. This preset is added with the binary switch code so the output is a code of 208-207, depending on the setting of the 10 MHz and 100 MHz switches. The counter input of 208-307 is the divide-by-P. The 208-307 MHz VCO input to the circuit is divided by 10 and input at P1-10 as a 20.8-30.7 MHz frequency. This input is divided-by-2 in U15 and input through driver U5-4 to the U12, U13 counters clock input. The UP/DN enable inputs to U12, U13 are held "HIGH" by U5-12, so the counters will only count down. When the ÷2P clock input to U12, U13 has counted down to 0-3 (U12-2, 3, 6, 7 outputs all zero, and U13-6, 7 zero), and there is no carry input from adder U10, gate U14-6 will go "HIGH". At the next clock count (0-2), flip-flop U7 will be set. At U12, U13 count 0-1, the U7 pin 11 output will be enabled, so that at count 0-0 the U12, U13 $\overline{LD}$ input, pin 11, will be "LOW" and enable loading of the adder inputs to the counters. If the combinations of binary input and 208 offset in the adders causes U10 to generate an overload, or carry (pin 14 "HIGH"), output U7 pin 14 will inhibit an output from U14 pin 6 until the counters have counted down the carry.

4.63 Also on the Digit Decode/÷P circuits are some components of the sampler switching control circuits. Input to the circuit is the phase-lock switch pulse at P1-S from the YIG Main Coil Driver (33000) board. This normally "LOW" input will go "HIGH" if the YIG or 208-307 MHz VCO loop is unlocked. This "HIGH" input to U2 pin 9 sets the one-shot for 300 milliseconds during which the loop is allowed to lock. At the end of the 300 millisecond lock period, the output of U4 pin 3 will go "LOW". This sends a "LOW" switching signal to the YIG FM Coil Driver (27000) board to switch the FM coil driver to the 10 MHz Sampler output. It will also send a "HIGH" signal to P1-N to light the YIG UNLOCK indicator, and to set the U1 pin 9 one-shot "KICK" oscillator. The "KICK" one-shot sends a 5 millisecond pulse to cause it to start searching from the high end of the tuning voltage range.

YIG Main Coil Driver (33000), Figure 6-19

4.64 The binary coded output of the 100 MHz and 10 MHz switches is taken Digit Decode/÷P (34000) board and applied to the Digital to Analog (D to A) converter (U8) in the YIG Main Coil Driver circuit. The output of the D to A, U8, is input to operational amplifier U9. Potentiometer R58 is used to set the input current level to U9 when the 100 MHz and 10 MHz switches are at 00, while R51 adjusts the output current change (gain) from 00-99, with a maximum setting at 99. The output of U9 pin 6 then goes through output driver Q6 to the YIG (69000) main coil.

4.65 The 208 P.L. (phase lock) input is the ÷2P input to U1-12, 13 and 50 kHz input to U1-4, 5. The inputs are applied to phase

comparator U2, pins 1 and 3. If the ÷2P and 50 kHz reference signals are the same phase (frequencies are equal), the pin 13 and 2 outputs of U2 will both remain high. If the ÷2P input to U2-3 lags in phase to the U2-1 50 kHz reference frequency, it will cause the U2-13 output go "LOW" while U2-2 remains "HIGH". The U2-2, 13 outputs are applied through switches Q1 and Q2 to pulse averaging capacitors C14, C15 which average the U2 output pulses to a dc value to be applied to U4 loop amplifier. The U4 output will go above or below its reference output depending on the phase of the U2 input signals. The U4-6 output is filtered by C25-32, R19, R22-24 50 Khz notch filter to remove the input frequency components and assure a constant dc voltage output through buffer Q3 to the 208-307 MHz VCO/÷10/ Sampler (73000) board for VCO tuning. The U2-2, 13 outputs also go to the U1 lock detect gate which will have an output at pin 3 mostly "LOW" if the loop is locked. If the loop is unlocked, the U1-3 output will pulse high more and more often (depending on how far the ÷2P frequency is from the 50 kHz reference), and C13 averaging capacitor will have a more and more positive charge until the U3 pin 6 output exceeds the threshold set by R21 at the U6 threshold detector input. At this point, if the 208-307 MHz VCO is unlocked, and the phase lock switching is enabled at the Digit Decode/÷P (34000) board, or the YIG HAS become unlocked, the output of U7-8 will be "HIGH", and enable the phase lock switching pulse output at P1-6 to the 34000 board. Switches Q4 and Q5 enable troubleshooting LED's on the ALC/Squelch/DC Control (21000) board.

208-307 MHz VCO/DIV 10/Sampler (73000), Figure 6-45

4.66 The 208-307 MHz VCO steeering voltage is from the YIG Main Coil Driver (33000) board, and is applied to CR1, CR2 tuning diodes of the Q1 VCO. The 208-307 MHz VCO output is applied through driver Q2 to the power splitter circuit of T1, and to the centertap of T2. From here it is sent to two places. One output goes through buffer Q4 to the U2 divide-by-10. The U2-11 output is 20.8-30.7 MHz, and is sent to the Digit Decode/÷P (34000) board. The other output of the splitter goes to the power amplifier Q3, Q5, Q7. The bias of Q7 is controlled by Q6. The amplifier output of Q7 is then applied to step recovery diode CR4 which generates harmonics of the 208-307 MHz signal of which the tenth, or 2080-3070 MHz, is selected to be output to the CR7-CR10 sampler. In the sampler, the signal is compared with the 2080-3070 MHz YIG output from the 3 dB Power Splitter/Buffer Amp (74000), and the difference detected by the sampler buffer U3 which outputs the sampled difference to the YIG FM Coil Driver (27000) board.

Directional Coupler (76000), Figure 6-48

4.67 The 2080-3070 MHz output of the YIG Oscillator Assembly (69000) is applied to the input of the Directional Coupler board. The coupler is made up on the PC board as a microstrip circuit and has 3 outputs. The first output is to Receiver Casting 1st Converter (52000) board. The second is to the Final Mixer and 1.1 GHz LPF (75000) board. The third output is to the 3 dB Power Splitter/Buffer Amp (74000) board.

3 dB Power Splitter/Buffer Amp (74000) Figure 6-46

4.68 The 3 dB Splitter and Buffer input is from the Directional Coupler (76000) and goes to two places from the 3 dB splitter L1, R1. One output goes to the 10 MHz sampler (72000) board. The second output is buffered by Q1 to go to the 208-307 MHz VCO/Div 10/Sampler (73000) board.

YIG FM Coil Driver (27000), Figure 6-12

4.69 The YIG lock-up circuit inputs to the YIG FM Coil Driver are from the 208-307 MHz VCO/Div 10/Sampler (73000) board (Sampler Output), and the 10 MHz Sampler (72000) board (Sampler Output). The signals are applied to their respective Q8, Q9 FET switches to await the Sampler SW input signal to switch Q6. The sampler SW input is a normally "HIGH" signal from the Digit Decode/÷P (34000) board sampler switching control circuits. This "HIGH" holds switch Q6 off, which allows its collector to go to -5V, and turn off FET's Q7 and Q8. The -5V turns on switch Q10, which turns on FET Q9 and allows the 208 MHz Sampler input through the switching circuits. If there is a failure in the 208-307 MHz VCO loop, or if the YIG is unlocked, the Sampler SW input to Q6 will go "HIGH", turning on Q9 and turning off Q8 FET switches. This allows the 208 MHz Sampler input to go through the switching circuit to control the YIG oscillator frequency. The 208 MHz Sampler input holds the YIG oscillator frequency within the acquisition range of the normal 10 MHz control on unit turn-on and during failure. The 208 MHz or 10 MHz Sampler signals are fed to the U3-2 YIG Loop amplifier and search oscillator input. The loop amplifier output will be a dc tuning control voltage to the YIG FM coil which sets the YIG output frequency if the loop is locked. If it is not locked, the output will be a search voltage which oscillates within the voltage range limits of the loop-locking circuits. U4 and Q12 make a driver circuit for the U3 output to the YIG FM coil. The 208 Sampler input also goes to the FET switch Q11, which is turned on if the Sampler SW input to Q6 is "HIGH". It inputs the signal to U2 pin 2 which outputs an automatic offset control (AOC) voltage to the 208-307 MHz VCO/Div10/Sampler (73000) board. The Lock Detector circuit on the YIG FM Coil Driver board also takes as its input the 208 MHz Sampler voltage. The signal is amplified through Q2 and Q3 and applied through Q4, Q5 differential input stage to comparator U1. The output is sent to the YIG Main Coil Driver (33000) board Sampler Switching circuits YIG Unlock input.

YIG FM Coil Driver/Sweep Driver (CE-50A-1) (27000), Figure 6-13

4.70 The 208 Sampler and 10 MHz Sampler inputs to the YIG FM Coil Driver/Sweep Driver board are identical to their CE-50A 27000

board counterparts. The 208 Sampler input goes to the FET Q21. If "Spectrum Monitor" is selected on the CE-50A-1 then there will be +10V (SW) at the base of switch Q13, turning it off. This causes Q12 to be held off so that the only control to the Q21 gate is Q14. The base of Q14 can be turned on by two inputs. The first is from the Sweep Lock Timing one-shot, U6 pin 12, which will trigger "LOW" for approximately 5 milliseconds during the time the 0-6V sweep ramp from the Time Base and Horiz Ampl (42000) board is low. As the sweep input to U5-2 goes toward 6V, the voltage will cross the R47, R48 threshold set at pin 3 and cause the normally "HIGH" U5-6 output to go "LOW". The output will remain "LOW" until the sweep ramp reaches 6V and then drops back to 0V. As it drops, the ramp will again cross the U5-3 threshold, and U5-6 output will return to its normal "HIGH" output state. This positive going transition of the U5-6 output will trigger the 5 millisecond sweep lock timing one-shot, U6-10, causing the Q output to pulse "HIGH" and $\bar{Q}$ output to pulse "LOW". The low going $\bar{Q}$ output turns on Q14 and applies +5V to the Q21 gate. This turns on the FET switch for a 5 millisecond sampling (held by R63, C31 circuit) of the 208 Sampler input. The second input turning on Q14 to enable FET Q21 is from the U7-3 Sweep Reacquire Timer output. If U7-3 goes "HIGH" it will turn on Q15, which turns on Q14 enabling Q21. Timer U7-3 will go "HIGH" if one of the inputs to U2-2, 3 remains "LOW" after they were both "LOW" together. This would occur if an unlocked condition were detected by the Q1, Q3, Q4, Q5, U1 Lock Detector circuit. The unlock would cause U1-6 to go "LOW", and it would be "LOW" as the Lock Timing one-shot U6-12 goes back "HIGH". The U2-1 output would then go "LOW" triggering U7-2 input, and causing pin 3 to go "HIGH".

4.71 After passing switch Q21, the 208 Sampler input goes through the U8 buffer amplifier to FET switch Q25. In other than spectrum monitor operation, this switch is closed, and allows the sampler signal to pass, if the 208 Sampler input is selected by the Sampler Switch input from the Digit Decode/÷P (34000) board. If this signal is "HIGH" (208 Sampler is selected) it turns off switch Q22. Its collector will go to -5V and turn off Q23 and Q24 while turning on Q26. The collector of Q26 will then apply +5V to the Q25 FET gate input, turning on the FET and passing the 208 sampler signal. A "LOW" Sampler Sw input would turn on Q22, Q23, and Q24 while turning off Q26 and gating FET Q25 off. This enables the 10 MHz Sampler path while disabling the 208 Sampler path to the loop main amplifier and search oscillator U9. In spectrum monitor operation, Q22 is held off by the +10V (Sw) input to its base. If during sweep time the YIG loop latches in a false lock mode, the Q6, U2 False Lock Detector circuit will cause the input of the U9 main loop amp and search oscillator to be pulsed "HIGH", and the U9-6 output "LOW". The signal passes through the FET sample and hold switch Q27, which is gated on by Q14 simultaneously with FET sample and hold switch Q21. It is then applied to the U11, Q33 YIG FM Coil Driver circuit where it is added to the output of the YIG Sweep Driver circuit to be sent to the YIG FM Coil.

4.72 The YIG Sweep Driver circuit input comes from the Sweep In at P1-T. The 0-6V sweep input ramp goes to two transistors, Q7 and Q11. Emitter follower Q7 buffers the ramp input through a voltage threshold circuit to U3-10 one-shot. When the sweep ramp peaks and starts to fall back toward zero, it will trigger U3 as it crosses the voltage threshold and cause U3-5 to have a positive going pulse of approximately 13 milliseconds as set by R31. The output then goes to Q31 at the YIG FM Coil Driver input, turning the normally "ON" transistor "OFF". This puts -5V to the gate of FET switch Q32, turning it off, and adds 10K resistor R100 to the C50, R99 pole to ground at U11-3 input during the time the unit is not sweeping. This reduces the amount of jitter which is passed through the YIG FM Coil Driver circuit.

4.73 The threshold input to U3-10 also goes to U3-2 one-shot input. The output of this one-shot is a negative going pulse which starts at the same threshold as the other one-shot and ends at approximately 5 milliseconds later as set by R34. This one-shot output, at U3-4, goes to normally off switch Q9, turning it on. This puts +5V through CR2 to Q10 gate, turning it on and allowing the 208 sampler input to go to U4-2 input. The U4-6 output is the result of a level comparison between the 208 Sampler input and the level at U4-3, and will compensate the level difference sent back to the 208 MHz (73000) board sampler circuit to correct for any offset.

4.74 The Sweep In signal to Q11 emitter follower is buffered through Q11 to potentiometer R98 where it is added to the centering voltage reference output of U10. The adjustment of R98 (in 1 MHz/Div), R107 (in 100 kHz/Div), and R112 (in 10 kHz/Div) set the width of the sweep selected by the input (low) signal at P1-S and 14/R from the Horizontal Deflection Switch Mounting (44000) board. The centered and width controlled signal at the input to U12-3 is then amplified and buffered by U12 and Q20, and used to control the YIG FM Coil frequency for the spectrum monitor sweep.

10 MHz Sampler (72000) Figure 6-44

4.75 The 10 MHz Sampler board is used in the CE-50A to lock the YIG oscillator to the correct frequency after being steered within range by the 208 MHz Sampler signal when front panel frequency selectors are changed. A 10 MHz reference frequency comes into the 72000 board from the TCXO. It goes through lowpass filter C1, L1, C4 and through amplifier Q1, Q2 to a 3 pole lowpass filter L6, L7, L8, C8, C9, C13, C15. The 10 MHz output of this filter is applied to step recovery diode CR1, and the resulting frequency comb applied through T1 to the detector bridge, CR2, CR3, CR4, CR5. Also applied to the detector

bridge is the 2.08-3.07 GHz input frequency from the 3 dB Splitter and Buffer (74000) board. Buffered by Q3, the 2.08-3.07 GHz input is offset by a voltage set by potentiometer R20 to compensate for the detector bridge offset caused by unwanted comb harmonics. The detector bridge voltage output is taken at the junction of CR4, CR5 and buffered by U1 for output to the YIG FM Coil Driver (27000) board.

RF Attenuator (51000) Figure 6-32

4.76 The RF Attenuator controls the input level of a selected RF input frequency at the CE-50A antenna. The input goes to the RF IN on the attenuator board, and the input level is either amplified or attenuated to produce an output to the 1st Converter (52000) board within the circuits range. The RF Attenuator board operation is controlled by the front panel SENSITIVITY (REF LEVEL dBm) control. In the MAX position the input RF is amplified +20 dB. A +10V level is applied to test point 1, and goes through R12, turning on CR2. It also applies power to Q1, Q2, Q3, Q4 and goes through R6, R11 to turn on CR10. This gives the input RF at test point 6 a path through CR2 to Q2, and through the +20 dB amplifier Q2, Q4 (whose bias is controlled by Q1, Q3) to CR10 and output at test point 8. In the -40 position of the SENSITIVITY switch, the path goes through the board with no amplification or attenuation. The -40 position applies +10V to test point 2. This turns on diodes CR3, CR4. The +10V also goes through CR11 to turn on CR6 and CR8 to give a straight-through path for the input RF from test point 6 to test point 8. When the SENSITIVITY switch is turned to -20, the RF Attenuator board must attenuate the input RF by 20 dB. To do this, the switch applies +10V to test points 3 and 5. The +10V at test point 3 goes through R24 to turn on diodes CR6 and CR8. At test point 5 the +10V turns on CR1 and CR5 to open a path from the test point 6 RF input through CR1 to the 20 dB attenuator pad R20, R21, R22 and out to test point 8 through diodes CR5, CR6, and CR8. In the 0 position, the SENSITIVITY switch must turn on 40 dB of attenuation in the RF attenuator board. It does this by applying +10V to test point 4. This opens a current path for the input RF signal through both 20 dB attenuator pads by forward biasing CR7 and CR9, and through CR12, CR1, and CR5. The input RF path then is through CR1, 20 dB pad R20, R21, R22, CR5, CR7, 20 dB pad R26, R27, R28, and CR9 to the output test point 8. From test point 8, the signal goes to the 1st Converter (52000) board.

1st Converter (52000) Figure 6-33

4.77 In the 1st Converter the input RF signal from the RF Attenuator board is converted to the first intermediate frequency for processing in the CE-50A receiver circuits. The 100 kHz to 1 GHz input RF signal comes into the board at test point 1 and goes through an etched PC board microstrip lowpass filter to diode mixer CR1. The L.O. input to CR1 is from test point 3, and is a 2.08-3.07 GHz signal from the Directional Coupler (76000) board. The 2.08-3.07 GHz signal is amplified through L.O. amplifier Q3, Q1 (bias controlled by Q4, Q2) and applied to the mixer. The mixer output will be the difference frequency of 2080 MHz to 2070 MHz (3.07 minus 1 GHz). This 2080 - 2070 MHz intermediate frequency (IF) is amplified by Q5, Q6 and output at test point 4 through a bandpass filter to the 2nd Converter.

2nd Converter (53000) Figure 6-34

4.78 In the Second Converter the first IF input signal is converted to the second IF (210.7 MHz) and then the third IF (10.7 MHz) which is output from the board. The output of the First Converter comes into the Second Converter board at test point 6. It goes to diode mixer CR1, CR2 where it is mixed with the test point 5 input from the 1865 MHz Filter and Amplifier (66000) board. The mixer output is the 210.7 MHz difference frequency which is amplified by Q2 (Q3 is a bias control) and applied through a tuneable bandpass filter to amplifier Q6. The amplified 210.7 MHz signal is taken from the collector of Q6 and applied to mixer Z1 with a 200 MHz input. The 10.7 MHz difference frequency is amplified through Q4 and passed through a 10.7 MHz bandpass filter to remove unwanted mixing harmonics. The output is then buffered through Q1 for output at test point7.

Bandpass Filter (25000) CE-50A-1 only. Figure 6-10

4.79 The Bandpass Filter board has three bandpass filters to give the needed resolution for input signal spectrum monitoring. The 2 kHz filter allows the resolution of signals which are close together and need to be looked at separately. The 100 kHz bandpass filter allows widely separated components of a signal, or widely separated signals, to be monitored simultaneously for evaluation. The 10 kHz bandpass allows an intermediate range of signal resolution on the signal spectrum. The Bandpass Filter input is from the Second Converter output, which also goes to the 10.7 MHz IF (23000) board. The 10.7 MHz comes in at P1-17, and goes through amplifier Q1 whose gain is adjustable by potentiometer R6. The output of Q1 is buffered through Q2 to amplifier Q3, Q4, and the collector output of Q4 is applied to the anode sides of diodes CR1, CR3, and CR5. The bandpass filter selected is determined by the position of the HORIZ (Per Div) switch in the SPECTRUM MONITOR positions of 10 kHz, 100 kHz, and 1 MHz. If the switch is in the 10 kHz position, the input to P1-15,S will be ground, turning on CR5 and CR6. This allows the Q4 output to go through the 2 kHz bandpass filter. The 100 kHz switch position turns on CR1 and CR2, and the 1 MHz position turns on the CR3, CR4 100 kHz bandpass path. The output of the selected bandpass filter goes to the emitter of amplifier Q7, and then to amplifier Q6. The output of Q6 is buffered through Q5 emitter to the P1-2,B output pin, and then to the Log Converter board.

Log Converter (26000) CE-50A-1, Figure 6-11

4.80 The Log Converter takes the input 10.7 MHz signal, and converts the analog levels to a logarithmic scale for display on the spectrum monitor CRT. The 10.7 MHz input signal comes in at board pin P1-16 and goes to the base of Q11. Amplifier Q11 and common-base amplifier Q12 together make up an IF amplifier whose gain is controlled by Q10 according to the setting of the front panel LEVEL ADJ control. The output of Q12 is filtered by the parallel resonant (bandpass filter) circuit L11, C42 and applied to the base of Q13. The circuits of Q13-Q17, and Q1-Q7 are used to provide the inputs needed by the U1 log converter circuit. The attenuation of R56, R57 at the base of buffer Q13 provide the -30 dB input needed at the U1 pin 7 input, while R24, R23 further reduce the level to the -60 dB needed for U1 pin 4. When amplified by the Q14-Q17 15 dB IF Amp/Limiter, the signal at U1 pin 9 is at the 0 dB reference level needed, and limited to 5 volts P-P. The emitter output of Q17 goes to Q1 through the input level control potentiometer R1. This pot controls the output level of the 30 dB log amp circuit, Q1-Q7, so the input to U1 pin 12 will be at +30 dB. The output of Log Converter U1 is adjusted by setting gain control potentiometers R27, R28 and R29 for the low, medium and high level gain break points needed for the correct logarithmic output curve. The output is amplified in Q8, Q9 and detected in CR2, CR3 log detector. The detected input drives differential amplifier U2 which amplifies it and outputs it at P1-4, D to the Vertical Amplifier (41000) board. The GAIN potentiometer R70 adjusts the gain through U2, and signal amplitude. Potentiometer R71, the REF control, adjusts the no-signal zero reference trace on the CRT.

10.7 MHz I.F. (23000), Figure 6-8

4.81 The 10.7 MHz output of the Second Converter (53000) board is input to the 10.7 MHz I.F. Amplifier at P1-2, B. The input signal is amplified and filtered to obtain a signal which is undistorted and of sufficient amplitude to measure its parameters with precision. The input 10.7 MHz is applied to amplifier Q1, Q2 through I.F. ATTEN potentiometer R119. The potentiometer is used to adjust the input signal level so the overall gain of the 10.7 MHz I.F. Amplifier board is 80 dB. The collector output of amplifier Q2 goes to the 10.7 MHz parallel resonant filter circuit L3, C12, and through the CR1 cathode to the 10.7 MHz, 22 kHz BW filter, FL1. If the front panel SELECTIVITY switch is in the NARROW position, +10V will be switched to P1-5, E. This voltage is applied to the cathodes of CR3, CR5, turning them off, and to the anodes of CR1, CR6 turning them on. This allows a path for the input signal through CR1, FL1, CR6 to source-follower Q3, and through FET Q3 to emitter follower Q4. In the WIDE position, the signal level at P1-5, E will be ground. This opens a signal path for the 10.7 MHz I.F. around the filter FL1 through CR1, CR3, CR5, and CR6 to source-follower Q3. Part of the Q4 emitter output is applied to amplifier Q22, Q21. The emitter output of Q21 is detected by CR11, CR12, and the detected voltage applied to Schmitt trigger Q19, Q20. If the signal exceeds the overload level set by the Schmitt trigger, the collector of Q20 will go "HIGH". This turns on switches Q18 and Q23. The "ON" Q18 turns off Q16, which puts the normally bypassed R5 into the Q1 emitter bias circuit. When Q23 is turned on, it places attenuating resistance R87 at the Q4 output. The resistance changes effecively reduce the 10.7 MHz input signal to the I.F. amplifier by approximately 10 dB when the input is overloaded.

4.82 The emitter output of Q4 goes through amplifier Q6, Q7 to the 10.7 MHz filter FL2, with a bandwidth of 280 kHz. The FL2 output is amplified through Q8, Q9 and sent to the second AGC controlled amplifier. The Q9 emitter output is also amplified throu AGC amplifier Q25, Q24. The output of Q24 is detected in CR16, CR17 and the detected level used to control the Q5 bias set by R88, and the feedback from Q5 to the 1st AGC amplifier. The Q9 emitter output of the 1st AGC amplifier is amplified through the 2nd AGC amplifier Q11-14, with AGC feedback through Q27, Q26, detected in CR21, CR23, and applied through Q10 to the base of Q11. The 2nd AGC amplifier gain control level is set by R98. Its output is through buffer driver Q15 to P1-17, U and the FM/AM Detector No. 1 (24000). The Squelch circuit is on the 10.7 MHz I.F. Amplifier board and is composed of U1 and associated components. The inputs to U1 are the detector outputs of CR16, CR17 and CR21, CR23 compared to the setting of the front panel SQUELCH control. The U1 squelch detector also controls the Schmitt trigger Q28, Q29 output to P1-16 which sets a signal level LED on the ALC/Squelch/DC Control (21000) board when the squelch range has not been exceeded.

FM/AM Detector #1 (24000), Figure 6-9

4.83 The purpose of the FM/AM Detector #1 board is to remove the modulation signal from the 10.7 MHz IF input, and output it for display and further processing for display as necessary. The 10.7 MHz input comes onto the board at P1-4 (from the 10.7 MHz I.F. (23000) board) if the CE-50A front panel FUNCTION switch is in one of the MON positions, or P1-D (from the FM/AM Modulation, (36000) board) if in one of the SIG GEN positions. The input 10.7 MHz is buffered through Q3 and applied to CR1, which acts as a variable attenuator. The diode bias is set by Q5, and its attenuation is controlled by the AGC loop amplifier U1A. After CR1, the 10.7 MHz is amplified through Q4, Q6 and Q7. At Q7 the FM signal would be directed through buffer Q15 to mixer Z1. The AM signal path continues through amplifier Q8, Q9 to AM detector CR2, CR3. Here the positive portion of the modulation signal is detected, buffered by U1B, and output at U1-7 to three places.

If the % AM is selected for meter display on the front panel, (Q28), the detected AM signal is switched through Q10 and output at P1-F (AM Audio). The second output at U1-7 goes to the AGC loop amplifier, U1A. The signal is filtered by R44, C34 and input at U1-2. The loop bandwidth is set by C91. The AM AMP potentiometer, R38, is adjusted to give a 1 volt P-P signal at the front panel DEMOD OUT jack when the AM modulation is set to 50%. The third U1-7 output is selected by switch CR4, if the CE-50A is in the AM mode, and sent to P1-7 (DEMOD AM) and buffer U2A to go to P1-N and the DEMOD OUT jack. The U2A input also goes to P1-M for output to the Speaker Driver (93000) board.

4.84 The 10.7 MHz signal taken from Q7 and buffered through Q15 to Mixer Z1 is mixed with a 10 MHz reference signal amplified through Q16 to Z1. The 700 kHz mixer output frequency is attenuated by 3 dB pad R39, R40, R127 (for impedance matching) and filtered by lowpass C38, L6, C43. It is then amplified by Q20, Q21 for output to three places. One output is to P1-12, where the signal is sent to the Vert Deflection Sw. Mtg. (43000) board for display on the CRT. A second output is buffered through Q22 to analog switch U7. Also input to U7 is the 700 kHz output of Q18, Q19 buffer amplifier. The 700 kHz signal is derived from a 100 kHz reference input from P1-V to amplifier Q17. The seventh harmonic of the 100 kHz signal (700 kHz) is filtered out in the C24-C29, L7-L9 bandpass filter and buffered by Q18, Q19 to U7. The switching of U7 is controlled by the $\overline{\text{Vosc}} \cdot \overline{\text{SQ}}$ and Vosc + SQ signals input from the FM/AM Detector #2 (32000) board at P1-J and P1-8. In the automatic calibration mode, Vosc + SQ selects the reference 700 kHz input from the 100 kHz x 7 circuits. Otherwise, the $\overline{\text{Vosc}} \cdot \overline{\text{SQ}}$ input selects the normal 10.7 MHz IF signal in U7 for input to limiter U10. The U10 output is the P1-6 Sig/Cal Out. The third output of the Q20, Q21 700 kHz amplifier is the input to the U4 limiter, which triggers one-shot U5. The U5-6 ($\overline{Q}$) output is to P1-10 where it is sent to the FM/AM Modulation (36000) board as AFC OUT. The U5-1 (Q) output is voltage translated by Q23 to improve the signal-to-noise ratio and input to the switchable bandwidth lowpass filter U6 to demodulate the FM signal. If PFM is selected (P1-16) input), Q25 will turn on, turning on Q24 and Q26. This adds C79 and C82 to the U6 lowpass filter circuit, and reduces the bandwidth of its pass band. The demodulated signal at U6 is input to U8A, where it goes to three places. One output goes to P1-M where it is sent to the Speaker Driver (93000) board. A second output is applied to the base of Q11 and U2B-2. If the +/- PEAKS switch is in the (+) position, Q11 is turned off, and it turns on in the (-) position. This allows Q11 to switch the input signal from the pin 2 (inverting) input of U2B for (+) peaks to pin 3 (non-inverting) input of U2B for (-) peaks. The amplified output of U2B is applied to comparator U3, whose reference input is set by the front panel LEVEL SET potentiometer input at P1-S. The comparator output triggers one-shot multivibrator U9, turning on Q27 and lighting the PEAKS LED for the one-shot timing cycle of approximately 240 milliseconds for each peak detected. The third output of audio amplifier U8A is through 80 kHz lowpass R69, C93, R70 to U2A-6. If the CE-50A is in the FM or PFM mode, switch Q12 will be off and switches Q13, Q14, Q29 turned on. This puts U2A-5 at ground and allows the FM audio input to be amplified by U2A and output through P1-N to the DEMOD OUT jack. If the CE-50A is in the AM mode, switch Q12 is turned on, placing the U2A-6 input to ground through the 10K of R70. The Q12, Q14, Q29 switches at U2A-5 are turned off, allowing the AM audio input to be amplified by U2A and output to P1-N.

FM/AM Detector #2 (32000), Figure 6-18

4.85 The FM/AM Detector #2 board contains circuits for meter display, automatic calibration, signal switching, and signal processing for other circuits. The front panel METER FUNCTION switch AM audio input (P1-F) and FM audio input (P1-D) are from FM/AM Detector #1. When % AM is selected, the AM audio input goes through R12 and C10 to halfwave rectifier input U2A-2. The FM audio input is applied to switches Q1, Q2, Q3 and its path through the switches depends on the deviation range selected on the METER FUNCTION switch. Potentiometers R18, R19, and R20 adjust the meter deflection for full scale at the appropriate deviation frequency. The pin 1 output of U2A is rectified by CR4, CR5, and the dc output used to control the function meter deflection for AM or FM signals.

4.86 Separate AM Audio input (P1-9) and FM Audio input (P1-8) signals, plus the DEMOD OUT signal which is used in the PFM mode, are used to develop CRT deflection signals. The AM and FM Audio signals are input to U7B where they are amplified and applied to switch U8-11. If PFM is selected, the DEMOD OUT signal from Detector #1 is input at P1-10 to U9A-3. The amplified U9A-1 output is applied to switch U8-8. The switching of U8 is controlled by Q4 and Q5. If PFM is selected, Q4 will turn on and switch the U8-8 input to U8-9 output where it goes to P1-H and the CRT circuits. If AM or FM is selected, Q4 will turn off and Q5 will turn on, switching U8-11 input to U8-10 output to also go to P1-H.

4.87 The Sig/Cal Out signal from Detector #1 is the signal input to be measured and is controlled by the automatic calibration circuits on the Detector #2 board. The auto-cal oscillator U1 puts out a 4 millisecond pulse every 400 milliseconds which goes to the Detector #1 board as Vosc + SQ (P1-P) and its logical opposite $\overline{\text{Vosc}} \cdot \overline{\text{SQ}}$ (P1-14). On the Detector #1 board, the oscillator signals select as the Sig/Cal signal to Detector #2 either a reference 700 kHz signal (during the 4 millisecond calibration time) or the 700 kHz signal IF (during the re-

mainder of the 400 millisecond period, or measurement time). The Sig/Cal signal comes onto the board at P1-A and triggers one-shot U3. The 50% ADJ potentiometer at the one-shot is adjusted so the Frequency Error meter input is exactly equal to the +2.5V reference voltage at U6-2 (from reference voltage generator U9B) when the input IF at P1-A is exactly 700 kHz to get a symmetrical meter swing. Potentiometers R76, R77 and R78 are adjusted, when selected by their respective switch Q18, Q19 or Q20, for full scale Frequency Error meter deflection. The output of one-shot U3 is filtered by 17 kHz active lowpass filter U4. The U4-6 lowpass output is filtered again by 3 kHz lowpass R46, C21, R49 during the 4 millisecond calibration period. After calibration, the input to switch Q8 (the Vosc + SQ signal) goes low, turning on Q8, and FET switches Q12, Q14. This changes the lowpass to 4 kHz by adding C22 and C23 to the lowpass for the duration of the 400 millisecond measurement period. The output of the lowpass is now applied to amplifier U6-3 input. During the 4 millisecond calibration period, the cal signal is amplified by U6 and applied to FET switch Q17 which is closed only during calibration time. The signal is input to sample-and-hold amplifier U5-2 where its average value is held in holding capacitor C26. Potentiometer R58 is adjusted for zero on the Frequency Error meter in the AM or CW modes. During the measurement period, FET switch Q17 opens up, preventing any change in the C26 holding voltage as long as the input to U6-3 is equal to it. This means the measured signal is equal to the calibration signal (both are exactly 700 kHz), and there is no frequency error. If there is a frequency error, the C26 holding capacitor voltage will be either higher or lower than the U6-3 input. This causes the current at U6-3 to change and the amplifier +2.5 V output will be changed by an amount directly related to this frequency error current change. The output is applied to another sample-and-hold made up of FET switch Q15 (controlled by Vosc + SQ and Squelch signals to Q7, Q8, and Q10) and C24. This sample-and-hold smoothes out the U6-6 output changes by averaging the sampled voltage changes. The output is then buffered through U6A to the Frequency Error meter.

FM/AM Modulation (36000), Figure 6-22

4.88 The CE-50A Modulation board inserts modulating frequencies into the frequency being generated in SIG GEN OUT connector. The circuits are operated on the board by +10V which is made available at P1-14, R only in the SIG GEN positions of the front panel FUNCTION switch. Circuits are also turned on and off in certain positions of the FUNCTION switch within the SIG GEN mode. Those positions control switches Q1 (AM select at P1-E), and Q2, Q3, Q4 (FM, PFM select at P1-N).

4.89 When the FUNCTION switch is in the SIG GEN-AM or CW positions, the circuits powered by voltages +10V, +10V ($\overline{FM}$), and +10V (AM) are turned on and the +10V (FM) powered circuits turned off. The 100 kHz reference input at P1-P is amplified through Q5 and the seventh harmonic (700 kHz) extracted by the tuned bandpass filter C13-C18, L2, L3, L4. The 700 kHz output is buffered through Q7 and amplified by Q8-Q10 to be input to the M1 mixer L.O. input. Here it is mixed with 10 MHz from P1-B and amplified through Q6. The 10.7 MHz summed frequency output of M1 is amplified by Q14 and sent through the bandpass filters F1 and F2. Then it is amplified by Q15, Q16 and buffered by Q18 to switch Q17. The signal is then buffered through Q19 to the AM modulator, U3, where it becomes the carrier signal for the audio modulation frequency. The audio frequency (AF) input comes in at P1-M, and is buffered through Q23. If the FUNCTION switch is in the SIG GEN-AM position, switch Q22 and Q20 will be turned off and CR6 turned on to allow the signal to get to the AM Modulator U3-4 input. The AM ADJ potentiometer (R82) is adjusted to give 100% amplitude modulation on the Function meter when the audio frequency input is at maximum.

4.90 When the CE-50A front panel FUNCTION switch is in the SIG GEN-FM or PFM positions, the circuits powered by voltages +10V and +10V (FM) are turned on while all others are turned off. The AFC input from the FM/AM Detector #1 (24000) comes onto the board at P1-D. It is filtered by lowpass R16, C44, buffered by U1, and then filtered again by the 200 kHz lowpass filter made up of C50, C53, C55-C57, L6, L8. The output of the 200 kHz lowpass is then summed into U2-2 with the FM CAL (OFFSET) potentiometer level. The OFFSET potentiometer R24 is adjusted to give the front panel FM CAL (OFFSET) control a frequency range of +15 kHz about the 10.7 MHz carrier. The modulating audio frequency, at P1-M, is switched through CR7-CR9 to amplifier Q21. The collector output of Q21 is to U2-2 where it is summed with the FM CAL (OFFSET) potentiometer input and AFC input. The loop summing amplifier U2 drives the CR4, CR5 tuning input to the 10.7 MHz VCO. The output of the VCO then is an FM modulated and frequency controlled 10.7 MHz carrier signal which can be offset from the selected center frequency by ±15 kHz. This signal is buffered through Q12 and switched through Q13 to Q19, which buffers it into the U3 AM modulator to become the carrier signal. The Q19 output to U3 then is the carrier signal in SIG GEN position of the FUNCTION switch. The output of U3 is the modulated 10.7 MHz carrier whose level is adjustable by R111. The output is buffered through Q24 and Q25 and filtered through lowpass filter C76-C80, L16, L17 to P1-L. The lowpass output is also buffered through Q26 to P1-H.

Tone Generator Switch Mtg/DC Power Control (12000), Figure 6-4

4,91 This board contains the switches used to select the audio modulation to be added to the SIG GEN output signal, and relays used to prevent meter and circuit damage from input RF levels while the CE-50A is in the SIG GEN mode. The 4 section FREQUENCY (Hz) switch, S1, selects the numerical value of the audio tone to be generated on the Audio Synthesizer (22000) board. The audio tone's output value is determined by selecting a multiplier of X1.0, X0.1, or X.01 at the multiplier switch S2. The GEN/OFF/GEN + 1 kHz switch, S3, controls the output of the audio tone on the Audio Control (31000) board. Relays K1 and K2 are operated simultaneously (the same signal actuates both), and protects the CE-50A Function meter and other sensitive circuits from an input of RF power even if the unit is in other than a power measurement mode. Switch Q1 will turn on and actuate the relays if the METER FUNCTION switch is in the PWR X1 position (+10V to CR2) or the PWR X10 position (+10V to CR3), or if the input Power Detector circuit on the Output Protection/Power Detector (81000) board detects an input RF signal at the RF IN/SIG GEN OUT connector at the CE-50A front panel (diode CR4 turned on). When K1 and K2 are energized, the CE-50A is automatically in the power measurement mode, and if they are energized by CR4 (an input RF signal detected) the unit will automatically be placed in the PWR X10 measurement mode no matter what the position of the METER FUNCTION switch with one exception. If the switch is in the PWR X1 position, and the RF detected is less than 1 watt the circuits won't switch to PWR X10.

210.7 MHz 1.F. (62000), Figure 6-37

4.92 The 10.7 MHz output of the FM/AM Modulation board is coupled onto the 210.7 MHz I.F. board through C1 and passed through lowpass filter C2, C3, L1 and 6 dB pad R1, R2, R3 to the double-balanced mixer, BM1. In the mixer it is added to a 200 MHz reference input from the 159.3-169.3 MHz I.F. power splitter circuits. The 200 MHz is coupled through C4, and filtered through C5, L2. It is then amplified through Q1 and input to mixer BM1. The output of the mixer is the sum of the input frequencies, or 210.7 MHz, and is filtered by C10, L5 before being amplified through Q2. The output of amplifier Q2 goes through lowpass C15, L6 to pin attenuator CR2, CR1. The attenuation presented by the diodes to the signal is controlled by the automatic leveling control (ALC) circuit of the ALC/Squelch/DC Control (21000) board, and gives the CE-50A SIG GEN circuits a controlled output level. The signal is amplified again in Q3 and output to the 210.8 MHz BPF board.

210.7 MHz BPF (64000), Figure 6-39

4.93 The purpose of the 210.7 MHz Bandpass Filter (BPF) board is to remove unwanted mixing products and harmonics from the 210.7 MHz I.F. signal. The input signal from the 210.7 MHz I.F. board is filtered through L1-L9, and C1-C7 and output to the 2.075 GHz Upconverter board. Inductors L6-L9 are microstrip inductors. Capacitors C2-C6 are variable to allow adjustment of the filters passband and frequency rejection around the 210.7 MHz center frequency.

2.075 GHz Upconverter (65000), Figure 6-40

4.94 The filtered 210.7 MHz 1F signal now goes to the 2.075 GHz Upconverter board. It is passed through impedance matching pad R8, R9, R10 and coupled through C6 to lowpass C10, L' (a microstrip inductor) and to mixer CR1, CR2, T1. At the mixer, the 210.7 MHz 1F is mixed with the 1859.3 MHz - 1869.3 MHz input from the 1865 MHz Filter and Amplifier (66000) board. The mixer summation frequency of 2.070 - 2.080 GHz is amplified through Q2, Q1 and output to the Final Mixer/1.1 GHz LPF board through a 2075 ±5 MHz coaxial bandpass filter.

Final Mixer & 1.1 GHz Lowpass Filter (75000), Figure 6-47

4.95 The filtered 2.07 - 2.08 GHz input to the Final Mixer goes through impedance matching 3 dB attenuation pad, R1, R2, R3, and highpass filter C1 with a microstrip inductor, to the CR1, CR2, T1 mixer circuit. Here the signal is mixed with the 2.08 - 3.07 GHz YIG frequency from the Directional Coupler board, and the 0-1 GHz mixer difference frequency extracted. It is filtered by an on board microstrip lowpass filter, and sent to the output casting assembly High Level Amplifier board.

High Level Amplifier (82000), Figure 6-51

4.96 The High Level Amplifier consists of a pair of wideband feedback amplifiers which amplify the 100 kHz - 1 GHz input signal to the needed output level, and an ALC detector circuit which allows the Automatic Level Control on the ALC/Squelch/DC Control (21000) board to control the signal generator output level. The two feedback amplifiers, Q1, Q2 and Q3, Q4 have their feedback controlled to maintain input and output impedances at each amplifier of 50 ohms and an overall amplifier gain of≈36 dB. The output of the wideband amplifier is sampled at the collector output of Q4 and input to the U1 ALC detector. The signal is rectified by CR1 and the RF filtered by C19, C20. Variations in CR1 over temperature are compensated by CR2 to maintain an input to ALC amplifier U1 which changes only with the output level of the wideband amplifier. The ALC detector output is

sent to the ALC/Squelch/DC Control board, and the RF output of the wideband amplifier goes to the 0-120 dB variable attenuator on the CE-50A front panel to control the level to the Output Protection/Power Detector board.

Output Protection/Power Detector (81000), Figure 6-50

4.97 The RF input signal comes onto the board at WT 8 from the 0-120 dB attenuator, and is coupled through C7 to the CR5, CR6, CR7, CR9 limiter. The limiter prevents any signal of greater than ±1.0 volt from being accidentally coupled from the SIG GEN OUT/RF IN jack on the CE-50A front panel to the signal generator circuits, and causing possible damage. If an RF signal is input to the CE-50A SIG GEN OUT/RF IN connector, it comes onto the Output Protection/Power Detector board at WT 1 where it is detected, and the detected level goes to the K1 relay on the Output Casting assembly. It also goes through positive detector diode CR2 while negative limiter CR1 clips the signal negative portion. Capacitor C3 averages the voltage variations to make a dc input signal at the U1-3 input. The level of the signal is determined by the input RF level, and if it exceeds the limit set by R1 at the U1-2 reference input, the U1-6 output will go "HIGH" turning on Q1 and Q2. When Q2 conducts it puts a ground on the Output Casting assembly relay K1, causing it to actuate and switch the SIG GEN OUT/RF IN connector from the signal generation circuits to the 20 dB RF Antenna Load attenuator on the CE-50A rear panel. The output of the 20 dB attenuator comes back to the Output Protection/Power Detector board at WT 10. The signal is peak detected by CR8, and the detected level output at WT 9 to the ALC/Squelch/DC Control (21000) board power measurement circuits.

Audio Synthesizer (22000), Figure 6-7

4.98 The purpose of the Audio Synthesizer is to take the audio switch position code from the Tone Generator SW Mtg/DC Pwr Cont board, convert the code to an audio frequency, and use the audio frequency for internal CE-50A modulation and as an audio output. The audio frequency codes from the front panel MODULATION-FREQUENCY (Hz) switches are input to a Decimal Rate Multiplier made up of U1 (whose input is the MSD of the MODULATION switches) U2, U3, and U4 (input from the LSD switch). A clock input to the Rate Multiplier comes from the Q1, Y1 oscillator Time Base circuit. The oscillator frequency of 5.1 MHz can be adjusted by C31, and is buffered through U14 to the CLK inputs of U1, U2, U3 and U4 of the Decimal Rate Multiplier. For every 10 clock pulses input to each multiplier unit, its output rate will be the number of pulses to which its corresponding frequency switch is set. For example, if the MODULATION-FREQUENCY (Hz) LSD switch is set to 4, the output rate of U4 would be 4 equally spaced pulses for every 10 input clock pulses. If set to 7, U4 would have 7 equally spaced output pulses for every 10 clock pulses in. Since the multipliers are decaded, meaning the Enable Outputs of U1, U2, and U3 are connected to the Enable and Strobe Inputs of the following multiplier (U1 to U2, U2 to U3, and U3 to U4), the clock rate at each succeeding multiplier is effectively divided by 10. This means that the output frequency of each multiplier will be a function of the input clock times the switch setting (or multiplier rate) divided by 10. So with the MODULATION-FREQUENCY (Hz) switch setting of 2345, the output of U1 would be 5.1 MHz times 2 divided by 10 (.2); U2 is 5.1 MHz times 3 divided by 100 (.03); U3 is 5.1 MHz times 4 divided by 1000 (.004); U4 is 5.1 MHz times 5 divided by 10000 (.0005). In other words, the total four unit multiplier output would be, at the 2345 switch setting, 5.1 MHz times .2345, or 1,195,950 bits.

4.99 The outputs of U1 and U2 are cascaded by connecting the Z output of U1 to the cascade input of U2. In the same way, U3 and U4 are cascaded together. This causes the outputs of U1 and U2 to appear at the U2 (Y) output, and of U3 and U4 to appear at the U4 (Y) output. These outputs are inverted through parts of U14 and input to OR gate U15-9, 10. At the U15-8 output, the total output of the 4 multipliers appears as a continuous bit stream depending on the setting of the MODULATION-FREQUENCY (Hz) switches. In the switch setting of 2345 discussed above, the frequency would be 1,195,950 bits per second. If the MODULATION - X1.0/X0.1/X.01 switch is in the X1.0 position, the U15-8 output is gated through U15-6 and U7-6 to the U8-14 Clk input of the Up/Down Counter. In the X.01 position, the U15-8 output is input to the U5-14 Divide-by-10 counter, and its U5-11 output gated through U16-8, U7-8, U15-11, and U7-6 to the U8-14 Up/Down Counter input. When set to the X.01 position, the output of U15-8 goes through both Divide-by-10 counters U5, U6 and is gated from U6-11 to the U8-14 Up/Down Counter input. The ripple clock output of U8-13 is connected to the U9-14 clock input effectively making the 2 counters one Up/Down Counter with 8 binary outputs. The up-down count is controlled by J-K flip-flop U10 which is triggered to change states at maximum or minimum counts from the 2 counters (U10 pin 12 "HIGH" means count down; "LOW" means count up). The counter will count up and down for a total count of 255 in each direction (the full count of the 8 binary outputs). So for each cycle of output frequency, the cycle requires 510 bits. In our example of the modulation switch setting of 2345, therefore, the bit count into the up-down counters of 1,195,950 will be divided by 510 for every cycle of output frequency, for an output frequency of 2345 (the number selected on the switches).

4.100 The eight binary outputs from the Up/Down Counters U8, U9 are connected to the D/A Converter, U11. The D/A Converter changes the linearly progressing binary input

count to a linearly increasing, or decreasing (depending on the direction of the count) output current. The current increases or decreases in small steps, one step for each count. This produces a triangular current waveform with a total range of 0-2 mA from minimum to maximum. One cycle of this waveform is produced for 510 input counts to the D/A Converter. The D/A output is connected to operational amplifier U12. Operational amplifier U12 converts the current input from the D/A Converter to a triangular wave voltage and applies it to the Sine Converter. The output of U12 is biased by R22 to center the output around ground.

4.101 The Sine Converter takes the U12 triangular wave and converts it into a sine wave. The circuit makes use of the fact that in a field effect transistor (FET), for a fixed voltage, the drain current as a function of drain voltage between zero and pinch-off resembles a quarter sine wave. Since drain and source are symmetrical they may be switched back and forth to provide a complete sine wave. The FET transistor is Q2, and CR1, CR2 are the switching diodes. Adjustment for minimum distortion is made by adjusting the input level with R28 in the U12 feedback loops and with the source resistance, R35. Output level to the Output Amplifier U13 is adjusted by R23. Amplifier U13 provides an output voltage at P1-14, R of 3.0 volts across 600 ohms. Temperature compensation for U13 is provided by thermistor R39.

Audio Control (31000), Figure 6-17

4.102 The Audio Control board selects and directs the audio frequency signals to ensure that the correct audio signals are available for modulation or output as needed. The audio input from the Audio Synthesizer comes onto the board at P1-J and is coupled through C8 to FET switch Q2. Four actions can turn off the normally on FET switch. First, if the BURST switch is not in the CONT position, the setting of the BURST potentiometer controls the timing of the U4 monostable multivibrator (1-shot) period. During the time the period is "LOW", the FET Q2 is turned off, and when "HIGH" Q2 is on. This allows the audio to pass through Q2 in "bursts" controlled by the timing of U4 and the setting of the BURST control. Second, if the BURST control is in the CONT position, pressing the INTERRUPT pushbutton will enable switch Q3 and interrupt the input of the audio signal. The FET Q2 is also turned off if the OFF/GEN/GEN + 1 kHz switch is in the OFF position, or if the FUNCTION switch is in the SIG GEN-PFM position. With Q2 turned on, the signal is amplified through U1A and U1B, and output from the board at P1-2 to be sent to the MOD ADJ potentiometer, which controls the modulation level. Also input to U1A-2 from P1-4 is the external MOD IN signal from an external modulation source.

4.103 The modulation signal returns to the board from the MOD ADJ control at P1-11 and is amplified through modulation amplifier U2A and input to the modulation output summation amplifier U3A-6. Also into U3A-6 is the output of the 1 kHz amplifier U2B-1. A 1 kHz square wave is input to the Audio Control board at P1-14 when U5-12 causes P1-R to enable the 1 kHz Switched TTL circuits on the Reference Divider/Sinad (35000) board. Inverter U5-12 goes high if the OFF/GEN/GEN + 1 kHz switch is in the GEN + 1 kHz position. The switched TTL input goes to R32, 1 kHz adjust which sets the input level to the Q5, Q6 wave shaper circuit for a 1 volt P-P output sine wave. The signal goes to the 1 kHz LEVEL ADJ potentiometer on the front panel through P1-M. The controlled modulation level is then input at P1-L to be amplified through U2B-1 and input to U3A-6.

4.104 The modulation signal at U3A-7 consists of the synthesized audio input, or the synthesized audio plus 1 kHz. This signal goes to P1-N where it is sent to the MOD OUT connector on the CE-50A front panel. It also goes to the inputs of FET switches Q7, Q8, Q9 which are gated on if selected by the position of the FUNCTION switch. Potentiometer R53 (AM), R57 (FM), and R60 (PFM) are set to adjust the gain of U3B which goes through P1-9 to the FM/AM Modulation (36000) board circuits.

ALC/SQUELCH/DC Control (21000), Figure 6-6

4.105 This board contains four separate circuits used in the CE-50A. Three seemingly separate circuits, the ALC Ckt, Meter Driver, and Output Level Cal circuit, are actually parts of the same circuit. The other circuits are used to (1) drive the power meter, (2) detect the unit input signal level for squelching, and (3) visually indicate (with LED's) loop unlocked conditions.

4.106 The ALC circuit receives its input from the High Level Amplifier (82000) board at P1-T. The input signal is amplified through U7. The Det Zero adjust, R10, removes any DC offset within the ALC loop to insure that the SIG GEN output voltage will be proportional to the voltage at U8-3. The input to U8-3 is a reference level used to control the signal generator output level, and comes from the Output Level Cal circuit driver at P1-S, through FINE (OFF) adjust potentiometer on the front panel, and into U8-3 from P1-15. The Output Level Cal circuit input is the 1-2-4-8 code from the 100 MHz Frequency Select switch to P1-17, 18, U, V. The code drives U6, a BCD to Decimal (1 of 10) Decoder. The code for each position (0-9) of the 100 MHz switch causes one of the U6 outputs (Q0 through Q9) to be enabled, switching in a different calibration adjustment of R50-R59 for each 100 MHz range of signal generator output frequency. This means the output

of reference amplifiers U11 can be adjusted to give any output voltage from 0-10 volts for every 100 MHz change in signal generator output frequency selected. The U11 output goes through P1-S to the FINE (OFF) control on the front panel, and through the wiper of one of its dual potentiometers to P1-15. From here the calibrated voltage is applied to U8-3 where it is used as an adjustable reference to allow the U8-6 ALC output to hold the CE-50A signal generator output level nearly flat over its 0-1 GHz range. The second potentiometer of the FINE (OFF) control is connected through P1-14 to the SIG GEN LEVEL meter driver, U10. MET CAL adjust R26 is set for full scale meter deflection with the meter measuring the signal generator output level relative to the attenuator control setting.

4.107 The Power Meter Driver has 2 inputs. The P1-13 input is the detected power input from the Output Protection/Power Detector (81000) board, and goes to U12-3 input. The P1-9 input is the control voltage for the U5 Quad Bilateral switch, and comes from the Meter Function switch on the CE-50A front panel. When the switch is in any position other than PWR X1, the P1-9 input is open, and the U5 pin 1 to pin 2 and pin 8 to pin 9 switches are held closed by the +10 volts on control pins 6 and 13. This connects the U12-6 output through R44 (the 100W set adjust) to U4-2, and U4-3 to the R46 (10W set adjust) center. When the Meter Function switch is in the PWR X1 position, the P1-9 input will be +10 volts. This voltage turns on switch Q8 and opens the U5 pin 1 to pin 2 and pin 8 to pin 9 switches which had been held closed by control pins 6 and 13. The +10V also goes to the U5 control pins 5 and 12, closing the pin 10 to pin 11 and pin 3 to pin 2 switches. This connects the U12-6 output through R43 to U4-1, and the R42, R45 voltage divider to U4-3. The U4-6 output drives U1. The 1W to 10W range can be adjusted at U1 by R61 (10W adjust) and R62 (1W adjust). The power driver output is taken at P1-12 and N and applied to the power meter.

4.108 The Squelch and DC Control circuits have some interacting functions. A Squelch In signal from the 10.7 MHz IF board comes in at P1-8. In the SIG GEN position of the FUNCTION switch, +10V is applied through CR18 to the cathode of CR19, turning it off. In the SPECTRUM MONITOR position of the FUNCTION switch, +10V is applied to P1-L and J, turning on Q6 and energizing DC Pwr Control relay K1. With K1 energized, +10V is applied through CR15 to the cathode of CR17, turning it off. With the FUNCTION switch in one of the MON positions (FM, PFM, AM), CR19 and CR17 are forward biased and the squelch signal is applied to the bases of Q5 and Q7. A positive voltage to the base of Q7 turns it on. This turns off LED CR13, and applies a ground level signal to P1-K. Switch Q5 is also turned on by a positive voltage applied to its base, and applies a ground level signal to P1-10.

4.109 The Loop Unlock Detector circuits on this board are generalized troubleshooting circuits which light an LED to give a visual indication of problems in the CE-50A phase-lock loop circuits. This localizes most problems which might occur in the CE-50A to a section associated with the failing loop, and is an important troubleshooting aid. A loop unlock condition will cause P1-4 output to the front panel UNLOCK LED to go "HIGH", either through LED CR5 (S) or the conduction of Q1. Transistor Q1 will conduct if a "HIGH" is present at P1-C (turning on CR1) signifying an unlocked condition exists in the YIG on the 208 phase-lock loops. It will also conduct if P1-D goes "HIGH" (turning on CR4) signifying an unlocked 1.7 GHz phase-lock loop. The Basic Synthesizer phase-lock loop unlock indicator, CR5, will be turned on and apply a "HIGH" to P1-4 if the basic synthesizer loop A or B is unlocked. The Loop A Divide-by-N output comes onto the board at P1-E and goes through logic inverter Q2 (for phasing) to the U2-11 clock input. The U2-12 input is a 100 Hz reference level. If Loop A is locked, the Loop A Divide-by-N input will also be at 100 Hz, and the U2-9 flip-flop will be "HIGH" into NAND gate U3-4. At the NAND gate U2-5 input is the output of flip-flop U2-5, which will also be "HIGH" if the Loop B Divide-by-N output frequency at P1-H is equal to the 100 kHz reference frequency input at P1-F, meaning the loop is locked. As long as the two loops are locked the output of U3-6 will be "LOW", and there will be no input to the U3, CR6, R5, C12, C9 delay circuit to CR5. If one of the loops becomes unlocked, the delay circuit input rises "HIGH" and lights the Basic Synthesizer Phase-lock loop unlock LED, CR5. The 100 Hz and 100 kHz reference frequencies are also monitored through Q3, Q4 drivers. The output of Q3 is rectified through CR8 and filtered by C13 to produce a "HIGH" while the 100 Hz frequency is present. The Q4 100 kHz output is rectified by CR9 and filtered by C14 to hold the U3-2 input "HIGH". If one of the frequencies is lost, the U3-3 output will go "HIGH", turning on the 100 Hz or 1000 kHz Ref Failure LED, CR10.

Speaker Driver (93000), Figure 6-55

4.110 The Speaker Driver board contains two circuits. One is to amplify the audio signal to the correct level to drive the CE-50A internal speaker. The second circuit determines if the optional OCXO heater circuit is operating. The audio signal to the Speaker Driver comes from the FM/AM Detector #1 (24000) board, and is input to U1-2 from J2-2. The gain of U1 is variable, and controlled by the feedback combination of the photoconductive resistance of photoconductor U3 in parallel

with R4. If the audio output signal level at U1-2 attempts to increase (which might occur with an increase in the % of AM modulation for example), the amplified U1-6 output is dc averaged through C3, R5 and negative limited by CR1. Rectifier CR1 also prevents excess reverse bias on the photo diode input. Since the increase at U1-2 is amplified through the IC the positive dc average at the U3 photodiode anode will also increase. This causes an increase in current through the diode which increases its light level and decreases the photoresistance across R4. This decreases the U1 gain and holds the output level to a constant amplitude. The leveled audio output is then coupled through C2, R6 to J1-10 where it goes to the front panel volume control. The controlled volume level returns to the board at J1-8, and is amplified in the Q1, Q2, Q3, Q4 amplifier to be applied to push-pull amplifier Q5, Q6. The push-pull output goes to J1-1, 2 to drive the CE-50A speaker.

4.111 The U2 comparator circuit determines if the optional Oven Controlled Crystal Oscillator (OCXO) heater circuit is operating, and if it is, lights the front panel OVEN LED to alert the operator that the oven temperature is low. Since heater operation requires the OCXO to draw much more current than it does during operation of the oscillator circuits, the OCXO input power is applied through R20 on the Speaker Driver board. An increase in the OCXO current will increase the current through R20, causing a larger voltage drop across the resistor to J2-4. The voltage at J2-4 is divided across R24, R23 and the voltage at U2-2 compared with a constant reference voltage at U2-3 across dividers R21, R22. The increased voltage drop across R20 causes a decrease in the U2-2 comparator input. This decrease causes the output level to go high, turning on the OVEN LED. If the voltage drop across R20 decreases, the level at U2-2 will increase, causing the U2-6 output to drop and turn off the OVEN LED.

Horizontal Deflection Switch Mounting (44000) Figure 6-29

4.112 The board is a switch mounting and interface board for the eight deck HORIZ (per div) switch S1, and its concentric CAL switch/potentiometer vernier adjustment, S2/R3. The S1 switch sections are drawn in the 10 ms position, and as viewed from the front. Four separate connectors are used to connect the switch position data to appropriate circuits in the CE-50A. The vernier R3 scan width adjustment is functional only during oscilloscope operation of the CE-50A.

Vertical Deflection Switch Mounting (43000) Figure 6-28

4.113 The Vertical Deflection Switch Mounting board is used as a switch mounting and interface board for the four deck VERT switch S1, and its concentric CAL switch/potentiometer vernier adjustment, S2/R1. The S1 switch sections are drawn in the 1.5 kHz/% AM X10 position, and as viewed from the front. The vernier R1 adjustment will vary the signal amplitude on the CRT only during oscilloscope operation of the CE-50A.

Vertical Amplifier (41000) Figure 6-26

4.114 This board contains circuits for amplifying and converting the selected input signal to the voltage levels needed to transform the signal data to a visual display, representative of the input signal, on the CE-50A CRT. There are also circuits for controlling the CRT functions which position and display the signal characteristics so they can be seen and understood.

4.115 The signal input comes onto the board at J1-8 (demodulated AM or FM from FM/AM Detector #2 board for normal oscilloscope operation) or J1-6 (the Log Converter board output for spectrum monitor operation). For oscilloscope operation, the signal gain is set by R59 and its offset level controlled by R61. The signal is then sent to J4-8. The signal is acted on through Vertical Deflection Switch Mounting board switching and then returned to the Vertical Amplifier board through J4-1 to the gate of one of the dual FET amplifiers of Q2. The two FET's of Q2, plus Q1, Q3, Q4 and Q5 make a low noise, high input impedance, dual differential feedback amplifier for the signal. The input FET of Q2, plus Q1 and Q4, make up the first differential feedback amplifier. Its output is taken at the Q1 collector and sent to the Q6 base input of the Q6, Q7 differential amplifier. The second Q2 FET gate is biased through voltage divider R14, R15, and BAL potentiometer R71, and its output taken from the collector of Q3 to go to the base of Q7. The BAL adjust, R71, is adjusted to prevent changes in the R10 VERT CRT position potentiometer from causing a dc level shift in the amplifier output. The differential output of Q6, Q7 goes through J2-4 and J2-9 to the Horizontal Deflection Switch Mounting board. If the HORIZ (per div) switch is not in one of the SPECTRUM MONITOR positions (10 kHz, 100 kHz, or 1 MHz), the signal is returned through J2-6 and J2-7 to the base inputs of Q8, Q16 differential amplifier. The Q15 circuit is a current source for the Q8, Q16 amplifier, which is cascaded with the Q11, Q14 differential amplifier using CR10-12 as a current source. The Q11, Q14 differential amplifier is used to drive the Q9, Q10, Q12, Q13 current sinking network which powers the Q8, Q16 collector differential output. Increased current requirements of higher frequencies are met by using C11 and C15 to short across Q9, Q10 and Q12, Q13 at higher frequencies. This reduces the transistors current gating effects and makes more current available to meet the increased speed requirements. The output of the deflection amplifier goes to J3-2 and J3-1 where it drives the CRT vertical deflection plates.

4.116 In spectrum monitor operation, the input signal comes into the board at J1-6 from the Logarithmic Amplifier board. The HORIZ (per div) switch is in one of the SPECTRUM MONITOR positions (10 kHz, 100 kHz, or 1 MHz). This causes the deflection amplifier Q16 base to be grounded (J2-7 to J2-8), and the base of Q8 to be connected (from J2-6 to J2-2) through R45 to the J1-6 input. It also connects the GAIN (R49) and VERT SHIFT (R47) potentiometers to the deflection amplifier input to control the input signal amplitude and offset during spectrum monitoring. This causes the vertical amplifier circuits to be by-passed during spectrum monitor operation so that only the deflection amplifier and CRT display control circuits are used. Astigmatism control R54 is set to assure good focus of the trace at either end of the CRT. The Trace Rot (R62) potentiometer allows the trace of the rectangular CRT to be rotated without moving the tube itself. The X POS potentiometer is a centering control for the CRT display, and the INTENSITY (R66) and FOCUS (R67) controls are set to make the CRT display readable.

Time Base and Horizontal Amplifier (42000)
Figure 6-27

4.117 The board's Time Base section consists of U1, U2 and Q1-Q15, plus all associated circuitry including timing capacitors C1-C4 on the Horizontal Deflection Switch Mounting board. Its function is to synchronize the horizontal sweep rate, in both the oscilloscope and spectrum monitor modes, to the input signal, and to generate the correct sweep range for each selected sweep speed. The Horizontal Amplifier section amplifies the sweep to a level which can be used to drive the CRT deflection plates, and controls the intensity of the display.

4.118 The input signal to the Time Base is the synchronous input signal from the Vertical Amplifier (41000) board. The signal is input at J2-8 and applied to the base of buffer Q1. The emitter output of Q1 is sent to differential pair amplifier U1-10 with a dc input bias controlled by R1. The synchronous input signal is amplified through U1 and buffered through emitter-follower Q2 to the U2-3 Clock 1 input. The +5V Vcc for U2 and other circuits is provided by the Q2 +5V regulator circuit. The Q3 emitter output also goes through C11 to the Q4, Q5 Preset Trigger pulse detector circuit. The Q4, Q5 output through CR4 is one input of a three input OR feeding the U2-4 Preset input, and is normally "LOW" (Q4, Q5 off). The other two inputs to U2-4 are the free-run Preset enable through CR7 (presets U2-5 output "HIGH" when there is no trigger input), and the free-run disable signal through CR13 (for spectrum monitor operation).

4.119 The operation of dual "D" flip-flop U2 sets the timing for the oscilloscope horizontal sweep as follows: When there is a trigger input signal, it is detected by Q4, Q5 and the detector output through CR4 is a positive pulse. This pulse is applied to U2-4, and disables the preset hold which places the circuit in a "free-run" condition. The pulse is also output from the U3 emitter and applied to the Clock 1 input at U2-3. Since the U2-5 has been preset "HIGH", it stays set, and the "LOW" at U2-6 holds the ramp reset switch, Q12, off. With Q12 off, the oscilloscope ramp generator current source Q7 will be turned on and pull current (set by R9-R14) to charge the holding capacitor selected by the Horizontal Deflection Switch Mounting sections A and B. As these capacitors charge, the ramp output of Q12, Q14 ramp generator goes more positive. This turns on Q8 and removes the preset hold from U2-10 without resetting it. The ramp will go more positive until it crosses the threshold set at the base of Q9 by R45, R48. When this threshold is crossed, Q9 will conduct, resetting the U2-9 output "LOW". This "LOW" enables the U2-1 clear input, and resets U2-5 to a "LOW", and U2-6 "HIGH" (possible now because the U2-4 preset hold was removed by the Q4, Q5 detected trigger pulse). The U2-6 "HIGH" turns on Q12 and discharges the selected holding capacitor, resetting the ramp to its low starting level. This "LOW" ramp voltage then turns off Q9 and Q8, enabling the U2-10 Preset (setting U2-9 "HIGH"), and disabling the U2-13 Clear input. The Q4, Q5 detector output now returns to its normal "LOW" and the timing flip-flop is ready for another trigger input.

4.120 When the HORIZ (per div) switch is in one of the spectrum monitor positions (10 kHz, 100 kHz, or 1 MHz), the switch section E on the Horizontal Deflection Switch Mounting board applies a switched +10V to the CR13 input to U2-4 Preset, and to switches Q18, Q10, and Q28. The Q10 switch disables the squelch blanking circuits. Switch Q28 base is enabled by the sweep trigger input (through the forward biased diodes CR31-33) from the YIG FM Coil Driver/Sweep Driver (optional 27000 board for CE-50A-1) at J3-1. The sweep trigger is a normally "LOW" input with positive going sweep trigger pulse. Switched through Q28, the input to U2-3 is a normally "HIGH" signal with a "LOW" going pulse. The switched +10V through CR13 holds the U2-4 Preset input "HIGH", so the U2-5 output is set by the input sweep trigger pulse. When the trigger from J3-1 sets U2-5, U2-6 goes "LOW" and holds the ramp reset switch, Q12, off. The current source for the spectrum monitor sweep is Q6, which now starts charging the C10 spectrum monitor current holding capacitor. The Q6 collector output is switched through the Horizontal Deflection Switch Mounting section B to the input to the ramp generator, Q13, Q14. As C10 charges, the ramp output of Q13, Q14 becomes more positive, turning on Q8. With Q8 turned on, the input to U2-10 Preset goes "HIGH" disabling the preset hold on U2-9 output. When the ramp exceeds the

threshold at the base of Q9 set by R45, R48, Q9 will conduct, resetting the U2-9 output to a "LOW". This "LOW" enables the U2-1 Clear input and resets U2-5 "LOW" and U2-6 "HIGH". The "HIGH" at U2-6 turns on Q12 and discharges C10, resetting the ramp to its "LOW" starting level. The low ramp voltage turns off Q8 and Q9, and presets U2-9 "HIGH" again. The timing circuits are then ready for another spectrum monitor sweep trigger input at J3-1.

4.121 The Q13, Q14 ramp output goes to the junction of R56 and R57. In all positions of the HORIZ (per div) switch other than spectrum monitor, switch Q15 shorts out R59, and Trace Width potentiometer R58 alone sets the base bias to the horizontal amplifier Q19 input. In the spectrum monitor mode, R59 is in the circuit. External input signals used to control the horizontal sweep are input to the board at J4-1 from the front panel. The signals are amplified through Q16, Q17 and switched through the Horizontal Deflection Switch Mounting board to the Q19 horizontal amplifier input. The horizontal sweep ramp signal is amplified through the cascaded differential amplifier Q19, Q20, Q21, Q23, while Q22 provides the constant current source. The differential output is adjusted for balance by R87 in the spectrum monitor mode (the FET Q24 is turned on by switch Q18), and output through J7 to the CRT horizontal deflection plates. Amplifier Q25, Q26, Q27 controls the voltage differential between the CRT cathode and grid #1 at J5 pins 1 and 2 to set the intensity of the CRT display.

AC/DC Switching Supply #1 (91000) Figure 6-53

4.122 The AC/DC Switching Supply #1 board contains the circuitry for converting the input 115 volts or 230 volts AC power source to +12 volts DC. The converted +12 volts, or +12 volts DC from the external dc input or optional battery, is used on other boards to derive all voltages used in the CE-50A.

4.123 The input AC comes onto the board at wireties 1 and 2, and is passed through line filter transformer T1. If the 115/230 volt slide switch on the CE-50A rear panel (S90001) is in the 115 volt position, CR1 is connected as a half wave rectifier, and C4, C5 are connected as a voltage doubler for the rectified output. The negative half wave of the 115 volt input is rectified through CR1 and charges C5 to its peak voltage (115 x 1.414, or approximately 163 volts) through thermistor R3. The positive half wave of the 115 volt input is rectified through CR1 and attempts to charge C4 (through R3) to its peak, but since the top of C5 is already at 163 volts, it has to charge to approximately 325 volts to achieve the 163 volt differential across C4, thus doubling the voltage. With S90001 in the 230 volt position, CR1 is connected as a full wave rectifier, and C4, C5 as a single output filter capacitor. Since the combination of C4, C5 tries to charge to the voltage peak, the rectified voltage at the top of C4 will still be approximately 325 volts as it was when S90001 was in the 115 volt position. Diode CR2 is a gas filled, two element device with a very fast response time used to suppress transient voltage excursions in the output.

4.124 The purpose of thermisters R1 and R3 is to reduce the initial turn-on surge current charging capacitors C4,C5. Then as they warm up their resistance decreases to a low value for full circuit efficiency. However, if the CE-50A is turned off, and then turned back on while R1 and R3 are still warm and C4, C5 are discharged, the surge to charge the capacitors won't be restrained by the resistance of the thermisters. The circuits of Q4 and Q6 protect the AC/DC Rectifiers from this. The input ac voltage, divided down by R11, R12, turns Q4 off and on at a 60 Hz rate. With Q4 on, C17 is discharged. It charges while Q4 is off through R16. Due to the long R16, C16 time constant, the capacitor can't charge enough before Q4 discharges it to make the Q6 emitter more positive than its base, and Q6 will remain off. However, when CE-50A power is turned off, Q4 can't turn on, and C16 will charge sufficiently to turn on Q6. This applies a positive voltage to the U1 shutdown input, turning off the base drive circuit. This prevents the discharge of C4, C5, and they will maintain a charge long enough for R1 and R3 to cool and again have enough resistance to protect against surge current.

4.125 To assure operation of the +12V converter circuits at unit turn-on, the board has a starting circuit consisting of a switch (Q3) controlled latching circuit (Q5 and Q7), and a power rectifier feedback loop (C21, CR20, CR21 and T3 secondary coil). When the CE-50A is initially turned on, there is rectified ac at the CR1 bridge rectifier output, but no voltage to the transformer, T3. Therefore, the T3 secondary feeding CR20, CR21 will have no voltage impressed upon it, and Q3 will be turned off. With Q3 off, the rectified ac at the CR1 output will be felt across R17 at the emitter of Q5, and C15 will start to charge. As the charge on C15 reaches 30 volts, it will turn on CR18, which turns on the latch Q5, Q7. When Q5, Q7 are turned on, the 30 volt charge (which was formerly on C15) will be divided between C15 and C21. As C21 becomes charged, it supplies power for the U1, Q8-11 control circuits. This starts the T3 output transformer operation, and as the T3 feedback loop secondary begins supplying voltage to the rectifier circuit of CR20, CR21, and C21, Q3 is turned on. When Q3 turns on, it turns off latch Q5, Q7, and the base drive control circuit power is sustained by the feedback loop of output transformer T3.

4.126 The control circuit output is determined by the operation of the regulating pulse width modulator, U1, whose output pins 12 and 13 control the push-pull drivers Q8, Q10 and Q9, Q11 to the primary of T2. The oscillator frequency of U1 is approximately 36 kHz, and is set by R29 and C17. In push-pull operation, the oscillator enables first one and then the other output, which divides the output frequency by half, or to approximately 18 kHz. If the pin 12 output goes "HIGH", pin 13 will be "LOW". This turns on Q8 and Q11, opening a current path through Q11, to the dotted side of the T2 primary, then through the primary to the emitter of Q8 and through Q8 to ground. If pin 13 goes "HIGH", pin 12 will be "LOW", and Q9 and Q10 will be turned on. This opens a current path in the opposite direction through the T2 primary, from Q10 to ground at the collector of Q9. The amount of time the pin 12 or pin 13 outputs of U1 stay "HIGH" is determined by the amount of error in the output +12 volts. This error is determined on the AC/DC Switching Supply #2 board error amplifier circuit, and returned to the AC/DC Switching Supply #1 board at the wiretie 6 Feed Back input. A positive error (+12V too high) will increase the current to U2 and cause its output at pin 4 to become more positive. This goes to U1-1 Pulse width modulator and causes the output pulse width at pins 12 and 13 to compensate for the higher level by decreasing the output signal positive pulse width. This reduces the base drive to the rear panel Q90004, Q90005 transformer drivers, and reduces the rectified output +12vdc at wiretie 8 to the AC/DC Switching Supply #2 error amplifier circuits.

4.127 The starting load circuit of Q90006 (on the rear panel), CR25-CR29, and R40-R42 provides a dynamic load for the power supply when the front panel POWER (STD BY/ON/OFF) switch is in the OFF or STD BY position, and the POWER (EXT DC/BATTERY/AC) switch is in the AC position.

AC/DC Switching Supply #2 (92000), Figure 6-54

4.128 The AC/DC Switching Supply #2 board contains four power supply circuits. The Error Ampl circuit is the error amplifier circuit for the AC/DC Switching Supply #1 rectified +12vdc output. The 14.1 volt Battery Charging Ckt is used to recharge the optional +12 volt battery when an AC or External DC voltage source is available. And the -7vdc and +7vdc supply circuits provide additional voltage needed for CE-50A operation.

4.129 The error amplifier's +12vdc input comes onto the board at J1 pin 3, and its output level set by R6. The output +12vdc is filtered through L1, C2 and goes to wiretie 2 to be sent to the front panel POWER switch S10006. Error detection is done in the Q2, Q3 differential amplifier. Base-emitter bias for Q3 is set by CR1 and the voltage drop across R9, which also sets the Q2 emitter voltage. The base voltage for Q2 is set by the voltage drop across R1, R6, R7 and selected by the setting of R6. Any fluctuation in the +12vdc will cause an increase or decrease in the base voltage of Q2 and cause it to draw correspondingly more or less current through R3. This causes the base voltage of Q1 to vary also, and the error is amplified through Q1 and sent to wiretie 3 and from there to the AC/DC Switching Supply #1 board as the error Feedback signal.

4.130 The 14.1 volt battery charging circuit converts +12vdc input to +14.1 volts for maintaining the correct output voltage from the optional battery when an AC or External DC voltage is selected by S10006. The charging circuit is operational in any position of the POWER (STD BY/ON/OFF) switch, S10005. The +12V input comes onto the board at wiretie 9 and goes to two places. First it actuates relay K1 to allow the charging line to be connected to the battery. It also goes to filter capacitor C3, and inductor L2 which is part of a voltage boost circuit which works as follows. Timer U1 is connected as an astable multivibrator whose approximately 16.6 kHz free-running duty cycle is set by the charging of C11 through R21 and R45, and the discharge of the capacitor through R45 only. The U1-3 output pulses go to the base circuit of switch control Q5, Q6. When the pulse goes "HIGH", it turns on Q5 which draws emitter current through R13, turning on switch Q4. This opens a current path for the +12vdc through L2 and Q4 to ground. This current flow builds a current field in L2. When the U1-3 output pulse goes "LOW", it turns off Q5, Q6 which also turns off Q4, and the field of L2 begins to collapse to maintain the current flow. However, the current path has changed now from Q4 to the battery, and the difference in the load causes a boost in the voltage felt on the line going to wiretie 8 to approximately +14.1 volts. This voltage can be adjusted by R27 and regulated by U2. The U2-10 regulator output is applied to the charge on C11 to vary the timers output pulse duty cycle. This varies the amount of time in which L2 is allowed to maintain the circuit current flow, and therefore the amount of voltage boost felt at wiretie 8.

4.131 The -7vdc and +7vdc supplies are both controlled by the U3 regulating circuits. When the CE-50A is first turned on, Q8-Q11 are turned off, and +12vdc is applied to U3-12 V+ input. This turns on the +7 volt U3-6 reference voltage circuit to the R36, R38, R39 divider. Since there is no +6 volt output yet, the U3-4 comparator inverting input will be low, while the noninverting input to U3-5 is some positive value. This enables the U3-11 Vc output, turning on Q9 and Q10, and enabling Q8 and Q11. The output of Q11 goes through R20 to one secondary winding of T1. This voltage opposes the voltage induced in this secondary by the primary T1 winding fed by Q8, and prevents Q8 from saturating at turn-on.

The primary also induces a voltage in the second secondary winding which is rectified by CR8 and filtered by C9, C13 before being sent to wiretie 7 as the -7 volt output. As the input +12 volts saturates the T1 primary, the U3-4 inverting input will start to exceed the reference level set by R38 at the U3-5 noninverting input. This disables the Vc output and turns off Q8, Q9, Q10, Q11. The saturated field in T1 will start to collapse, now pulling current through CR7. As the field collapses, U3-4 will again be less than the level at U3-5, enabling Vc and Q8, Q9, Q10, Q11. The U3-11 Vc output will continue to oscillate like this as long as the POWER (STD BY/ ON/OFF) switch S10005 is in the ON or STD BY position. The output +6 volts is filtered by L4, C18 to remove the regulator switching fluctuations, and sent to wiretie 5 for output.

10V/5V Regulators (39000), Figure 6-24

4.132 The 10V/5V Regulator board contains the circuits which provide the CE-50A with +10V, +5V, and -5V mecca power sources, plus -2V and the battery condition monitoring circuits.

4.133 The input voltage used to produce the +10V mecca power source is +12vdc from the front panel POWER (STD BY/ON/OFF) switch. When it is in the ON position, and the POWER (EXT DC/BATTERY/AC) switch is in the position from which the power source is to be derived, +12V comes onto the board at P1-1, A. It is filtered through L1, C1 and sent to the rear panel series pass transistors Q90001 through P1-2, B. Initial regulator turn-on start and IC bias isolation is provided by Q1 and Q2. Current regulation of Q90001 output is used to control the voltage and is done by U1. A precision, temperature compensated zener reference input is provided for U1 by CR11. Voltage fluctuations at the +10V mecca are felt at the U1-2 inverting input through resistive divider R12, 13, 14, 15 and 17. Potentiometer R13 is the +10V adjust. The output of U1-6 is amplified and inverted through Q3, Q4 to control the base bias of Q90001. If the +10V mecca voltage tries to decrease, the base bias is increased to allow more current through the series pass regulator, Q90001.

4.134 The battery meter indicating circuit of Q4, CR1-5 and R8-11 monitors the output voltage of the +10V mecca source to P1-6, F at all times. With the POWER (EXT DC/BATTERY/ AC) switch in the battery position, the indication sent to the front panel BATTERY COND meter through P1-C and P1-5, E shows the voltage level of the optional battery to the regulator circuits. As the battery voltage decreases, the current through Q4 increases causing an increased voltage drop across R10, R11 and a decreased differential to the meter, resulting in the meter needle moving toward the red marked area.

4.135 The +5V mecca power source is produced from a pre-regulated +6V input at P1-5 from the AC/DC Switching Supply #2. The input is filtered through L2, C7 and sent through P1-L to the Q90002 series pass regulator. The regulator return is at P1-K. The +5V source is regulated by controlling the emitter-base bias to Q90002, and is done by the circuits of Q5, Q6, and voltage comparator U3. The +5V mecca source is monitored at U3-2 and compared with +5V derived across divider R31, R32 from the previously regulated +10V mecca source. Any fluctuations in the +5V output are amplified and inverted across Q5, Q6, and the fluctuations eliminated by increasing or decreasing the emitter-base bias of Q90002 as needed . The differential amplifier U2 monitors the current through R25 by checking its voltage drop. If the current is too high, the U2-6 output will go "LOW", turning off the Q5, Q6 emitter-base bias control to Q90002 and turning off Q90002, also. This is called "Fold-back protection", as the current will increase through the +5V source circuits until it becomes too high, and U2 begins to then reduce it, or fold it back. Then as more current is needed, less is supplied through the circuit. Additional protection for the circuit is given by the overvoltage protection circuit of Q90003. Normally off, Q90003 will conduct only when the +5V output voltage exceeds the level set by CR9 zener value. This turns on CR9 causing it to draw current through R33. If the voltage drop across R33 exceeds the Q90003 emitter-base turn-on bias, the transistor will conduct and turn off the +5V output.

4.136 The input voltage for the -5V and -2V regulator circuits also comes from the AC/DC Switching Supply #2 board. The -7V regulated input at P1-9 goes to the series pass regulator Q7. The conduction of Q7 is controlled by its emitter-base bias which is set by the voltage comparator Q8, Q9. The base voltage of Q9 will be equal to the base voltage of Q8 (zero volts) if the output of series pass regulator Q7 is -5V. When the Q7 output goes more positive than -5V, the conduction of Q9 decreases. This decreases the voltage drop across R35 making the emitter of Q8 more positive. The increased forward bias on Q8 causes it to conduct more and increase the conduction of Q7, which makes the Q7 output more negative. This cancels the output attempt to go more positive. The -2V output is derived from the -5V regulated output, and regulated by Q10.

DC-DC Converter (45000), Figure 6-30

4.137 This board converts an input +10vdc to dc voltage levels needed to operate the CRT and CRT deflection circuits of the CE-50A. The +10vdc comes onto the board at J2 pin 3, and is filtered by C1 before being applied through R1 and L1 to transformer T1. Resistor

R1 is a current limit for the T1 terminal 3, 4, 5 secondary winding. L1 is a current feed control for the circuit. The input +10vdc to the T1 terminal 1, 2, 14 primary winding stores current in L1 to be used when the output load requires it. This reduces output fluctuations by having an available current source for short-term loading demands.

4.138 When the +10vdc input comes into the board, it is applied through R1 to the T1 center-tap terminal 5, and is felt at the bases of both Q1 and Q2. Due to normal transistor differences, one will begin to conduct before the other, and for purposes of explanation it will be assumed to be Q1. As Q1 begins conducting, it pulls current through L1, and from the terminal 14 center-tap through the primary winding to terminal 1, and then through Q1 collector to emitter, or ground. As the current is pulled through the primary winding from terminal 14 to terminal 1, it induces an opposite flow of current in the terminal 3, 4, 5 secondary winding, or from terminal 4 to terminal 3. This makes terminal 4 more positive and turns on Q1 harder. Since terminal 3 is the more negative terminal, Q2 is held off. The conduction of Q1 will increase until the field in the primary of T1 reaches the maximum voltage of the input. At this point, since the input to the primary is a dc voltage, the field will start to collapse. The current through the primary winding will now reverse, going from terminal 14 through terminal 2, and through the collector of Q2 to its emitter, or ground. Now the induced current through the terminal 3, 4, 5 winding will cause terminal 4 to change from positive to negative, and terminal 3 from negative to positive. The bias on Q1 will decrease, and on Q2 will increase, until Q1 turns off and Q2 turns on. The operation of switch Q2 is identical to Q1 except that the direction of current flow through the transformer is reversed. Switches Q1 and Q2 will alternately switch on and off at the natural oscillating frequency of the circuit.

4.139 The four remaining secondaries provide the voltages for CRT operation. The addition of C2, C3, C4, and C5, in conjunction with the transformer windings, places a tank circuit in the T1 primary (C4 and C5 are reflected back by transformer action) which stabilizes the natural oscillating frequency and the transformer operation. The secondary winding at terminals 8, 9, 10 works with CR1, CR2 to make a full wave negative rectifier. The output is filtered by L2, C8 and the resulting -10V output sent to J1-1. The secondary winding from terminal 6 to 7 (center-tapped to ground at terminal 9) and CR3, CR4 make a full wave positive rectifier to produce +90V, filtered by L3, C9, at J1-3. The -960V CRT cathode voltage is output at the board wire tiepoint 2, and the 6.3vac CRT filament voltage is developed across the secondary on terminals 11, 12 and sent to board output tiepoints 7 and 8.

SECTION 5
MAINTENANCE

GENERAL

5.01 This section of the manual containsthe information necessary to check the performance of the CE-50A and to make the recommended field adjustments, and a troubleshooting procedure for locating system problems down to the PC board level.

5.02 Due to the complexity of some CE-50A circuits, and the special procedures necessary for their adjustment, it is recommended that the instrument be returned to the factory or authorized service center for recalibration or repair. Refer to paragraph 2.06-2.11 of Section 2 for procedures to be used in returning an instrument for recalibration or repair. Please contact the Cushman Electronics, Inc. Customer Service Department for further instructions before returning an instrument.

5.03 In the following discussions it is assumed that the technician is familiar with the operating procedures described in Section 3.

5.04 Prior to making any adjustments to the CE-50A circuits, the instrument should be warmed up for two hours with all covers installed.

Access and Parts Location

5.05 Printed circuit boards and assemblies can be reached in the CE-50A by removing the two side covers. Each cover is held in place by eight screws, and to each other by two additional screws. To remove the covers, stand the instrument on its back to facilitate removal.

5.06 Figure 5-1 shows the location and access for all CE-50A circuit boards and assemblies. The drawing also shows, by their position in relation to the main chassis, the direction in which the components must be moved for removal.

PERFORMANCE CHECKS

Test Equipment Required

5.07 The following test equipment is required to check the CE-50A for correct performance within published specifications. Any equivalent instrument may be substituted.

Frequency Counter, EIP 351D
Digital Voltmeter, Dana 4300
Power Meter, HP436A
Spectrum Analyzer, HP8555
Modulation Meter, Boonton 82AD
Distortion Analyzer, HP331A
Oscilloscope, HP180C
Signal Generator, Exact Model 120
Thruline Wattmeter, Bird Model 4340
VHF Band Transmitter, 60-80 watts
VHF Band Transmitter, 20-40 watts
VHF Band Transmitter, 6-8 watts
VHF Band Transmitter, 2-4 watts
VHF Band Receiver, without DPL or channel guard and having a 12 dB SINAD sensitivity of 0.1-0.3 uV with a final IF bandwidth of approximately 7 kHz.
Attenuator (132 dB), Kay Model 460A.

Signal Generator Mode

5.08 The following tests are to be done to check the operation of the CE-50A signal generation circuits. Test equipment required for these tests will be:

Power Meter, HP436A
Spectrum Analyzer, HP8555
Modulation Meter, Boonton 82AD
Distortion analyzer, HP331A
Oscilloscope, HP180C
Attenuator (132 dB), Kay Model 460A
VHF Band Receiver, without DPL or channel guard and having a 12 dB SINAD sensitivity of 0.1-0.3 uV with a final IF bandwidth of approximately 7 kHz.

5.09 To check the signal generator output level, perform the following tests:

a. Connect the CE-50A SIG GEN OUT/RF IN connector to the HP436A Power meter.

b. Set the CE-50A FUNCTION switch to the SIG GEN CW position; the RF Attenuator to -10 dBm; and FINE (OFF) level control fully clockwise.

c. Adjust R26 on the ALC/Squelch/DC Control (21000) board for +2 dB on the CE-50A SIG GEN Output Level meter.

d. Starting at 90 MHz, check for level accuracy every 100 MHz up to 990 MHz. The output level measured on the HP436A power meter should be -8 dBm ±1.7 dB. If not, on the ALC/Squelch/DC Control board, adjust the R51-R59 adjustment marked with the number of the 100 MHz digit selected (i.e., 2 for 290 MHz, 3 for 390 MHz, etc.).

e. Set the FINE (OFF) level control for -10 dB so HP436A power meter now reads -20 dBm. Repeat step c. using -20 dBm ±1.7 dB for output measurement.

f. Adjust R10 on the ALC/Squelch/DC Control board for -10 dBm on CE-50A SIG GEN Output Level meter.

g. Set the FUNCTION switch to SIG GEN FM, the GEN/OFF/GEN + 1 kHz switch to GEN + 1 kHz, and turn the MOD ADJ control fully CCW. Adjust the 1 kHz MOD ADJ control for 3.3 kHz deviation. Set the Step Attenuator on the CE-50A to -10 dBm and the Meter Function switch to SINAD. Turn the Kay attenuator to 110 dB attenuation and connect it to the SIG GEN OUT/RF IN jack on the CE-50A. Set the CE-50A Frequency (MHz) select switches to the receiver frequency and connect the output of the Kay attenuator to the receiver.

CAUTION

If the receiver used is a transceiver, care must be taken not to key into the Kay attenuator as this would damage the attenuator.

h. Connect the audio output of the receiver to the SINAD IN jack and adjust the FINE (OFF) control for a 12 dB reading on the SINAD meter scale. Set the CE-50A Step attenuator to -20 dBm and remove 10 dB from the Kay attenuator, noting the change in SINAD reading. The amount of change in the SINAD can be determined to the nearest dB by switching the appropriate amount of attenuation in or out on the Kay attenuator to bring the SINAD meter reading closest to the 12 dB mark.

i. Continue stepping down the CE-50A Step attenuator in 10 dB steps while removing attenuation on the Kay attenuator and noting the change in SINAD reading. The maximum error allowable in the reading is:

-10 dB to -110 dB on the CE-50A Step Attenuator must be ±2.5 dB

0 dB and -120 dB on the Step Attenuator must be ±3 dB.

These errors include .3 dB maximum error from the Kay attenuator plus a .2 dB mismatch error.

5.10 Spurious responses in the CE-50A can be checked as follows:

a. Connect a calibrated spectrum analyzer to the CE-50A SIG GEN OUT/RF IN connector. Set the spectrum analyzer sweep to 100 MHz/DIV with the 0 frequency position on the far left of the display and 1 GHz on the right, 20 dB RF attenuation, and 100 kHz IF.

b. Set the CE-50A to SIG GEN CW mode, RF attenuator to 0 dBm, and the FINE (OFF) control set for -9 dB output level on the spectrum analyzer.

c. Step the CE-50A in 100 MHz steps and observe the spectrum display. All spurs must be 35 dB down, including the harmonics.

d. Set the CE-50A to 557 MHz and slowly narrow the spectrum analyzer dispersion down to 100 kHz/DIV, observing the spur level at all times. The spurs should never exceed -35 dB. Move the CE-50A MHz position switch through its 0-9 range to check for spurs.

5.11 Perform the following tests to check the CE-50A AM modulation characteristics.

a. Set the CE-50A FUNCTION switch to SIG GEN AM mode, the SIG GEN OUT level to -10 dBm ±2 dB, FREQUENCY (MHz) switches to 999.0000 MHz, MODULATION FREQUENCY (Hz) switches to 9.9 kHz, and Meter Function switch to % AM. Set the HORIZ switch to EXT.

b. Connect the Boonton 82AD Modulation Meter to the CE-50A SIG GEN OUT/RF IN jack, and the HP331A Distortion Analyzer to the Boonton AF output.

c. Set the Modulation Meter Function to % AM, Range to 100, Peak to +, Low-pass to 30, and Tuning to Auto.

d. Set the CE-50A scope VERT switch to 50% AM, and adjust the MOD ADJ control for 30% reading on the Modulation Meter. The CE-50A Function Meter and scope should both read 30% ±5%, and the Distortion Analyzer show a distortion of less than 4%.

e. Repeat Step 5.11 (d) above except set the VERT switch to 150% AM, and the modulation to 80%. The CE-50A Function Meter should read 80% ±5%, and the scope should be within ±8% of 80%. If adjustment is necessary, refer to step 5.17.

5.12 To check the CE-50A FM modulation, these tests must be performed:

a. Set the CE-50A FUNCTION switch to SIG GEN-FM, and adjust the FM CAL (OFFSET) control to 0 offset on the Frequency Error meter. Adjust the Sig Gen output for -10 dBm, MODULATION FREQUENCY (Hz) to 1 kHz, the frequency select switches to 152.15 MHz, HORIZ switch to EXT, and the Meter Function switch and VERT switch to 1.5, 5, or 15 kHz as required.

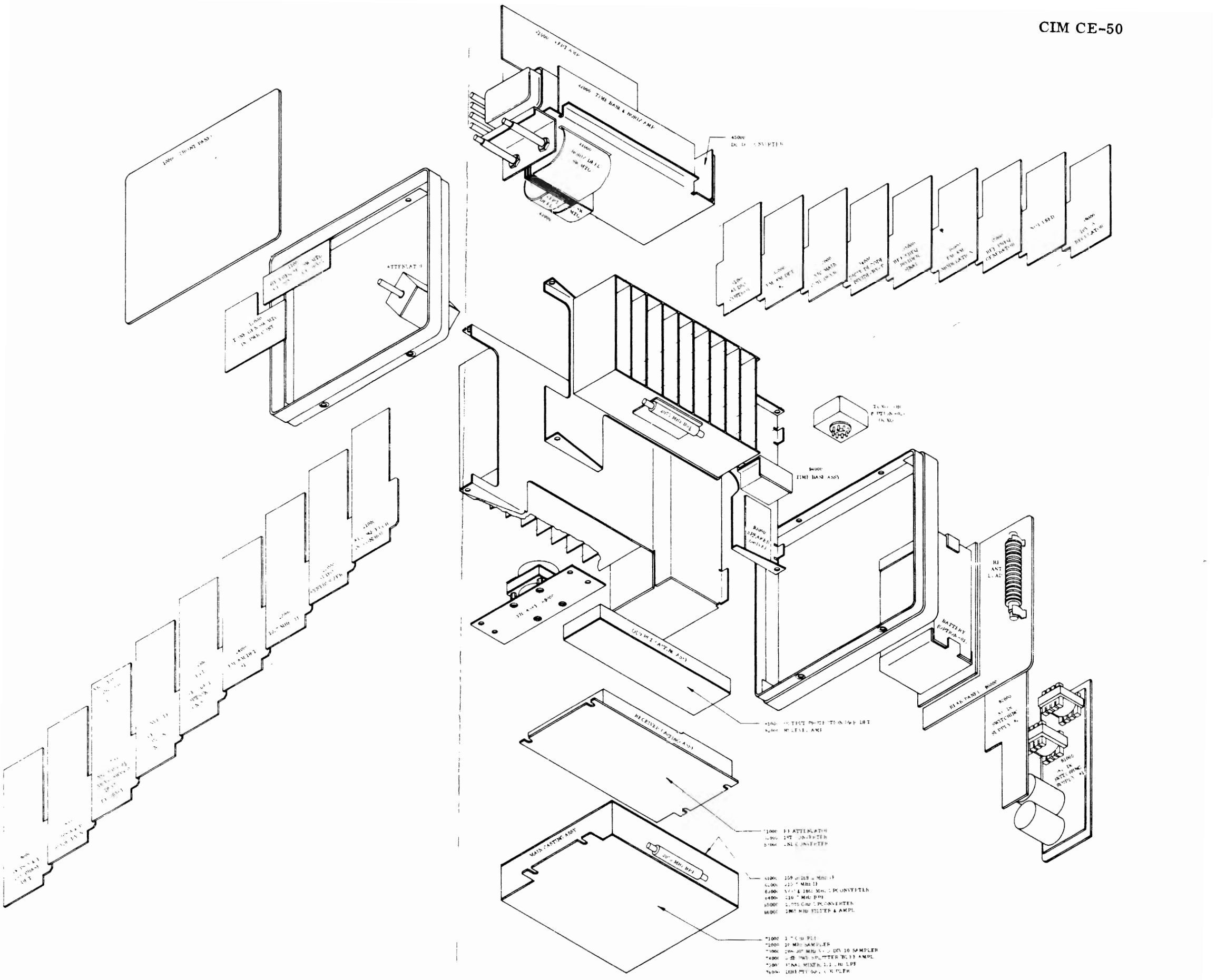


Figure 5-1. CE-50A Assembly Location Diagram

5601--0075

b. Connect the Boonton 82AD Modulation Meter to the CE-50A SIG GEN OUT/RF IN jack, and the HP331A Distortion Analyzer to the Boonton AF output.

c. Set the Modulation Meter Function to kHz DEV, Range to 100, Peak to +, and Tuning to AUTO.

d. Connect an HP180C oscilloscope to the CE-50A DEMOD OUT.

e. Adjust the CE-50A MOD ADJ control for 1.4 kHz deviation on the Modulation Meter. The CE-50A Function Meter and scope should show 1.4 kHz deviation ±60 Hz with a distortion reading of 3% or less. The scope connected to the DEMOD OUT jack should be observed for any anomalies in the display.

f. Repeat the test for 4.9 kHz deviation. The CE-50A scope and Function Meter should agree within ±200 Hz and 3% or better distortion. Again observe the scope at DEMOD OUT jack for any anomalies.

g. Increase the CE-50A modulation to 14 kHz and repeat the test. The CE-50A should agree within ±600 Hz with a distortion of less than 3%.

h. Repeat the 14 kHz deviation test with the FM CAL (OFFSET) control set for 15 kHz offset on the FREQ ERROR meter. The CE-50A Function Meter and scope should not change from Step (g) readings.

Monitor Mode

5.13 To check the operation of the CE-50A in the monitor function, perform the following tests. Test equipment required will be:

Signal Generator, HP8640B
Distortion Analyzer, HP331A
Modulation Meter, Boonton 82AD
Thruline Wattmeter, Bird Model 4340
VHF Band Transmitter, 60-80 watts
VHF Band Transmitter, 20-40 watts
VHF Band Transmitter, 6-8 watts
VHF Band Transmitter, 2-4 watts

5.14 The frequency error meter calibration is checked as follows:

a. Set the CE-50A FUNCTION switch to the MON-PFM position, frequency selector switches to 200.0000 MHz, the SENSITIVITY switch to MAX, SELECTIVITY switch to WIDE, METER FUNCTION switch to 1.5 kHz, and Frequency Error RANGE (kHz) switch to 1.5 kHz.

b. Connect the CAL OUT jack on the CE-50A front panel to the ANT jack. Adjust the SQUELCH contol so that the SIGNAL LEVEL LED just comes on. Turn the scope on, and set the VERT switch to 1.5 kHz. Center the trace on the CRT with the VERT control.

c. The frequency error meter should read 0 Hz, ±50 Hz, and the Deviation meter show less than 100 Hz deviation. If incorrect, adjust the Freq Adj potentiometer R58 on the FM/AM Detector #2 (32000) board.

d. Switch the FUNCTION switch to MON-AM position. The scope trace must stay within 2 divisions. If not, adjust R115 on the FM/AM Detector #1 (24000) board and repeat steps (c) and (d). Switch back to MON-PFM.

e. Set the CE-50A frequency to 200.0015 MHz. The FREQ ERROR meter and scope should indicate -1.5 kHz ±50 Hz. If not, adjust R59 on the Vertical Amplifier (41000) board for the scope, and R76 on the FM/AM Detector #2 board to correct the FREQ ERROR meter.

f. Set the frequency of the CE-50A to 199.9985 MHz. The FREQ ERROR meter should read 1.5 kHz ±30 Hz.

NOTE

Before each of the following frequency error meter calibration tests, zero the scope trace with the VERT control at a CE-50A frequency of 200.0000 MHz.

g. Set the CE-50A RANGE (kHz) switch and VERT switch to 5 kHz, and frequency to 200.0050 MHz. The FREQ ERROR meter and scope should both indicate -5 kHz ±100 Hz. Adjust R77 on the FM/AM Detector #2 board if not correct.

h. When set to a frequency of 199.9950 MHz, the CE-50A FREQ ERROR meter and scope should read 5 kHz ±100 Hz.

i. Set the RANGE (kHz) switch and VERT switch to 15 kHz, and frequency to 200.0150 MHz. The FREQ ERROR meter and scope should both indicate -15 kHz ±600 Hz. Adjust R78 on the FM/AM Detector #2 board if not correct.

j. Set the CE-50A frequency to 199.9850 MHz. The FREQ ERROR meter and scope should read 15 kHz ±600 Hz.

5.15 To check the CE-50A monitor function FM sensitivity, perform the following tests:

a. Set the CE-50A FUNCTION switch to the MON-PFM position, SENSITIVITY switch to MAX, SELECTIVITY to NARROW, and METER FUNCTION switch to SINAD.

b. Connect the CE-50A DEMOD OUT jack to the SINAD IN jack.

c. Connect an HP8640B signal generator to the CE-50A ANT jack. Set the signal generator to INT FM modulation at 1 kHz rate and 3.3 kHz deviation, output level to -60 dBm, and frequency to 999.xxxx MHz.

d. Tune the CE-50A to the HP8640B frequency. The SIGNAL LEVEL LED should come on, and a sine wave display appear on the CE-50A CRT.

e. Center the scope display. When the FREQ ERROR meter reads 0 frequency error, decrease the output level from the HP8640B until 10 dB SINAD is read on the Function Meter. The level from the HP8640B must be less than -101 dBm.

f. Repeat the tests of 5.15 (d) and (e) for frequencies of 124.xxxx and 10.2xxx MHz. The sensitivity at each frequency must be better than -101 dBm.

g. At a frequency of 124.xxxx MHz, set the CE-50A SENSITIVITY control to -40, and adjust the HP8640B output for a 10 dB SINAD on the CE-50A. When the CE-50A SENSITIVITY switch is changed from -40 to -20 and to 0 dBm, the HP8640B should only have to be changed 20 ±2 dB at each position to compensate.

5.16 To check the AM sensitivity of the CE-50A the following tests must be performed:

a. Set the CE-50A controls as in step 5.15 (a) above, except place the FUNCTION switch in the MON AM position.

b. Set the HP8640B signal generator controls to INT AM, 1 kHz rate and 50% modulation. Repeat steps 5.15 (d) through (g) above. The sensitivity should be -101 dBm or better.

5.17 To check the CE-50A AM Demodulation circuits, perform the following tests and adjustments:

a. Set the CE-50A frequency to 152.1500 MHz, the FUNCTION switch to MON AM, SELECTIVITY to WIDE, SENSITIVITY to MAX and METER FUNCTION to % AM. The VERT switch is set as required by test, and the HORIZ switch is set to EXT.

b. Connect an HP331A Distortion Analyzer to the CE-50A DEMOD OUT jack.

c. Set the HP8640B signal generator for a modulation frequency of 1 kHz and 30% modulation as read on the Boonton 82AD Modulation Meter. Set the output signal level to -70 dBm and connect to the CE-50A ANT input jack.

d. The Function Meter and scope of the CE-50A should read 30% ±5% modulation while the Distortion analyzer should read a distortion of not more than 4%.

e. Repeat the above test for 80% modulation. The Function Meter of the CE-50A should read 80% ±5% with a distortion reading on the HP331A of less than 8%.

f. Adjust R64 % AM control on the CE-50A FM/AM Detector #1 (24000) board for correct AM modulation if necessary.

5.18 The following tests should be used to check the CE-50A FM demodulation circuits:

a. Set the CE-50A controls as follows: Frequency to 152.1500 MHz, FUNCTION switch to MON FM, SELECTIVITY switch to WIDE, SENSITIVITY to MAX, METER FUNCTION switch to 1.5, 5, or 15 kHz DEV as required, HORIZ switch to EXT, FM CAL (OFFSET) to 0, and VERT switch to 1.5, 5, or 15 kHz as required.

b. Set the HP8640B signal generator to INT FM modulation at a 1 kHz rate, modulation to 1.4 kHz deviation, and output level to -70 dBm.

c. Connect the HP8640B to the ANT input of the CE-50A and the HP331A Distortion analyzer to the DEMOD OUT jack.

d. Adjust the CE-50A SQUELCH control until the SIGNAL LEVEL LED lights. The Function Meter and scope should both show 1.4 kHz deviation ±60 Hz, and the Distortion analyzer should show less than 3% distortion.

e. Repeat test at 4.9 kHz deviation. The CE-50A should agree within ±200 Hz and with a distortion again of less than 3%.

f. Repeat test at a 14 kHz deviation. The CE-50A Function Meter and scope should agree within ±600 Hz and have less than 3% distortion.

g. Repeat step 5.18 (f) with the HP8640B output frequency set to 152.1515 MHz. There should be no changes in the CE-50A Function Meter reading.

5.19 The following tests will check the CE-50A residual FM:

a. Set the CE-50A FUNCTION switch to the MON PFM position, SENSITIVITY switch to MAX, SELECTIVITY to NARROW,

and METER FUNCTION switch to 1.5 kHz deviation.

b. Set the HP8640B signal generator to 20µV output level with no modulation and connect to the ANT input of the CE-50A.

c. Check the residual FM on the CE-50A Function Meter at 999.xxxx, 124.xxxx, and 10.2xxx MHz. The residual FM should be less than 100 Hz.

5.20 The CE-50A can measure 500 MHz RF signals to a level of 100 watts at the SIG GEN OUT/RF IN jack. Anytime an RF input is sensed at the SIG GEN OUT/RF IN jack when the METER FUNCTION switch is in other than the PWR x 1 position, the circuits will automatically switch to the PWR x 10 level and display the power level on the Function Meter. To test the level measurement and protection circuits, perform the following tests:

a. Set the CE-50A front panel controls as follows: SENSITIVITY switch to -20 dBm position, RF Attenuation to -10 dBm, METER FUNCTION switch to PWR x 1.

b. Connect the output of the 2-4 watt VHF band transmitter to the Bird Model 4340 wattmeter input, and the wattmeter output to the CE-50A SIG GEN OUT/RF IN jack.

c. Key the transmitter and note the power reading on the Bird Model 4340 wattmeter.

CAUTION

Do not key the transmitter for longer than 30 seconds. Allow a two minute cooling period fo the CE-50A between transmission periods.

d. Check the CE-50A power meter reading. It should read within ±1 watt of the Bird 4340 reading. If not, adjust R62 on the ALC/Squelch/DC Control (21000) board.

e. Repeat step (d) using the VHF band 6-8 watt transmitter. If needed, adjust R61 on the ALC/SQUELCH/DC Control board.

f. Repeat steps (d) and (e) for best results.

g. Switch the CE-50A METER FUNCTION switch to the PWR x 10 position and repeat step (d) using the VHF band 20-40 watt transmitter. The power reading on the CE-50A should be within ±10 watts of the Bird Model 4340 reading. If not, adjust R46 on the ALC/Squelch/DC Control board.

CAUTION

Do not key the transmitter for longer than 10 seconds. Allow a 10 minute cooling period before transmitting again.

h. Repeat step (d) using the VHF band 60-80 watt transmitter. If the CE-50A power reading is not within ±10 watts of the Bird Model 4340 reading, adjust R44 on the ALC/Squelch/DC Control board.

i. Repeat steps (g) and (h) for best results.

5.21 The CE-50A SINAD measuring circuits have a null set for 1 kHz. Any frequency outside this null is considered noise. This means the CE-50A Audio Synthesizer (internal modulation) circuits can be used to check SINAD operation when set to the GEN + 1 kHz position. The dialed frequency is noise, and must not be harmonically related to 1 kHz and at least 100 Hz away. Check SINAD operation as follows:

a. Set the CE-50A MODULATION FREQUENCY (Hz) switches to 2111 Hz, the MODULATION (GEN/OFF/GEN + 1 kHz) switch to GEN + 1 kHz, BURST control out of the CONT detent, and the METER FUNCTION switch to SINAD. Adjust the 1 kHz MOD ADJ control for maximum output at the MOD OUT jack, and connect the MOD OUT jack to the CE-50A SINAD IN jack.

b. On the Reference Frequency Divider/SINAD (35000) board, adjust R40 and R46 for minimum deflection on the Function Meter.

c. On the CE-50A front panel, set the METER FUNCTION switch to 15 kHz DEV, the FUNCTION switch to SIG GEN FM, and adjust the 1 kHz MOD ADJ for 15 kHz on the Function Meter.

d. Switch the MODULATION (GEN/OFF/GEN + 1 kHz) to GEN, BURST control into the CONT detent, and dial 2111 Hz on the MODULATION FREQUENCY (Hz) switches.

e. Set the MOD ADJ control to read 5 kHz deviation on the Function Meter, and then switch the METER FUNCTION switch to the SINAD position.

f. Adjust R57 on the Reference Frequency Divider/SINAD board until the FUNCTION Meter reads full scale (on the SINAD scale).

g. Switch the MODULATION (GEN/OFF/GEN + 1 kHz) switch to the GEN +1 kHz position and adjust R48 on the Reference Frequency Divider/SINAD board for 12 dB on the Function Meter.

h. Repeat steps (f) and (g) above as necessary for correct reading.

Oscilloscope Check

5.22 The following tests and adjustments can be made to assure proper operation of the CE-50A oscilloscope circuits.

a. Connect the 200 MHz CAL OUT jack on the CE-50A front panel to the ANT input.

b. Turn the FUNCTION switch to MON-FM, and set the Frequency Select switches to 200.0000 MHz.

c. Set the VERT switch to 1.5 kHz position

d. Center the trace on the CRT with the VERT position control. If the trace is not lined up horizontally with the CRT face, adjust R62 TRACE ROT control on the Vertical Amplifier (41000) board.

e. Change the VERT switch from 1.5 kHz to 5 kHz to 15 kHz. The scope trace should not move. If it does, adjust R61 DEMOD SHIFT control on the Vertical Amplifier board.

f. Set the FUNCTION switch to SIG GEN FM and modulate the signal with 1 kHz on the MODULATION FREQUENCY (Hz) switches. Adjust the MOD ADJ control for 5 kHz peak deviation on the Function Meter.

g. Set the RANGE (kHz) switch to 1.5 and adjust the FM CAL (OFFSET) control to center the FREQ ERROR meter to 0.

h. Place the VERT switch in the 5 kHz position.

i. Check the CE-50A CRT display. If it doesn't show 5 kHz deviation adjust R60 MOD GAIN on the Vertical Amplifier board.

j. Switch the HORIZ (per div) control to INT TONE. A tilted line should be seen on the scope.

k. Connect the MOD OUT jack to the VERT EXT SCOPE INPUTS jack, and switch the VERT switch to EXT (per div) -50 mV/DIV. Set the HORIZ switch to 1 ms position.

l. The CE-50A scope should display a 1 kHz signal.

m. Set the VERT switch to 5 kHz, and the HORIZ switch to EXT. Connect the MOD OUT jack to the HORIZ EXT SCOPE INPUTS. A sloped line should be seen on the scope.

n. Change the VERT switch to IF, and HORIZ to 1 ms position.

o. When the FUNCTION switch is moved to the SIG GEN-AM position, the scope should display a trapezoidal signal.

Spectrum Monitor Check (CE-50A-1 only)

5.23 The CE-50A-1 Spectrum Monitor horizontal calibration can be tested and adjusted as follows:

a. Connect the 200 MHz CAL OUT signal to the ANT input. Set the CE-50A-1 frequency to 200.0000 MHz.

b. Set the HORIZ switch to SPECTRUM MONITOR/10 kHz and FUNCTION switch to SPECTRUM.

c. The display should be within ±.5 division of CRT center. If not, adjust the 10 kHz CENTERING control, R92, on the YIG FM Coil/Sweep Driver (27000) board.

d. Switch the HORIZ switch to SPECTRUM MONITOR/1 MHz and check that the display is within ±.5 division of CRT center. If not, adjust R10 1 MHz/DIV CENTERING on the YIG FM Coil/Sweep Driver board.

e. Check the CRT centering at the HORIZ switch 100 kHz SPECTRUM MONITOR position. It should be within ±.5 division of CRT center.

f. Repeat steps (b) through (e) above for best centering.

g. Connect the HP8640B signal generator set to 155.000 MHz and 0 dBm, to the CE-50A-1 ANT input. Set the CE-50A-1 frequency to 155.0000 MHz and HORIZ switch to SPECTRUM MONITOR/1 MHz. Adjust the REF LEVEL dBm switch for an on-scale CRT display.

h. Adjust the signal generator output frequency to the CRT center and LOCK the frequency so it won't drift.

i. Switch the CE-50A-1 frequency to 159.000 MHz. The display should be 4 ±.5 divisions to the left of CRT center. If not, adjust R48 1 MHz/DIV on the YIG FM Coil/Sweep Driver board.

j. Change the CE-50A-1 frequency to 151.000 MHz. The display should be 4 ±.5 divisions to the right of CRT center.

k. Set the HORIZ switch to SPECTRUM MONITOR 100 kHz. Change the CE-50A-1 frequency back to 155.000 MHz and assure that the signal generator frequency is still locked.

l. Switch the CE-50A-1 frequency to 155.4000 MHz. The display should be 4 ±.5 divisions to the left of CRT center. If not, adjust R107 on the YIG FM Coil/Sweep Driver board.

m. Change the CE-50A-1 frequency to 154.6000 MHz. The display should be 4 ±.5 divisions to the right of CRT center.

n. Set the CE-50A-1 HORIZ switch to SPECTRUM MONITOR 10 kHz. Set the CE-50A-1 frequency back to 155.000 MHz and make sure that the HP8640B **signal** generator frequency is still locked.

o. Switch the CE-50A-1 frequency to 155.0400 MHz. The display should be 4 ±.5 divisions to the left of CRT center. If not, adjust R112 10 kHz/DIV on the YIG FM Coil/Sweep Driver board.

5.24 To check the Spectrum Monitor vertical calibration, perform the following tests and adjustments:

a. On the CE-50A-1, set the HORIZ switch to SPECTRUM MONITOR 100 kHz, the SENSITIVITY switch to 0 dBm Ref Level, and frequency to 150.0000 MHz. Preset the LEVEL CAL control to the center of its range.

b. Set the HP8640B signal generator to 150.0000 MHz, and the RF level output to 0 dBm. The display on the CE-50A-1 CRT should be at the center of the screen and at the 0 dBm level.

c. Step the signal generator level down to 10 dB steps to -60 dBm. Note the level accuracy and tracking of the scale on the CE-50A-1 CRT.

d. On the CE-50A-1 Vertical Amplifier (41000) board, adjust R49 S.M. GAIN and R47 S.M. SHIFT along with the BPF (25000) board R6 GAIN control for best tracking and accuracy. It should be better than ±2.5 dB down through -60 dB.

e. Set the HP8640B output level to -30 dBm and the CE-50A-1 SENSITIVITY switch to -20 dBm. The display should be at the -10 dB line within ±2.5 dB.

f. Set the HP8640B output level to -50 dBm and the CE-50A-1 SENSITIVITY switch to -40 dBm. The display should be at the -10 dB line within ±2.5 dB.

g. Set the HP8640B output level to -70 dBm and the CE-50A-1 SENSITIVITY switch to MAX. The display should be at the -10 dB line within ±6 dB.

Power Supplies Check

5.25 Problems in the AC/DC Switching Supply #2 and 10V/5V Regulators PC boards can be found using normal troubleshooting techniques given in the General Troubleshooting Diagram, Figure 5-2. However, problems in the AC/DC Switching Supply #1 board require special procedures for troubleshooting. These procedures are given below:

WARNING

Hazardous voltage levels are present on the AC/DC Switching Supply #1 PC board when the CE-50A is connected to AC power. The unit must be operated only in a three-wire system. Use extreme caution when troubleshooting in this area.

5.26 Prior to making tests, the folowing set-up and checks must be made:

a. Connect the CE-50A to an AC power source through an ungrounded isolation transformer which has a minimum rating of 150VA.

b. With the Dana 4300 voltmeter set to RANGE 100, check the CE-50A Chassis for voltage to earth ground. If there is a voltage measured, replace the failed Q1 or Q2 on the CE-50A rear panel.

c. Apply an earth ground to the low side of R8 on the AC/DC Switching Supply #1 board. All measurements will be referenced to this point unless otherwise noted.

5.27 If the CE-50A is blowing power fuses, check the following:

a. Check that the 120V/220V POWER switch is not defective.

b. Check for excessive current loading at the AC/DC Switching Supply #1 P1-8.

c. Check the AC/DC Switching Supply #1 rectifier circuit, C9 and C12 (for leakage), CR3 through CR12, CR13, CR14, CR23, and CR24.

d. Check Q1 and Q2 on the rear panel for leakage to the chassis.

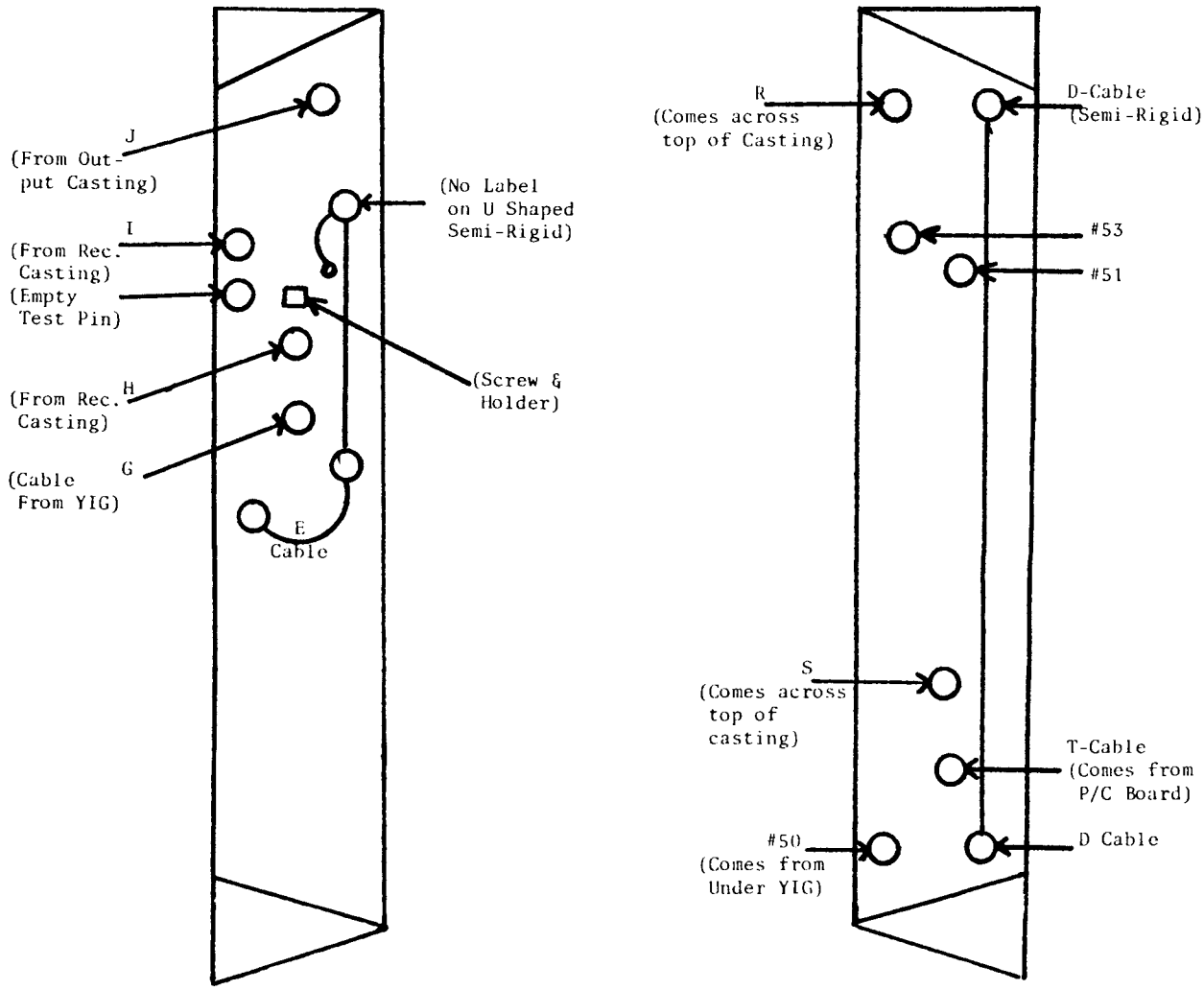


Figure 5-2 Main Casting Cable Interconnect

5.28 If the AC/DC Switching Supply #1 will not start, check the following items:

a. A 12V starting pulse of 1-1/2 to 2 seconds duration is generated every 2 to 3 seconds by the Q3, Q5, Q7 Circuit. It can be measured at the cathode end of CR20.

b. Check that there is no surge shutdown control voltage on U1 pin 10. It should be 0V.

c. Check for an approximately 5V P-P square wave at U1 pins 12 and 13 switching control output.

d. Check the emitters of Q8 through Q11 for square waves at approximately 20 kHz.

e. Check the cathode side of CR11 for +340V DC.

TROUBLESHOOTING

5.29 The troubleshooting procedures for CE-50A circuits are presented in a series of flow diagrams showing a logical process of troubleshooting for problems which might be encountered in normal operation. The troubleshooting diagrams do not show, and are not intended to show, all problems which might occur, or all avaialble solutions. They are presented as guides which are to be used to isolate the problem to a printed circuit board by a logical process of elimination. When the failed board is located, it can be exchanged for a working board under Cushman Electronics' PC board exchange program. This will reduce instrument down-time due to failures to a minimum.

5.30 Test equipment required for the troubleshooting procedures is the same as that needed for checking instrument performance, and is listed in paragraph 5.07.

5.31 The CE-50A Functional Flow Diagram, Figure 5-2, an overall view of the operation and interaction of CE-50A circuits. The General Troubleshooting Diagram, Figure 5-3, is to be used to locate the functional section of the CE-50A causing the problem, and for troubleshooting SINAD, power supply, and RF power measurement troubles. The Signal Generator Troubleshooting Diagram, Figure 5-4, is for troubleshooting problems traced to the signal generator function of the CE-50A. The Monitor Function Troubleshooting Diagram is Figure 5-5, and is to be used to locate problems in the Spectrum Analyzer, oscilliscope, Monitor, and modulation circuits. Figure 5-6 is the Phase Lock Loop Troubleshooting Diagram, and is for locating problems in the YIG and VCO loops used in the CE-50A.

5.32 If it becomes necessary to disconnect the cabling to the castings, the Main Casting Cable Interconnect (Figure 5-2), Output Casting Cable Interconnect (Figure 5-3), and Receiver Casting Cable Interconnect (Figure 5-4) drawings can be used as references for cable replacement.

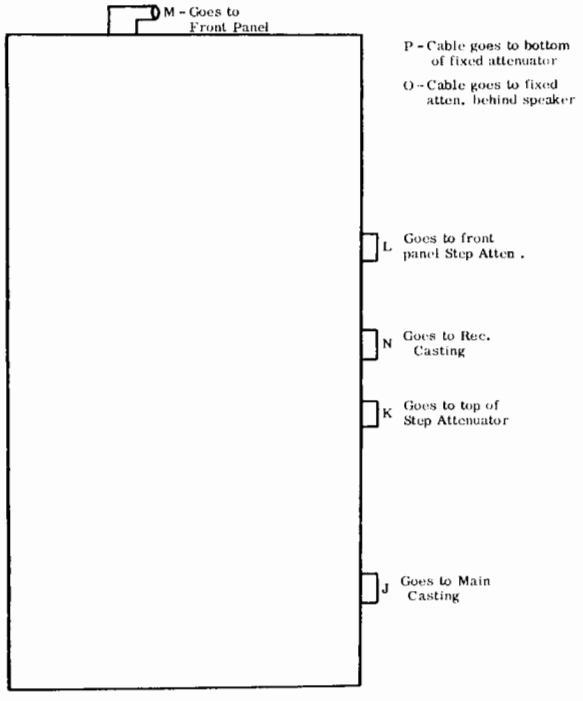


Figure 5-3. Output Casting Cable Interconnect

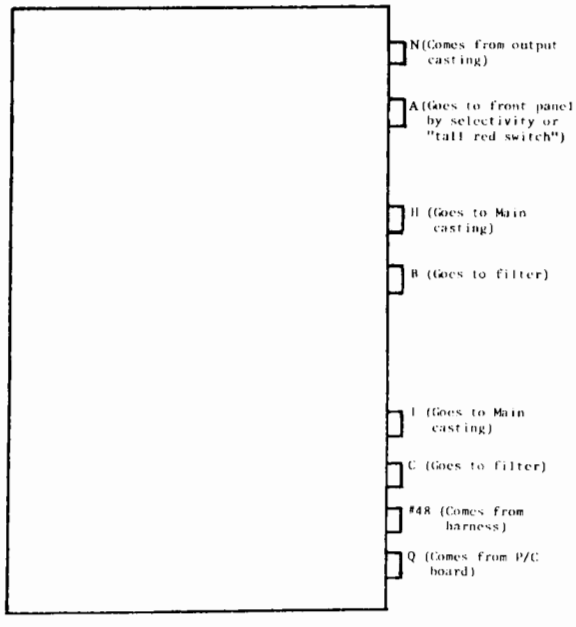


Figure 5-4. Receiver Casting Cable Interconnect

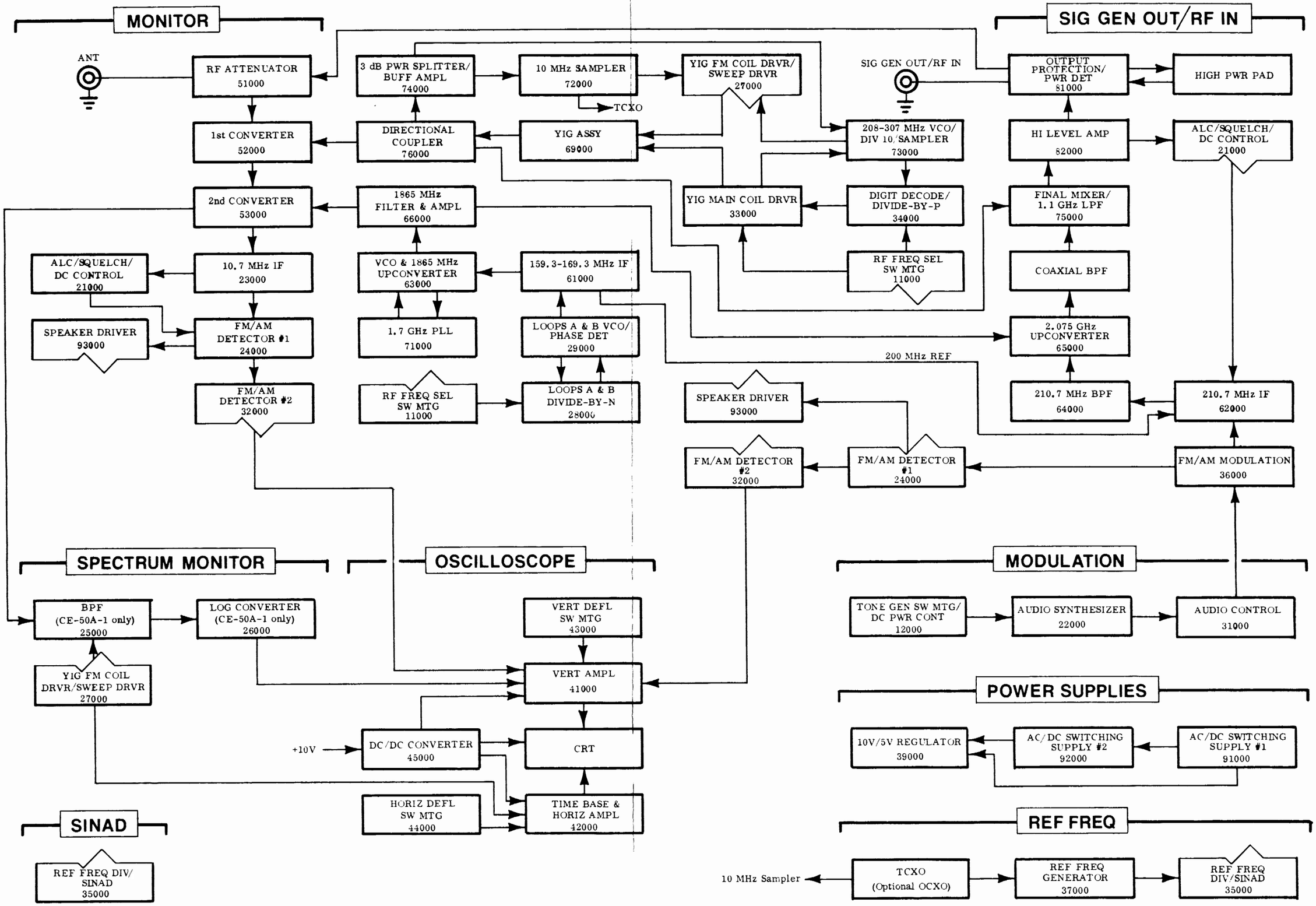
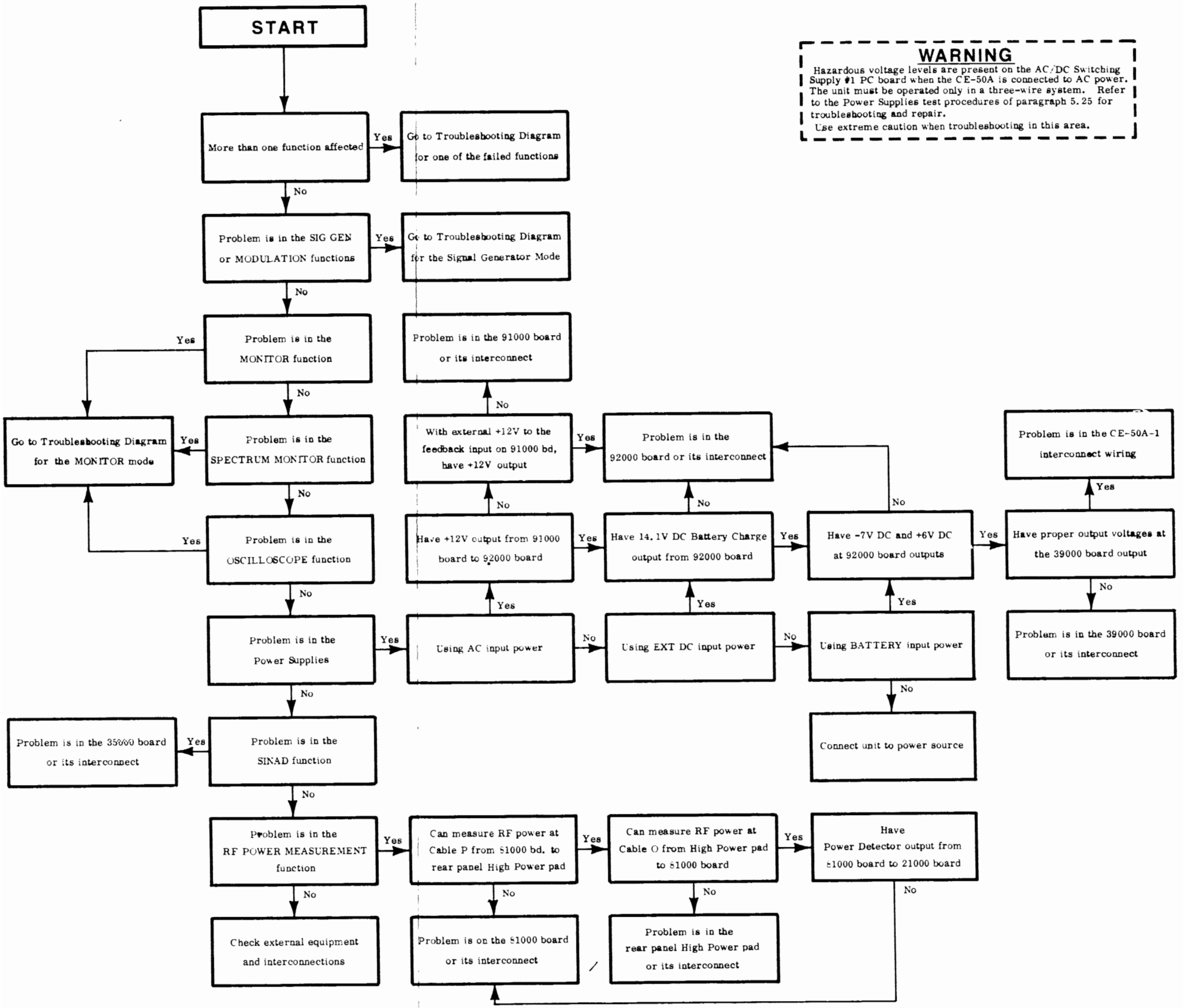


Figure 5-5. CE-50A Functional Flow Diagram



WARNING

Hazardous voltage levels are present on the AC/DC Switching Supply #1 PC board when the CE-50A is connected to AC power. The unit must be operated only in a three-wire system. Refer to the Power Supplies test procedures of paragraph 5.25 for troubleshooting and repair.

Use extreme caution when troubleshooting in this area.

Figure 5-6. General Troubleshooting Diagram

Figure 5-7. Signal Generator Troubleshooting Diagram

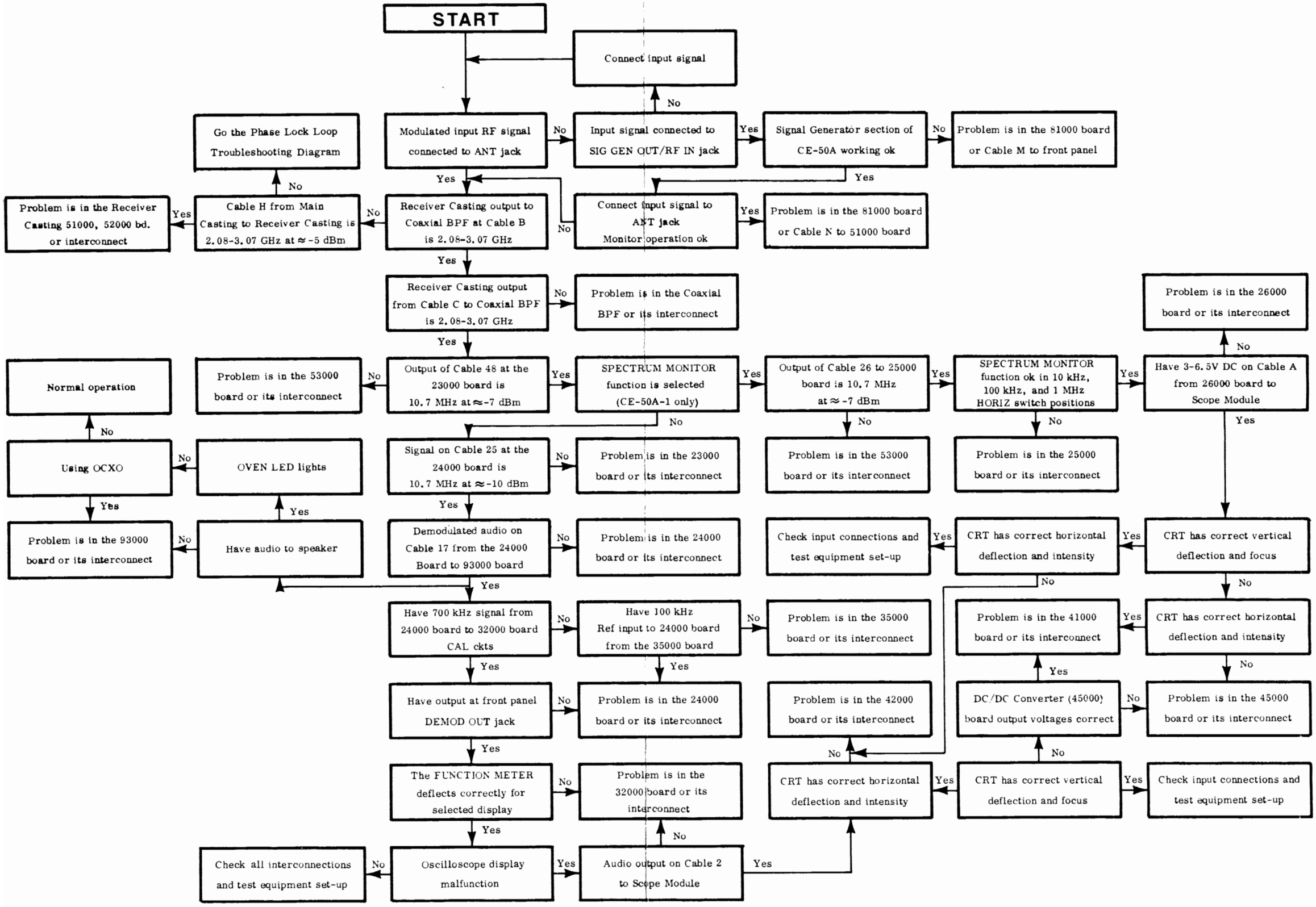


Figure 5-8. Monitor Troubleshooting Diagram

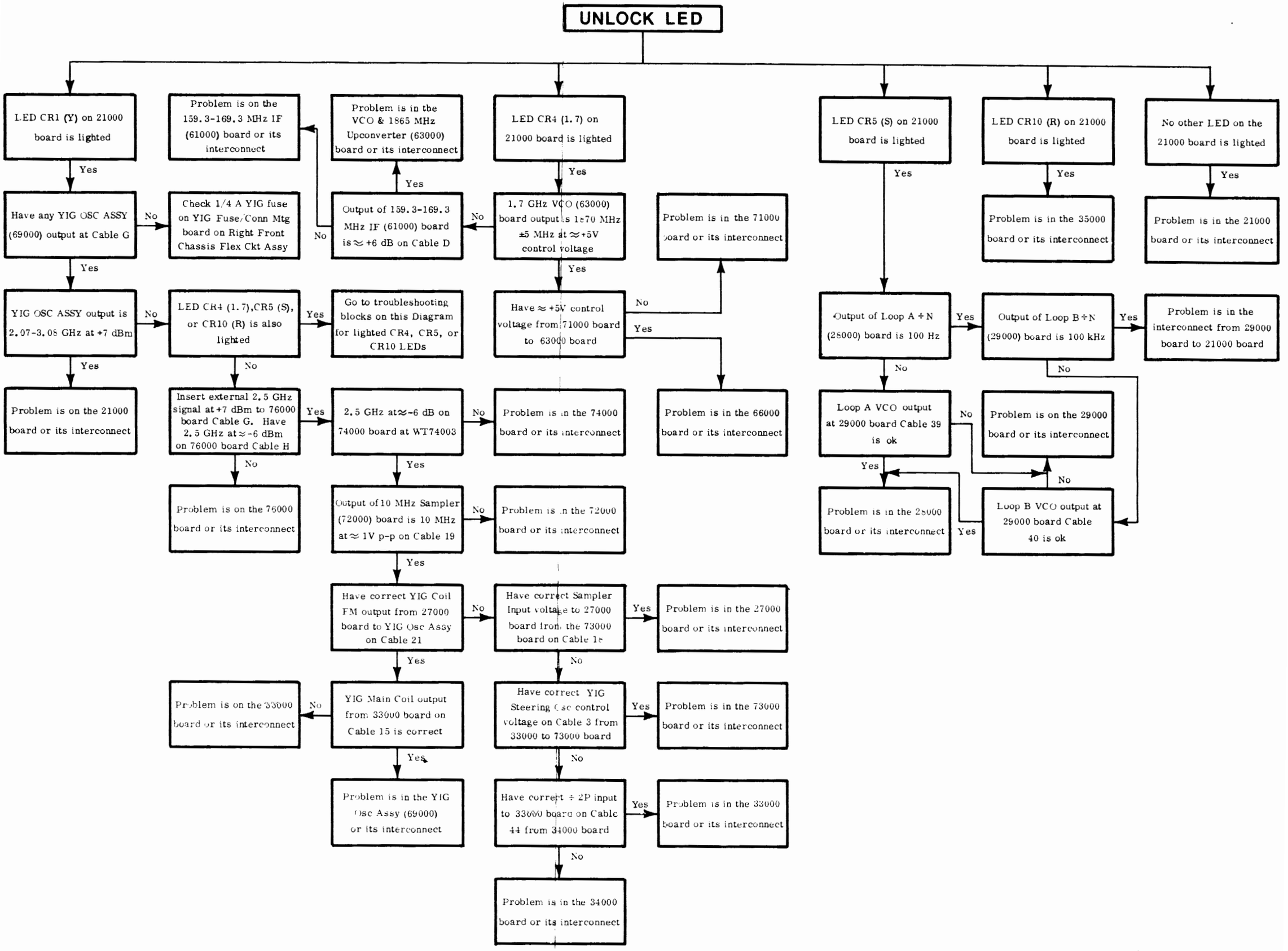


Figure 5-9. YIG Freq/Phase Lock Loops Troubleshooting Diagram

5601-0075

APPENDIX

Sales and service information is available from:

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Robert Bosch Stasse 30
6072 Dreieich-Sprendlingen
West Germany
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Southwestern
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(214) 256-1614

Eastern
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Mountain Lakes, NJ 07046
(201) 335-7780

Southeastern
Suites 110/111
Northgate Office Park
3610 Interstate 85 N.E.
Atlanta, GA 30340
(404) 451-3264

SECTION 6
SCHEMATICS AND PARTS LISTS

6.01 This section contains the circuit schematics, the drawings showing parts placement, and a complete list of parts (with stock numbers) for each individual printed circuit board.

6.02 Table 6-1 below is intended to give an overview of the divisions of Section 6 by page number. Tables 6-2 through 6-7 are incorporated as a guide to the technician in finding the schematic diagram, part locator diagram, and parts list for any printed circuit board using the instrument model number (i.e., CE-50A-1/TG) to choose a table, and the printed circuit board reference designator (i.e., 27000 PCB) to determine the figure number of the schematic needed.

6.03 Each schematic diagram has a figure number located at the upper right corner of the page. For better visibility and faster reference, schematic diagrams have been placed and folded in such a way as to insure that all figure numbers are facing the front of the manual.

TABLE 6-1, SECTION 6 OVERVIEW

TABLE 6-2, CE-50A REFERENCE LOCATOR

CIRCUIT REFERENCE	FIGURE
FRONT PANEL	
10000	6-1/2
11000	6-3
12000	6-4
30500	N/A
69000	6-40
LEFT CARD CAGE	
20000	6-5
21000	6-6
22000	6-7
23000	6-8
24000	6-9
25000	N/A
26000	N/A
27000	6-10
28000	6-11
29000	6-12
RIGHT CARD CAGE	
30000	6-13
31000	6-14
32000	6-15/16
33000	6-17
34000	6-18
35000	6-19
36000	6-20
37000	6-21
38000	N/A
39000	6-22
OSCILLOSCOPE MODULE	
40000	6-23
41000	6-24
42000	6-25
43000	6-26
44000	6-27
45000	6-28

CIRCUIT REFERENCE	FIGURE
RECEIVER CASTING	
50000	6-29
51000	6-30
52000	6-31
53000	6-32
MAIN CASTING	
60000/70000	6-33
61000	6-34
62000	6-35
63000	6-36
64000	6-37
65000	6-38
66000	6-39
71000	6-41
72000	6-42
73000	6-43
74000	6-44
75000	6-45
76000	6-46
OUTPUT CASTING	
80000	6-47
81000	6-48
82000	6-49
REAR PANEL/POWER SUPPLY	
90000	6-50
91000	6-51
92000	6-52
93000	6-53
94000	6-54
OFFSET GENERATOR	
95000	N/A
96000	N/A
97000	N/A
98000	N/A

TABLE 6-3, CE-50A-1 AND CE-50A-1/TG

TABLE 6-4, CE-45A REFERENCE LOCATOR

CIRCUIT REFERENCE	FIGURE
FRONT PANEL	
10000	6-64/65
11000	6-3
12000	6-68
30500	N/A
69000	6-40
LEFT CARD CAGE	
20000	6-69
21000	6-70
22000	6-7
23000	6-71
24000	6-72
25000	N/A
26000	N/A
27000	6-10
28000	6-11
29000	6-12
RIGHT CARD CAGE	
30000	6-75
31000	6-76
32000	6-78
33000	6-17
34000	6-18
35000	6-80
36000	6-81
37000	6-21
38000	N/A
39000	6-22
OSCILLOSCOPE MODULE	
40000	6-23
41000	6-24
42000	6-25
43000	6-26
44000	6-27
45000	6-28

CIRCUIT REFERENCE	FIGURE
RECEIVER CASTING	
50000	6-82
51000	6-83
52000	6-31
53000	6-32
MAIN CASTING	
60000/70000	6-33
61000	6-34
62000	6-35
63000	6-36
64000	6-37
65000	6-38
66000	6-39
71000	6-41
72000	6-42
73000	6-43
74000	6-44
75000	6-45
76000	6-46
OUTPUT CASTING	
80000	6-84
81000	6-48
82000	6-49
REAR PANEL/POWER SUPPLY	
90000	6-50
91000	6-51
92000	6-52
93000	6-53
94000	6-54
OFFSET GENERATOR	
95000	N/A
96000	N/A
97000	N/A
98000	N/A

TABLE 6-5, CE-46A REFERENCE LOCATOR

CIRCUIT REFERENCE	FIGURE
FRONT PANEL	
10000	6-66/67
11000	6-55
12000	6-4
30500	N/A
69000	6-40
LEFT CARD CAGE	
20000	6-69
21000	6-6
22000	6-7
23000	6-8
24000	6-73
25000	6-74
26000	6-58
27000	6-59
28000	6-11
29000	6-12
RIGHT CARD CAGE	
30000	6-75
31000	6-77
32000	6-79
33000	6-17
34000	6-18
35000	6-80
36000	6-20
37000	6-60
38000	6-61
39000	6-62
OSCILLOSCOPE MODULE	
40000	6-23
41000	6-24
42000	6-25
43000	6-26
44000	6-27
45000	6-28

CIRCUIT REFERENCE	FIGURE
RECEIVER CASTING	
50000	6-82
51000	6-83
52000	6-31
53000	6-32
MAIN CASTING	
60000/70000	6-62
61000	6-34
62000	6-35
63000	6-36
64000	6-37
65000	6-38
66000	6-39
71000	6-41
72000	6-42
73000	6-43
74000	6-44
75000	6-45
76000	6-46
OUTPUT CASTING	
80000	6-47
81000	6-48
82000	6-49
REAR PANEL/POWER SUPPLY	
90000	6-50
91000	6-51
92000	6-52
93000	6-53
94000	6-54
OFFSET GENERATOR	
95000	N/A
96000	N/A
97000	N/A
98000	N/A

TABLE 6-6, CE-5100 REFERENCE LOCATOR

CIRCUIT REFERENCE	FIGURE
FRONT PANEL	
10000	6-85/86
11000	6-55
12000	6-87
30500	6-91
69000	6-40
LEFT CARD CAGE	
20000	6-5
21000	6-6
22000	6-7
23000	6-8
24000	6-9
25000	N/A
26000	N/A
27000	6-10
28000	6-11
29000	6-12
RIGHT CARD CAGE	
30000	6-13
31000	6-14
32000	6-15/16
33000	6-17
34000	6-18
35000	6-92
36000	6-93
37000	6-21
38000	6-94
39000	6-22
OSCILLOSCOPE MODULE	
40000	6-23
41000	6-24
42000	6-96
43000	6-26
44000	6-97
45000	6-28

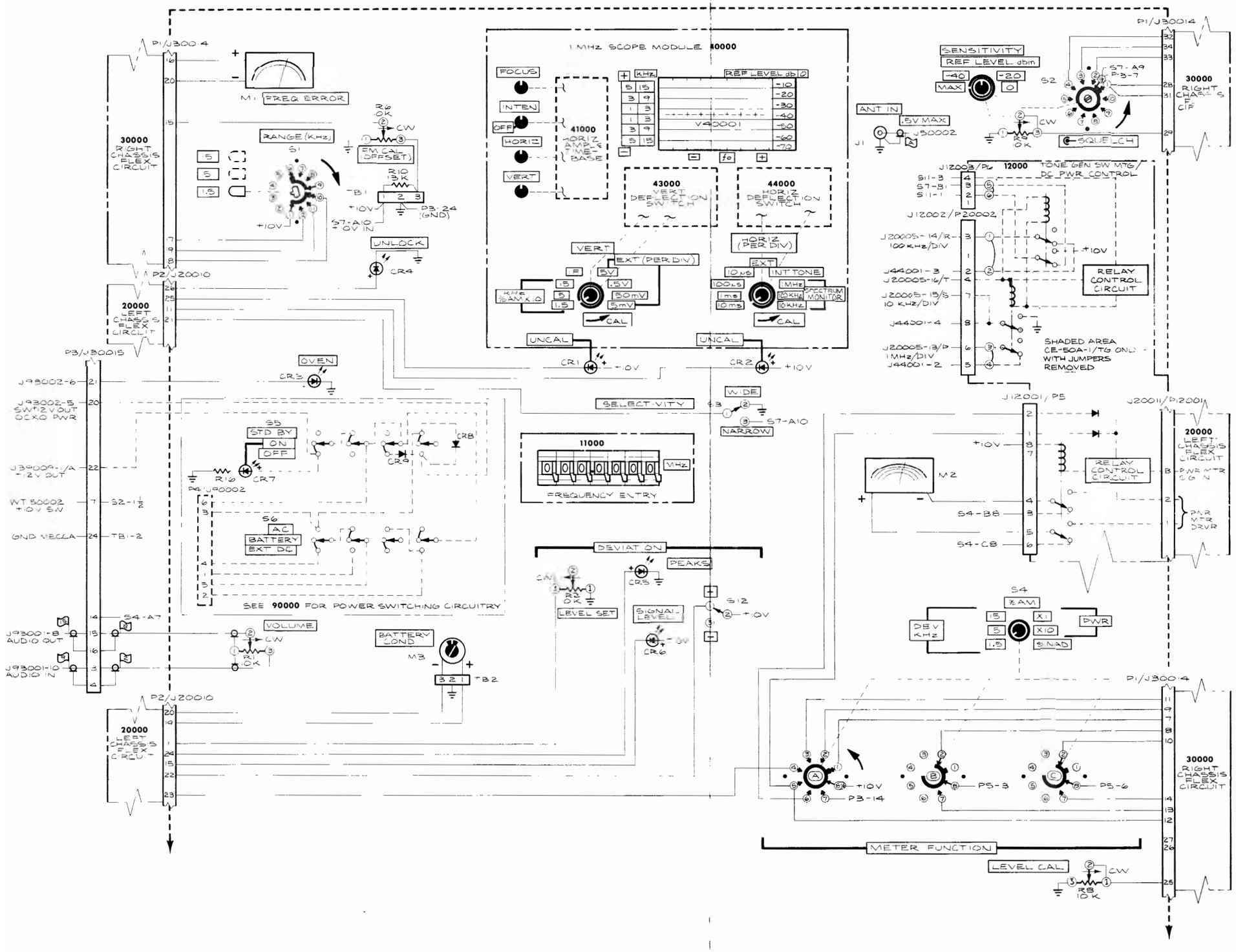
CIRCUIT REFERENCE	FIGURE
RECEIVER CASTING	
50000	6-29
51000	6-30
52000	6-31
53000	6-32
MAIN CASTING	
60000/70000	6-62
61000	6-34
62000	6-35
63000	6-36
64000	6-37
65000	6-38
66000	6-39
71000	6-41
72000	6-42
73000	6-43
74000	6-44
75000	6-45
76000	6-46
OUTPUT CASTING	
80000	6-47
81000	6-48
82000	6-49
REAR PANEL/POWER SUPPLY	
90000	6-50
91000	6-98
92000	6-99
93000	6-53
94000	6-100
OFFSET GENERATOR	
95000	6-101
96000	6-102
97000	6-103
98000	6-104

TABLE 6-7, CCE-5110 REFERENCE LOCATOR

CIRCUIT REFERENCE	FIGURE
FRONT PANEL	
10000	6-85/86
11000	6-55
12000	6-88
30500	6-91
69000	6-40
LEFT CARD CAGE	
20000	6-5
21000	6-6
22000	6-7
23000	6-8
24000	6-9
25000	6-89
26000	6-90
27000	6-59
28000	6-11
29000	6-12
RIGHT CARD CAGE	
30000	6-13
31000	6-14
32000	6-15/16
33000	6-17
34000	6-18
35000	6-92
36000	6-93
37000	6-60
38000	6-95
39000	6-22
OSCILLOSCOPE MODULE	
40000	6-23
41000	6-24
42000	6-96
43000	6-26
44000	6-97
45000	6-28

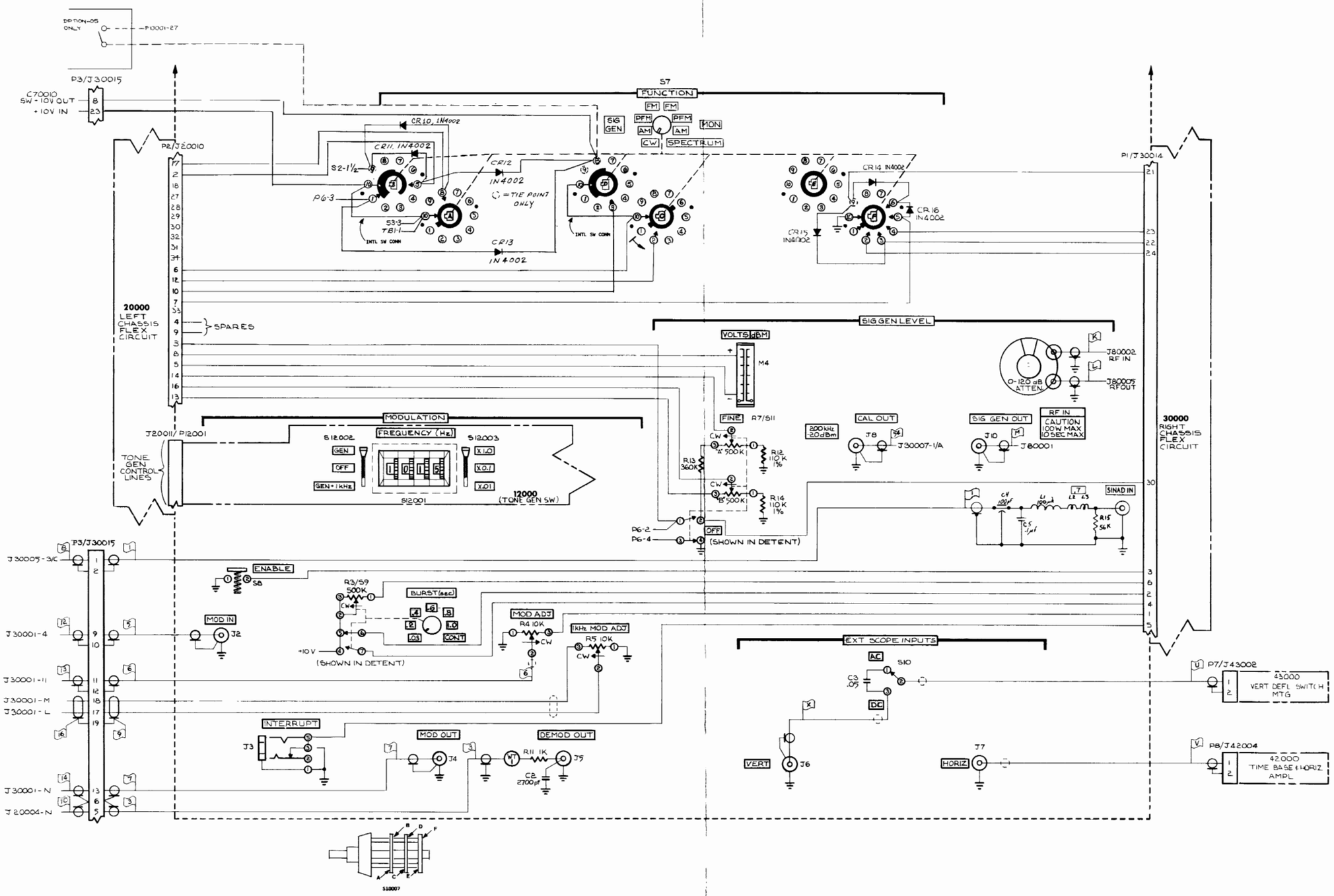
CIRCUIT REFERENCE	FIGURE
RECEIVER CASTING	
50000	6-29
51000	6-30
52000	6-31
53000	6-32
MAIN CASTING	
60000/70000	6-62
61000	6-34
62000	6-35
63000	6-36
64000	6-37
65000	6-38
66000	6-39
71000	6-41
72000	6-42
73000	6-43
74000	6-44
75000	6-45
76000	6-63
OUTPUT CASTING	
80000	6-47
81000	6-48
82000	6-49
REAR PANEL/POWER SUPPLY	
90000	6-50
91000	6-98
92000	6-99
93000	6-53
94000	6-100
OFFSET GENERATOR	
95000	6-101
96000	6-102
97000	6-103
98000	6-104

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
10000	FRONT PANEL ASSY	7003-0128	CUSHMAN	CE-50, -1 & /TG
	CAPACITOR			
C 2	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 3	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-550
C 4	CAP-1000PF +100-0% 300V CER FEED-THRU	1005-0077	SPECTRUM	54-802-002 W/SOLDER
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 2	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 3	DIO-LT EMIT YEL 5V SNAP-IN MT	1281-0146	DIALCO	559-0301-001
CR 4	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 5	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 6	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 7	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 8	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 9	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 10	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 11	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 12	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 13	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 14	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 15	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 16	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
	CONNECTOR			
J 2	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 3	JK-3 COND SINGLE CLOSED CIRCUIT AUDIO	2586-0011	SWITCHCRAFT	113B
J 4	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 5	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 6	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 7	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 9	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	MIXER			
M 1	MTR-DC 500-0-500 UA FREQ	1402-0038	MODUTEC	TIWI-DVA-5H5
M 2	MTR-DC 0-500UA DEV	1402-0039	MODUTEC	TIWI-DVA-500
M 3	MTR-DC 0-1MA BATTERY CHECK	1402-0036	IMPACT ELECTRICIAL	CFM-11
M 4	MTR-DC 0-500UA OUTPUT LEVEL	1402-0040	WESTON	C/E DWG
	RESISTOR			
R 1	POT-10K 20% 1/8W LOG 1/8 SFT CC	1203-0119	MALLORY	C/E DWG(MLC10K)
R 2	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 3	POT-500K 10% 1/2W LIN 1/8SFT CC W/SPDT	1203-0076	ALLEN BRADLEY	C/E DWG 14M158
R 4	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 5	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 6	POT-10K 20% 3/4W LIN 1/8 SFT CERMET	1203-0080	CTS BERNE	X6P1313 SERIES VA305
R 7	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		
R 8	POT-10K 10% 3/4W 20T CERMET TRMR	1215-0034	SPECTROL	43P103T000
R 9	SW-RTRY CONC 1 POLE 4 POS W/POT	1851-0122		
R 10	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335



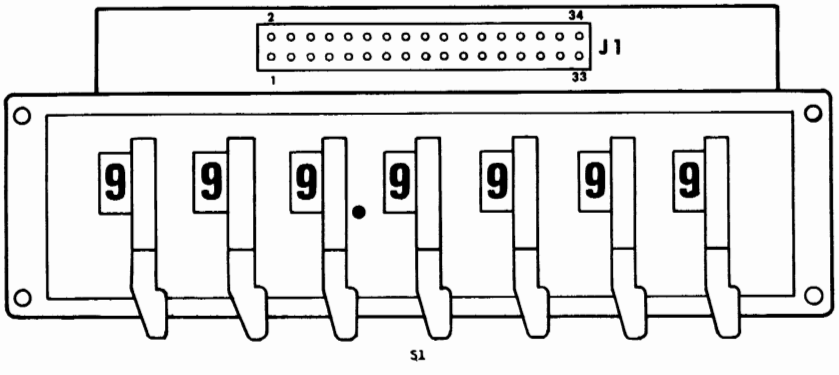
10000 Front Panel Interconnect Diagram, (8000-0647)
CE-50A, -1, and /TG Sheet 1 of 2

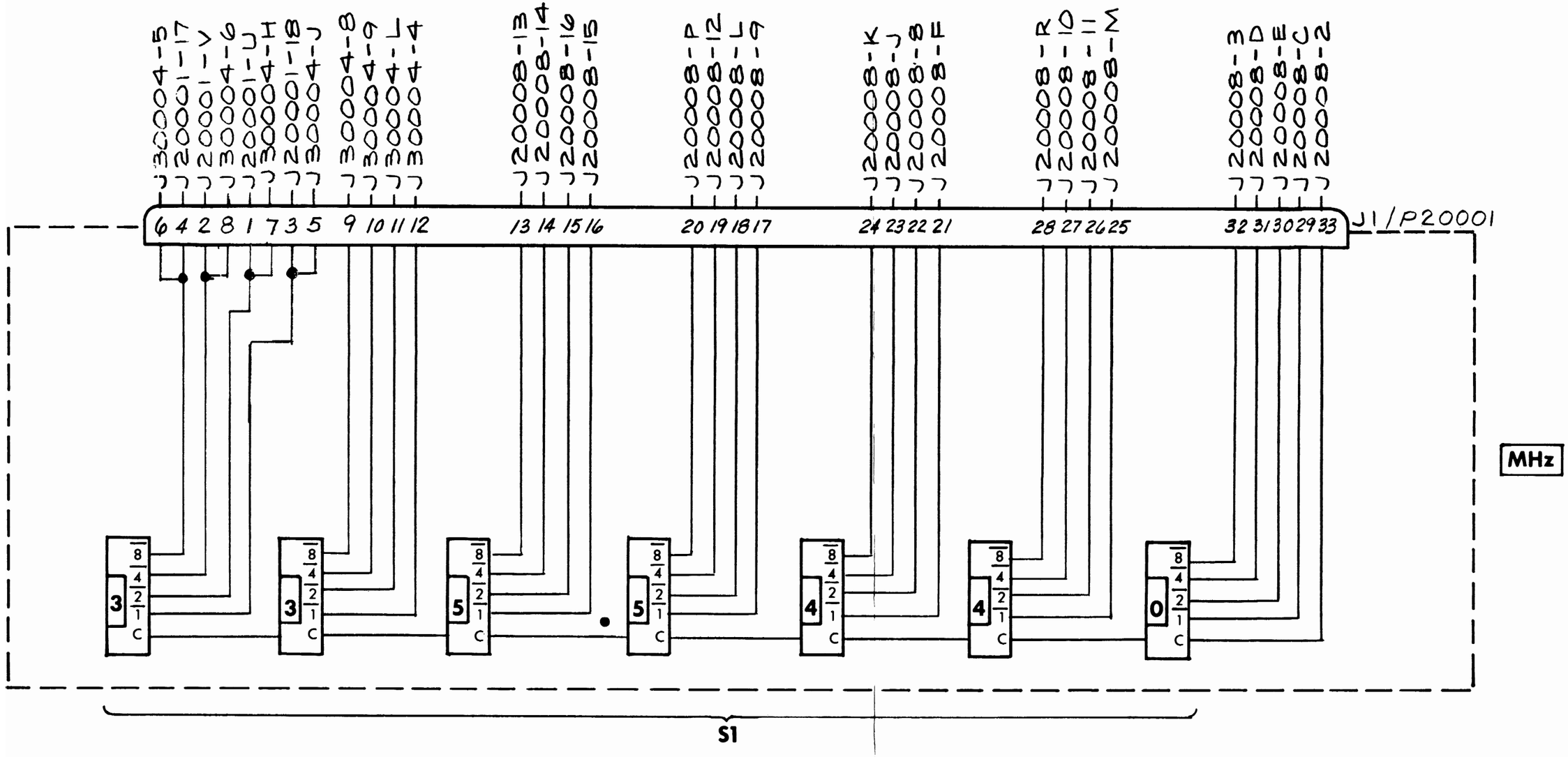
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 11	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 12	RES-110K 1% 100PPM FILM	1075-0162	CAT. LIST	55-100
R 13	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 14	RES-110K 1% 100PPM FILM	1075-0162	CAT. LIST	55-100
R 15	RES-56K 5% 1/4W CC	1066-5635	ALLEN BRADLEY	CB 3635
R 16	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	SWITCH			
S 1	SW-LVR 2 POLE 3 POSN	1851-0016	OAK MFG.	C/E DWG
S 2	SW-RTRY CONC 1 POLE 4 POS W/POT	1851-0122		
S 3	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 4	SW-RTRY 3 POLE 7 POSN PNL MT	1851-0133	OAK INDUSTRIES	C/E DWG
S 5	SW-DBL POLE 3 POS ON-ON-ON TOGGLE	1850-0024	OAK IND.	46A-1A1-1C0
S 6	SW-DBL POLE 3 POS ON-ON-ON TOGGLE	1850-0024	OAK IND.	46A-1A1-1C0
S 7	SW-RTRY 5 POLE 8 POSN PNL MT	1851-0134	OAK INDUSTRIES	C/E DWG
S 8	SW-SPXT SUBMINI MON NO PB W/OVER TER	1852-0025	C&K COMPONENTS	8531-W/A7002
S 9	POT-500K 10% 1/2W LIN 1/8SFT CC W/SPDT	1203-0076	ALLEN BRADLEY	C/E DWG 14M158
S 10	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 11	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		
S 12	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101



10000 Front Panel Interconnect Diagram, (8000-0647)
CE-50A, -1, and /TG Sheet 2 of 2

6-15/16

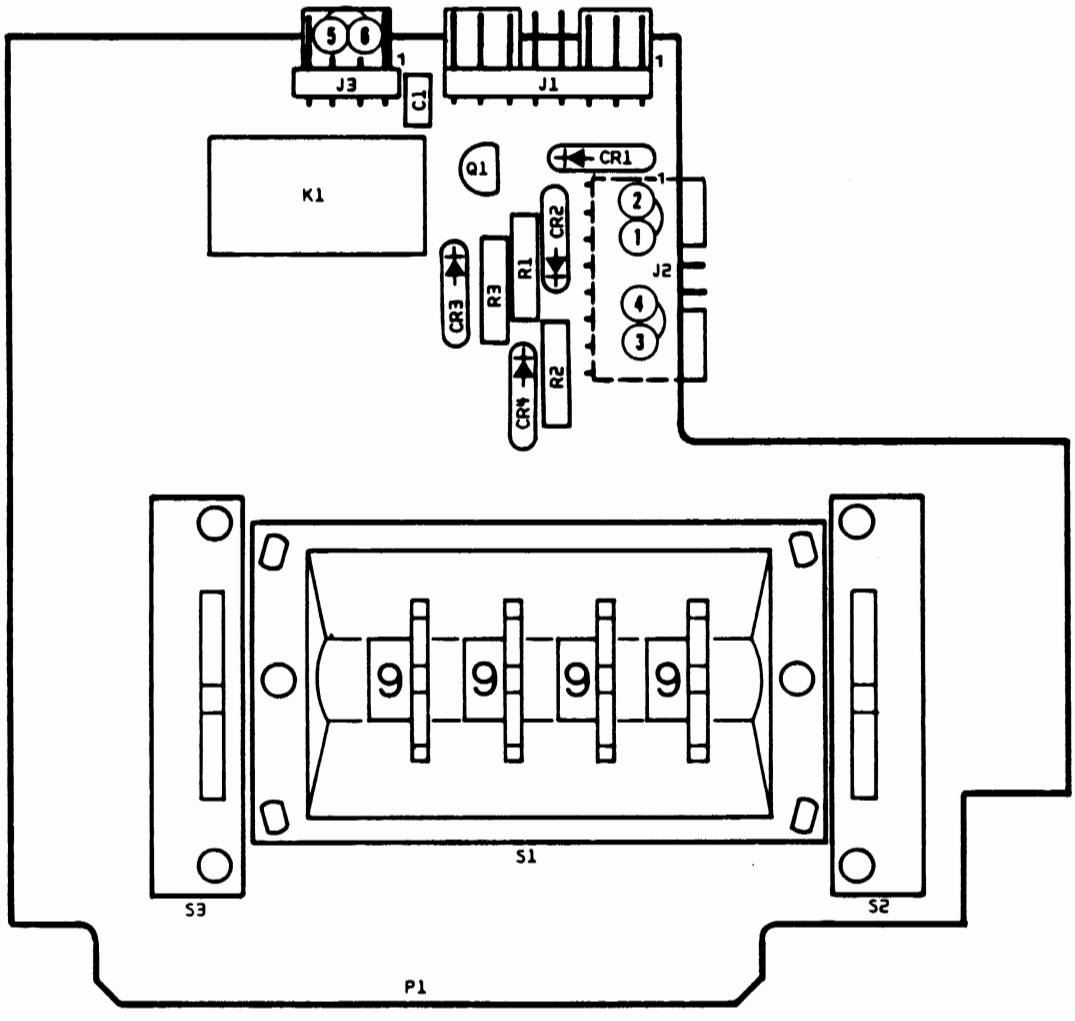

2
34
J1
1
33
9
9
9
9
9
9
9
S1

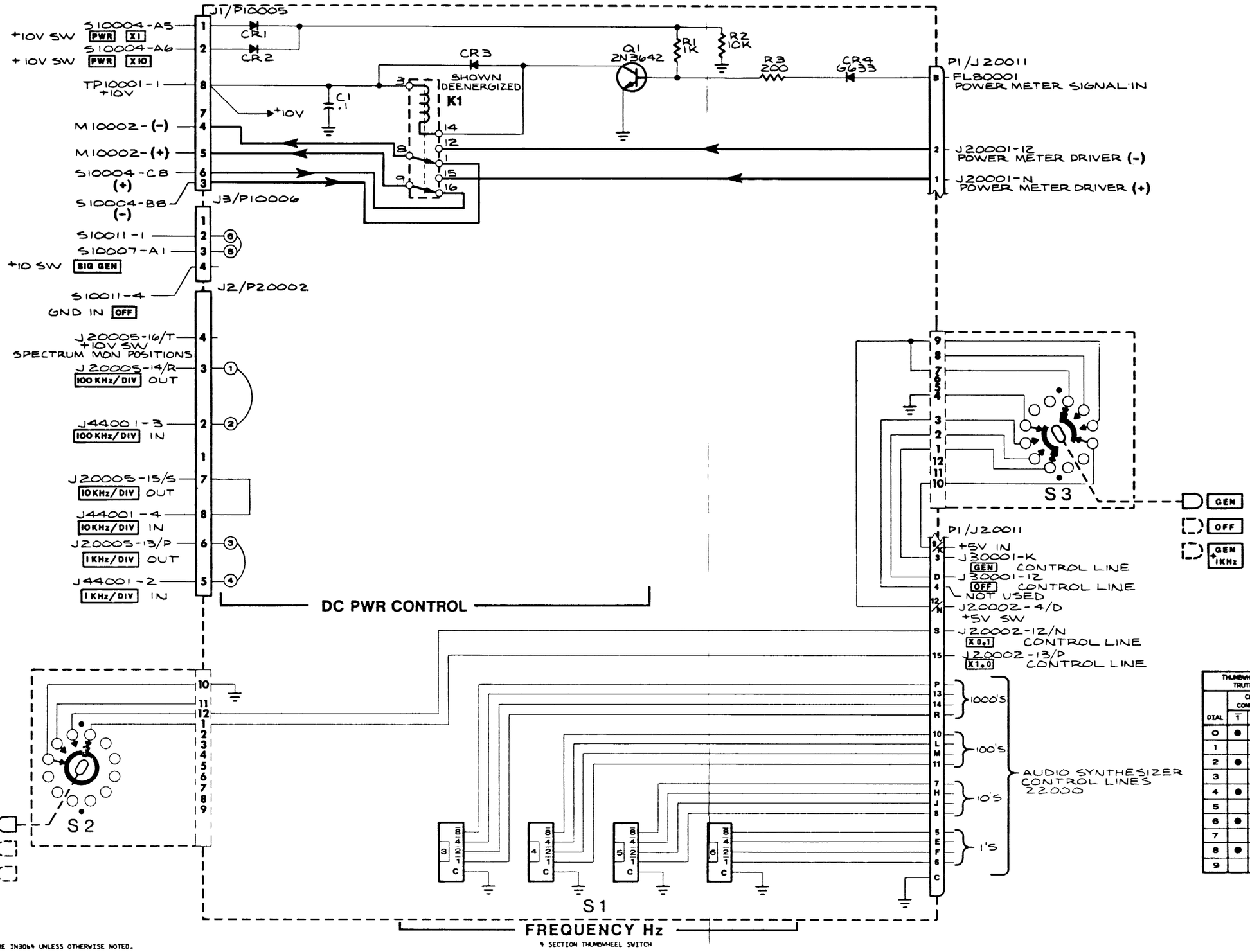


5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
11000	PCB ASSY - RF FREQ SELECT SW MTG PRINTED CIRCUIT BOARD	7001-0482 1780-1029	CUSHMAN CUSHMAN	CE-45A, CE-50A,* *(AND CE-5100A)
	CONNECTOR			
J 1	CONN-34(2X17)CONT STR PCB MT JK	2535-0154	SPECTRA-STRIP	800-579
	SWITCH			
S 1	SW-LVRWL 7 SEC PCB MT	1851-0114		


J3
C1
J1
K1
Q1
CR1
CR2
R1
J2
CR3
R3
R2
CR4
9
9
9
9
S1
S3
S2
P1



THUMBWHEEL SWITCH TRUTH TABLE

DIAL	COMMON "C" CONNECTED TO 1	2	4	8
0	●	●	●	●
1		●	●	●
2	●		●	●
3			●	●
4	●	●		●
5		●		●
6	●			●
7				●
8	●	●	●	
9		●	●	

NOTE:
6. ALL DIODES ARE IN3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

12000 Tone Gen Sw Mtg/DC Pwr Cont. (7001-0602)
CE-46A and CE-50A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
12000	PCB ASSY - TONE GEN SW MTG/DC PWR	7001-0602	CUSHMAN	CE-46A & CE-50A
	PRINTED CIRCUIT BOARD	1780-1075	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
	CONNECTOR			
J 1	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 2	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 3	CONN-4 PIN .1SP RTANG LKG PCB MT JK	2535-0174	METHODE	1100-9-104-01
	RELAY			
K 1	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	SWITCH			
S 1	SW ASSY-4 SELECTOR THUMBWHEEL	7011-0028		
S 2	SW-LEVER 1P 3 POS PCB MOUNT	1851-0094	OAK	C/E DWG
S 3	SW-LEVER 2 POLE 3 POSN PCB MT	1851-0115	OAK	C/E DWG

P/O FRONT PANEL
10000

TONE GEN SW MTG/DC PWR CONTROL
12000

FLEX CKT ASSY-
LEFT FRONT CHASSIS
20000

ALC/SQUELCH/
DC CONTROL

AUDIO SYNTHESIZER

10.7 MHz IF

FM/AM DETECTOR #1

P3/J50007
10.7 MHz IF
RCVR CASTING

J12002/P2
J1C/P10002
J10/P10002
J111/P12001

SPARES
SPARES

CR10001-(-)
VERT UNCAL
CR10002-(-)
HORIZ UNCAL
M10003-(+)
BATT GND RTN
M10003-(-)
CR10004-(+)
S10007-E,K,10
S10011-1
SIG GEN ONLY
R10007-A2
R10007-B2
R10007-B5
CAL OUT
M10004-(+)
M10004-(-)
CR10006-(-)
SIGNAL LEVEL
S10007-D8
SW +10V
SPECTRUM MON

S10007-B5
S10007-F5
S10003
CR10005-(+)
S10012-1
R10002-2,3
S10007-D3
S10007-B2
S10004-A4

J12002/P2
8 — J12-18
7 — J5-15/S
6 — J5-13/P
5 — J12-20
4 — J5-16/T
3 — J5-14/R
2 — J12-19
1

J111/P12001
1 2 R P 11 10 8 7 6 5 9/K C A — 15 S E F H J L M/R/N 13 14 B D 34
+5V

J1C/P10002
2 7 21 24 22 1 10 12 23

% AM
AM SELECT
FM/PFM SELECT

(NOT USED) GEN +1KHz
WT30017 GEN
WT30030 OFF
WT30032

J18/P10002
18 27 28 29 30 31 32 33 34
25 11 19 2 26 6 3 — 14 16 4 9 — 13 8 5 15 17

J1
'B'
21000
100M-1
100M-8
100M-4
100M-2

J2
22000
XI SEL
X.1 SEL
1'S-D
1'S-A
10'S-D
10'S-A
100'S-D
100'S-A
1000'S-D
1000'S-A
1'S-C
1'S-B
10'S-C
10'S-B
100'S-C
100'S-B
1000'S-C
1000'S-B
5XV IN

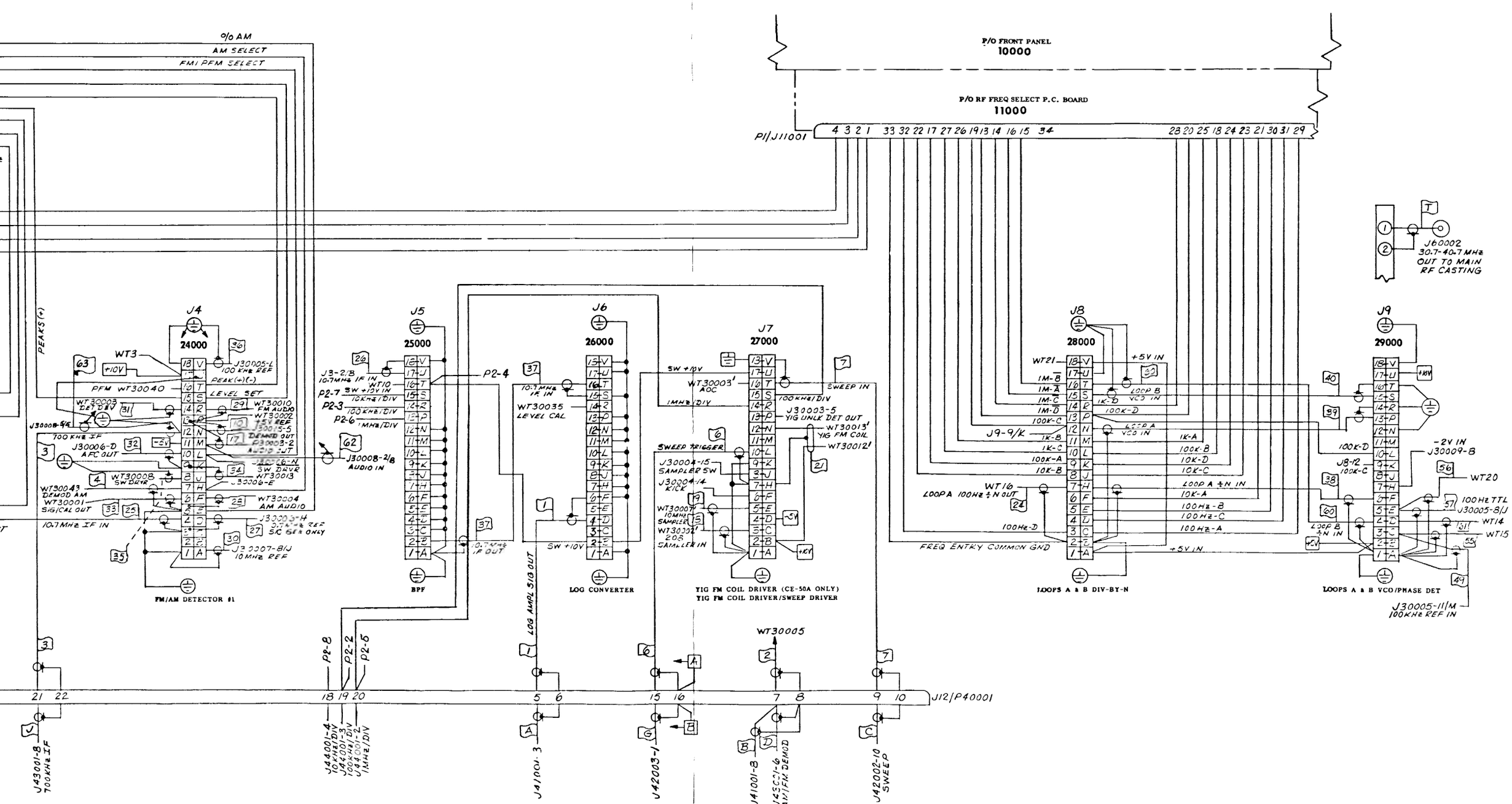
J3
23000
WT23 SQUELCH OUT
SW +10V IN
WT30022' SQUELCH AM/FM
(NOT USED) SIG STR
WT20023' SENS (MAX) (NOT USED)
(NOT USED) OVLD DET
+10V IN NARROW GND IN WIDE
J5-17/U 10.7 MHz IF OUT

J4
24000
WT3
+10V
PFM WT30040
WT30003 DET DEV
700 KHz IF
J30006-D AFC OUT
WT30008 SW DRVR
WT30043 DEMOD AM
WT30001 SIGICAL OUT
10.7MHz IF IN
PEAK(+)(-)
LEVEL SET
WT30010 FM AUDIO
WT30002 +5V REF
J30015-5 DEMOD OUT
WT30004 AM AUDIO
J30005-H 10.7MHz REF
S/C GEN ONLY
J30007-B/J 10MHz REF
J30005-L 100 KHz REF

WT30005' ALC OUT
WT30034 PWR DET
J30006-1/E SW +10V OUT
WT30023 PWR XI
J3-16 SQUELCH IN
J8-18/N +5V IN
J9-5/E 100Hz REF
J30009-5/E
J30009-C
WT30007 SQUELCH OUT
J30003-F VIA/1208 UNIT
WT30004' UNLK S/G
J8-7/H LOOP A 100 Hz REF
J9-3/C 100 KHz REF
J9-4/D 100 KHz
WT30016 AUDIO SYNTH OUT
(NOT USED)
WT30033 ALC LEVEL IN
J5-16/T SW +10V OUT
-5V
J4-17/U +10V IN

J3001-1
J4002-3
J42003-4 SQUELCH OUT
J44001-1 SW +10V SPECTRUM MON
J44002-1 AUDIO SYNTH IN
T84000-3 +10V IN
T84000-6 GND
J43001-8 700KHz IF
J44001-4 10KHz DIV
J44001-3 100KHz DIV
J44001-2

P2-8
P2-2
P2-7 SW
P2-3
P2-6
J3-2/B 10.7MHz



20000 Left Main Chassis Interconnect Diagram, (8000-0645)
CE-50 Family (Except CE-45A/46A)

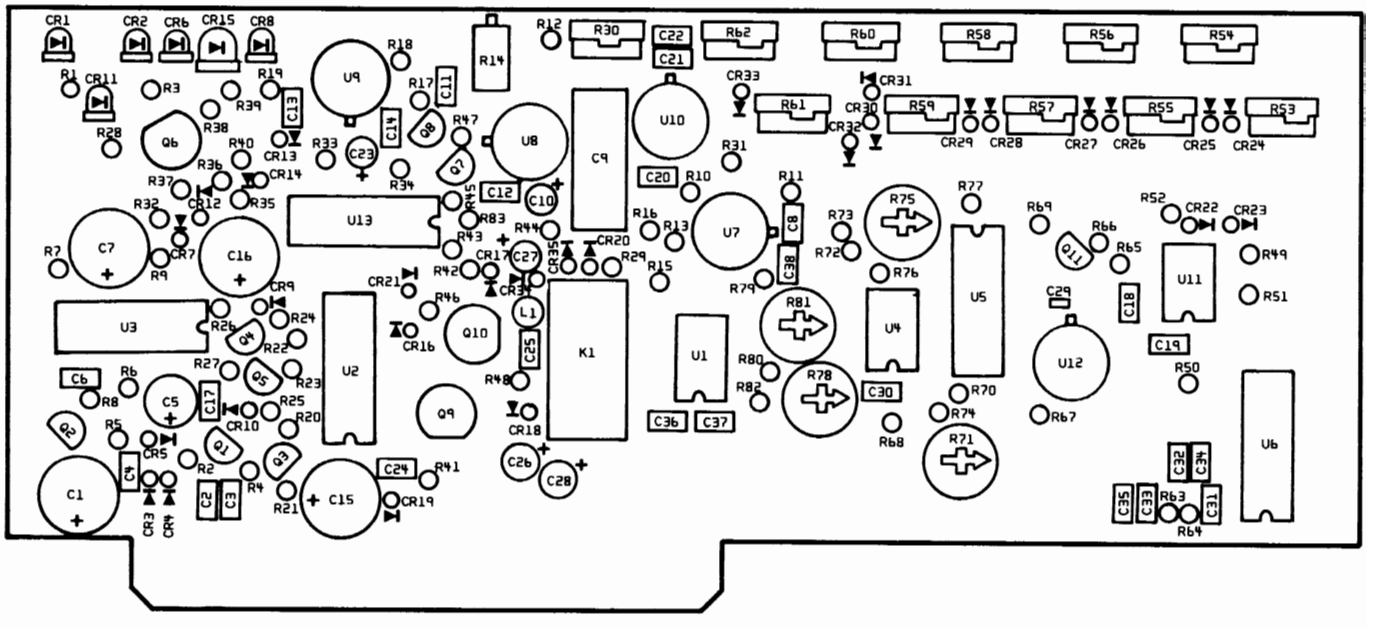
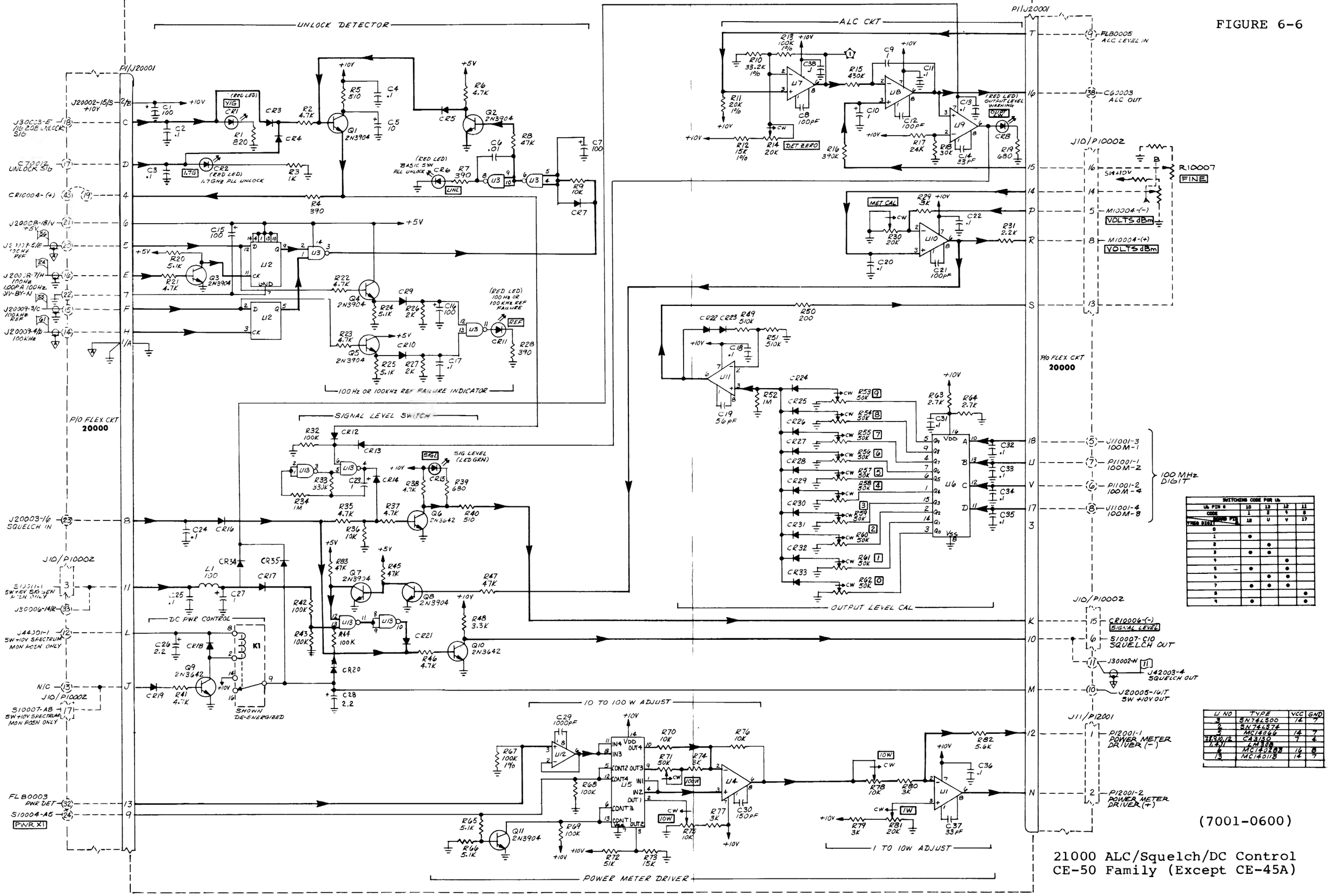

CR1
CR2
CR6
CR15
CR8
R1
CR11
R3
R19
R39
R28
Q6
R38
C13
R40
CR13
R36
CR14
R37
CR12
R35
R32
C7
CR7
R9
C16
R7
CR9
U3
R26
Q4
R24
R22
R27
Q5
R23
C6
R6
R8
C5
C17
R25
CR10
R20
Q2
R5
Q1
Q3
CR5
C4
R2
R4
C1
C2
C3
CR3
CR4
R21
C15
C24
R41
CR19
U2
U9
R18
R17
C11
C14
Q8
R47
C23
R34
Q7
U8
R45
C12
C10
R83
R43
R44
C27
CR17
R42
CR21
R46
CR16
Q10
L1
C25
R48
Q9
CR18
C26
C28
R14
R12
C9
R30
C22
C21
U10
R62
R60
R58
R56
R54
CR33
CR31
CR30
CR32
R61
R59
R57
R55
R53
CR29
CR28
CR27
CR26
CR25
CR24
R31
C20
R10
R16
R13
U7
R11
C8
R73
R72
R79
R75
R76
R77
R69
R66
R65
Q11
R52
CR22
CR23
U11
R49
R51
C29
C18
C19
R50
U12
R67
R70
R74
R71
R68
U5
U4
C30
R81
R78
R80
R82
C36
C37
U1
K1
CR20
R29
R15
CR34
CR35
C38
U6
C32
C34
C35
C33
R63
R64
C31

FIGURE 6-6



21000 ALC/Squelch/DC Control
CE-50 Family (Except CE-45A)

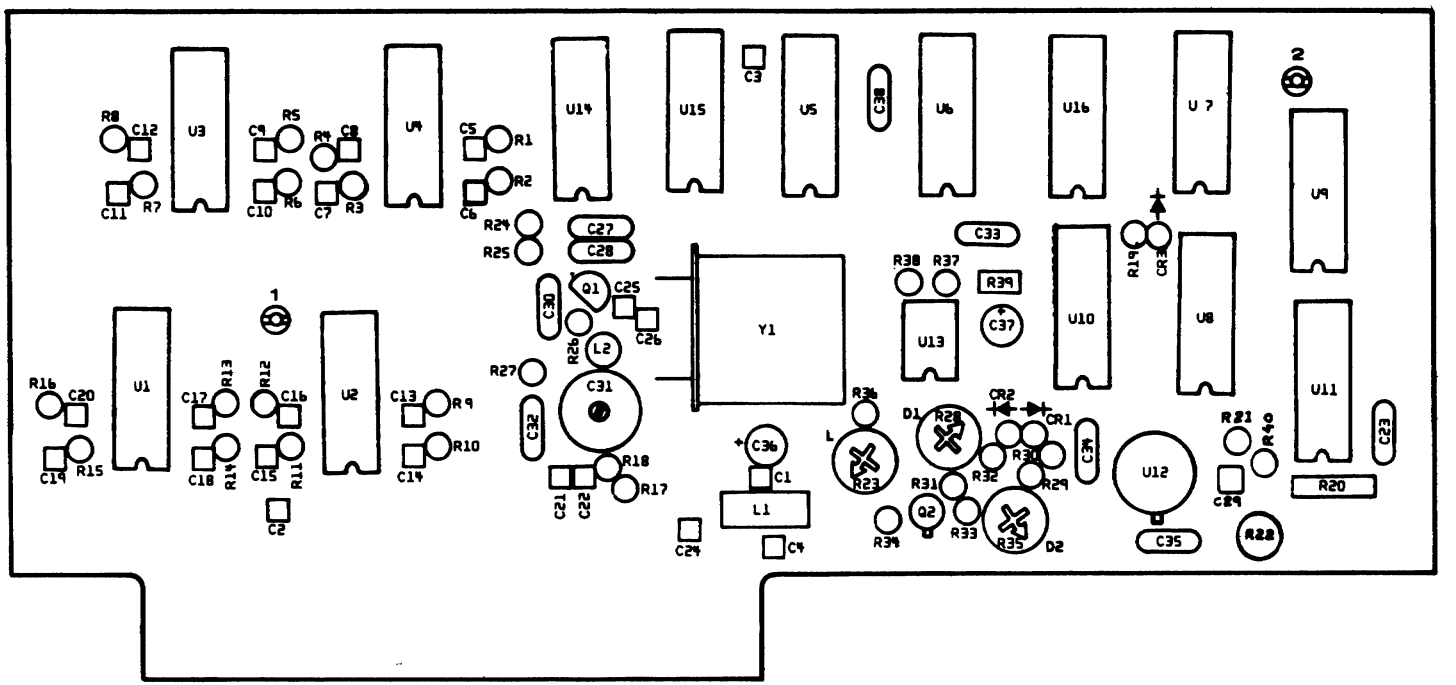
(7001-0600)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
21000	PCB ASSY - ALC/SQELCH/DC CONTROL	7001-0600	CUSHMAN	CE-50 FAMILY*
	PRINTED CIRCUIT BOARD	1780-1077	CUSHMAN	*(EXCEPT CE-45A)
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 8	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 9	CAP-1UF 10% 100V RDL MET-POLYESTER	1008-0100	PLESSEY	60H105K100
C 10	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-33PF 5% 500V THIN DIP MICA	1004-0006	CORNELL DUBILIER	CD6ED330J
C 15	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 16	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 26	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 27	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 28	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 29	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 30	CAP-150PF 10% 100V NPO MINTR CER	1005-0108	ERIE	8121-100-C0G0-151K
C 31	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 32	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 35	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 36	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 37	CAP-33PF 5% 500V THIN DIP MICA	1004-0006	CORNELL DUBILIER	CD6ED330J
C 38	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 2	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-LT EMIT GRN 2V M AMG W/MTG GROM	1281-0096	CHICAGO MINIATURE	CM4-384B
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 21	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 23	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 24	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 25	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 26	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 29	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 30	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 31	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 32	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 33	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 34	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 35	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	RELAY			
K 1	RLY-SPDT 12VDC COIL FORM C PCB MT	1313-0026	ARROW-M	HB1-DC12V
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 6	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 7	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 8	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 9	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 10	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 11	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 2	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 3	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 4	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 5	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 6	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 7	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 8	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 9	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 10	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100
R 11	RES-20K 1% 100PPM FILM	1075-0096	CAT.LIST	55-100
R 12	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 13	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 14	POT-20K 10% 1/2W 25T CERMET TRMR	1215-0048	BOURNS	3299X-1-203
R 15	RES-430K 5% 1/4W CC	1066-4345	ALLEN BRADLEY	BB4345
R 16	RES-390K 5% 1/4W CC	1066-3945	ALLEN BRADLEY	CB 3945
R 17	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 18	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 19	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 20	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 21	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 22	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 23	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 24	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 25	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 26	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 27	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 28	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 29	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 30	POT-20K 20% 1/2W 1T CERMET TRMR	1215-0044	BECKMAN	91AR20K
R 31	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 32	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 33	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 34	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 35	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 36	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 37	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 38	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 39	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 40	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 43	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 44	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 45	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 46	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 47	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 48	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 49	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 50	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 51	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 52	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 53	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 54	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 55	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 56	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 57	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 58	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 59	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 60	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 61	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 62	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 63	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 64	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 65	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 66	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 67	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 68	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 69	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 70	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 71	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 72	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 73	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 74	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 75	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 76	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 77	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 78	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 79	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 80	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 81	POT-20K 20% 1/2W 1T CERMET TRMR	1215-0044	BECKMAN	91AR20K
R 82	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 83	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
	INTEGRATED CIRCUIT			
U 1	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 2	IC-74LS74 DUAL D POS &DGETRIGFFW/P&C	2025-0124	TEXAS INSTRUMENTS	SN74LS74N
U 3	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 4	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 5	IC-4066B 14 PIN DIP QUAD BILATERAL SW	2025-0193	MOTOROLA	MC14066BCP
U 6	IC-4028B 16 PIN DIP BCD-TO-DEC DCDR	2025-0195	MOTOROLA	MC14028BP
U 7	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 8	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 9	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 10	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 11	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 12	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 13	IC-4011 14PIN DIP QUAD 2-INP NAND GATE	2025-0203	MOTOROLA	MC14011BCP


R8
C12
C11
R7
U3
C9
R5
C10
R6
R4
C8
C7
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C6
R2
U14
U15
C3
U5
C38
U6
U16
U 7
2
U9
R24
R25
C27
C28
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R38
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Y1
U11
R16
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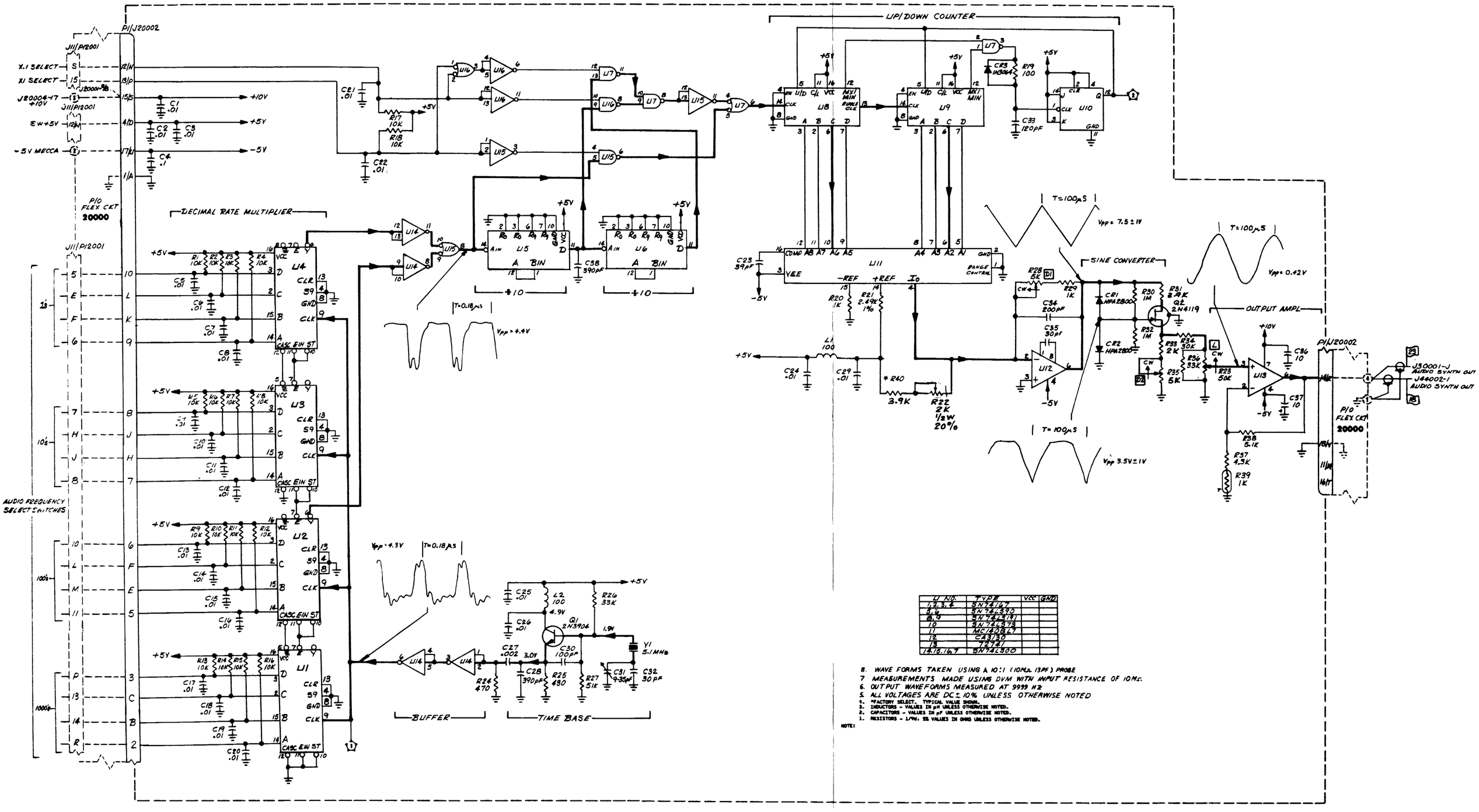
R20



U NO.	TYPE	VCC	GND
1,2,3,4	SN74147		
5,6	SN74L590		
8,9	SN74LS191		
10	SN74LS74		
11	MC1403U7		
12	CA3130		
13	7274		
14,15,16,17	SN74L900		

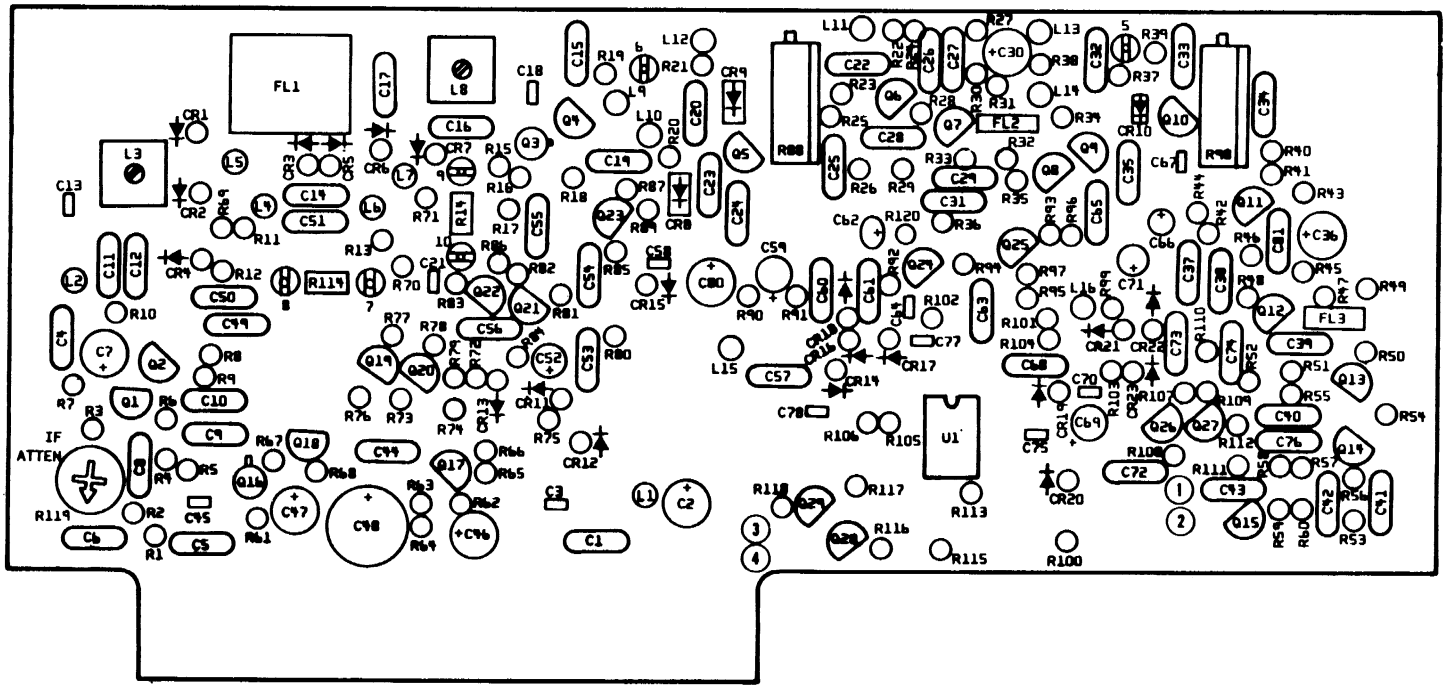
NOTE:
8. WAVE FORMS TAKEN USING A 10:1 (10MΩ, 13PF) PROBE
7. MEASUREMENTS MADE USING DVM WITH INPUT RESISTANCE OF 10MΩ.
6. OUTPUT WAVEFORMS MEASURED AT 9999 HZ
5. ALL VOLTAGES ARE DC ± 10% UNLESS OTHERWISE NOTED
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN pF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

22000 Audio Synthesizer, (7001-0485)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
22000	PCB ASSY - AUDIO SYNTHESIZER	7001-0485	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1035	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-39PF 2% 500V DIP MICA	1002-0054	ELMENCO	DM15-E-390G
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-.002UF 20% 500V Z5U CER DISC	1005-0003	TUSONIX	831-596-Z5U-202M
C 28	CAP-390PF 5% 500V DIP MICA	1002-0033	CORNELL DUBILIER	CD15FD391J
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 31	CAP-9-35PF 200V N650 V MT CER TRMR	1001-0006	ERIE	CV31D350
C 32	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 33	CAP-120PF 10% 100V NPO MINTR CER	1005-0110	ERIE	8121-100-C0G0-121K
C 34	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 35	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 36	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 37	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 38	CAP-390PF 5% 500V DIP MICA	1002-0033	CORNELL DUBILIER	CD15FD391J
	DIODE			
CR 1	DIO-HP2800 SI HOT CARR AIN 2PF 70PRV	1283-0001	HP	5082-2800
CR 2	DIO-HP2800 SI HOT CARR AIN 2PF 70PRV	1283-0001	HP	5082-2800
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N4119 SI T072 J-FET N-CHAN	1272-0078	NATIONAL	2N4119

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 10	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 11	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 12	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 13	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 14	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 15	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 16	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 17	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-2.49K 1% 100PPM FILM	1075-0027	CAT.LIST	55-100
R 22	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 23	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 24	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 25	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 26	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 27	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 28	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 29	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 30	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H ONLY
R 31	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 32	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 33	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 34	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 35	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 36	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 37	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 38	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 39	THMS-1K 10% 3.5MW RDL DISC	1253-0002	VECO	31E2
R 40	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
	INTEGRATED CIRCUIT			
U 1	IC-SN74167N SYN DECADE RATE MULTIPLIER	2025-0097	TEXAS INSTRUMENTS	SN74167N
U 2	IC-SN74167N SYN DECADE RATE MULTIPLIER	2025-0097	TEXAS INSTRUMENTS	SN74167N
U 3	IC-SN74167N SYN DECADE RATE MULTIPLIER	2025-0097	TEXAS INSTRUMENTS	SN74167N
U 4	IC-SN74167N SYN DECADE RATE MULTIPLIER	2025-0097	TEXAS INSTRUMENTS	SN74167N
U 5	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 6	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 7	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 8	IC-SN74LS191N SYN UP/DOWN COUNTERS	2025-0115	TI	SN74LS191N
U 9	IC-SN74LS191N SYN UP/DOWN COUNTERS	2025-0115	TI	SN74LS191N
U 10	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N
U 11	IC-MC1408L 7D-TO-A CONVERTER	2025-0089	MOTOROLA	MC1408L-7
U 12	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 13	IC-UA741CP	2025-0067	TI	UA741CP

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
U 14	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 15	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 16	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
	CRYSTAL			
Y 1	XTAL-5.1 MHZ	2035-0022	NORTHERN ENG. LABS	C/E DWG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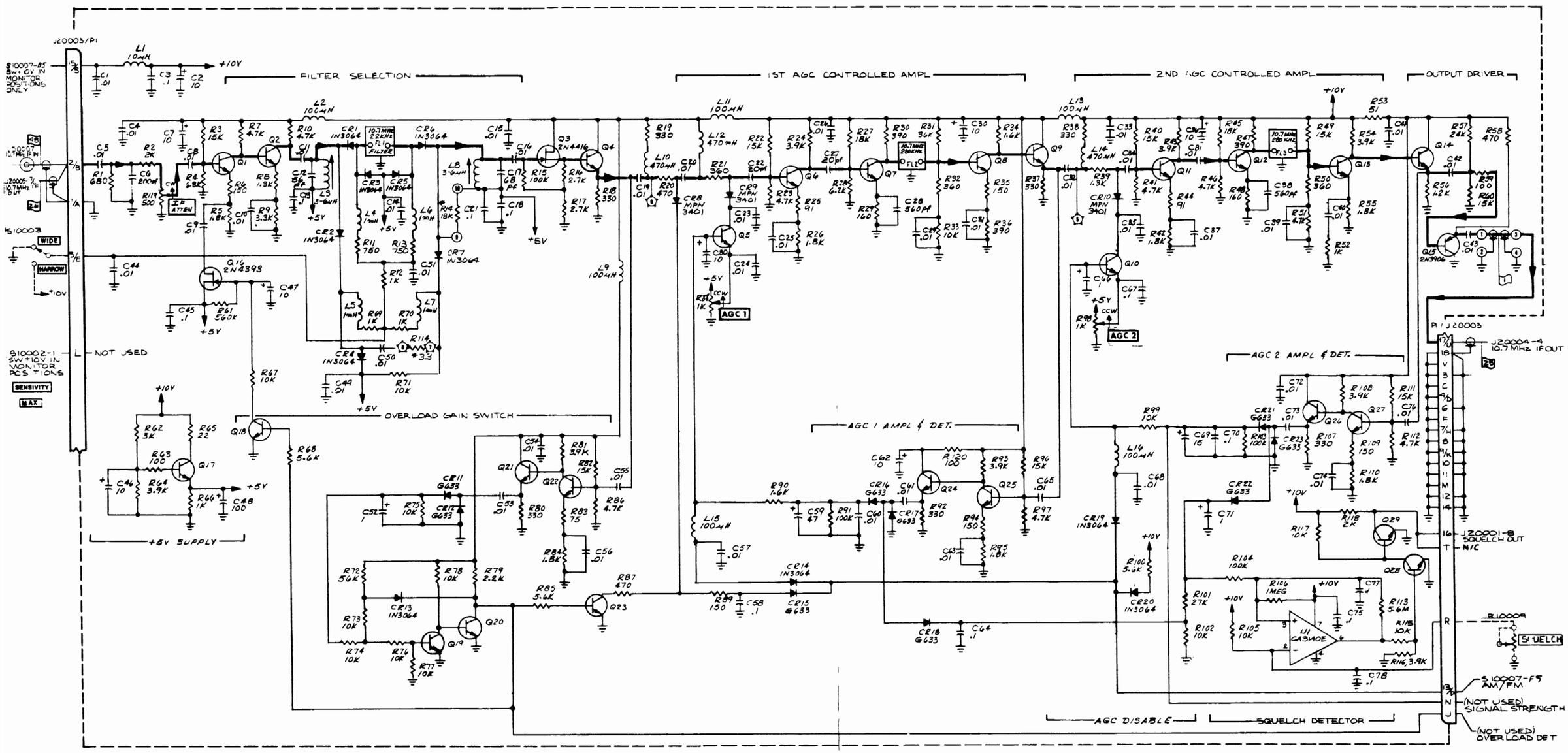


NOTE:
1. RESISTORS – 1/4w, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS – VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS – VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. ALL TRANSISTORS ARE SILICON UNLESS OTHERWISE NOTED.

C79 NOT USED

23000 10.7 MHz IF, (7001-0574)
CE-50 Family (Except CE-45A)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
23000	PCB ASSY - 10.7 MHZ IF	7001-0574	CUSHMAN	CE-50 FAMILY *
	PRINTED CIRCUIT BOARD	1780-1060	CUSHMAN	*(EXCEPT CE-45A)
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 20	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-20PF 5% 500V DIP MICA	1004-0008	CORNELL DUBILIER	CD10ED200J
C 23	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 24	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-20PF 5% 500V DIP MICA	1004-0008	CORNELL DUBILIER	CD10ED200J
C 28	CAP-560PF 5% 300V DIP MICA	1002-0037	SANGAMO	D155F561
C 29	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 35	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 36	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 37	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 38	CAP-560PF 5% 300V DIP MICA	1002-0037	SANGAMO	D155F561
C 39	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 40	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 41	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 42	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 43	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 44	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 45	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 46	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 47	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 48	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 49	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 50	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 51	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 52	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 53	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 55	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 56	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 57	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 58	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 59	CAP-47UF 10% 6V AXL TANT	1011-0005	SPRAGUE	150D476X9006B2
C 60	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 61	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 62	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 63	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 64	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 65	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 66	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 67	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 68	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 69	CAP-15UF 10% 20V AXL TANT	1011-0004	SPRAGUE	150D156X9020B
C 70	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 71	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 72	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 73	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 74	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 75	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 76	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 77	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 78	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 80	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 81	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-MPN3401 SI PIN SW 35PRV .4W	1281-0050	MOTOROLA	MPN3401
CR 9	DIO-MPN3401 SI PIN SW 35PRV .4W	1281-0050	MOTOROLA	MPN3401
CR 10	DIO-MPN3401 SI PIN SW 35PRV .4W	1281-0050	MOTOROLA	MPN3401
CR 11	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 12	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 16	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 17	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 18	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 21	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 22	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 23	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
	FILTER			
FL 1	FLTR-XTAL 10.7MHZ 3DB BW 22KHZ	1040-0041	PIEZO	C/E DWG
FL 2	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP.	10.70MHZ RED ONLY
FL 3	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP.	10.70MHZ RED ONLY

CE-50 FAMILY

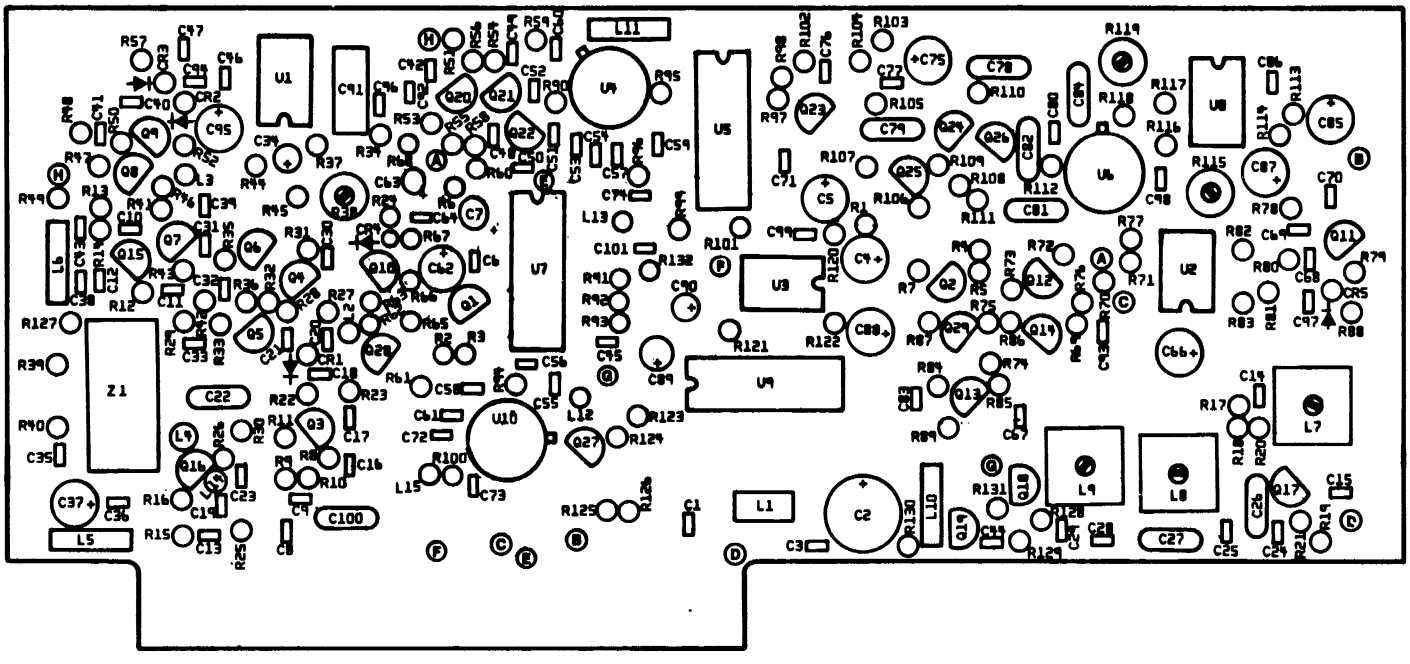
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INDUCTOR			
L 1	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	COIL 3.9 MHZ	1596-0104		
L 4	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 5	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 6	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 7	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 8	COIL 3.9 MHZ	1596-0104		
L 9	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 10	CH-470UH 10% RF MLD AXL.10DX.25L	1585-0086	DELEVAN	1025-84
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-470UH 10% RF MLD AXL.10DX.25L	1585-0086	DELEVAN	1025-84
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-470UH 10% RF MLD AXL.10DX.25L	1585-0086	DELEVAN	1025-84
L 15	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 16	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N4416 SI TO 72 J-FET N-CHAN	1272-0048	INTERSIL	2N4416
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 6	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 7	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 8	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 9	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 12	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 13	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 14	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 15	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 16	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 17	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 18	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 19	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 20	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 21	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 22	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 23	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 24	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 25	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 26	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 27	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 28	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 29	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 2	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 3	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 4	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 5	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825

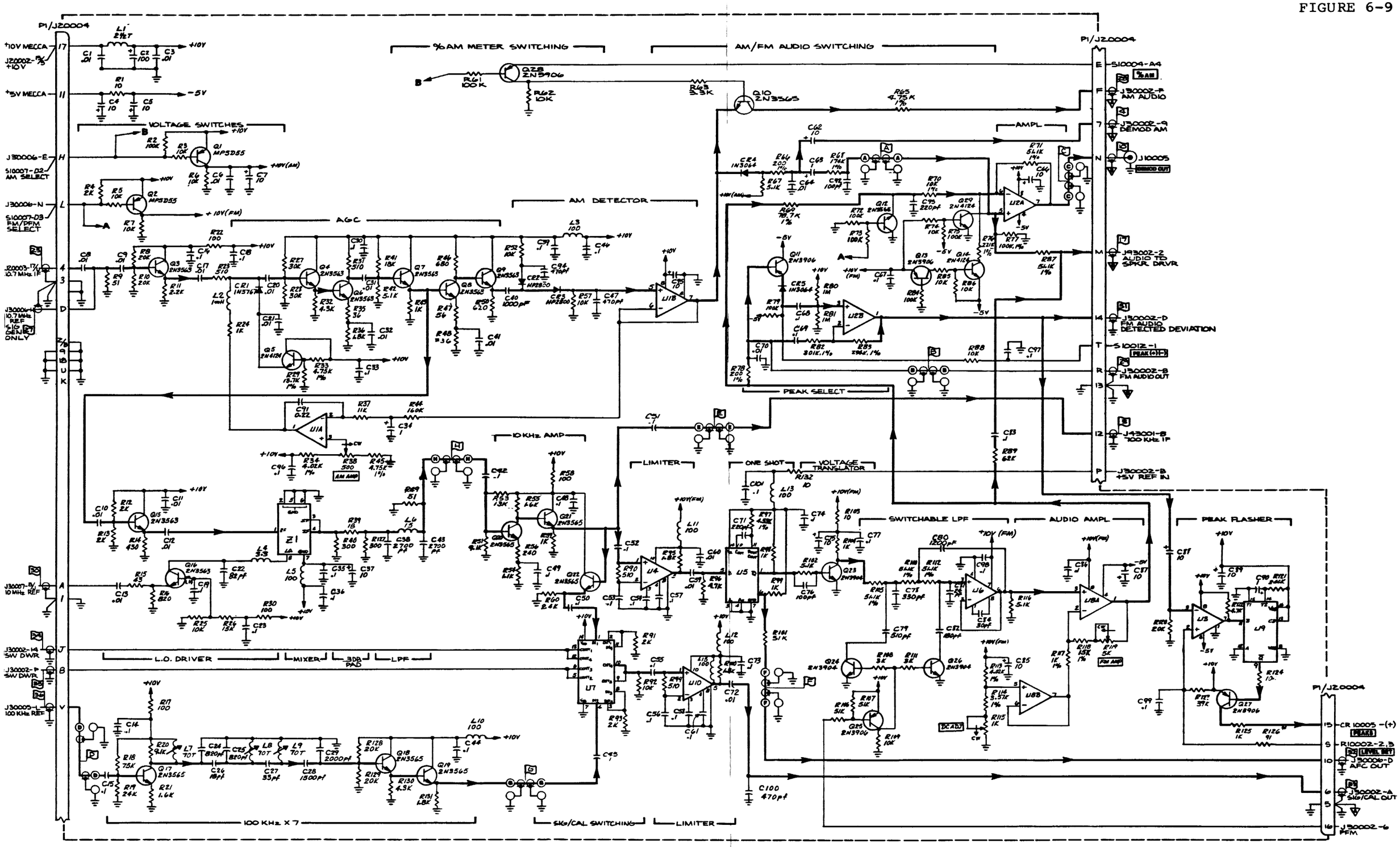
5601-0075-3

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 6	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 7	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 8	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 9	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 10	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 11	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 14	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 15	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 16	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 17	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 18	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 19	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 20	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 21	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 22	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 23	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 24	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 25	RES-91 OHM 5% 1/4W CC	1066-9105	ALLEN BRADLEY	CB 9105
R 26	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 27	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 28	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 29	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 30	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 31	RES-36K 5% 1/4W CC	1066-3635	ALLEN BRADLEY	CB3635
R 32	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 33	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 34	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 35	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 36	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 37	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 38	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 39	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 40	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 43	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 44	RES-91 OHM 5% 1/4W CC	1066-9105	ALLEN BRADLEY	CB 9105
R 45	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 46	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 47	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 48	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 49	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 50	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 51	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 52	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 53	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 54	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 55	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 56	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 57	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 58	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 59	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 60	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 61	RES-560K 5% 1/4W CC	1066-5645	ALLEN BRADLEY	CB 5645
R 62	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 63	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 64	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 65	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 66	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 67	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 68	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 69	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 70	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 71	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 72	RES-56K 5% 1/4W CC	1066-5635	ALLEN BRADLEY	CB 3635
R 73	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 74	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 75	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 76	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 77	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 78	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 79	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 80	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 81	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 82	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 83	RES-75 OHM 5% 1/4W CC	1066-7505	ALLEN BRADLEY	CB 7505
R 84	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 85	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 86	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 87	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 88	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 89	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 90	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 91	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 92	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 93	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 94	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 95	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 96	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 97	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 98	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 99	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 100	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 101	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 102	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 103	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 104	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 105	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 106	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 107	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 108	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 109	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 110	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 111	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 112	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 113	RES-5.6MEG 5% 1/4W CC	1066-5655	ALLEN BRADLEY	CB 5655
R 114	RES-3.3 OHM 5% 1/4W CC	1066-0006	ALLEN BRADLEY	CB33G5
R 115	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 116	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 117	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 118	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 119	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500
R 120	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
	INTEGRATED CIRCUIT			
U 1	IC-CA 3140E 8 PIN DIP OP AMPL	2025-0237		





NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

U NO.	PART NO.	+V	-V
1, 2	TL082	8	4
3	LM317	8	4
4, 10	CA3072	10	8
5	SN74LS21	14	7
6	CA3130	7	4
9	MC14538	16	8
7	MC14066	14	7
8	MC4558	8	4

R64, C65 NOT USED

24000 FM/AM Detector No. 1, (7001-0596)
CE-50 Family (Except CE-45A/46A)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
24000	PCB ASSY - FM/AM DETECTOR NO. 1	7001-0596	CUSHMAN	CE-50A, -1, /TG
	PRINTED CIRCUIT BOARD	1780-1031	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-82PF 5% 500V DIP MICA	1002-0020	ELMENCO	DM15-E-820J
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-820 PF 5% 100V NPO MINTR CER	1005-0126	CENTRE	200-100-NPO-821J
C 25	CAP-820 PF 5% 100V NPO MINTR CER	1005-0126	CENTRE	200-100-NPO-821J
C 26	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 27	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 28	CAP-1500PF 5% 100V NPO MINTR CER	1005-0128	CENTRE	200-100-NPO-152J
C 29	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 32	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 35	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 36	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 37	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 38	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 39	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 40	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 41	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 44	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 45	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 46	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 47	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 48	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 49	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 50	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 51	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 52	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 53	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M

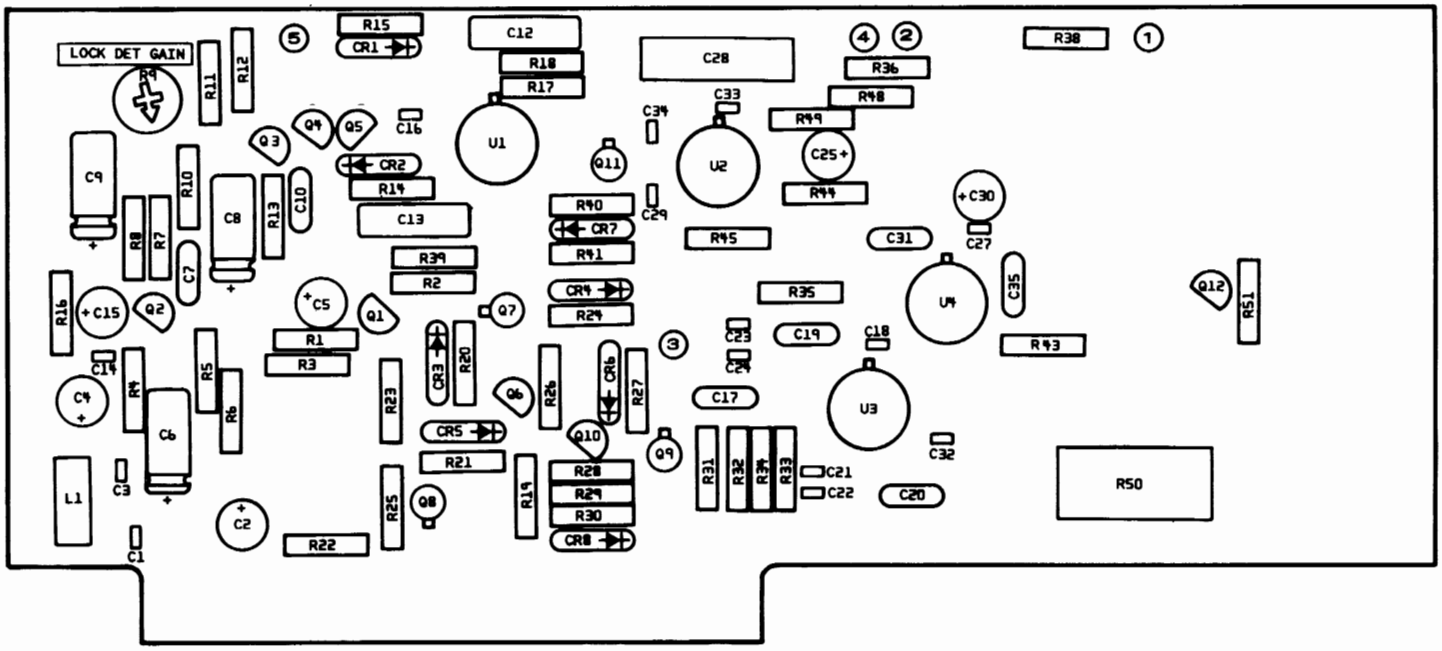
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 55	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 56	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 57	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 58	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 59	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 60	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 61	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 62	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 63	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 64	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 66	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 67	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 68	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 69	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 70	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 71	CAP-220PF 5% 100V NPO MINTR CER	1005-0134		
C 72	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 73	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 74	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 75	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 76	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 77	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 78	CAP-330PF 5% 500V DIP MICA	1002-0032	ELMENCO	DM15-F-331J
C 79	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 80	CAP-1200PF 5% 100V NPO MINTR CER	1005-0127	CENTRE	200-100-NPO-122J
C 81	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 82	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 83	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 84	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 85	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 86	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 87	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 88	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 89	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 90	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 91	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 92	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 93	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 94	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 95	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 96	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 97	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 98	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 99	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 100	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 101	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N5767 SI PIN A1AH	1281-0075	NIPPON ELECT	1SV34
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 3	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 3	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 4	CH-3.3UH 10% RF MLD AXL 16DX.38L	1585-0037	DELEVAN	1537-24
L 5	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-15UH 10% RF MLD AXL .10DX.25L	1585-0051	DELEVAN	1025-48
L 7	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 8	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 9	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 10	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 15	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
	TRANSISTOR			
Q 1	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 2	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 3	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 4	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 8	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 9	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 12	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 13	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 14	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 17	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 18	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 19	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 20	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 21	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 22	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 23	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 24	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 25	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 26	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 27	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 28	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 29	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 3	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 4	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 9	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 10	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 11	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 13	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 14	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 15	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 16	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 17	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 18	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 19	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 20	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 21	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 22	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 23	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 24	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 27	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 28	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 29	RES-13.7K 1% 100PPM FILM	1075-0154	CAT. LIST	55-100
R 30	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 31	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 32	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 33	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 34	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 35	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 36	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 37	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 38	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 39	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 40	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 41	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 42	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 43	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 44	RES-160K 5% 1/4W CC	1066-1645	ALLEN BRADLEY	CB1645
R 45	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 46	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 47	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 48	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 49	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 50	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 51	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 52	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 53	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 54	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 55	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 56	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 57	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 58	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 59	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 60	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 61	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 63	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 65	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 66	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 67	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 68	RES-174K 1% 100 PPM FILM	1075-0201	SOURCE APPROVAL LIST	CAT. 55-100
R 69	RES-78.7K 1% 100PPM FILM	1075-0060	CAT.LIST	55-100
R 70	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 71	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 72	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 73	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 74	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 75	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 76	RES-221K 1% 100PPM FILM	1075-0040	CAT.LIST	55-100
R 77	RES-100K 1% 100PPM FILM	1074-0109	CAT.LIST	55-025
R 78	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 79	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 80	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 81	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 82	RES-301K 1% 150PPM FILM	1074-1037	CAT.LIST	55-100
R 83	RES-294K 1% 100PPM FILM	1075-0028	CAT.LIST	55-100
R 84	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 85	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 86	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 87	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 88	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 89	RES-62K 5% 1/4W CC	1066-6235	ALLEN BRADLEY	CB 6235
R 90	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 91	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 92	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 93	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 94	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 95	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 96	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 97	RES-4.53K 1% 100PPM FILM	1075-0053	CAT.LIST	55-100
R 98	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 99	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 100	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 101	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 102	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 103	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 104	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 105	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 106	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 107	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 108	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 109	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 110	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 111	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 112	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 113	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 114	RES-3.57K 1% 100PPM FILM	1075-0056	CAT.LIST	55-100
R 115	POT-1K 10% 1/2W 1T CERMET TRMR	1215-0052	ALLEN BRADLEY	A2A102
R 116	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 117	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 118	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100
R 119	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 120	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 121	RES-240K 5% 1/4W CC	1066-2445	ALLEN BRADLEY	CB2445
R 122	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 123	RES-39K 5% 1/4W CC	1066-3935	ALLEN BRADLEY	CB 3935

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 124	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 125	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 126	RES-91 OHM 5% 1/4W CC	1066-9105	ALLEN BRADLEY	CB 9105
R 127	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 128	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 129	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 130	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 131	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 132	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 2	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 3	IC-311 VOLTAGE COMPARATOR	2025-0181	NATIONAL	LM311N
U 4	IC-CA3012	2025-0013	RCA	CA3012
U 5	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-4066B 14 PIN DIP QUAD BILATERAL SW	2025-0193	MOTOROLA	MC14066BCP
U 8	IC-4558 8 PIN DIP DUAL OP AMPL	2025-0213		
U 9	IC-4538B 16 PIN DIP MONOSTABLE MV	2025-0194		
U 10	IC-CA3012	2025-0013	RCA	CA3012
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1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R15
CR1
C12
R18
R17
C28
R36
R48
R38
R49
C25
R44
C30
C31
C27
C33
C34
U1
U2
Q11
C29
R40
CR7
R41
R45
C13
R39
R2
CR4
R24
R35
U4
C35
Q12
R51
R43
C19
C18
C23
C24
C17
U3
C32
R50
C21
C22
C20
R31
R32
R34
R33
C16
R14
CR2
Q3
Q4
Q5
C9
R8
R7
R10
C8
R13
C10
C7
R16
C15
Q2
C5
Q1
R1
R3
C14
C4
R4
R5
R6
C6
L1
C3
C1
C2
R22
R23
R25
Q8
CR3
R20
Q7
Q6
R26
CR6
R27
CR5
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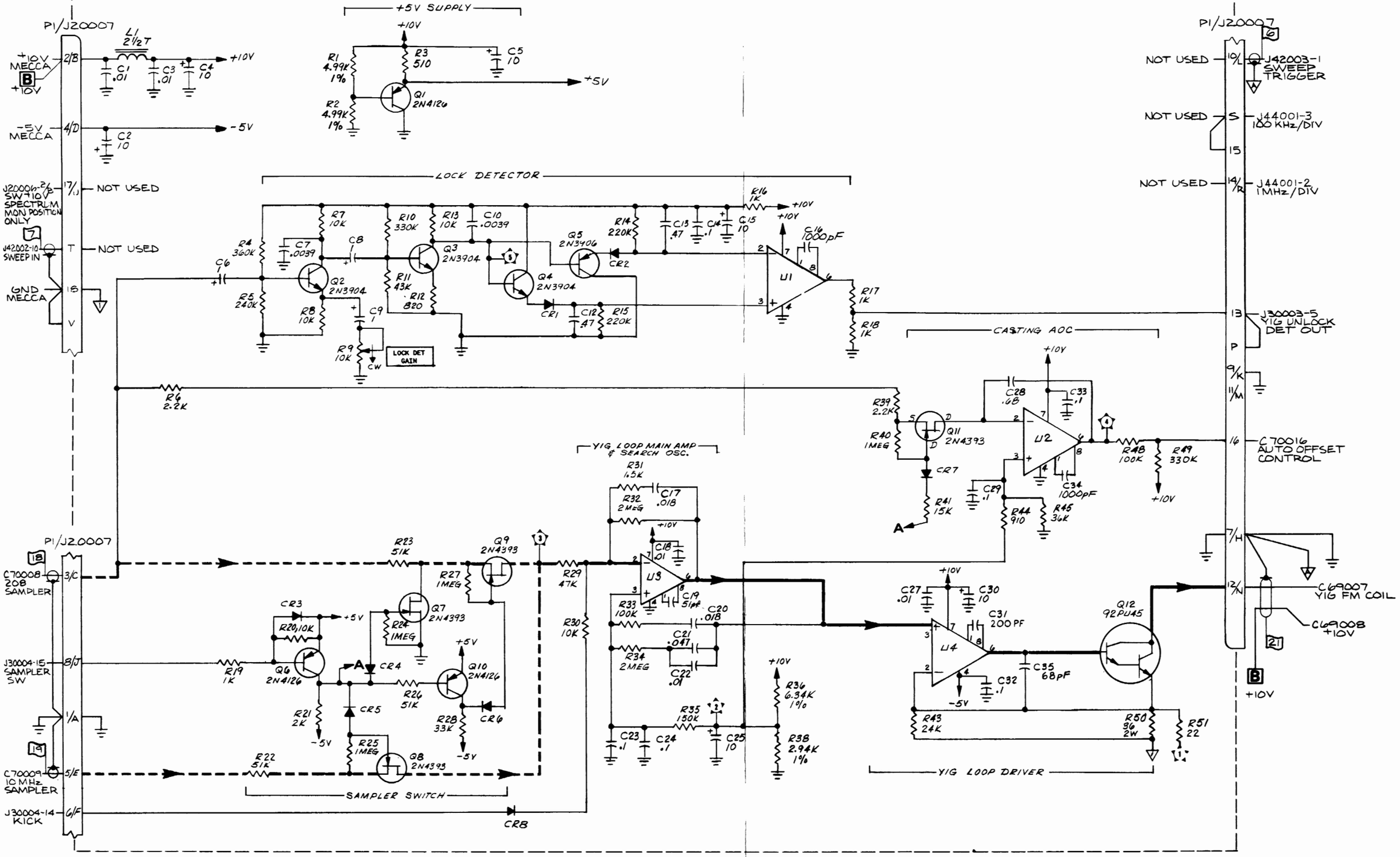


U NO	TYPE	VCC	GND
1,2,3	CA3130	7	4
4	OP08	7	4

C11, C26 & R37, 42, 46, 47 NOT USED.

6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

27000 YIG FM Coil Driver, (7001-0490)
CE-45A, 50A, and 5100A

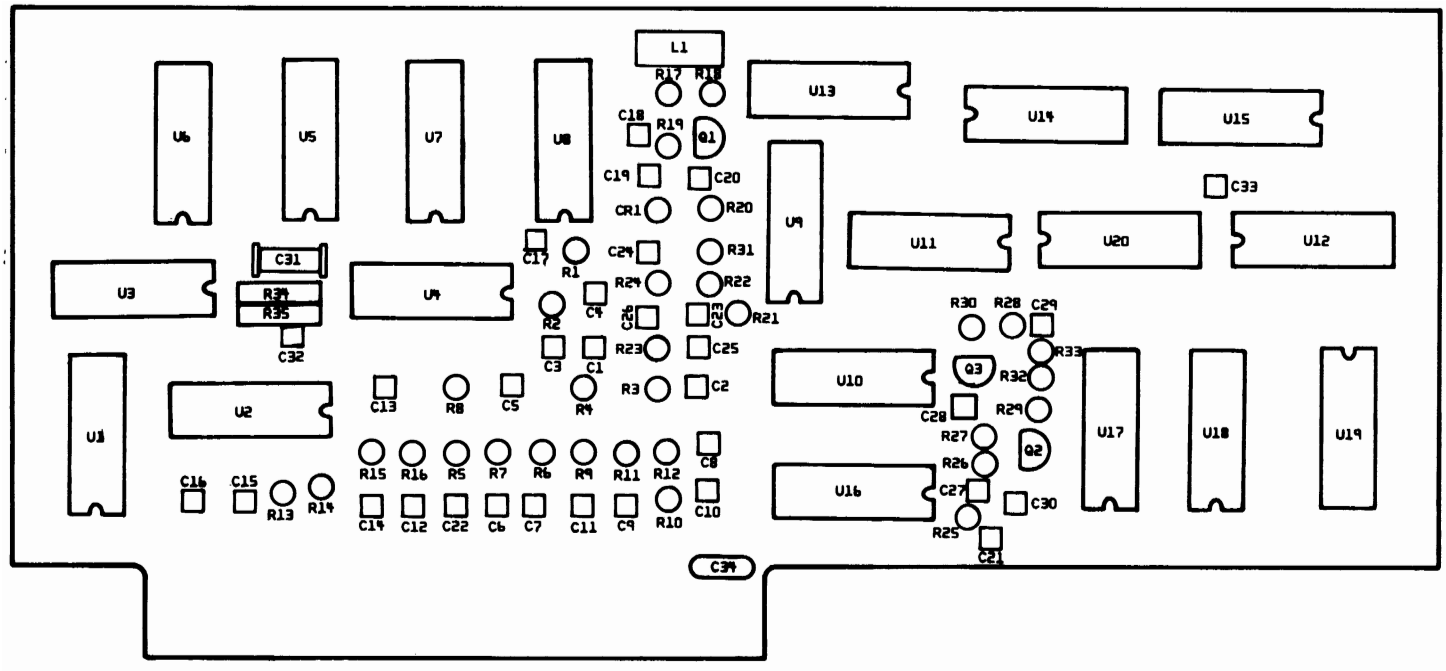
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
27000	PCB ASSY - YIG FM COIL DRIVER	7001-0490	CUSHMAN	CE-45A & CE-50A
	PRINTED CIRCUIT BOARD	1780-1058	CUSHMAN	ONLY
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-1UF+75-10% 50V ELCTLT	1013-0004	SPRAGUE	30D105G050BA5
C 7	CAP-.0039UF GMV 1KV Z5U CER DISC	1005-0106	SPRAGUE	5HK-D39
C 8	CAP-1UF+75-10% 50V ELCTLT	1013-0004	SPRAGUE	30D105G050BA5
C 9	CAP-1UF+75-10% 50V ELCTLT	1013-0004	SPRAGUE	30D105G050BA5
C 10	CAP-.0039UF GMV 1KV Z5U CER DISC	1005-0106	SPRAGUE	5HK-D39
C 12	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 13	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 16	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 17	CAP-.018UF 10% 100V RDL POLYESTER	1008-0008	SPRAGUE	225P18391WD3
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-51PF 5% 500V DIP MICA	1002-0045	ELMENCO	DM15-E-510J
C 20	CAP-.018UF 10% 100V RDL POLYESTER	1008-0008	SPRAGUE	225P18391WD3
C 21	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-.68UF 10% 100V AXL POLYCARBONATE	1008-0039	ELECTROCUBE	625B1B684K
C 29	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 30	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 31	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 32	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 35	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	TRANSISTOR			
Q 1	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 7	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 8	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
Q 9	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 10	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 11	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 12	XSTR-92PU45 NPN SI DARLINGTON	1272-0113	NATIONAL	92PU45
	RESISTOR			
R 1	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 2	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 3	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 4	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 5	RES-240K 5% 1/4W CC	1066-2445	ALLEN BRADLEY	CB2445
R 6	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 10	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 11	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 12	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 13	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 14	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 15	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 16	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 17	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 21	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 22	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 23	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 24	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 25	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 26	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 27	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 28	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 29	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-2MEG 5% 1/4W CC	1066-2055	ALLEN BRADLEY	CB2055
R 33	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 34	RES-2MEG 5% 1/4W CC	1066-2055	ALLEN BRADLEY	CB2055
R 35	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 36	RES-6.34K 1% 150PPM FILM	1074-1007	CAT.LIST	55-100
R 38	RES-2.94K 1% 100PPM FILM	1075-0108	CAT.LIST	55-100
R 39	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 40	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 41	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 43	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 44	RES-910 OHM 5% 1/4W CC	1066-9115	ALLEN BRADLEY	CB 9115
R 45	RES-36K 5% 1/4W CC	1066-3635	ALLEN BRADLEY	CB3635
R 48	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 49	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 50	RES-36 OHM-5% 2W CC	1069-3605	ALLEN BRADLEY	HB 3605
R 51	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T

5601-0075-3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U6
U5
U7
U8
U13
U14
U15
R17
R18
C18
R19
Q1
C19
C20
C33
CR1
R20
U9
U11
U20
U12
C17
R1
C24
R31
U3
C31
R24
R22
U4
R34
R35
C4
C32
R2
C3
R21
R30
R28
C29
R23
C25
R33
Q3
U10
U1
U2
C13
R8
C5
R4
R3
C2
R32
C28
R29
U17
U18
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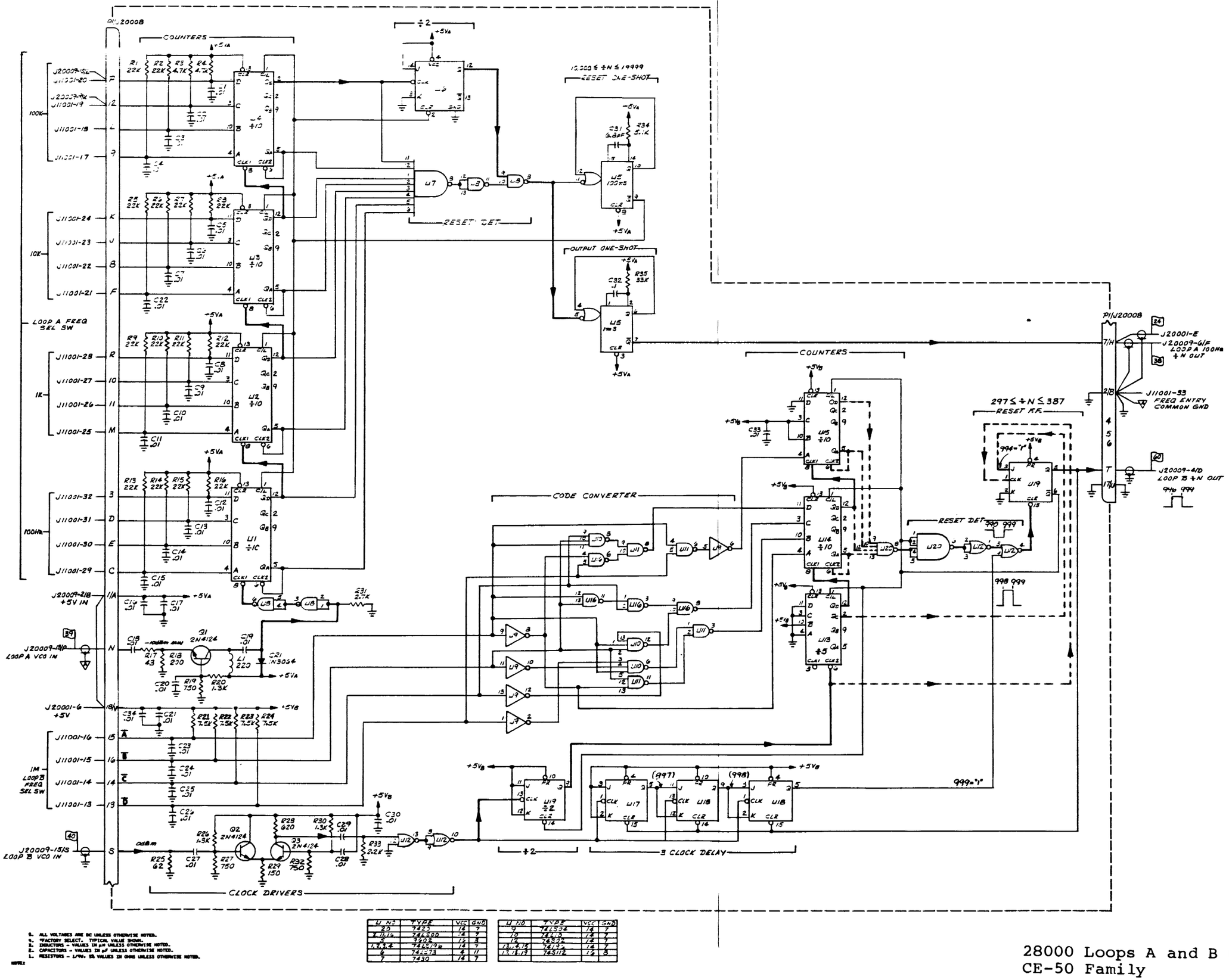


U NO.	TYPE	VCC	GND
20	7423	14	7
8,11,16	74L200	12	7
5	7402	14	7
1,2,3,4	74LS/S38	14	7
6	74LS73	4	11
7	7430	14	7

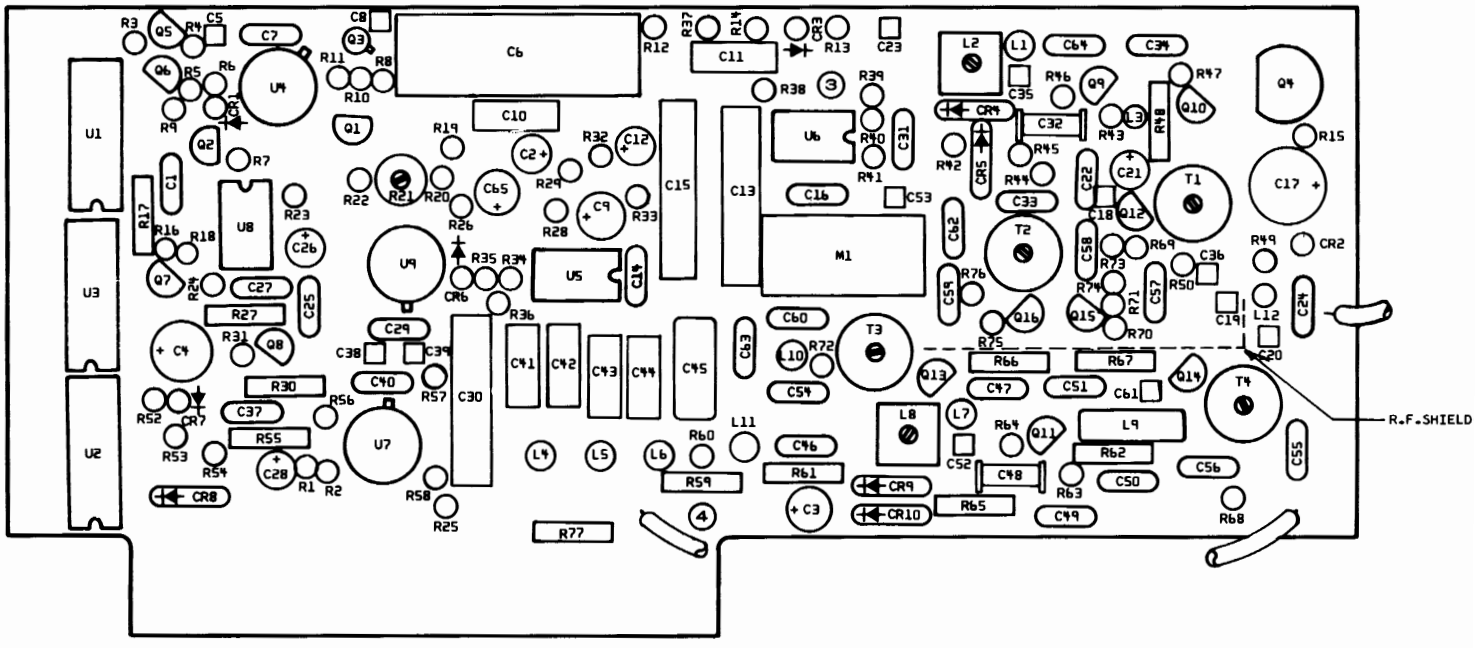
U NO.	TYPE	VCC	GND
9	74LS34	14	7
19	74L93	12	7
14	74S32	14	7
13,4,15	74174	14	7
17,18,19	74S112	16	8

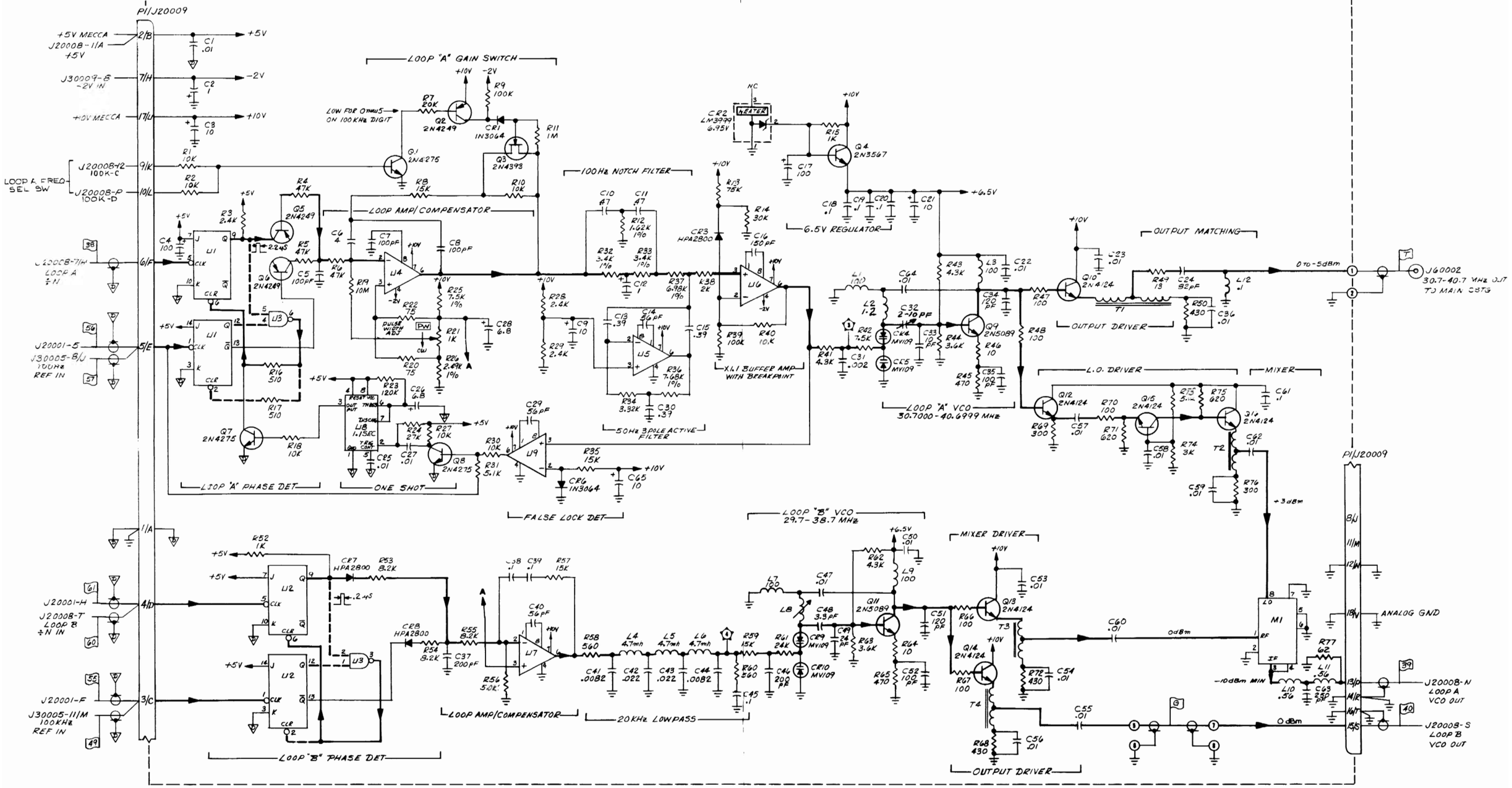
NOTES:
1. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
2. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
5. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

28000 Loops A and B Divide-By-N (7001-0492)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
28000	PCB ASSY - LOOPS A & B DIV-BY-N	7001-0492	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1008	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 31	CAP-6.8PF .25PF 500V NPO CER TUB	1005-0006	TUSONIX	301-000-C0H0-689C
C 32	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 33	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 34	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-220UH 5% RF MLD AXL .16DX.38L	1585-0018	DELEVAN	1537-92
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 2	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 3	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 4	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 5	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 6	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 7	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 8	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 9	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 10	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 11	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 12	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 13	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 14	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 15	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 16	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 17	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 18	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 19	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 20	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 21	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 22	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 23	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 24	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 25	RES-62 OHM 5% 1/4W CC	1066-6205	ALLEN BRADLEY	CB 6205
R 26	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 27	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 28	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 29	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 30	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 31	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 32	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 33	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 34	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 35	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
	INTEGRATED CIRCUIT			
U 1	IC-SN74LS196N DECADE COUNTERS	2025-0111	TI	SN74LS196N
U 2	IC-SN74LS196N DECADE COUNTERS	2025-0111	TI	SN74LS196N
U 3	IC-SN74LS196N DECADE COUNTERS	2025-0111	TI	SN74LS196N
U 4	IC-SN74LS196N DECADE COUNTERS	2025-0111	TI	SN74LS196N
U 5	IC-9602 16 PIN DIP MONOSTABLE MV	2025-0191	NATIONAL	DM9602N
U 6	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N
U 7	IC-SN7430A NAND GATES	2025-0004	TI	SN7430N
U 8	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 9	IC-SN74LS04N HEX INVERTOR	2025-0084	TI	SN74LS04N
U 10	IC-74LS10 14 PIN DIP TRIPLE 3-INP NAND	2025-0215	NATIONAL	DM74LS10N
U 11	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 12	IC-74S02 14 PIN DIP QUAP 2-INP NOR GAT	2025-0190		
U 13	IC-SN74196N	2025-0016	FAIRCHILD	74196PC
U 14	IC-SN74196N	2025-0016	FAIRCHILD	74196PC
U 15	IC-SN74196N	2025-0016	FAIRCHILD	74196PC
U 16	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 17	IC-SN74S112N DUAL J-K FLIP-FLOP	2025-0086	TI	SN74S112N
U 18	IC-SN74S112N DUAL J-K FLIP-FLOP	2025-0086	TI	SN74S112N
U 19	IC-SN74S112N DUAL J-K FLIP-FLOP	2025-0086	TI	SN74S112N
U 20	IC-SN7420N DUAL 4 INPUT NAND GATE	2025-0008	TI	SN7420N


R.F.SHIELD



U NO	TYPE	+5V	-VCC	GND
1,2	SN74LS73	4		11
3	SN74LS00	14		7
7,9	CA3130			
8	LM555	8		1
5,6	NE5534			
4	OP-08			

R51 NOT USED

CR2 BOTTOM VIEW

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN Ω UNLESS OTHERWISE NOTED.

29000 Loops A & B VCO Phase Detector (7001-0493), CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
29000	PCB ASSY - LOOPS A & B VCO/PHASE DET	7001-0493	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1028	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 3	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 6	CAP-4UF 10% 50V RDL MET-POLYESTER	1008-0102	ELPAC	Z5R405K
C 7	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 8	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 9	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 10	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 11	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 12	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 13	CAP-.39UF 10% 200V RDL POLYCARBONATE	1008-0037	ELECTROCUBE	625B1C394K2
C 14	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 15	CAP-.39UF 10% 200V RDL POLYCARBONATE	1008-0037	ELECTROCUBE	625B1C394K2
C 16	CAP-150PF 5% 500V DIP MICA	1002-0021	ARCO	ADM15FD151J
C 17	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 22	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 24	CAP-82PF 5% 500V DIP MICA	1002-0020	ELMENCO	DM15-E-820J
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-6.8UF 10% 35V RDL TANT	1011-0002	DICKSON	D6R8GS1B35K
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-6.8UF 10% 35V RDL TANT	1011-0002	DICKSON	D6R8GS1B35K
C 29	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 30	CAP-.39UF 10% 200V RDL POLYCARBONATE	1008-0037	ELECTROCUBE	625B1C394K2
C 31	CAP-.002UF 20% 500V Z5U CER DISC	1005-0003	TUSONIX	831-596-Z5U-202M
C 32	CAP-2-10PF 25V NPO V ADJ CER TRMR	1001-0024	TUSONIX	513-011 A 2-10PF
C 33	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 34	CAP-120PF 5% 500V DIP MICA	1002-0010	ELMENCO	DM15-F-121J
C 35	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 38	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 39	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 40	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 41	CAP-.0082UF 5% 600V RDL POLYESTER	1008-0095	PLESSEY CAP.	60C822V630
C 42	CAP-.022UF 5% 400V RDL POLYESTER	1008-0094	PLESSEY CAP.	60C223J400
C 43	CAP-.022UF 5% 400V RDL POLYESTER	1008-0094	PLESSEY CAP	60C223J400
C 44	CAP-.0082UF 5% 600V RDL POLYESTER	1008-0095	PLESSEY CAP.	60C822V630
C 45	CAP-.1UF 10% 100V RDL POLYESTER	1008-0031	SPRAGUE	225P10491 WA3
C 46	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 47	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 48	CAP-3.3PF .25PF 500V NPO CER TUB	1005-0011	TUSONIX	301-00-C0J0-339C
C 49	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 50	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 51	CAP-120PF 5% 500V DIP MICA	1002-0010	ELMENCO	DM15-F-121J
C 52	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 53	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M

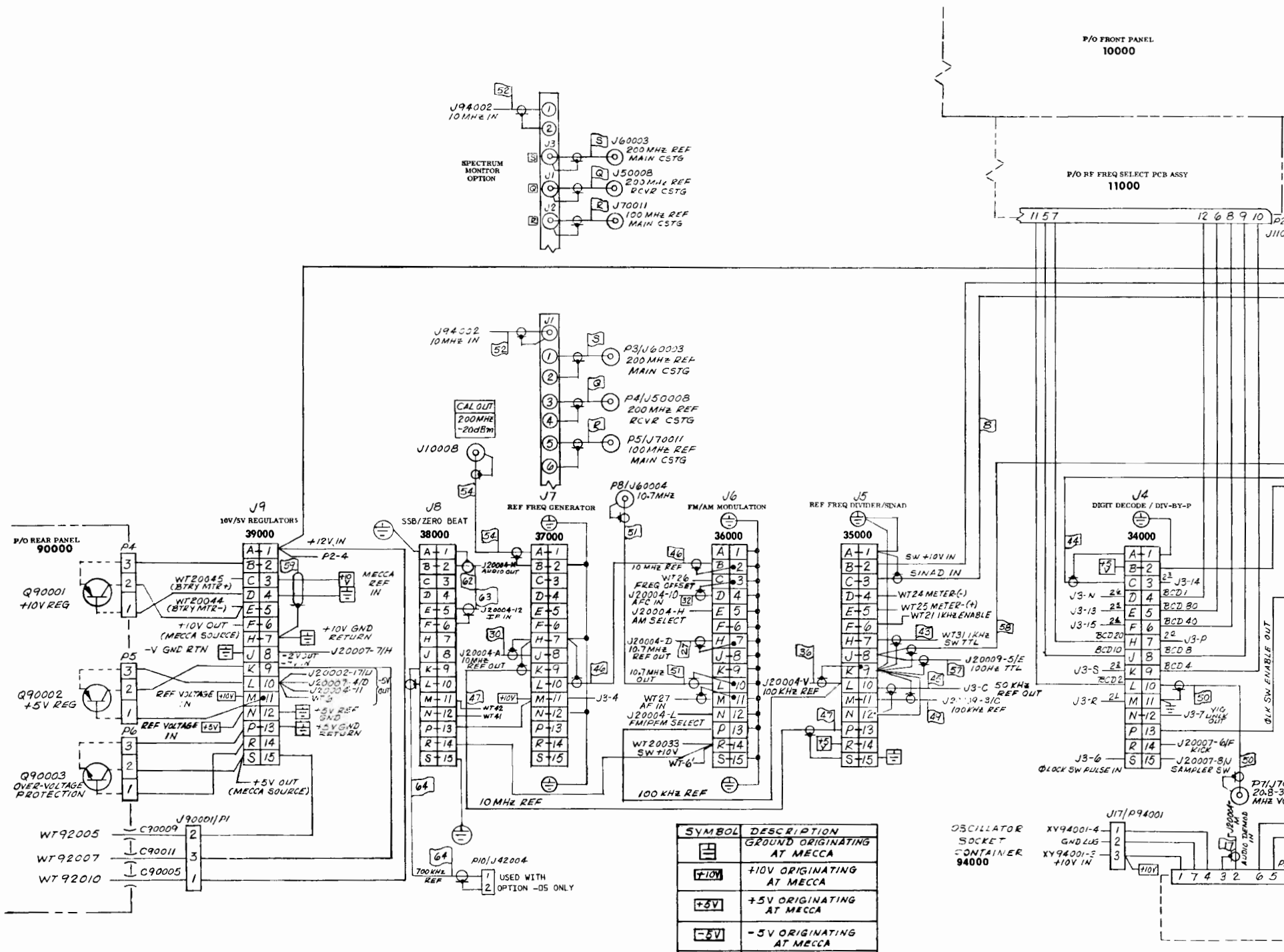
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 55	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 56	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 57	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 59	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 60	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 61	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 62	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 63	CAP-250PF 5% 500V DIP MICA	1002-0061	ELMENCO	DM15-F-251J
C 64	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 65	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-3999 ZENER TO92 6.95V 5PPM	1281-0136	NATIONAL	LM3999Z
CR 3	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 4	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 5	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 8	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 9	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 10	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 2	CH-1.2UH 10% RF MLD AXL .16DX.38L	1585-0066	DELEVAN	1537-14
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-4.7UH 10% RF MLD SHLD AXL .16DX.40L	1585-0055	DELEVAN	1641-472
L 5	CH-4.7UH 10% RF MLD SHLD AXL .16DX.40L	1585-0055	DELEVAN	1641-472
L 6	CH-4.7UH 10% RF MLD SHLD AXL .16DX.40L	1585-0055	DELEVAN	1641-472
L 7	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 8	COIL-VAR IF L31-6/10/44 LITZ/14T	1596-0291		
L 9	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 10	CH-.56UH 10% RF MLD AXL .19DX.44L	1585-0036	DELEVAN	1840-07
L 11	CH-.56UH 10% RF MLD AXL .19DX.44L	1585-0036	DELEVAN	1840-07
L 12	CH-.1UH 10% RF MLD SHLD AXL .16DX.40L	1585-0041	DELEVAN	1641-101
	TRANSISTOR			
Q 1	XSTR-2N4275 NPN SI R110 LOW PWR/SW	1272-0016	FAIRCHILD	2N4275
Q 2	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 3	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 4	XSTR-2N3567 NPN SI TO 105 LOW PWR	1272-0014		
Q 5	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 6	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 7	XSTR-2N4275 NPN SI R110 LOW PWR/SW	1272-0016	FAIRCHILD	2N4275
Q 8	XSTR-2N4275 NPN SI R110 LOW PWR/SW	1272-0016	FAIRCHILD	2N4275
Q 9	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 10	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 11	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 12	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 13	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 14	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 15	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 16	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 4	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 5	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 6	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 7	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 8	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 9	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 10	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 11	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 12	RES-1.62K 1% 100PPM FILM	1075-0104	CAT.LIST	55-100
R 13	RES-75K 1% 100PPM FILM	1075-0135	CAT LIST	55-100
R 14	RES-29.4K 1% 100PPM FILM	1074-0092	CAT.LIST	55-050
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 17	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-10MEG 5% 1/4W CC	1066-1065	ALLEN BRADLEY	AB1065
R 20	RES-75 OHM 5% 1/4W CC	1066-7505	ALLEN BRADLEY	CB 7505
R 21	POT-1K 20% 1/2W 4T CERMET TRMR	1203-0058	BOURNS	3339H-1-102
R 22	RES-75 OHM 5% 1/4W CC	1066-7505	ALLEN BRADLEY	CB 7505
R 23	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 24	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 25	RES-7.5K 1% 100PPM FILM	1075-0158	CAT. LIST	55-100
R 26	RES-2.49K 1% 100PPM FILM	1075-0027	CAT.LIST	55-100
R 27	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 28	RES-2.43K 1% 100PPM FILM	1075-0019	CAT.LIST	55-100
R 29	RES-2.43K 1% 100PPM FILM	1075-0019	CAT.LIST	55-100
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 32	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 33	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 34	RES-3.32K 1% 100PPM FILM	1075-0181	SHELLY RODABAUGH	RN55D
R 35	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 36	RES-7.68K 1% 100PPM FILM	1075-0054	CAT.LIST	55-100
R 37	RES-6.98K 1% 150PPM FILM	1074-1028	CAT.LIST	55-025
R 38	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 39	RES-6.19K 1% 100PPM FILM	1075-0109	CAT.LIST	55-100
R 40	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 41	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 42	RES-7.5K 1% 100PPM FILM	1075-0158	CAT. LIST	55-100
R 43	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 44	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 45	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 46	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 47	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 48	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 49	RES-20 OHM 5% 1/4W CC	1066-2005	ALLEN BRADLEY	CB2005
R 50	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 52	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 53	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 54	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 55	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225

5601-0075-3

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 56	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 57	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 58	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 59	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 60	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 61	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 62	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 63	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 64	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 65	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 66	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 67	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 68	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 69	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 70	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 71	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 72	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 73	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 74	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 75	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 76	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 77	RES-62 OHM 5% 1/4W CC	1066-6205	ALLEN BRADLEY	CB 6205
	TRANSFORMER			
T 1	ASSY-TRIFILAR COIL	1579-0017		
T 2	ASSY-TRIFILAR COIL	1579-0017		
T 3	ASSY-TRIFILAR COIL	1579-0017		
T 4	ASSY-TRIFILAR COIL	1579-0017		
	INTEGRATED CIRCUIT			
U 1	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N
U 2	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N
U 3	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 4	IC-OP-08 8 PIN CAN OP AMPL	2025-0187	PRECISION MONOLITHIC	OP-0865
U 5	IC-5534A 8PIN DIP LOW NOISE OP AMPL	2025-0198	SIGNETICS	NE5534AN
U 6	IC-5534A 8PIN DIP LOW NOISE OP AMPL	2025-0198	SIGNETICS	NE5534AN
U 7	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 8	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 9	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1

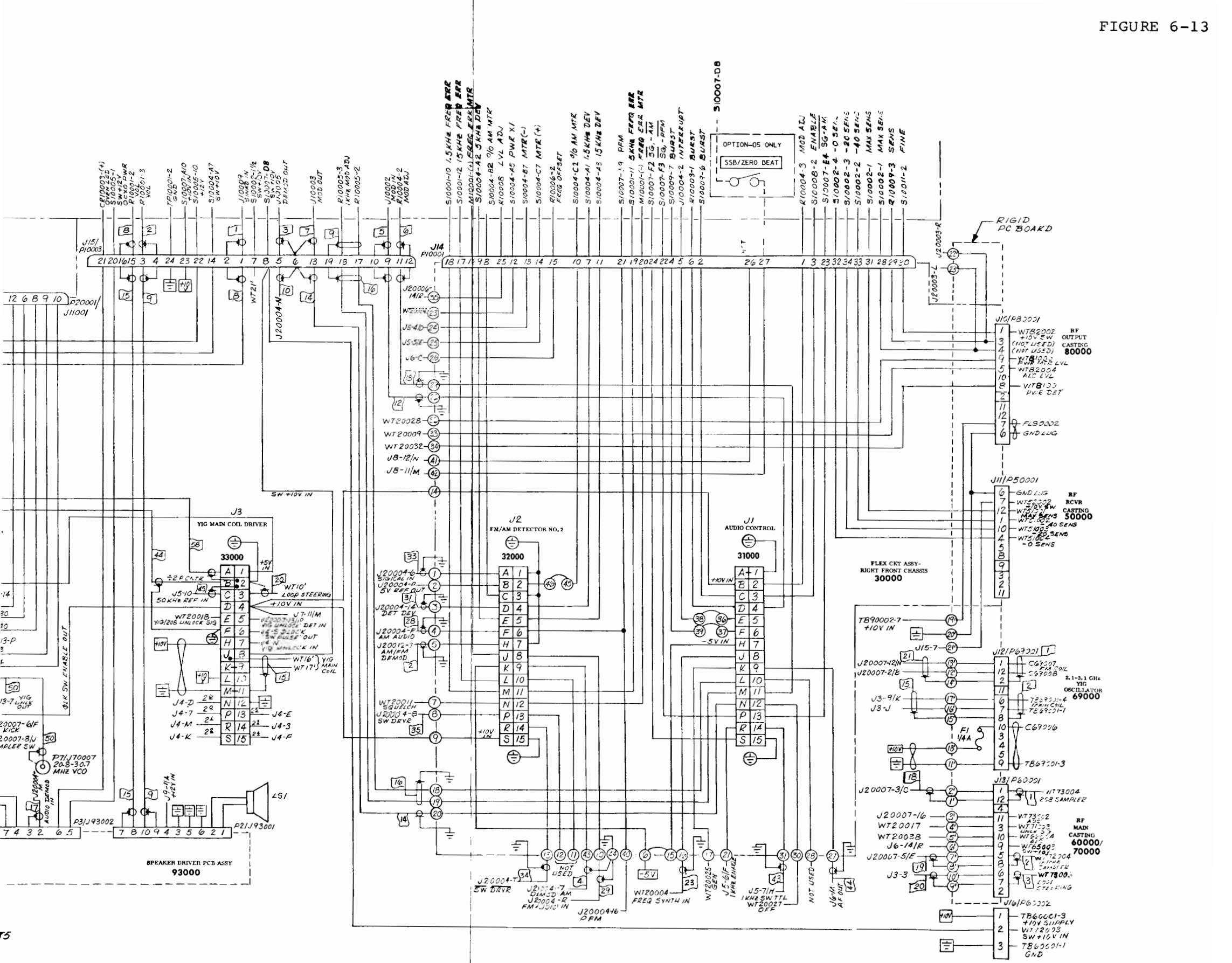


SYMBOL	DESCRIPTION
	GROUND ORIGINATING AT MECCA
+10V	+10V ORIGINATING AT MECCA
+5V	+5V ORIGINATING AT MECCA
-5V	-5V ORIGINATING AT MECCA
(23)	DESIGNATED WIRE POINT ON P.C. BOARD OR FLEX CIRCUIT
12	COAXIAL OR SHIELDED CABLE LABEL NO.
	GROUND LUG

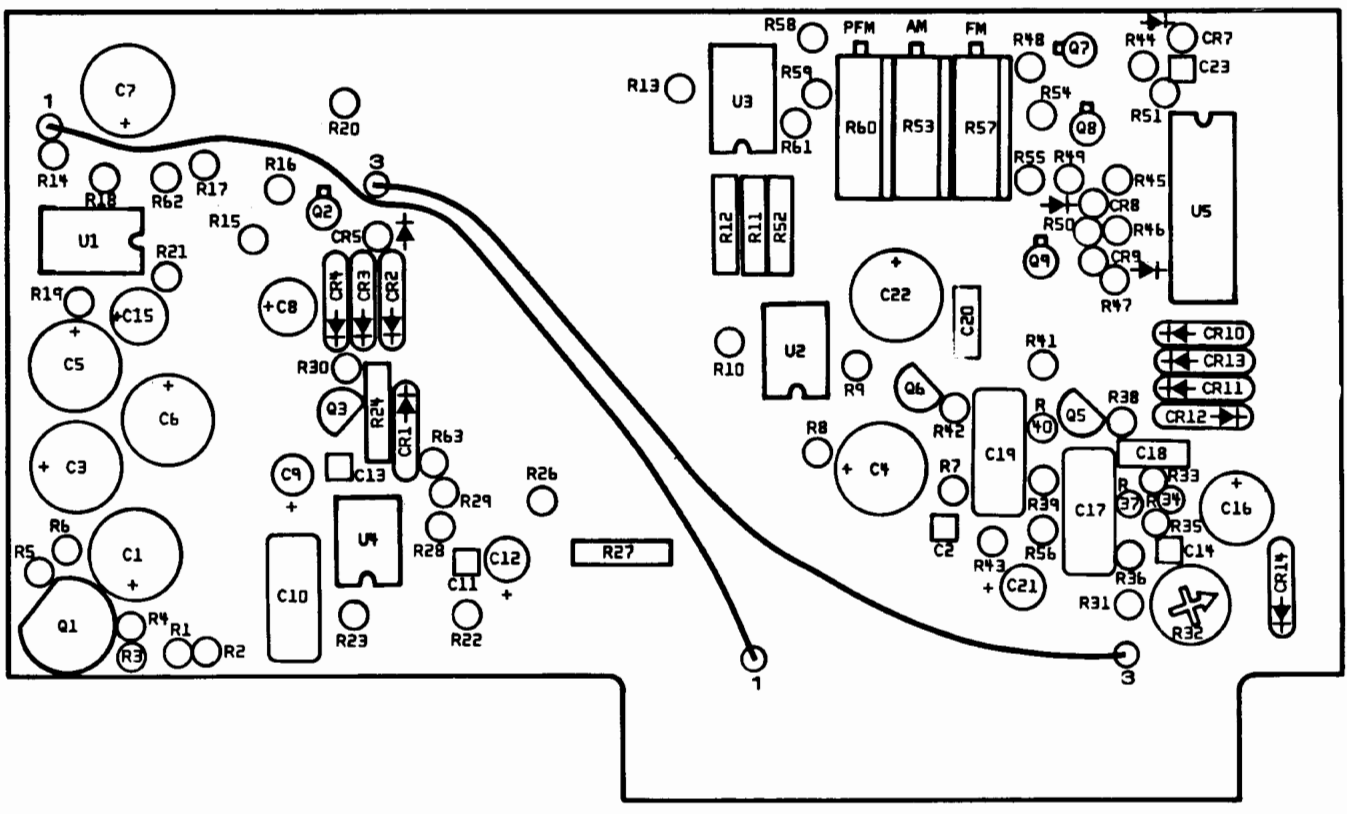
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

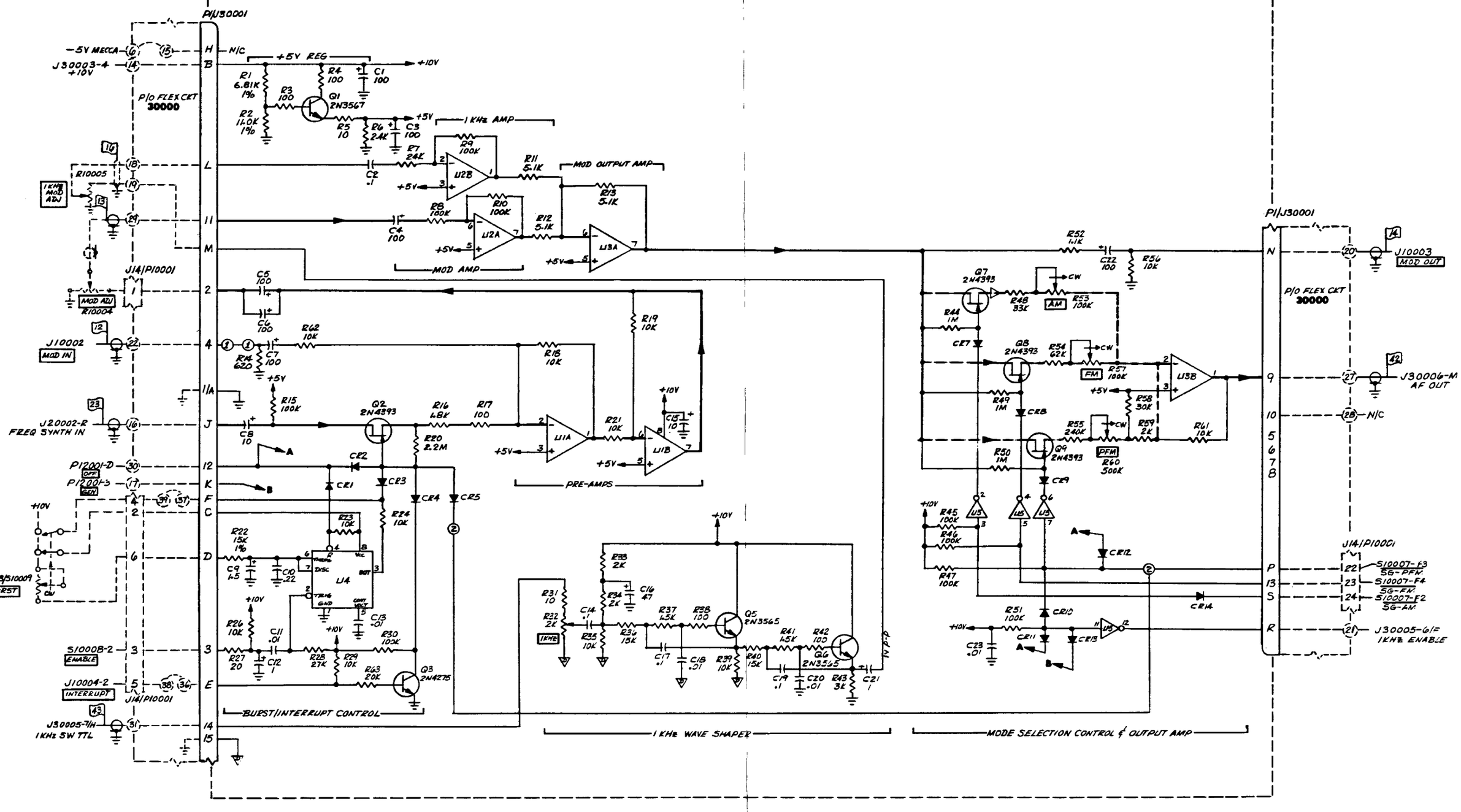
NOTE:

S.N. 256 THRU 485



30000 Right Main Chassis Interconnect Diagram, (8000-0645)
CE-50 Family (Except CE-45A/46A)


C7
1
R14
R18
R62
R17
R16
R20
3
Q2
R15
CR5
CR4
CR3
CR2
U1
R21
R19
C15
C8
C5
C6
C3
R30
Q3
R24
CR1
R63
C9
C13
R29
R26
R6
R5
C1
U4
R28
C12
C11
R27
Q1
R4
R1
R2
R3
C10
R23
R22
1
3
R58
PFM
AM
FM
R48
Q7
R44
CR7
C23
R13
U3
R59
R60
R53
R57
R54
Q8
R51
R61
R55
R49
R45
CR8
R50
R46
U5
R12
R11
R52
Q9
CR9
R47
C22
C20
R41
R10
U2
R9
Q6
R42
R38
Q5
CR10
CR13
CR11
CR12
R8
C4
C19
R7
C18
R33
R39
C17
R37
R34
C16
R35
C2
R43
R56
C14
C21
R36
R31
R32
CR14



U NO	TYPE	VCC	GND
1,2,3	MC1458	8	4
5	MC14049	1	8
4	MC1455	8	1

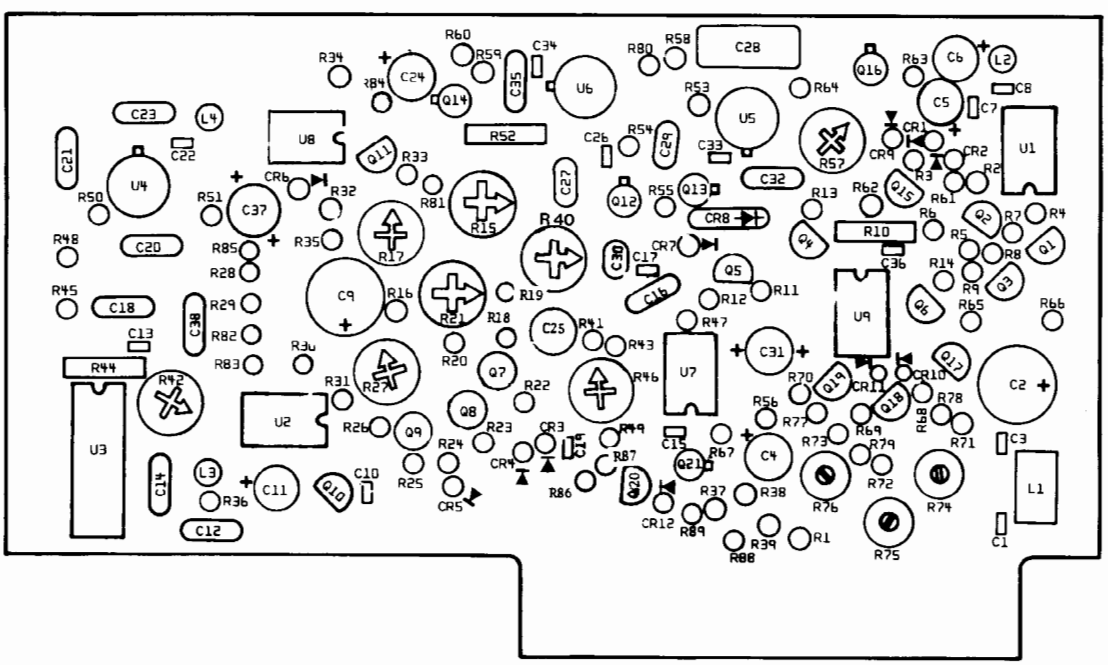
CR6, Q4, R25 NOT USED

NOTE:
6. ALL DIODES ARE IN3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
31000	PCB ASSY - AUDIO CONTROL	7001-0495	CUSHMAN	CE-50A, -1, /TG
	PRINTED CIRCUIT BOARD	1780-0858	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 8	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 9	CAP-1.5UF 10% 35V AXL TANT	1013-0001	SPRAGUE	150D155X9035B2
C 10	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 16	CAP-47UF 20% 20V RDL TANT	1011-0009	DICKSON	D47GSIC20M
C 17	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 18	CAP-.01UF 10% 200V MLD CER	1005-0065	AEROVOX	CK06BX103K
C 19	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 20	CAP-.01UF 10% 200V MLD CER	1005-0065	AEROVOX	CK06BX103K
C 21	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 22	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	TRANSISTOR			
Q 1	XSTR-2N3567 NPN SI TO 105 LOW PWR	1272-0014		
Q 2	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 3	XSTR-2N4275 NPN SI R110 LOW PWR/SW	1272-0016	FAIRCHILD	2N4275
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 8	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 9	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
	RESISTOR			
R 1	RES-6.81K 1% 100PPM FILM	1075-0140	CAT LIST	55-100
R 2	RES-11K 1% 100PPM FILM	1074-0106	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 3	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 4	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 5	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 6	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 7	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 10	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 13	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 14	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 15	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 16	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 17	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-2.2MEG 5% 1/4W CC	1066-2255	ALLEN BRADLEY	CB2255
R 21	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 22	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100
R 23	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-20 OHM 5% 1/4W CC	1066-2005	ALLEN BRADLEY	CB2005
R 28	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 29	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 30	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 31	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 32	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 33	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 34	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 35	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 36	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 37	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 38	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 39	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 40	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 41	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 42	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 43	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 44	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 45	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 46	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 47	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 48	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 49	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 50	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 51	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 52	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 53	POT-100K 10% 3/4W 15T CERMET TRMR	1215-0006	BECKMAN	89WR
R 54	RES-62K 5% 1/4W CC	1066-6235	ALLEN BRADLEY	CB 6235
R 55	RES-240K 5% 1/4W CC	1066-2445	ALLEN BRADLEY	CB2445
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-100K 10% 3/4W 15T CERMET TRMR	1215-0006	BECKMAN	89WR
R 58	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 59	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 60	POT-500K 10% 3/4W 15T CERMET TRMR	1215-0041	BECKMAN	89WR500K

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 61	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 63	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
	INTEGRATED CIRCUIT			
U 1	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 4	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 5	IC-4049 16 PIN DIP HEX INVT/BUFFER	2025-0189	MOTOROLA	MC14049UBP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R53
R64
U5
C5
C8
C7
C23
L4
U8
R52
C26
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C29
C33
CR1
CR4
CR2
U1
C22
C21
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R57
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CR6
C27
C32
R62
Q15
R61
R50
R51
C37
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R81
R15
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Q13
R13
R6
Q2
R7
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R40
CR8
R10
R5
R48
C20
R85
R35
R17
CR7
Q4
C30
C17
C36
R8
Q1
R28
Q5
R14
R45
C9
R16
R19
C16
R12
R11
R9
Q3
C18
R29
R21
R18
C25
R41
R47
U9
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R43
C31
Q6
C13
R30
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R70
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CR11
Q17
R44
R31
R27
R26
Q8
R23
CR3
R49
R56
R77
Q18
R78
C2
R42
U2
Q9
R24
C15
C4
R73
R79
R68
R71
U3
R25
R87
Q21
R67
R69
C3
C14
L3
C11
C10
Q10
R86
Q20
R37
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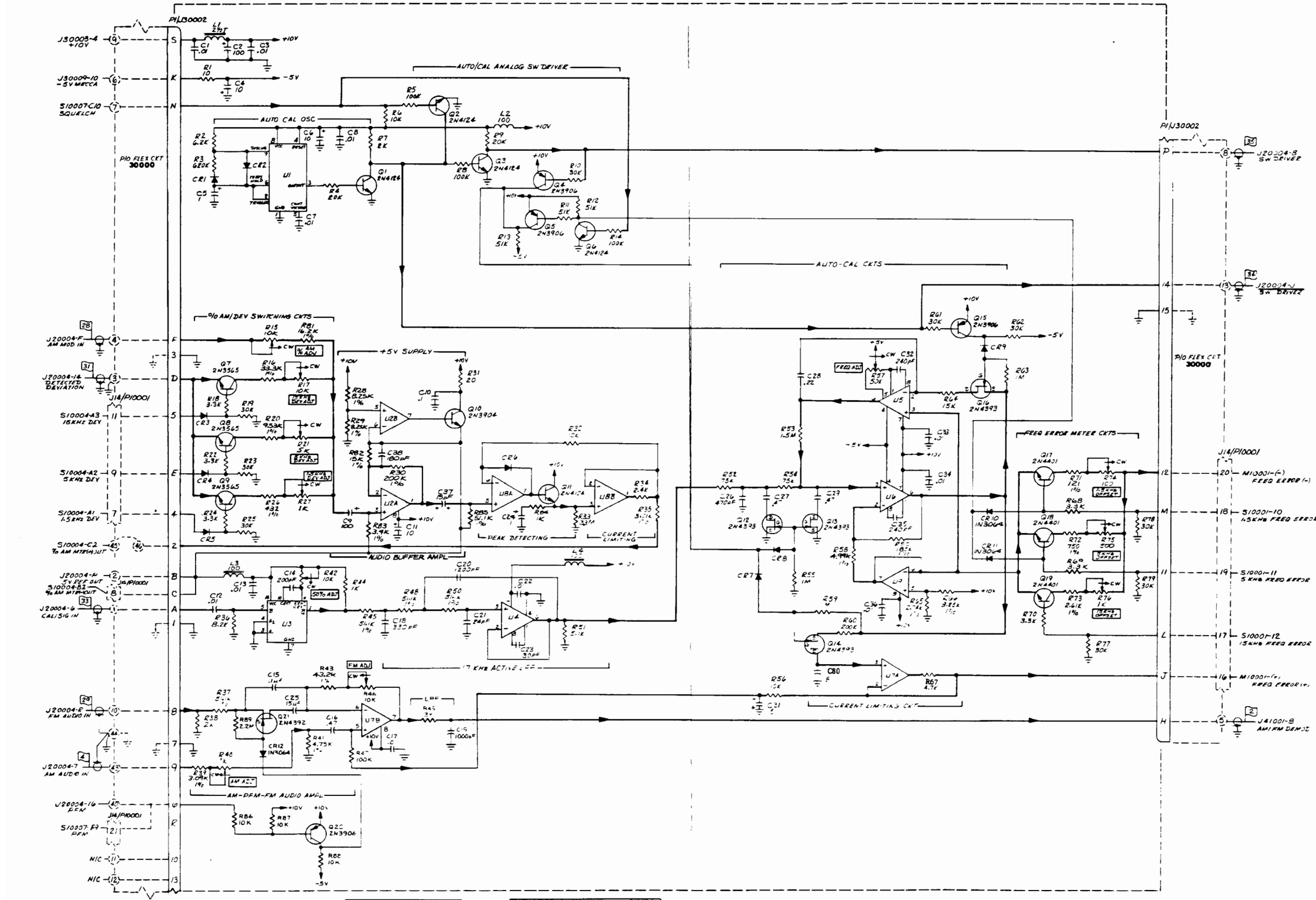
C12
R88



U#	TYPE	VCC	GND
1	1494	3	1
2 & 8	1595	5	4
3	SN74LS01	14	7
4, 5, 6, 7	CA3130E	7	4
	LM324	5	4

OUT OF SEQUENCE LOCATION CHART	
REF	APPROX LOCATION
RB5	R4
R6	R5
R82, R83	U2A
R84,85	U8

NOTE:
6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

32000 FM/AM DETECTOR #2 (7001-0700)
CE-50 Family (Except CE-45A/46A)

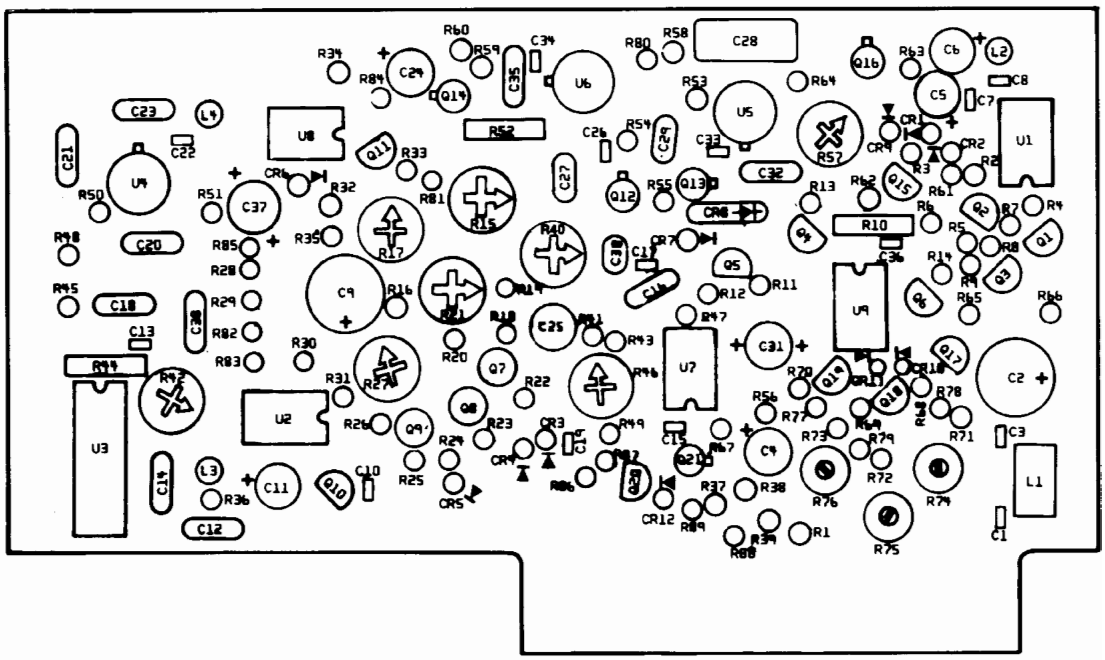
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
32000	PCB ASSY - FM/AM DETECTOR NO. 2	7001-0700	CUSHMAN	CE-50A, -1, /TG
	PRINTED CIRCUIT BOARD	1780-1086	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 6	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-330PF 5% 500V DIP MICA	1002-0032	ELMENCO	DM15-F-331J
C 19	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 20	CAP-1200PF 5% 500V DIP MICA	1002-0090	ELMENCO	DM19-F-122J
C 21	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 24	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 25	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-I
C 26	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 27	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 28	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 29	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 30	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 31	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-I
C 32	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 33	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 34	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 35	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-I
C 38	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 4	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 13	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 14	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 15	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 16	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 17	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 18	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 19	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 20	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 21	XSTR-2N4392 SI T018 J-FET N-CHAN	1272-0054	TELEDYNE	2N4392
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 3	RES-620K 5% 1/4W CC	1066-6245	ALLEN BRADLEY	CB 6245
R 4	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 5	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 10	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 11	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 12	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 13	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 14	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 15	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 16	RES-33.3K 1% 100PPM FILM	1075-0072	CAT.LIST	55-100
R 17	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 18	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 19	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 20	RES-9.53K 1% 100PPM FILM	1074-1001	CAT.LIST	55-100
R 21	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 22	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 25	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 26	RES-432 OHM 1% 100PPM FILM	1075-0142	CAT LIST	55-100
R 27	POT-1K 20% 1/2W 1T CERMET TRMR	1215-0058	BECKMAN	91AR1K
R 28	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 29	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 30	RES-200K 1% 100PPM FILM	1075-0148	CAT. LIST	55-100
R 31	RES-20 OHM 5% 1/4W CC	1066-2005	ALLEN BRADLEY	CB2005
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 34	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 35	RES-3.01K 1% 100PPM FILM	1075-0127	CAT. LIST	55-100
R 36	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 37	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 38	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 39	RES-3.09K 1% 100PPM FILM	1075-0091	CAT.LIST	55-100
R 40	POT-1K 20% 1/2W 1T CERMET TRMR	1215-0058	BECKMAN	91AR1K
R 41	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 42	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 43	RES-43.2K 1% 100PPM FILM	1075-0117		
R 44	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 45	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 46	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 47	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 48	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 49	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 50	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 51	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 52	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 53	RES-1.5MEG 5% 1/4W CC	1066-1555	ALLEN BRADLEY	CB1555
R 54	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 55	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H ONLY
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 58	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 59	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 60	RES-200K 5% 1/4W CC	1066-2045	ALLEN BRADLEY	CB2045
R 61	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 62	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 63	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 64	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 65	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 66	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 67	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 68	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 69	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 70	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 71	RES-121 OHM 1% 100PPM FILM	1075-0006	CAT.LIST	55-100
R 72	RES-750 OHM 1% 100PPM FILM	1075-0043	CAT.LIST	55-100
R 73	RES-2.61K 1% 100PPM FILM	1075-0090	CAT.LIST	55-100
R 74	POT-100 OHM 10% 1/2W 1T CERMET TRMR	1215-0056	ALLEN BRADLEY	A2A101
R 75	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 76	POT-1K 10% 1/2W 1T CERMET TRMR	1215-0052	ALLEN BRADLEY	A2A102
R 77	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 78	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 79	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 80	RES-182K 1% 100PPM FILM	1075-0147	CAT. LIST	55-100
R 81	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 82	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 83	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 84	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 85	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 86	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 87	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 88	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 89	RES-2.2MEG 5% 1/4W CC	1066-2255	ALLEN BRADLEY	CB2255
	INTEGRATED CIRCUIT			
U 1	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 5	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 8	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 9	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB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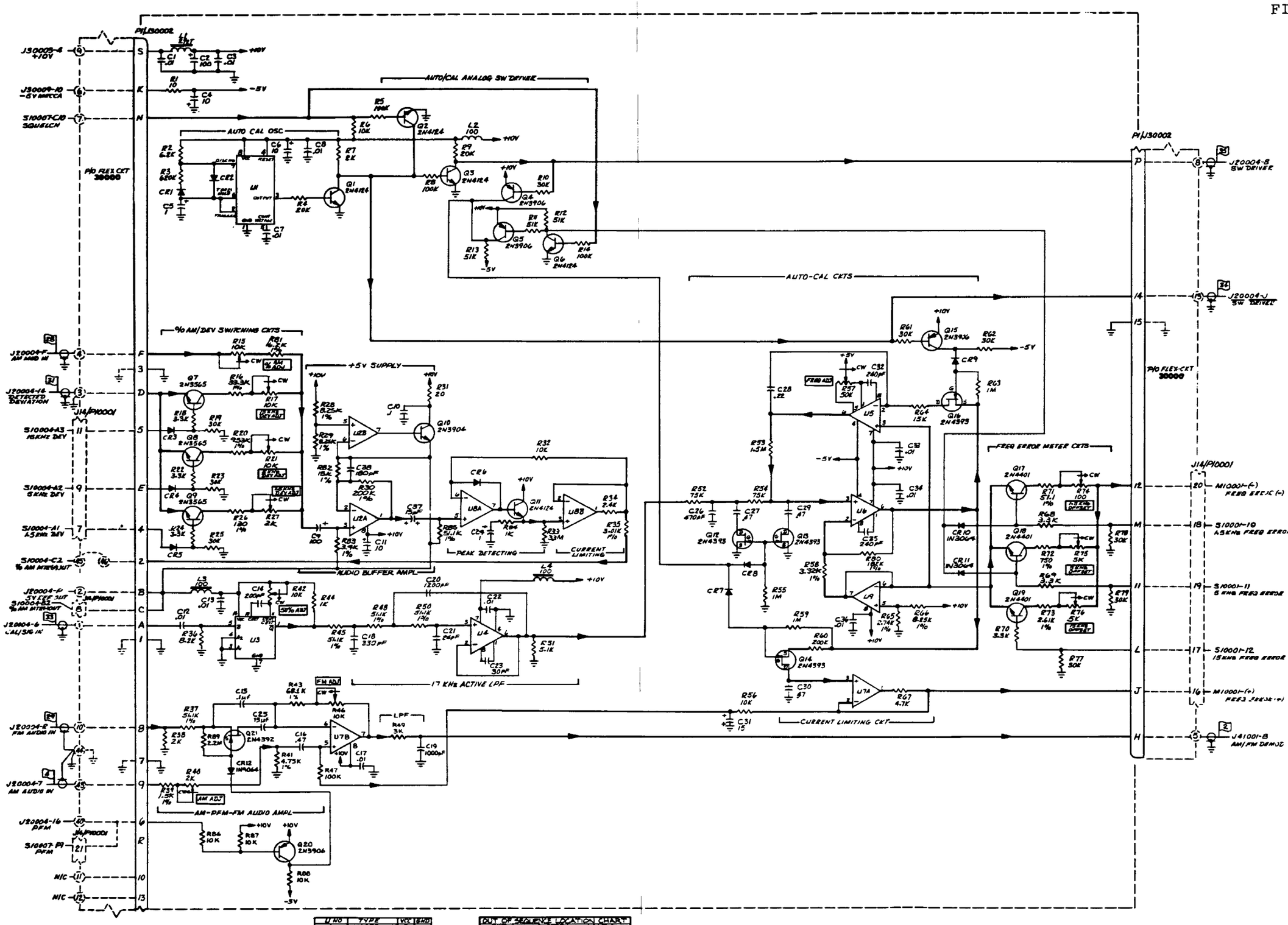
R20
R43
C31
C13
R30
R83
Q7
R22
U7
R70
Q14
Q17
R99
R97
R31
R27
R46
R56
R77
R78
C2
U3
U2
R26
Q9
Q8
R23
CR3
R49
C15
R67
C4
R73
R69
R79
R71
C3
R24
C16
R25
CR5
R86
R37
R38
R72
R76
R74
L1
C14
L3
R36
C11
C10
Q10
CR12
R89
R88
R39
R1
R75
C1
C12



U NO	TYPE	VCC	GND
1	1435	8	1
2, 4, 8	1458	8	4
3	SN74LS21	14	7
5, 6, 7	CA3130	7	4
9	4066Z	8	4

OUT OF SEQUENCE LOCATION CHART	
REF	APPROX LOCATION
R80	U16
R81	R15
R82, R83	U2A
R84	Q11

6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

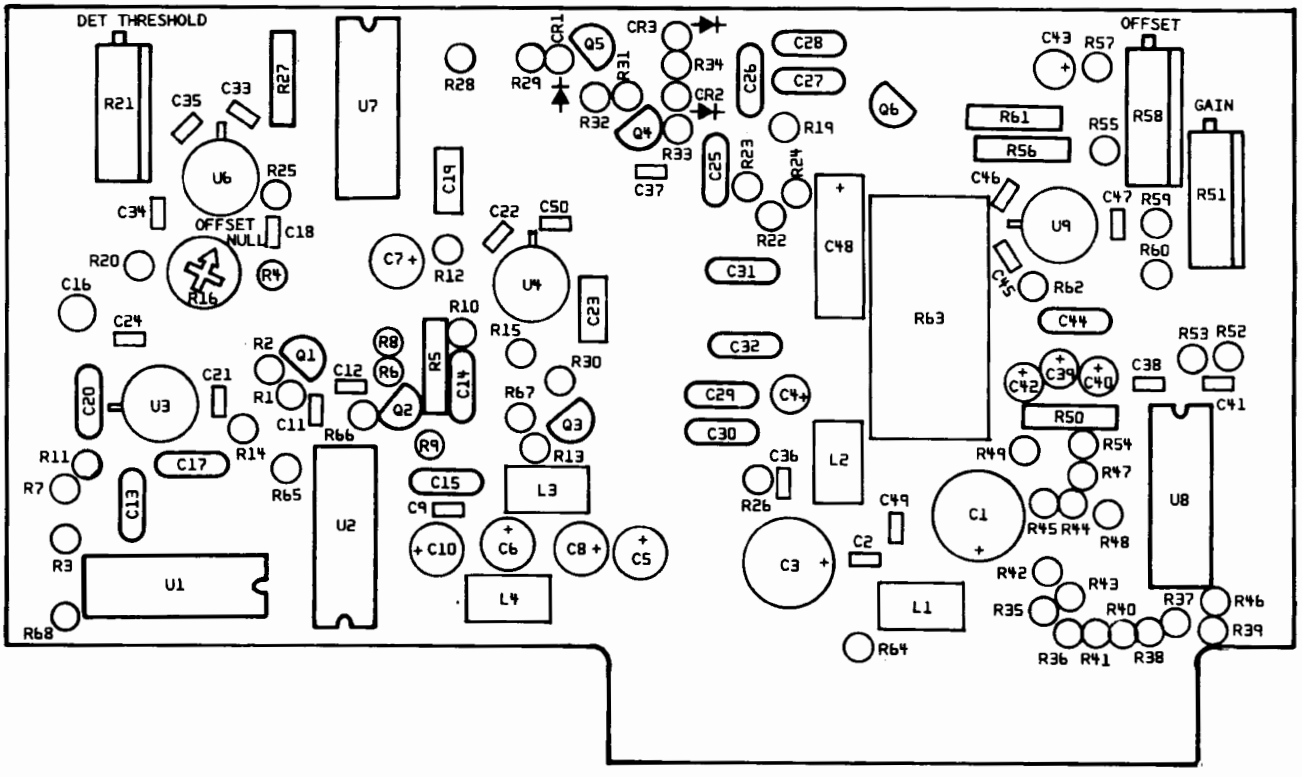
32000 FM/AM DETECTOR #2 (7001-0703)
CE-50 Family (Except CE-45A/46A)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
32000	PCB ASSY - TONE GEN SW MTG/DC PWR	7001-0703	CUSHMAN	CE-50 FAMILY*
	PRINTED CIRCUIT BOARD	1780-1072	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 6	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-330PF 5% 500V DIP MICA	1002-0032	ELMENCO	DM15-F-331J
C 19	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 20	CAP-1200PF 5% 500V DIP MICA	1002-0090	ELMENCO	DM19-F-122J
C 21	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 24	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 25	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-I
C 26	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 27	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 28	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 29	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 30	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 31	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-I
C 32	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 33	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 34	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 35	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-I
C 38	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 4	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 13	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 14	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 15	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 16	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 17	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 18	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 19	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 20	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 21	XSTR-2N4392 SI T018 J-FET N-CHAN	1272-0054	TELEDYNE	2N4392
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 3	RES-620K 5% 1/4W CC	1066-6245	ALLEN BRADLEY	CB 6245
R 4	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 5	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 10	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 11	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 12	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 13	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 14	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 15	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 16	RES-33.3K 1% 100PPM FILM	1075-0072	CAT.LIST	55-100
R 17	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 18	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 19	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 20	RES-9.53K 1% 100PPM FILM	1074-1001	CAT.LIST	55-100
R 21	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 22	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 25	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 26	RES-130 OHM 1% 100PPM FILM	1075-0101	DALE	MFF-1/8
R 27	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 28	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 29	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 30	RES-200K 1% 100PPM FILM	1075-0148	CAT. LIST	55-100
R 31	RES-20 OHM 5% 1/4W CC	1066-2005	ALLEN BRADLEY	CB2005
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 34	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 35	RES-3.01K 1% 100PPM FILM	1075-0127	CAT. LIST	55-100
R 36	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 37	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 38	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 39	RES-1.5K 1% 100PPM FILM	1075-0039	CAT.LIST	55-100
R 40	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 41	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 42	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 43	RES-68.1K 1% 100PPM FILM	1075-0136	DALE	MFF 1/8 TI
R 44	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 45	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 46	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 47	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 48	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 49	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 50	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 51	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 52	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 53	RES-1.5MEG 5% 1/4W CC	1066-1555	ALLEN BRADLEY	CB1555
R 54	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 55	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50k
R 58	RES-3.32K 1% 100PPM FILM	1075-0181	SHELLY RODABAUGH	RN55D
R 59	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H ONLY
R 60	RES-200K 5% 1/4W CC	1066-2045	ALLEN BRADLEY	CB2045
R 61	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 62	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 63	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 64	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 65	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 66	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 67	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 68	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 69	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 70	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 71	RES-51.1 OHM 1% 100PPM FILM	1075-0077	CAT.LIST	55-100
R 72	RES-750 OHM 1% 100PPM FILM	1075-0043	CAT.LIST	55-100
R 73	RES-2.61K 1% 100PPM FILM	1075-0090	CAT.LIST	55-100
R 74	POT-100 OHM 10% 1/2W 1T CERMET TRMR	1215-0056	ALLEN BRADLEY	A2A101
R 75	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 76	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 77	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 78	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 79	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 80	RES-182K 1% 100PPM FILM	1075-0147	CAT LIST	55-100
R 81	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 82	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 83	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 84	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 85	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 86	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 87	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 88	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 89	RES-2.2MEG 5% 1/4W CC	1066-2255	ALLEN BRADLEY	CB2255
	INTEGRATED CIRCUIT			
U 1	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 5	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 8	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 9	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB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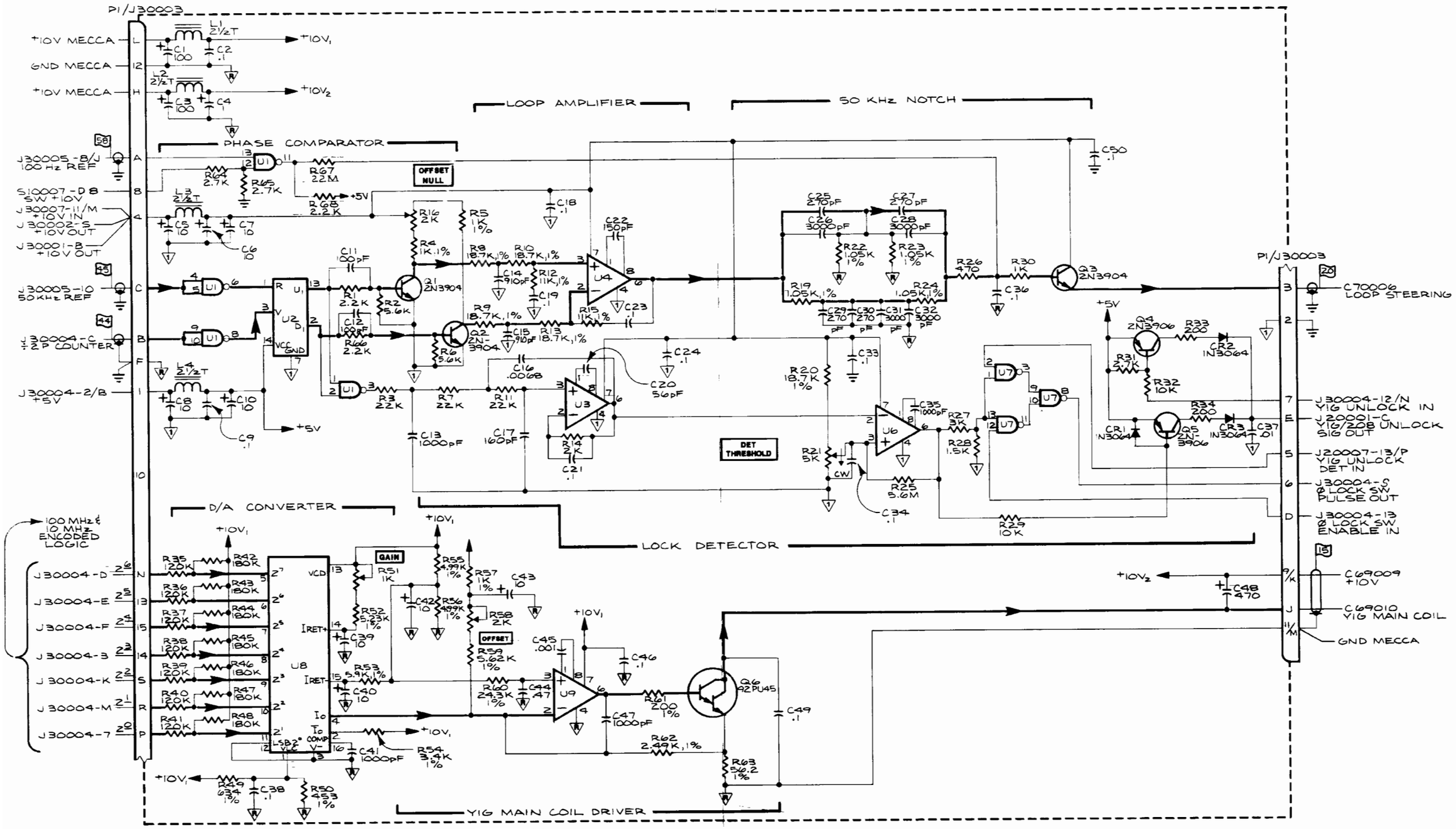


U NO.	TYPE	VCC	GND
1,7	SN74LS00	14	7
2	MC4044	14	7
3,4,5,6	CA 3130	7	4
8	NE 5008	13	3
9	OP-08	7	4

R17, R18, U5 NOT USED

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

33000 YIG Main Coil Driver, (7001-0576)
CE-50 Family

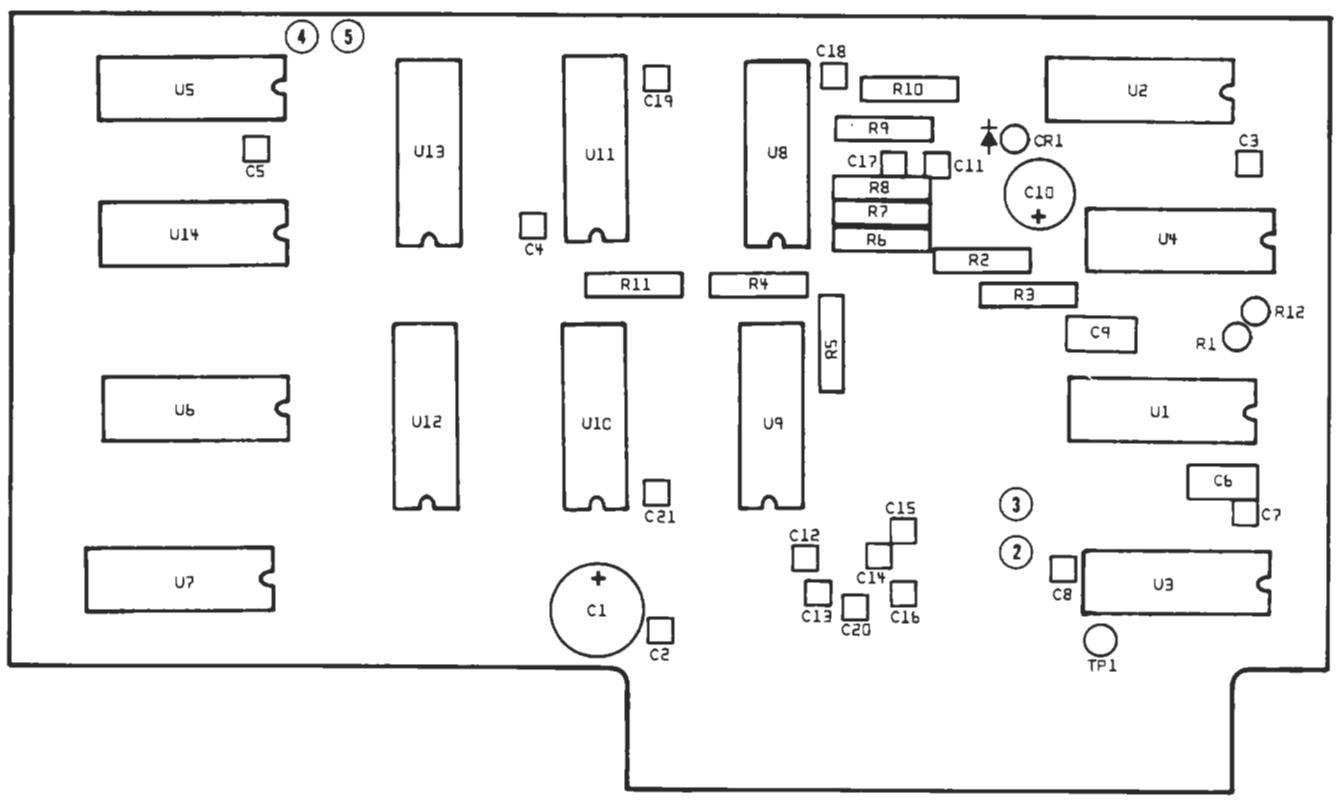
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
33000	PCB ASSY - YIG MAIN COIL DRIVER	7001-0576	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1061	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 6	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 11	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 12	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 13	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 14	CAP-910PF 5% 100V DIP MICA	1002-0062	ELMENCO	DM15-F-911J
C 15	CAP-910PF 5% 100V DIP MICA	1002-0062	ELMENCO	DM15-F-911J
C 16	CAP-.0068UF 10% 200V AXL POLYESTER	1008-0012	SPRAGUE	192P68292
C 17	CAP-160PF 5% 500V DIP MICA	1002-0091	ELMENCO	DM15-F-161J
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 20	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-150PF 10% 100V NPO MINTR CER	1005-0108	ERIE	8121-100-C0G0-151K
C 23	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 26	CAP-3000PF 5% 500V DIP MICA	1002-0088	ELMENCO	DM19-F-302J
C 27	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 28	CAP-3000PF 5% 500V DIP MICA	1002-0088	ELMENCO	DM19-F-302J
C 29	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 30	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 31	CAP-3000PF 5% 500V DIP MICA	1002-0088	ELMENCO	DM19-F-302J
C 32	CAP-3000PF 5% 500V DIP MICA	1002-0088	ELMENCO	DM19-F-302J
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 35	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 36	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 37	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 38	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 39	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 40	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 41	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 42	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 43	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 44	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 45	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 46	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 47	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 48	CAP-470UF 20% 6V AXL WET SLUG TANT	1011-0018	SWT	470-6-5B-M
C 49	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 50	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	DIODE			
CR 1	DIO-1N3064 SI SW DO35 75PRV .25W	1281-0105	FAIRCHILD	1N3064 DO35 PKG
CR 2	DIO-1N3064 SI SW DO35 75PRV .25W	1281-0105	FAIRCHILD	1N3064 DO35 PKG
CR 3	DIO-1N3064 SI SW DO35 75PRV .25W	1281-0105	FAIRCHILD	1N3064 DO35 PKG
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 3	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 4	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-92PU45 NPN SI DARLINGTON	1272-0113	NATIONAL	92PU45
	RESISTOR			
R 1	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 2	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 3	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 4	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 5	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 6	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 7	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 8	RES-18.7K 1% 150PPM FILM	1074-1022	CAT.LIST	55-100
R 9	RES-18.7K 1% 150PPM FILM	1074-1022	CAT.LIST	55-100
R 10	RES-18.7K 1% 150PPM FILM	1074-1022	CAT.LIST	55-100
R 11	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 12	RES-11K 1% 100PPM FILM	1074-0106	CAT.LIST	55-100
R 13	RES-18.7K 1% 150PPM FILM	1074-1022	CAT.LIST	55-100
R 14	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 15	RES-11K 1% 100PPM FILM	1074-0106	CAT.LIST	55-100
R 16	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 19	RES-1.05K 1% 100PPM FILM	1075-0086	CAT.LIST	55-100
R 20	RES-78.7K 1% 100PPM FILM	1075-0060	CAT.LIST	55-100
R 21	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 22	RES-1.05K 1% 100PPM FILM	1075-0086	CAT.LIST	55-100
R 23	RES-1.05K 1% 100PPM FILM	1075-0086	CAT.LIST	55-100
R 24	RES-1.05K 1% 100PPM FILM	1075-0086	CAT.LIST	55-100
R 25	RES-5.6MEG 5% 1/4W CC	1066-5655	ALLEN BRADLEY	CB 5655
R 26	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 27	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 28	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 29	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 31	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 34	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 35	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 36	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 37	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 38	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 39	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 40	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 41	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 42	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 43	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 44	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 45	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 46	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 47	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 48	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 49	RES-634 OHM 1% 150PPM FILM	1074-1042	CAT.LIST	55-100
R 50	RES-453 OHM 1% 100PPM FILM	1075-0107	CAT.LIST	55-100
R 51	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 52	RES-5.23K 1% 100PPM FILM	1075-0169	CAT. LIST	55-100
R 53	RES-5.9K 1% 100PPM FILM	1075-0110	CAT.LIST	55-100
R 54	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 55	RES-4.99K 1% 25PPM FILM	1074-1027	CAT.LIST	55-025
R 56	RES-4.99K 1% 25PPM FILM	1074-1027	CAT.LIST	55-025
R 57	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 58	POT-2K 10% 3/4W 15T CERMET TRMR	1215-0015	BECKMAN	89WR2K
R 59	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 60	RES-24.3K 1% 100PPM FILM	1075-0097	CAT.LIST	55-100
R 61	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 62	RES-2.49K 1% 100PPM FILM	1075-0027	CAT.LIST	55-100
R 63	RES-56.2 OHM 1% 1W 2PPM AXL WW	1157-0001	JORDAN	5-190+OR-2PPM 1%
R 64	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 65	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 66	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 67	RES-22MEG 5% 1/4W CC	1066-2265	ALLEN BRADLEY	CB2265
R 68	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	INTEGRATED CIRCUIT			
U 1	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 2	IC-MC4044P PHASE DETECTOR	2025-0066	MOTOROLA	MC4044
U 3	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 8	IC-08 16 PIN DIP D/A CONVERTER	2025-0188	SIGNETICS	NE5008
U 9	IC-OP-08 8 PIN CAN OP AMPL	2025-0187	PRECISION MONOLITHIC	OP-0865

5601-0075-3


4
5
U5
C5
U14
U6
U7
U13
U12
U11
U10
C4
C19
C21
C1
C2
U8
U9
C18
R10
R9
R8
R7
R6
R11
R4
R5
C17
C11
C12
C15
C14
C13
C20
C16
CR1
C10
R2
R3
C9
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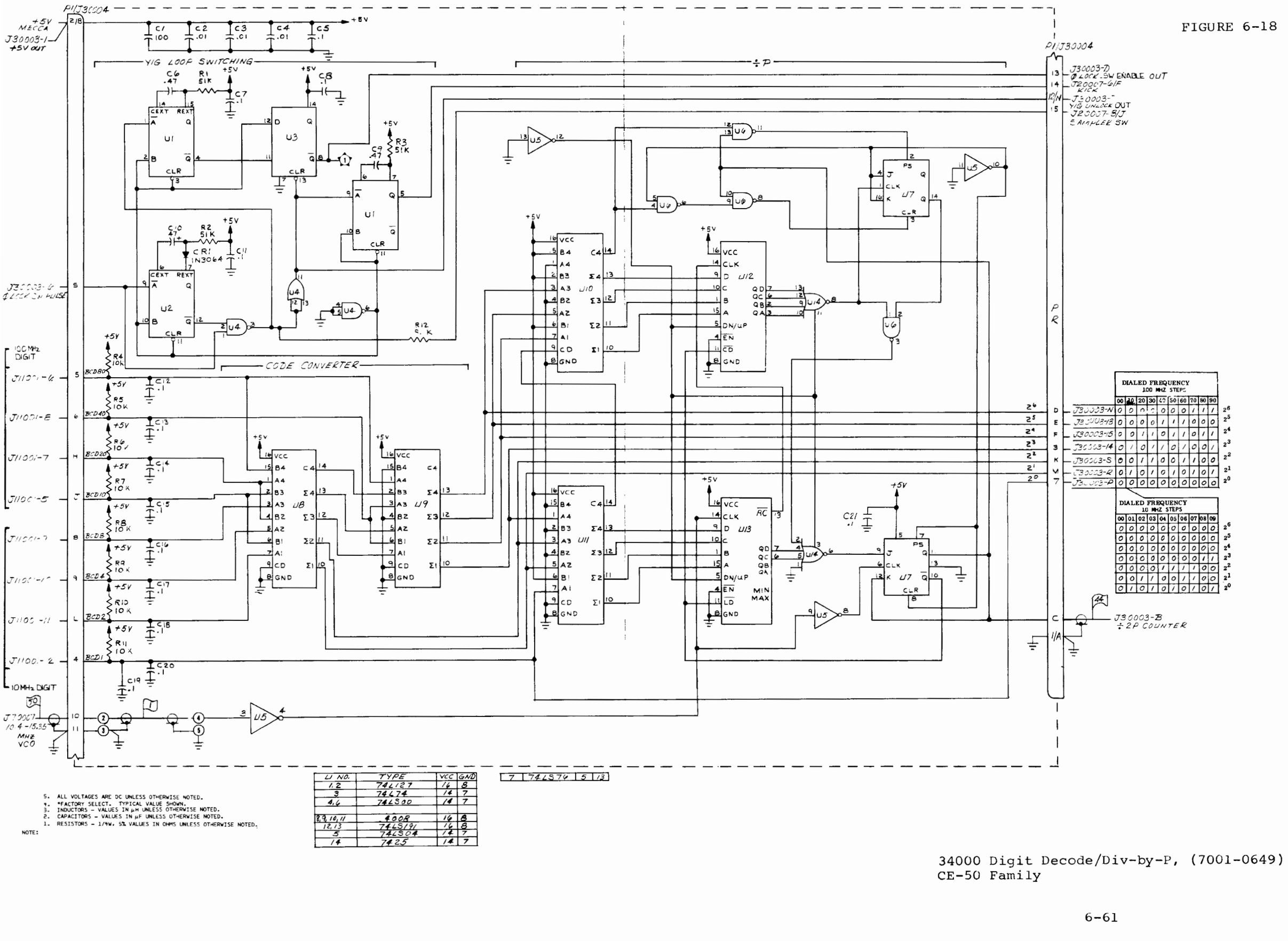
U4
U1
R1
R12
C6
C7
C8
U3
TP1
3
2

FIGURE 6-18



U NO.	TYPE	VCC	GND
1,2	74L127	16	8
3	74L74	14	7
4,6	74LS00	14	7
8,9,10,11	4008	16	8
12,13	74LS191	16	8
5	74LS04	14	7
14	7425	14	7

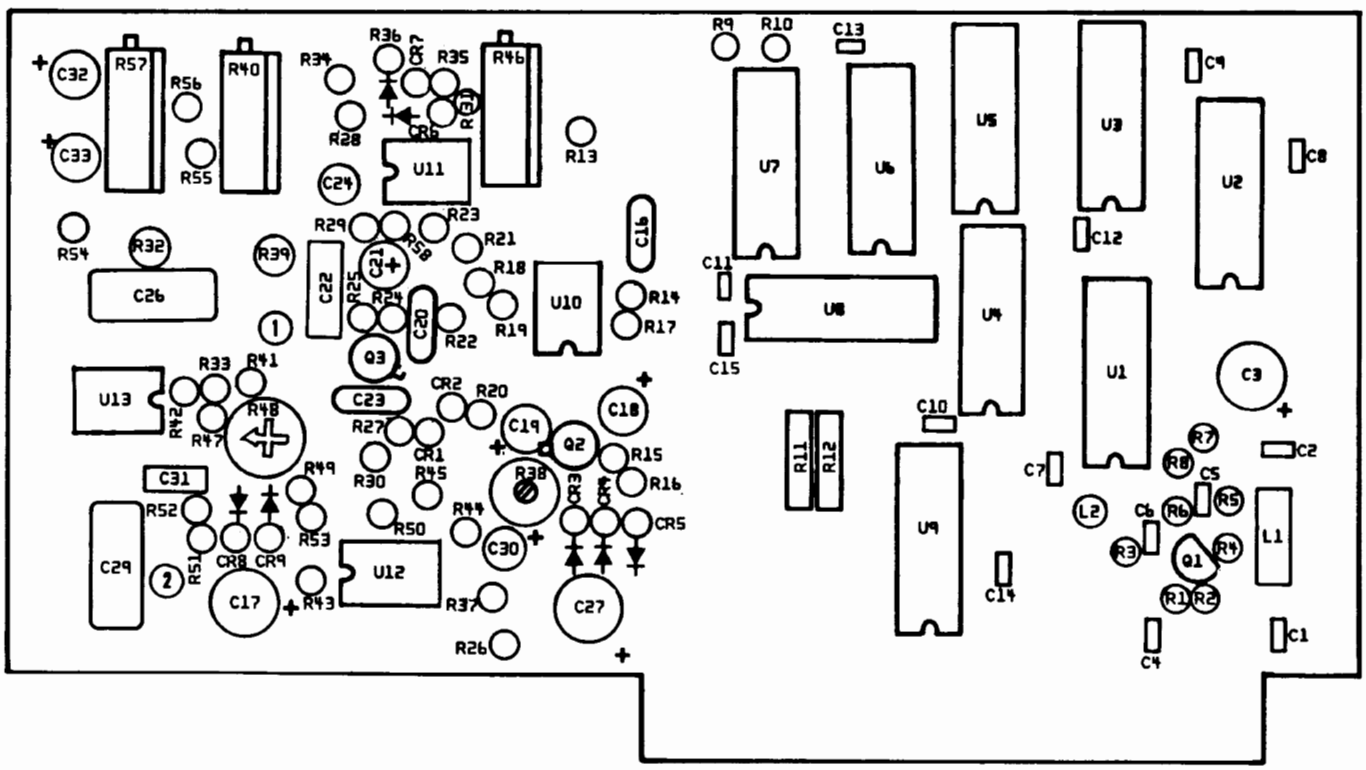
7	74LS76	5	13

NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

34000 Digit Decode/Div-by-P, (7001-0649)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
34000	PCB ASSY - DIGIT DECODE/DIV-BY-P	7001-0649	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1096	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 6	CAP-.47UF 10% 50V MLD CER	1005-0092	AEROVOX	CK06BX474K
C 7	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.47UF 10% 50V MLD CER	1005-0092	AEROVOX	CK06BX474K
C 10	CAP-47UF 20% 20V RDL TANT	1011-0009	DICKSON	D47GSIC20M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	RESISTOR			
R 1	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 2	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 3	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 10	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 11	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 12	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
	INTEGRATED CIRCUIT			
U 1	IC-74LS123 16 PIN DIP MONOSTABLE MV	2025-0186	TI	SN74LS123N
U 2	IC-74LS123 16 PIN DIP MONOSTABLE MV	2025-0186	TI	SN74LS123N
U 3	IC-74LS74 DUAL D POS &DGETRIGFFW/P&C	2025-0124	TEXAS INSTRUMENTS	SN74LS74N
U 4	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 5	IC-54LS04 14 PIN DIP HEX INVERTERS	2025-0270	TI	SN54LS04J
U 6	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 7	IC-74LS76 16 PIN DIP DUAL J-K FLIP FLO	2025-0185	TI	SN74LS76N
U 8	IC-4008 B16 PIN DIP 4-BIT FULL ADDER	2025-0183	MOTOROLA	MC14008BCP
U 9	IC-4008 B16 PIN DIP 4-BIT FULL ADDER	2025-0183	MOTOROLA	MC14008BCP
U 10	IC-4008 B16 PIN DIP 4-BIT FULL ADDER	2025-0183	MOTOROLA	MC14008BCP
U 11	IC-4008 B16 PIN DIP 4-BIT FULL ADDER	2025-0183	MOTOROLA	MC14008BCP
U 12	IC-SN74LS191N SYN UP/DOWN COUNTERS	2025-0115	TI	SN74LS191N
U 13	IC-SN74LS191N SYN UP/DOWN COUNTERS	2025-0115	TI	SN74LS191N
U 14	IC-7425 14 PIN DIP DUAL 4-INP NOR GATE	2025-0184	TI	SN7425N

CE-50 FAMILY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R57
R56
R40
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R36
Q7
R35
R46
C33
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R28
CR6
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C24
U11
R54
R32
R29
R23
R59
R21
C16
R39
C22
C21
R25
R24
C20
R22
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R16
R30
CR1
R45
R38
CR3
CR4
CR5
C31
R49
R52
R44
R50
C30
R53
C29
R51
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CR8
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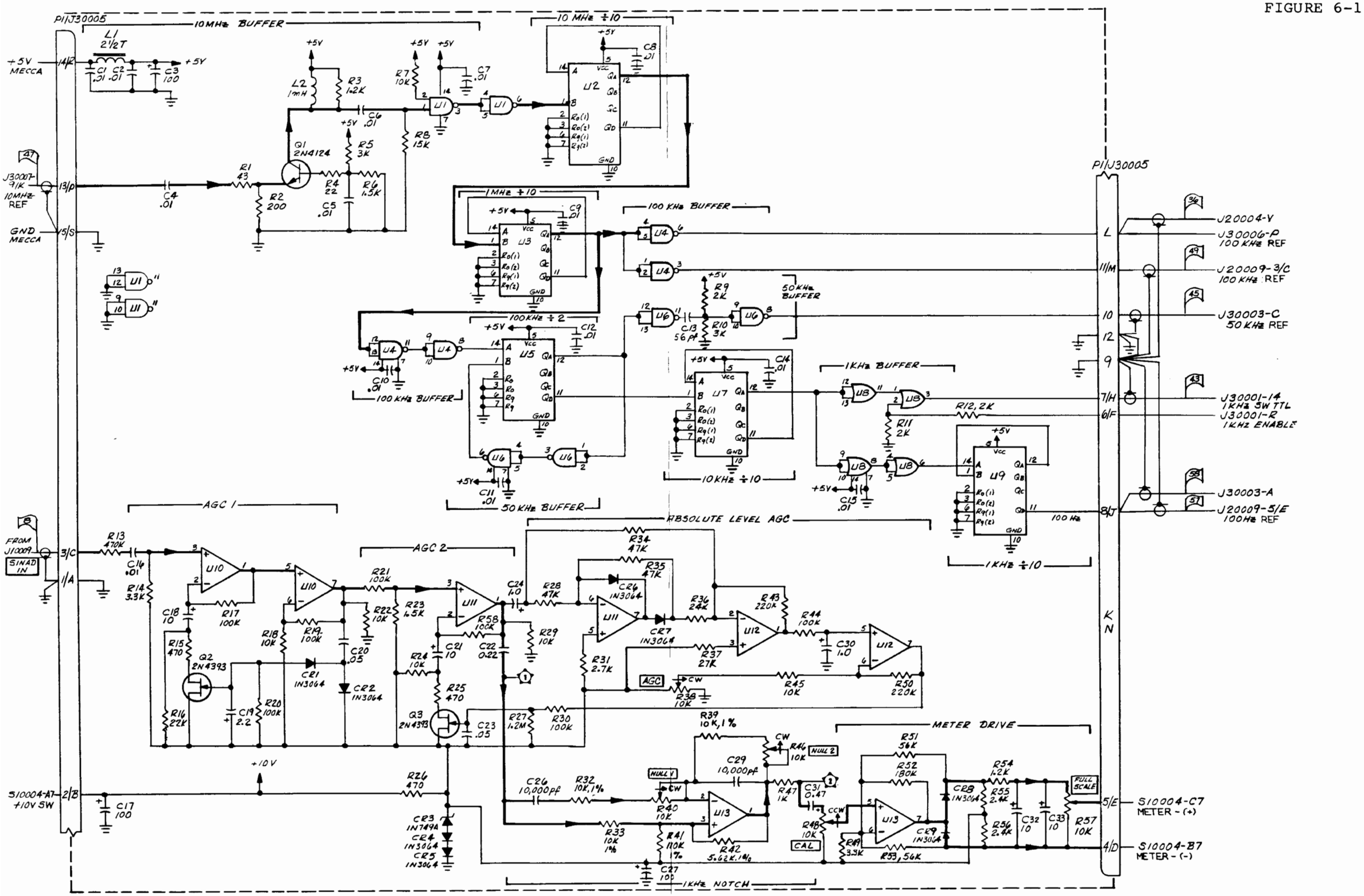


5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

U NO.	PART NO	VCC	GND
1,4,6	74LS00	14	7
2,3,5,7,9	74LS90	5	10
8	74LS32	14	7
10,11,12,13	3533	8	4

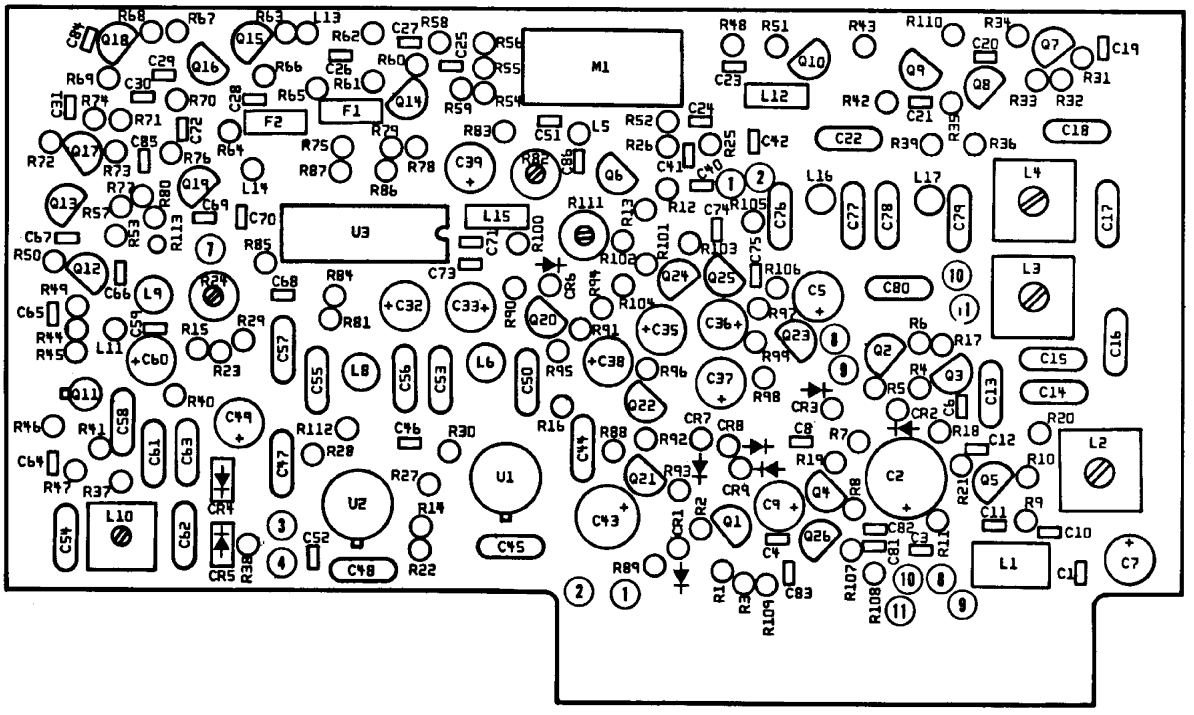
C25, 28 NOT USED.

35000 Ref Freq Divider/SINAD, (7001-0501)
CE-50A, -1, and /TG

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
35000	PCB ASSY - REF. FREQ. DIVIDER/SINAD	7001-0501	CUSHMAN	CE-50A, -1, /TG
	PRINTED CIRCUIT BOARD	1780-1050	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 18	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 19	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 20	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 21	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 22	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 23	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 24	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 26	CAP-10000 PF 5% 500V DIP MICA	1002-0093	CORNELL-DUBILIER	CD20FD103J03
C 27	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 29	CAP-10000 PF 5% 500V DIP MICA	1002-0093	CORNELL-DUBILIER	CD20FD103J03
C 30	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 31	CAP-.47UF 10% 50V MLD CER	1005-0092	AEROVOX	CK06BX474K
C 32	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 33	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N749A SI ZENER D07 4.3V 5% .4W	1281-0034	MOTOROLA	1N749A
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-1000UH 5% RF MLD AXL .19DX.44L	1585-0020	DELEVAN	2500-28
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 3	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 2	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 3	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 4	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 5	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 6	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 9	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 10	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 11	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 13	RES-470K 5% 1/4W CC	1066-4745	ALLEN BRADLEY	CB 4745
R 14	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 15	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 16	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 17	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 20	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 21	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 22	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 23	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 25	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 26	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 27	RES-1.2MEG 5% 1/4W CC	1066-1255	ALLEN BRADLEY	CB1255
R 28	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 29	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 30	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 31	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 32	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 33	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 34	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 35	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 36	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 37	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 38	POT-10K 20% 1/2W 4T CERMET TRMR	1203-0061	BOURNS	3339H-1-103
R 39	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 40	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 41	RES-110K 1% 100PPM FILM	1075-0162	CAT LIST	55-100
R 42	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 43	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 44	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 45	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 46	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 47	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 48	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 49	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 50	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 51	RES-56K 5% 1/4W CC	1066-5635	ALLEN BRADLEY	CB 3635
R 52	RES-180K 5% 1/4W CC	1066-1845	ALLEN BRADLEY	CB1845
R 53	RES-56K 5% 1/4W CC	1066-5635	ALLEN BRADLEY	CB 3635
R 54	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 55	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 56	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 57	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 58	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
	INTEGRATED CIRCUIT			
U 1	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 2	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 3	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 4	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 5	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 6	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 7	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 8	IC-SN74LS32N QUAD 2-INPUT POS-OR GATE	2025-0085	TI	SN74LS32N
U 9	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 10	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 11	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 12	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 13	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB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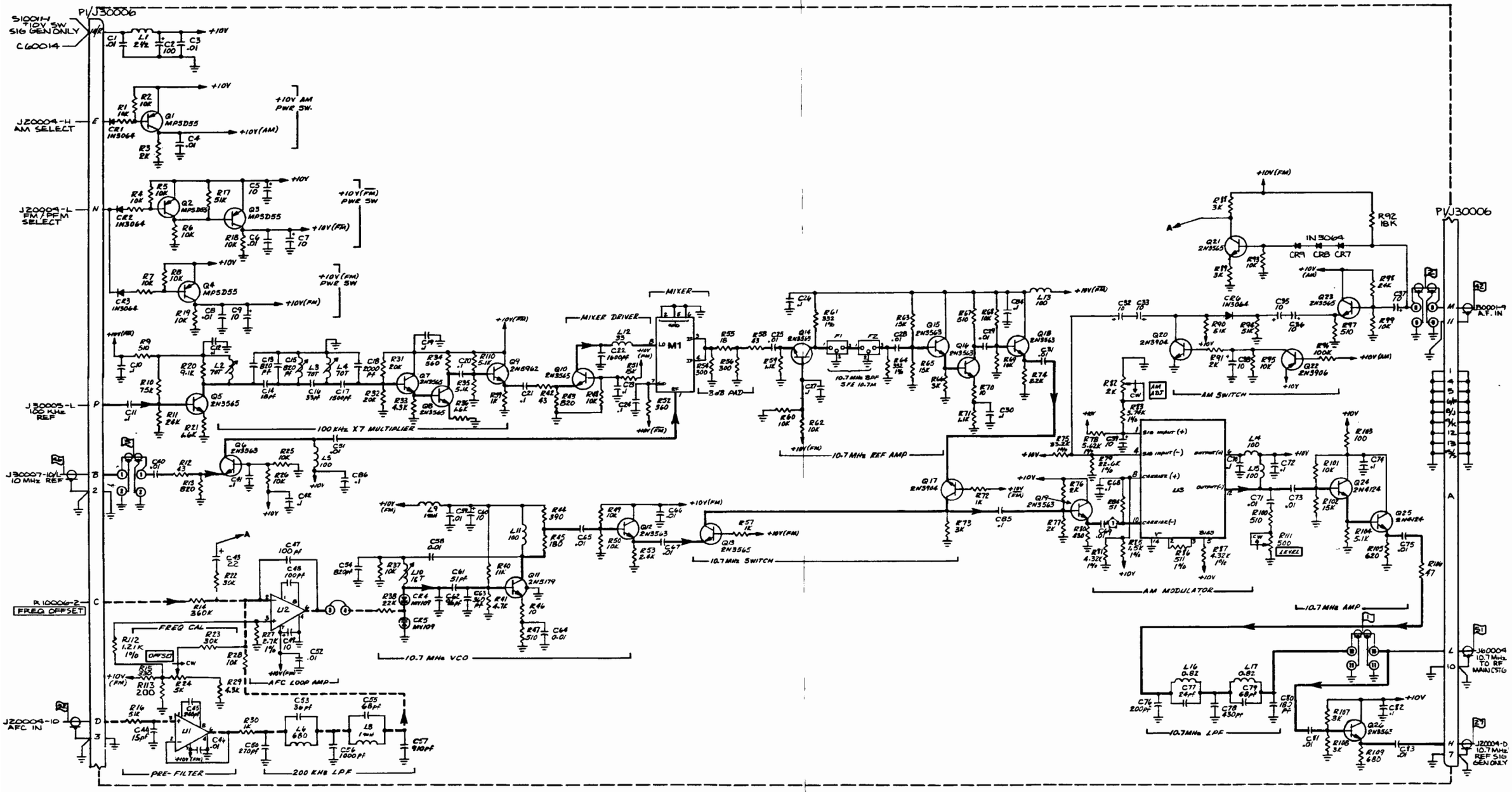


U NO	TYPE	VCC	GND
5	MC1496		12
12	CA3130	7	4

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN pF UNLESS OTHERWISE NOTED.
1. RESISTORS - Ω/w. KΩ VALUES IN OHMS UNLESS OTHERWISE NOTED.

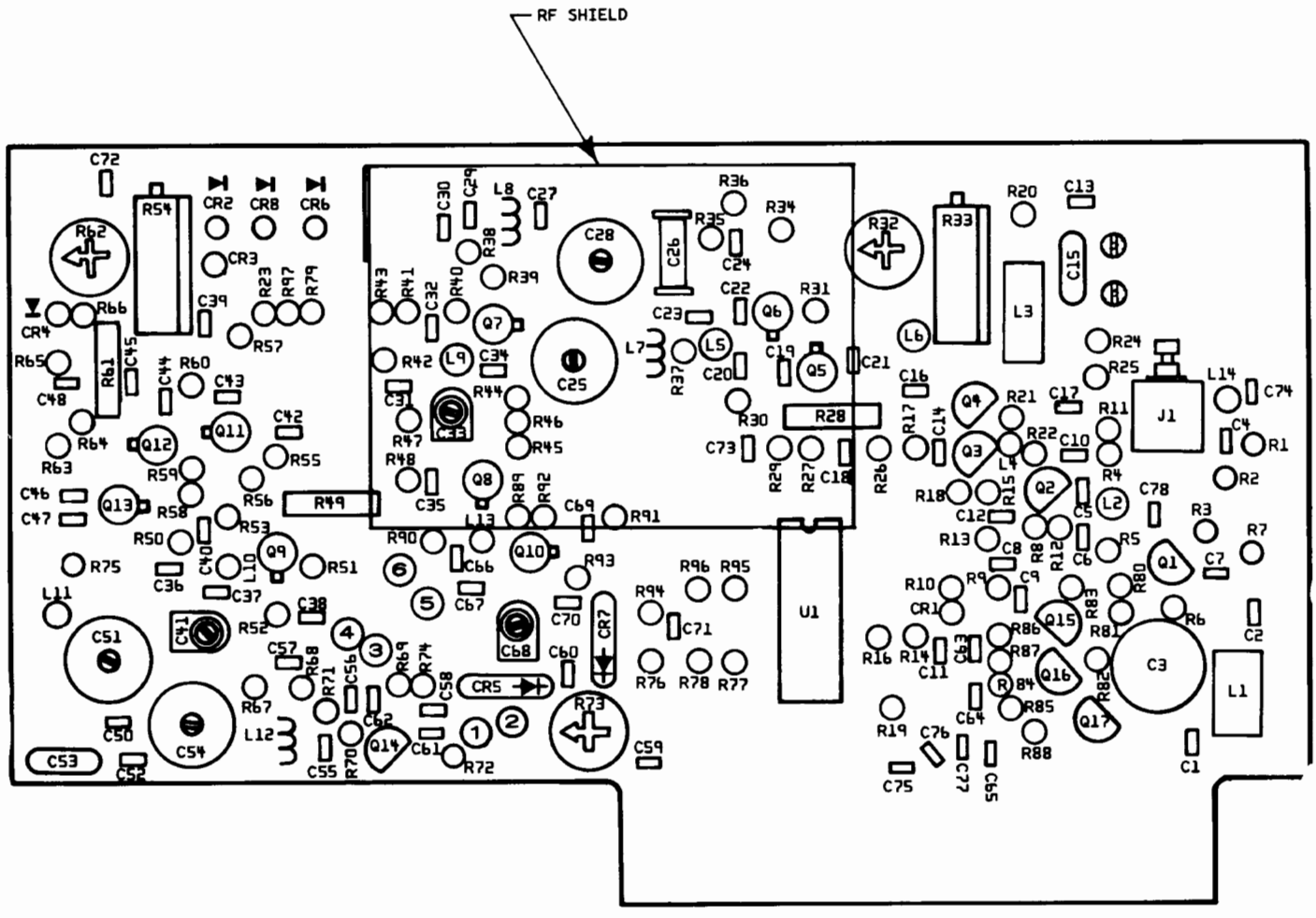
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
36000	PCB ASSY - FM/AM MODULATION	7001-0589	CUSHMAN	CE-50 FAMILY *
	PRINTED CIRCUIT BOARD	1780-1030	CUSHMAN	*(EXCEPT CE-45A)
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 14	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 15	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 16	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 17	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 18	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-1600PF 5% 500V DIP MICA	1002-0072	ELMENCO	DM19-F-162J
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 32	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 33	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 35	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 36	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 37	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 38	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 39	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 40	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 41	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
C 44	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 45	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 46	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 47	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 48	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 49	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 50	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 51	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 52	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 53	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 54	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 55	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 56	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 57	CAP-910PF 5% 100V DIP MICA	1002-0062	ELMENCO	DM15-F-911J
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 59	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 60	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 61	CAP-51PF 5% 500V DIP MICA	1002-0045	ELMENCO	DM15-E-510J
C 62	CAP-96PF 1% 500V DIP MICA	1002-0049	ELMENCO	DM15-F-960F
C 63	CAP-360PF 5% 500V DIP MICA	1002-0040	ELMENCO	DM15-F-361J
C 64	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 65	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 66	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 67	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 68	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 69	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 70	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 71	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 72	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 73	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 74	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 75	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 76	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 77	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 78	CAP-430PF 5% 500V DIP MICA	1002-0034		
C 79	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 80	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 81	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 82	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 83	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 84	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 85	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 86	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 5	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	FILTER			
FL 1	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP.	10.70MHZ RED ONLY
FL 2	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP.	10.70MHZ RED ONLY
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 5	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-680UH 5% RF MLD AXL .19DX.44L	1585-0023	DELEVAN	2500-20
L 8	CH-1000UH 5% RF MLD AXL .19DX.44L	1585-0020	DELEVAN	2500-28
L 9	CH-1000UH 5% RF MLD AXL .19DX.44L	1585-0020	DELEVAN	2500-28

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
L 10	COIL-VAR IF L31-6/30GA/16T	1596-0292		
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-33UH 10% RF MLD AXL .10DX.25L	1585-0071	DELEVAN	1025-56
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 15	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 16	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10
L 17	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10
	TRANSISTOR			
Q 1	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 2	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 3	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 4	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N5962 NPN SI T092 LOW PWR	1272-0059	FAIRCHILD	2N5962
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 12	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 13	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 14	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 17	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 18	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 19	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 20	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 21	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 22	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 23	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 24	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 25	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 26	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 10	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 11	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 12	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 13	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 14	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 15	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 16	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 17	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 21	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 31	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 32	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 33	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 34	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 35	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 36	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 37	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 38	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 40	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 43	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 44	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 45	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 46	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 47	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 50	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 51	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 52	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 53	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 54	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 55	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 56	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 57	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 58	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 59	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 61	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 63	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 64	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 65	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 66	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 67	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 68	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 69	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 70	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 71	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 72	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 73	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 74	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 75	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 76	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 77	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 78	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 79	RES-22.6K 1% 100PPM FILM	1074-1056	CAT.LIST	55-100
R 80	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 81	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 82	POT-2K 10% 1/2W 1T CERMET TRMR	1215-0057	ALLEN BRADLEY	A2A202
R 83	RES-3.74K 1% 150PPM FILM	1074-1017	CAT.LIST	55-100
R 84	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 85	RES-1.5K 1% 100PPM FILM	1075-0039	CAT.LIST	55-100
R 86	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 87	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 88	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 89	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 90	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 91	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 92	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 93	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 94	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 95	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 96	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 97	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 98	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 99	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 100	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 101	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 102	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 103	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 104	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 105	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 106	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 107	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 108	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 109	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 110	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 111	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 112	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 113	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-1496 14 PIN DIP	2025-0197	MOTOROLA	MC1496P
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1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CR2
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R62
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CR4
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R57
R65
R61
C45
C44
R60
C43
C48
R64
Q12
Q11
C42
R63
R59
R55
C46
C47
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R58
R56
R49
R50
R53
C40
L10
Q9
R51
R75
C36
C37
C38
L11
C41
R52
C51
C57
R68
C56
R69
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R67
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R6
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R14
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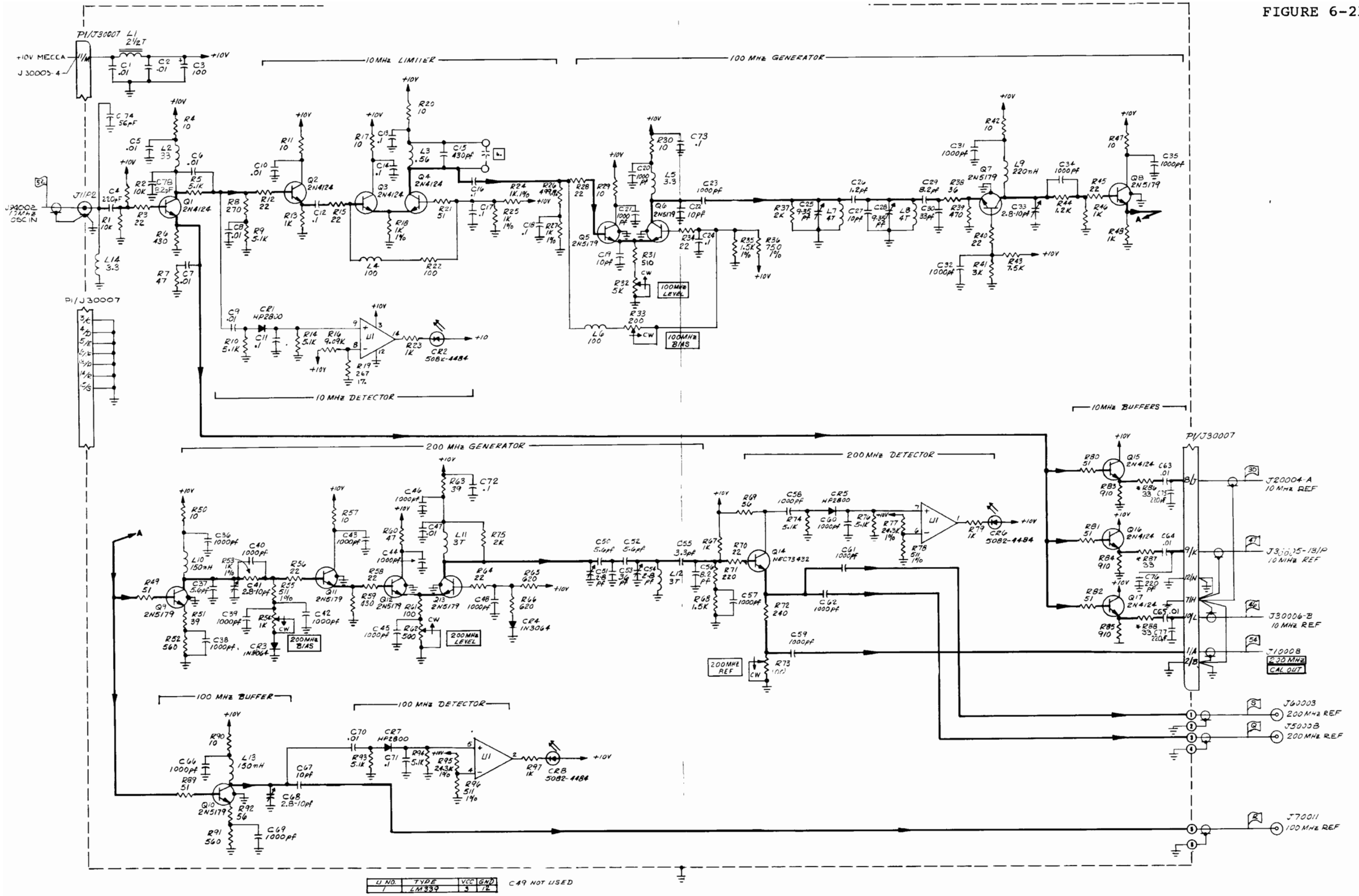


U NO.	TYPE	VCC	GND
1	LM339	3	12

C49 NOT USED

[4] INSTALLED IN CERTAIN UNITS DURING FINAL TEST.

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS – VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS – VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS – 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

3700 Ref Freq Generator, (7001-0497)
CE-45, 50A, and 5100A

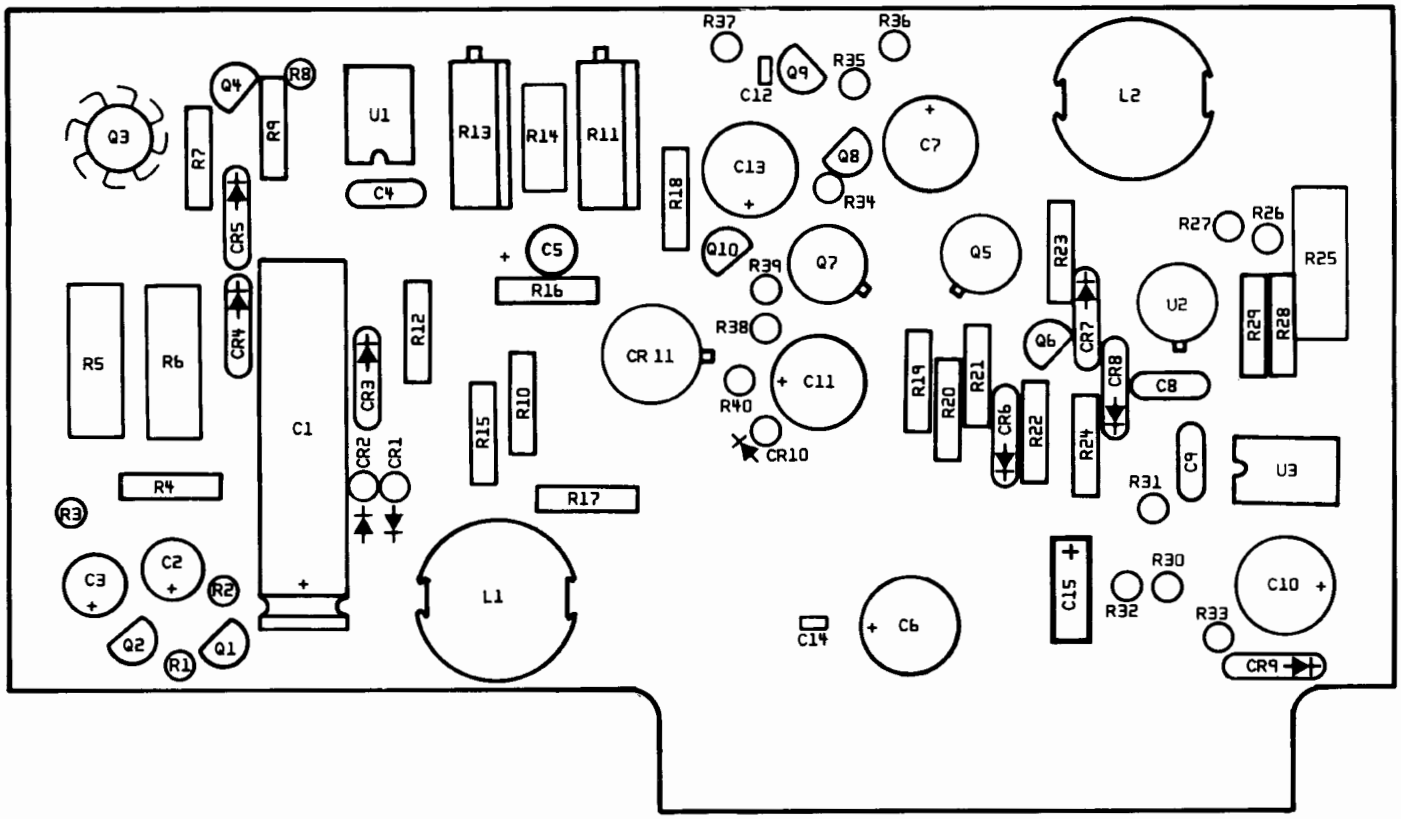
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
37000	PCB ASSY - REF. FREQ. GENERATOR	7001-0497	CUSHMAN	CE-45A. CE-50A ONLY
	PRINTED CIRCUIT BOARD	1780-1040	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-430PF 5% 500V DIP MICA	1002-0034		
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 20	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 21	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 22	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 23	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-9-35PF 200V N650 V MT CER TRMR	1001-0006	ERIE	CV31D350
C 26	CAP-1.2PF .1PF 500V NPO CER TUB	1005-0016	TUSONIX	301-000-C0K0-129B
C 27	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 28	CAP-9-35PF 200V N650 V MT CER TRMR	1001-0006	ERIE	CV31D350
C 29	CAP-8.2PF +/-.5PF 100V NPO MINI CER	1005-0104	TUSONIX	8101-100 C0H0 829D
C 30	CAP-33PF 5% 500V THIN DIP MICA	1004-0006	CORNELL DUBILIER	CD6ED330J
C 31	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 32	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 33	CAP-2.8-10PF 250V V ADJ CER TRMR	1001-0021	SPRAGUE	GRU10000
C 34	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 35	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 36	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 37	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 38	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 39	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 40	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 41	CAP-2.8-10PF 250V V ADJ CER TRMR	1001-0021	SPRAGUE	GRU10000
C 42	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 43	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 44	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 45	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 46	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 47	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 48	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 50	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 51	CAP-2-8PF 350V NPO V MT CER TRMR	1001-0004	TUSONIX	538-011A2-8
C 52	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 53	CAP-36PF 5% 500V DIP MICA	1004-0011	CORNELL DUBILIER	CD10ED360J

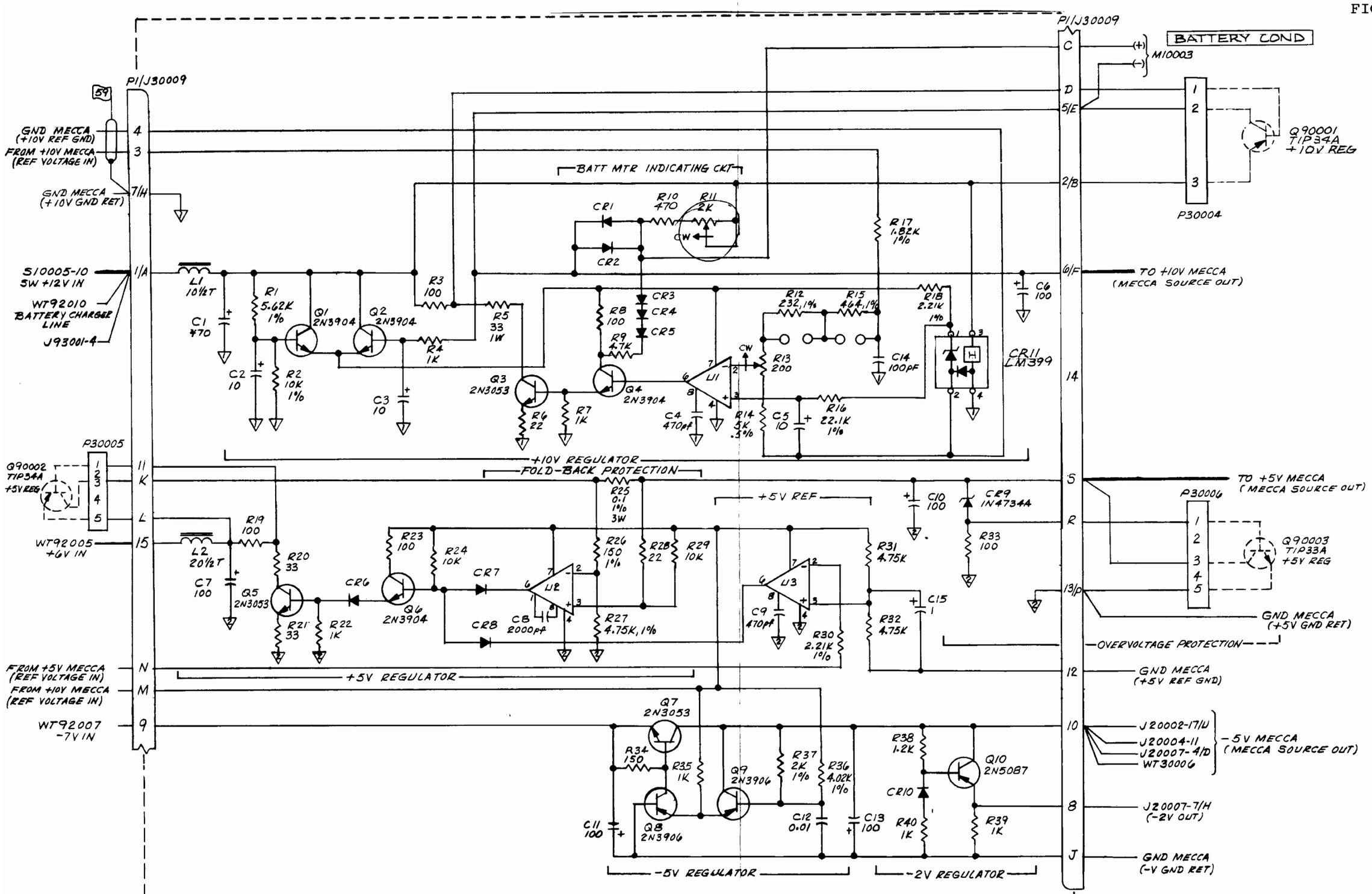
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-2-8PF 350V NPO V MT CER TRMR	1001-0004	TUSONIX	538-011A2-8
C 55	CAP-3.3PF 10% 100V NPO MINTR CER	1005-0132	TUSONIX	8101-100-C0J0-339C
C 56	CAP-8.2PF +/-.5PF 100V NPO MINI CER	1005-0104	TUSONIX	8101-100 C0H0 829D
C 57	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 58	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 59	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 60	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 61	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 62	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 63	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 64	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 65	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 66	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 67	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 68	CAP-2.8-10PF 250V V ADJ CER TRMR	1001-0021	SPRAGUE	GRU10000
C 69	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 70	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 71	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 72	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 73	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 74	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 75	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 76	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 77	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 78	CAP-8.2PF +/-.5PF 100V NPO MINI CER	1005-0104	TUSONIX	8101-100 C0H0 829D
	DIODE			
CR 1	DIO-HP2800 SI HOT CARR AIN 2PF 70PRV	1283-0001	HP	5082-2800
CR 2	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-HP2800 SI HOT CARR AIN 2PF 70PRV	1283-0001	HP	5082-2800
CR 6	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 7	DIO-HP2800 SI HOT CARR AIN 2PF 70PRV	1283-0001	HP	5082-2800
CR 8	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
	CONNECTOR			
J 1	CONN-SMB 50 OHM RTANG JK PC MT SNAP-ON	2536-0060	CABLEWAVE	700214NP
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 3B	1586-0001	FERROXCUBE	VK200 10/3B
L 2	CH-33UH 5% RF MLD AXL .16DX.38L	1585-0022	DELEVAN	1537-52
L 3	CH-.56UH 10% RF MLD AXL .19DX.44L	1585-0036	DELEVAN	1840-07
L 4	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 5	CH-3.3UH 10% RF MLD AXL .16DX.38L	1585-0037	DELEVAN	1537-24
L 6	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 7	COIL-NYL CORE 10-32/24GA/4T	1596-0293		
L 8	COIL-NYL CORE 10-32/24GA/4T	1596-0293		
L 9	CH-.22UH 20% RF MLD AXL .16DX.38L	1585-0039	DELEVAN	1537-02
L 10	CH-.15UH 10% RF MLD AXL .10DX.25L	1585-0065	DELEVAN	1025/00
L 11	COIL-NYL CORE 10-32/24GA/3T	1596-0294		
L 12	COIL-NYL CORE 10-32/24GA/3T	1596-0294		
L 13	CH-.15UH 10% RF MLD AXL .10DX.25L	1585-0065	DELEVAN	1025/00
L 14	CH-3.3UH 10% RF MLD AXL .10DX.25L	1585-0080	DELEVAN	1025-32

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 4	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 5	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 6	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 7	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 8	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 9	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 10	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 11	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 12	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 13	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 14	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 15	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 16	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 17	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 4	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 5	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 6	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 7	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 8	RES-270 OHM 5% 1/4W CC	1066-2715	ALLEN BRADLEY	CB2715
R 9	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 10	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 11	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 12	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 15	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 16	RES-9.09K 1% 100PPM FILM	1074-1019	CAT.LIST	55-100
R 17	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 18	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 19	RES-267 OHM 1% 100PPM FILM	1075-0083	CAT.LIST	55-100
R 20	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 21	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 22	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 23	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 24	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 25	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 26	RES-499 OHM 1% 100PPM FILM	1075-0008	CAT.LIST	55-100
R 27	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 28	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 29	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 30	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 31	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 32	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 33	POT-200 OHM 10% 3/4W 15T CERMET TRMR	1215-0017	HELITRIM	89WR
R 34	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 35	RES-1.5K 1% 100PPM FILM	1075-0039	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 36	RES-750 OHM 1% 100PPM FILM	1075-0043	CAT.LIST	55-100
R 37	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 38	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 39	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 40	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 41	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 42	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 43	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 44	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 45	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 46	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 47	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 48	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 49	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 50	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 51	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 52	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 53	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 54	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 55	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 56	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 57	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 58	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 59	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 60	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 61	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 62	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500
R 63	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 64	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 65	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 66	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 67	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 68	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 69	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 70	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 71	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 72	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 73	POT-100 OHM 20% 1/2W 1T CERMET TRMR	1215-0054	BECKMAN	91AR100
R 74	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 75	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 76	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 77	RES-24.3K 1% 100PPM FILM	1075-0097	CAT.LIST	55-100
R 78	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 79	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 80	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 81	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 82	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 83	RES-910 OHM 5% 1/4W CC	1066-9115	ALLEN BRADLEY	CB 9115
R 84	RES-910 OHM 5% 1/4W CC	1066-9115	ALLEN BRADLEY	CB 9115
R 85	RES-910 OHM 5% 1/4W CC	1066-9115	ALLEN BRADLEY	CB 9115
R 86	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 87	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 88	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 89	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 90	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 91	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 92	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 93	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 94	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 95	RES-24.3K 1% 100PPM FILM	1075-0097	CAT.LIST	55-100
R 96	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 97	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
	INTEGRATED CIRCUIT			
U 1	IC-339 14 PIN DIP QUAD VOLTAGE COMPTR	2025-0201	MOTOROLA	MLM339P


R37
R36
Q9
R35
C12
L2
Q4
R8
U1
R13
R14
R11
C13
C7
Q3
R7
R9
Q8
R34
R18
C4
CR5
C5
Q10
R39
Q7
Q5
R23
R27
R26
R25
R16
U2
R5
R6
CR4
R12
R38
CR 11
C11
Q6
CR7
R29
R28
C1
CR3
R19
R21
CR8
C8
R15
R10
R40
R20
CR2
CR1
CR10
CR6
R22
R24
C9
U3
R4
R17
R31
R3
C3
C2
R2
L1
C15
R30
C10
R32
R33
C14
C6
Q2
R1
Q1
CR9



NOTE:

6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

39000 10V/5V Regulators, (7001-0502)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
3900(	PCB ASSY - 10V/5V REGULATORS	7001-0502	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1043	CUSHMAN	
	CAPACITOR			
C 1	CAP-470UF +50-10% 25V AXL ELCTLT	1014-0020	ILL CAP.	477TTA025A
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 4	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 5	CAP-10UF 20% 35V RDL ELCTLT	1013-0044	NICHICON	35UKB10M
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 8	CAP-.002UF 20% 500V Z5U CER DISC	1005-0003	TUSONIX	831-596-Z5U-202M
C 9	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 10	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 11	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 14	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 15	CAP-1UF+75-10% 50V ELCTLT	1013-0004	SPRAGUE	30D105G050BA5
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N4734A SI ZENER AIAY 5.6V 5% 1W	1281-0134	MOTOROLA	1N4734A
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-399 ZENER TO46 MOD 6.95V 2PPM	1281-0133	NATIONAL	LM399H
	INDUCTOR			
L 1	INDCTR-POT CORE 18X11/10.5T/20GA	1596-0258		
L 2	INDCTR-POT CORE 18X11/20.5T/22GA	1596-0259		
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N3053 NPN SI TO 5 HIGH PWR	1272-0011	RCA	2N3053
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3053 NPN SI TO 5 HIGH PWR	1272-0011	RCA	2N3053
Q 6	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 7	XSTR-2N3053 NPN SI TO 5 HIGH PWR	1272-0011	RCA	2N3053
Q 8	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 9	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 10	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
	RESISTOR			
R 1	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 2	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 3	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 4	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 5	RES-33 OHM 5% 1W CC	1068-3305	ALLEN BRADLEY	GB 3305

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 6	RES-22 OHM 5% 1W CC	1068-2205	ALLEN BRADLEY	GB 2205
R 7	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 8	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 9	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 10	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 11	POT-2K 10% 3/4W 15T CERMET TRMR	1215-0015	BECKMAN	89WR2K
R 12	RES-232 OHM 1% 25PPM FILM	1075-0173	SHELLY	RN55E
R 13	POT-200 OHM 10% 3/4W 15T CERMET TRMR	1215-0017	HELITRIM	89WR
R 14	RES-5K.5%.15W 15 PPM AXL WW	1177-0011	JORDAN	J110
R 15	RES-464 OHM 1% 25PPM FILM	1075-0174	SHELLY	RN55E
R 16	RES-22.1K 1% 100PPM FILM	1075-0012	CAT.LIST	55-100
R 17	RES-1.82K 1% 25PPM FILM	1075-0080	CAT.LIST	55-025
R 18	RES-2.21K 1% 100PPM FILM	1075-0010	CAT.LIST	55-100
R 19	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 20	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 21	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 22	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 23	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 25	RES-.10 OHM 3% 3W .90PPM AXL WW	1159-0010	DALE	RS-2B
R 26	RES-150 OHM 1% 100PPM FILM	1075-0125	CAT. LIST	55-100
R 27	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 28	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 29	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 30	RES-2.21K 1% 100PPM FILM	1075-0010	CAT.LIST	55-100
R 31	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 32	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 33	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 34	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 35	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 36	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 37	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 38	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 40	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
	INTEGRATED CIRCUIT			
U 1	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N

FIGURE 6-2

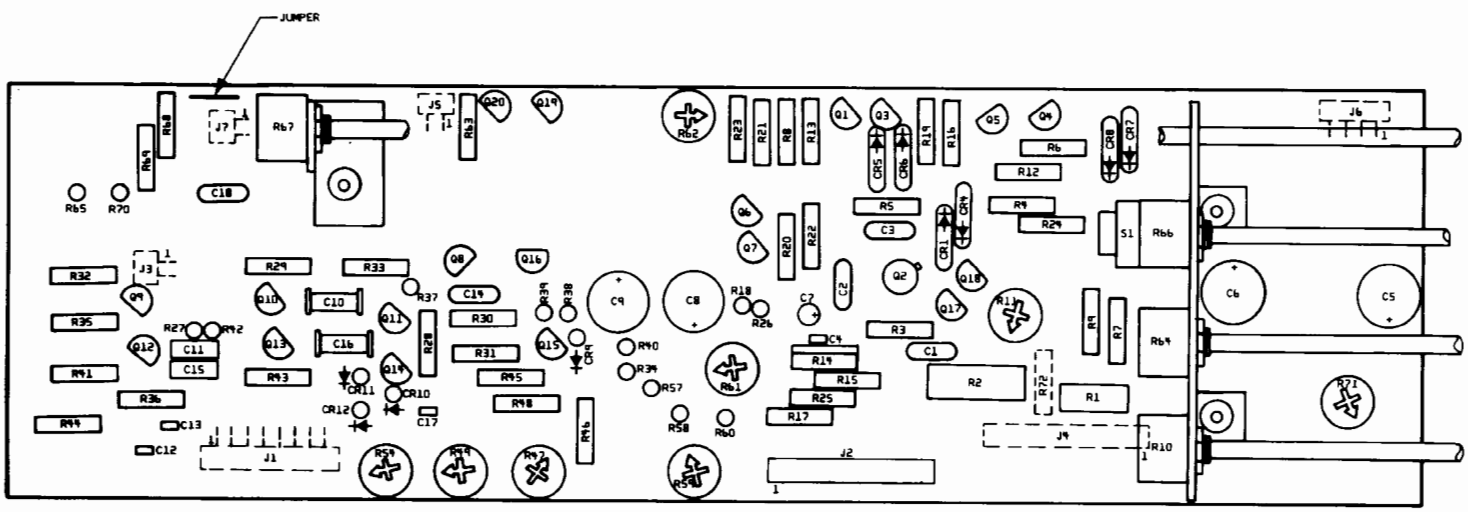
FOCUS
INTEN
OFF
HORIZ
VERT
CAL
CAL
J1/P40012
P1/J20012
TB1-5, +90V
TB1-6 GND
TB1-4 -10V
V1-5 GRID2
J20006-4 LOG AMPL SIGNAL IN
J30002-H AM/FM DEMOD
J20009-12 700 kHz IF
CR10001-(-) VERT UNCAL LED
J43001-6
J43001-8
J43001-1
41000
VERTICAL AMPL
J3/J40013 (Y DEFL)
J7/P40015 (FOCUS)
J5/P40014 (ROTATION COIL)
J6/P40011
J2/P44002
J4/P43001
P1-23
P1-7
P1-21
J1/P40004
43000
VERT DEFL SWITCH MTG
J2/P10007
J1/P40016
TB1-2
J2/P40017
J1/P44001
44000
HORIZ DEFL SWITCH MTG
J4/P10008
J6/P40008
J45002-1
J3/P40005
J2/P40003
42000
TIME BASE & HORIZ AMPL
TB1-5 (+90V)
TB1-4 (+10V)
TB1-6 (GND)
J7/P40009
J5/P40007
P1/J20012
J12002-8 10 kHz/DIV
J20007-5 100kHz/DIV
J20007-14/R 1MHz/DIV
J20001-L SW+10V SPECTRUM MON POSN ONLY
J20002-14/R AUDIO SYNTH IN
CR10002-(-) HORZ UNCAL LED
J10007 HORIZ
J12002-2 100 kHz/DIV
J12002-5 1MHz/DIV
J20007-10/6 SM BLANK
J20001-10 SQUELCH IN
J20007-T SWEEP OUT
HORIZ (PER DIV)
1μs EXT
10μs
100μs
1μs
10μs
INT TONE
1 MHz
100 kHz
10 kHz
SPECTRUM MONITOR
VERT
IF
5V
EXT (PER DIV)
kHz % AM x10
5V
50 MV
5 MV
AC
C10003
S10010
DC
VERT J10006
P1/J2002
+10 V MECCA
GND MECCA
A
TOP
CRT SOCKET REAR VIEW
P40002
NOT USED
J1/P40018
45000
DC-DC CONVERTER
-10V SOURCE
+90V SOURCE
GND
J2/P40010
SW +10V IN
J42006-1
20kHz 135V PULSE
+10V SOURCE
TB1
J44001-5
J42002-5,6
J42002-4
J41001-3
J42002-2
J41001-1
J42001-2
A
L1 100
J41001-4
G2
V1
(ROTATIONAL COIL)
K
FOCUS G3
Y2
Y1
X1
X2
-90V
K

TAGES ARE DC UNLESS OTHERWISE NOTED.
SELECT. TYPICAL VALUE SHOWN.
Ω - VALUES IN μH UNLESS OTHERWISE NOTED.
MS - VALUES IN μF UNLESS OTHERWISE NOTED.
Ω - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

(8000-06

40000 1 MHz Scope Modu
CE-50 Family

6-75/76


JUMPER
J7
J5
J6
J3
J4
J2
J1
J10
S1
R65
R70
C18
R32
R35
R41
R36
R44
C13
C12
R27
R42
C11
C15
R43
C10
C16
R29
R33
R37
C14
R30
R31
R45
R48
R28
R39
R38
C4
R40
R34
R57
R58
R60
R46
C17
CR11
CR10
CR12
Q8
Q16
Q15
C9
C8
R18
R26
C7
C2
C9
R19
R15
R25
R17
R62
R61
R59
R54
R52
R53
R23
R21
R8
R13
R63
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Q19
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Q3
Q5
Q4
CR5
CR6
R14
R16
R6
R12
R9
R29
C3
R5
Q6
Q7
R20
R22
Q2
CR1
CR4
Q18
Q17
R11
R3
C1
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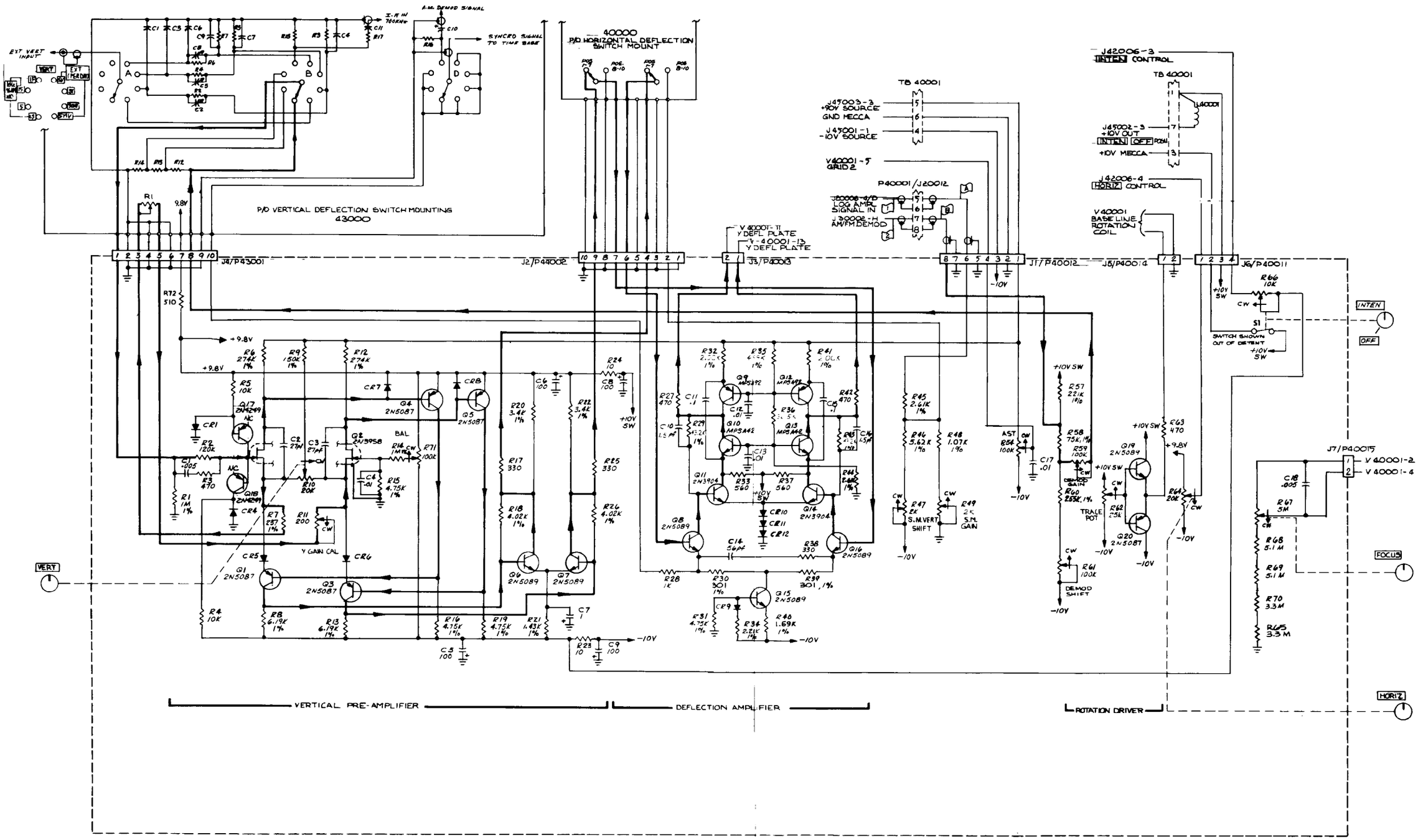
R72
R1
R4
R7
R64
R66
CR8
CR7
C6
C5
R71
R10



NOT USED:
R50, 51, 52, 53, 55, 56;
CR 2, 3

OUT OF SEQUENCE LOCATION TABLE	
REF NO	APPROX LOCATION
R71	NEAR Q4
Q17	NEAR R2
Q18	NEAR R3
R72	NEAR J4

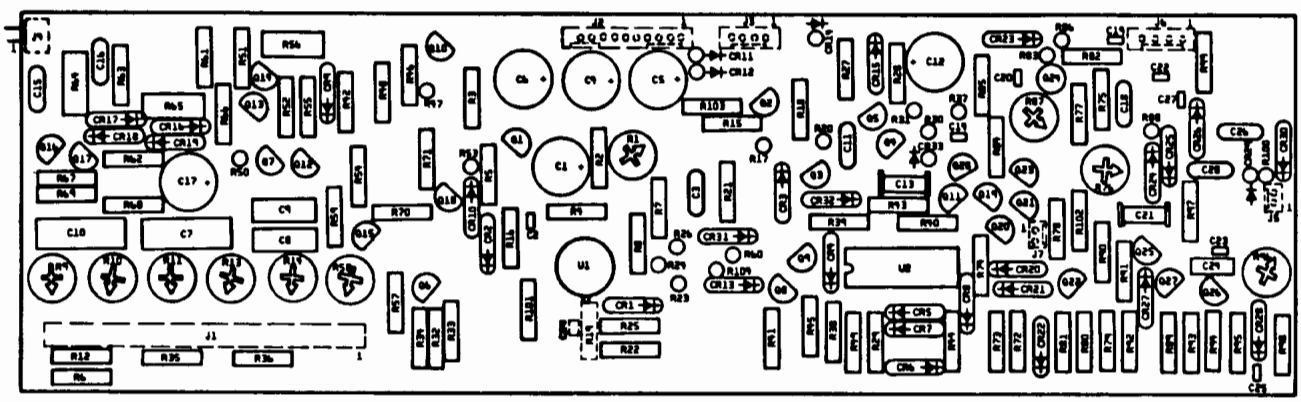
NOTE:
4. ALL DIODES ARE 1N4004 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

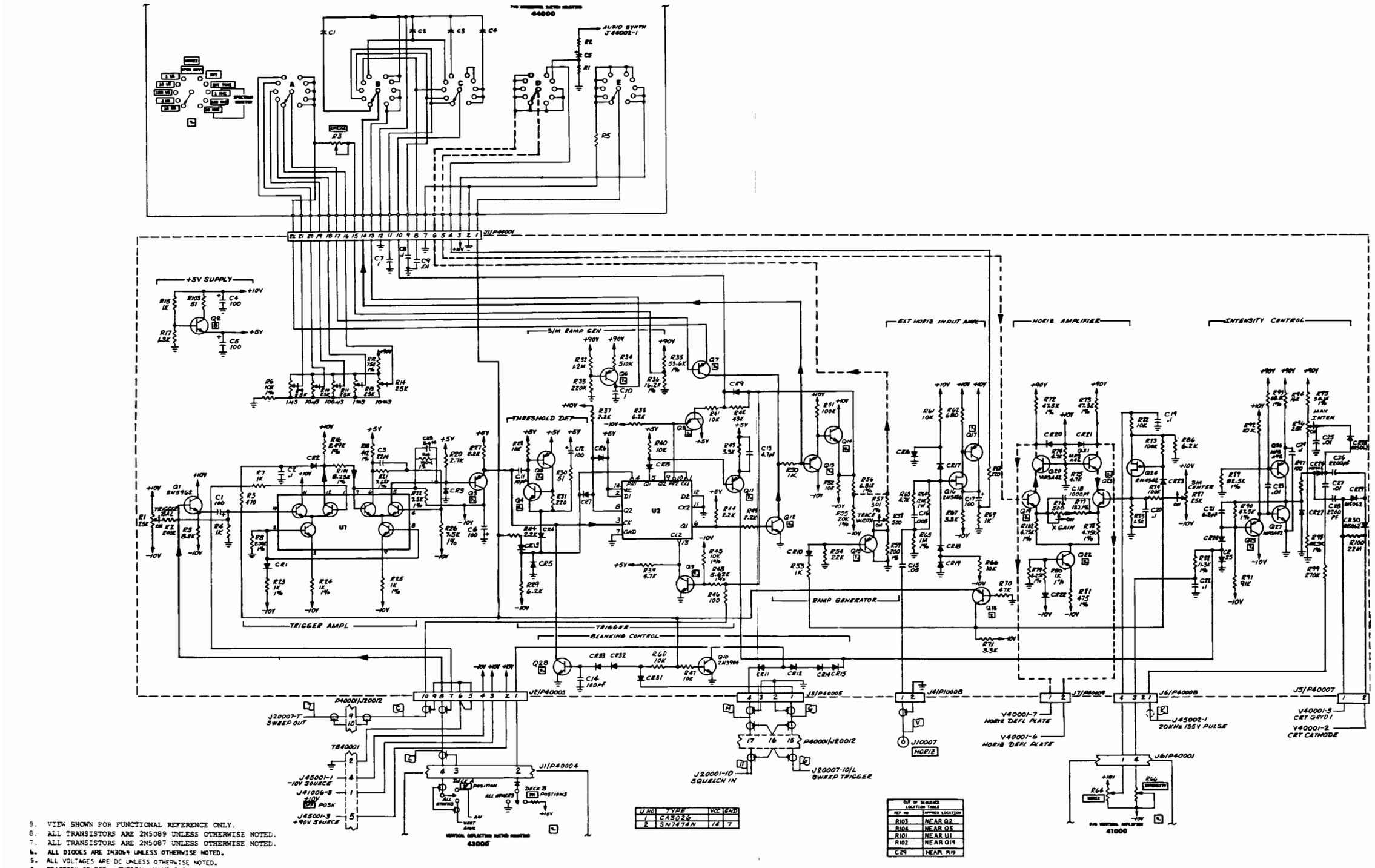
41000 Vertical Amplifier, (7001-0614)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
41000	PCB ASSY - VERT. AMP	7001-0614	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1014	CUSHMAN	
	CAPACITOR			
C 1	CAP-.005UF GMV 1KV Z5U CER DISC	1005-0009	CENTRALAB	DD-502
C 2	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 3	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 8	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-1.5PF .25PF 500V NPO CER TUB	1005-0041	TUSONIX	301-000-C0K0-159C
C 11	CAP-.1UF 10% 100V MLD CER	1005-0064	AEROVOX	CK06BX104K
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 15	CAP-.1UF 10% 100V MLD CER	1005-0064	AEROVOX	CK06BX104k
C 16	CAP-1.5PF .25PF 500V NPO CER TUB	1005-0041	TUSONIX	301-000-C0K0-159C
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.005UF GMV 1KV Z5U CER DISC	1005-0009	CENTRALAB	DD-502
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 2	CONN-10PIN .1SP RTANG FLAT CA JK	2535-0185	BURNDY	HBRB10R-1
J 3	CONN-2 PIN .1SP RTANG LKG PCB MT JK	2535-0172	METHODE	1100-9-102-01
J 4	CONN-10PIN .1SP RTANG FLAT CA JK	2535-0185	BURNDY	HBRB10R-1
J 5	CONN-2 PIN .1SP RTANG LKG PCB MT JK	2535-0172	METHODE	1100-9-102-01
J 6	CONN-4 PIN .1SP RTANG LKG PCB MT JK	2535-0174	METHODE	1100-9-104-01
J 7	CONN-2 PIN .1SP RTANG LKG PCB MT JK	2535-0172	METHODE	1100-9-102-01
	TRANSISTOR			
Q 1	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 2	XSTR-2N3958 SI T071 DUAL J-FET N-CHAN	1272-0127	NATIONAL	2N3958
Q 3	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 4	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 5	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 6	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 7	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 8	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 9	XSTR-MPSA92 PNP SI T092 LOW PWR	1272-0088	MOTQROLA	MPSA92
Q 10	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
Q 11	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 12	XSTR-MPSA92 PNP SI T092 LOW PWR	1272-0088	MOTOROLA	MPSA92
Q 13	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 14	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 15	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 16	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 17	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 18	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 19	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 20	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
	RESISTOR			
R 1	RES-1MEG 1% 150PPM FILM	1074-1039	CAT.LIST	55-100
R 2	RES-120K 5% 1W CC	1068-1245	ALLEN BRADLEY	GB 1245
R 3	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-274K 1% 100PPM FILM	1075-0062		
R 7	RES-237 OHM 1% 150PPM FILM	1074-1041	CAT.LIST	55-100
R 8	RES-6.19K 1% 100PPM FILM	1075-0109	CAT.LIST	55-100
R 9	RES-150K 1% 100PPM FILM	1075-0152	CAT LIST	55-100
R 10	POT-20K 10% 1/2W LIN 1/8SFT CC	1203-0095	ALLEN BRADLEY	WAZG056S203UA
R 11	POT-200 OHM 20% 1/2W 1T CERMET TRMR	1215-0055	BECKMAN	91AR200
R 12	RES-274K 1% 100PPM FILM	1075-0062		
R 13	RES-6.19K 1% 100PPM FILM	1075-0109	CAT.LIST	55-100
R 14	RES-1MEG 1% 150PPM FILM	1074-1039	CAT.LIST	55-100
R 15	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 16	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 17	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 18	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 19	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 20	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 21	RES-1.43K 1% 100PPM FILM	1075-0021	CAT.LIST	55-100
R 22	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 23	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 24	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 25	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 26	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 27	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 28	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 29	RES-43.2K 1% 100PPM FILM	1075-0117		
R 30	RES-301 OHM 1% 100PPM FILM	1075-0048	CAT.LIST	55-100
R 31	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 32	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 33	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 34	RES-2.21K 1% 100PPM FILM	1075-0010	CAT.LIST	55-100
R 35	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 36	RES-36.5K 1% 100PPM FILM	1075-0113	CAT.LIST	55-100
R 37	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 38	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 39	RES-301 OHM 1% 100PPM FILM	1075-0048	CAT.LIST	55-100
R 40	RES-1.69K 1% 150PPM FILM	1074-1015	CAT.LIST	55-100
R 41	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 42	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 43	RES-43.2K 1% 100PPM FILM	1075-0117		
R 44	RES-2.61K 1% 100PPM FILM	1075-0090	CAT.LIST	55-100
R 45	RES-2.61K 1% 100PPM FILM	1075-0090	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 46	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 47	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 48	RES-1.07K 1% 100PPM FILM	1075-0166	CAT. LIST	55-100
R 49	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 54	POT-100K 20% 1/2W 1T CERMET TRMR	1215-0046	BECKMAN	91AR100K
R 57	RES-221K 1% 100PPM FILM	1075-0040	CAT.LIST	55-100
R 58	RES-75K 1% 100PPM FILM	1075-0135	CAT. LIST	55-100
R 59	POT-100K 20% 1/2W 1T CERMET TRMR	1215-0046	BECKMAN	91AR100K
R 60	RES-255K 1% 100PPM FILM	1075-0017	CAT.LIST	55-100
R 61	POT-100K 20% 1/2W 1T CERMET TRMR	1215-0046	BECKMAN	91AR100K
R 62	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 63	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 64	POT-20K 10% 1/2W LIN 1/8SFT CC	1203-0095	ALLEN BRADLEY	WAZG056S203UA
R 65	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 67	POT-5MEG 10% 1/2W LIN 1/8SFT CC	1203-0096	ALLEN BRADLEY	WAZG056S505UA
R 68	RES-5.1MEG 5% 1/4W CC	1066-5155	ALLEN BRADLEY	CB 5155
R 69	RES-5.1MEG 5% 1/4W CC	1066-5155	ALLEN BRADLEY	CB 5155
R 70	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 71	POT-100K 20% 1/2W 1T CERMET TRMR	1215-0046	BECKMAN	91AR100K
R 72	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 66 S1	POT-10K 10% 1/2W LIN 1/8 SFT CC W/SPST	1203-0094	ALLEN BRADLEY	WRS1G056S103UA





U NO	TYPE	VCC	GND
1	CA5026		
2	SN7474N	14	7

OUT OF SEQUENCE LOCATION TABLE	
REF NO	APPROX LOCATION
R103	NEAR Q2
R104	NEAR Q5
R101	NEAR U1
R102	NEAR Q19
C29	NEAR R19

NOTE:
9. VIEW SHOWN FOR FUNCTIONAL REFERENCE ONLY.
8. ALL TRANSISTORS ARE 2N5089 UNLESS OTHERWISE NOTED.
7. ALL TRANSISTORS ARE 2N5087 UNLESS OTHERWISE NOTED.
6. ALL DIODES ARE IN3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

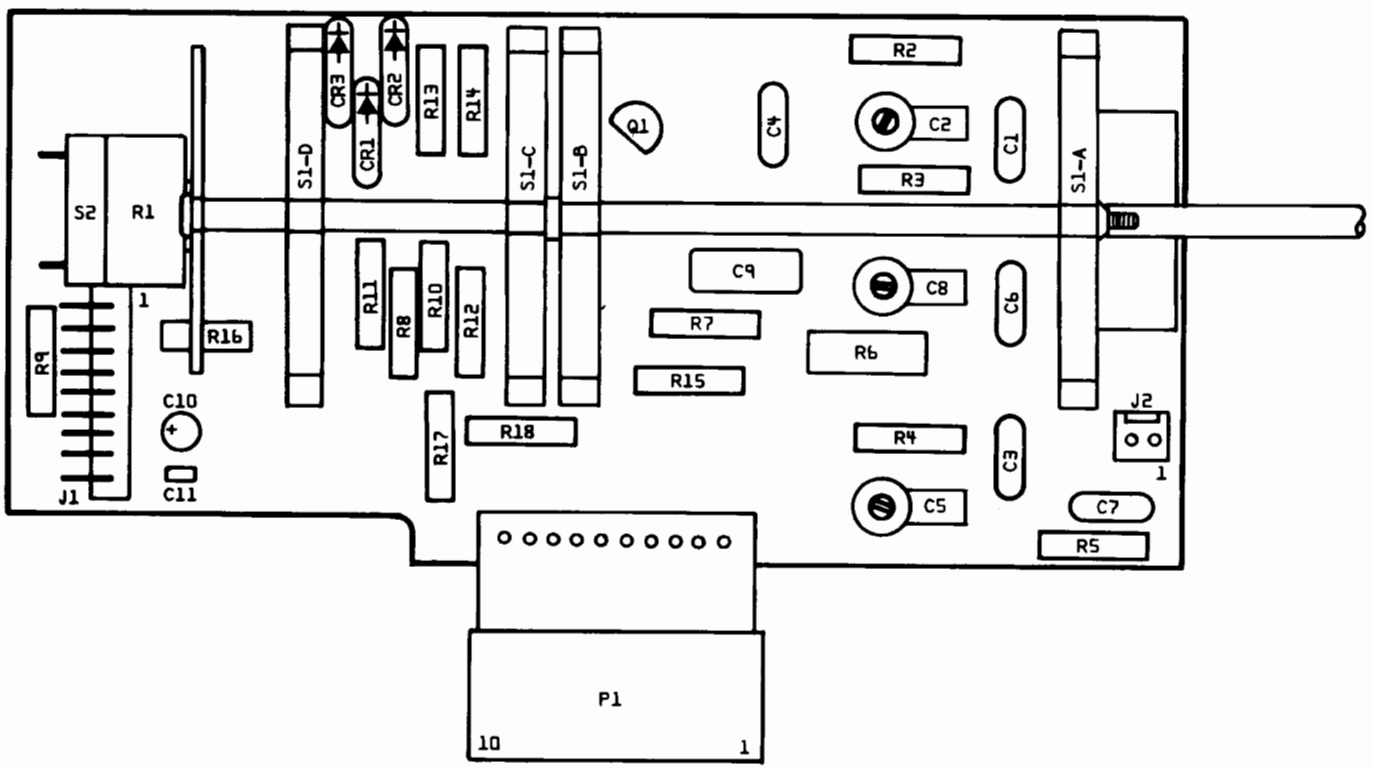
42000 Time Base & Horizontal Amp, (7001-0615)
CE-50 Family (Except CE-5100A and 5110A)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
42000	PCB ASSY - TIME BASE & HORZ. AMP.	7001-0615	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1062	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-22PF 5% 500V DIP MICA	1002-0023	CORNELL DUBILIER	CD15CD220J
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-1UF 10% 100V RDL MET-POLYESTER	1008-0100	PLESSEY	60H105K100
C 8	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 9	CAP-.01UF 10% 600V RDL MET-POLYESTER	1008-0099	PLESSEY	60103K630
C 10	CAP-1UF 10% 100V RDL MET-POLYESTER	1008-0100	PLESSEY	60H105K100
C 11	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 12	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 13	CAP-4.7PF .25PF 500V NPO CER TUB	1005-0015	TUSONIX	301-000-C0H0-479C
C 14	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 15	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
C 16	CAP-.005UF GMV 1KV Z5U CER DISC	1005-0009	CENTRALAB	DD-502
C 17	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 18	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-6.8PF .25PF 500V NPO CER TUB	1005-0006	TUSONIX	301-000-C0H0-689C
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 24	CAP-.1UF 10% 100V MLD CER	1005-0064	AEROVOX	CK06BX104K
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 29	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 21	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 23	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 24	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 25	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 26	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E.	1N5062
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E.	1N5062
CR 29	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E.	1N5062
CR 30	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E.	1N5062
CR 31	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 32	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 33	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-10PIN .1SP RTANG FLAT CA JK	2535-0185	BURNDY	HBRB10R-1
J 1	CONN-12PIN 1SP RTANG FLAT CA JK	2535-0186	BURNDY	HBRB12R-1
J 2	CONN-10 PIN 1SP STR LKG PCB MT JK	2535-0150	METHODE	100-8-110-01
J 3	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 4	CONN-2 PIN .1SP RTANG LKG PCB MT JK	2535-0172	METHODE	1100-9-102-01
J 5	CONN-2 PIN .1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
J 6	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 7	CONN-2 PIN 1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
	TRANSISTOR			
Q 1	XSTR-2N5962 NPN SI T092 LOW PWR	1272-0059	FAIRCHILD	2N5962
Q 2	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 3	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 4	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 5	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 6	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 7	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 8	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 9	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 12	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 13	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 14	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 15	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 16	XSTR-2N5486 SI T092 J-FET N-CHAN	1272-0093	MOTOROLA	2N5486
Q 17	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 18	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 19	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 20	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 21	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 22	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 23	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 24	XSTR-2N4342 SI R124B J-FET P-CHAN	1272-0027	MOTOROLA	2N4342
Q 25	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 26	XSTR-MPSA92 PNP SI T092 LOW PWR	1272-0088	MOTOROLA	MPSA92
Q 27	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 28	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
	RESISTOR			
R 1	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 2	RES-200K 5% 1/4W CC	1066-2045	ALLEN BRADLEY	CB2045
R 3	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 4	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 5	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 6	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 7	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 8	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 9	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 10	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 11	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 12	RES-75K 1% 100PPM FILM	1075-0135	CAT. LIST	55-100
R 13	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 14	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-2.49K 1% 100PPM FILM	1075-0027	CAT.LIST	55-100
R 17	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 18	RES-412 OHM 1% 100PPM FILM	1075-0084	CAT.LIST	55-100
R 19	RES-150K 1% 100PPM FILM	1075-0152	CAT. LIST	55-100
R 20	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 21	RES-7.68K 1% 100PPM FILM	1075-0054	CAT.LIST	55-100
R 22	RES-7.5K 1% 100PPM FILM	1075-0158	CAT. LIST	55-100
R 23	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 24	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 25	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 26	RES-7.5K 1% 100PPM FILM	1075-0158	CAT LIST	55-100
R 27	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 30	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 31	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 32	RES-1.2MEG 5% 1/4W CC	1066-1255	ALLEN BRADLEY	CB1255
R 33	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 34	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 35	RES-53.6K 1% 150PPM FILM	1074-1023	CAT.LIST	55-100
R 36	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 37	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 38	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 39	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 40	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 41	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 42	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 43	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 44	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 45	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 46	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 47	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 48	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 49	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 50	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 51	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 52	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 53	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 54	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 55	RES-20K 1% 100PPM FILM	1075-0096	CAT.LIST	55-100
R 56	RES-6.81K 1% 100PPM FILM	1075-0140	CAT. LIST	55-100
R 57	RES-301 OHM 1% 100PPM FILM	1075-0048	CAT.LIST	55-100
R 58	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500
R 59	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 61	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 62	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 63	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 64	RES-120K 5% 1W CC	1068-1245	ALLEN BRADLEY	GB 1245
R 65	RES-1MEG 1% 150PPM FILM	1074-1039	CAT.LIST	55-100
R 66	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 67	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 68	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 69	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 70	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 71	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 72	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 73	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 74	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 75	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 76	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500
R 77	RES-182 OHM 1% 150PPM FILM	1074-1014	CAT.LIST	55-100 55-100
R 78	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 79	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 80	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 81	RES-475 OHM 1% 100PPM FILM	1075-0023	CAT.LIST	55-100
R 82	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 83	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 84	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 85	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 86	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 87	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 88	RES-11.3K 1% 100PPM FILM	1075-0034	CAT.LIST	55-100
R 89	RES-82.5K 1% 25PPM FILM	1075-0161	CAT. LIST	55-025
R 90	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 91	RES-91K 5% 1/4W CC	1066-9135	ALLEN BRADLEY	CB 9135
R 92	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 93	RES-68.1K 1% 100PPM FILM	1075-0136	DALE	MFF 1/8 T1
R 94	RES-16K 5% 1/4W CC	1066-1635	ALLEN BRADLEY	CB1635
R 95	RES-30.1K 1% 25PPM FILM	1074-0107	CAT.LIST	55-025
R 96	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 97	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 98	RES-82.5K 1% 25PPM FILM	1075-0161	CAT. LIST	55-025
R 99	RES-270K 5% 1/4W CC	1066-2745	ALLEN BRADLEY	CB2745
R 100	RES-22MEG 5% 1/4W CC	1066-2265	ALLEN BRADLEY	CB2265
R 101	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 102	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 103	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 104	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	INTEGRATED CIRCUIT			
U 1	IC-CA3026	2025-0026	RCA	CA3026
U 2	IC-7474 DUAL D POS EDG TRIG FF W/P&C	2025-0166	TI	SN7474N


S2
R1
1
S1-D
CR3
CR1
CR2
R13
R14
S1-C
S1-B
Q1
C4
R2
C2
R3
C1
S1-A
C9
C8
C6
R7
R6
R15
R11
R8
R10
R12
R16
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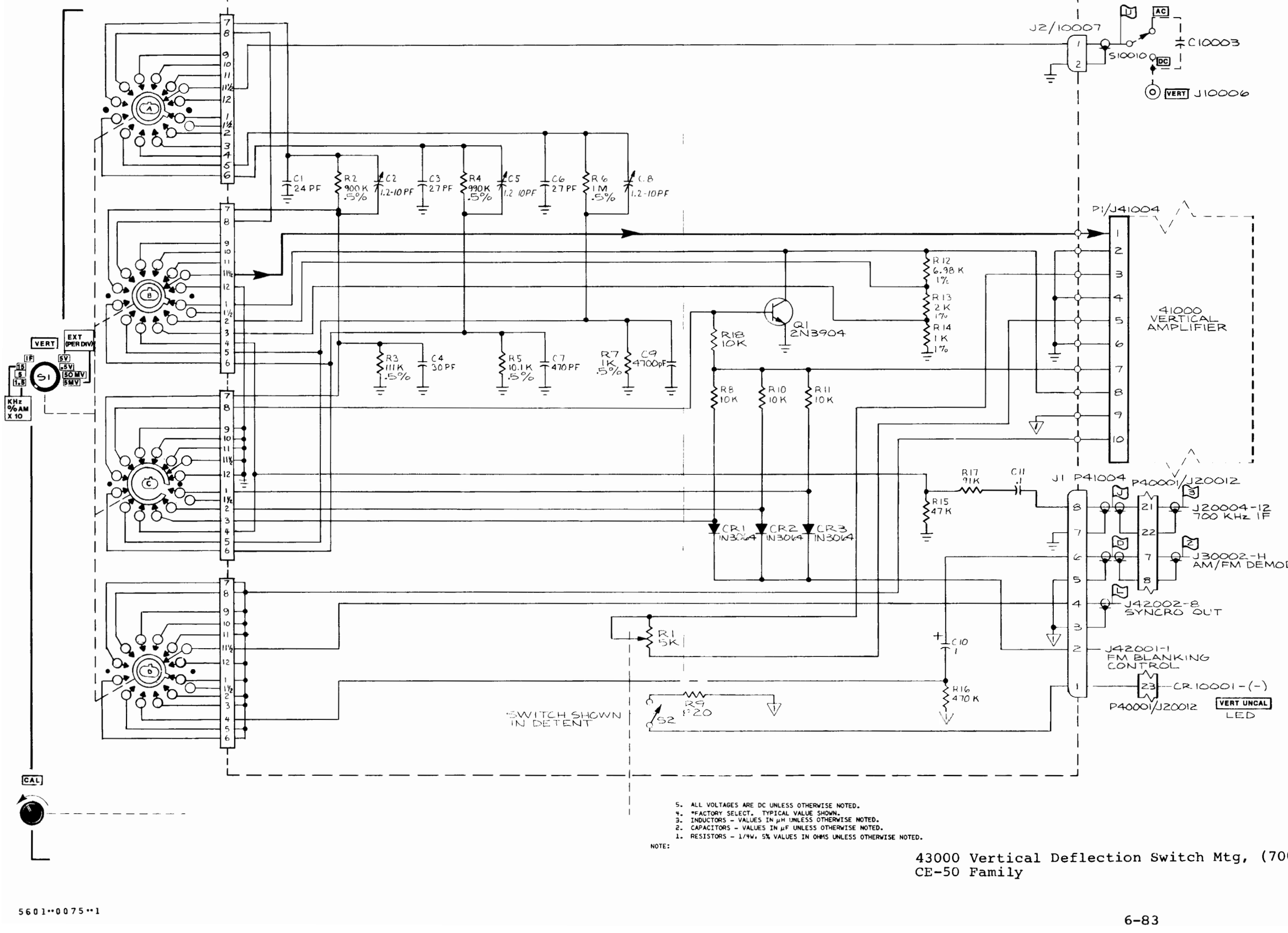
C7
R5
P1
10
1



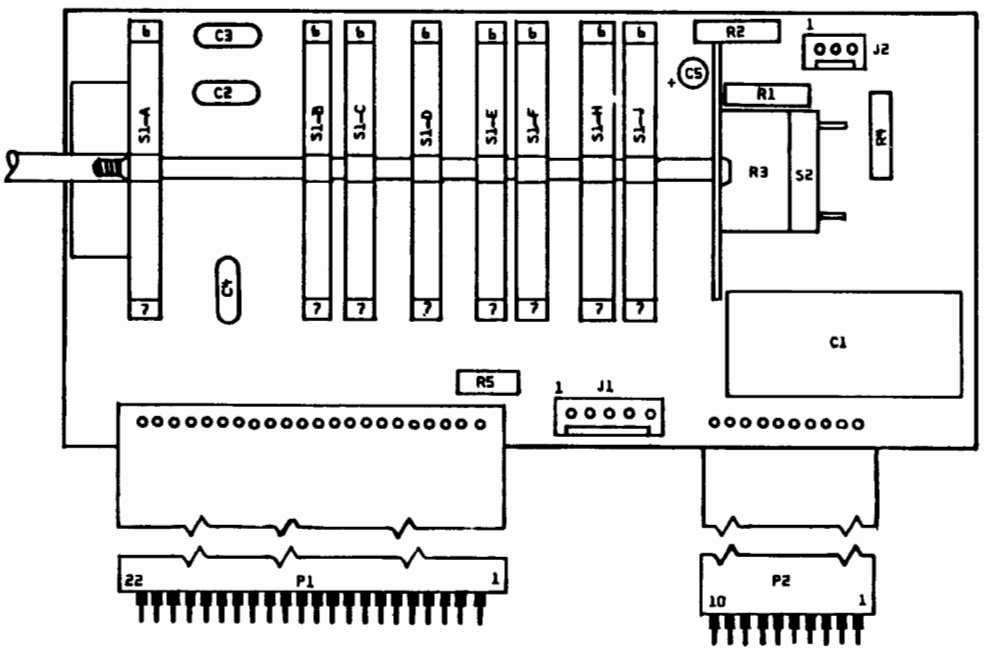
NOTE:

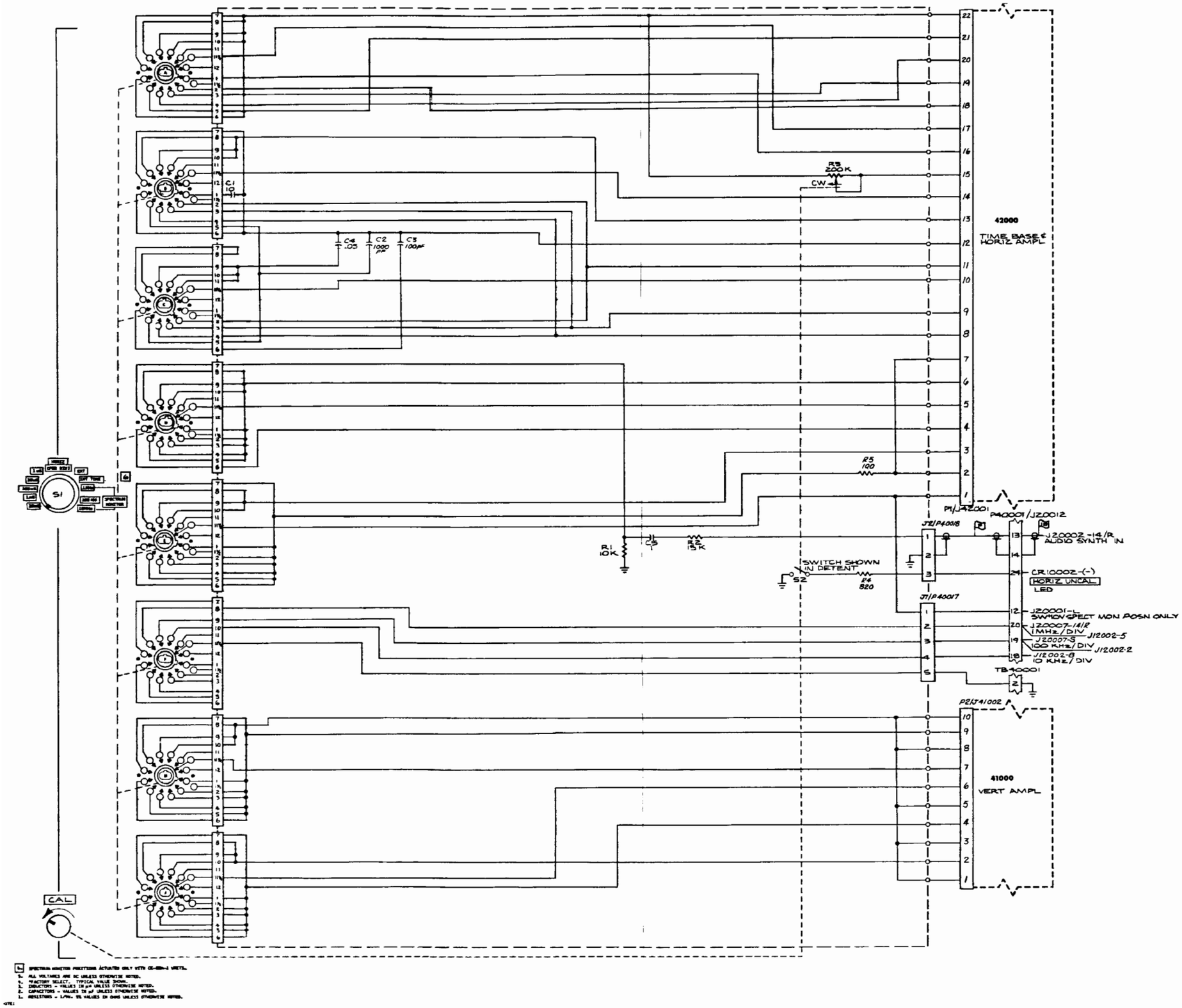
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

43000 Vertical Deflection Switch Mtg, (7001-0628)
CE-50 Family

5601**0075**1

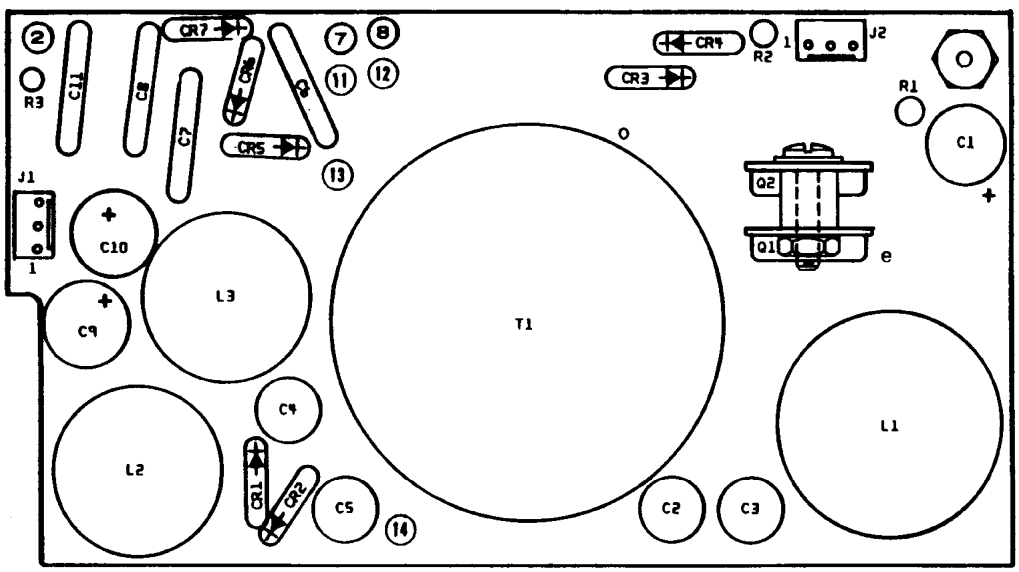
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
43000	PCB ASSY - VERT DEFLECT SW MTG	7001-0628	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1052	CUSHMAN	
	CAPACITOR			
C 1	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 2	CAP-1.2-10PF 250V NO75 CER PSTN TRMR	1001-0020	STETTNER-TRUSH	311505S 1.2/10 N075
C 3	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 4	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 5	CAP-1.2-10PF 250V NO75 CER PSTN TRMR	1001-0020	STETTNER-TRUSH	311505S 1.2/10 N075
C 6	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 7	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 8	CAP-1.2-10PF 250V NO75 CER PSTN TRMR	1001-0020	STETTNER-TRUSH	311505S 1.2/10 N075
C 9	CAP-.0047UF 2% 200V AXL POLYCARBONATE	1008-0088	IMB	DV2C472G
C 10	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 2	CONN-2 PIN .1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	SW-RTRY CNCTRC 4 POLE 8 POS W/POT/SPST	1851-0112		
R 2	RES-900K .5% 100PPM FILM	1075-0178	SHELLY RODABAUGH	CMF55
R 3	RES-111K .5% 100PPM FILM	1075-0177	SHELLY RODABAUGH	CMF55
R 4	RES-990K .5% 100PPM FILM	1075-0179	SHELLY RODABAUGH	CMF55
R 5	RES-10.1K .5% 100PPM FILM	1075-0176	SHELLY RODABAUGH	CMF55
R 6	RES-1 MEG .5% 100PPM FILM	1075-0180	SHELLY RODABAUGH	CMF55
R 7	RES-1K .5% 100PPM FILM	1075-0175	SHELLY	CMF55
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 10	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 11	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 12	RES-6.98K 1% 150PPM FILM	1074-1028	CAT.LIST	55-025
R 13	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 14	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 15	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 16	RES-470K 5% 1/4W CC	1066-4745	ALLEN BRADLEY	CB 4745
R 17	RES-91K 5% 1/4W CC	1066-9135	ALLEN BRADLEY	CB 9135
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
	SWITCH			
S 1	SW-RTRY CNCTRC 4 POLE 8 POS W/POT/SPST	1851-0112		
S 2	SW-RTRY CNCTRC 4 POLE 8 POS W/POT/SPST	1851-0112		

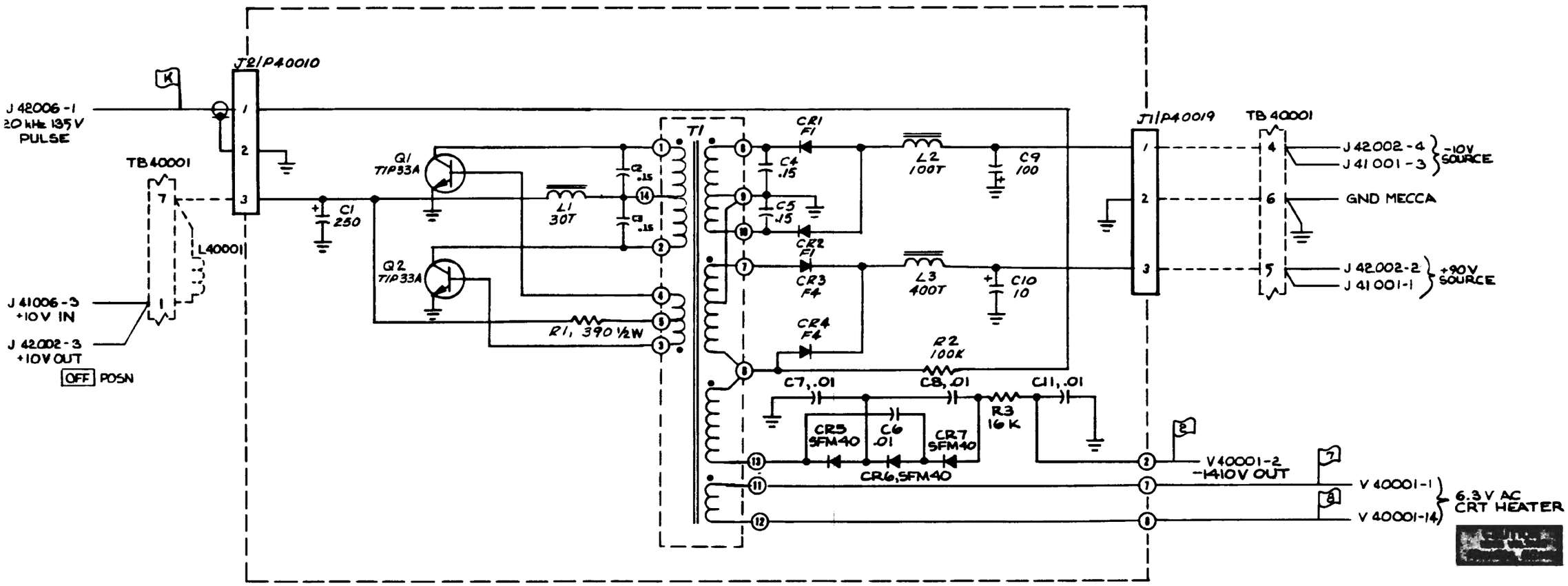

S1-A
S1-B
S1-C
S1-D
S1-E
S1-F
S1-H
S1-J
C3
C2
C4
C5
R2
J2
R1
R3
S2
R4
C1
R5
J1
P1
22
1
P2
10
1

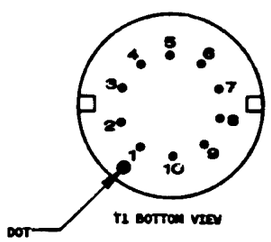


44000 Horizontal Deflection Switch Mtg, (7001-0627)
CE-50 Family (Except CE-5100A and 5110A)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
44000	PCB ASSY - HORZ DEFLECT SW MTG	7001-0627	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1051	CUSHMAN	
	CAPACITOR			
C 1	CAP-10UF 10% 50V RDL MET-POLYESTER	1008-0101	PLESSEY	60R106K100
C 2	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 3	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 4	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 5	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
	CONNECTOR			
J 1	CONN-5 PIN .1SP STR LKG PCB MT JK	2535-0145	MOLEX INC	22-27-2051
J 2	CONN-3 PIN 1SP STR LKG PCB MT JK	2535-0143	METHODE	1100-8-103-01
P 1	CA-3.0 IN 22 CNDCTR FLAT JUMPER	3120-0036	AMP	2-86943-1
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 3	SW-RTRY CNCTRC 8 POLE 9 POS W/POT/SPST	1851-0113		
R 4	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 5	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
	SWITCH			
S 1	SW-RTRY CNCTRC 8 POLE 9 POS W/POT/SPST	1851-0113		
S 2	SW-RTRY CNCTRC 8 POLE 9 POS W/POT/SPST	1851-0113		

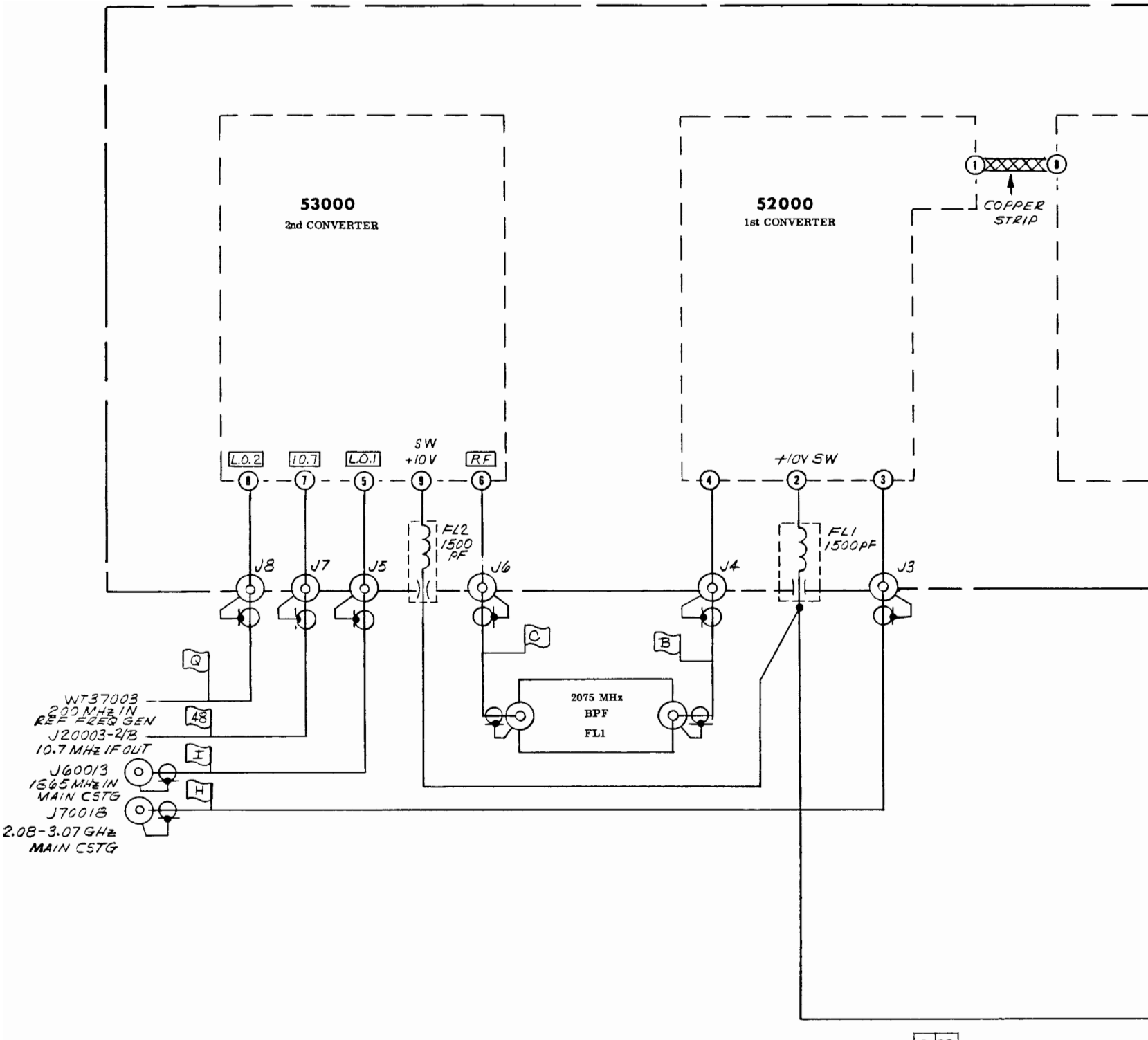

2
R3
C11
C8
CR7
C6
C7
CR6
Q2
7
8
11
12
CR5
13
J1
1
C10
C9
L3
T1
C4
L2
CR1
CR2
C5
14
CR4
R2
1
J2
CR3
R1
C1
+
Q2
Q1
e
L1
C2
C3





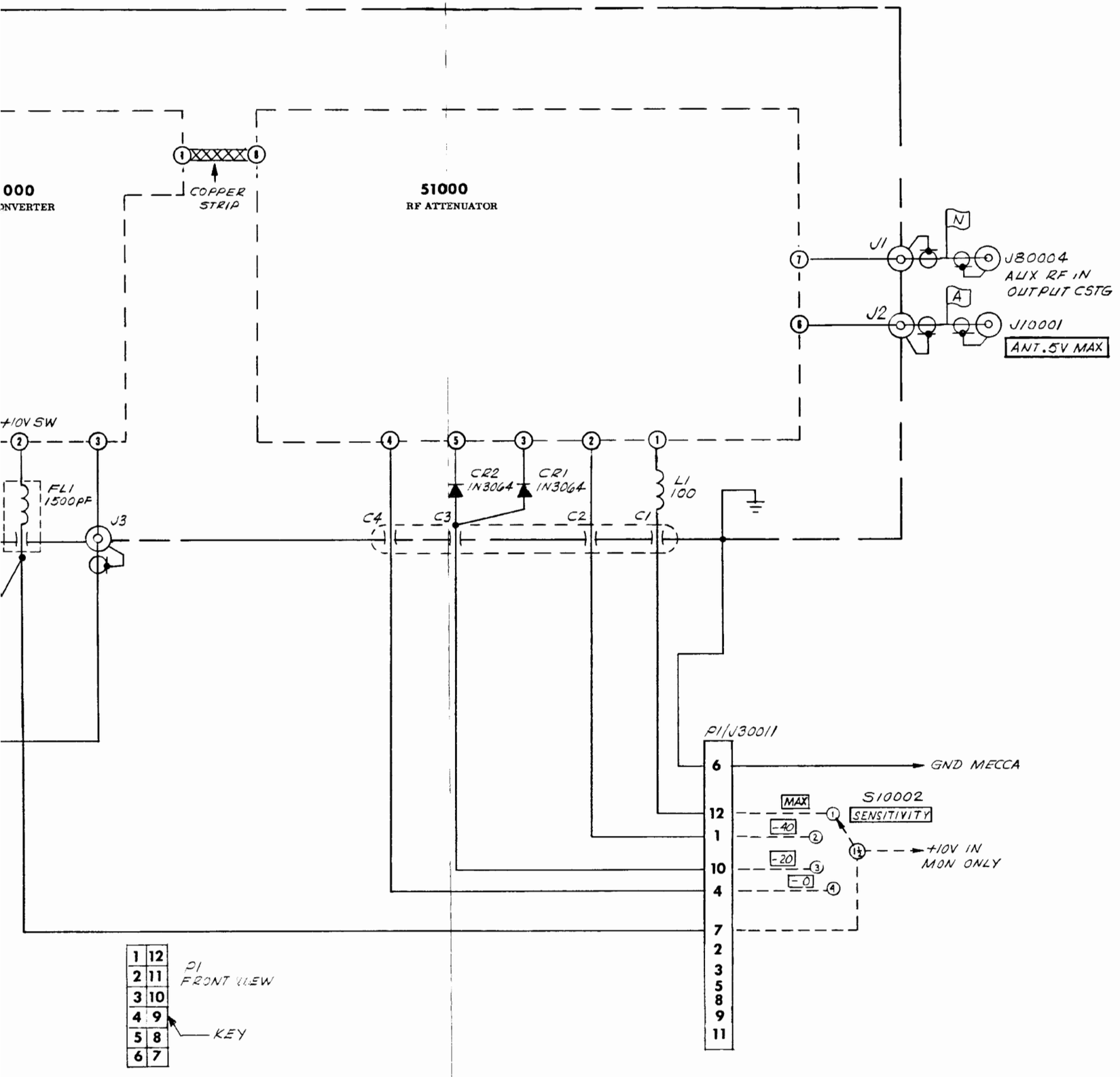
NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
45000	PCB ASSY - DC/DC CONVERTER	7001-0613	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1084	CUSHMAN	
	CAPACITOR			
C 1	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 2	CAP-.15UF 10% 200V AXL POLYESTER	1008-0035	SPRAGUE	192P15492
C 3	CAP-.15UF 10% 200V AXL POLYESTER	1008-0035	SPRAGUE	192P15492
C 4	CAP-.15UF 10% 200V AXL POLYESTER	1008-0035	SPRAGUE	192P15492
C 5	CAP-.15UF 10% 200V AXL POLYESTER	1008-0035	SPRAGUE	192P15492
C 6	CAP-.01UF 20% 1.4KV CER DISC	1005-0051	SPRAGUE	125L-S10
C 7	CAP-.01UF 20% 1.4KV CER DISC	1005-0051	SPRAGUE	125L-S10
C 8	CAP-.01UF 20% 1.4KV CER DISC	1005-0051	SPRAGUE	125L-S10
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-10UF +75-10% 150V AXL ELCTLT	1013-0017	SPRAGUE	30D106G150DD5
C 11	CAP-.01UF 20% 3KV Z5U CER DISC	1005-0069	SPRAGUE	30GA-S/10
	DIODE			
CR 1	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 2	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 3	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 4	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 5	DIO-1N4948 SI F RCVY A1TC 1000PRV 1A	1282-0019	CODI SEMICONDUCTOR	MRF 1000
CR 6	DIO-1N4948 SI F RCVY A1TC 1000PRV 1A	1282-0019	CODI SEMICONDUCTOR	MRF 1000
CR 7	DIO-1N4948 SI F RCVY A1TC 1000PRV 1A	1282-0019	CODI SEMICONDUCTOR	MRF 1000
	CONNECTOR			
J 1	CONN-3 PIN .1SP STR LKG PCB MT JK	2535-0143	METHODE	1100-8-103-01
J 2	CONN-3 PIN .1SP STR LKG PCB MT JK	2535-0143	METHODE	1100-8-103-01
	INDUCTOR			
L 1	INDCTR-POT CORE 26X16/30.5T/20GA	1596-0265		
L 2	INDCTR-POT CORE 18X11/100.5T/28GA	1596-0267		
L 3	INDCTR-POT CORE 18X11/400.5T/36GA	1596-0266		
	TRANSISTOR			
Q 1	XSTR-TIP33A NPN SI X86 HIGH PWR/SW	1272-0084	TI	TIP33A
Q 2	XSTR-TIP33A NPN SI X86 HIGH PWR/SW	1272-0084	TI	TIP33A
	RESISTOR			
R 1	RES-390 OHM 5% 1/2W CC	1067-3915	ALLEN BRADLEY	EB 3915
R 2	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 3	RES-16K 5% 1/4W CC	1066-1635	ALLEN BRADLEY	CB1635
	TRANSFORMER			
T 1	XFMR-POT CORE 42X29	1575-0057	MINI-MAGNETICS	C/E DWG

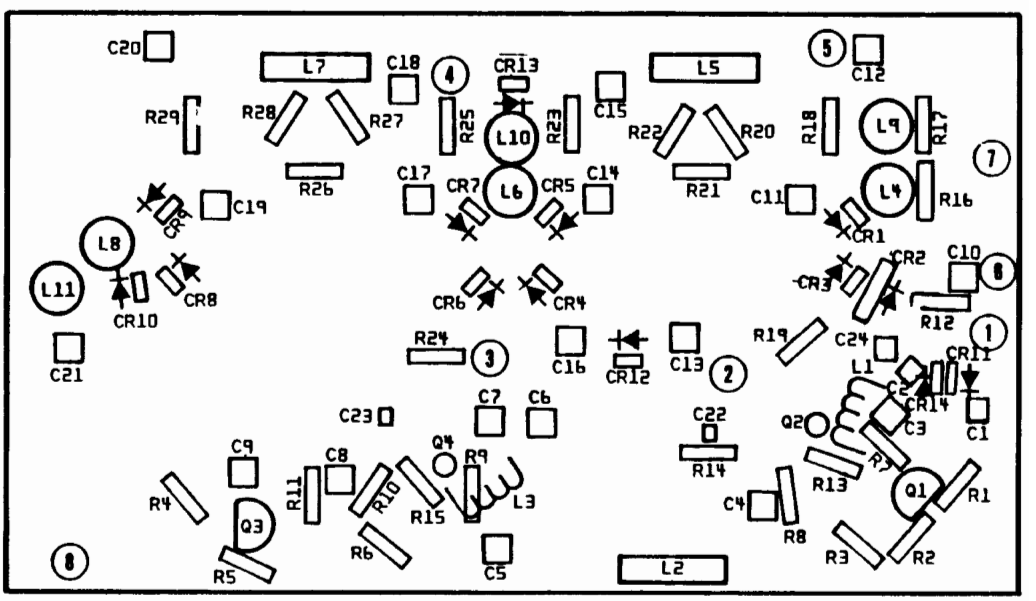


NOTE:

5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. ALL CAPACITORS ARE 1000PF.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.



50000 RF Receiver Casting, (8000-0648)
CE-50 Family (Except CE-45A/46A)


C20
L7
C18
CR13
L5
C12
R29
R28
R27
R25
L10
R23
C15
R22
R20
R18
L9
R17
R26
C17
CR7
L6
CR5
C14
R21
C11
L4
R16
C19
L8
CR1
CR2
C10
L11
CR8
CR10
CR6
CR4
CR3
R12
R24
C16
CR12
C13
R19
C24
L1
CR11
C21
C7
C6
C23
C22
Q2
CR14
C3
C1
C9
C8
Q4
R9
R14
R13
R7
C4
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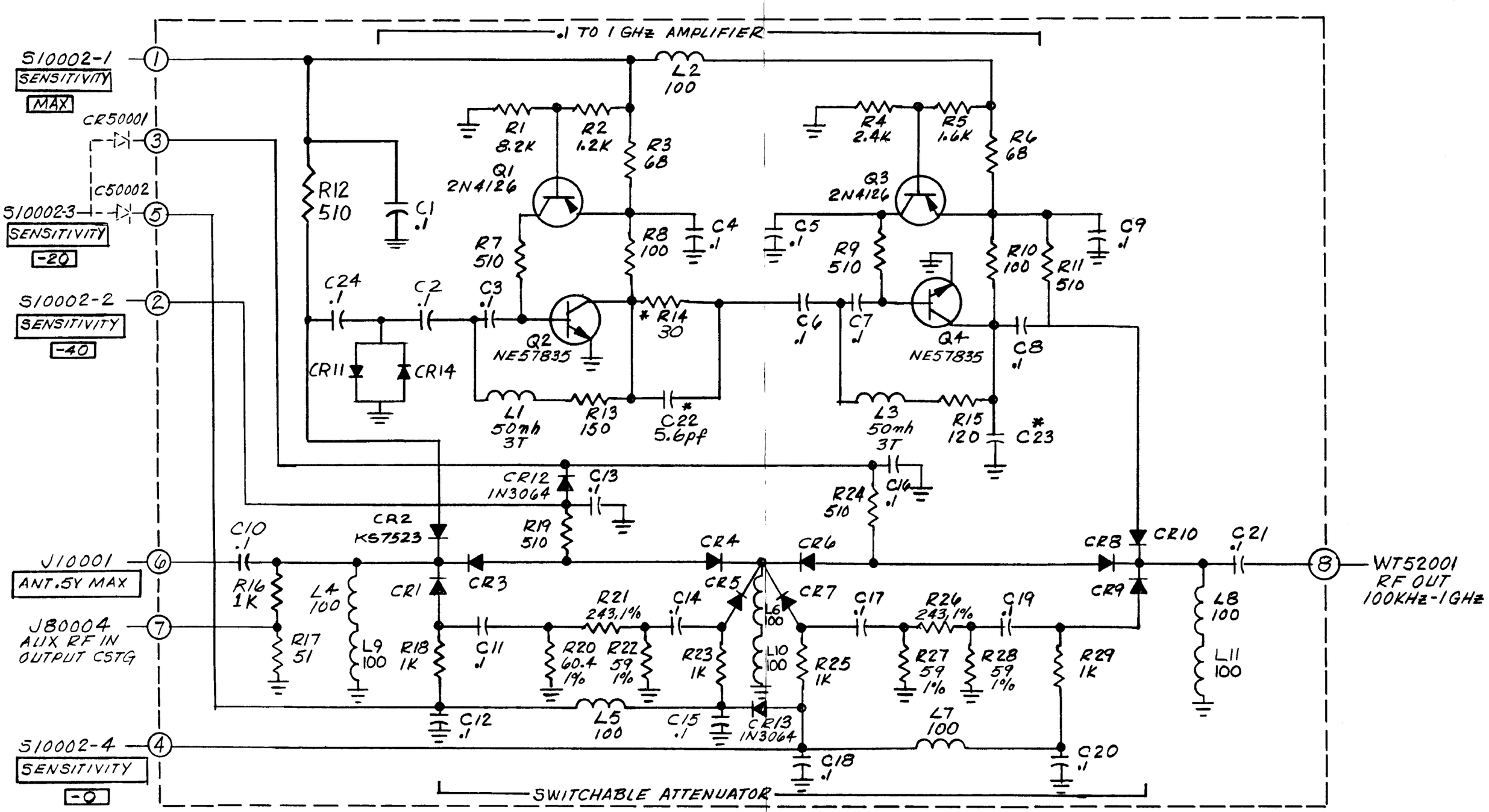
L2
R3
R2
R5



NOTE:

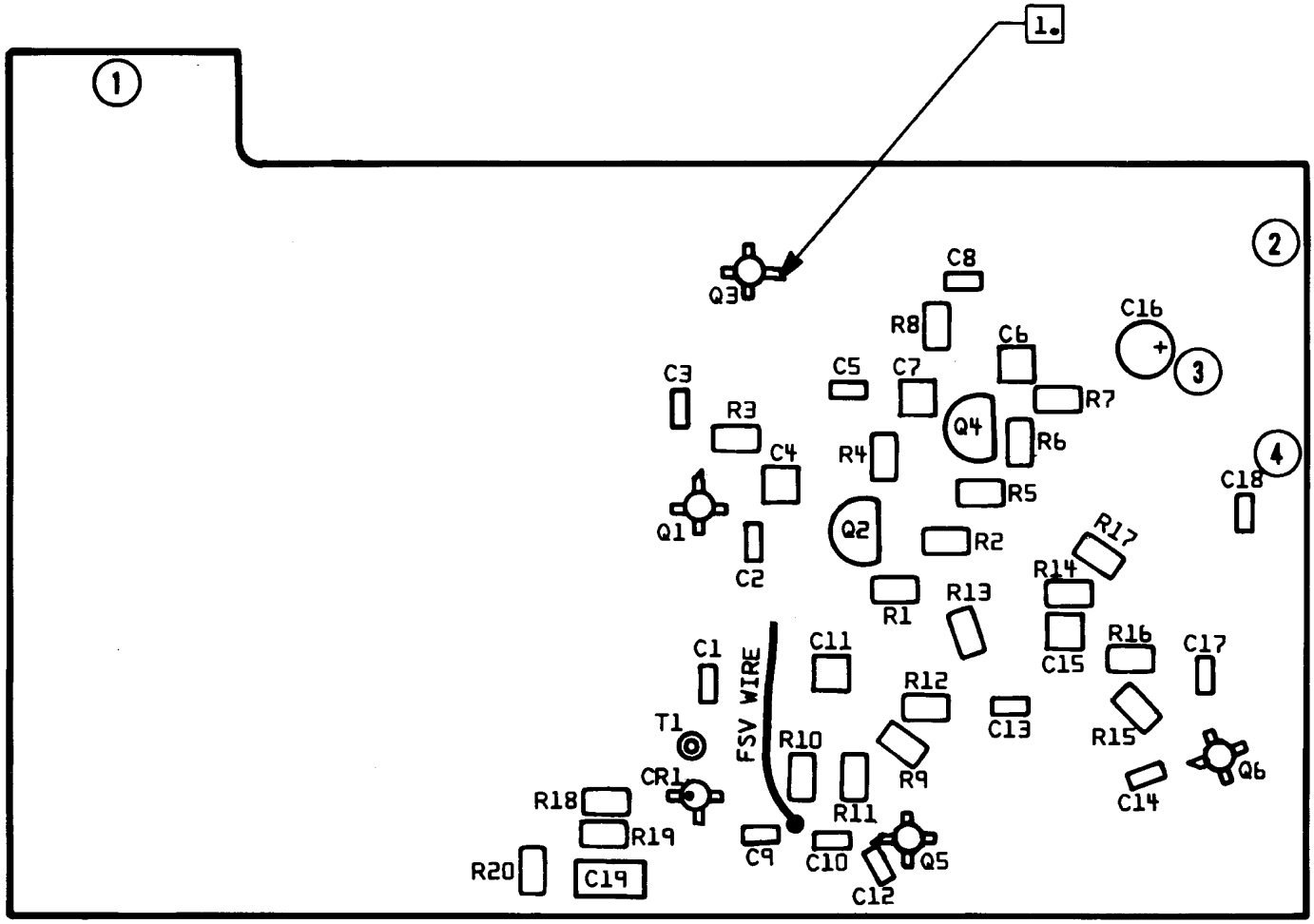
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. ALL DIODES ARE BA 379 UNLESS OTHERWISE NOTED.

SWITCHING CODE				
	+20	0	-20	-40
1	ON	OFF	OFF	OFF
2	OFF	ON	OFF	OFF
3	OFF	OFF	ON	OFF
4	OFF	OFF	OFF	ON

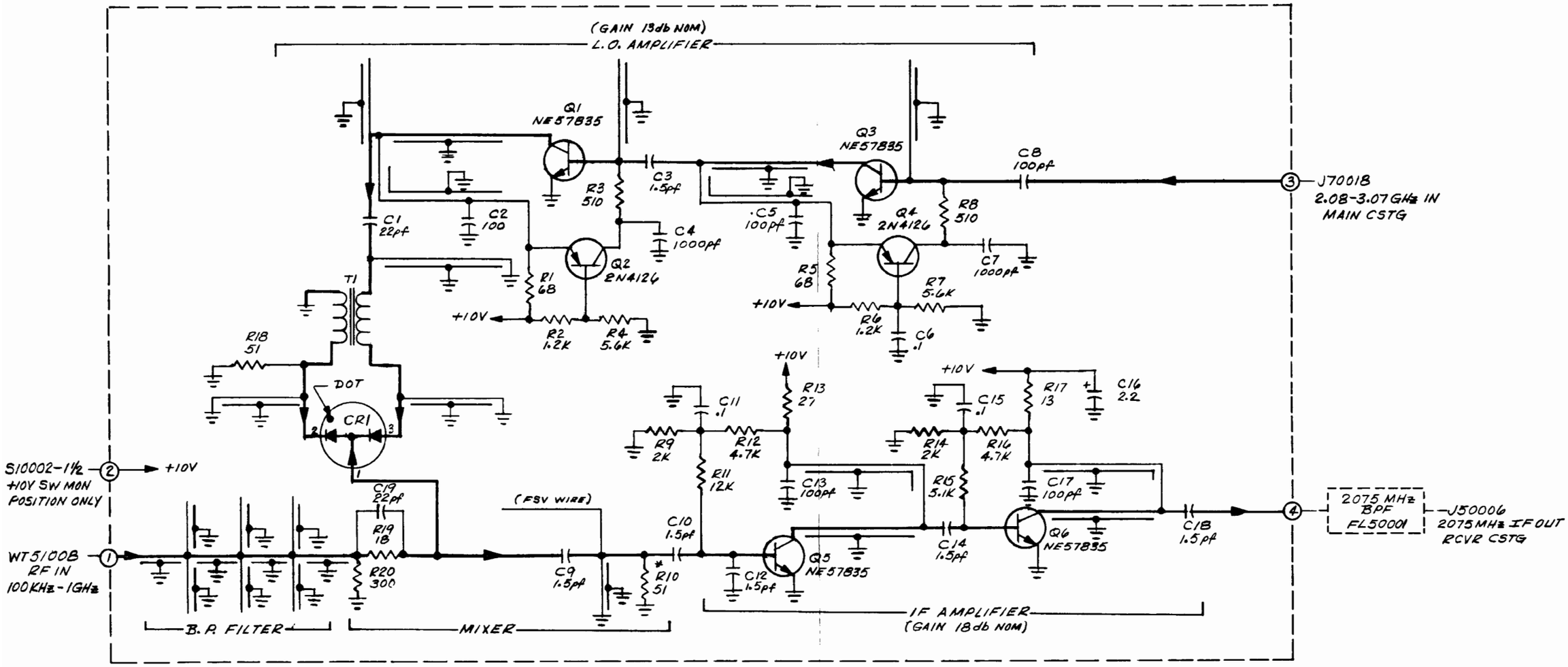
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
51000	PCB ASSY - RF ATTEN	7001-0507	CUSHMAN	CE-50A, -1, /TG
	PRINTED CIRCUIT BOARD	1780-1009	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 7	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 2	DIO-LS7523 SI PIN DO7	1281-0153	KSW ELECTRONICS CORP	KS7523
CR 3	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 4	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 5	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 6	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 7	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 8	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 9	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 10	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 11	DIO-1N3062 SI SW DO7 1PF 75PRV	1281-0080	ITT	1N3062
CR 12	DIO-1N3064 SI SW DO7/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW DO7/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3062 SI SW DO7 1PF 75PRV	1281-0080	ITT	1N3062
	INDUCTOR			
L 1	COIL-AIR CORE .090 DIA/22GA/3T	1596-0271		
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	COIL-AIR CORE .090 DIA/22GA/3T	1596-0271		
L 4	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 5	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 7	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 8	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 9	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 10	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N4126 PNP SI TO92 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 2	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 3	XSTR-2N4126 PNP SI TO92 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-8.2K 5% 1/8W CC	1065-8225	ALLEN BRADLEY	BB8225
R 2	RES-1.2K 5% 1/8W CC	1065-1225	AB	BB1225
R 3	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 4	RES-2.4K 5% 1/8W CC	1065-2425	ALLEN BRADLEY	BB2425
R 5	RES-1.6K 5% 1/8W CC	1065-1625	ALLEN BRADLEY	BB1625
R 6	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 8	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 10	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 11	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 12	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 13	RES-150 OHM 5% 1/8W CC	1065-1515	ALLEN BRADLEY	BB1515
R 14	RES-30 OHM 5% 1/8W CC	1065-3005	ALLEN-BRADLEY	BB3005
R 15	RES-120 OHM 5% 1/8W CC	1065-1215		
R 16	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 17	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 18	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 19	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 20	RES-60.4 OHM 1% 100PPM FILM	1074-0115	CAT.LIST	55-100
R 21	RES-243 OHM 1% 100PPM FILM	1074-0114		
R 22	RES-59 OHM 1% 100PPM FILM	1075-0067	CAT.LIST	55-100
R 23	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 24	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 25	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 26	RES-243 OHM 1% 100PPM FILM	1074-0114		
R 27	RES-59 OHM 1% 100PPM FILM	1075-0067	CAT.LIST	55-100
R 28	RES-59 OHM 1% 100PPM FILM	1075-0067	CAT.LIST	55-100
R 29	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025



1. BASE LEADS OF Q1, Q3, Q5, AND Q6 ARE ANGLE CUT. ORIENT AS SHOWN.

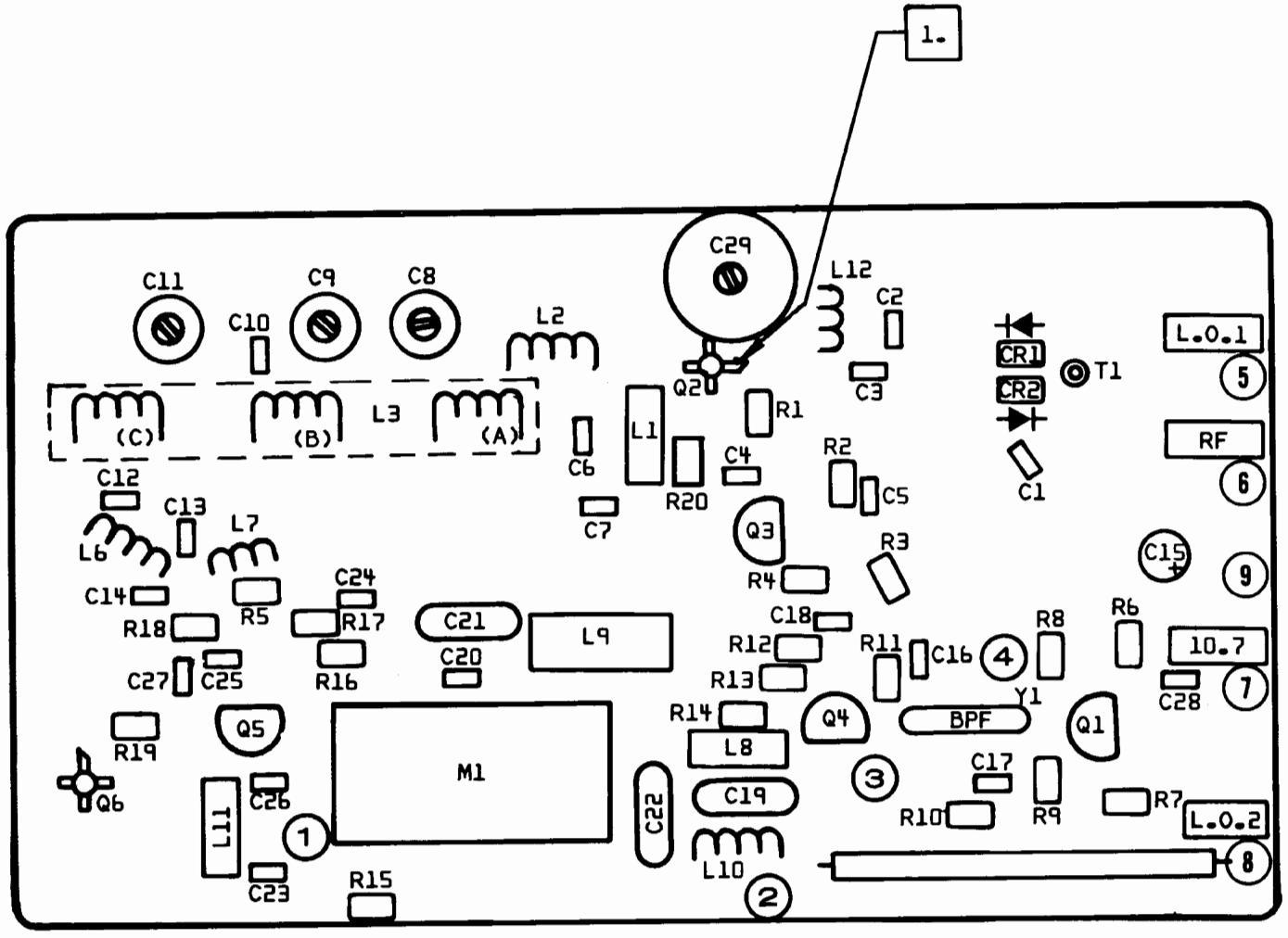


NOTE:

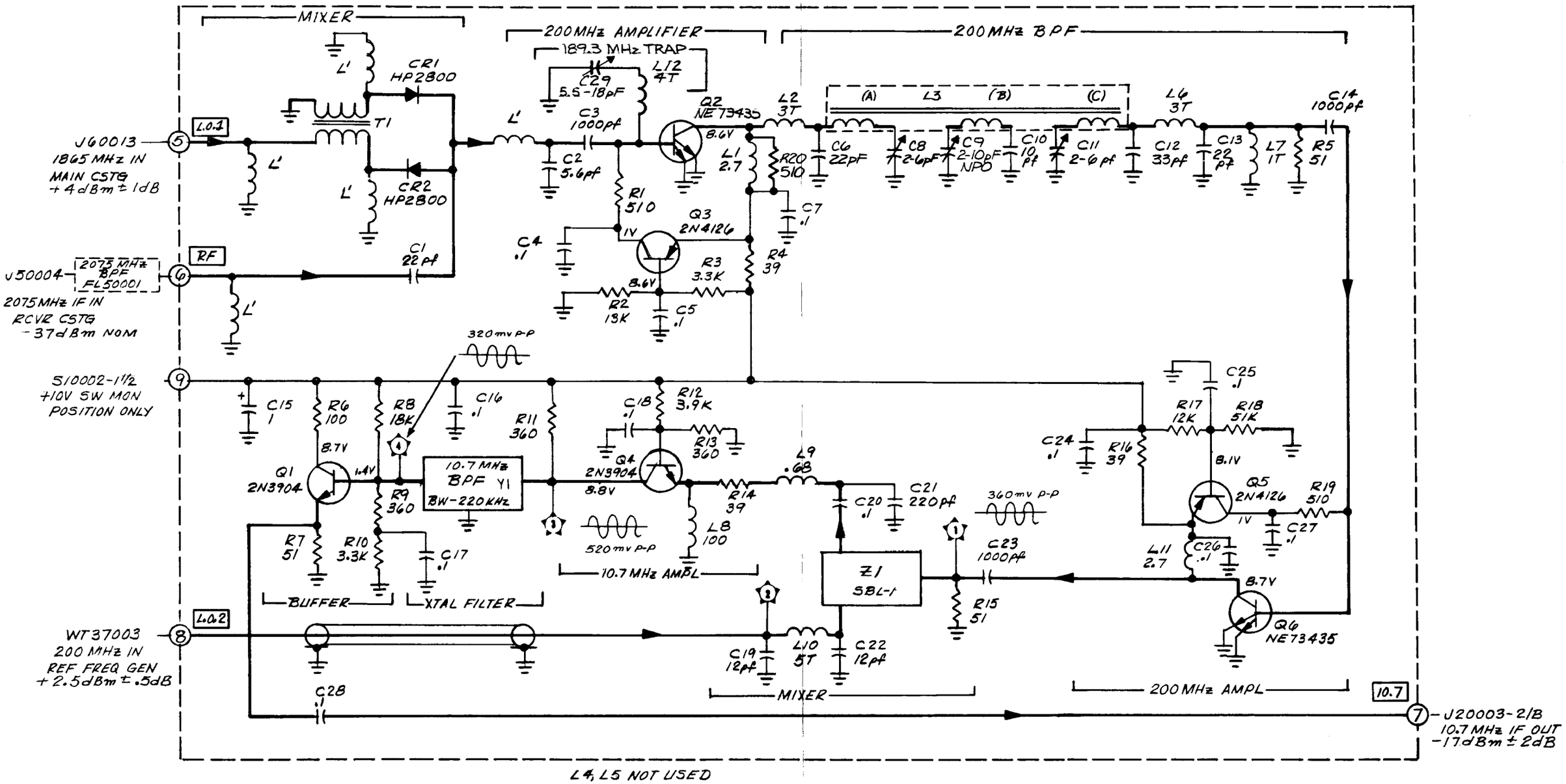
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
52000	PCB ASSY - 1ST. CONVERTER	7001-0508	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1010	CUSHMAN	
	CAPACITOR			
C 1	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 2	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 3	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 4	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 5	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 7	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 8	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 9	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 10	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 13	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 14	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 17	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 18	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 19	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
	DIODE			
CR 1	DIO-DMD6460 SCHOTTKY BARRIER DUAL	1281-0095	ALPHA IND.	DMD-6460-131-012
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 2	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 3	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 4	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 5	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 6	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 2	RES-1.2K 5% 1/8W CC	1065-1225	AB	BB1225
R 3	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 4	RES-5.6K 5% 1/8W CC	1065-5625	ALLEN BRADLEY	BB5625
R 5	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 6	RES-1.2K 5% 1/8W CC	1065-1225	AB	BB1225
R 7	RES-5.6K 5% 1/8W CC	1065-5625	ALLEN BRADLEY	BB5625
R 8	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 9	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 10	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 11	RES-12K 5% 1/8W CC	1065-1235	ALLEN BRADLEY	BB1235
R 12	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 13	RES-27 OHM 5% 1/8W CC	1065-2705	ALLEN BRADLEY	BB2705
R 14	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 15	RES-5.1K 5% 1/8W CC	1065-5125	ALLEN BRADLEY	BB5125
R 16	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 17	RES-13 OHM 5% 1/8W CC	1065-1305	ALLEN BRADLEY	BB1305
R 18	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 19	RES-18 OHM 5% 1/8W CC	1065-1805	ALLEN BRADLEY	BB1805

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 20	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
	TRANSFORMER			
T 1	XFMR-TOROIDIAL BIFILAR	1579-0042		



1. BASE LEADS OF Q2 AND Q6 ARE ANGLE CUT. ORIENT AS SHOWN.

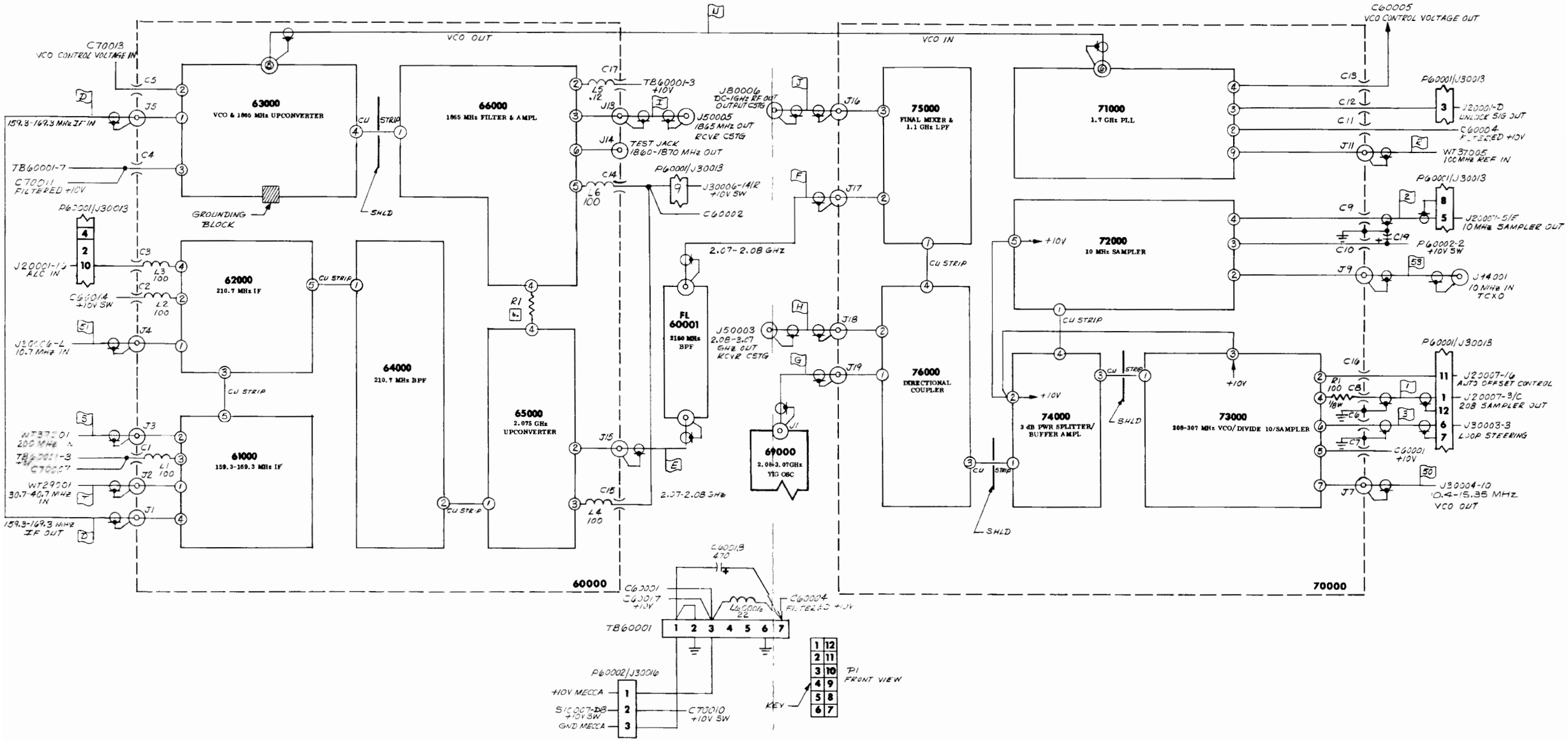


NOTE:

6. L'= MICROSTRIP INDUCTORS (ETCHED)
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
53000	PCB ASSY - 2ND CONVERTER	7001-0509	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1011	CUSHMAN	
	CAPACITOR			
C 1	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 2	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 3	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 6	CAP-22PF 5% 500V THIN DIP MICA	1004-0003	CORNELL DUBILIER	CD6CD220J03
C 7	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 8	CAP-2.8-10PF 250V V ADJ CER TRMR	1001-0021	SPRAGUE	GRU10000
C 9	CAP-2-10PF 25V NPO V ADJ CER TRMR	1001-0024	TUSONIX	513-011 A 2-10PF
C 10	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 11	CAP-2.8-10PF 250V V ADJ CER TRMR	1001-0021	SPRAGUE	GRU10000
C 12	CAP-33PF 5% 500V THIN DIP MICA	1004-0006	CORNELL DUBILIER	CD6ED330J
C 13	CAP-22PF 5% 500V THIN DIP MICA	1004-0003	CORNELL DUBILIER	CD6CD220J03
C 14	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 15	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-12PF 5% 500V DIP MICA	1002-0017	ELMENCO	DM15-C-120J
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-220PF 5% 500V DIP MICA	1002-0029	ELMENCO	DM15-F-221J
C 22	CAP-12PF 5% 500V DIP MICA	1002-0017	ELMENCO	DM15-C-120J
C 23	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 26	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 29	CAP-5.5-18PF 350V NPO V MT CER TRMR	1001-0008	ERIE	CV31A180
	DIODE			
CR 1	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
	FILTER			
FL1	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP	10.70MHZ RED ONLY
	INDUCTOR			
L 1	CH-2.7UH 10% RF MLD AXL .10DX.25L	1585-0079	DELEVAN	1025-30
L 2	ASSY-COIL AIR CORE	1596-0076		
L 3	COIL ASSY-5/6/5 TURN	1596-0223		
L 6	ASSY-COIL AIR CORE	1596-0076		
L 7	COIL-AIR CORE .209 DIA 22GA IT	1596-0232		
L 8	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 9	CH-.68UH 10% RF MLD AXL .16DX.38L	1585-0024	DELEVAN	1537-08
L 10	ASSY-COIL .064 UH RF	1596-5802		
L 11	CH-2.7UH 10% RF MLD AXL .10DX.25L	1585-0079	DELEVAN	1025-30
L 12	ASSY-COIL-AIR CORE	1596-0072		

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-NE73435 NPN SI	1272-0087	NIPPON ELEC	NE73435
Q 3	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 6	XSTR-NE73435 NPN SI	1272-0087	NIPPON ELEC	NE73435
	RESISTOR			
R 1	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 2	RES-13K 5% 1/8W CC	1065-1335	ALLEN BRADLEY	BB1335
R 3	RES-3.3K 5% 1/8W CC	1065-3325	ALLEN BRADLEY	BB3325
R 4	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 5	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 6	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 7	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 8	RES-18K 5% 1/8W CC	1065-1835	ALLEN BRADLEY	BB1835
R 9	RES-360 OHM 5% 1/8W CC	1065-3615	ALLEN BRADLEY	BB3615
R 10	RES-3.3K 5% 1/8W CC	1065-3325	ALLEN BRADLEY	BB3325
R 11	RES-360 OHM 5% 1/8W CC	1065-3615	ALLEN BRADLEY	BB3615
R 12	RES-3.9K 5% 1/8W CC	1065-3925	ALLEN BRADLEY	BB3925
R 13	RES-360 OHM 5% 1/8W CC	1065-3615	ALLEN BRADLEY	BB3615
R 14	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 15	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 16	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 17	RES-12K 5% 1/8W CC	1065-1235	ALLEN BRADLEY	BB1235
R 18	RES-51K 5% 1/8W CC	1065-5135	ALLEN BRADLEY	BB5135
R 19	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 20	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
	TRANSFORMER			
T 1	XFMR-TOROIDIAL BIFILAR	1579-0042		
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1

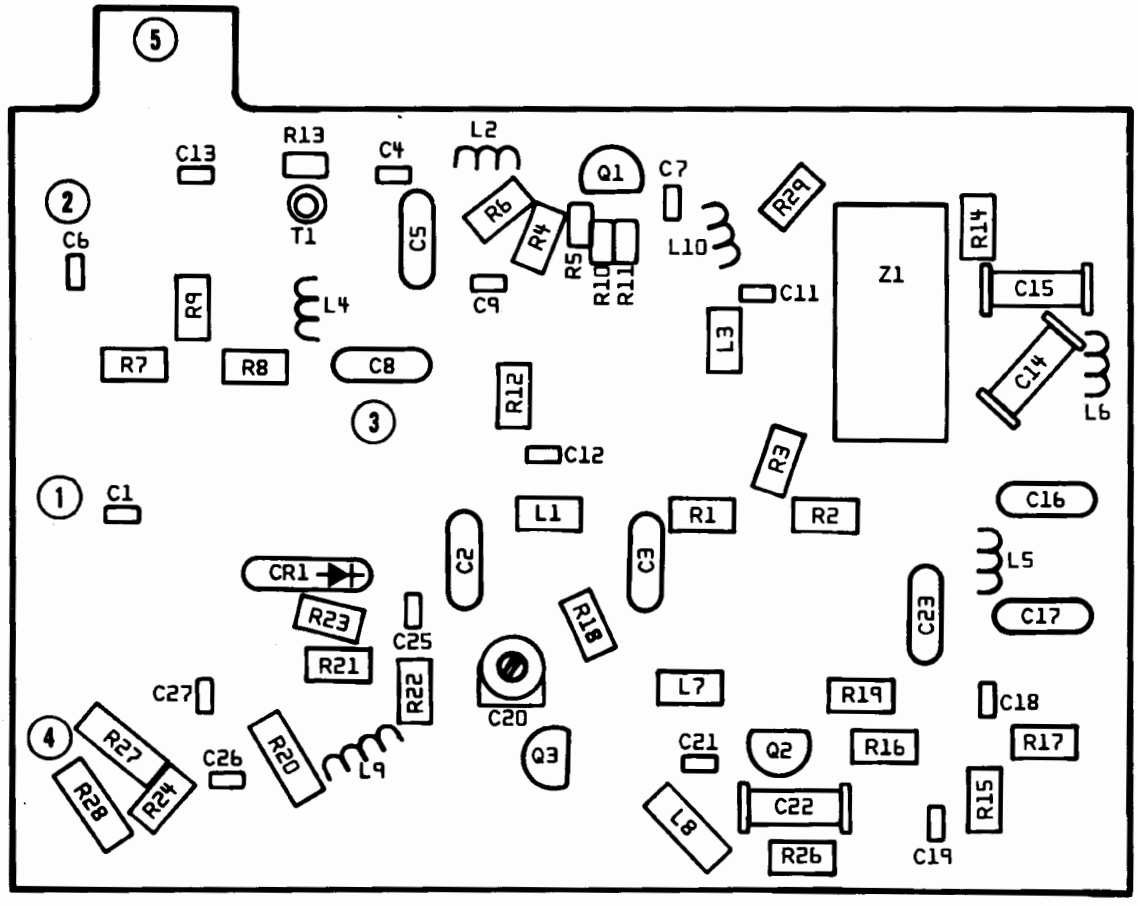


6. INSTALLED IN CERTAIN UNITS DURING FINAL TEST. SEE TEST PROCEDURE FOR VALUE RANGE.

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

J6,8,10,12 NOT USED.

60000/70000 RF Main Casting, (8000-0649),
CE-50 Family (Except CE-50A-1/TG and CE-5100)


5
2
C6
C13
R13
T1
C4
L2
C5
R6
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Q1
C7
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R10
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C9
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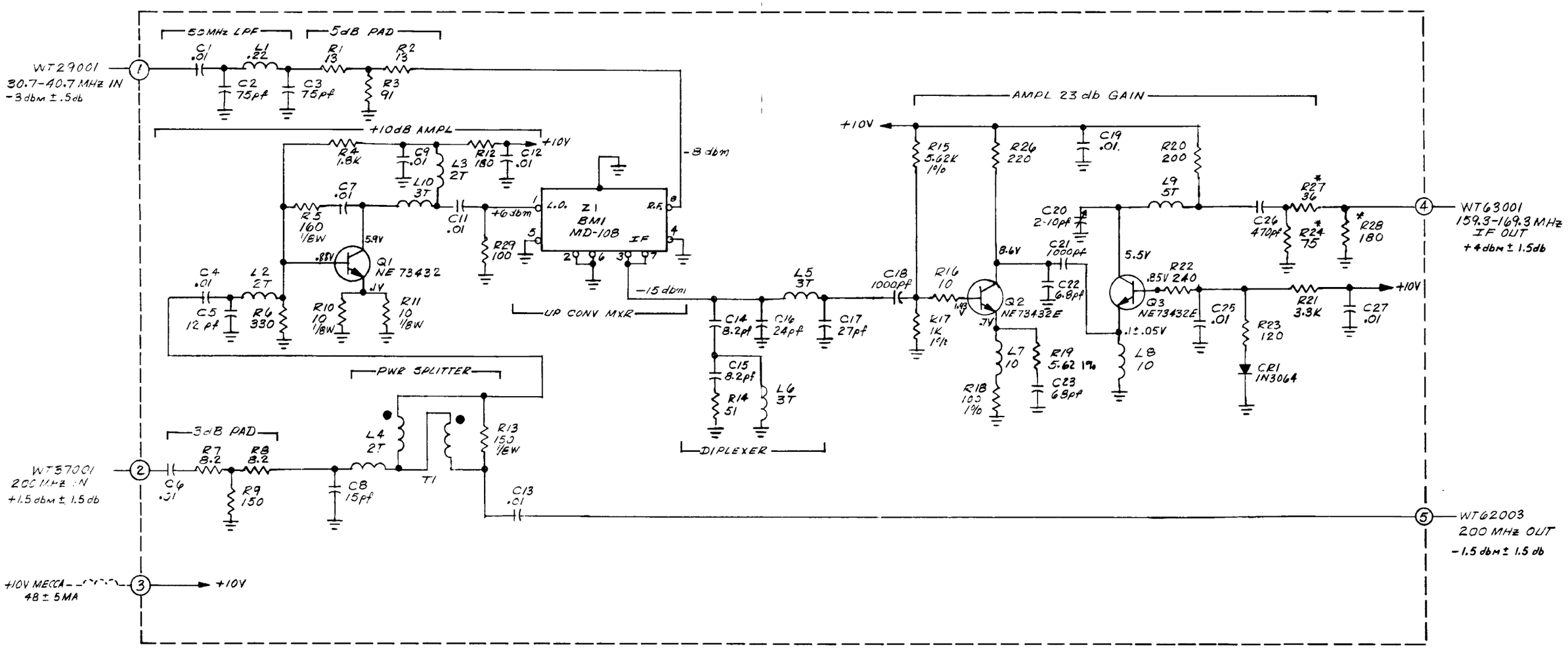
L8
R26
C19



NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.

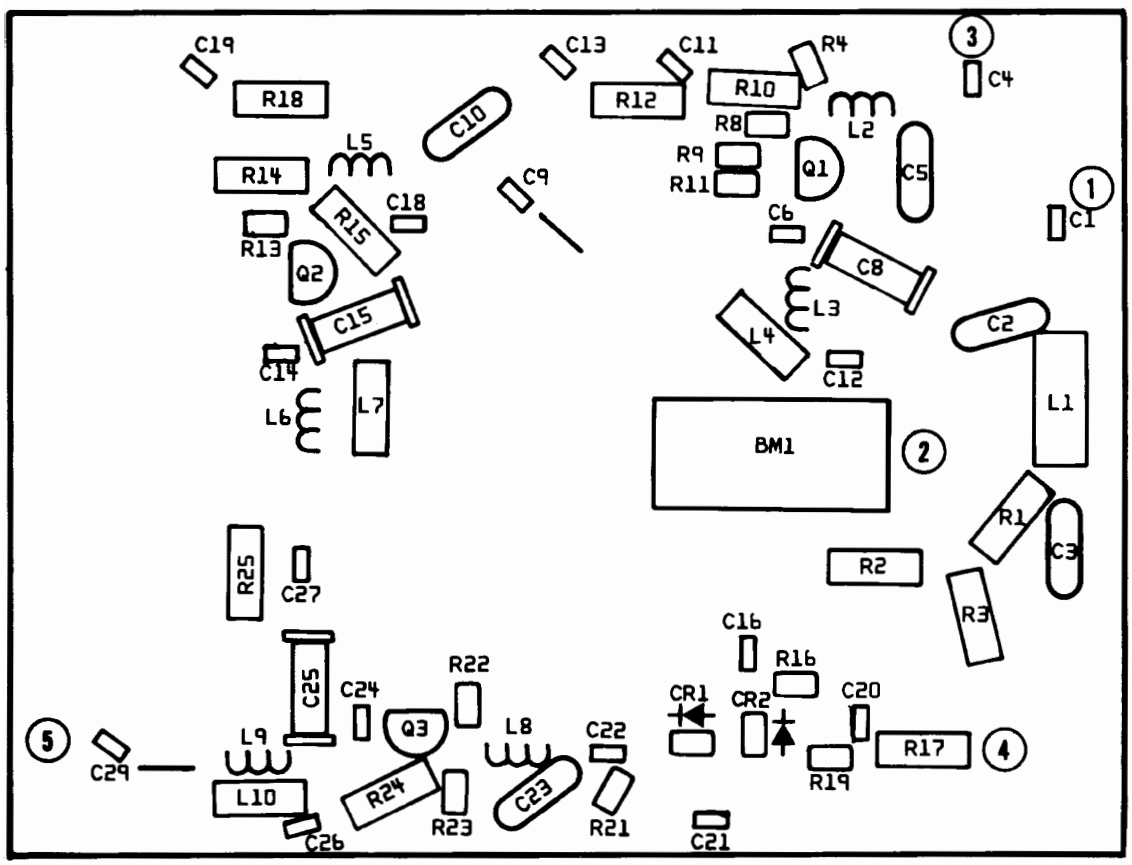
5. ALL VOLTAGES ARE DC± 10% UNLESS OTHERWISE NOTED

C24, C28, C10, R25 NOT USED

61000 159.3-169.3 MHz IF, (7001-0468)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
61000	PCB ASSY - 159.3-169.3 MHz IF	7001-0468	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1021	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-75PF 5% 500V DIP MICA	1002-0025	ELMENCO	DM15-E-750J
C 3	CAP-75PF 5% 500V DIP MICA	1002-0025	ELMENCO	DM15-E-750J
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-12PF 5% 500V DIP MICA	1002-0017	ELMENCO	DM15-C-120J
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-8.2PF .25PF 500V NPO CER TUB	1005-0043	TUSONIX	301-000-C0H0-829C
C 15	CAP-8.2PF .25PF 500V NPO CER TUB	1005-0043	TUSONIX	301-000-C0H0-829C
C 16	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 17	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 18	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-2.8-10PF 250V V ADJ CER TRMR	1001-0021	SPRAGUE	GRU10000
C 21	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 22	CAP-6.8PF .25PF 500V NPO CER TUB	1005-0006	TUSONIX	301-000-C0H0-689C
C 23	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-.22UH 10% RF MLD AXL .10DX.25L	1585-0075	DELEVAN	1025-04
L 2	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
L 3	ASSY-COIL-AIR CORE	1596-0070		
L 4	COIL-AIR CORE .136 DIA/24GA/2T	1596-0278		
L 5	COIL-AIR CORE .136 DIA/26GA/3T	1596-0279		
L 6	COIL-AIR CORE .090 DIA/26GA/3T	1596-0277		
L 7	CH-10UH 10% RF MLD AXL .10DX.25L	1585-0064	DELEVAN	1025-44
L 8	CH-10UH 10% RF MLD AXL .10DX.25L	1585-0064	DELEVAN	1025-44
L 9	COIL NYL CORE 1/4-20/20GA/5T	1596-0295		
L 10	COIL-AIR CORE .136 DIA/22GA/3T	1596-0273		
	TRANSISTOR			
Q 1	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 2	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 3	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
	RESISTOR			
R 1	RES-13 OHM 5% 1/4W CC	1066-1305	ALLEN BRADLEY	CB1305
R 2	RES-13 OHM 5% 1/4W CC	1066-1305	ALLEN BRADLEY	CB1305
R 3	RES-91 OHM 5% 1/4W CC	1066-9105	ALLEN BRADLEY	CB 9105
R 4	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 5	RES-160 OHM 5% 1/8W CC	1065-1615	ALLEN BRADLEY	BB1615

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 6	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 7	RES-8.2 OHM 5% 1/4W CC	1066-0005	ALLEN BRADLEY	CB82G5
R 8	RES-8.2 OHM 5% 1/4W CC	1066-0005	ALLEN BRADLEY	CB82G5
R 9	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 10	RES-10 OHM 5% 1/8 CC	1065-1005	ALLEN BRADLEY	BB1005
R 11	RES-10 OHM 5% 1/8 CC	1065-1005	ALLEN BRADLEY	BB1005
R 12	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 13	RES-150 OHM 5% 1/8W CC	1065-1515	ALLEN BRADLEY	BB1515
R 14	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 15	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 16	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 17	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 18	RES-100 OHM 1% 150PPM FILM	1074-1033	CAT.LIST	55-100
R 19	RES-5.62 OHM 1% 100 PPM FILM	1075-0199	SOURCE APPROVAL LIST	CAT 55-100
R 20	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 21	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 22	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 23	RES-120 OHM 5% 1/4W CC	1066-1215	ALLEN BRADLEY	CB1215
R 24	RES-75 OHM 5% 1/4W CC	1066-7505	ALLEN BRADLEY	CB 7505
R 26	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 27	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 28	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 29	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
	TRANSFORMER			
T 1	XFMR-TOROIDIAL BIFILAR	1579-0042		
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1


C19
R18
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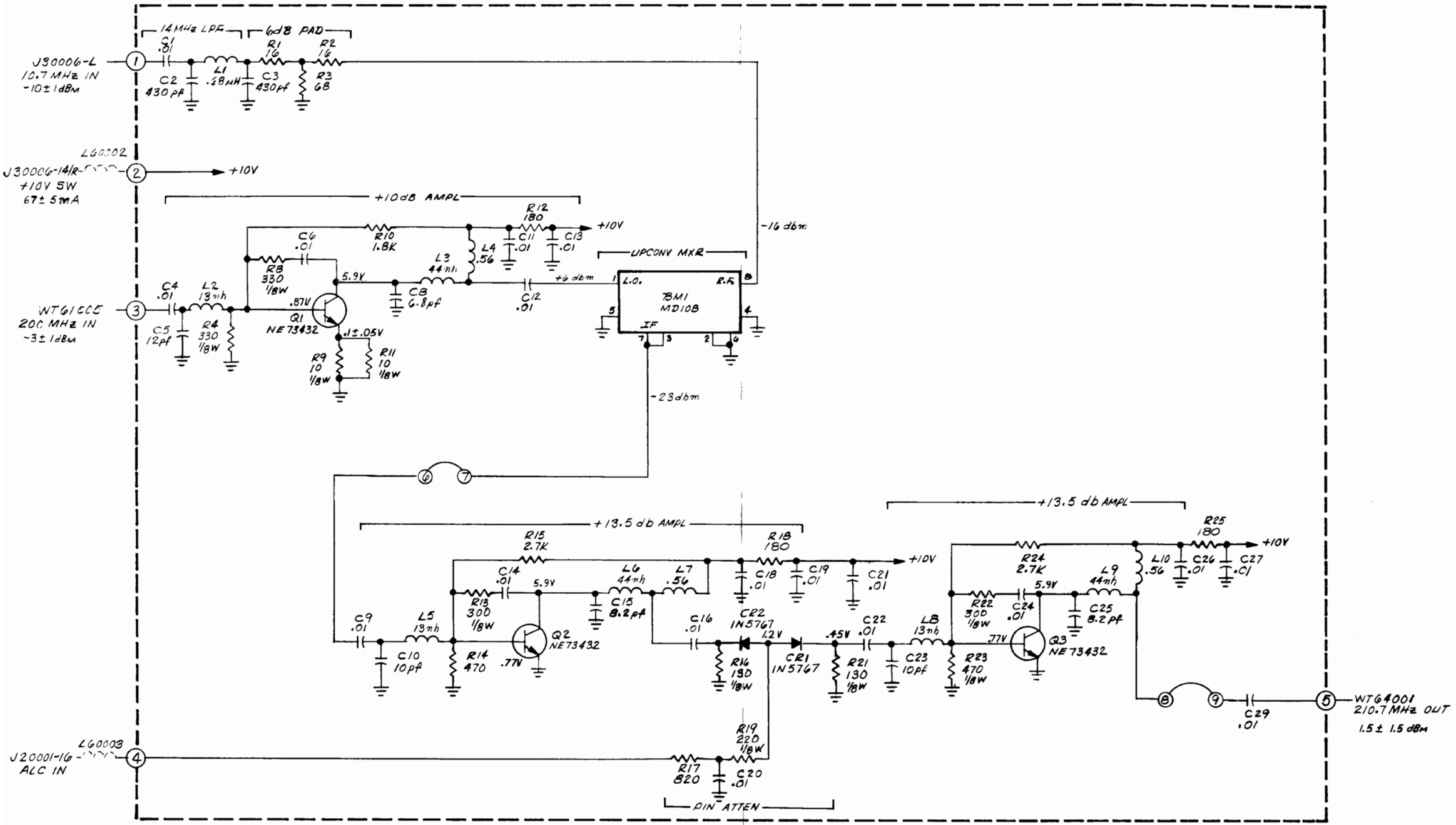
C21



NOTE:

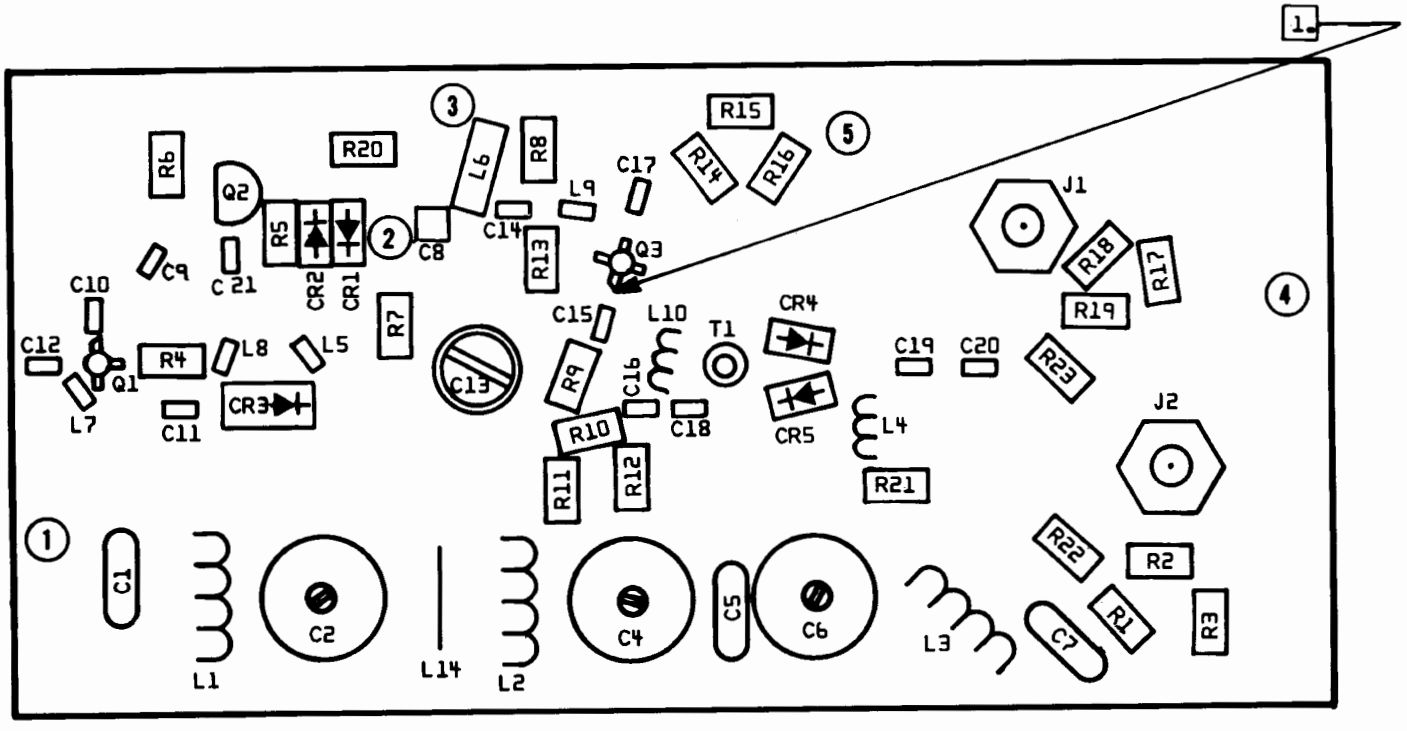
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC ±10% UNLESS NOTED
6. MEASUREMENTS MADE WITH ALC CONTROL VOLTAGE OF +9V DC
7. MEASUREMENTS MADE USING A DVM WITH INPUT RESISTANCE 10 MΩ

C7, 17, 28 & R5, 6, 7, 20 NOT USED

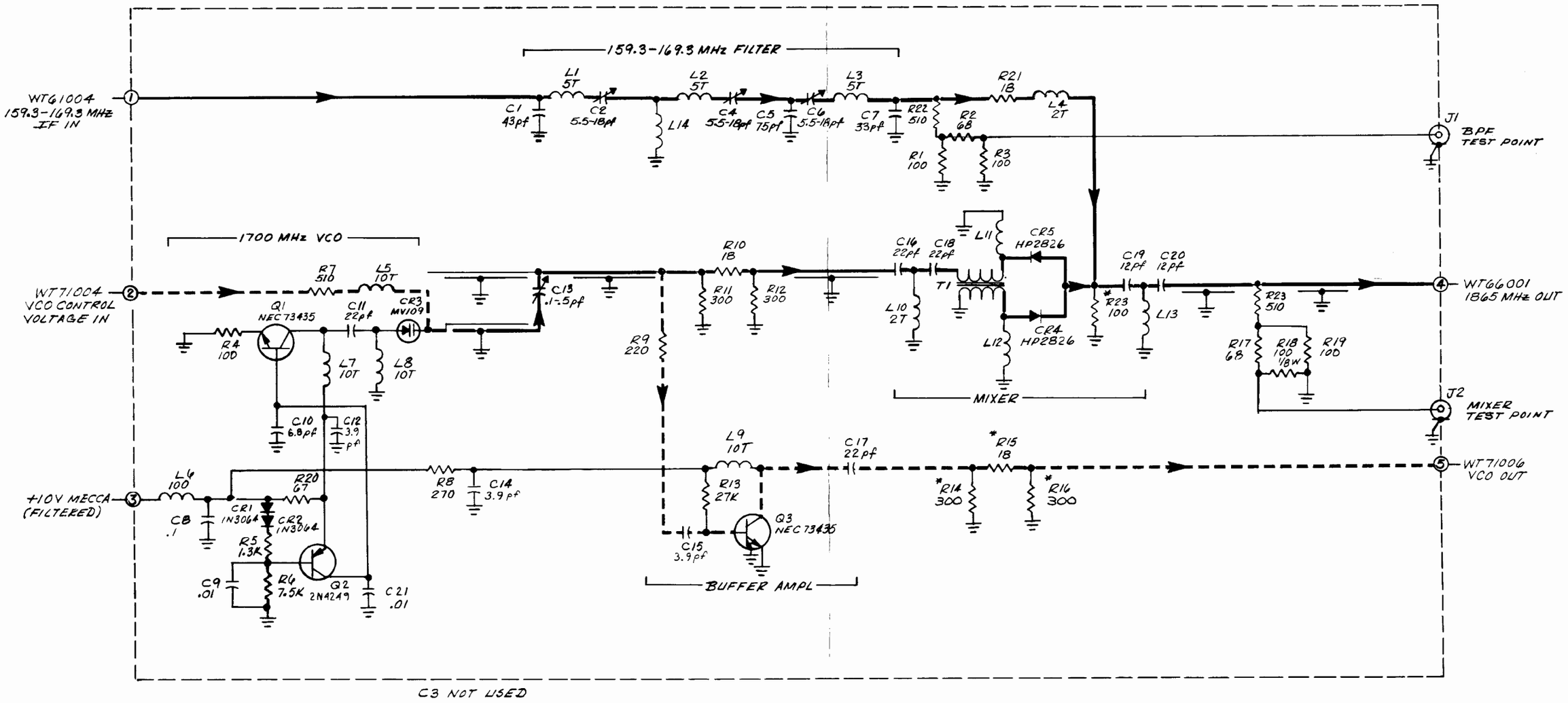
62000 210.7 MHz IF, (7001-0469)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
62000	PCB ASSY - 210.7 MH7 IF	7001-0469	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1020	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-430PF 5% 500V DIP MICA	1002-0034		
C 3	CAP-430PF 5% 500V DIP MICA	1002-0034		
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-12PF 5% 500V DIP MICA	1002-0017	ELMENCO	DM15-C-120J
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-6.8PF .25PF 500V NPO CER TUB	1005-0006	TUSONIX	301-000-C0H0-689C
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-8.2PF .25PF 500V NPO CER TUB	1005-0043	TUSONIX	301-000-C0H0-829C
C 16	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-8.2PF .25PF 500V NPO CER TUB	1005-0043	TUSONIX	301-000-C0H0-829C
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N5767 SI PIN A1AH	1281-0075	NIPPON ELECT	1SV34
CR 2	DIO-1N5767 SI PIN A1AH	1281-0075	NIPPON ELECT	1SV34
	INDUCTOR			
L 1	CH-.68UH 10% RF MLD AXL .16DX.38L	1585-0024	DELEVAN	1537-08
L 2	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
L 3	COIL-AIR CORE .136 DIA/22GA/3T	1596-0273		
L 4	CH-.56UH 10% RF MLD AXL .10DX.25L	1585-0076	DELEVAN	1025-14
L 5	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
L 6	COIL-AIR CORE .136 DIA/22GA/3T	1596-0273		
L 7	CH-.56UH 10% RF MLD AXL .10DX.25L	1585-0076	DELEVAN	1025-14
L 8	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
L 9	COIL-AIR CORE .136 DIA/22GA/3T	1596-0273		
L 10	CH-.56UH 10% RF MLD AXL .10DX.25L	1585-0076	DELEVAN	1025-14
	TRANSISTOR			
Q 1	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 2	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 3	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 2	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 3	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 4	RES-330 OHM 5% 1/8W CC	1065-3315	ALLEN BRADLEY	BB3315
R 8	RES-330 OHM 5% 1/8W CC	1065-3315	ALLEN BRADLEY	BB3315
R 9	RES-10 OHM 5% 1/8 CC	1065-1005	ALLEN BRADLEY	BB1005
R 10	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 11	RES-10 OHM 5% 1/8 CC	1065-1005	ALLEN BRADLEY	BB1005
R 12	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 13	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 14	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 15	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 16	RES-130 OHM 5% 1/8W CC	1065-1315	ALLEN BRADLEY	BB1315
R 17	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 18	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 19	RES-220 OHM 5% 1/8W CC	1065-2215		
R 21	RES-130 OHM 5% 1/8W CC	1065-1315	ALLEN BRADLEY	BB1315
R 22	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 23	RES-470 OHM 5% 1/8W CC	1065-4715	ALLEN BRADLEY	BB4715
R 24	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 25	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1



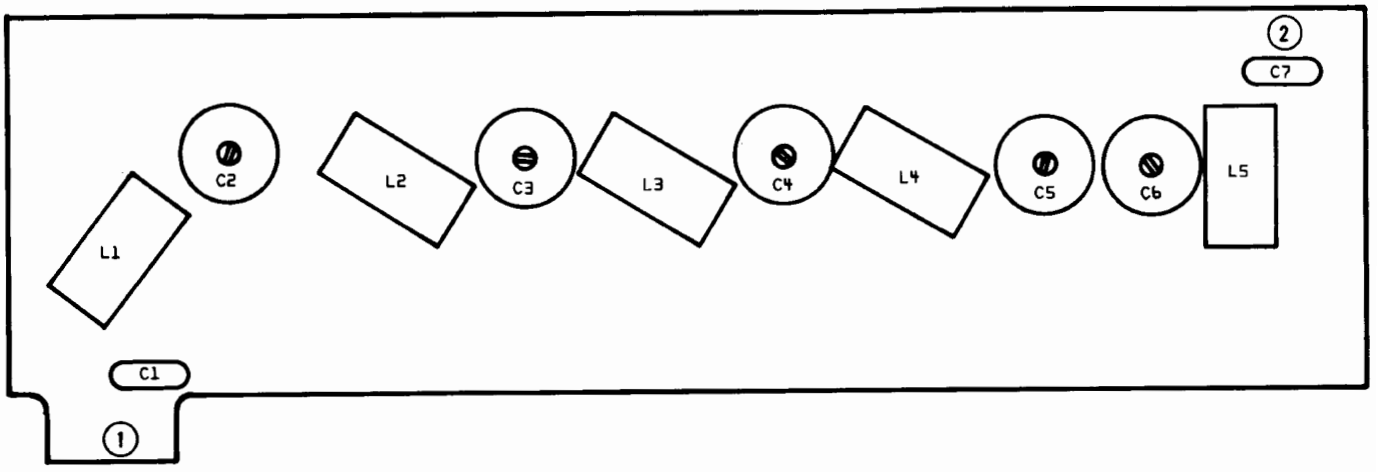
1. BASE OF Q1 AND Q3 IS ANGLE CUT. ORIENT AS SHOWN.



NOTE:
1. RESISTORS - 1/8W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
63000	PCB ASSY - VCO & 1875 MHz UPCONV	7001-0470	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1022	CUSHMAN	
	CAPACITOR			
C 1	CAP-43PF 5% 500V DIP MICA	1002-0046	SANGAMO	D155E430
C 2	CAP-5.5-18PF 350V NPO V MT CER TRMR	1001-0008	ERIE	CV31A180
C 4	CAP-5.5-18PF 350V NPO V MT CER TRMR	1001-0008	ERIE	CV31A180
C 5	CAP-75PF 5% 500V DIP MICA	1002-0025	ELMENCO	DM15-E-750J
C 6	CAP-5.5-18PF 350V NPO V MT CER TRMR	1001-0008	ERIE	CV31A180
C 7	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-6.8PF .5PF 50V NPO CHIP	1012-0012	VARADYNE	30BN050S6R8CS
C 11	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 12	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 13	PL-SINGLE SIDED CAP	2245-0043	CUSHMAN	C/E DWG
C 14	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 15	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 16	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 17	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 18	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 19	CAP-12PF 5% 50V NPO CHIP	1012-0005	VARADYNE	3BN050S120JS
C 20	CAP-12PF 5% 50V NPO CHIP	1012-0005	VARADYNE	3BN050S120JS
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-10UF 20% 35V RDL ELCTLT	1013-0044	NICHICON	35UKB10M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 4	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 5	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
	CONNECTOR			
J 1	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
J 2	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
	INDUCTOR			
L 1	COIL-AIR CORE .172 DIA/18GA/5T	1596-0276		
L 2	COIL-AIR CORE .172 DIA/18GA/5T	1596-0276		
L 3	COIL-AIR CORE .172 DIA/18GA/5T	1596-0276		
L 4	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
L 5	COIL-SLVG CORE .050 DIA/36GA/10T	1596-0288		
L 6	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 7	COIL-SLVG CORE .050 DIA/36GA/10T	1596-0288		
L 8	COIL-SLVG CORE .050 DIA/36GA/10T	1596-0288		
L 9	COIL-SLVG CORE .050 DIA/36GA/10T	1596-0288		
L 10	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
	TRANSISTOR			
Q 1	XSTR-NE73435 NPN SI	1272-0087	NIPPON ELEC	NE73435
Q 2	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 3	XSTR-NE73435 NPN SI	1272-0087	NIPPON ELEC	NE73435

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 2	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 3	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 4	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 5	RES-1.3K 5% 5% 1/8W CC	1065-1325	ALLEN BRADLEY	BB1325
R 6	RES-7.5K 5% 1/8W CC	1065-7525	ALLEN BRADLEY	BB7525
R 7	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 8	RES-270 OHM 5% 1/8W CC	1065-2715	ALLEN BRADLEY	BB2715
R 9	RES-220 OHM 5% 1/8W CC	1065-2215		
R 10	RES-18 OHM 5% 1/8W CC	1065-1805	ALLEN BRADLEY	BB1805
R 11	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 12	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 13	RES-27K 5% 1/8W CC	1065-2735	ALLEN BRADLEY	BB2735
R 14	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 15	RES-18 OHM 5% 1/8W CC	1065-1805	ALLEN BRADLEY	BB1805
R 16	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 17	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 18	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 19	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 20	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 21	RES-18 OHM 5% 1/8W CC	1065-1805	ALLEN BRADLEY	BB1805
R 22	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 23	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
	TRANSFORMER			
T 1	XFMR-TOROIDAL 2/36GA/4T	1579-0052	CUSHMAN	C/E DWG & M/L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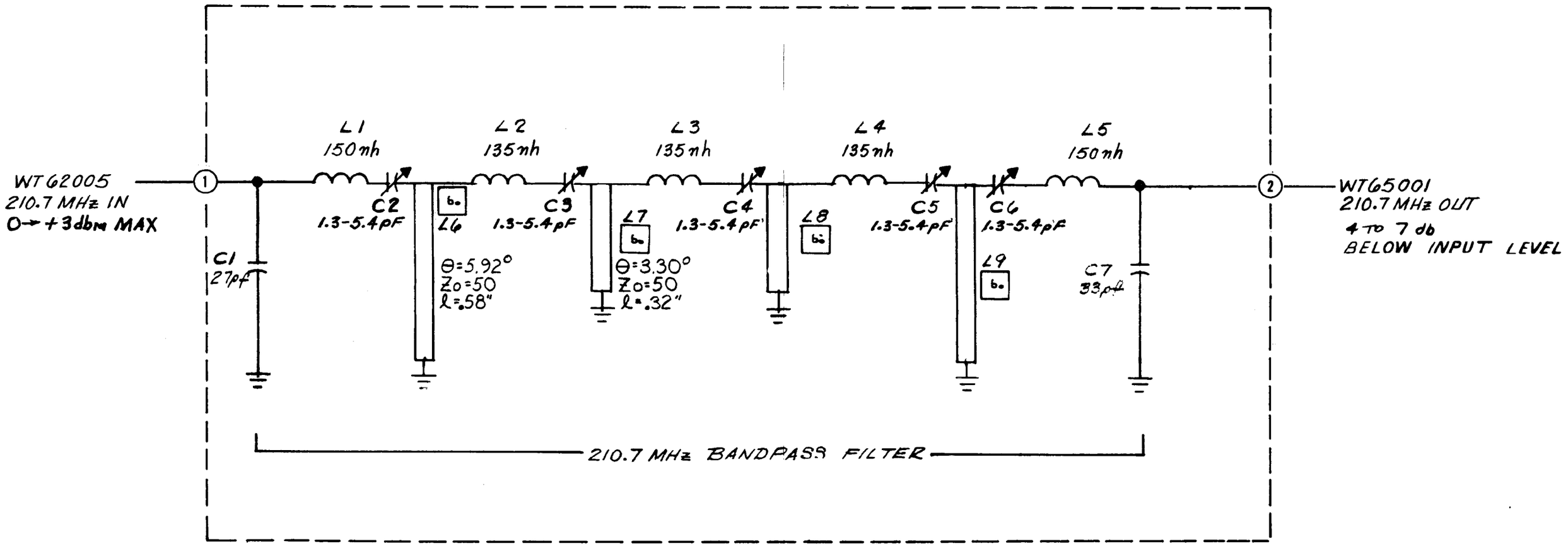
C7
C2
L2
C3
L3
C4
L4
C5
C6
L5
L1
C1
1



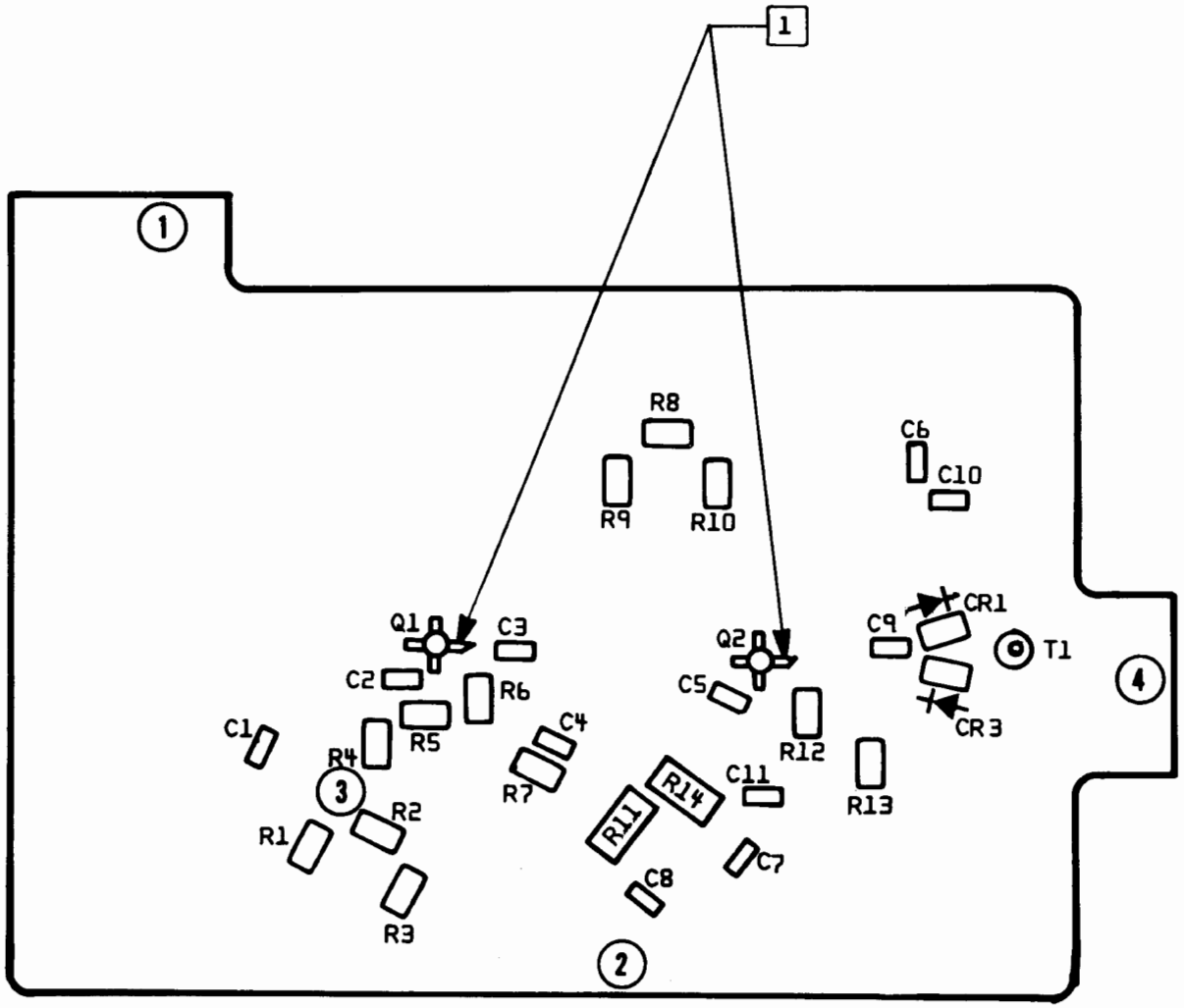
NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

6a. L6-L9 STRIP LINE INDUCTORS.

64000 210.7 MHz BPF, (7001-0471)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
64000	PCB ASSY - 210.7 MH7 BPF	7001-0471	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1023	CUSHMAN	
	CAPACITOR			
C 1	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 2	CAP-1.3-5.4PF V PCB MT AIR VAR TRMR	1000-0012	E.F. JOHNSON	187-0103-005
C 3	CAP-1.3-5.4PF V PCB MT AIR VAR TRMR	1000-0012	E.F JOHNSON	187-0103-005
C 4	CAP-1.3-5.4PF V PCB MT AIR VAR TRMR	1000-0012	E.F. JOHNSON	187-0103-005
C 5	CAP-1.3-5.4PF V PCB MT AIR VAR TRMR	1000-0012	E.F. JOHNSON	187-0103-005
C 6	CAP-1.3-5.4PF V PCB MT AIR VAR TRMR	1000-0012	E.F JOHNSON	187-0103-005
C 7	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
	INDUCTOR			
L 1	COIL-AIR CORE .228 DIA/18GA/6T	1596-0275		
L 2	COIL-AIR CORE .225 DIA/18GA/6T	1596-0274		
L 3	COIL-AIR CORE .225 DIA/18GA/6T	1596-0274		
L 4	COIL-AIR CORE .225 DIA/18GA/6T	1596-0274		
L 5	COIL-AIR CORE .228 DIA/18GA/6T	1596-0275		
	TRANSFORMER			
T1	XFMR-TOROIDAL BIFILAR	1579-0051		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R8
R9
R10
C6
C10
Q1
C3
C2
R6
R5
C1
R4
3
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R3
C4
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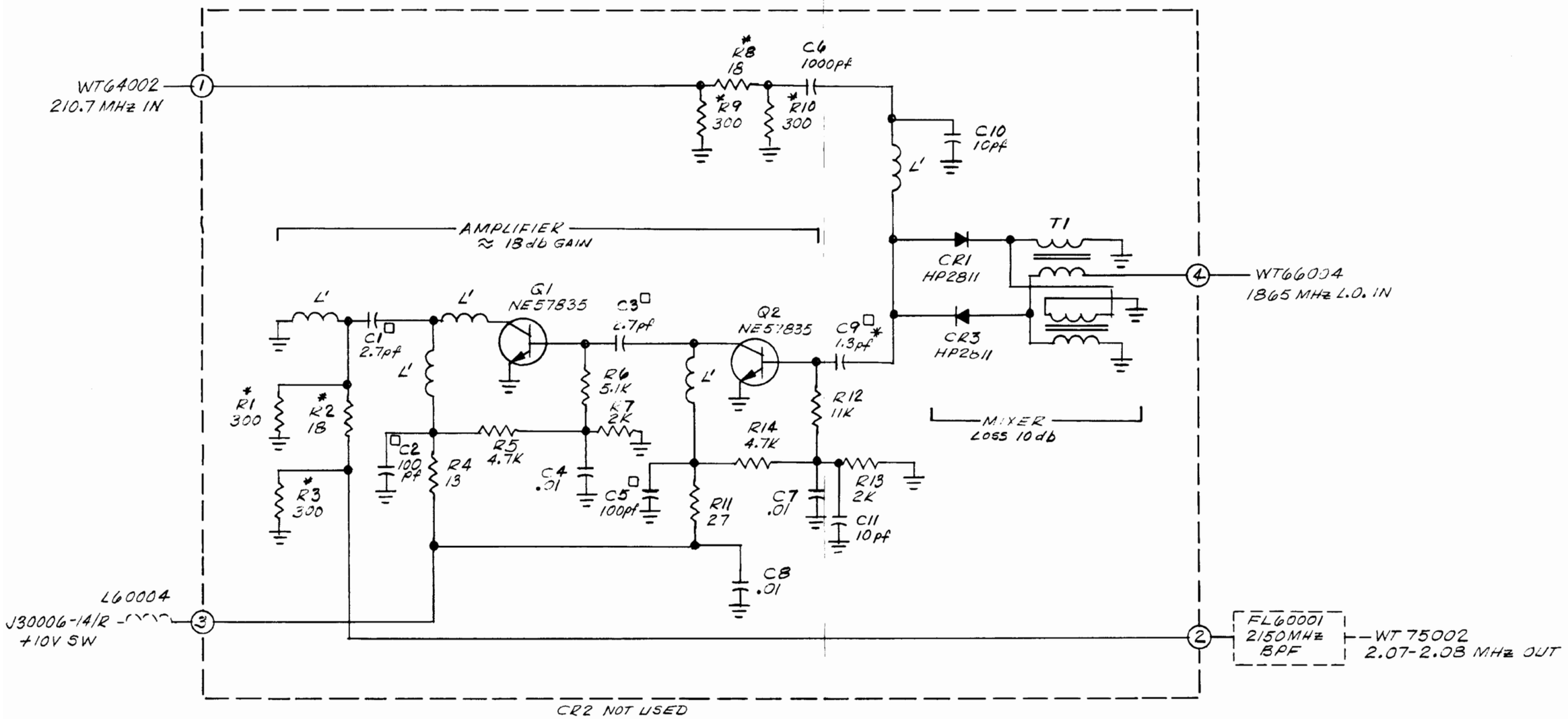
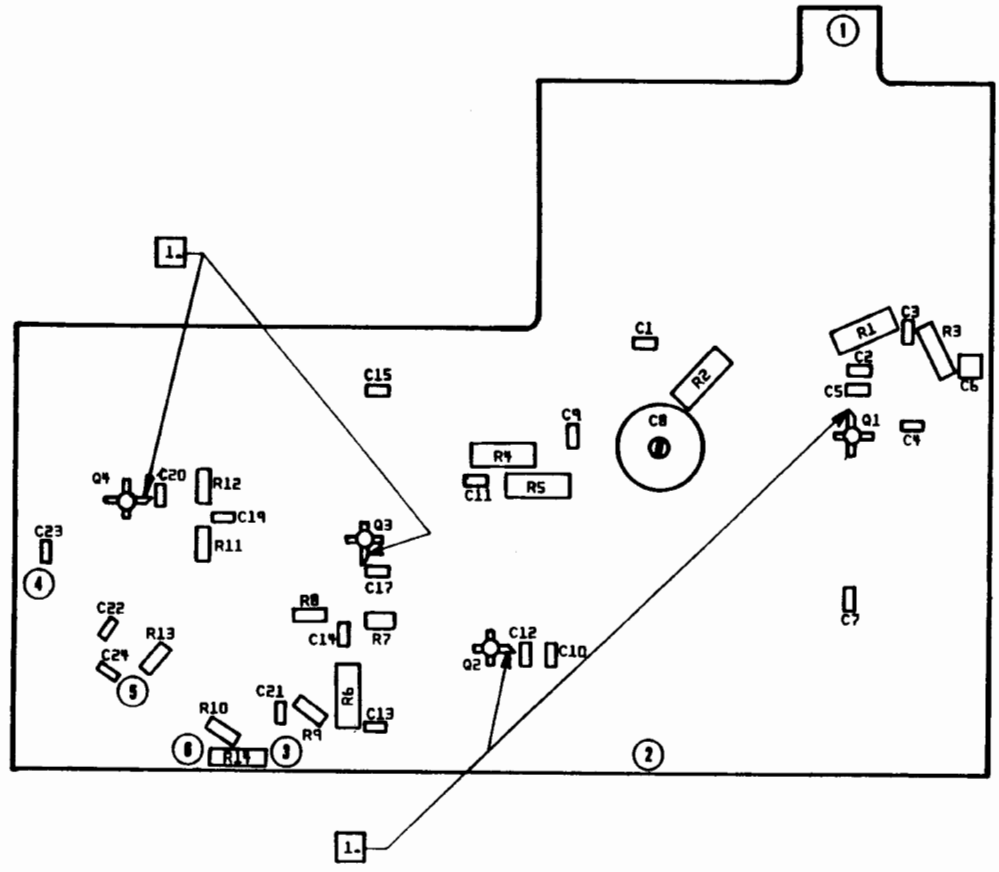
C9
T1
CR3
4

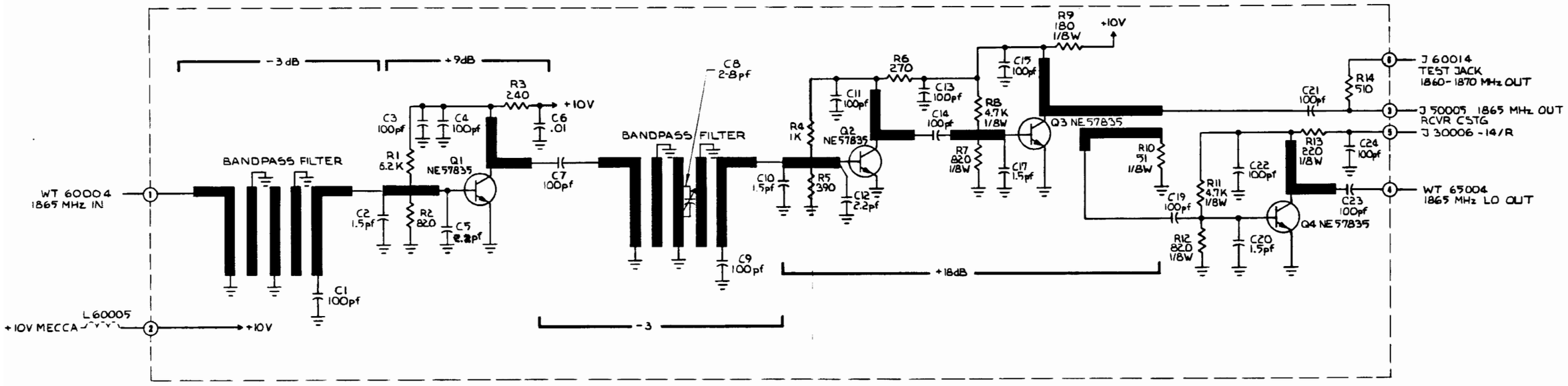


65000 2.075 GHz Upconverter, (8001-0472)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
65000	PCB ASSY - 2.075 GHz UPCONVERTER	7001-0472	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1026	CUSHMAN	
	CAPACITOR			
C 1	CAP-2.7PF .25PF 50V NPO CHIP	1012-0032	NOR CAL ASSOC	3BP050S2R7C S
C 2	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 3	CAP-2.7PF .25PF 50V NPO CHIP	1012-0032	NOR CAL ASSOC	3BP050S2R7C S
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 6	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-1.3PF .25PF 50V NPO CHIP	1012-0034	JOHANSON	500 R16N143CB
C 10	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 11	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
	DIODE			
CR 1	DIO-HP2811 SI HOT CARR A1N 1.2PF 15PRV	1283-0004	HP	5082-2811
CR 3	DIO-HP2811 SI HOT CARR A1N 1.2PF 15PRV	1283-0004	HP	5082-2811
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 2	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 2	RES-18 OHM 5% 1/8W CC	1065-1805	ALLEN BRADLEY	BB1805
R 3	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 4	RES-13 OHM 5% 1/8W CC	1065-1305	ALLEN BRADLEY	BB1305
R 5	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 6	RES-5.1K 5% 1/8W CC	1065-5125	ALLEN BRADLEY	BB5125
R 7	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 8	RES-18 OHM 5% 1/8W CC	1065-1805	ALLEN BRADLEY	BB1805
R 9	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 10	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 11	RES-27 OHM 5% 1/8W CC	1065-2705	ALLEN BRADLEY	BB2705
R 12	RES-11K 5% 1/8W CC	1065-1135	ALLAN BRADLEY	BB 1135
R 13	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 14	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725



1. BASE LEAD OF Q1,Q2,Q3 AND Q4 ARE ANGLE CUT. ORIENT AS SHOWN.



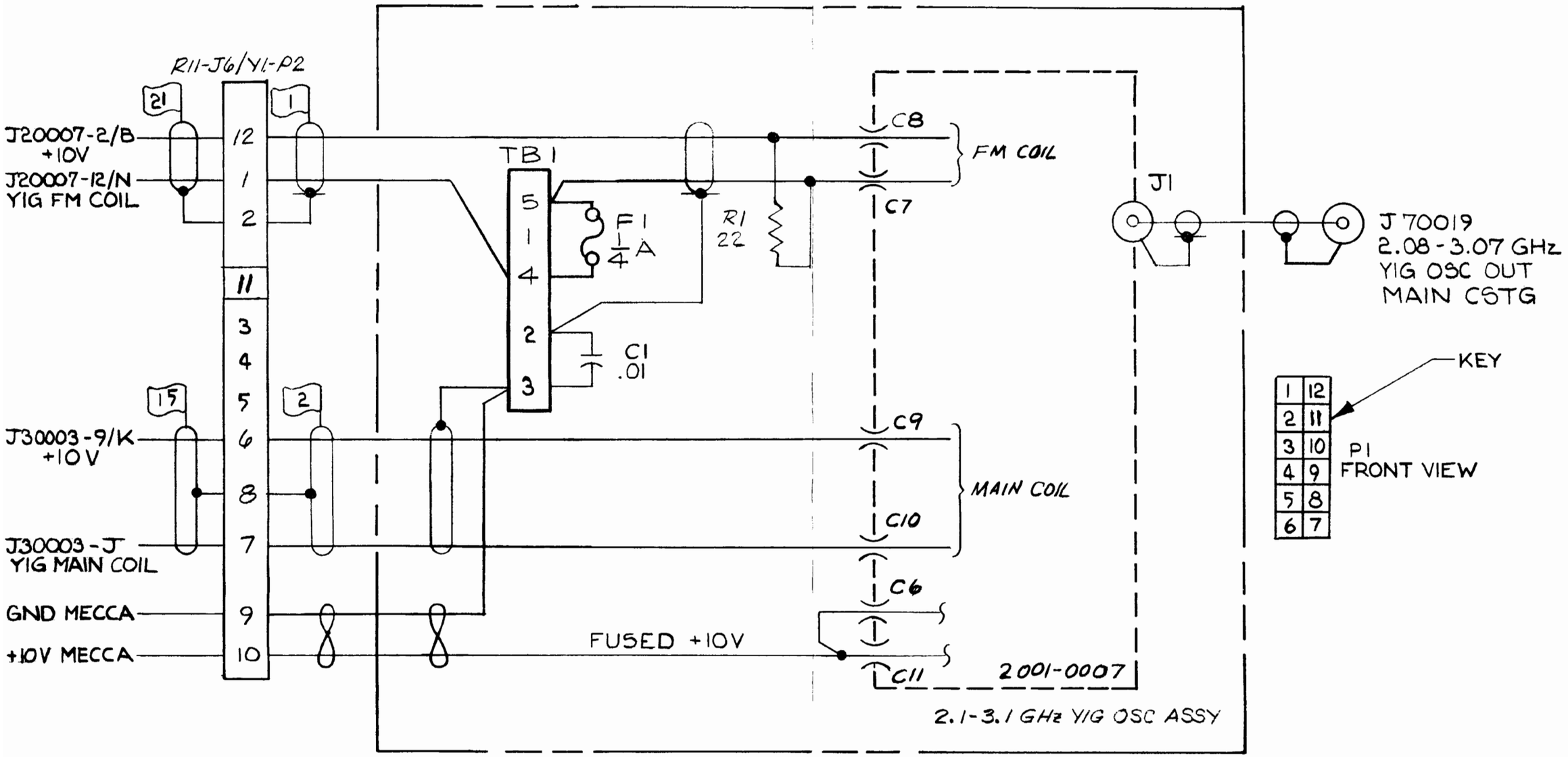
C16, 18 NOT USED

NOTE:

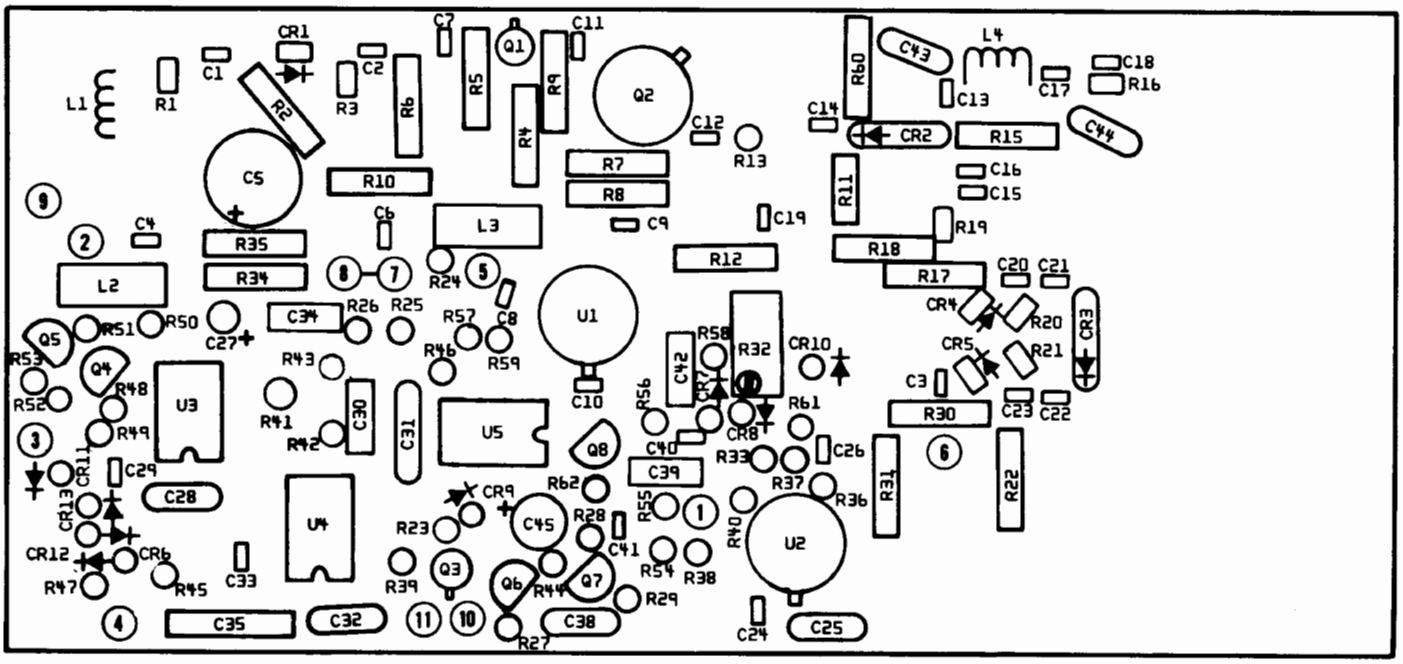
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

66000 1865 MHz Filter & Amp, (7001-0599)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
66000	PCB ASSY - 1865 MHZ FILTER & AMP	7001-0599	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1079	CUSHMAN	
	CAPACITOR			
C 1	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 2	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 3	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 4	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 5	CAP-2.2PF .5PF 50V NPO CHIP	1012-0003	KEMET	C0805C229D5GHH
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 8	CAP-2-8PF 350V NPO V MT CER TRMR	1001-0004	TUSONIX	538-011A2-8
C 9	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 10	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 11	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 12	CAP-2.2PF .5PF 50V NPO CHIP	1012-0003	KEMET	C0805C229D5GHH
C 13	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 14	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 15	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 17	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 19	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 20	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 21	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 22	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 23	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 24	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 2	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 3	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 4	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 2	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 3	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 4	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 5	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 6	RES-270 OHM 5% 1/4W CC	1066-2715	ALLEN BRADLEY	CB2715
R 7	RES-820 OHM 5% 1/8 CC	1065-8215	ALLEN BRADLEY	BB8215
R 8	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 9	RES-180 OHM 5% 1/8W CC	1065-1815	ALLEN BRADLEY	BB1815
R 10	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 11	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 12	RES-820 OHM 5% 1/8 CC	1065-8215	ALLEN BRADLEY	BB8215
R 13	RES-220 OHM 5% 1/8W CC	1065-2215		
R 14	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115



69000 YIG Interconnect, (7001-0669)
CE-50 Family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CR1
R2
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R3
R6
C7
R5
Q1
C11
R9
R4
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R13
C14
R60
C43
L4
C18
R16
C13
C17
CR2
R15
C44
C5
R10
R7
R8
C9
C19
R11
C16
C15
R19
C4
R35
C6
L3
R12
R18
C20
C21
L2
R34
R24
R17
CR4
R20
CR3
R26
R25
C34
R57
C8
U1
R58
R32
CR10
C27
R50
R51
R59
R46
C42
C3
R21
Q5
Q4
R53
R52
R48
R49
R43
R41
R42
C30
C31
U3
U5
C10
R56
C37
R61
C23
C22
R30
C40
C26
R33
R37
R36
C39
R31
R22
C29
C28
CR11
CR13
U4
CR9
R62
Q8
R55
R40
U2
CR12
CR6
R23
C45
R28
C41
R54
R38
R47
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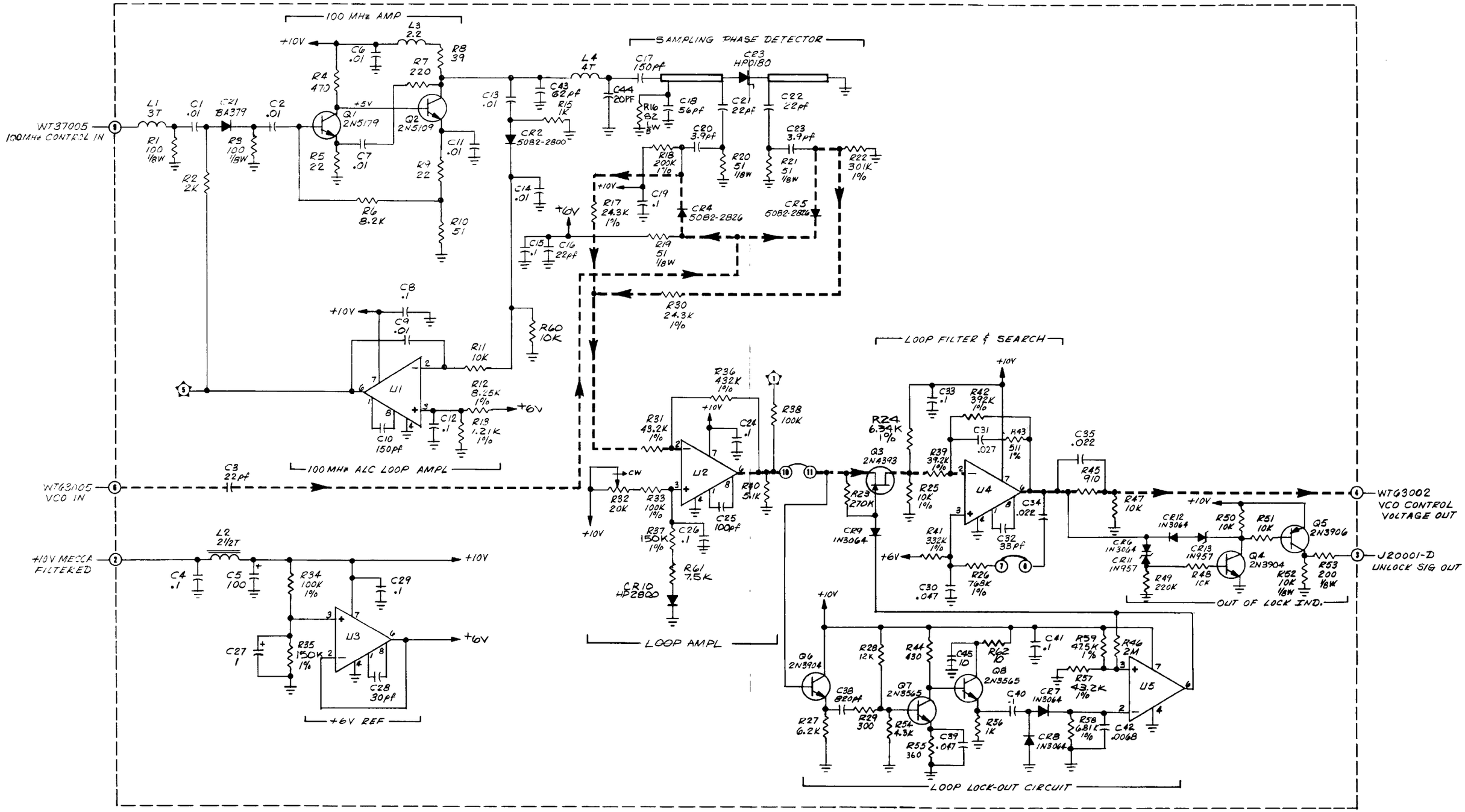
C38
R27
C24
C25



NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

U NO.	TYPE	VCC	GND
1,2	CA3130	7	4
3,4	LM308	7	4
5	741	7	4

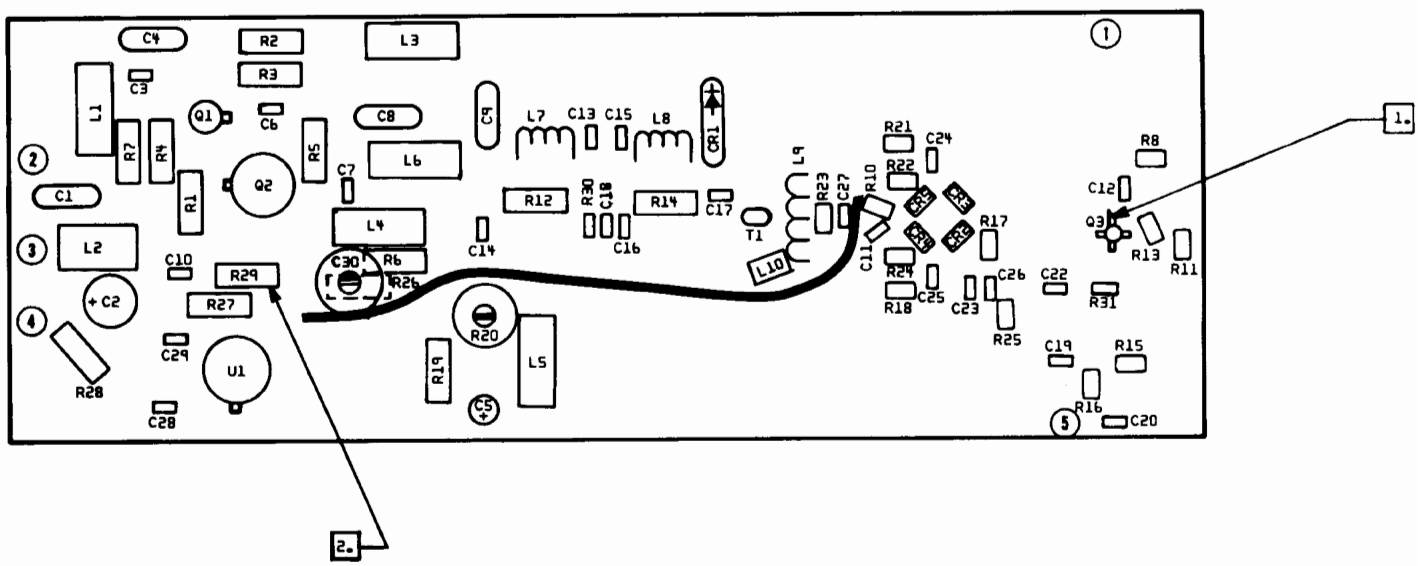
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
71000	PCB ASSY - 1.7 GHz PLL	7001-0474	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1027	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-150PF 10% 100V NPO MINTR CER	1005-0108	ERIE	8121-100-C0G0-151K
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 17	CAP-150PF 10% 100V NPO MINTR CER	1005-0108	ERIE	8121-100-C0G0-151K
C 18	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 21	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 22	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 23	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-100PF 2% 500V DIP MICA	1002-0050	ELMENCO	DM15-F-101G
C 26	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 27	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 28	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 29	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 30	CAP-.047UF 10% 100V MLD CER	1005-0055	AEROVOX	CK06BX473K
C 31	CAP-.027UF 10% 100V RDL POLYESTER	1008-0032	SPRAGUE	225P27391WA3
C 32	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-.022UF 10% 100V MLD CER	1005-0079	AEROVOX	CK06BX223K
C 35	CAP-.022UF 5% 400V RDL POLYESTER	1008-0094	PLESSEY CAP.	60C223J400
C 38	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 39	CAP-.047UF 10% 100V MLD CER	1005-0055	AEROVOX	CK06BX473K
C 40	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 41	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 42	CAP-6800PF 10% 200V MLD CER	1005-0099	AEROVOX	CK06BX682K
C 43	CAP-62PF 5% 500V DIP MICA	1002-0057		
C 44	CAP-20PF 5% 500V DIP MICA	1002-0060	ELMENCO	DM15-E-200J
C 45	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
	DIODE			
CR 1	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 3	DIO-HP0180 SI STEP RCVY D07 4.6PF 50V	1282-0008	HP	5082-0180
CR 4	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 5	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CE-50 FAMILY

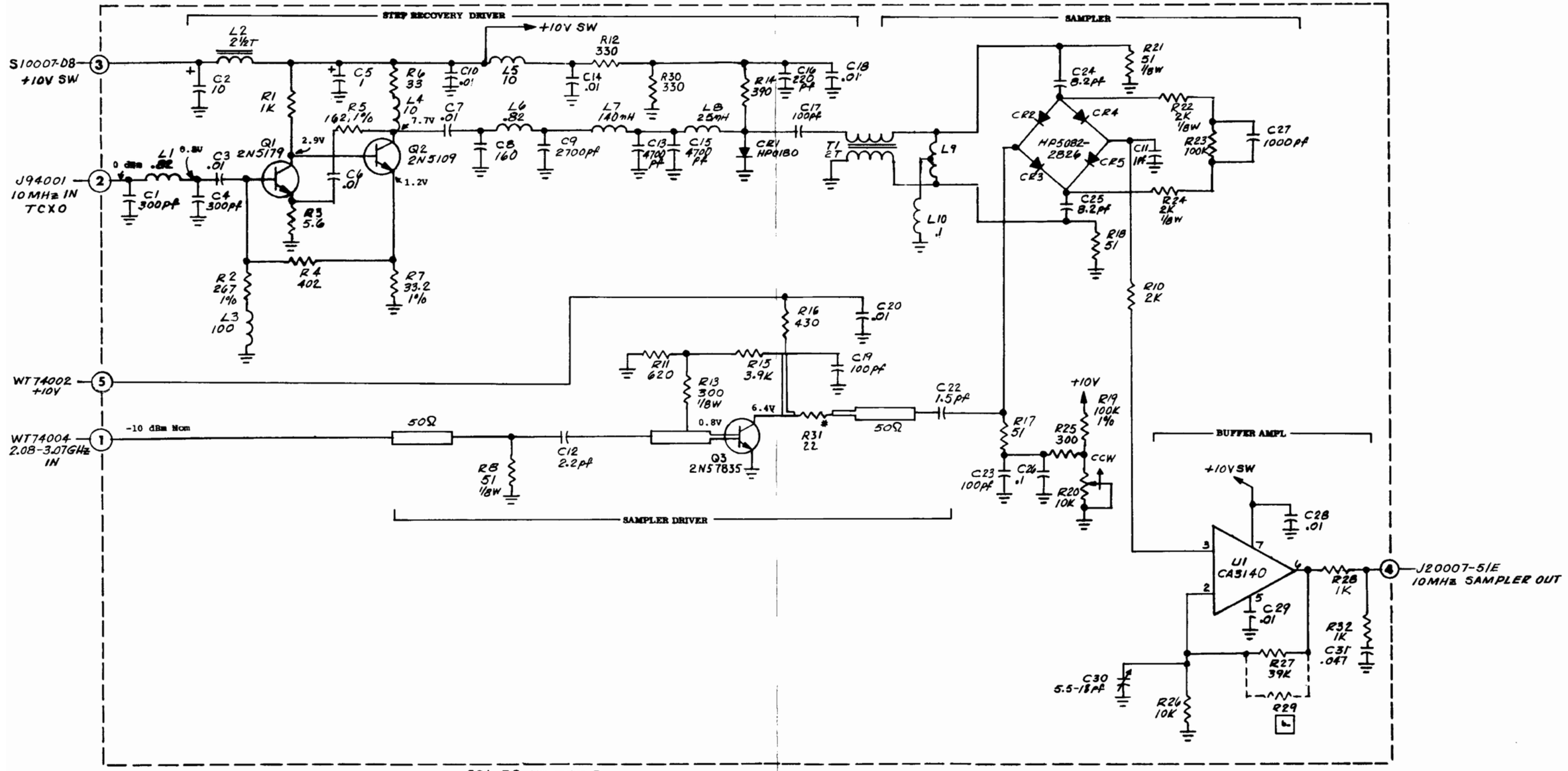
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 11	DIO-1N957 SI ZENER D07 6.8V 20% .4W	1281-0007	MOTOROLA	1N957
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N957 SI ZENER D07 6.8V 20% .4W	1281-0007	MOTOROLA	1N957
	INDUCTOR			
L 1	COIL-AIR CORE .130 DIA/24GA/3T	1596-0289		
L 2	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 3	CH-2.2UH 10% RF MLD AXL .16DX.38L	1585-0013	DELEVAN	1537-20
L 4	COIL-AIR CORE .140 DIA/24GA/4T	1596-0300	CUSHMAN	C/E DWG & M/L
	TRANSISTOR			
Q 1	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 2	XSTR-2N5109 NPN SI TO39 HIGH PWR	1272-0110	MOTOROLA	2N5109
Q 3	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
	RESISTOR			
R 1	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 2	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 3	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 4	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 5	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 6	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 7	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 8	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 9	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 10	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 11	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 12	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 13	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-82 OHM 5% 1/8W CC	1065-8205	ALLEN BRADLEY	BB8205
R 17	RES-24.3K 1% 100PPM FILM	1075-0097	CAT.LIST	55-100
R 18	RES-200K 1% 100PPM FILM	1075-0148	CAT. LIST	55-100
R 19	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 20	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 21	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 22	RES-301K 1% 150PPM FILM	1074-1037	CAT.LIST	55-100
R 23	RES-270K 5% 1/4W CC	1066-2745	ALLEN BRADLEY	CB2745
R 24	RES-6.34K 1% 150PPM FILM	1074-1007	CAT.LIST	55-100
R 25	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 26	RES-768K 1% 100PPM FILM	1075-0146	CAT. LIST	55-100
R 27	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 28	RES-12K 5% 1/4W CC	1066-1235	ALLEN BRADLEY	CB1235
R 29	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 30	RES-24.3K 1% 100PPM FILM	1075-0097	CAT.LIST	55-100
R 31	RES-43.2K 1% 100PPM FILM	1075-0117		
R 32	POT-20K 10% 1/2W 25T CERMET TRMR	1215-0061	BOURNS	3299Y-1-203
R 33	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 34	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 35	RES-150K 1% 100PPM FILM	1075-0152	CAT. LIST	55-100

5601-0075-3

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 36	RES-432K 1% 100PPM FILM	1075-0194		
R 37	RES-150K 1% 100PPM FILM	1075-0152	CAT. LIST	55-100
R 38	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 39	RES-39.2K 1% 25PPM FILM	1074-1032	CAT.LIST	55-025
R 40	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 41	RES-332K 1% 100PPM FILM	1075-0170	SHELLY RODABAUGH	MFF1/8 RN55D
R 42	RES-392K 1% 100PPM FILM	1075-0193		
R 43	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 44	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 45	RES-910 OHM 5% 1/4W CC	1066-9115	ALLEN BRADLEY	CB 9115
R 46	RES-2MEG 5% 1/4W CC	1066-2055	ALLEN BRADLEY	CB2055
R 47	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 50	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 51	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 52	RES-10K 5% 1/8W CC	1065-1035	ALLEN BRADLEY	BB1035
R 53	RES-200 OHM 5% 1/8W CC	1065-2015	ALLEN BRADLEY	BB2015
R 54	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 55	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 56	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 57	RES-43.2K 1% 100PPM FILM	1075-0117		
R 58	RES-6.81K 1% 100PPM FILM	1075-0140	CAT LIST	55-100
R 59	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 61	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 62	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 4	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 5	IC-UA741CP	2025-0067	TI	UA741CP



1. BASE LEADS OF Q1,Q2,Q3,AND Q4 ARE ANGLE CUT. ORIENT AS SHOWN.
2. INSTALLED IN CERTAIN UNITS DURING FINAL TEST.



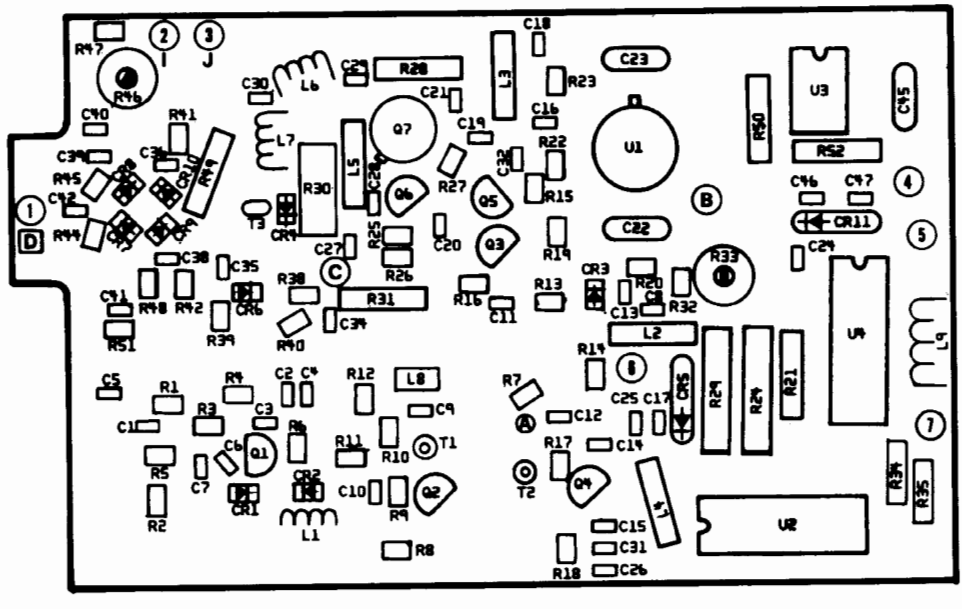
C21 R9 NOT USED

OUT OF SEQUENCE LOCATION TABLE	
REF NO	APPROX LOC
R30	R12
R31	Q3

NOTE:
8. POWER LEVELS MEASURED WITH HP435A POWER METER.
7. VOLTAGE MEASUREMENTS MADE USING A DVM (10 MΩ INPUT RESISTANCE)
6. INSTALLED IN CERTAIN UNITS DURING FINAL TEST.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
72000	PCB ASSY - 10 MH7 SAMPLER	7001-0475	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1017	CUSHMAN	
	CAPACITOR			
C 1	CAP-300PF 5% 500V DIP MICA	1002-0059	ELMENCO	DM15-F-301J
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-300PF 5% 500V DIP MICA	1002-0059	ELMENCO	DM15-F-301J
C 5	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-160PF 5% 500V DIP MICA	1002-0091	ELMENCO	DM15-F-161J
C 9	CAP-2700PF 5% 500V DIP MICA	1002-0081	ELMENCO	DM19-C-272J
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-1PF .1PF 50V MIN HIGH Q CHIP	1012-0027	JOHANSON	251R12Q1R0BP
C 12	CAP-2.2PF .5PF 50V NPO CHIP	1012-0003	KEMET	C0805C229D5GHH
C 13	CAP-4700 PF 5% 50V Z7R CHIP	1012-0031	VARADYNE	3BR050S472JS
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-4700 PF 5% 50V Z7R CHIP	1012-0031	VARADYNE	3BR050S472JS
C 16	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 17	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-1.5PF .25PF 50V NPO CHIP	1012-0002	VICLAN	0805NP01R5C50PS
C 23	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 24	CAP-8.2PF.5PF 50V NPO CHIP	1012-0030	NOVACAP	1005N8R2D500A
C 25	CAP-8.2PF.5PF 50V NPO CHIP	1012-0030	NOVACAP	1005N8R2D500A
C 26	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 27	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-5.5-18PF 350V NPO V MT CER TRMR	1001-0008	ERIE	CV31A180
C 31	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
	DIODE			
CR 1	DIO-HP0180 SI STEP RCVY D07 4.6PF 50V	1282-0008	HP	5082-0180
CR 2	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 3	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 4	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 5	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
	INDUCTOR			
L 1	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10
L 2	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
L 5	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
L 6	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10
L 7	COIL-AIR CORE .136 DIA/22GA/9T	1596-0272		
L 8	COIL-AIR CORE .090 DIA/22GA/3T	1596-0271		
L 9	COIL-AIR CORE .250DIA/22GA/HALF TURN	1596-0309	CUSHMAN	C/E DWG & M/L
L 10	CH-.1UH 10% RF MLD SHLD AXL .16DX.40L	1585-0041	DELEVAN	1641-101

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N5179 NPN SI T072 LOW PWR (RCA)	1272-0067	RCA	2N5179 NO SUB
Q 2	XSTR-2N5109 NPN SI TO39 HIGH PWR	1272-0110	MOTOROLA	2N5109
Q 3	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 2	RES-267 OHM 1% 100PPM FILM	1075-0083	CAT.LIST	55-100
R 3	RES-5.6 OHM 5% 1/4W CC	1066-0003	ALLEN BRADLEY	CB56G5
R 4	RES-402 OHM 1% 100PPM FILM	1075-0151	CAT LIST	55-100
R 5	RES-162 OHM 1% 150PPM FILM	1074-1009		55-100
R 6	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 7	RES-33.2 OHM 1% 100PPM FILM	1075-0045	CAT.LIST	55-100
R 8	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 10	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 11	RES-620 OHM 5% 1/8W CC	1065-6215	ALLEN BRADLEY	BB6215
R 12	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 13	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 14	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 15	RES-3.9K 5% 1/8W CC	1065-3925	ALLEN BRADLEY	BB3925
R 16	RES-430 OHM 5% 1/8 CC	1065-4315	ALLEN BRADLEY	BB4315
R 17	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 18	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 19	RES-100K 1% 100PPM FILM	1074-0109	CAT.LIST	55-025
R 20	POT-10K 20% 1/2W 4T CERMET TRMR	1203-0061	BOURNS	3339H-1-103
R 21	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 22	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 23	RES-100K 5% 1/8W CC	1065-1045	ALLEN BRADLEY	BB1045
R 24	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 25	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-39K 5% 1/4W CC	1066-3935	ALLEN BRADLEY	CB 3935
R 28	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 30	RES-22 OHM 5% 1/8W CC	1065-2205		
R 31	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
	TRANSFORMER			
T 1	XFMR-TOROIDAL BIFILAR	1579-0053	CUSHMAN	C/E DWG & M/L
	INTEGRATED CIRCUIT			
U 1	IC-CA3140T 8PIN CAN OP AMPL	2025-0238	RCA	CA3140T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R46
C40
R41
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L7
L5
R30
C28
T3
CR4
C27
R25
R26
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Q6
Q5
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C18
L3
R23
C16
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U1
R15
R14
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R5
C7
CR2
CR1
C10
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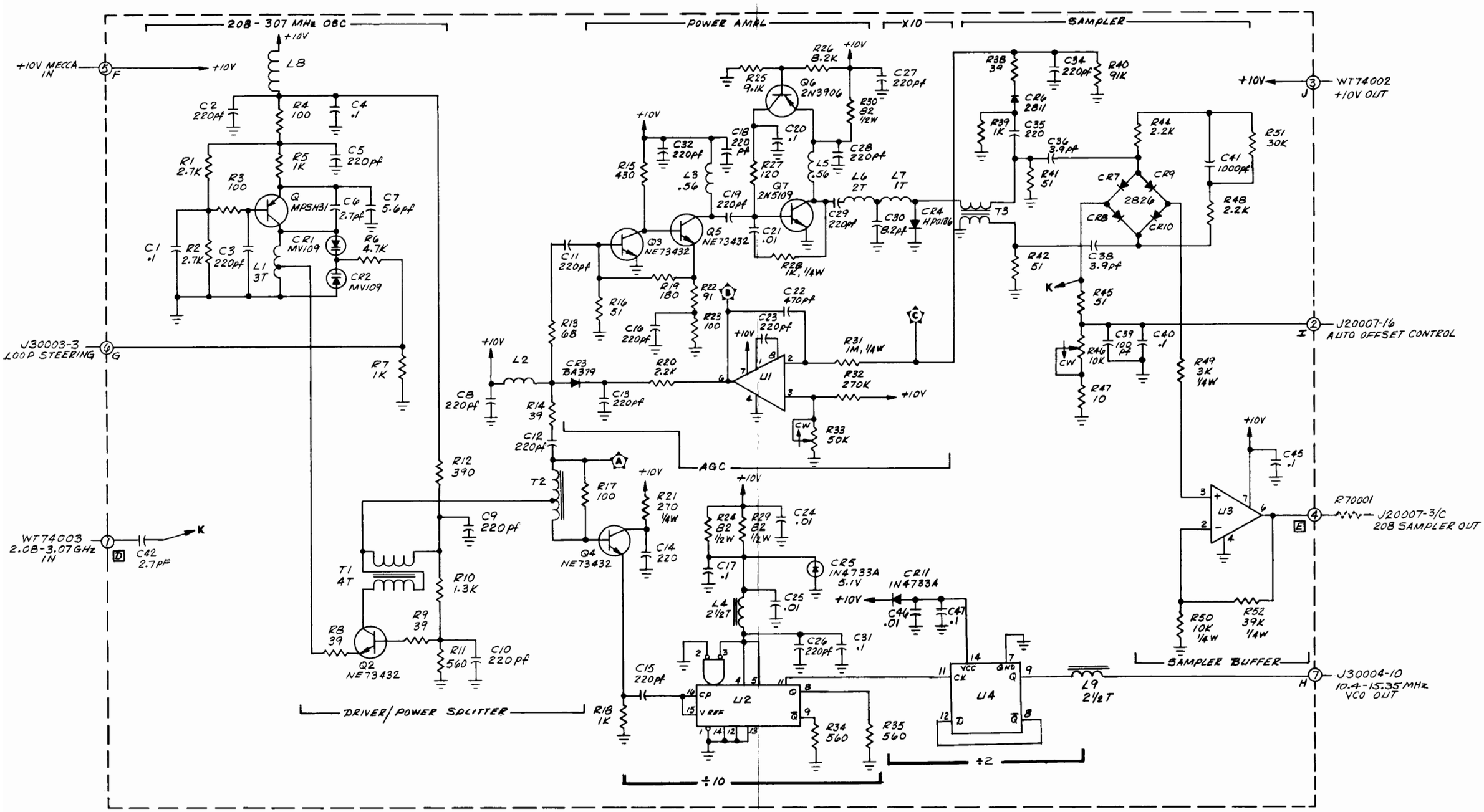


U NO.	TYPE	VCC	GND
1	CA3130	7	4
2	11C90		
3	CA3140	7	4
4	74S74		

C33, C37, R36, R37, R43 } NOT USED

NOTE:

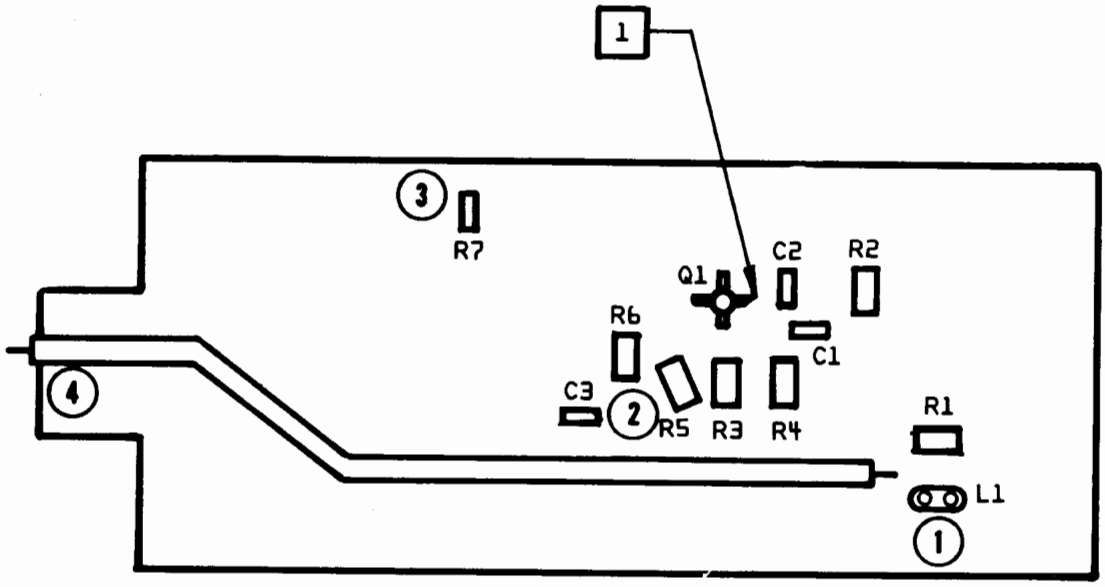
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/8W 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

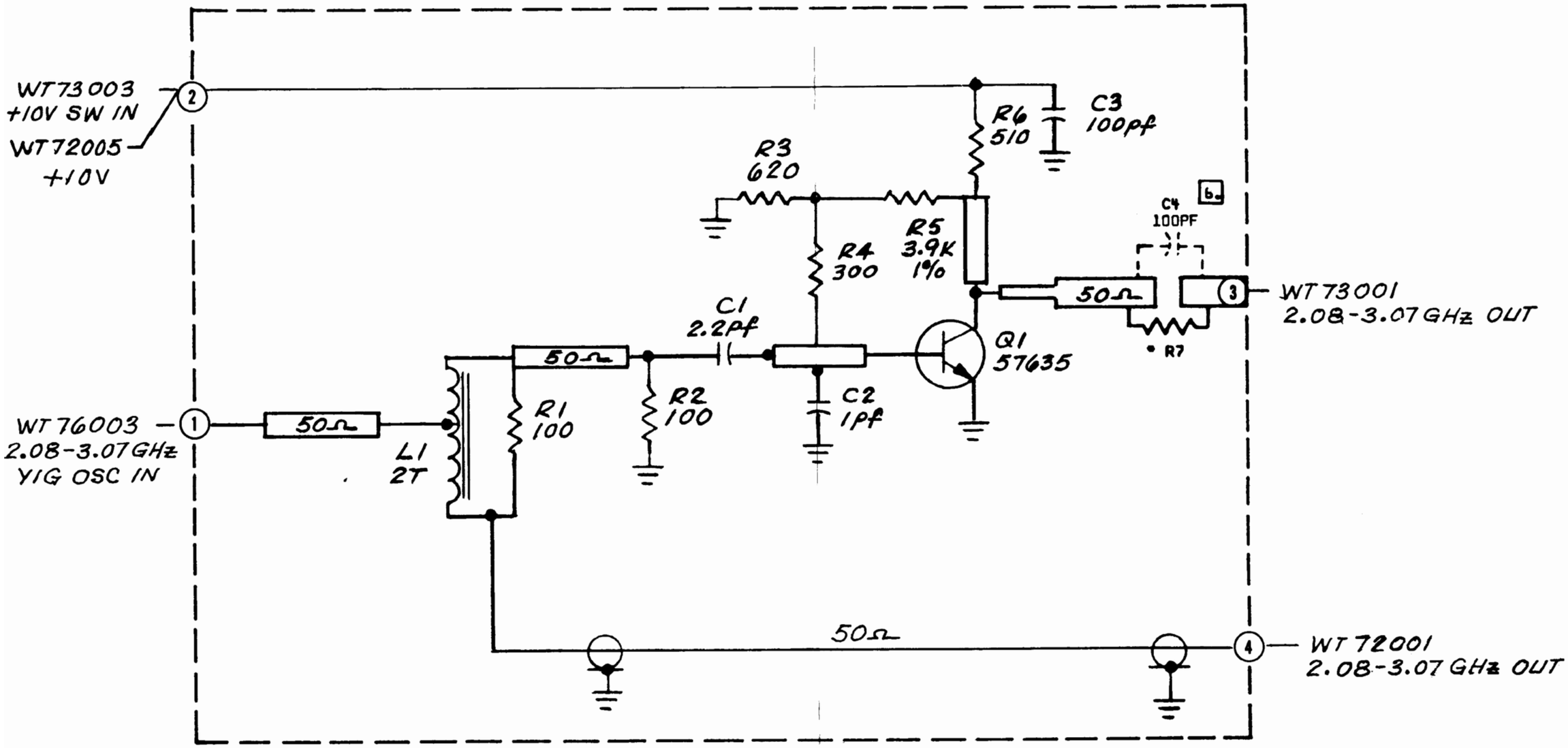
73000 208-307 MHz VCO/Div-by-10/Sampler (7001-0648), CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
73000	PCB ASSY - 208-307 MHz VCO/÷10/SAMP	7001-0648	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1094	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 3	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 6	CAP-2.7PF 10% 100V NPO MINTR CER	1005-0124	TUSONIX	8101-100-C0J0-279C
C 7	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 8	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 9	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 10	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 11	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 12	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 13	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 14	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 15	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 16	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 19	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 23	CAP-220PF 5% 500V DIP MICA	1002-0029	ELMENCO	DM15-F-221J
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 27	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 28	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 29	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 30	CAP-8.2PF.5PF 50V NPO CHIP	1012-0030	NOVACAP	1005N8R2D500A
C 31	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 32	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 34	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 35	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 36	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 38	CAP-3.9PF .5PF 50V NPO CHIP	1012-0022	JOHANSON	50R15Q-3R9DP
C 39	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 40	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 41	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 42	CAP-2.7PF .25PF 50V NPO CHIP	1012-0032	NOR CAL ASSOC	3BP050S2R7C S
C 45	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 46	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 47	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 2	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 3	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 4	DIO-HP0136 SI STEP RCVY 3PF 25V	1282-0006	HP	5082-0136
CR 5	DIO-1N4733A SI ZENER D041 5.1V 5% 1W	1281-0031	MOTOROLA	1N4733A
CR 6	DIO-HP2811 SI HOT CARR A1N 1.2PF 15PRV	1283-0004	HP	5082-2811
CR 7	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 8	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 9	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 10	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 11	DIO-1N4733A SI ZENER D041 5.1V 5% 1W	1281-0031	MOTOROLA	1N4733A
	INDUCTOR			
L 1	COIL-AIR CORE CT .114 DIA/20GA/3T	1596-0270		
L 2	CH-3B FERRITE BEAD 30GA/6T	1586-0007		
L 3	CH-.56UH 10% RF MLD AXL .10DX.25L	1585-0076	DELEVAN	1025-14
L 4	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 5	CH-.56UH 10% RF MLD AXL .10DX.25L	1585-0076	DELEVAN	1025-14
L 6	COIL-AIR CORE .090 DIA-22GA-2T	1596-0268		
L 7	ASSY-COIL-AIR CORE	1596-0068		
L 8	CH-3B FERRITE BEAD 30GA/6T	1586-0007		
L 9	ASSY-COIL-AIR CORE	1596-0072		
	TRANSISTOR			
Q 1	XSTR-MPSH81 PNP SI T092 LOW PWR	1272-0111	MOTOROLA	MPSH81
Q 2	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 3	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 4	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 5	XSTR-NE73432E NPN SI TO92 LOW PWR	1272-0112	CALIF EASTERN LABS	6EM8Z
Q 6	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 7	XSTR-2N5109 NPN SI TO39 HIGH PWR	1272-0110	MOTOROLA	2N5109
	RESISTOR			
R 1	RES-2.7K 5% 1/8 CC	1065-2725	ALLEN BRADLEY	BB2725
R 2	RES-2.7K 5% 1/8 CC	1065-2725	ALLEN BRADLEY	BB2725
R 3	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 4	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 5	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 6	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 7	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 8	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 9	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 10	RES-1.3K 5% 5% 1/8W CC	1065-1325	ALLEN BRADLEY	BB1325
R 11	RES-560 OHM 5% 1/8W CC	1065-5615	ALLEN BRADLEY	BB5615
R 12	RES-390 OHM 5% 1/8W CC	1065-3915	ALLEN BRADLEY	BB3915
R 13	RES-68 OHM 5% 1/8W CC	1065-6805	ALLEN BRADLEY	RC05GF680J
R 14	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 15	RES-430 OHM 5% 1/8 CC	1065-4315	ALLEN BRADLEY	BB4315
R 16	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 17	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 18	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 19	RES-180 OHM 5% 1/8W CC	1065-1815	ALLEN BRADLEY	BB1815
R 20	RES-2.2K 5% 1/8W CC	1065-2225	ALLEN BRADLEY	BB2225
R 21	RES-270 OHM 5% 1/4W CC	1066-2715	ALLEN BRADLEY	CB2715
R 22	RES-91 OHM 5% 1/8W CC	1065-9105	ALLEN BRADLEY	BB9105
R 23	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 24	RES-82 OHM 5% 1/2W CC	1067-8205	ALLEN BRADLEY	EB 8205
R 25	RES-9.1K 5% 1/8W CC	1065-9125	ALLEN BRADLEY	BB9125
R 26	RES-8.2K 5% 1/8W CC	1065-8225	ALLEN BRADLEY	BB8225
R 27	RES-120 OHM 5% 1/8W CC	1065-1215		
R 28	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 29	RES-82 OHM 5% 1/2W CC	1067-8205	ALLEN BRADLEY	EB 8205
R 30	RES-82 OHM 5% 1/2W CC	1067-8205	ALLEN BRADLEY	EB 8205

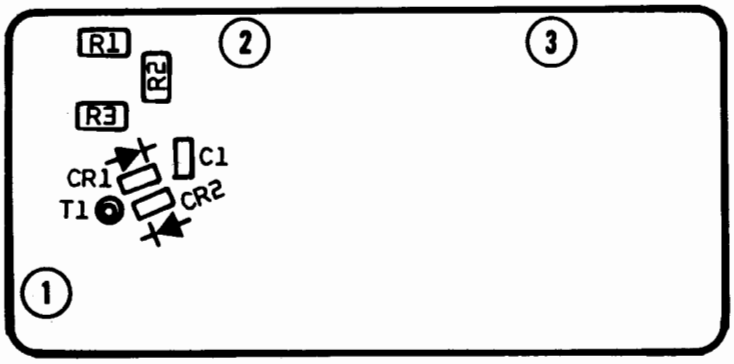
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 31	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 32	RES-270K 5% 1/8W CC	1065-2745	ALLEN BRADLEY	BB2745
R 33	POT-50K 20% 1/2W 4T CERMET TRMR	1203-0059	BOURNS	3339H-1-503
R 34	RES-560 OHM 5% 1/8W CC	1065-5615	ALLEN BRADLEY	BB5615
R 35	RES-560 OHM 5% 1/8W CC	1065-5615	ALLEN BRADLEY	BB5615
R 38	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 39	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 40	RES-91K 5% 1/8W CARBON COMP	1065-9135		
R 41	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 42	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 44	RES-2.2K 5% 1/8W CC	1065-2225	ALLEN BRADLEY	BB2225
R 45	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 46	POT-10K 20% 1/2W 4T CERMET TRMR	1203-0061	BOURNS	3339H-1-103
R 47	RES-10 OHM 5% 1/8 CC	1065-1005	ALLEN BRADLEY	BB1005
R 48	RES-2.2K 5% 1/8W CC	1065-2225	ALLEN BRADLEY	BB2225
R 49	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 50	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 51	RES-30K 5% 1/8W CC	1065-3035	ALLEN BRADLEY	BB3035
R 52	RES-39K 5% 1/4W CC	1066-3935	ALLEN BRADLEY	CB 3935
	TRANSFORMER			
T 1	XFMR-TOROIDAL 2/36GA/4T	1579-0050		
T 2	XFMR-TOROIDAL 2/36GA/4T	1579-0050		
T 3	XFMR-OVAL FERRITE 2/36 GA/2T	1579-0049		
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-11C90 16PIN DIP DIV 10/11 PRESCALER	2025-0182	FAIRCHILD	11C90DC
U 3	IC-CA 3140E 8 PIN DIP OP AMPL	2025-0237		
U 4	IC-74S74 DUAL D POS EDGE TRIG FF W/P&C	2025-0125	TEXAS INSTRUMENTS	SN74S74N

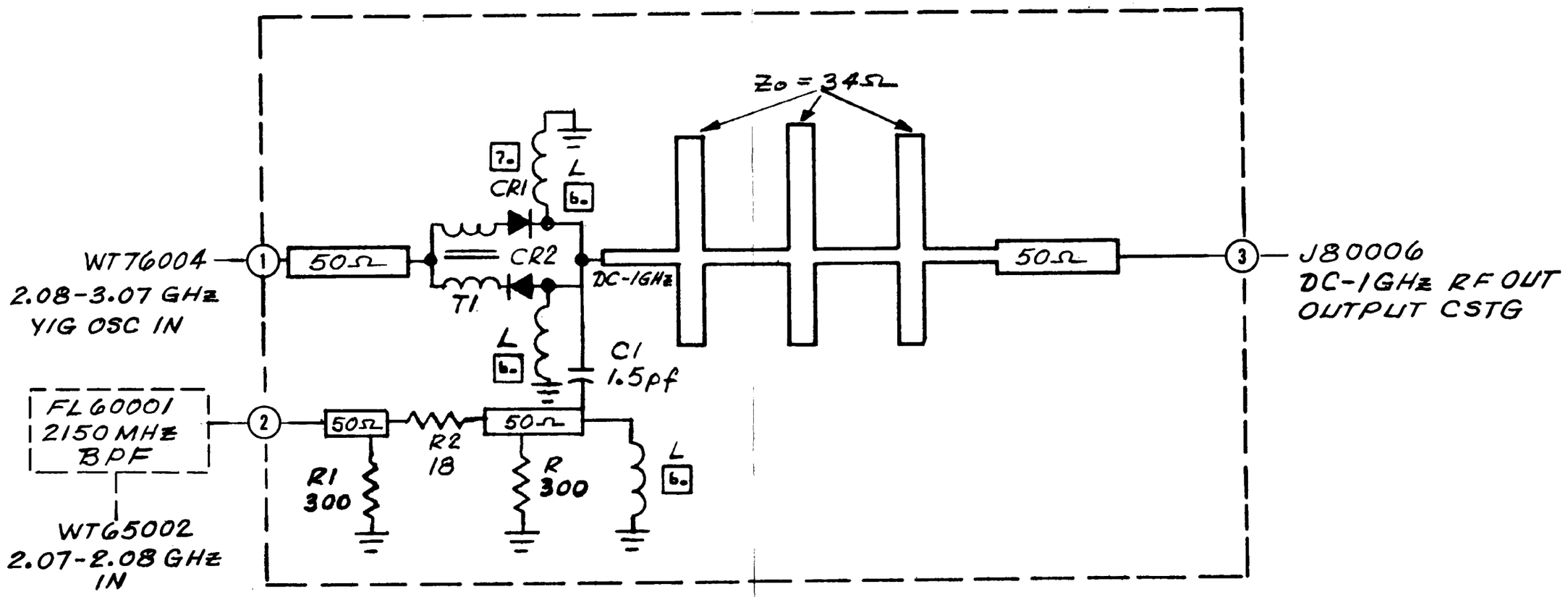

1
3
R7
Q1
C2
R2
R6
C1
C3
2
R5
R3
R4
R1
4
L1
1



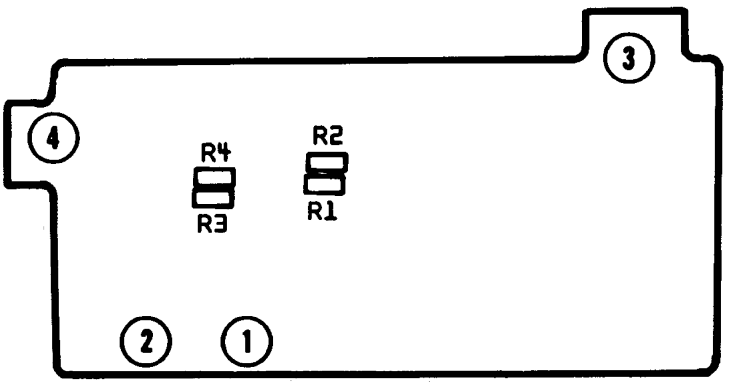
74000 3 dB power Splitter Buffer Amp, (7001-0477)
CE-50 Family

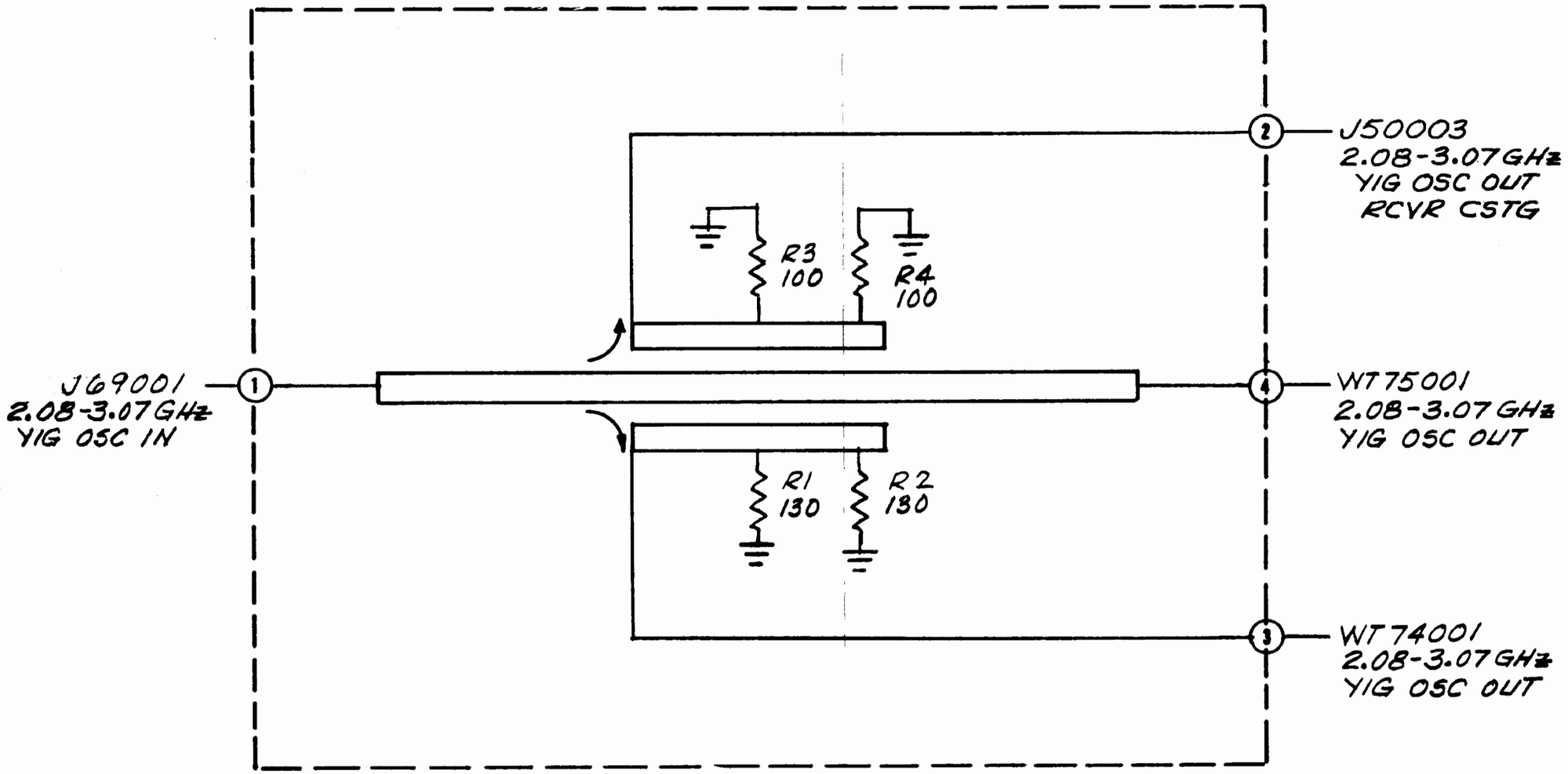
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
74000	PCB ASSY - 3dB PWR SPLTR/BFR AMP	7001-0477	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1016	CUSHMAN	
	CAPACITOR			
C 1	CAP-2.2PF .5PF 50V NPO CHIP	1012-0003	KEMET	C0805C229D5GHH
C 2	CAP-1PF .5PF 50V NPO CHIP	1012-0019	VITRAMON	VJ0805A1R0DH
C 3	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 2	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 3	RES-620 OHM 5% 1/8W CC	1065-6215	ALLEN BRADLEY	BB6215
R 4	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 5	RES-3.9K 5% 1/8W CC	1065-3925	ALLEN BRADLEY	BB3925
R 6	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 7	RES-30 OHM 5% 1/8W CC	1065-3005	ALLEN-BRADLEY	BB3005
	TRANSFORMER			
T 1	XFMR-OVAL FERRITE 2/36 GA/2T	1579-0049		


R1
R2
R3
C1
CR1
T1
CR2
1
2
3

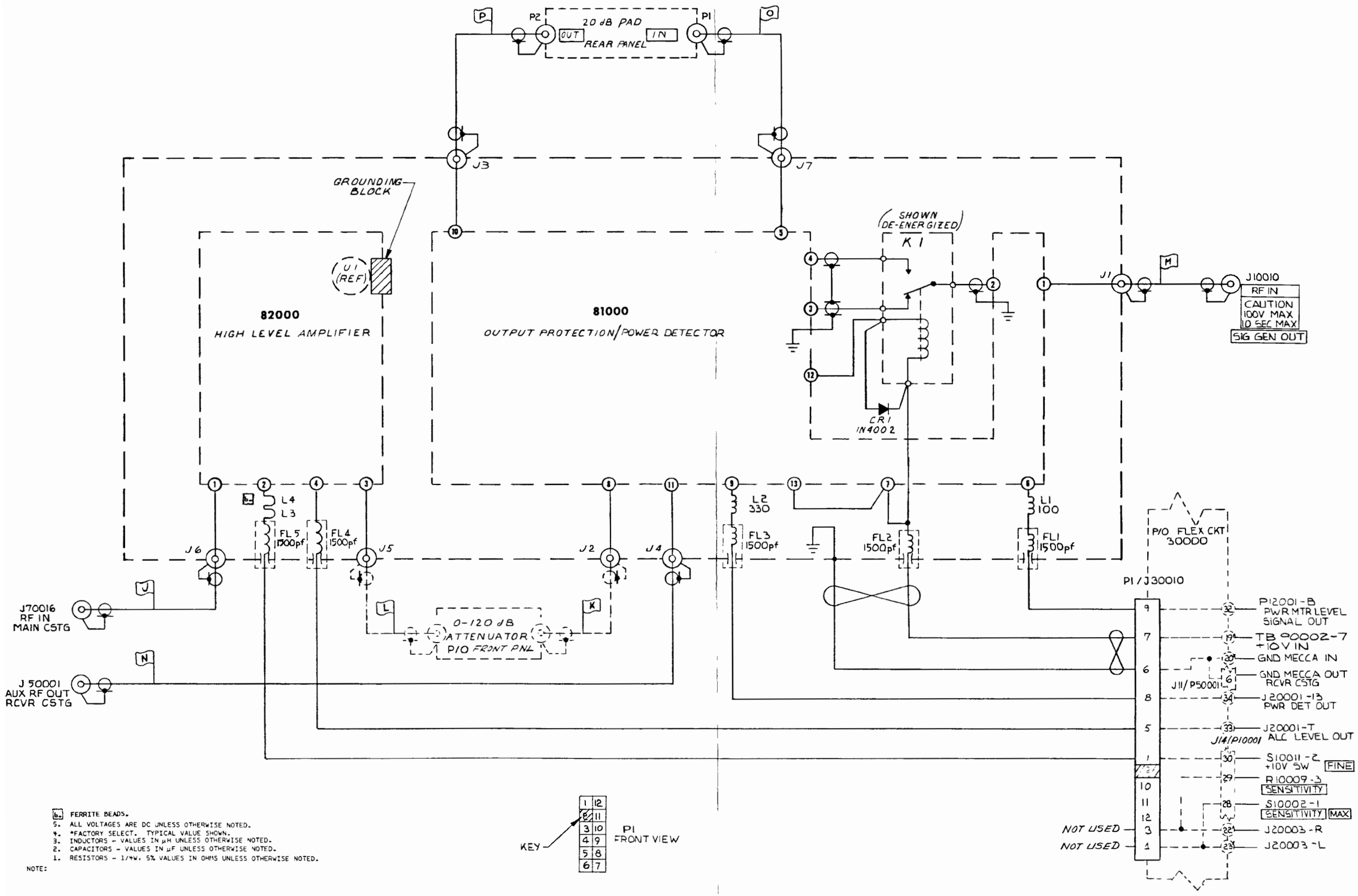

Zo = 34Ω
7.
CR1
L
6.
WT76004
2.08-3.07 GHz
YIG OSC IN
1
50Ω
CR2
T1
DC-1GHz
50Ω
3
J80006
DC-1GHz RF OUT
OUTPUT CSTG
L
6.
C1
1.5pf
FL60001
2150 MHz
BPF
2
50Ω
R1
300
R2
18
50Ω
R
300
L
6.
WT65002
2.07-2.08 GHz
IN

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
75000	PCB ASSY - FINAL MIXER & 1.1 GHz LPF	7001-0478	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1024	CUSHMAN	
	CAPACITOR			
C 1	CAP-1.5PF .25PF 100V NPO MINTR CER	1005-0121	CENTRE ENGINEERING	100-100-NPO 159C
	DIODE			
CR 1	DIO-HP2811 SI HOT CARR A1N 1.2PF 15PRV	1283-0004	HP	5082-2811
CR 2	DIO-HP2811 SI HOT CARR A1N 1.2PF 15PRV	1283-0004	HP	5082-2811
	RESISTOR			
R 1	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 2	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 3	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
	TRANSFORMER			
T 1	XFMR-TOROIDIAL BIFILAR	1579-0042		


4
3
R4
R2
R3
R1
2
1


J50003
2.08-3.07GHz
YIG OSC OUT
RCVR CSTG
R3
100
R4
100
J69001
2.08-3.07GHz
YIG OSC IN
WT75001
2.08-3.07GHz
YIG OSC OUT
R1
130
R2
130
WT74001
2.08-3.07GHz
YIG OSC OUT

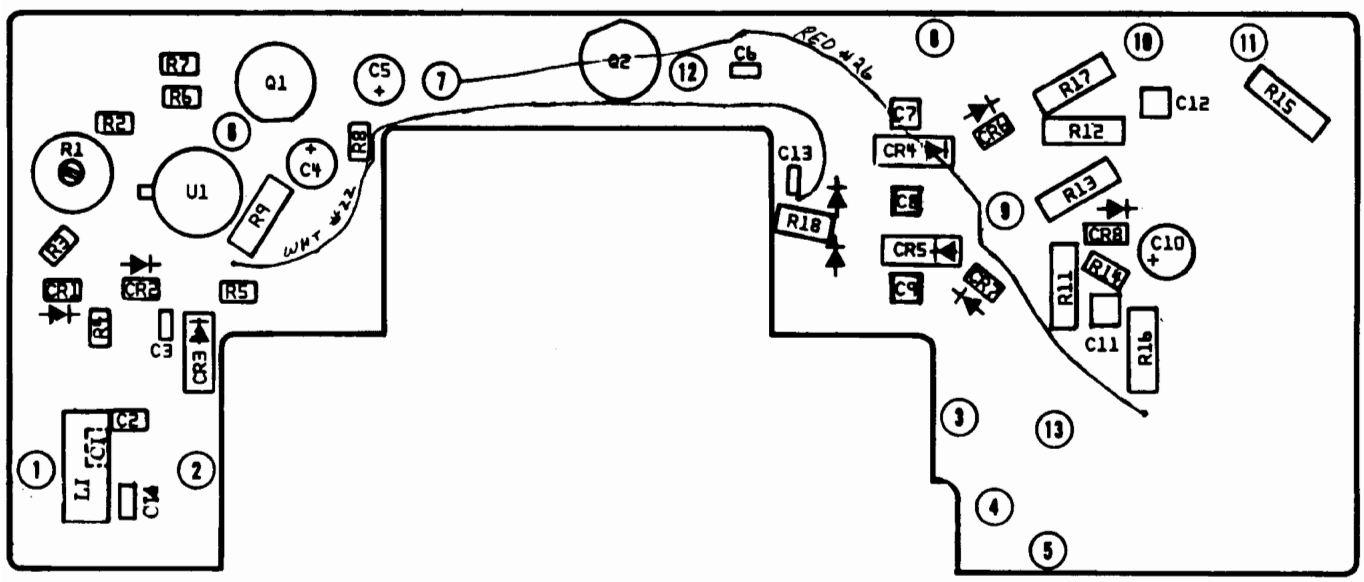
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
76000	PCB ASSY - DIRECTIONAL COUPLER	7001-0479	CUSHMAN	CE-50 FAMILY*
	PRINTED CIRCUIT BOARD	1780-1015	CUSHMAN	*(EXCEPT /TG)
	RESISTOR			
R 1	RES-130 OHM 5% 1/8W CC	1065-1315	ALLEN BRADLEY	BB1315
R 2	RES-130 OHM 5% 1/8W CC	1065-1315	ALLEN BRADLEY	BB1315
R 3	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 4	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015



NOTE:

6. FERRITE BEADS.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

80000 RF Output Casting, (8000-0650)
CE-50 Family (Except CE-45A)


R7
R6
Q1
C5
7
Q2
12
C6
RED #26
8
10
11
R17
C12
R15
R2
R1
U1
C4
R8
C13
C7
CR4
CR6
R12
R13
R3
R9
WHT #22
R18
C8
9
CR8
C10
CR1
CR2
R5
CR5
CR7
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C14
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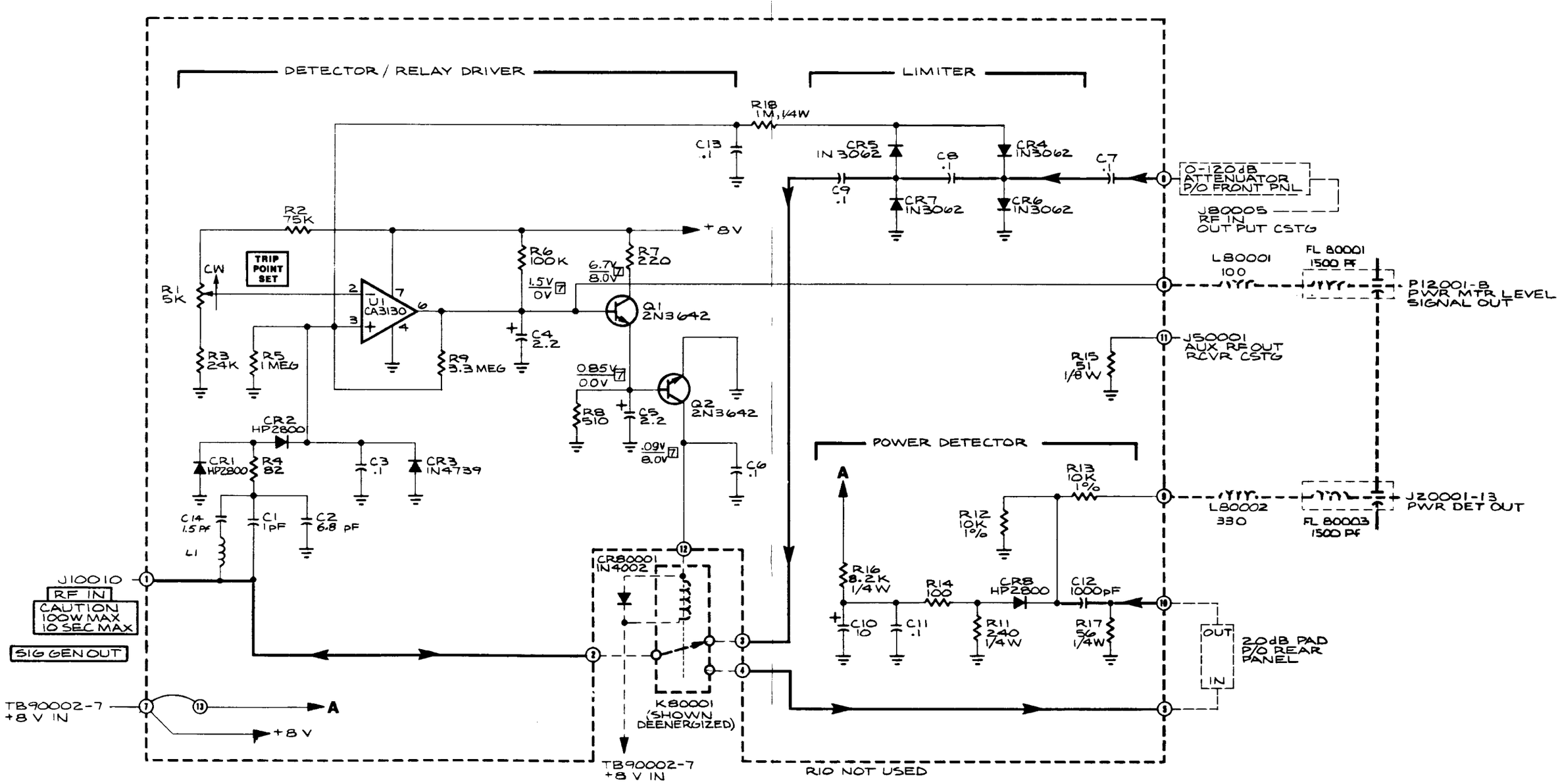
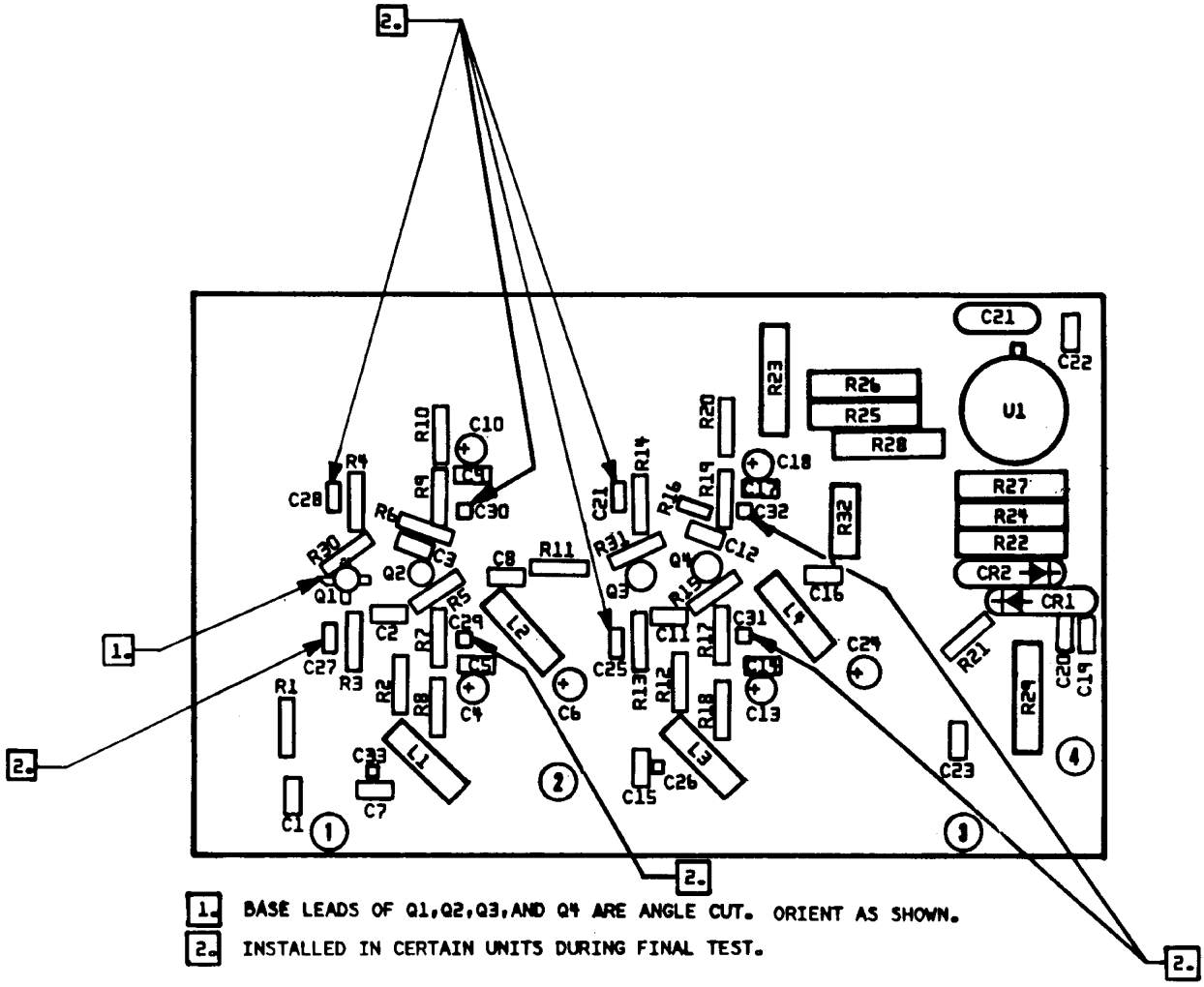


NOTE:

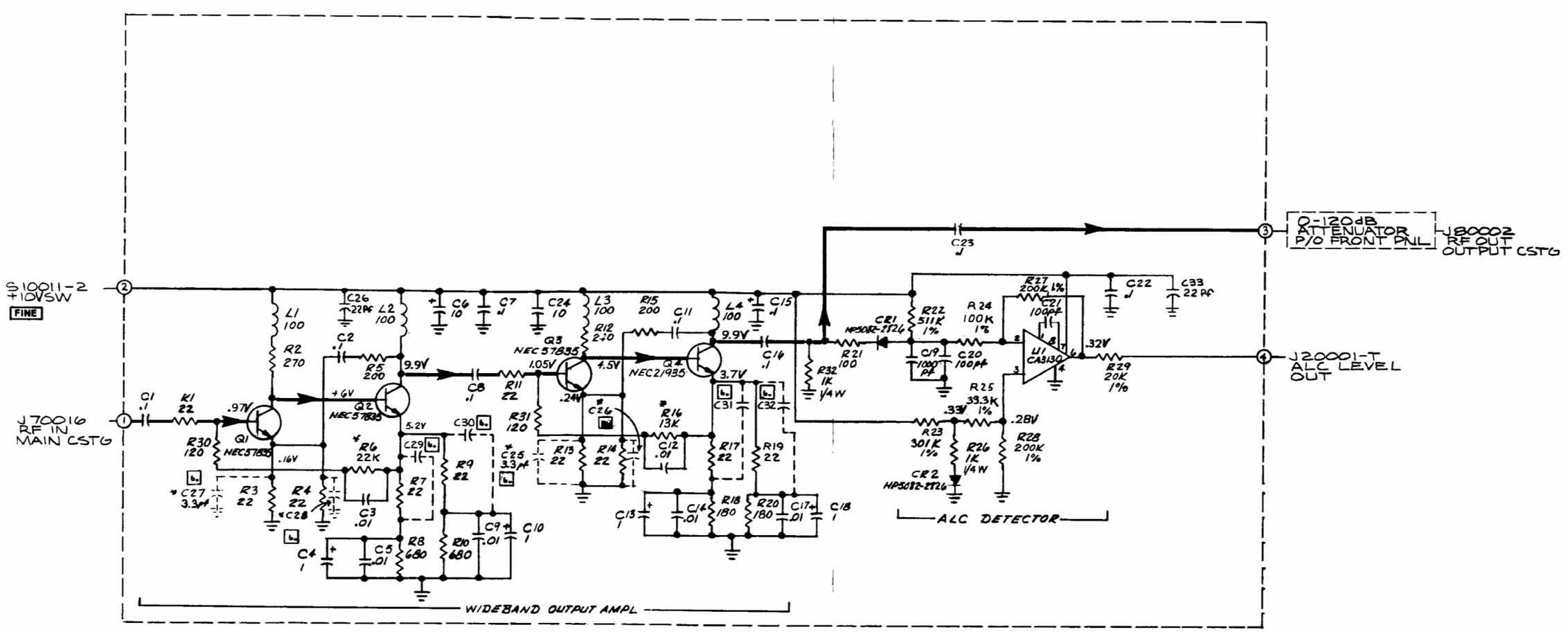
7. TOP VOLTAGE IS RELAY IN POWER MODE AND LOWER VOLTAGE IS RELAY IN SIG. GEN. MODE
6. VOLTAGES MEASURED WITH A DVM HAVING 10MΩ INPUT IMPEDANCE.
5. ALL VOLTAGES ARE DC ± 10% UNLESS OTHERWISE NOTED
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/8W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

81000 Output Protection/Power Detector, (7001-0505)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
81000	PCB ASSY - OUTPUT PROT/PWR DET	7001-0505	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1012	CUSHMAN	
	CAPACITOR			
C 1	CAP-1PF .5PF 50V NPO CHIP	1012-0019	VITRAMON	VJ0805A1R0DH
C 2	CAP-6.8PF .5PF 50V NPO CHIP	1012-0012	VARADYNE	30BN050S6R8CS
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 5	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 7	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-1.5PF .25PF 100V NPO MINTR CER	1005-0121	CENTRE ENGINEERING	100-100-NPO 159C
	DIODE			
CR 1	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 3	DIO-1N4739A SI ZENER A98A 9.1V 5% 1W	1281-0027	IRC	1N4739A
CR 4	DIO-1N3062 SI SW D07 1PF 75PRV	1281-0080	ITT	1N3062
CR 5	DIO-1N3062 SI SW D07 1PF 75PRV	1281-0080	ITT	1N3062
CR 6	DIO-1N3062 SI SW D07 1PF 75PRV	1281-0080	ITT	1N3062
CR 7	DIO-1N3062 SI SW D07 1PF 75PRV	1281-0080	ITT	1N3062
CR 8	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 2	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 2	RES-75K 5% 1/8W CC	1065-7535	ALLEN BRADLEY	BB7535
R 3	RES-2.4K 5% 1/8W CC	1065-2425	ALLEN BRADLEY	BB2425
R 4	RES-82 OHM 5% 1/8W CC	1065-8205	ALLEN BRADLEY	BB8205
R 5	RES-1MEG 5% 1/8W CC	1065-1055	ALLEN BRADLEY	BB1055
R 6	RES-100K 5% 1/8W CC	1065-1045	ALLEN BRADLEY	BB1045
R 7	RES-220 OHM 5% 1/8W CC	1065-2215		
R 8	RES-510 OHM 5% 1/8W CC	1065-5115	ALLEN BRADLEY	BB5115
R 9	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 11	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 12	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 13	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 14	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 15	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 16	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 17	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 18	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T



1. BASE LEADS OF Q1,Q2,Q3,AND Q4 ARE ANGLE CUT. ORIENT AS SHOWN.
2. INSTALLED IN CERTAIN UNITS DURING FINAL TEST.



7 VOLTAGES ARE MEASURED WITHOUT RF INPUT, USING A DVM WITH 10MΩ INPUT IMPEDANCE

INSTALLED IN CERTAIN UNITS DURING FINAL TEST, 3.3UF TYP.

5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/8W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

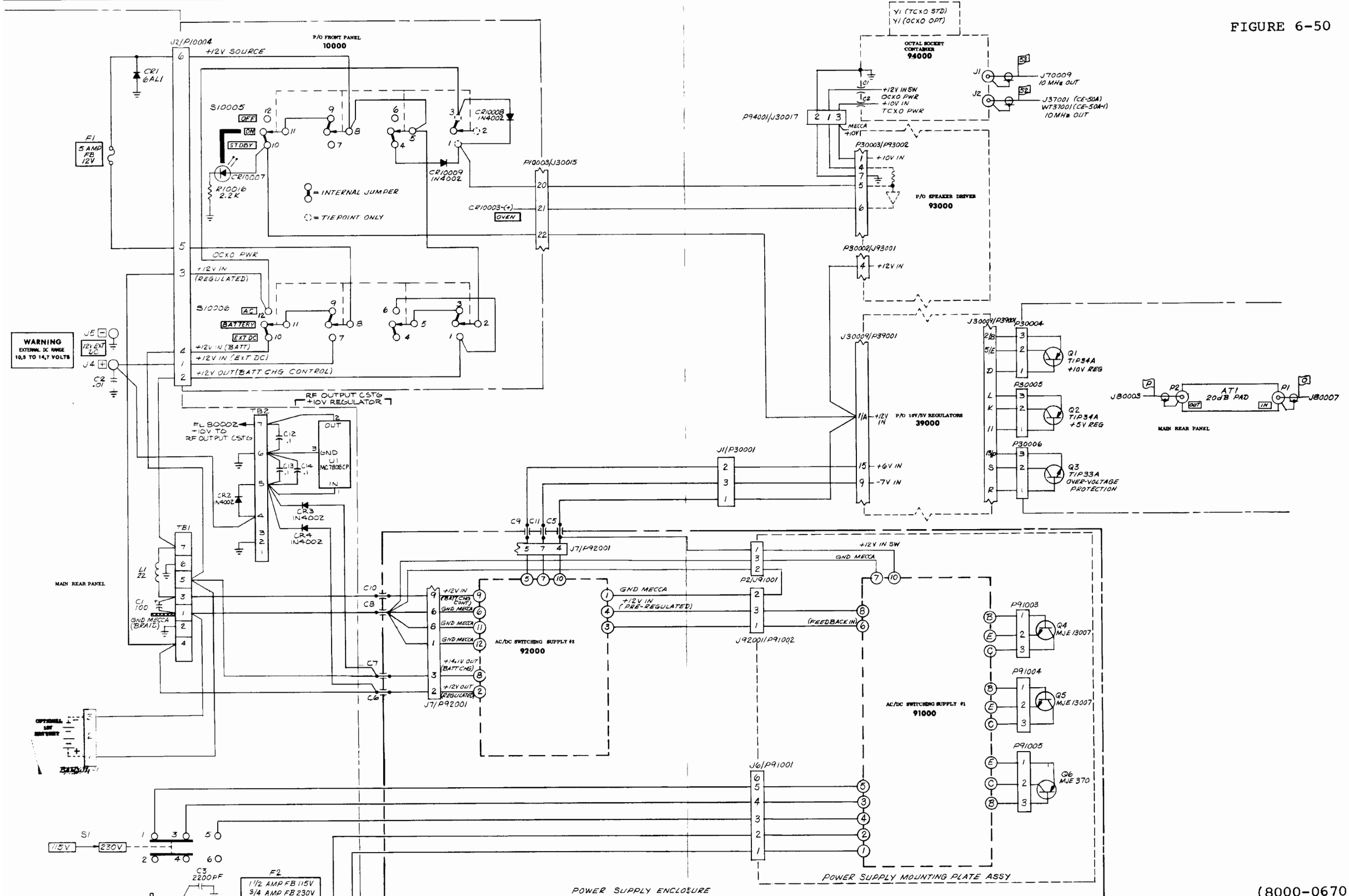
NOTE:

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
82000	PCB ASSY - HI LEVEL AMP	7001-0504	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1013	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 7	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 19	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 20	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 21	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 25	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 25	CAP-3.3PF 10% 100V NPO MINTR CER	1005-0132	TUSONIX	8101-100-C0J0-339C
C 26	CAP-22PF 5% 50V NPO CHIP	1012-0007	VARADYNE	3BN050S220JS
C 27	CAP-3.3PF 10% 100V NPO MINTR CER	1005-0132	TUSONIX	8101-100-C0J0-339C
	DIODE			
CR 1	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
CR 2	DIO-HP2826 HOT CARR 1.2PF A1N 15PRV BM	1283-0005	HP	5082-2826
	INDUCTOR			
L 1	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 4	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 2	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 3	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 4	XSTR-NE 21935 NPN SI LOW PWR	1272-0120	NEC	NE 21935
	RESISTOR			
R 1	RES-22 OHM 5% 1/8W CC	1065-2205		
R 2	RES-270 OHM 5% 1/8W CC	1065-2715	ALLEN BRADLEY	BB2715
R 3	RES-22 OHM 5% 1/8W CC	1065-2205		
R 4	RES-22 OHM 5% 1/8W CC	1065-2205		
R 5	RES-200 OHM 5% 1/8W CC	1065-2015	ALLEN BRADLEY	BB2015
R 6	RES-22K 5% 1/8W CC	1065-2235	ALLEN-BRADLEY	BB2235

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 7	RES-22 OHM 5% 1/8W CC	1065-2205		
R 8	RES-680 OHM 5% 1/8W CC	1065-6815	ALLEN BRADLEY	BB6815
R 9	RES-22 OHM 5% 1/8W CC	1065-2205		
R 10	RES-680 OHM 5% 1/8W CC	1065-6815	ALLEN BRADLEY	BB6815
R 11	RES-22 OHM 5% 1/8W CC	1065-2205		
R 12	RES-240 OHM 5% 1/8W CC	1065-2415	ALLEN BRADLEY	BB2415
R 13	RES-22 OHM 5% 1/8W CC	1065-2205		
R 14	RES-22 OHM 5% 1/8W CC	1065-2205		
R 15	RES-200 OHM 5% 1/8W CC	1065-2015	ALLEN BRADLEY	BB2015
R 16	RES-13K 5% 1/8W CC	1065-1335	ALLEN BRADLEY	BB1335
R 17	RES-22 OHM 5% 1/8W CC	1065-2205		
R 18	RES-180 OHM 5% 1/8W CC	1065-1815	ALLEN BRADLEY	BB1815
R 19	RES-22 OHM 5% 1/8W CC	1065-2205		
R 20	RES-180 OHM 5% 1/8W CC	1065-1815	ALLEN BRADLEY	BB1815
R 21	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 22	RES-511K 1% 100PPM FILM	1075-0156	CAT. LIST	55-100
R 23	RES-301K 1% 150PPM FILM	1074-1037	CAT.LIST	55-100
R 24	RES-100K 1% 100PPM FILM	1074-0109	CAT.LIST	55-025
R 25	RES-33.3K 1% 100PPM FILM	1075-0072	CAT.LIST	55-100
R 26	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 27	RES-200K 1% 100PPM FILM	1075-0148	CAT. LIST	55-100
R 28	RES-200K 1% 100PPM FILM	1075-0148	CAT LIST	55-100
R 29	RES-20K 1% 100PPM FILM	1075-0096	CAT.LIST	55-100
R 30	RES-120 OHM 5% 1/8W CC	1065-1215		
R 31	RES-120 OHM 5% 1/8W CC	1065-1215		
R 32	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
90000	REAR PANEL ASSY	7003-0129	CUSHMAN	CE-50 FAMILY
	POWER PANEL ASSY	7003-0136	CUSHMAN	(EXCEPT 5100'S)
	ATTENUATOR			
AT 90001	ATTEN-20DB 50 OHM 25W DUAL BNC JK	2381-0004	RCL ELEC. INC.	A-2726
	CAPACITOR			
C 90002	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 90003	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 90004	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
	DIODE			
CR 90001	DIO-6AL1 SI RECT 100PRV 6A	1281-0110	SARKES TARZIAN	6AL1
	FILTER			
F 90001	FU-5 AMP 250V 3 AG FAST BLO	1955-0026	LITTELFUSE	312005
F 90002	FU-1-1/2 AMP	1955-0007	LITTLEFUSE	3AG-31201.5
	CONNECTOR			
J 90003	CONN-3 PIN AC PWR RECEPT PNL MT	2535-0096	SWITCHCRAFT	EAC-301
J 90004	POST-BINDING RED INSULATED HEAD	2595-0003	SUPERIOR	DF21RC
J 90005	POST-BINDING BLACK INSULATED HEAD	2595-0002	SUPERIOR	DF21BC
	SPEAKER			
LS 30001	SPKR-3X3 3.2 OHM 3W	1715-0007		
	TRANSISTOR			
Q 90001	XSTR-TIP34A PNP SI B19 HIGH PWR/SW	1272-0095	TI	TIP34A
Q 90002	XSTR-TIP34A PNP SI B19 HIGH PWR/SW	1272-0095	TI	TIP34A
Q 90003	XSTR-TIP33A NPN SI X86 HIGH PWR/SW	1272-0084	TI	TIP33A
Q 90004	XSTR-MJE 13007 NPN SI TO220AB HIGH PWR	1272-0115	MOTOROLA	MJE 13007
Q 90005	XSTR-MJE 13007 NPN SI TO220AB HIGH PWR	1272-0115	MOTOROLA	MJE 13007
Q 90006	XSTR-MJE370 PNP SI B16D HIGH PWR	1272-0102	MOTOROLA	MJE370
	SWITCH			
S 90001	SW-SLIDE 115/230V	1850-0012	SWITCHCRAFT	46256LFR

FIGURE 6-50



NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

(8000-0670)

90000 AC/DC Power Switching Interconnect Diagram
CE-50 Family

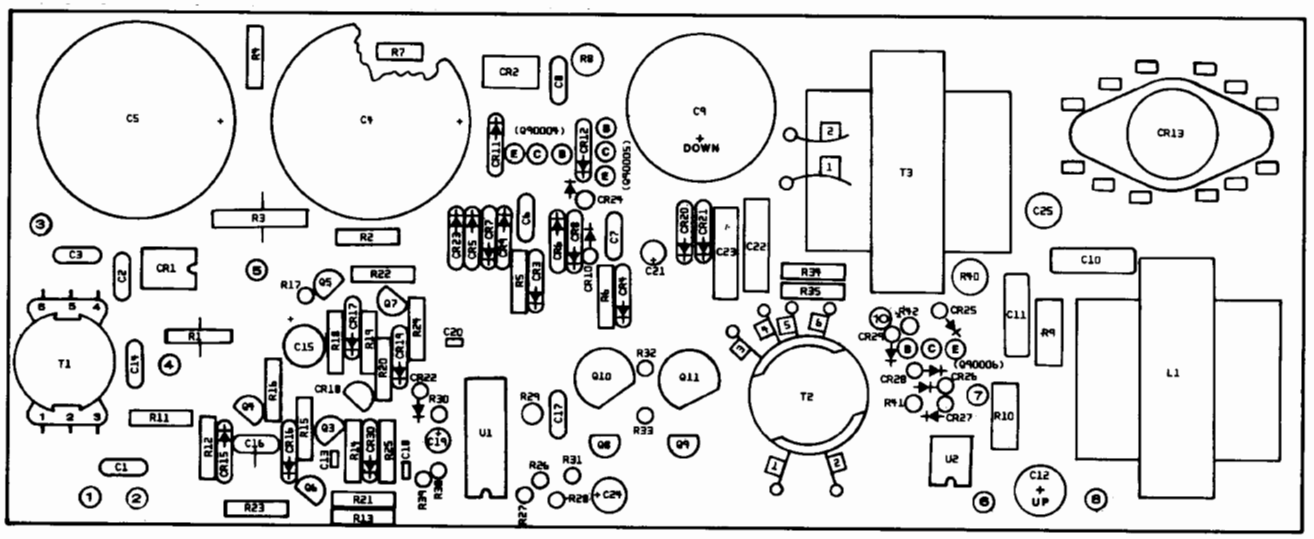
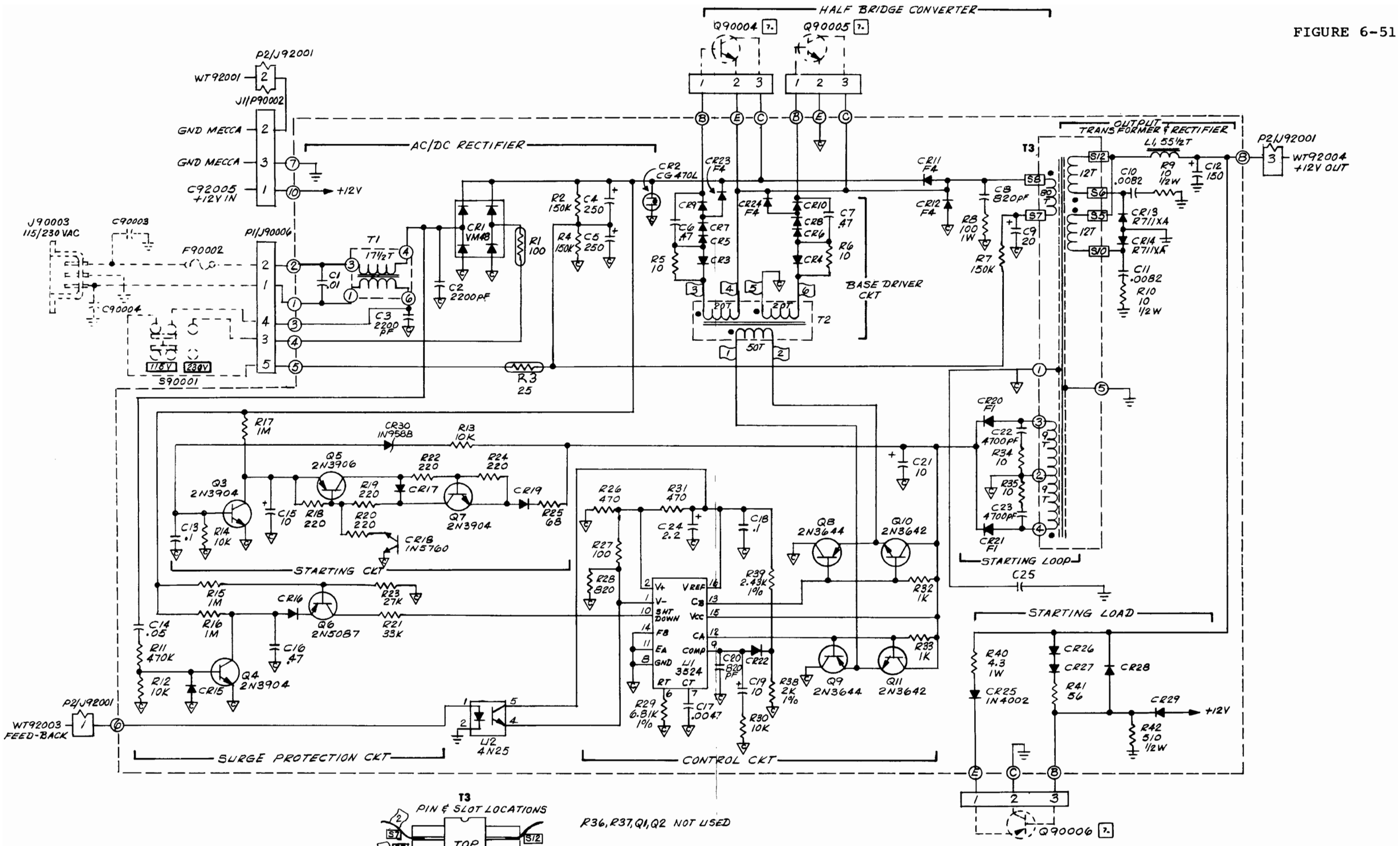
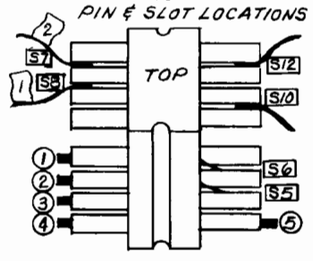

C5
C4
R9
R7
R8
CR2
C8
(Q90009)
CR11
CR12
(Q90005)
C9
DOWN
T3
CR13
C25
R3
R2
C3
C2
CR1
R17
Q5
R22
Q7
C6
C7
C10
C21
C23
C22
R39
R35
R40
C11
R4
L1
T1
R1
C15
R18
CR17
R19
R29
C20
CR18
R30
CR22
R30
Q10
R32
Q11
T2
CR24
CR25
(Q90006)
CR26
CR28
CR27
R41
R10
C14
R16
R15
Q3
R14
R35
R25
C13
C18
U1
R24
C17
R33
Q8
Q9
U2
C12
UP
R31
R26
R28
C29
R27
R34
R36
R23
R21
R13
C1

FIGURE 6-51



T3
PIN & SLOT LOCATIONS



R36, R37, Q1, Q2 NOT USED

NOTE:

8. ▽C COMMON CONNECTION, NOT CONNECTED TO CHASSIS GROUND.
7. MOUNTED TO PANEL
6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

91000 AC/DC Switching Supply #1, (7001-0594)
CE-50 Family (Except CE-5100A and 5110A)

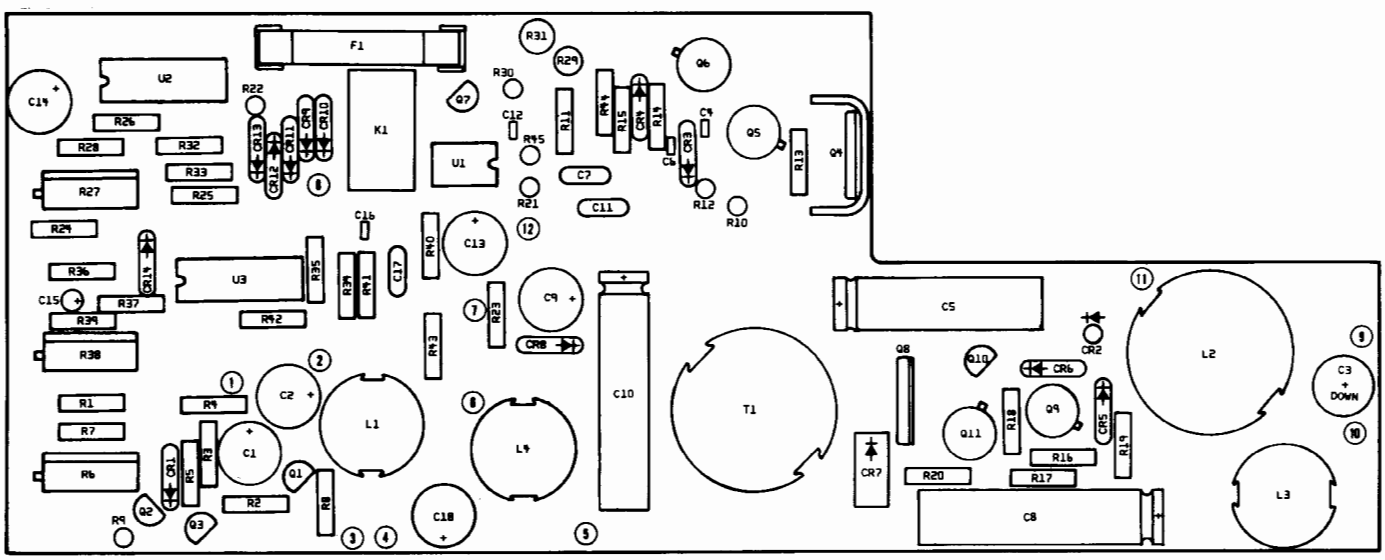
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
91000	PCB ASSY - AC/DC SW SPLY NO. 1	7001-0594	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1070	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 1.4KV CER DISC	1005-0051	SPRAGUE	125L-S10
C 2	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 3	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 4	CAP-250UF+50-10% 250V RDL ELCTLE SCR	1013-0049		
C 5	CAP-250UF+50-10% 250V RDL ELCTLE SCR	1013-0049		
C 6	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 7	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 8	CAP-820PF 10% 1KV Z5R CER DISC	1005-0047	CENTRALAB	DD821
C 9	CAP-20UF +50-10% 450V AXL ELCTLT	1014-0023	CORNELL DUBILIER	WBR20-450
C 10	CAP-.0082UF 5% 600V RDL POLYESTER	1008-0095	PLESSEY CAP.	60C822V630
C 11	CAP-.0082UF 5% 600V RDL POLYESTER	1008-0095	PLESSEY CAP.	60C822V630
C 12	CAP-150 UF 20% 15V AXL TANT	1011-0022	MALLORY	THF150G15
C 13	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 14	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
C 15	CAP-10UF 20% 50V RDL ELCTLT	1013-0046	NICHICON	50UKB-10-M
C 16	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 17	CAP-.0047UF 10% 100V AXL POLYESTER	1008-0085	SPRAGUE	225P47291WD3
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 20	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 21	CAP-100UF +100-10% 50V RDL ELCTLT	1013-0036	ILL. CAP	100-R-50
C 22	CAP-.0047UF 10% 100V AXL POLYESTER	1008-0085	SPRAGUE	225P47291WD3
C 23	CAP-.0047UF 10% 100V AXL POLYESTER	1008-0085	SPRAGUE	225P47291WD3
C 24	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 25	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 26	CAP-1000UF +50-10% 25V ELCTLT	1014-0006	ILLINOIS	108TTA025A
	DIODE			
CR 1	DIO-VM48 SI BRDG RECT 6 PIN DIP 400PRV	1281-0103	VARO	VM48
CR 2	DIO-CG2-470L 470V 15% SURGE ARRESTOR	1281-0130	CLARET CO	CG2-4706
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 12	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 13	DIO-R711X1A SI RECT TO3 100PRV 15A	1281-0131	VARO	R711X/A
CR 15	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N 5760 SI BILATERAL TRIG 28V .3W	1281-0132	MOTOROLA	1N5760
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 21	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 23	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 24	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 25	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 26	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 29	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 30	DIO-1N958B SI ZENER D07 7.5V 5% .4W	1281-0071	MOTOROLA	1N958B
CR 31	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
	INDUCTOR			
L 1	INDCTR-E-TYPE CORE 41X39/55.5T/16GA	1596-0260		
	TRANSISTOR			
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 7	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 8	XSTR-2N3644 PNP SI R110A LOW PWR/SW	1272-0040	FAIRCHILD	2N3644
Q 9	XSTR-2N3644 PNP SI R110A LOW PWR/SW	1272-0040	FAIRCHILD	2N3644
Q 10	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 11	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	THMS-100 OHM 10% 8MW AXL/RDL DISC	1253-0006		LB21L2
R 2	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 3	THMS-25 OHM 10% 25MW AXL/RDL DISC	1253-0005	RODAN INDUSTRIES	5DB250K
R 4	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 5	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 6	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 7	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 8	RES-100 OHM 5% 1W CC	1068-1015	ALLEN BRADLEY	GB 1015
R 9	RES-10 OHM 5% 1/2W CC	1067-1005	ALLEN BRADLEY	EB 1005
R 10	RES-10 OHM 5% 1/2W CC	1067-1005	ALLEN BRADLEY	EB 1005
R 11	RES-470K 5% 1/4W CC	1066-4745	ALLEN BRADLEY	CB 4745
R 12	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 13	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 14	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 15	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 16	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 17	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 18	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 19	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 20	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 21	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 22	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 23	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 24	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 25	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 26	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 27	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 28	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 29	RES-6.81K 1% 100PPM FILM	1075-0140	CAT LIST	55-100
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 32	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 33	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 34	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 35	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005

5601-0075-3

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 36	RES-1 OHM 5% 1/2W CC	1067-0001	ALLEN BRADLEY	EB 0001
R 37	RES-1 OHM 5% 1/2W CC	1067-0001	ALLEN BRADLEY	EB 0001
R 38	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 39	RES-2.43K 1% 100PPM FILM	1075-0019	CAT.LIST	55-100
R 40	RES-4.3OHM 5% 1W CC	1068-0001	ALLEN BRADLEY	GB43G5
R 41	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 42	RES-510 OHM 5% 1/2W CC	1067-5115	ALLEN BRADLEY	EB5115
	TRANSFORMER			
T 1	XFMR-POT CORE 18X11	1575-0054		
T 2	XFMR-POT CORE 22X13	1575-0055		
T 3	XFMR-E-TYPE CORE 41X39	1575-0053	MINI-MAGNETICS	C/E DWG
	INTEGRATED CIRCUIT			
U 1	IC-3524 16 PIN DIP RGLT PLS WD MOP	2025-0179	SILICON GENERAL	SG35245
U 2	IC-4N25 OPTO-ISOLATOR 2500V	2025-0159	MONSANTO	4N25


F1
U2
C14
R26
R28
R32
R33
R27
R25
R24
R36
C15
R37
R34
R38
R1
R7
R6
CR14
U3
R35
R42
C16
R34
R41
C17
R40
C13
R43
R23
C9
CR8
C12
R30
R31
R29
Q7
R45
R21
C7
C11
U1
K1
R22
CR13
CR12
CR11
CR10
R44
R15
CR9
R14
C4
CR3
R12
R10
Q6
Q5
Q4
R13
C6
C5
CR2
L2
C3
DOWN
Q8
Q10
CR6
Q9
CR5
R18
R19
R16
R17
R20
Q11
CR7
C8
L3
T1
C10
L1
L4
C18
R9
C2
C1
R3
R5
CR1
Q1
R8
R2
Q2
Q3
R9
1
2
3
4
5
6
7
8
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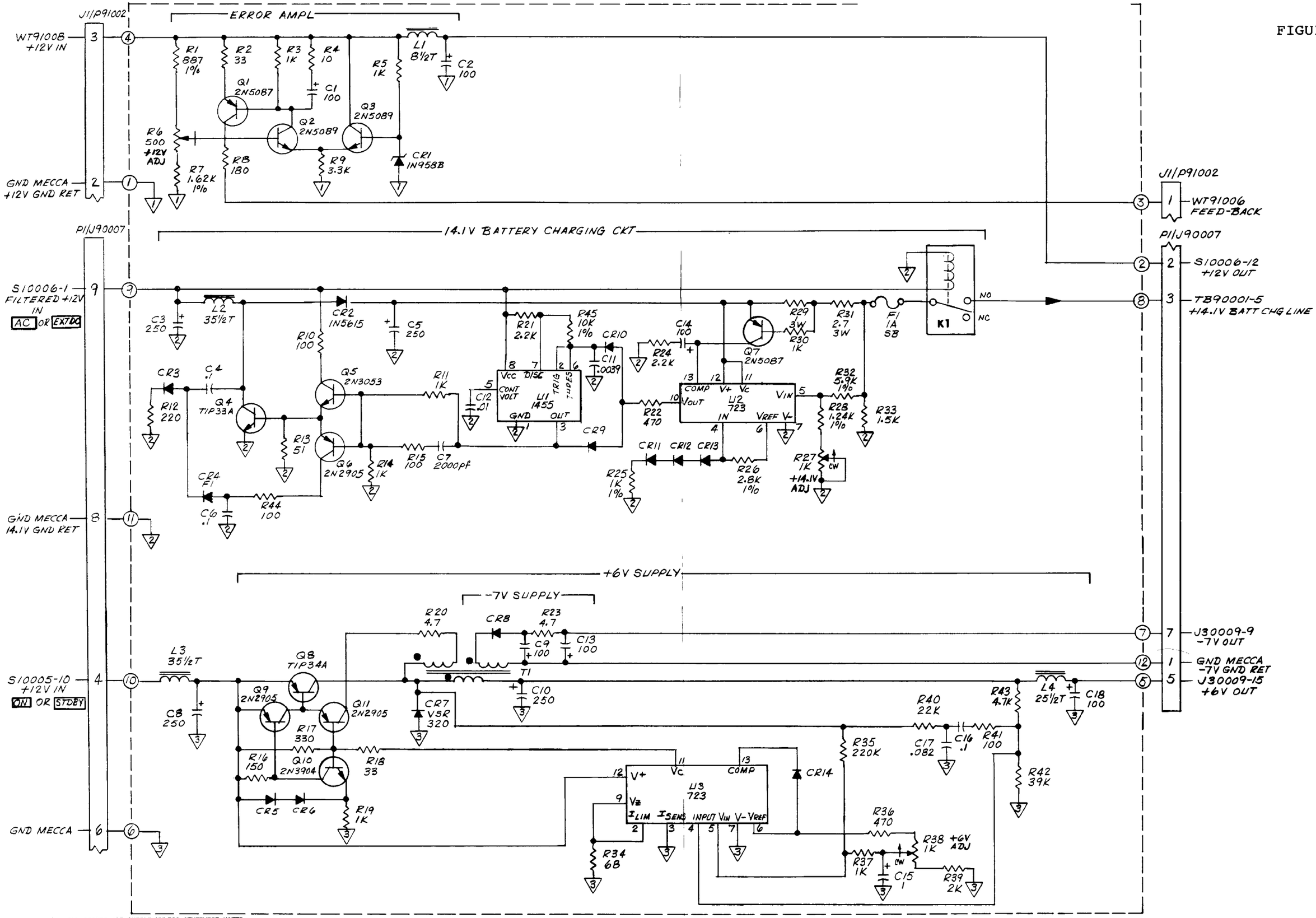
11
12

FIGURE 6-52



NOTE:

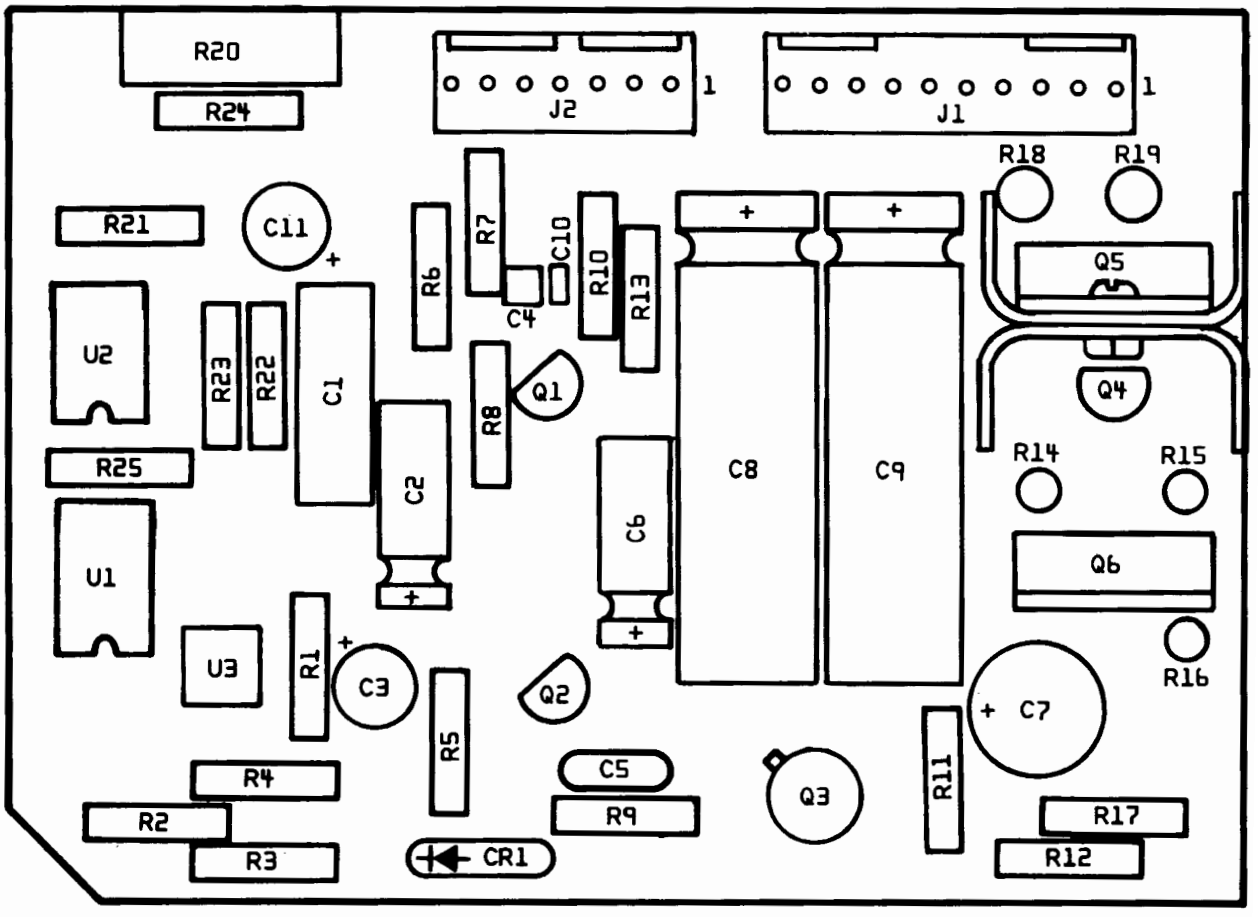
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.

92000 AC/DC Switching Supply #2, (7001-0512)
CE-50 Family (Except CE-5100A and 5110A)

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
92000	PCB ASSY - AC/DC SW SPLY NO. 2	7001-0512	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1042	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1C 01S
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C5	CAP-250UF T100-10% 50V AXL ELCTLT	1013-0041		
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 7	CAP-.002UF 20% 500V Z5U CER DISC	1005-0003	TUSONIX	831-596-Z5U-202M
C 8	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 11	CAP-.0039UF 10% 100V RDL POLYESTER	1008-0052	SPRAGUE	225P39291WD3
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 14	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 15	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.082UF 10% 100V RDL POLYESTER	1008-0023	SPRAGUE	225P82391WA3
C 18	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
	DIODE			
CR 1	DIO-1N958B SI ZENER D07 7.5V 5% .4W	1281-0071	MOTOROLA	1N958B
CR 2	DIO-1N5615 SI F RCVY A109C 200PRV 1A	1282-0010	SEMTECH	S2F
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-VSK320 SI RECT 20PRV 3A	1281-0127	VARO	VSK320
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-1N4747A SI ZENER A98A 20V 5% 1W	1281-0119	TI	1N4747A
	FILTER			
F 1	FU-1 AMP SLO BLO	1955-0006	LITTLEFUSE	3AG-313001
	RELAY			
K 1	RLY-SPDT 12VDC COIL FORM C PCB MT	1313-0017	ITT	MZ12HG
	INDUCTOR			
L 1	INDCTR-POT CORE 18X11/8.5T/18GA	1596-0264		
L 2	INDCTR-POT CORE 26X16/35.5T/20GA	1596-0261		
L 3	INDCTR-POT CORE 18X11/35.5T/24GA	1596-0262		
L 4	INDCTR-POT CORE 18X11/25.5T/22GA	1596-0263		
	TRANSISTOR			
Q 1	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 2	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 3	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
Q 4	XSTR-TIP33A NPN SI X86 HIGH PWR/SW	1272-0084	TI	TIP33A
Q 5	XSTR-2N3053 NPN SI TO 5 HIGH PWR	1272-0011	RCA	2N3053
Q 6	XSTR-2N2905 PNP SI TO 5 LOW PWR/SW	1272-0035	MOTOROLA	2N2905
Q 7	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 8	XSTR-TIP34A PNP SI B19 HIGH PWR/SW	1272-0095	TI	TIP34A
Q 9	XSTR-2N2905 PNP SI TO 5 LOW PWR/SW	1272-0035	MOTOROLA	2N2905
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N2905 PNP SI TO 5 LOW PWR/SW	1272-0035	MOTOROLA	2N2905
	RESISTOR			
R 1	RES-887 OHM 1% 100PPM FILM	1075-0022	CAT.LIST	55-100
R 2	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 3	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 4	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 5	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 6	POT-500 OHM 10% 3/4W 15T CERMET TRMR	1215-0011	HELITRIM	89WR
R 7	RES-1.62K 1% 100PPM FILM	1075-0104	CAT.LIST	55-100
R 8	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 9	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 10	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 11	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 12	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 13	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 14	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 15	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 16	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 17	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 18	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-4.7 OHM 5% 1/4W CC	1066-0001	ALLEN BRADLEY	CB47G5
R 21	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 22	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 23	RES-4.7 OHM 5% 1/4W CC	1066-0001	ALLEN BRADLEY	CB47G5
R 24	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 25	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 26	RES-2.8K 1% 100PPM FILM	1075-0102	CAT.LIST	55-100
R 27	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 28	RES-1.24K 1% 100PPM FILM	1075-0087	CAT.LIST	55-100
R 29	RES-1 OHM 5% 3.25W 80PPM AXL WW	1159-0001	OHMITE	4330
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 31	RES-2.7 OHM 5% 3.25W 80PPM AXL WW	1180-0005	OHMITE	4341
R 32	RES-5.9K 1% 100PPM FILM	1075-0110	CAT.LIST	55-100
R 33	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 34	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 35	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 36	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 37	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 38	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 39	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 40	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 41	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 42	RES-39K 5% 1/4W CC	1066-3935	ALLEN BRADLEY	CB 3935
R 43	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 44	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 45	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 46	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSFORMER			
T 1	XFMR-POT CORE 26X16	1575-0056		
	INTEGRATED CIRCUIT			
U 1	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 2	IC-723 PREC VOLTAGE REG	2025-0155	FAIRCHILD	723DC
U 3	IC-723 PREC VOLTAGE REG	2025-0155	FAIRCHILD	723DC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1
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R18
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R21
C11
+
R7
R6
C10
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R13
+
+
Q5
U2
R23
R22
C1
R8
Q1
Q4
R25
C2
C8
C9
R14
R15
C6
U1
Q6
+
R16
U3
R1
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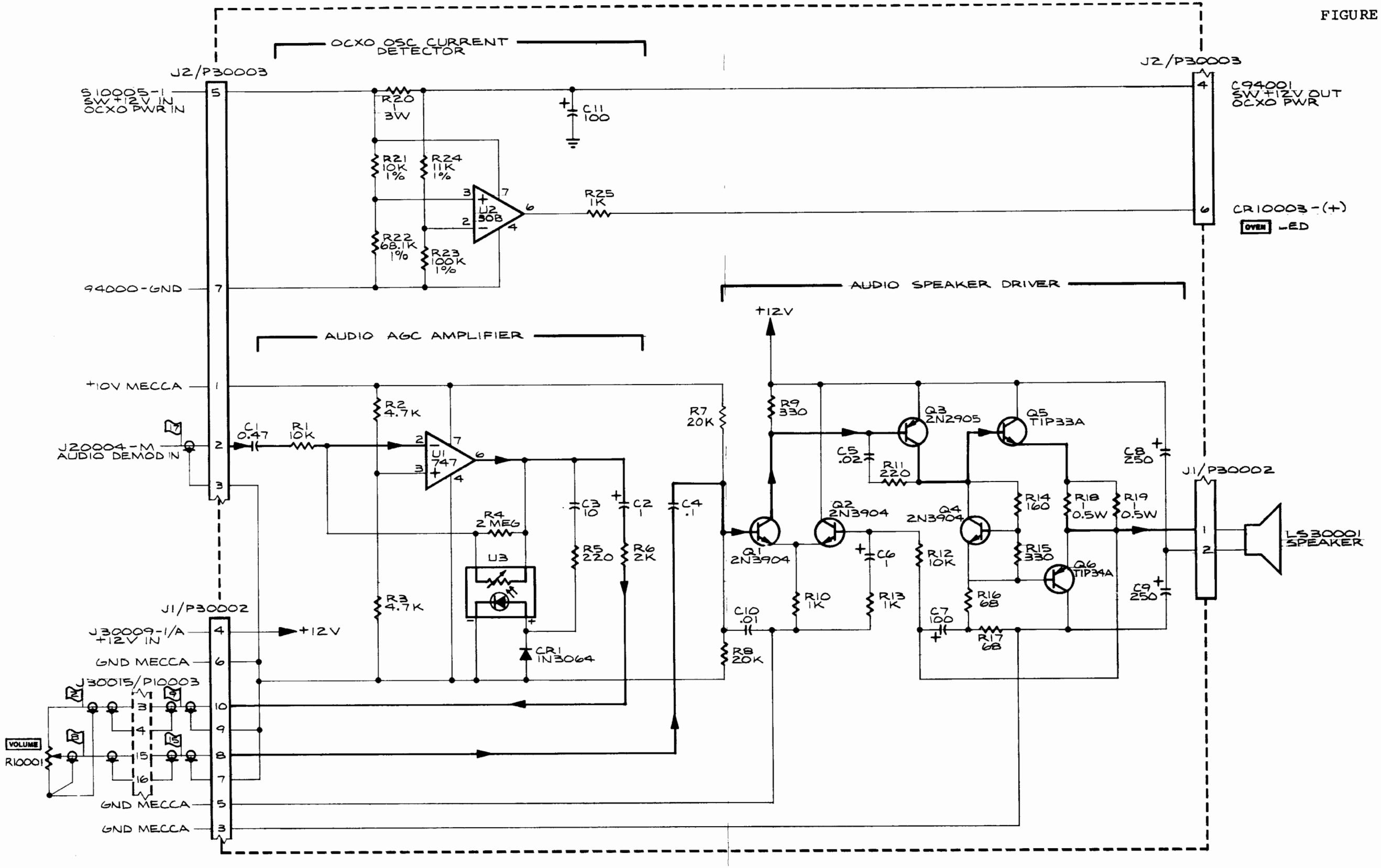
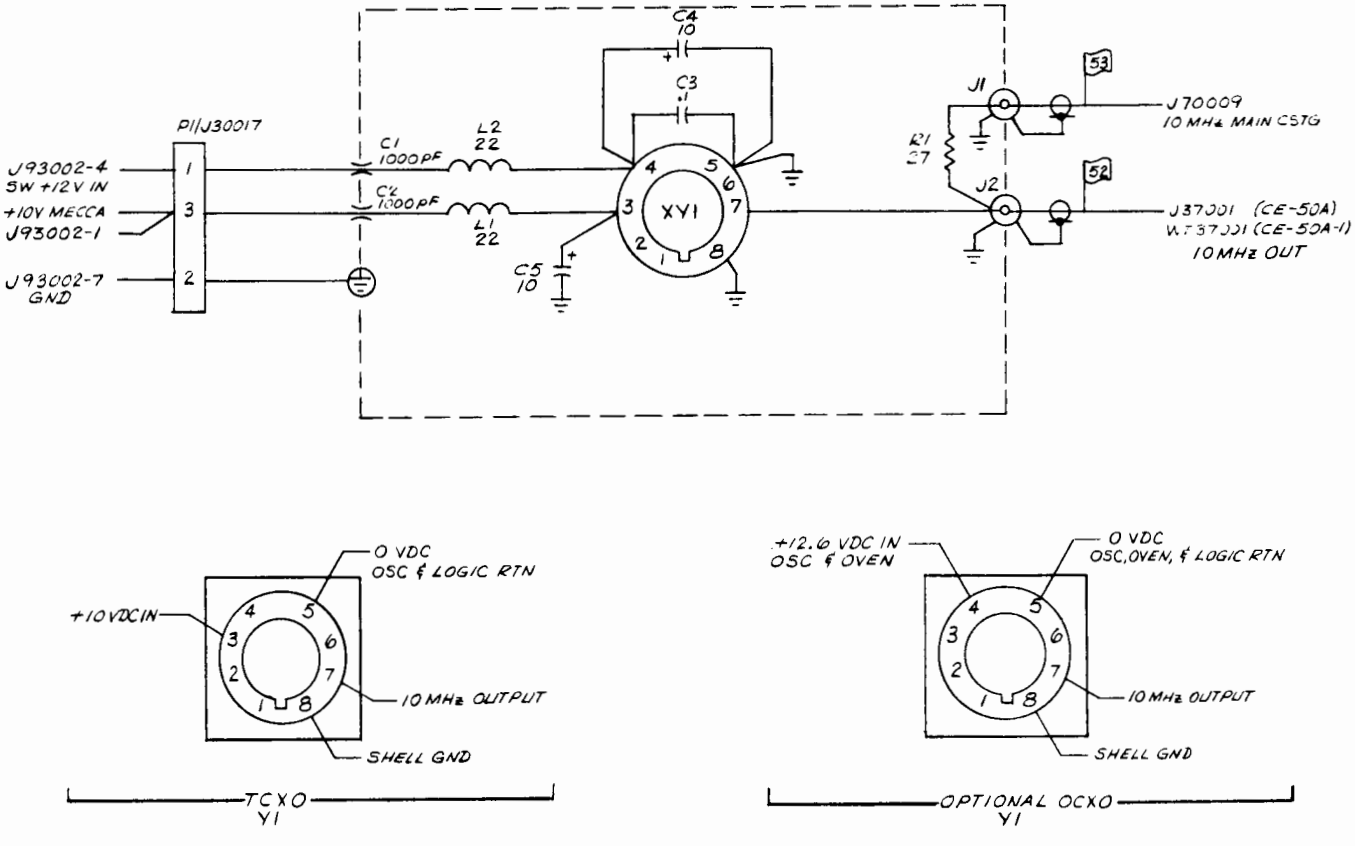


NOTE:

5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

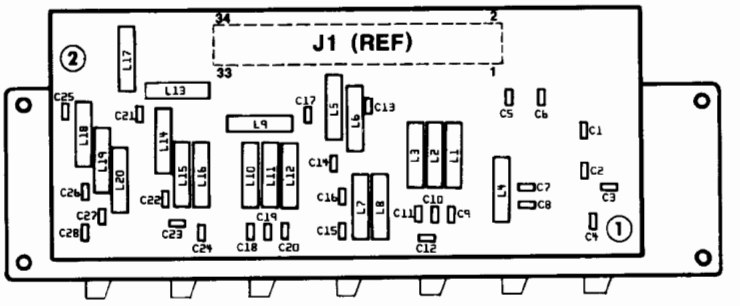
93000 Speaker Driver, (7001-0513)
CE-50 Family

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
93000	PCB ASSY - SPEAKER DRIVER	7001-0513	CUSHMAN	CE-50 FAMILY
	PRINTED CIRCUIT BOARD	1780-1036	CUSHMAN	
	CAPACITOR			
C 1	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 2	CAP-1UF+75-10% 50V ELCTLT	1013-0004	SPRAGUE	30D105G050BA5
C 3	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-.02UF 20% 1KV Z5U CER DISC	1005-0040	ERIE	828-000-Z5U-203Z
C 6	CAP-1UF+75-10% 50V ELCTLT	1013-0004	SPRAGUE	30D105G050BA5
C 7	CAP-100UF +100-30% 16V RDL NP ELCTLT	1013-0029	MATSUSHITA	ECE-A16N100
C 8	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 9	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N2905 PNP SI TO 5 LOW PWR/SW	1272-0035	MOTOROLA	2N2905
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-TIP33A NPN SI X86 HIGH PWR/SW	1272-0084	TI	TIP33A
Q 6	XSTR-TIP34A PNP SI B19 HIGH PWR/SW	1272-0095	TI	TIP34A
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 3	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 4	RES-2MEG 5% 1/4W CC	1066-2055	ALLEN BRADLEY	CB2055
R 5	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 6	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 7	RES-16.9K 1% 100PPM FILM	1075-0059	CAT.LIST	55-100
R 8	RES-24.3K 1% 100PPM FILM	1075-0097	CAT.LIST	55-100
R 9	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 10	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 11	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 12	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 15	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 16	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 17	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 18	RES-1 OHM 5% 1/2W CC	1067-0001	ALLEN BRADLEY	EB 0001
R 19	RES-1 OHM 5% 1/2W CC	1067-0001	ALLEN BRADLEY	EB 0001
R 20	RES-1 OHM 5% 3.25W 80PPM AXL WW	1159-0001	OHMITE	4330
R 21	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 22	RES-68.1K 1% 100PPM FILM	1075-0136	DALE	MFF 1/8 TI
R 23	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 24	RES-11K 1% 100PPM FILM	1074-0106	CAT.LIST	55-100
R 25	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
	INTEGRATED CIRCUIT			
U 1	IC-UA741CP	2025-0067	TI	UA741CP
U 2	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 3	IC-CLM6000 PHOTOCONDUCTOR	2025-0196		



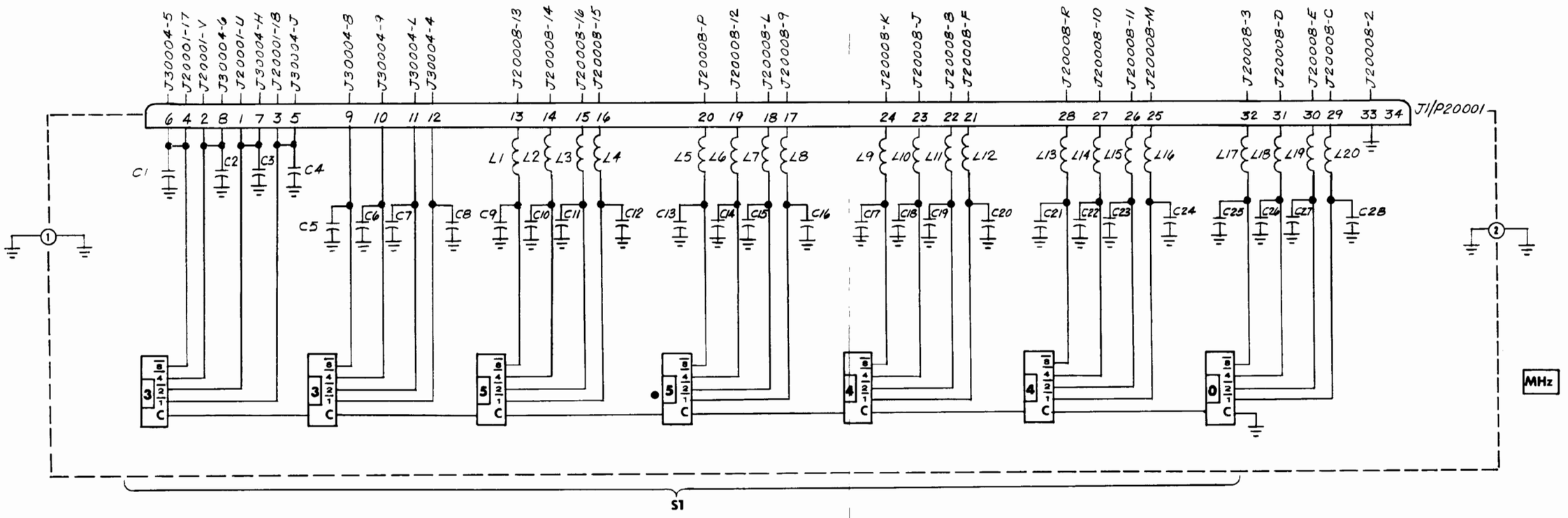
NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

94000 Octal Socket Assy (7046-0047)
CE-50 Family (Except CE-5100/5110)



BACK SIDE

FRONT SIDE

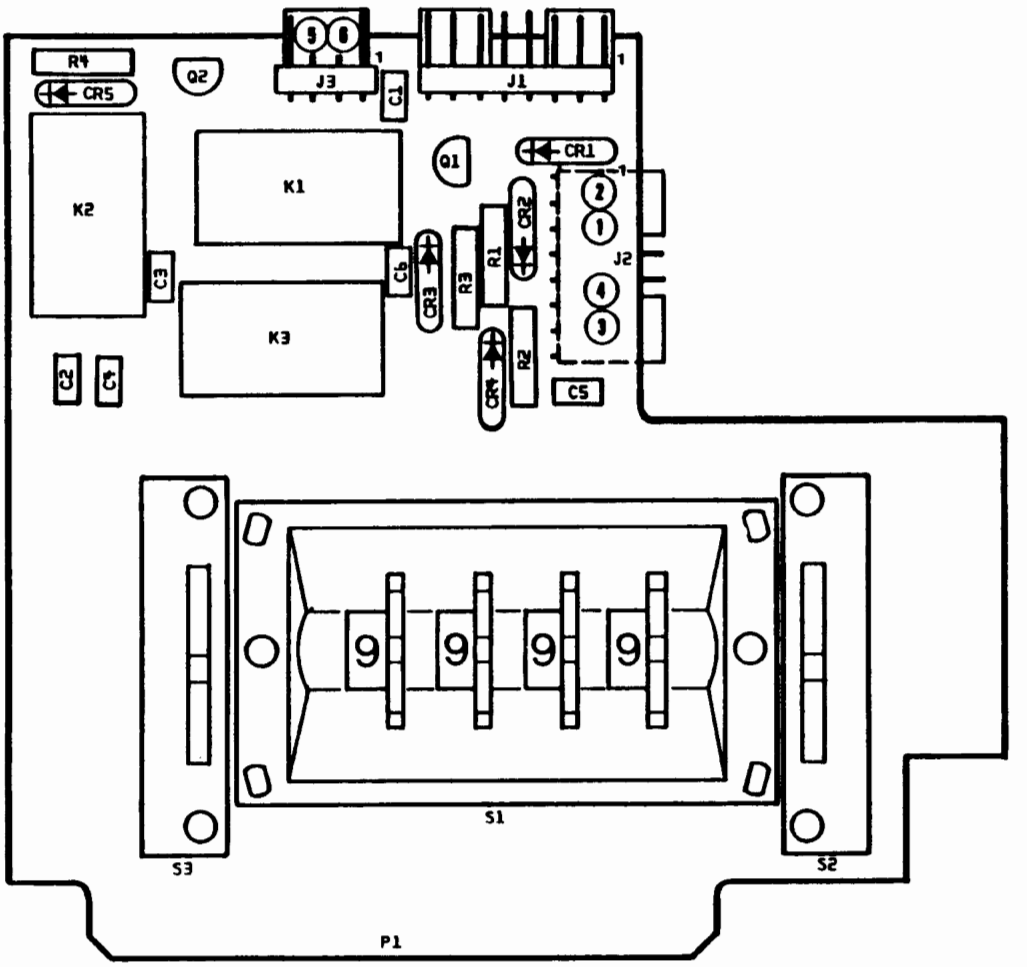


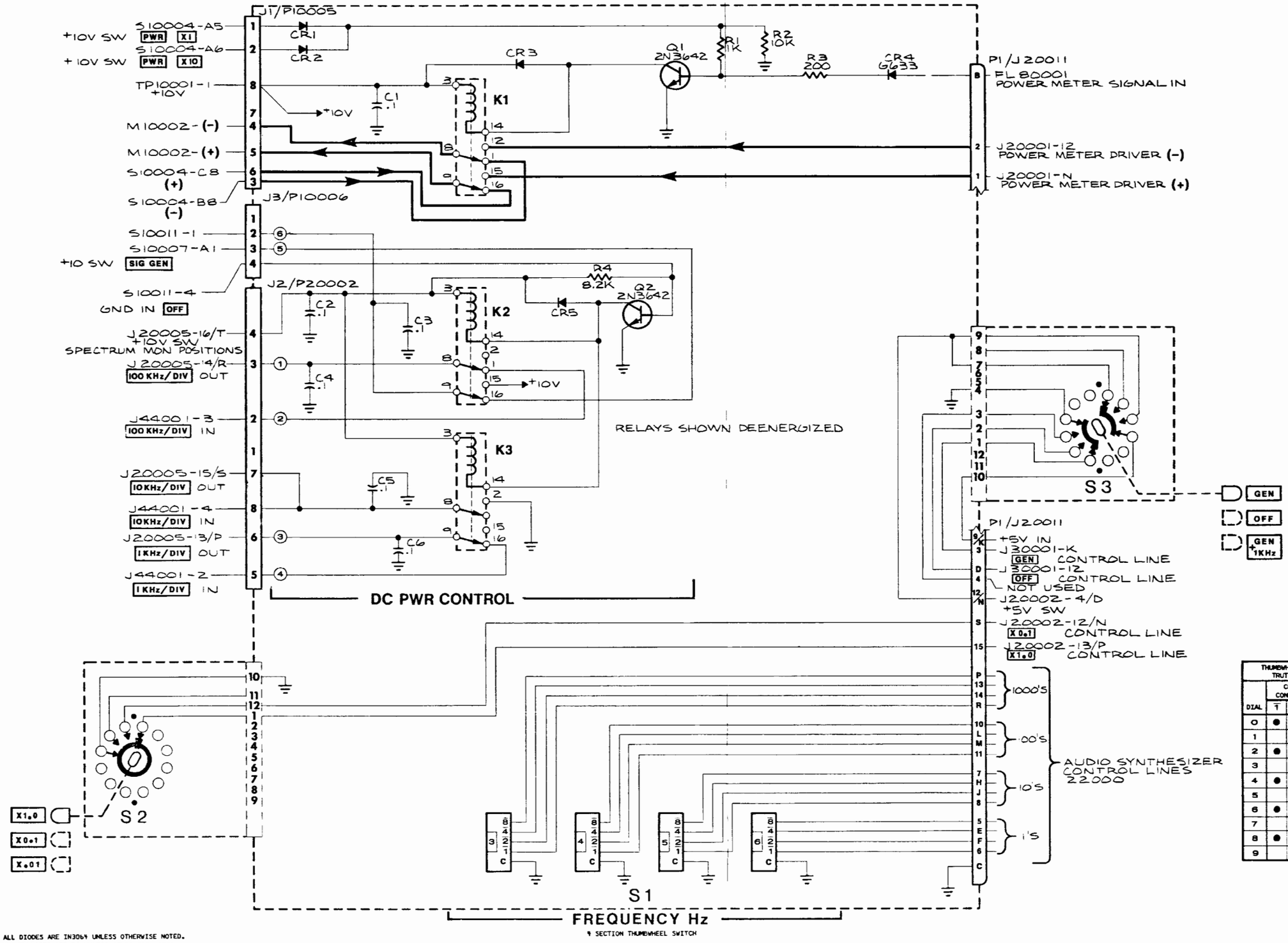
NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. ALL CAPACITORS-VALUES IN .01 μF UNLESS OTHERWISE NOTED.
7. ALL CHOKES-VALUES ARE 390 μH UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
11000	PCB ASSY - RF FREQ SELECT SW MTG	7001-0595	CUSHMAN	CE-46A, CE-50A-1*
	PRINTED CIRCUIT BOARD	1780-1074	CUSHMAN	*(/TG, & 5110A)
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	CONNECTOR			
J 1	CONN-34(2X17)CONT STR PCB MT JK	2535-0154	SPECTRA-STRIP	800-579
	INDUCTOR			
L 1	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 2	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 3	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 4	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 5	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 6	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 7	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 8	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 9	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 10	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 11	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 12	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 13	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 14	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 15	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 16	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 17	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 18	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 19	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82
L 20	CH-390UH 10% RF MLD AXL.10DX.25L	1585-0088	DELEVAN ELECTRONICS	1025-82

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	SWITCH			
S 1	SW-LVRWL 7 SEC PCB MT	1851-0114		

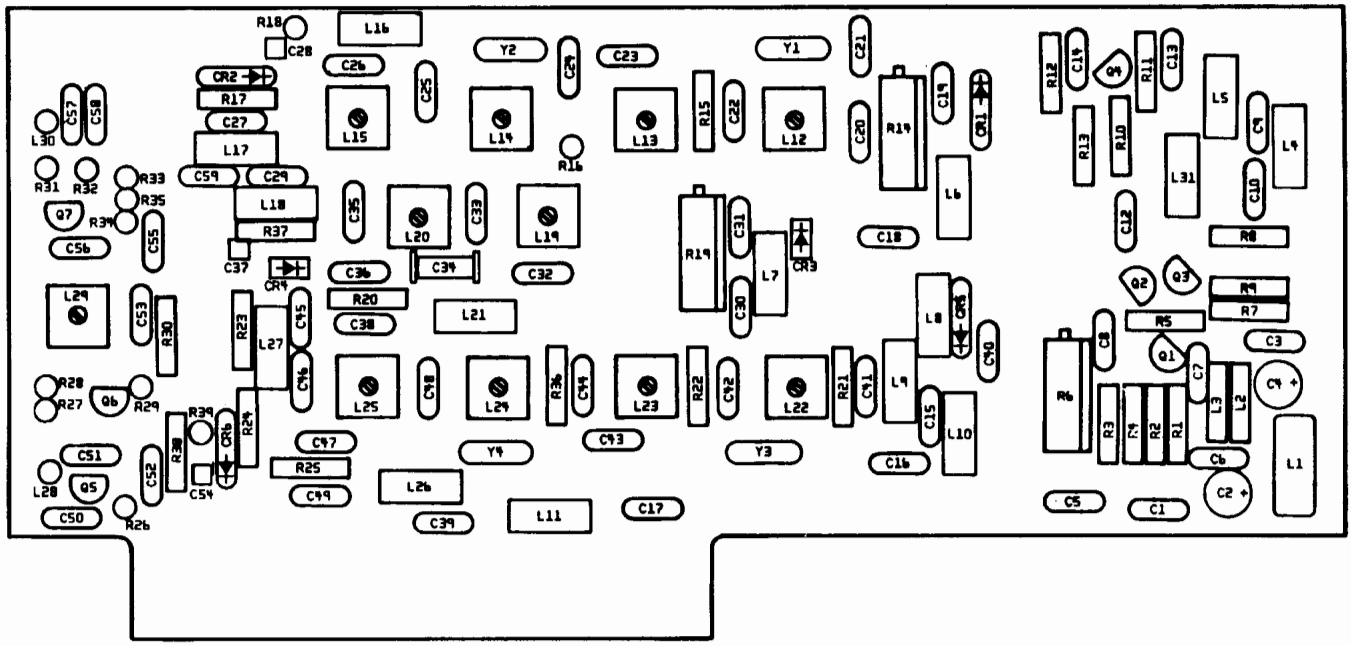

R4
CR5
Q2
J3
C1
J1
K2
K1
Q1
CR1
J2
C3
C6
CR3
R3
R1
CR2
K3
R2
CR4
C5
C2
C4
9
9
9
9
S1
S3
S2
P1



NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. ALL DIODES ARE IN3064 UNLESS OTHERWISE NOTED.

12000 Tone Gen Sw Mtg/DC Pwr Cont. (7001-0598)
CE-50A-1, and /TG

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
12000	PCB ASSY - TONE GEN SW MTG/DC PWR	7001-0598	CUSHMAN	CE-50A-1 & /TG
	PRINTED CIRCUIT BOARD	1780-1075	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	81-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 2	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 3	CONN-4 PIN .1SP RTANG LKG PCB MT JK	2535-0174	METHODE	1100-9-104-01
	RELAY			
K 1	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
K 2	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
K 3	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 2	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 4	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
	SWITCH			
S 1	SW ASSY-4 SELECTOR THUMBWHEEL	7011-0028		
S 2	SW-LEVER 1P 3 POS PCB MOUNT	1851-0094	OAK	C/E DWG
S 3	SW-LEVER 2 POLE 3 POSN PCB MT	1851-0115	OAK	C/E DWG


R18
C28
L16
C26
CR2
R17
C27
L17
C59
C29
L18
R37
C37
CR4
C36
C39
R20
C38
L21
L15
L14
L13
L12
Y2
Y1
C25
C24
C23
R16
R15
C22
C21
R19
C19
CR1
L6
C18
L30
C57
C58
R31
R32
R33
R35
R34
Q7
C56
C55
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C53
R30
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C45
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R28
R27
Q6
R29
R39
R24
C51
L28
Q5
C50
R38
C52
C54
R26
L25
C48
L29
R36
C44
L23
R22
C42
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R21
C41
L9
C15
L10
C16
C43
C97
R25
C99
L26
C39
Y4
Y3
L11
C17
L8
CR5
C40
C31
L7
C30
CR3
R14
R12
C14
Q4
R11
C13
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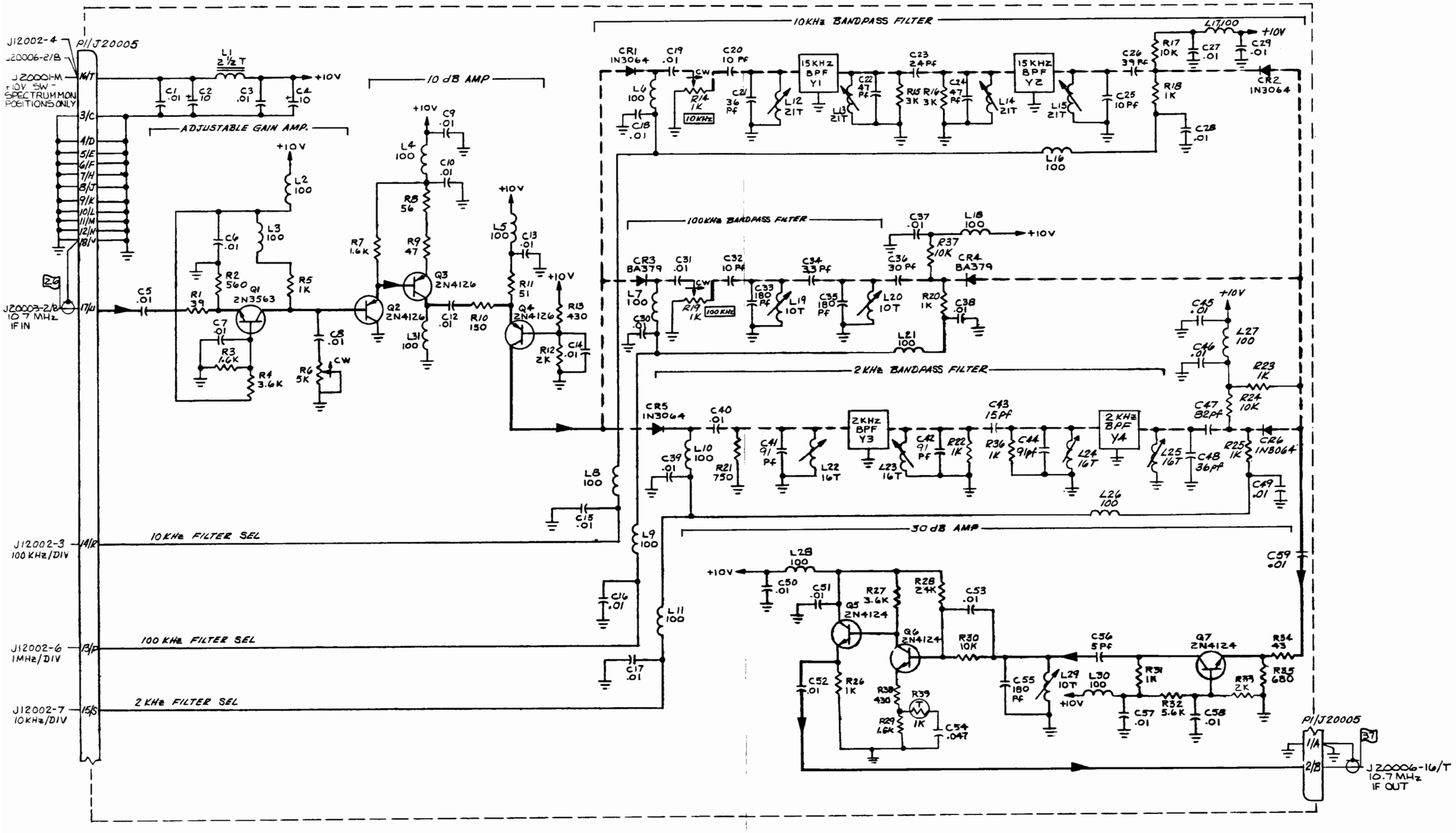
C9
L4
R13
R10
L31
C10
C12
R8
Q2
Q3
R9
R7
R5
C8
C3
Q1
C7
C9 +
R6
R3
R4
R2
R1
L3
L2
C6
C2 +
L1
C5
C1



5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

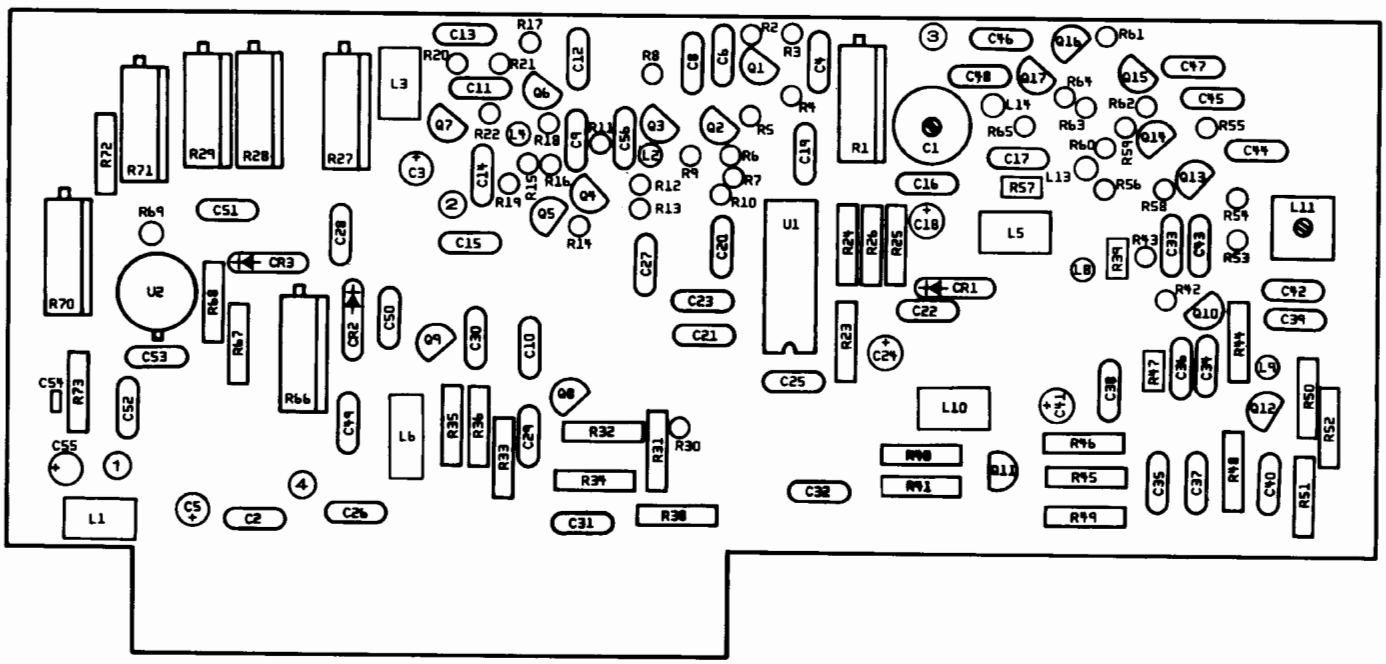
NOTE:

25000 Bandpass Filter, (7001-0488)
CE-50A-1 and /TG

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
25000	PCB ASSY - BPF	7001-0488	CUSHMAN	CE-50A-1 & /TG ONLY
	PRINTED CIRCUIT BOARD	1780-1001	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 7	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 20	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 21	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 22	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 23	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 24	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 25	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 26	CAP-39PF 5% 500V DIP MICA	1002-0018	ELMENCO	DM15-E-390J
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 33	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 34	CAP-3.3PF .25PF 500V NPO CER TUB	1005-0011	TUSONIX	301-00-C0J0-339C
C 35	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 36	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 37	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 38	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 39	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 40	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 41	CAP-91PF 5% 500V DIP MICA	1002-0027	ELMENCO	DM15-F-910J
C 42	CAP-91PF 5% 500V DIP MICA	1002-0027	ELMENCO	DM15-F-910J
C 43	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 44	CAP-91PF 1% 500V DIP MICA	1002-0048	ELMENCO	DM15-F-910F
C 45	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 46	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 47	CAP-82PF 2% 500V DIP MICA	1002-0003	ELMEMCO	DM15-E-820G
C 48	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 49	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 50	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 51	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 52	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 53	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
C 55	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 56	CAP-5PF .5PF 500V DIP MICA	1002-0028	ELMENCO	DM15-C-050D
C 57	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 59	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 4	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 6	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 7	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 8	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 9	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 10	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 11	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 12	COIL 3.9 MHZ	1596-0104		
L 13	COIL 3.9 MHZ	1596-0104		
L 14	COIL 3.9 MHZ	1596-0104		
L 15	COIL 3.9 MHZ	1596-0104		
L 16	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 17	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 18	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 19	COIL-VARIABLE IF	7050-0131		
L 20	COIL-VARIABLE IF	7050-0131		
L 21	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 22	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 23	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 24	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 25	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 26	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 27	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 28	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 29	COIL-VARIABLE IF	7050-0131		
L 30	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 31	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 2	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 3	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 2	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 3	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 4	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 5	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 6	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 7	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 8	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 9	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 10	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 11	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 13	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 14	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 15	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 16	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 17	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 22	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 23	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 25	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 26	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 27	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 28	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 29	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 32	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 33	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 34	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 35	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 36	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 37	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 38	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 39	THMS-1K 10% 3.5MW RDL DISC	1253-0002	VECO	31E2
	CRYSTAL			
Y 1	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0040	PIEZO	C/E DWG(2194F)
Y 2	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0039	CTS KNIGHTS	C/E DWG
Y 3	FLTR-XTAL 10.7MHZ 3DB BW 2KHZ	1040-0038	CTS KNIGHTS	C/E DWG
Y 4	FLTR-XTAL 10.7MHZ 3DB BW 2KHZ	1040-0038	CTS KNIGHTS	C/E DWG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Q16
R61
C98
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R64
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CR2
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CR3
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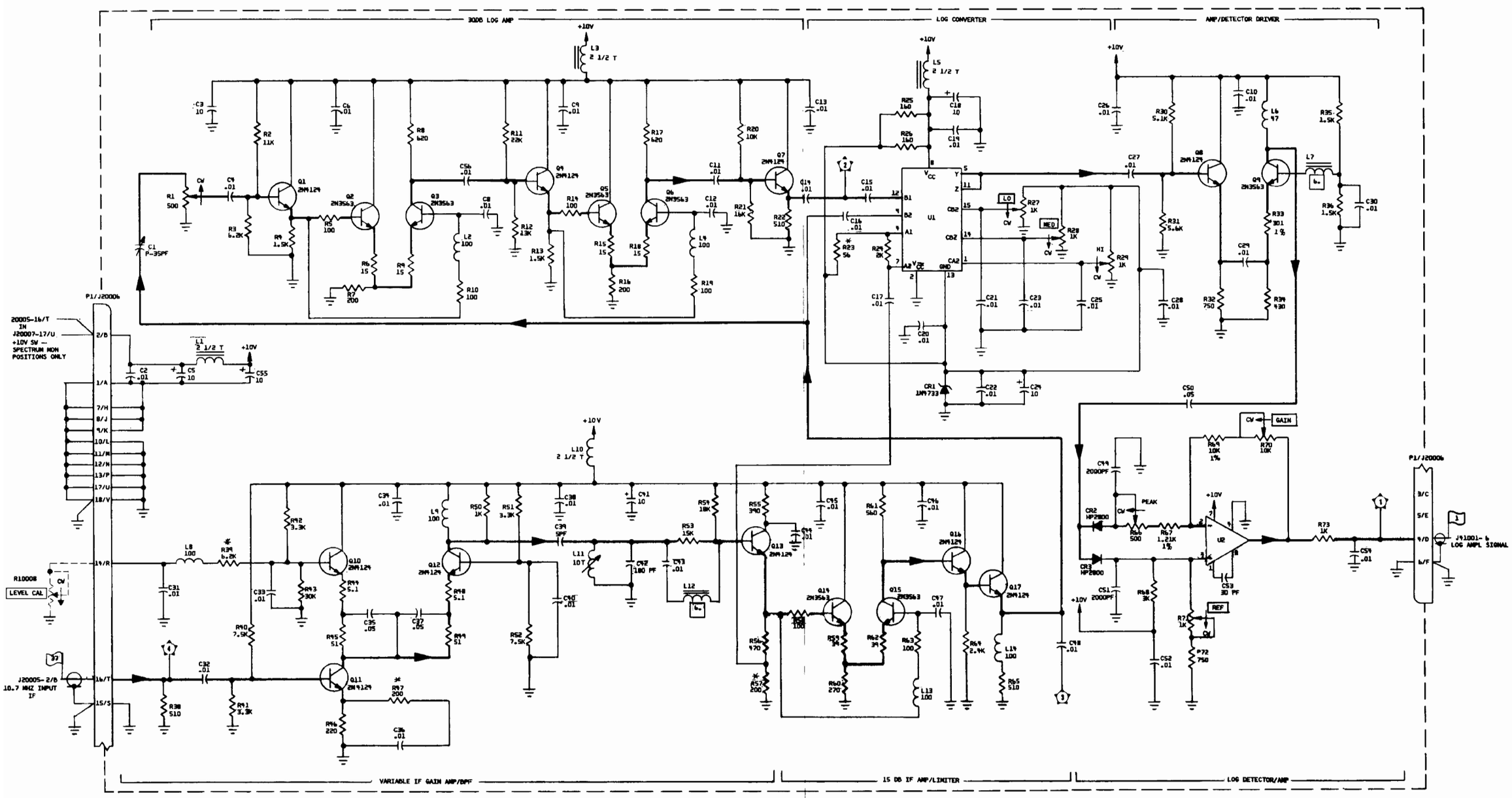


U NO	TYPE	VCC	GND
1	TL441MJ	8	13
2	LM801A	7	4

C7,R37 NOT USED

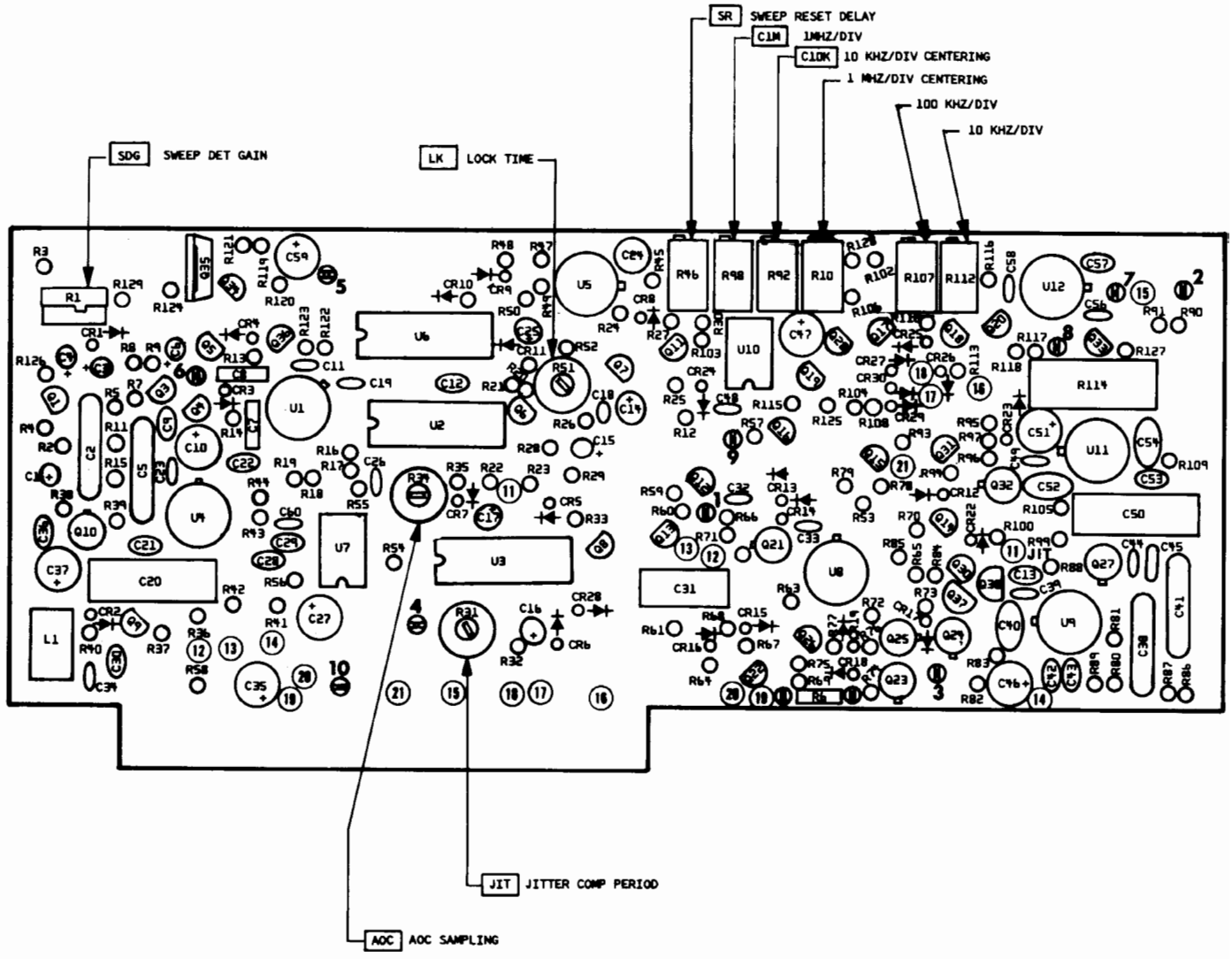
NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. FERRITE BEADS

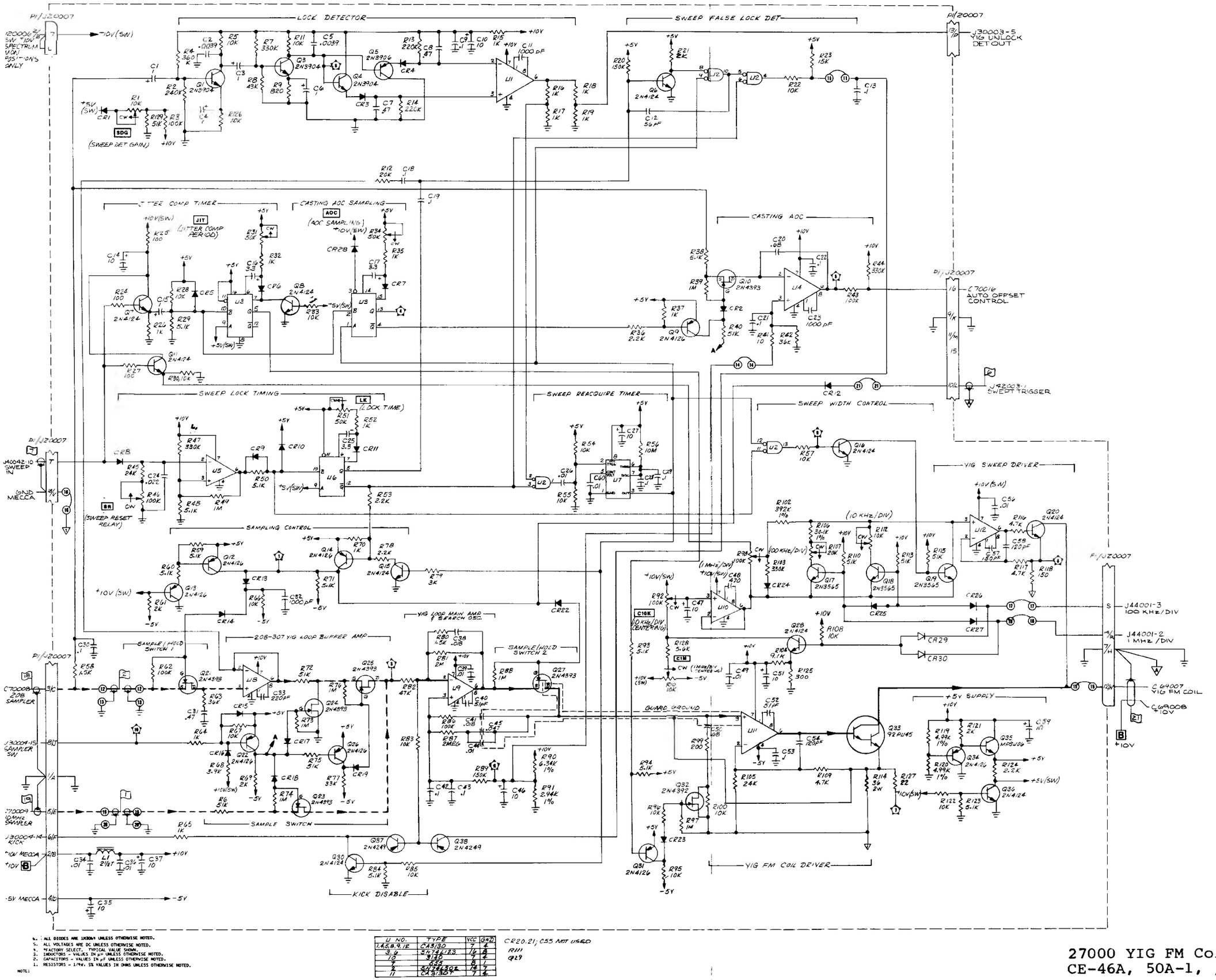
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
26000	PCB ASSY - LOG CONVERTER	7001-0489	CUSHMAN	CE-50A-1/TG ONLY*
	PRINTED CIRCUIT BOARD	1780-1002	CUSHMAN	*(AND CE-46A)
	CAPACITOR			
C 1	CAP-9-35PF 200V N650 V MT CER TRMR	1001-0006	ERIE	CV31D350
C 2	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 3	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 4	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 5	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 6	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 19	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 20	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 21	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 22	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 23	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 24	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 35	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 36	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 37	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 38	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 39	CAP-5PF .5PF 500V DIP MICA	1002-0028	ELMENCO	DM15-C-050D
C 40	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 41	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 42	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 43	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 44	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 45	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 46	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 47	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 48	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 49	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 50	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 51	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 52	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 53	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 55	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 56	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
	DIODE			
CR 1	DIO-1N4733 SI ZENER A98A 5.1V 10% 1W	1281-0015	MOTOROLA	1N4733
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 3	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 6	CH-47UH 5% RF MLD AXL .16DX.38L	1585-0010	DELEVAN	1537-60
L 7	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 8	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 9	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 10	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 11	COIL-VARIABLE IF	7050-0131		
L 12	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 13	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 14	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 3	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 4	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 5	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 8	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 9	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 10	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 13	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 14	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 17	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	POT-500 OHM 10% 3/4W 15T CERMET TRMR	1215-0011	HELITRIM	89WR
R 2	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 3	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 4	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 5	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 6	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 7	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 8	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 9	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 10	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 11	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 12	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 13	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 14	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 15	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 16	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 17	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 18	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 19	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 20	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 21	RES-16K 5% 1/4W CC	1066-1635	ALLEN BRADLEY	CB1635
R 22	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 23	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 24	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 25	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 26	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 27	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 28	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 29	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 30	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 31	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 32	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 33	RES-301 OHM 1% 100PPM FILM	1075-0048	CAT.LIST	55-100
R 34	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 35	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 36	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 38	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 39	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 40	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 41	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 42	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 43	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 44	RES-5.1 OHM 5% 1/4W CC	1066-0002	ALLEN BRADLEY	CB51G5
R 45	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 46	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 47	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 48	RES-5.1 OHM 5% 1/4W CC	1066-0002	ALLEN BRADLEY	CB51G5
R 49	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 50	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 51	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 52	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 53	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 54	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 55	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 56	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 57	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 58	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 59	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 60	RES-270 OHM 5% 1/4W CC	1066-2715	ALLEN BRADLEY	CB2715
R 61	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 62	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 63	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 64	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 65	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 66	POT-500 OHM 10% 3/4W 15T CERMET TRMR	1215-0011	HELITRIM	89WR
R 67	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 68	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 69	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 70	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 71	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 72	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 73	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
	INTEGRATED CIRCUIT			
U 1	IC-TL441MJ LOGARITHMIC AMP	2025-0049	TI	SN56502N
U 2	IC-LM301A OP AMP	2025-0032	NATIONAL	LM301AH


SR SWEEP RESET DELAY
C1M 1MHZ/DIV
C10K 10 KHZ/DIV CENTERING
1 MHZ/DIV CENTERING
100 KHZ/DIV
10 KHZ/DIV
SDG SWEEP DET GAIN
LK LOCK TIME
JIT JITTER COMP PERIOD
AOC AOC SAMPLING



U NO.	TYPE	VCC	GND
1,4,5,8,9,12	CA3130	7	4
3,6	SN74123	16	8
10	3130	7	4
7	339	8	1
2	SN74S302	14	7
11	CA3130Y	7	4

CR20,21; C55 NOT USED
R111
Q29

NOTE:
6. ALL DIODES ARE 1N4004 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

(7001-0491)

27000 YIG FM Coil Driver/Sweep Driver
CE-46A, 50A-1, /TG, and 5110A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
27000	PCB ASSY - YIG FM COIL DRIVER	7001-0491	CUSHMAN	CE-50A-1/TG*
	PRINTED CIRCUIT BOARD	1780-1006	CUSHMAN	*(AND CE-46A)
	CAPACITOR			
C 1	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 2	CAP-.0039UF 10% 100V RDL POLYESTER	1008-0052	SPRAGUE	225P39291WD3
C 3	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 4	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 5	CAP-.0039UF 10% 100V RDL POLYESTER	1008-0052	SPRAGUE	225P39291WD3
C 6	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 7	CAP-.47UF 10% 50V MLD CER	1005-0092	AEROVOX	CK06BX474K
C 8	CAP-.47UF 10% 50V MLD CER	1005-0092	AEROVOX	CK06BX474K
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 11	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 12	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 15	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 16	CAP-3.3UF 10% 35V RDL TANT	1011-0017	KEMET	T368B335K035AS
C 17	CAP-3.3UF 10% 35V RDL TANT	1011-0017	KEMET	T368B335K035AS
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.68UF 10% 100V RDL MET-POLYEST	1008-0108	PLESSEY CAPACITORS	60G 684 K 100
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 24	CAP-.022UF 5% 200V AXL POLYESTER	1008-0010		
C 25	CAP-3.3UF 10% 35V RDL TANT	1011-0017	KEMET	T368B335K035AS
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 28	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 29	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 32	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 33	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 34	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 35	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 38	CAP-.018UF 10% 100V RDL POLYESTER	1008-0008	SPRAGUE	225P18391WD3
C 39	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 40	CAP-51PF 5% 500V DIP MICA	1004-0012	CORNELL DUBILIER	CD10ED510J
C 41	CAP-.018UF 10% 100V RDL POLYESTER	1008-0008	SPRAGUE	225P18391WD3
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 44	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 45	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
C 46	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 47	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 48	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 49	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 50	CAP-.68UF 10% 100V RDL MET-POLYEST	1008-0108	PLESSEY CAPACITORS	60G 684 K 100
C 51	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 52	CAP-51PF 5% 500V DIP MICA	1004-0012	CORNELL DUBILIER	CD10ED510J

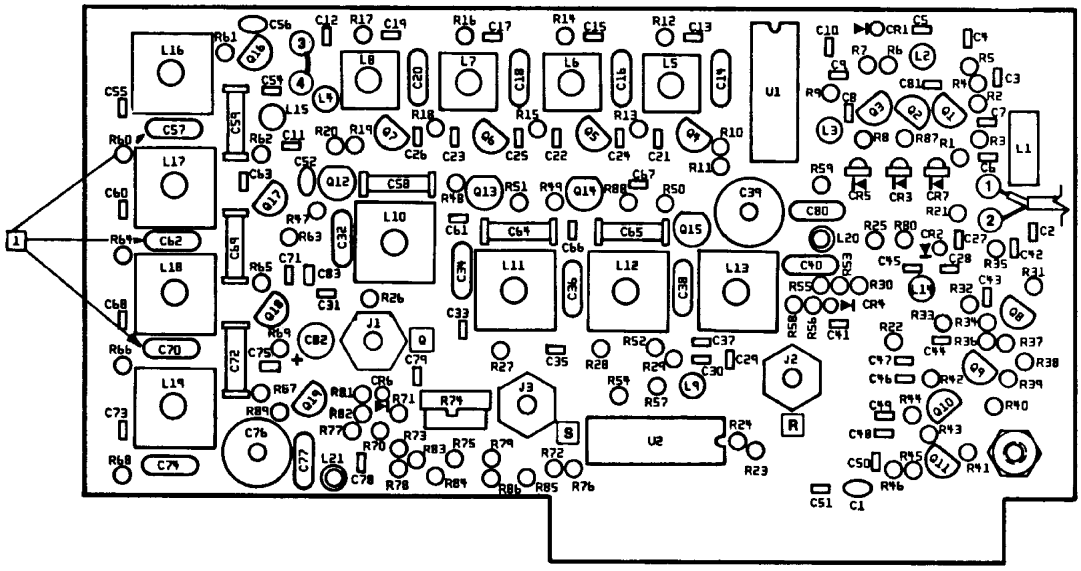
CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 53	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 54	CAP-120PF 5% 500V DIP MICA	1002-0010	ELMENCO	DM15-F-121J
C 56	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 57	CAP-150PF 10% 100V NPO MINTR CER	1005-0108	ERIE	8121-100-C0G0-151K
C 58	CAP-120PF 10% 100V NPO MINTR CER	1005-0110	ERIE	8121-100-C0G0-121K
C 59	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 60	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 23	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 24	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 25	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 26	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 29	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 30	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 8	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 9	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 10	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 13	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 14	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 15	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124

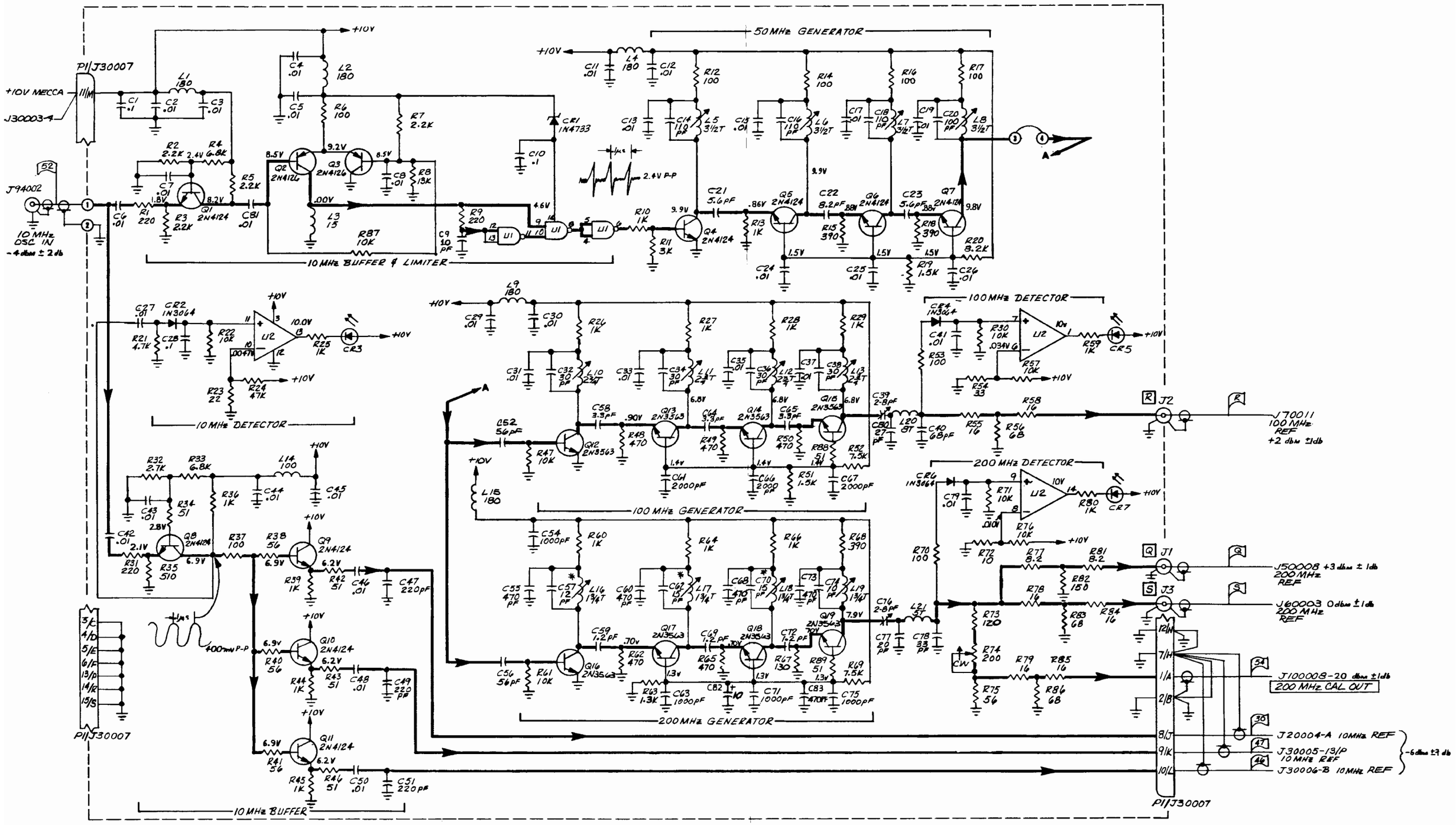
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
Q 16	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 17	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 18	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 19	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 20	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 21	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 22	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 23	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 24	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 25	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 26	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 27	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 28	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 30	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 31	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 32	XSTR-2N4392 SI T018 J-FET N-CHAN	1272-0054	TELEDYNE	2N4392
Q 33	XSTR-92PU45 NPN SI DARLINGTON	1272-0113	NATIONAL	92PU45
Q 34	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 35	XSTR-MPS-U06 NPN SI B18 HIGH PWR	1272-0053	MOTOROLA	MPS-U06
Q 36	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 37	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
Q 38	XSTR-2N4249 PNP SI R124B LOW PWR	1272-0024	CARTER SEMI	2N4249
	RESISTOR			
R 1	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 2	RES-240K 5% 1/4W CC	1066-2445	ALLEN BRADLEY	CB2445
R 3	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 4	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 7	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 8	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 9	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 10	POT-10K 10% 1/2W 25T CERMET TRMR	1215-0047	BOURNS	3299X-1-103
R 11	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 12	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 13	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 14	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 17	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 21	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 22	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 23	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 24	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 25	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 26	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 27	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	POT-50K 20% 1/2W 4T CERMET TRMR	1203-0059	BOURNS	3339H-1-503
R 32	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 33	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 34	POT-50K 20% 1/2W 4T CERMET TRMR	1203-0059	BOURNS	3339H-1-503
R 35	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 36	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 37	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 38	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 39	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 40	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 41	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 42	RES-36K 5% 1/4W CC	1066-3635	ALLEN BRADLEY	CB3635
R 43	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 44	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 45	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 46	POT-100K 10% 1/2W 25T CERMET TRMR	1215-0049	BOURNS	3299X1-104
R 47	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 48	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 49	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 50	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 51	POT-50K 20% 1/2W 4T CERMET TRMR	1203-0059	BOURNS	3339H-1-503
R 52	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 53	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 54	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 55	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 56	RES-10MEG 5% 1/4W CC	1066-1065	ALLEN BRADLEY	AB1065
R 57	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 58	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 59	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 60	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 61	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 62	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 63	RES-36K 5% 1/4W CC	1066-3635	ALLEN BRADLEY	CB3635
R 64	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 65	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 66	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 67	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 68	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 69	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 70	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 71	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 72	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 73	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 74	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 75	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 76	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 77	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 78	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 79	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 80	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 81	RES-2MEG 5% 1/4W CC	1066-2055	ALLEN BRADLEY	CB2055
R 82	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 83	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 84	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 85	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 86	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 87	RES-2MEG 5% 1/4W CC	1066-2055	ALLEN BRADLEY	CB2055
R 88	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 89	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 90	RES-6.34K 1% 150PPM FILM	1074-1007	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 91	RES-2.94K 1% 100PPM FILM	1075-0108	CAT.LIST	55-100
R 92	POT-100K 10% 1/2W 25T CERMET TRMR	1215-0049	BOURNS	3299X1-104
R 93	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 94	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 95	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 96	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 97	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 98	POT-100K 10% 1/2W 25T CERMET TRMR	1215-0049	BOURNS	3299X1-104
R 99	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 100	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 102	RES-392K 1% 100PPM FILM	1075-0193		
R 103	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 104	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 105	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 106	RES-30.1K 1% 25PPM FILM	1074-0107	CAT.LIST	55-025
R 107	POT-20K 10% 1/2W 25T CERMET TRMR	1215-0048	BOURNS	3299X-1-203
R 108	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 109	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 110	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 112	POT-10K 10% 1/2W 25T CERMET TRMR	1215-0047	BOURNS	3299X-1-103
R 113	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 114	RES-36 OHM-5% 2W CC	1069-3605	ALLEN BRADLEY	HB 3605
R 115	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 116	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 117	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 118	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 119	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 120	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 121	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 122	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 123	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 124	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 125	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 126	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 127	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 128	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 129	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-SN74LS02N QUAD 2-INOT POS-NDR GATES	2025-0108	TI	SN74LS02N
U 3	IC-74LS123 16 PIN DIP MONOSTABLE MV	2025-0186	TI	SN74LS123N
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 5	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-74LS123 16 PIN DIP MONOSTABLE MV	2025-0186	TI	SN74LS123N
U 7	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 8	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 9	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 10	IC-CA 3140E 8 PIN DIP OP AMPL	2025-0237		
U 11	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 12	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T



1. FACTORY SELECT VALUE



U NO	TYPE	VCC	GND
1	7400		
2	LM399		

NOTE:
1. Resistors - ¼W, 5% values in ohms unless otherwise noted.
2. Capacitors - values in μF unless otherwise noted.
3. Inductors - values in μH unless otherwise noted.
4. *Factory select. Typical value shown.
5. All voltages are DC ±10% unless otherwise noted.
6. All DC voltages measured with a 10 MΩ DVM.
7. All dB referenced AC voltages measured into 50 ohms with Boonton Model 372 RF millivoltmeter.
8. All peak to peak referenced AC voltages measured with 10 MΩ 10 pf probe and Tektronics 475 scope.

37000 Ref Freq Generator, (7001-0593)
CE-46A, 50A-1, /TG, and 5110A

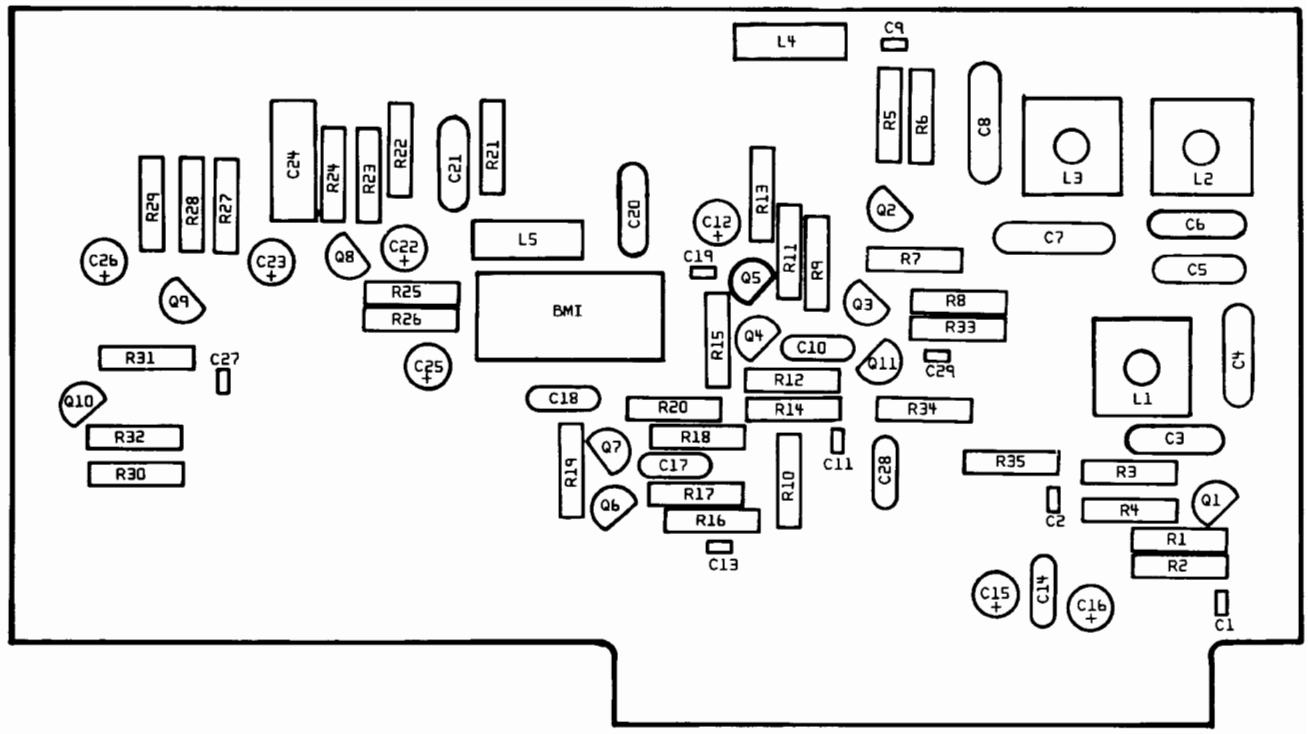
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
37000	PCB ASSY - REF. FREQ. GENERATOR	7001-0593	CUSHMAN	CE-50A-1/TG*
	PRINTED CIRCUIT BOARD	1780-1071	CUSHMAN	*(AND CE-46A)
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-10PF 10% 100V NPO MINTR CER	1005-0074	TUSONIX	8101-100-C0G0-100K
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-110PF 5% 500V DIP MICA	1002-0026	ELMENCO	DM15-F-111J
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-110PF 5% 500V DIP MICA	1002-0026	ELMENCO	DM15-F-111J
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-110PF 5% 500V DIP MICA	1002-0026	ELMENCO	DM15-F-111J
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 21	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 22	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
C 23	CAP-8.2PF +/-.5PF 100V NPO MINI CER	1005-0104	TUSONIX	8101-100 C0H0 829D
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 31	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 32	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 33	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 34	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 35	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 36	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 37	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 38	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 39	CAP-2-8PF 350V NPO V MT CER TRMR	1001-0004	TUSONIX	538-011A2-8
C 40	CAP-68PF 5% 500V DIP MICA	1004-0014	SANGAMO	D105E680
C 41	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 42	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 43	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 44	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 45	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 46	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 47	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 48	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 49	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 50	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 51	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 52	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 54	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 55	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 56	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 57	CAP-12PF 5% 500V DIP MICA	1002-0017	ELMENCO	DM15-C-120J
C 58	CAP-3.3PF .25PF 500V NPO CER TUB	1005-0011	TUSONIX	301-00-C0J0-339C
C 59	CAP-1.2PF .1PF 500V NPO CER TUB	1005-0016	TUSONIX	301-000-C0K0-129B
C 60	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 61	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
C 62	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 63	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 64	CAP-3.3PF .25PF 500V NPO CER TUB	1005-0011	TUSONIX	301-00-C0J0-339C
C 65	CAP-3.3PF .25PF 500V NPO CER TUB	1005-0011	TUSONIX	301-00-C0J0-339C
C 66	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
C 67	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
C 68	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 69	CAP-1.2PF .1PF 500V NPO CER TUB	1005-0016	TUSONIX	301-000-C0K0-129B
C 70	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 71	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 72	CAP-1.2PF .1PF 500V NPO CER TUB	1005-0016	TUSONIX	301-000-C0K0-129B
C 73	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 74	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 75	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 76	CAP-2-8PF 350V NPO V MT CER TRMR	1001-0004	TUSONIX	538-011A2-8
C 77	CAP-20PF 5% 500V DIP MICA	1004-0008	CORNELL DUBILIER	CD10ED200J
C 78	CAP-33PF 5% 500V THIN DIP MICA	1004-0006	CORNELL DUBILIER	CD6ED330J
C 79	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 80	CAP-27PF 5% 500V DIP MICA	1004-0009	CORNELL DUBILIER	CD10ED270J
C 81	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 82	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 83	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
	DIODE			
CR 1	DIO-1N4733 SI ZENER A98A 5.1V 10% 1W	1281-0015	MOTOROLA	1N4733
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-LT EMIT RED 1.6V W ANG TI	1281-0137	HP	5082-4484
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-LT EMIT RED 1.6V W ANG TI	1281-0137	HP	5082-4484
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-LT EMIT RED 1.6V W ANG TI	1281-0137	HP	5082-4484
	CONNECTOR			
J 1	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
J 2	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
J 3	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
	INDUCTOR			
L 1	CH-180UH 5% RF MLD AXL .16DX.38L	1585-0035	DELEVAN	1537-88
L 2	CH-180UH 5% RF MLD AXL .16DX.38L	1585-0035	DELEVAN	1537-88
L 3	CH-15UH 10% RF MLD AXL .16DX.38L	1585-0034	DELEVAN	1537-40
L 4	CH-180UH 5% RF MLD AXL .16DX.38L	1585-0035	DELEVAN	1537-88
L 5	COIL ASSY-VARIABLE IF 3 1/2 TURN	1596-0238		
L 6	COIL ASSY-VARIABLE IF 3 1/2 TURN	1596-0238		
L 7	COIL ASSY-VARIABLE IF 3 1/2 TURN	1596-0238		
L 8	COIL ASSY-VARIABLE IF 3 1/2 TURN	1596-0238		
L 9	CH-180UH 10% RF MLD AXL .10DX.25L	1585-0077	DELEVAN	1025-74
L 10	COIL ASSY-VARIABLE	7050-0122		

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
L 11	COIL ASSY-VARIABLE	7050-0122		
L 12	COIL ASSY-VARIABLE	7050-0122		
L 13	COIL ASSY-VARIABLE	7050-0122		
L 14	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 15	CH-180UH 5% RF MLD AXL .16DX.38L	1585-0035	DELEVAN	1537-88
L 16	ASSY-COIL VARIABLE 1-3/4 TURN	1596-0051		
L 17	ASSY-COIL VARIABLE 1-3/4 TURN	1596-0051		
L 18	ASSY-COIL VARIABLE 1-3/4 TURN	1596-0051		
L 19	ASSY-COIL VARIABLE 1-3/4 TURN	1596-0051		
L 20	COIL-RES CORE .093 DIA/26GA/8T	1596-0306	CUSHMAN	C/E DWG & M/L
L 21	COIL-RES CORE .093 DIA/26GA/5T	1596-0305	CUSHMAN	C/E DWG M/L
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 3	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 8	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 9	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 10	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 13	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 14	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 17	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 18	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 19	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
	RESISTOR			
R 1	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 2	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 3	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 4	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 5	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 6	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 7	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 8	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 9	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 10	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 11	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 12	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 15	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 16	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 17	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 18	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 19	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 20	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 21	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 22	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 23	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 81	RES-8.2 OHM 5% 1/4W CC	1066-0005	ALLEN BRADLEY	CB82G5
R 82	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 83	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 84	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 85	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 86	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 87	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 88	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 89	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-SN7400N TTL NAND GATES	2025-0003	TI	SN7400N
U 2	IC-339 14 PIN DIP QUAD VOLTAGE COMPTR	2025-0201	MOTOROLA	MLM339P

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 24	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 25	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 26	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 27	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 28	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 29	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 32	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 33	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 34	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 35	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 36	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 37	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 38	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 40	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 41	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 42	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 43	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 44	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 45	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 46	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 47	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 48	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 49	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 50	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 51	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 52	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 53	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 54	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 55	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 56	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 57	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 58	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 59	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 60	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 61	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 62	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 63	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 64	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 65	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 66	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 67	RES-130 OHM 5% 1/4W CC	1066-1315	ALLEN BRADLEY	CB1315
R 68	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 69	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 70	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 71	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 72	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 73	RES-120 OHM 5% 1/4W CC	1066-1215	ALLEN BRADLEY	CB1215
R 74	POT-200 OHM 20% 1/2W 1T CERMET TRMR	1215-0055	BECKMAN	91AR200
R 75	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 76	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 77	RES-8.2 OHM 5% 1/4W CC	1066-0005	ALLEN BRADLEY	CB82G5
R 78	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 79	RES-16 OHM 5% 1/4W CC	1066-1605	ALLEN BRADLEY	CB1605
R 80	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025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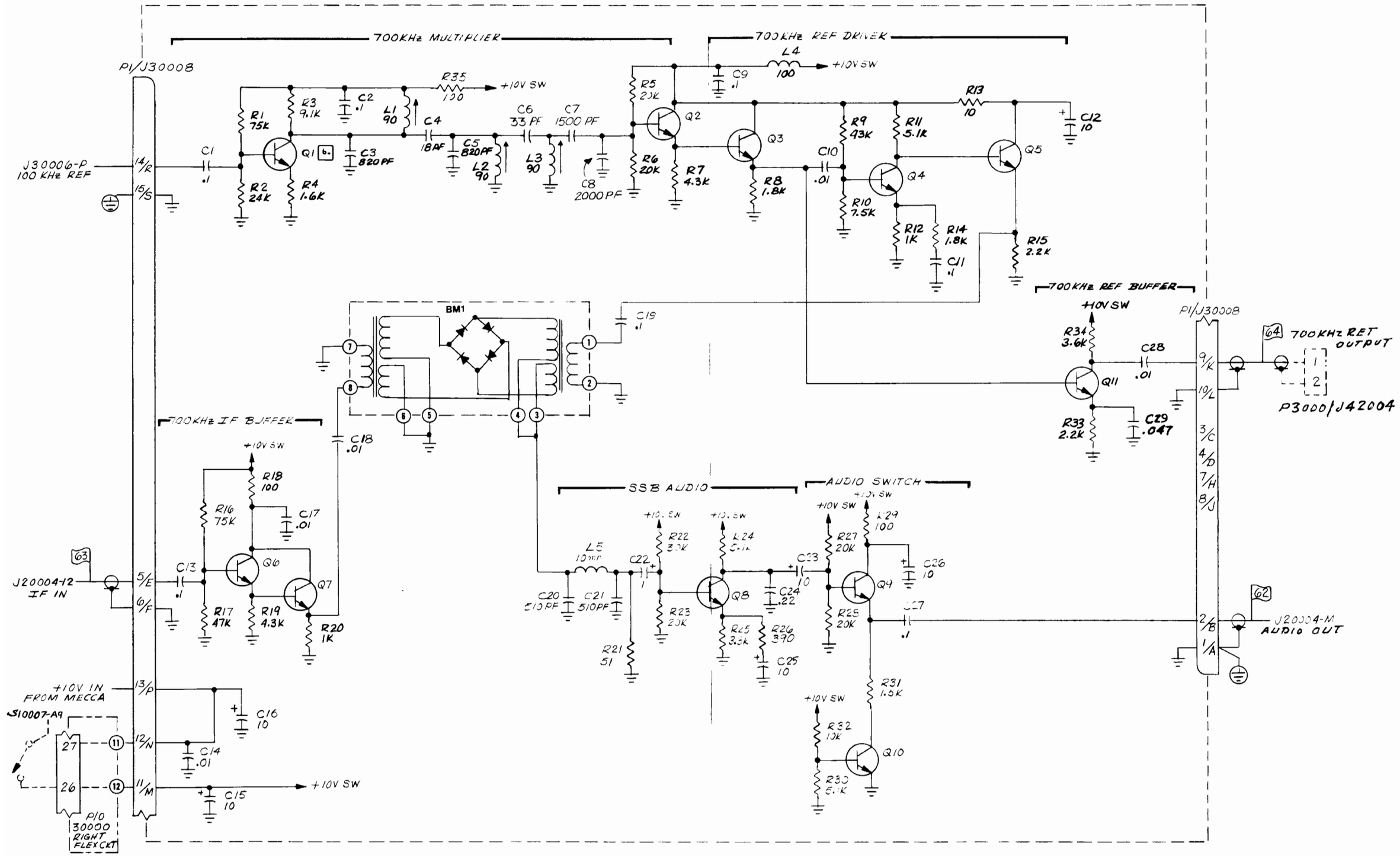


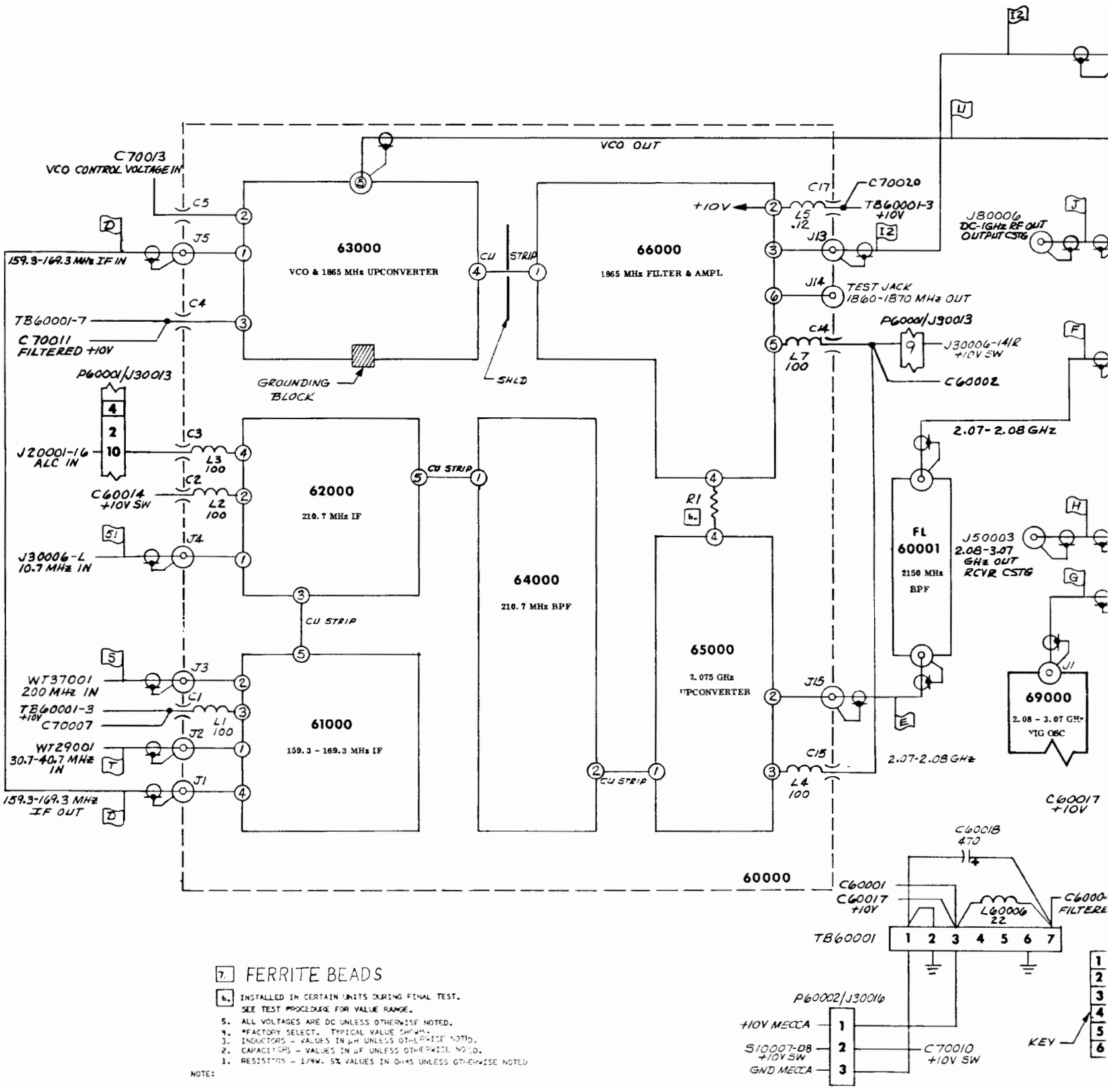
OUT OF SEQUENCE	
R35	NEAR Q1

NOTE:

6. ALL TRANSISTORS ARE 2N3565 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
38000	PCB ASSY - SSB/ZERO BEAT	7001-0650	CUSHMAN	CE-50 FAMILY*
	PRINTED CIRCUIT BOARD	1780-1095	CUSHMAN	*(OP-05 ONLY)
	MIXER			
BM 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 4	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 5	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 6	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 7	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 8	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 16	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 21	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 22	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 23	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 24	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 25	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 26	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
	INDUCTOR			
L 1	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	CH-100UH 5% RF MLD AXL 16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
	TRANSISTOR			
Q 1	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 2	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 3	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 4	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 2	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 3	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 4	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 5	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 6	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 7	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 8	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 9	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 10	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 14	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 15	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 16	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 17	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 18	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 19	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5103
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 24	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 25	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 26	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 27	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 28	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 29	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 30	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 34	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 35	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015

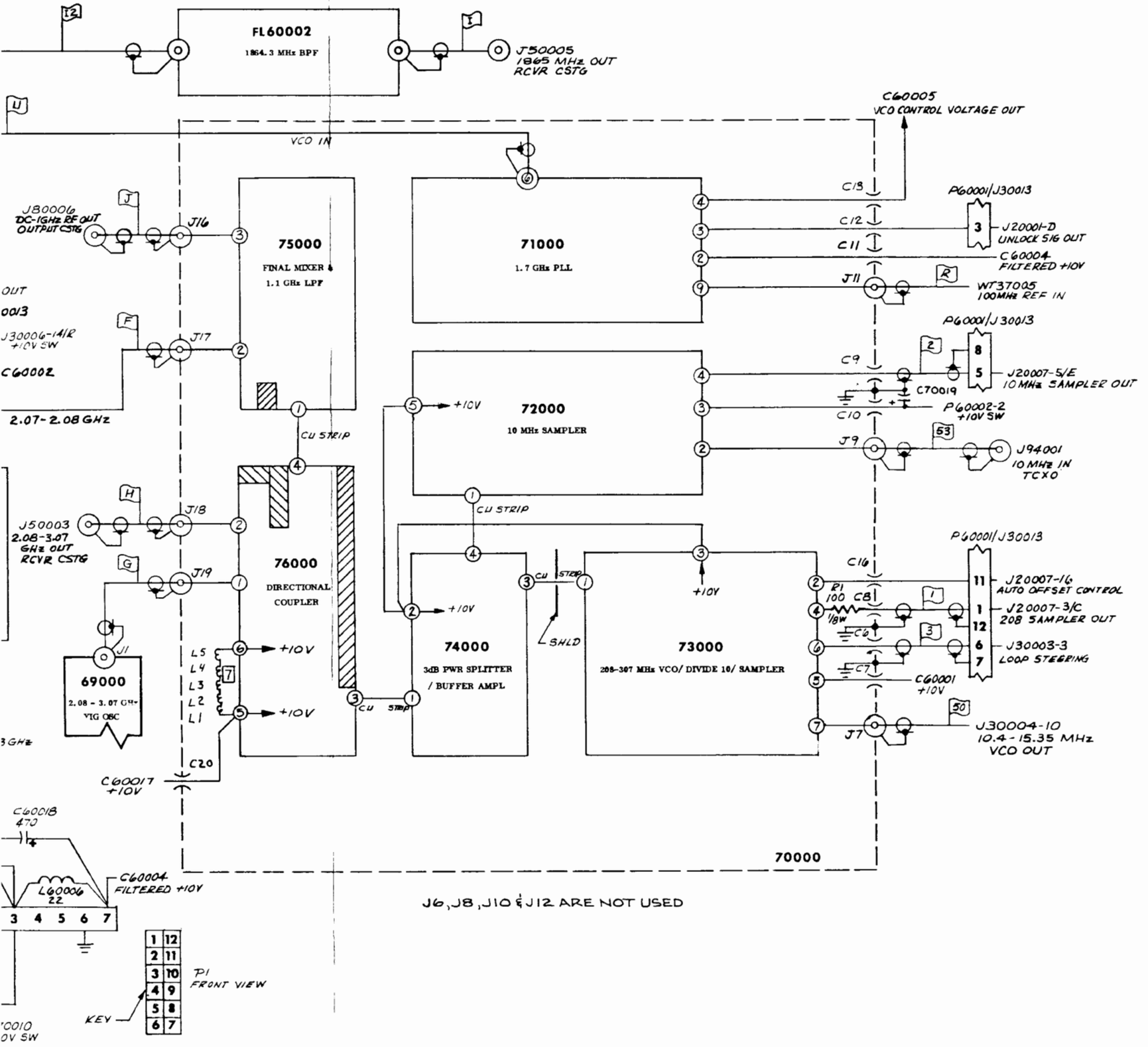


7. FERRITE BEADS

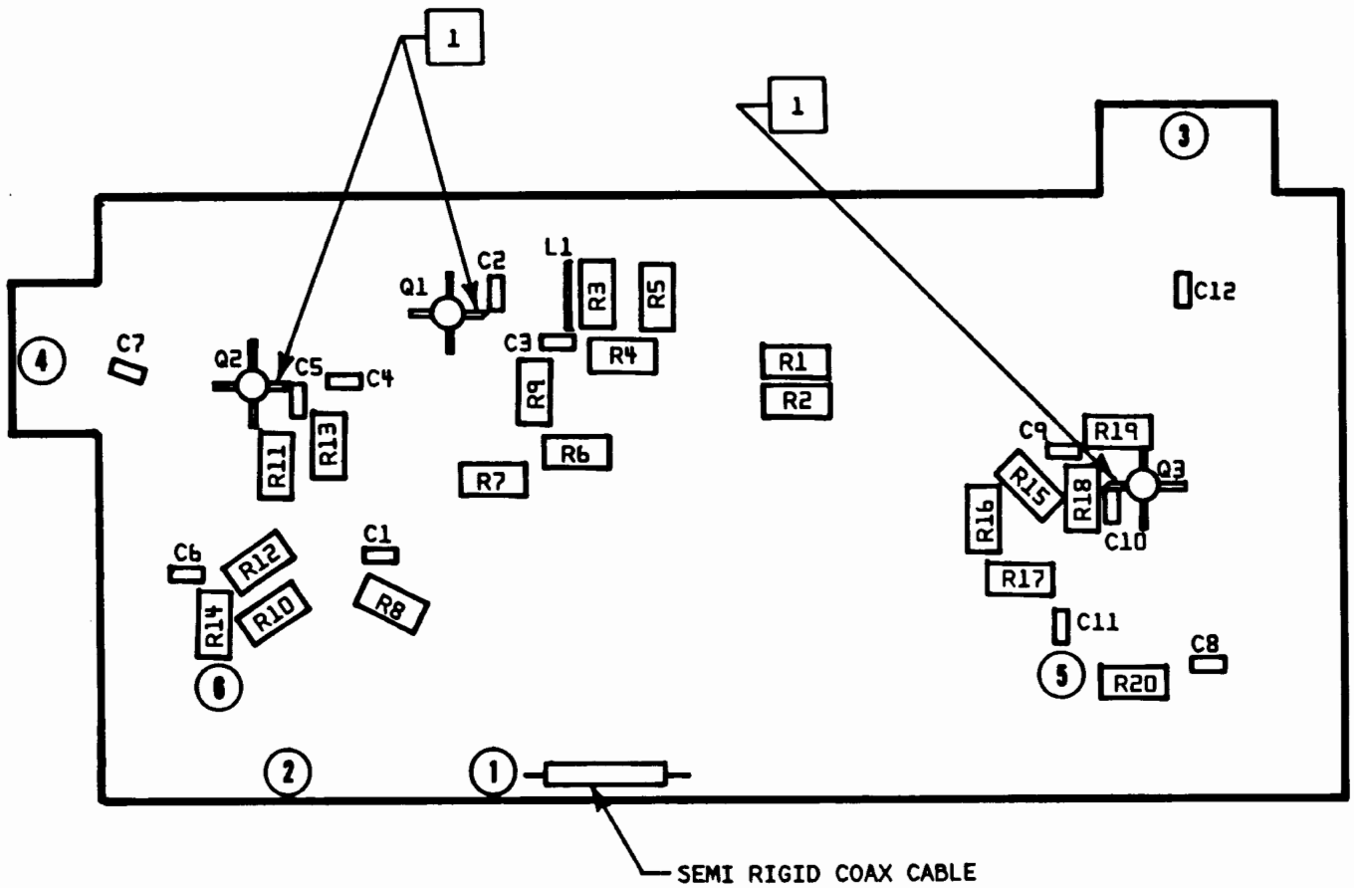
6. INSTALLED IN CERTAIN UNITS DURING FINAL TEST. SEE TEST PROCEDURE FOR VALUE RANGE.

NOTE:

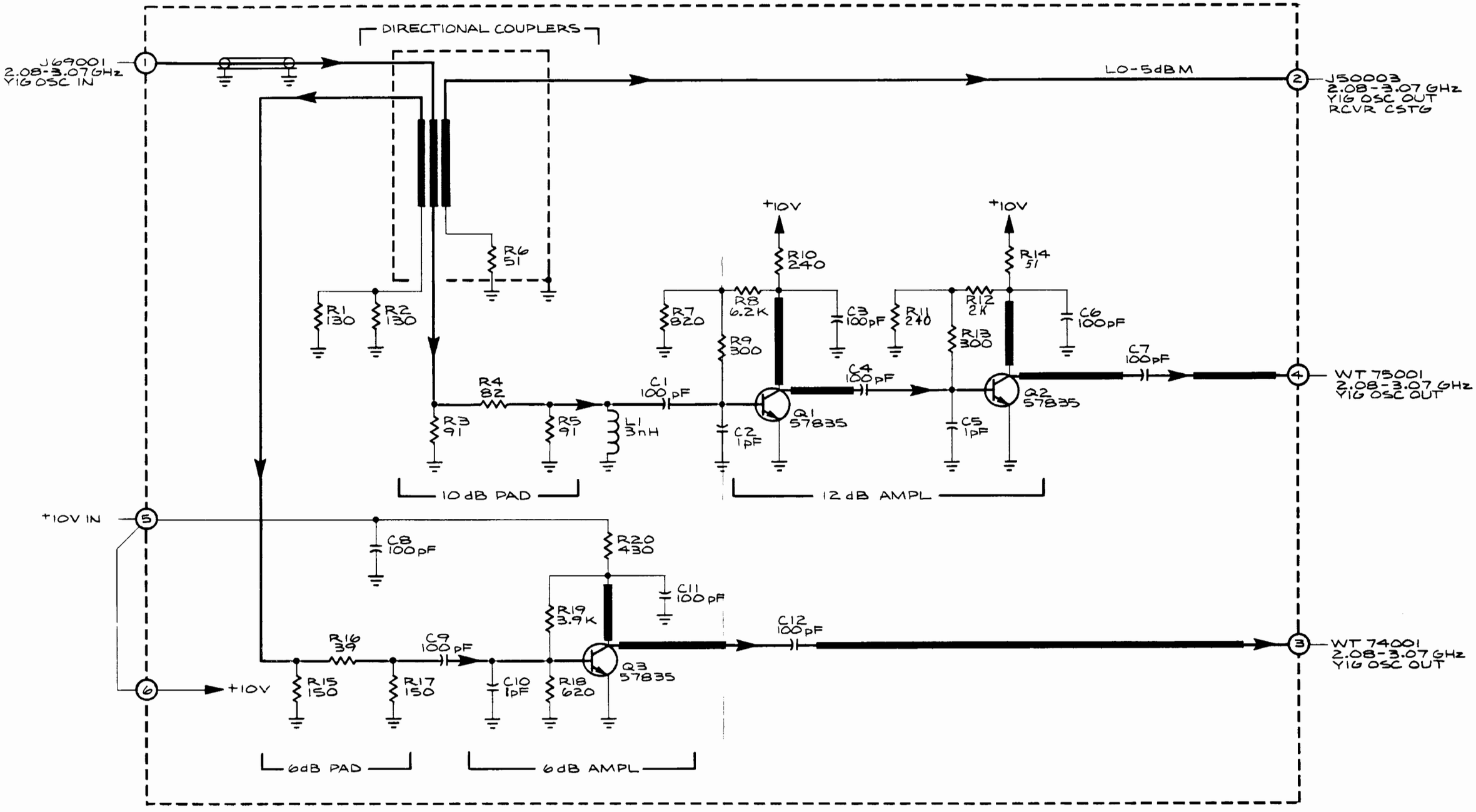
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS – VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS – VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS – 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED



60000/70000 RF Main Casting, (8000-0694)
CE-50A/TG and CE-5110



1 BASE LEAD OF Q1, Q2, AND Q3 ARE ANGLE CUT. ORIENT AS SHOWN.



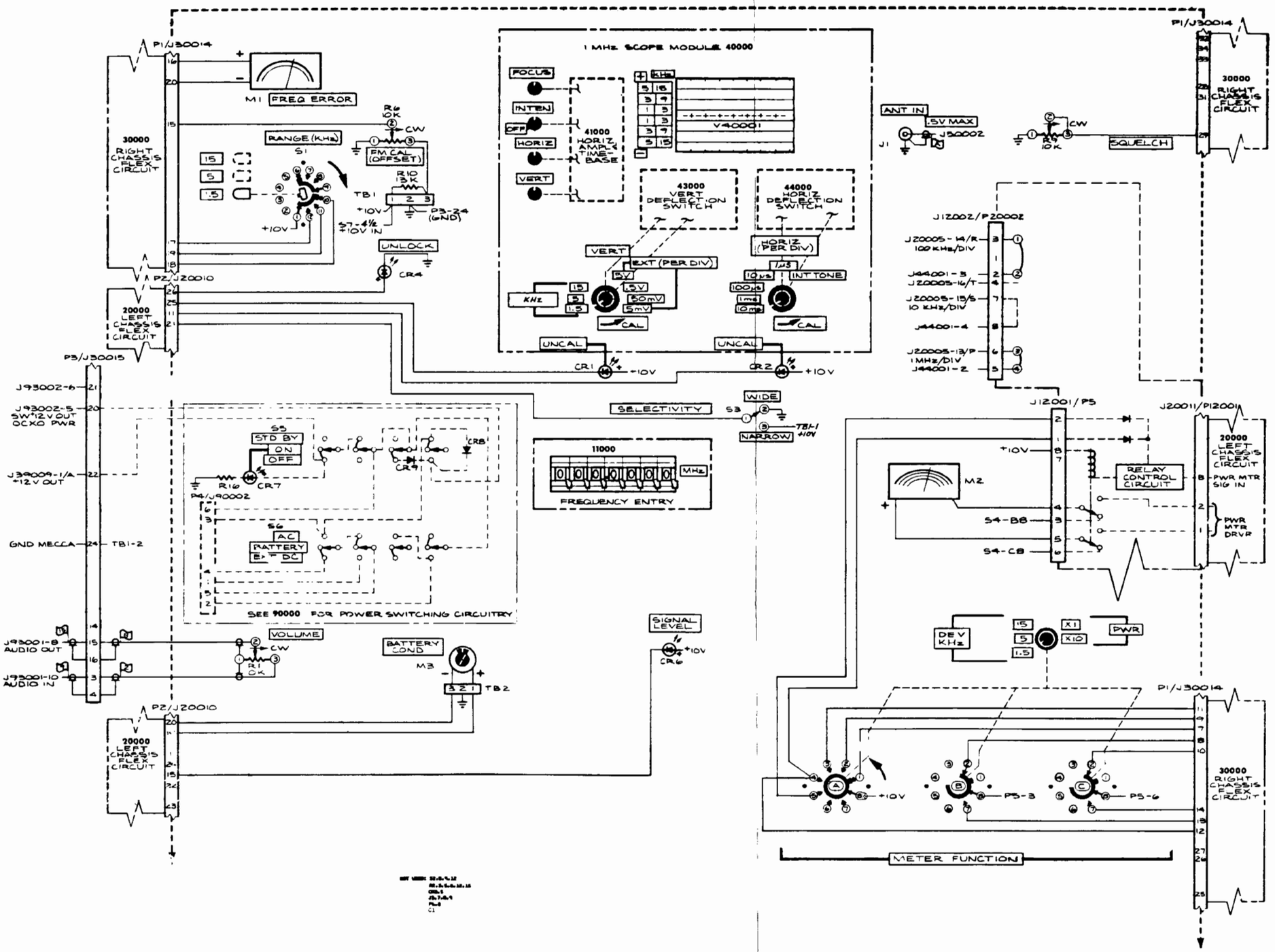
NOTE:

6. ALL CAPACITORS CHIP CAPS UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/8W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

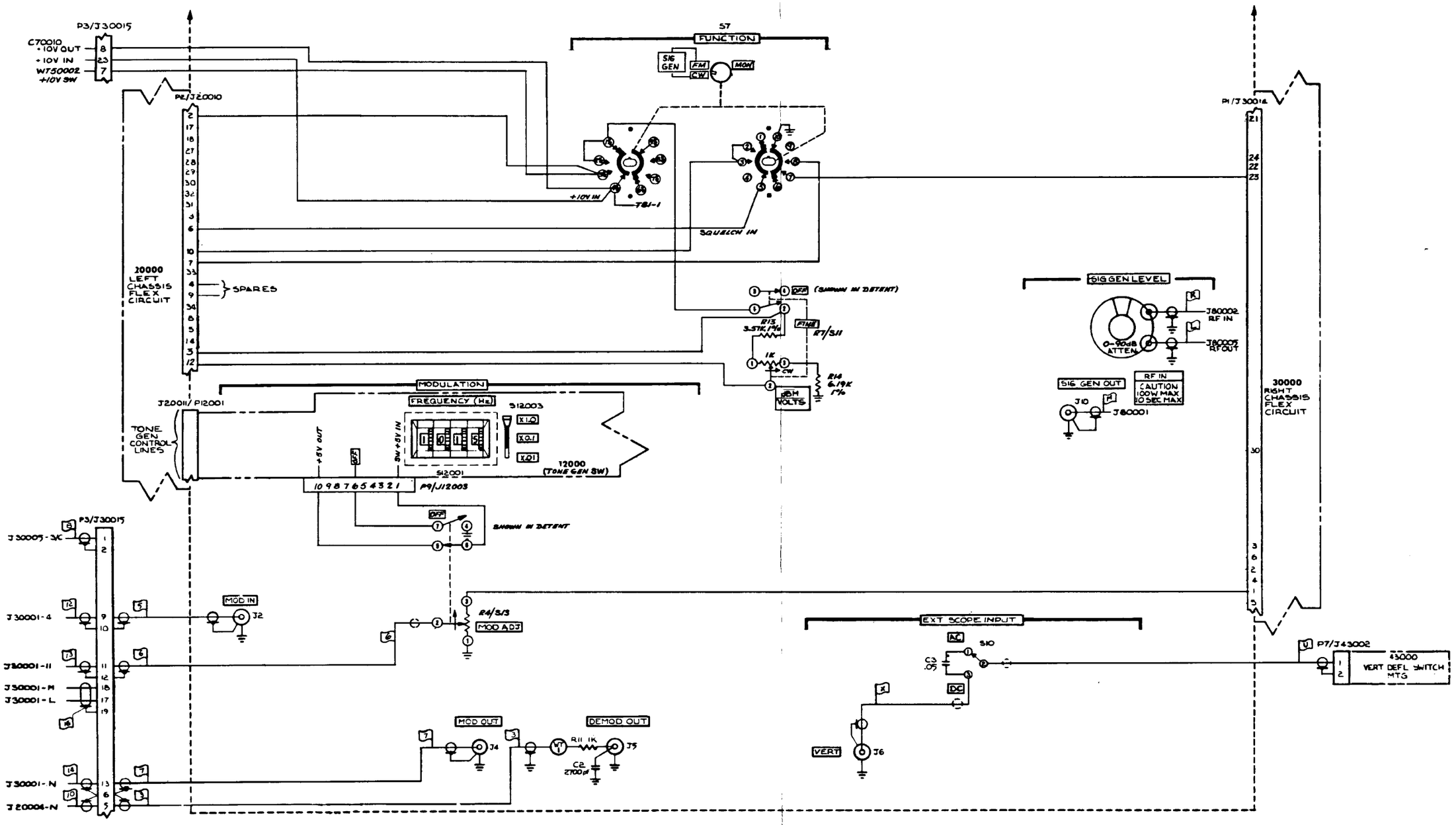
76000 Directional Coupler, (7001-0601)
CE-50A-1, /TG, and 5110A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
76000	PCB ASSY - DIRECTIONAL COUPLER	7001-0601	CUSHMAN	CE-50A-1/TG ONLY
	PRINTED CIRCUIT BOARD	1780-1080	CUSHMAN	
	CAPACITOR			
C 1	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 2	CAP-1PF .1PF 50V MIN HIGH Q CHIP	1012-0027	JOHANSON	251R12Q1R0BP
C 3	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 4	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 5	CAP-1PF .1PF 50V MIN HIGH Q CHIP	1012-0027	JOHANSON	251R12Q1R0BP
C 6	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 7	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 8	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 9	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 10	CAP-1PF .1PF 50V MIN HIGH Q CHIP	1012-0027	JOHANSON	251R12Q1R0BP
C 11	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 12	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 2	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 3	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-130 OHM 5% 1/8W CC	1065-1315	ALLEN BRADLEY	BB1315
R 2	RES-130 OHM 5% 1/8W CC	1065-1315	ALLEN BRADLEY	BB1315
R 3	RES-91 OHM 5% 1/8W CC	1065-9105	ALLEN BRADLEY	BB9105
R 4	RES-82 OHM 5% 1/8W CC	1065-8205	ALLEN BRADLEY	BB8205
R 5	RES-91 OHM 5% 1/8W CC	1065-9105	ALLEN BRADLEY	BB9105
R 6	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 7	RES-820 OHM 5% 1/8 CC	1065-8215	ALLEN BRADLEY	BB8215
R 8	RES-6.2K 5% 1/8W CC	1065-6225	ALLEN BRADLEY	BB6225
R 9	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 10	RES-240 OHM 5% 1/8W CC	1065-2415	ALLEN BRADLEY	BB2415
R 11	RES-240 OHM 5% 1/8W CC	1065-2415	ALLEN BRADLEY	BB2415
R 12	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 13	RES-300 OHM 5% 1/8W CC	1065-3015	ALLEN BRADLEY	BB3015
R 14	RES-51 OHM 5% 1/8W CC	1065-5105	ALLEN BRADLEY	BB5105
R 15	RES-150 OHM 5% 1/8W CC	1065-1515	ALLEN BRADLEY	BB1515
R 16	RES-39 OHM 5% 1/8W CC	1065-3905	ALLEN BRADLEY	BB3905
R 17	RES-150 OHM 5% 1/8W CC	1065-1515	ALLEN BRADLEY	BB1515
R 18	RES-620 OHM 5% 1/8W CC	1065-6215	ALLEN BRADLEY	BB6215
R 19	RES-3.9K 5% 1/8W CC	1065-3925	ALLEN BRADLEY	BB3925
R 20	RES-430 OHM 5% 1/8 CC	1065-4315	ALLEN BRADLEY	BB4315

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
10000	FRONT PANEL ASSY	7003-0148	CUSHMAN	CE-45A ONLY
	CAPACITOR			
C 2	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 3	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
	DIODE			
CR 1	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 2	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 4	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 6	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 7	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 8	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 9	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
	CONNECTOR			
J 1	CONN-BNC JK BHD MT .085 SEMI RGD	2536-0087	KINGS	KC-19-258
J 2	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 4	CONN-BNC JACK RECT. PANEL MT	2536-0010	KINGS	KC79-35
J 5	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 6	CONN-BNC JACK RECT. PANEL MT	2536-0010	KINGS	KC79-35
J 10	CONN-BNC JK BHD MT .085 SEMI RGD	2536-0087	KINGS	KC-19-258
	MIXER			
M 1	MTR-DC 500-0-500 UA FREQ	1402-0038	MODUTEC	TIWI-DVA-5H5
M 2	MTR-DC 0-500UA DEV	1402-0044	MODUTEC	C/E DWG
M 3	MTR-DC 0-1MA BATTERY CHECK	1402-0036	IMPACT ELECTRICIAL	CFM-11
	RESISTOR			
R 1	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 4	POT-10K 20% LOG 1/8 SFT CC W/DPST	1203-0113	ALLEN-BRADLEY	70K1G040R103D
R 6	POT-10K 20% 3/4W LIN 1/8 SFT CERMET	1203-0080	CTS BERNE	X6P1313 SERIES VA305
R 7	POT-1K 10%LIN 1/4SFT CERMET W/DPST	1203-0112	ALLEN-BRADLEY	70L1G040P102W
R 9	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 10	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 11	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-3.57K 1% 100PPM FILM	1075-0056	CAT.LIST	55-100
R 14	RES-6.19K 1% 100PPM FILM	1075-0109	CAT.LIST	55-100
R 16	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	SWITCH			
S 1	SW-LVR 2 POLE 3 POSN	1851-0016	OAK MFG.	C/E DWG
S 3	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 4	SW-RTRY 3 POLE 7 POSN PNL MT	1851-0133	OAK INDUSTRIES	C/E DWG
S 5	SW-DBL POLE 3 POS ON-ON-ON TOGGLE	1850-0024	OAK IND.	46A-1A1-1C0
S 6	SW-DBL POLE 3 POS ON-ON-ON TOGGLE	1850-0024	OAK IND.	46A-1A1-1C0
S 7	SW-RTRY 4 POLE 3 POSN	1851-0128	OAK INDUSTRIES	C/E DWG
S 10	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 11	POT-1K 10%LIN 1/4SFT CERMET W/DPST	1203-0112	ALLEN-BRADLEY	70L1G040P102W
S 13	POT-10K 20% LOG 1/8 SFT CC W/DPST	1203-0113	ALLEN-BRADLEY	70K1G040R103D

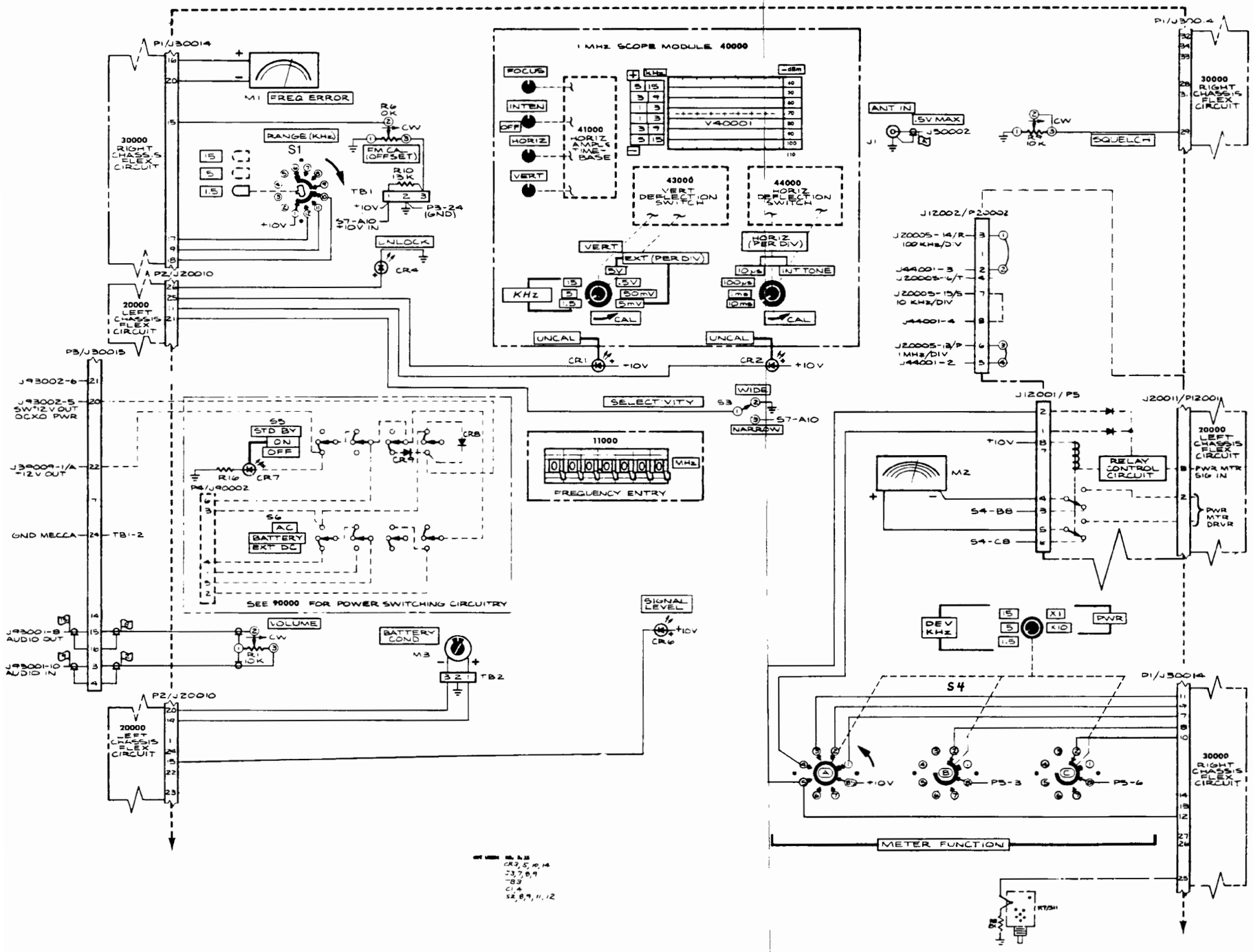


10000 Front Panel Interconnect Diagram, (8000-0724), CE-45A Sheet 1 of 2

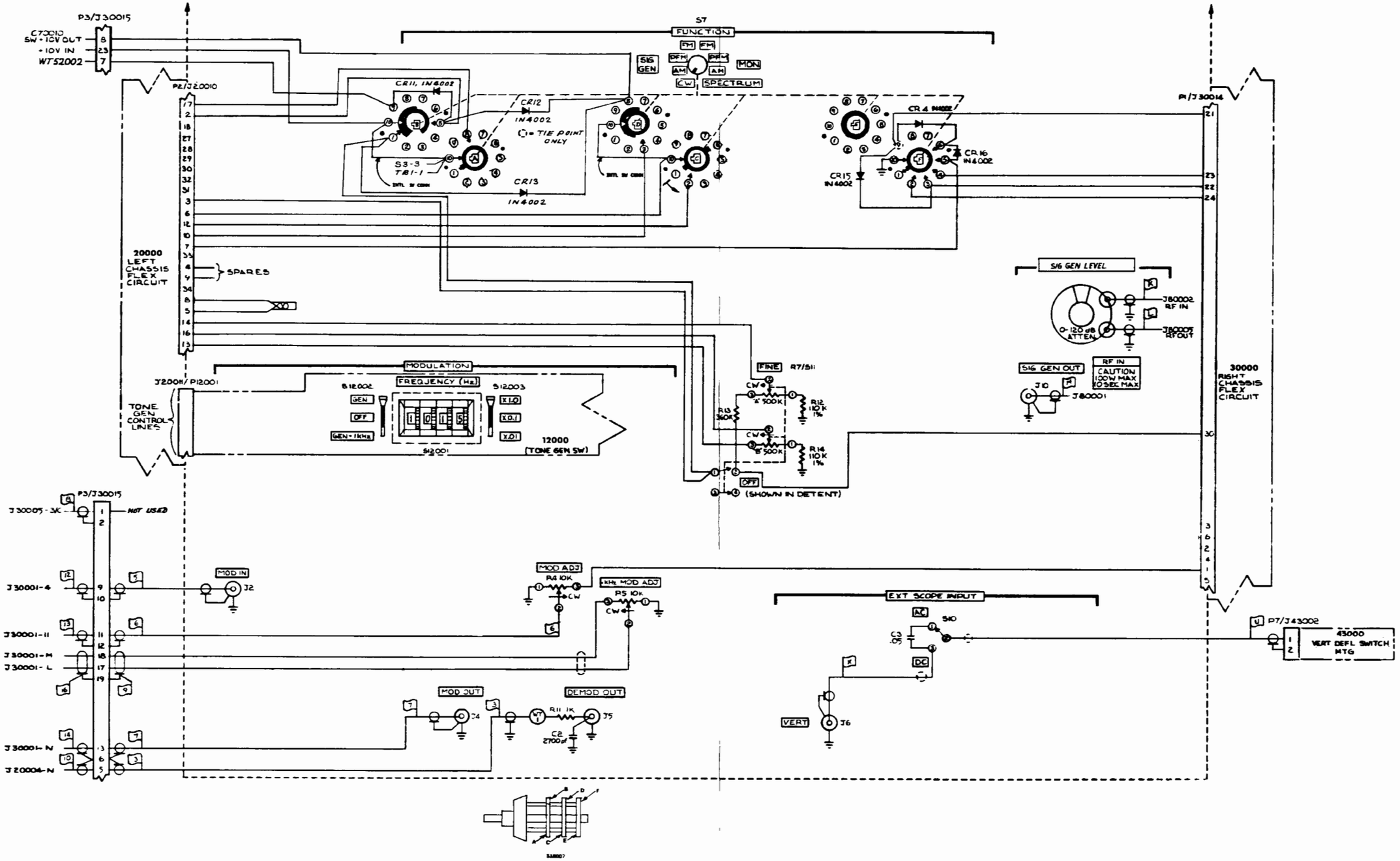


10000 Front Panel Interconnect Diagram, (8000-0724), CE-45A Sheet 2 of 2

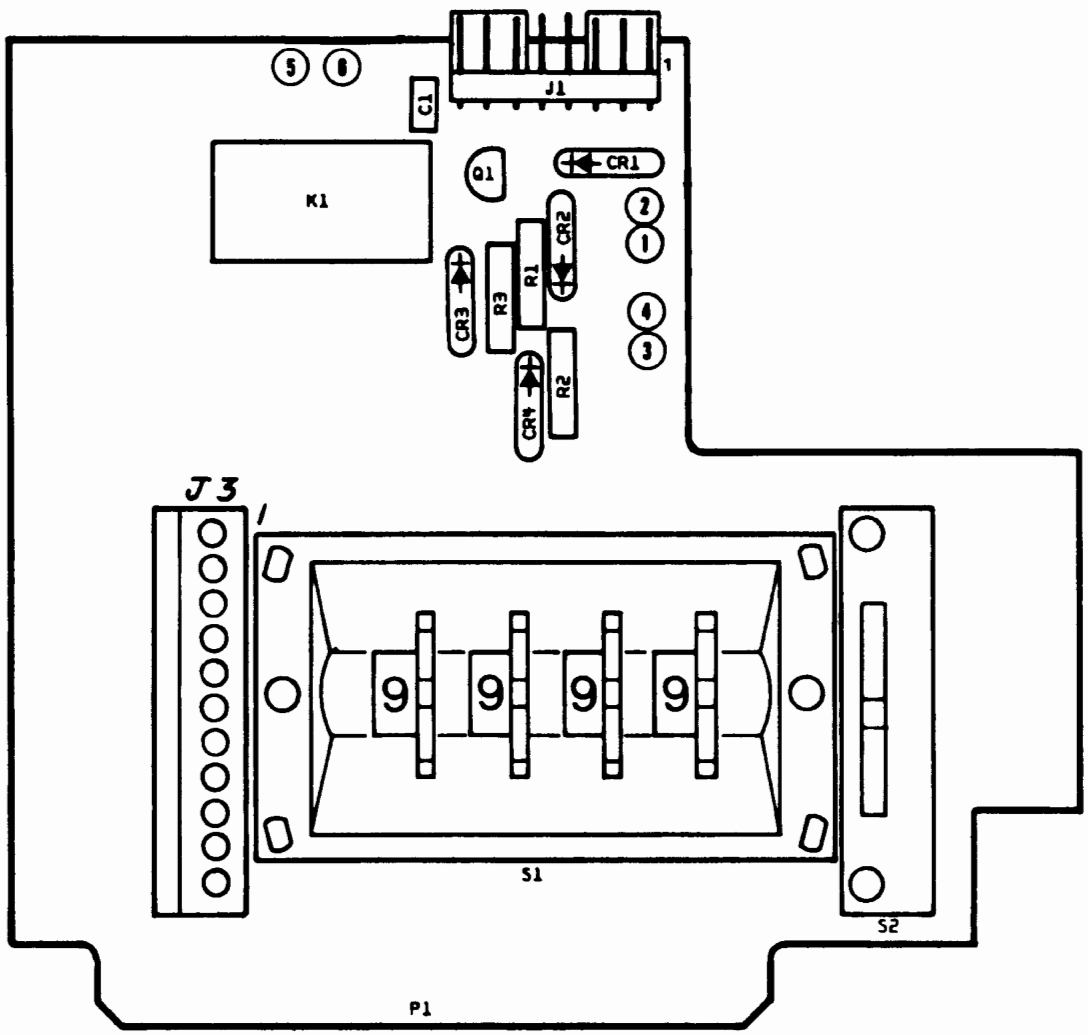
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
10000	FRONT PANEL ASSY	7003-0149	CUSHMAN	CE-46A ONLY
	CAPACITOR			
C 2	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 3	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
	DIODE			
CR 1	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 2	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 4	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 6	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 7	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 8	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 9	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 11	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 12	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 13	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 15	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 16	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
	CONNECTOR			
J 1	CONN-BNC JK BHD MT .085 SEMI RGD	2536-0087	KINGS	KC-19-258
J 2	CONN-BNC JACK RECT. PANEL MT	2536-0010	KINGS	KC79-35
J 4	CONN-BNC JACK RECT. PANEL MT	2536-0010	KINGS	KC79-35
J 5	CONN-BNC JACK RECT. PANEL MT	2536-0010	KINGS	KC79-35
J 6	CONN-BNC JACK RECT. PANEL MT	2536-0010	KINGS	KC79-35
J 10	CONN-BNC JK BHD MT .085 SEMI RGD	2536-0087	KINGS	KC-19-258
	MIXER			
M 1	MTR-DC 500-0-500 UA FREQ	1402-0038	MODUTEC	TIWI-DVA-5H5
M 2	MTR-DC 0-500UA DEV	1402-0044	MODUTEC	C/E DWG
M 3	MTR-DC 0-1MA BATTERY CHECK	1402-0036	IMPACT ELECTRICIAL	CFM-11
	RESISTOR			
R 1	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 4	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 5	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 6	POT-10K 20% 3/4W LIN 1/8 SFT CERMET	1203-0080	CTS BERNE	X6P1313 SERIES VA305
R 7	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		
R 8	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 9	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 10	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 11	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 12	RES-110K 1% 100PPM FILM	1075-0162	CAT LIST	55-100
R 13	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 14	RES-110K 1% 100PPM FILM	1075-0162	CAT LIST	55-100
R 16	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	SWITCH			
S 1	SW-LVR 2 POLE 3 POSN	1851-0016	OAK MFG.	C/E DWG
S 3	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 4	SW-RTRY 3 POLE 7 POSN PNL MT	1851-0133	OAK INDUSTRIES	C/E DWG
S 5	SW-DBL POLE 3 POS ON-ON-ON TOGGLE	1850-0024	OAK IND.	46A-1A1-1C0
S 7	SW-RTRY 5 POLE 8 POSN PNL MT	1851-0134	OAK INDUSTRIES	C/E DWG
S 6	SW-DBL POLE 3 POS ON-ON-ON TOGGLE	1850-0024	OAK IND.	46A-1A1-1C0
S 10	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 11	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		



10000 Front Panel Interconnect Diagram, (8000-0725), CE-46A Sheet 1 of 2



10000 Front Panel Interconnect Diagram, (8000-0725), CE-46A
Sheet 2 of 2


5
6
C1
J1
1
K1
Q1
CR1
2
1
CR2
R1
CR3
R3
4
3
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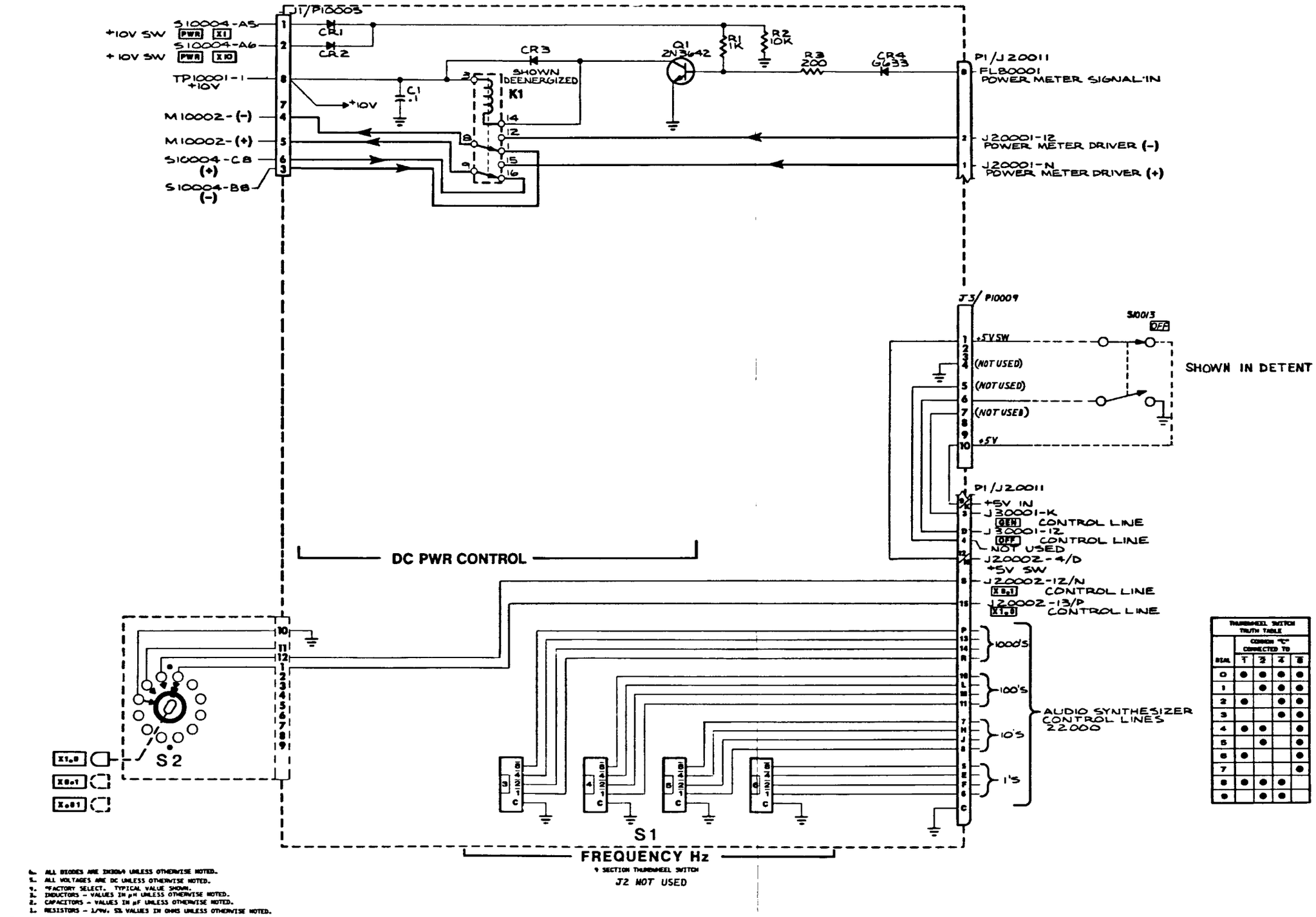
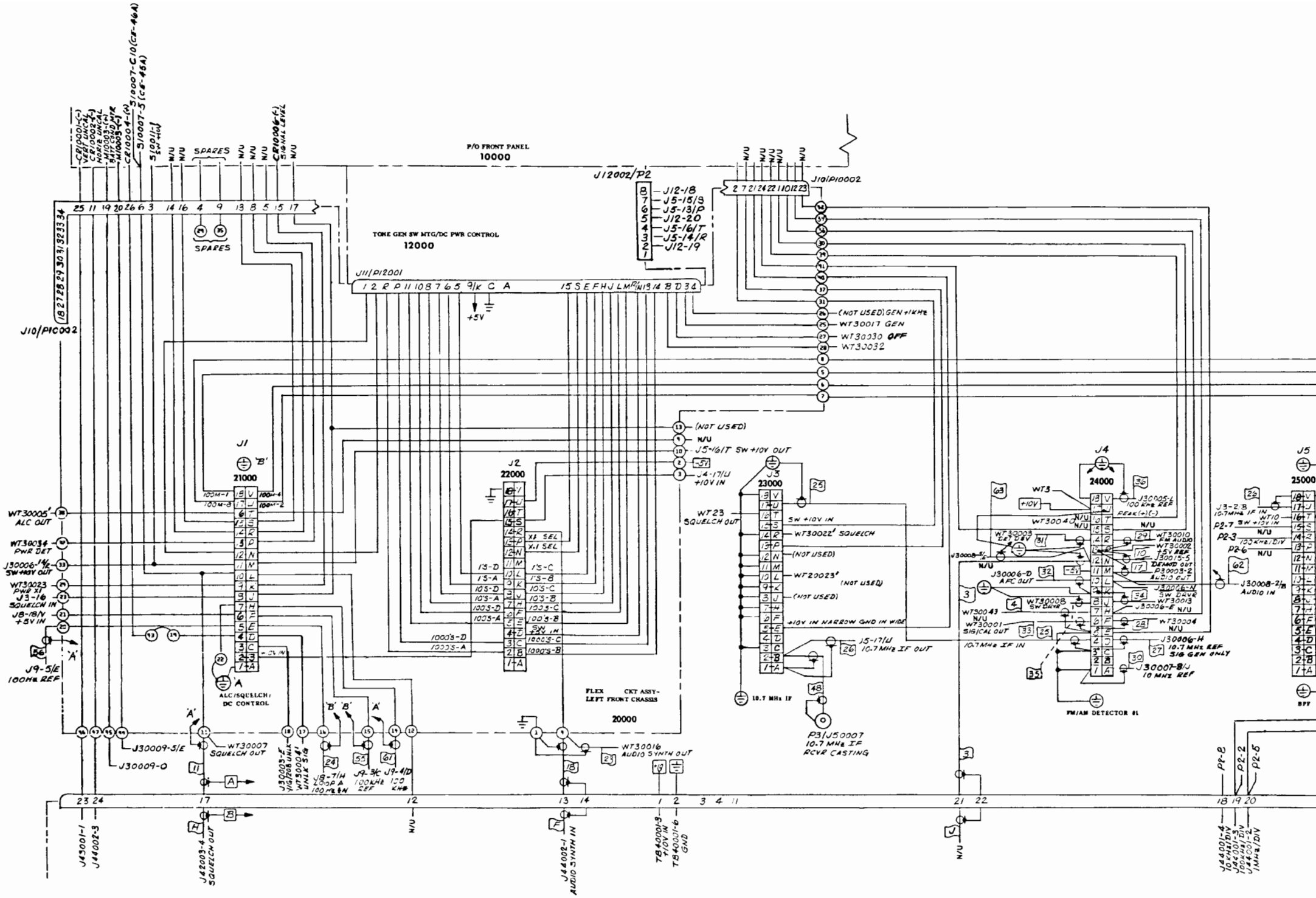
9
9
S1
S2
P1

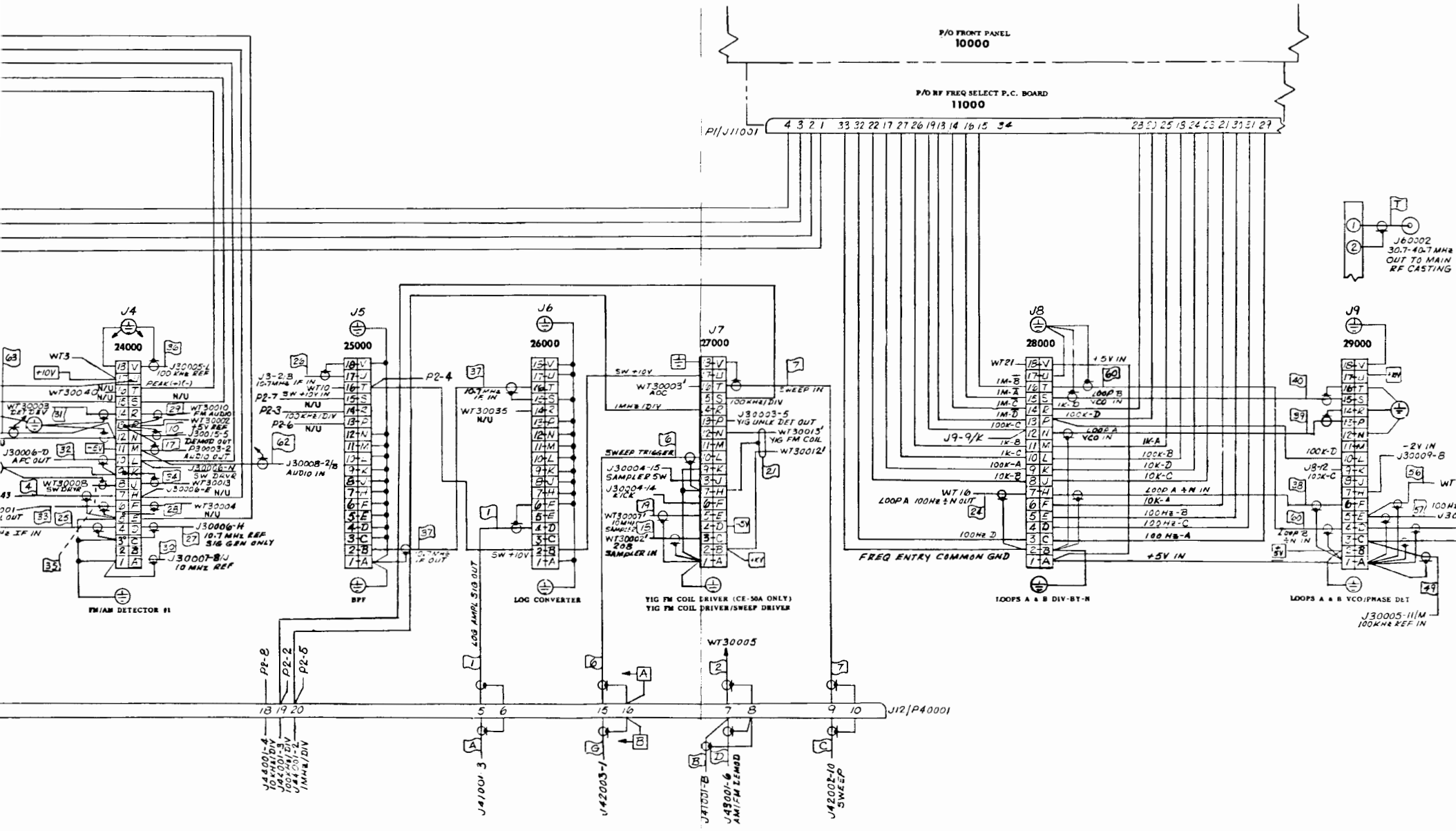


NOTE:
4. ALL DIODES ARE IN6004 UNLESS OTHERWISE NOTED.
3. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
2. *FACTORY SELECT. TYPICAL VALUE SHOWN.
1. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W. 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

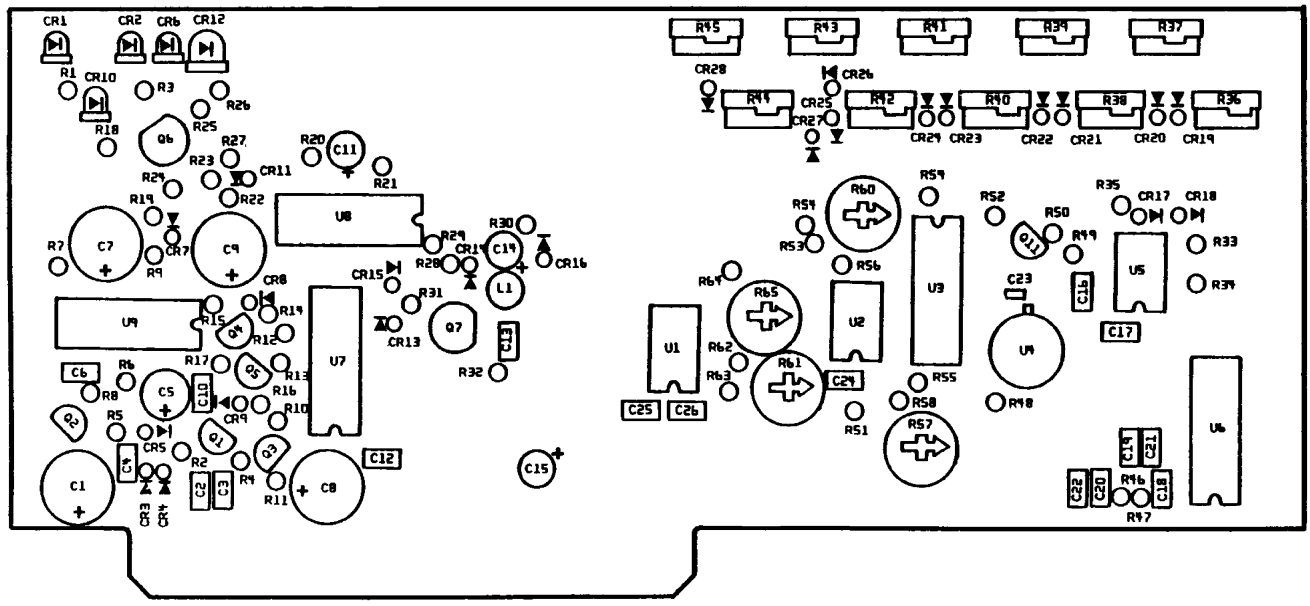
12000 Tone Gen Sw Mtg/DC Pwr Cont. (7001-0623)
CE-45A Only

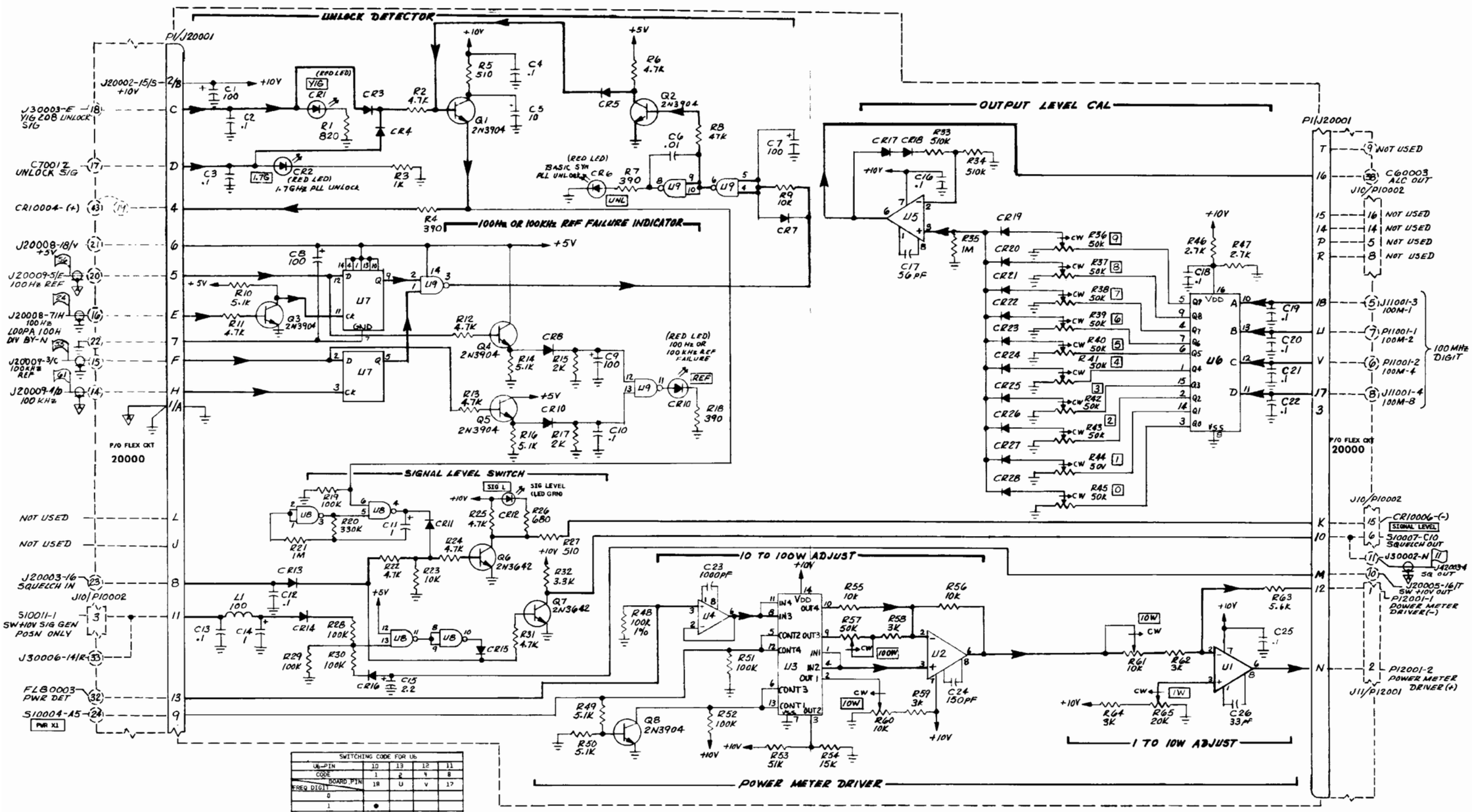
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
12000	PCB ASSY - TONE GEN SW MTG/DC PWR	7001-0623	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-1075	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
	CONNECTOR			
J 1	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 3	CONN-10 PIN .1SP STR LKG PCB MT JK	2535-0150	METHODE	100-8-110-01
	RELAY			
K 1	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	SWITCH			
S 1	SW ASSY-4 SELECTOR THUMBWHEEL	7011-0028		
S 2	SW-LEVER 1P 3 POS PCB MOUNT	1851-0094	OAK	C/E DWG


P/O FRONT PANEL
10000
TONE GEN SW MTG/DC PWR CONTROL
12000
FLEX CKT ASSY-
LEFT FRONT CHASSIS
20000
ALC/SQUELCH/
DC CONTROL
FM/AM DETECTOR #1
J12002/P2
J10/P10002
J11/P12001
J1
J2
J3
J4
J5
WT30005' ALC OUT
WT30034 PWR DET
WT30023 PWR SW
WT30007 SQUELCH OUT
WT30016 AUDIO SYNTH OUT
WT23 SQUELCH OUT
P3/J50007 10.7 MHz IF RCVR CASTING
J5-17/U 10.7MHz IF OUT
J4-17/U +10V IN
J5-16/T SW +10V OUT
WT30022' SQUELCH
WT20023' (NOT USED)
+10V IN NARROW GND IN WIDE
WT30017 GEN
WT30030 OFF
WT30032
J30006-D AFC OUT
WT30001 SIG/CAL OUT
WT30043
WT30008 SW DRVR
WT30003 CAL DRV
WT30040
WT30010 EXT AUDIO
WT30012 7.5V REF
WT30015-5 DEMOD OUT
P30003-2 AUDIO OUT
WT30013 SW DRVR
WT30004
J30006-H 10.7 MHz REF SIG GEN ONLY
J30007-B/U 10 MHz REF
J3-2,B 10.7MHz IF IN
P2-7 SW +10V IN
P2-3
P2-6
J30008-2/B AUDIO IN
P2-8
P2-2
P2-5
J43001-1
J44002-3
J42003-4 SQUELCH OUT
J44002-1 AUDIO SYNTH IN
TB40001-3 +10V IN
TB40001-6 GND
J44001-4 10 KHz/DIV
J44001-3 100 KHz/DIV
J44001-2 1 MHz/DIV



20000 Left Main Chassis Interconnect Diagram, (8000-0731), CE-45A/46A
Sheet 2 of 2


CR1
CR2
CR6
CR12
R1
CR10
R3
R26
R25
R18
Q6
R27
R23
R20
C11
R21
CR11
R22
R24
R19
R7
C7
C9
CR7
R9
U8
R29
R28
CR14
R30
C14
CR16
L1
CR8
CR15
R31
R15
R19
U9
Q4
R12
CR13
Q7
C13
R32
R17
Q5
R13
R16
R10
U7
C6
R6
R8
C5
C10
CR9
Q2
R5
CR5
Q1
Q3
C4
R2
R4
R11
C12
C1
C2
C3
C8
C15
CR3
CR4
R45
R43
R41
R39
R37
CR28
CR26
R44
CR25
CR27
R42
R40
R38
R36
CR29
CR24
CR23
CR22
CR21
CR20
CR19
R59
R60
R54
R53
R56
R52
R50
Q11
R49
R35
CR17
CR18
R33
R34
U5
C16
C17
R67
R65
U2
U3
C23
U4
R62
R63
R61
C24
R55
R58
R57
R51
R48
C25
C26
U1
U6
C19
C21
C22
C20
C18
R46
R47



SWITCHING CODE FOR U6				
U6-PIN	10	13	12	11
CODE	1	2	4	8
BOARD PIN / FREQ DIGIT	18	U	V	17
0				
1	•			
2		•		
3	•	•		
4			•	
5	•		•	
6		•	•	
7	•	•	•	
8				•
9	•			•

U NO.	PART NO.	VCC	GND
9	SN74LS00	14	7
7	SN74LS74		
3	MC14066	14	7
4	CA3130	7	4
1,2,5	LM308		
6	MC14028B	16	8
8	MC14011B	14	7

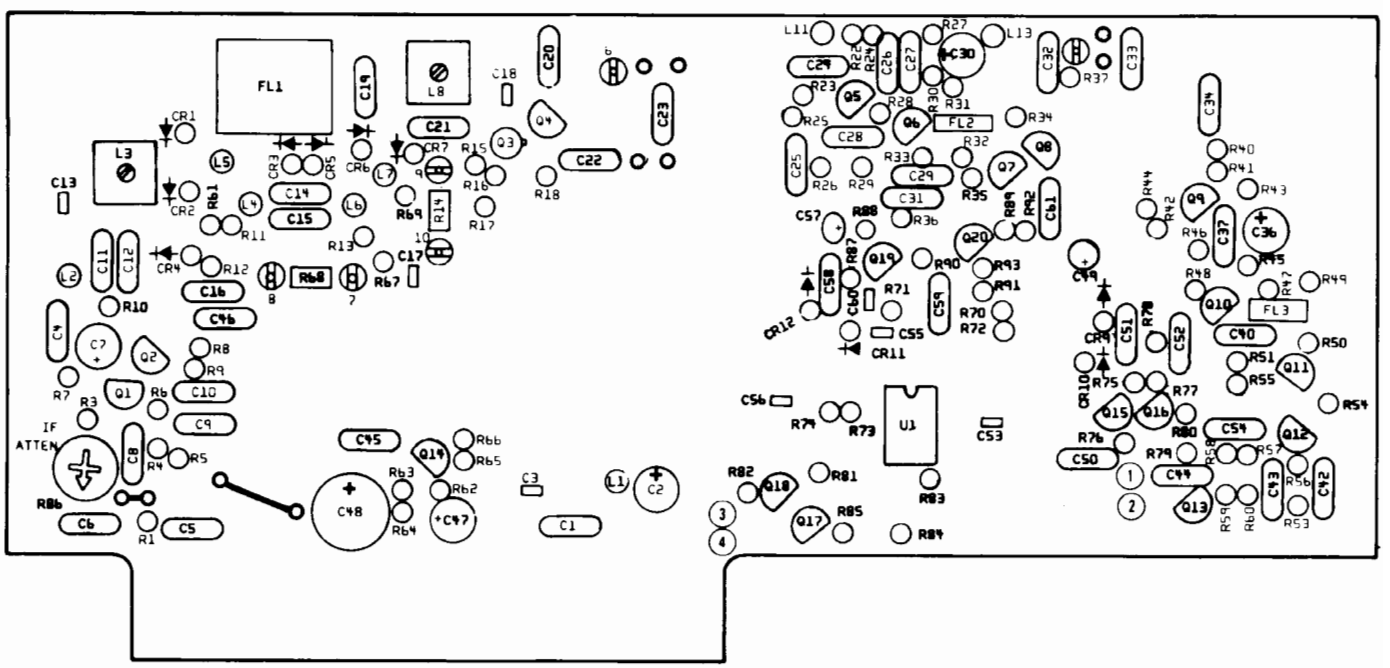
NOTE:
1. RESISTORS - 1/4w. 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.

21000 Squelch/DC Control, (7001-0617)
CE-45A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
21000	PCB ASSY - ALC/SQUELCH/DC CONTROL	7001-0617	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-1077	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 8	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 15	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 24	CAP-150PF 10% 100V NPO MINTR CER	1005-0108	ERIE	8121-100-C0G0-151K
C 25	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 26	CAP-33PF 5% 500V THIN DIP MICA	1004-0006	CORNELL DUBILIER	CD6ED330J
	DIODE			
CR 1	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 2	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-LT EMIT GRN 2V M AMG W/MTG GROM	1281-0096	CHICAGO MINIATURE	CM4-384B
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 21	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 23	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 24	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 25	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 26	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 6	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 7	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 8	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 2	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 3	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 4	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 5	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 6	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 7	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 8	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 9	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 10	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 11	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 12	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 13	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 14	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 15	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 16	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 17	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 18	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 19	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 20	RES-330K 5% 1/4 CC	1066-3345	ALLEN BRADLEY	CB3345
R 21	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 22	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 23	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 24	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 25	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 26	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 27	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 28	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 29	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 30	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 31	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 32	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 33	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 34	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 35	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 36	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 37	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 38	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 39	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 40	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 41	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 42	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 43	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 44	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 45	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 46	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 47	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 48	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 49	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 50	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 51	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 52	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 53	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 54	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 55	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 58	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 59	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 60	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 61	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 62	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 63	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 64	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 65	POT-20K 20% 1/2W 1T CERMET TRMR	1215-0044	BECKMAN	91AR20K
	INTEGRATED CIRCUIT			
U 1	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 2	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 3	IC-4066B 14 PIN DIP QUAD BILATERAL SW	2025-0193	MOTOROLA	MC14066BCP
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 5	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 6	IC-4028B 16 PIN DIP BCD-TO-DEC DCDR	2025-0195	MOTOROLA	MC14028BP
U 7	IC-74LS74 DUAL D POS &DGETRIGFFW/P&C	2025-0124	TEXAS INSTRUMENTS	SN74LS74N
U 8	IC-4011 14PIN DIP QUAD 2-INP NAND GATE	2025-0203	MOTOROLA	MC14011BCP
U 9	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N


FL1
L8
L3
C13
CR1
CR2
L5
R61
L4
C14
C15
R11
CR3
CR5
CR6
L7
L6
R69
R14
R13
C17
R12
CR4
L2
C11
C12
C16
C46
R10
C7
Q2
R8
R9
Q1
R6
C10
C9
R7
R3
IF ATTEN
C8
R4
R5
R86
C6
R1
C5
C45
C48
R63
R64
Q14
R66
R65
R62
+C47
C3
L1
C2
C1
C18
C20
C21
R15
Q3
R16
R17
R18
Q4
C23
C22
L11
C29
R22
R24
C26
C27
C30
R27
L13
C32
R37
C33
C34
R23
Q5
R28
R30
R31
Q6
FL2
R34
R25
C28
R32
R33
C29
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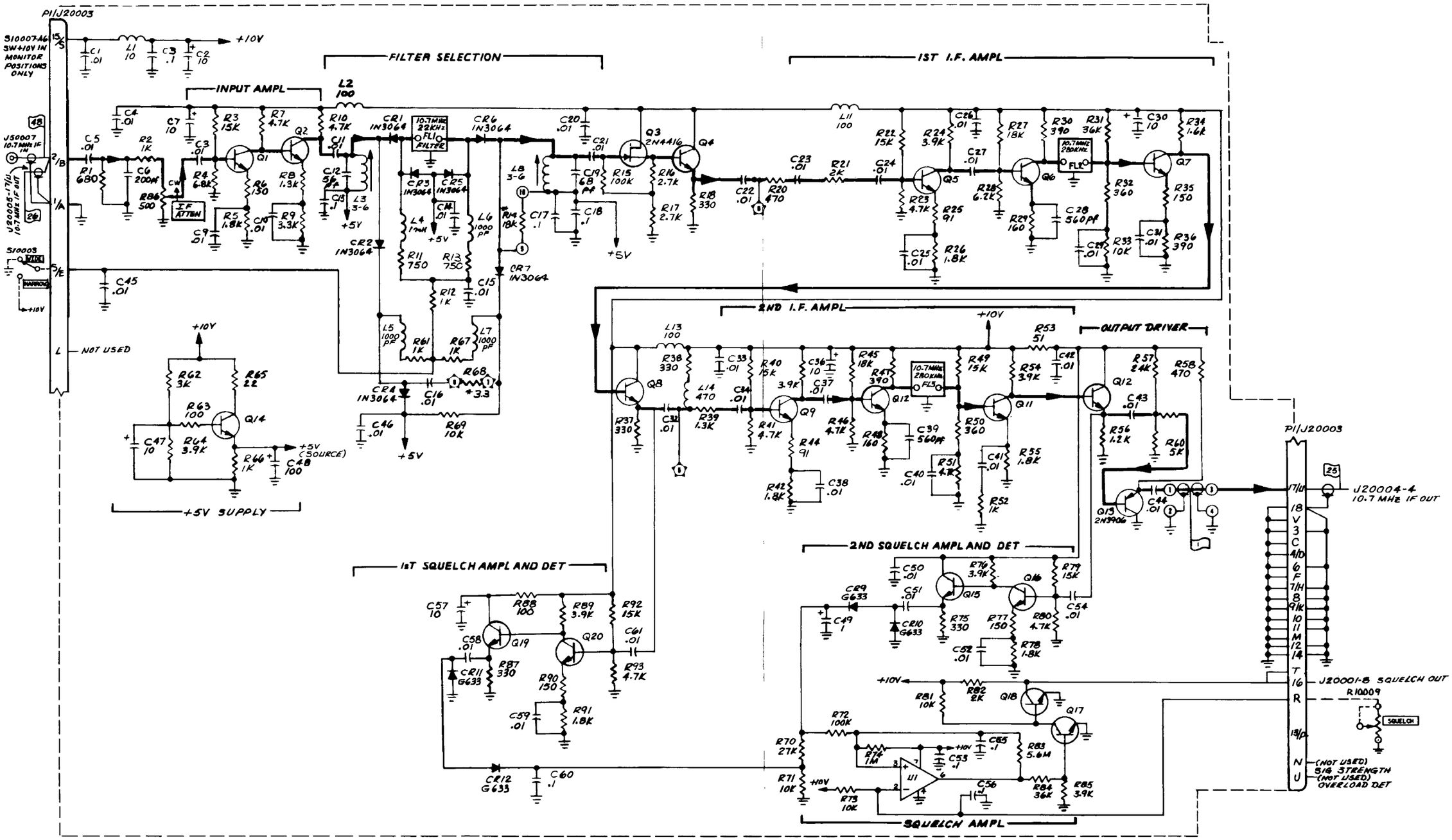
R26
R29
C31
R35
R36
Q7
Q8
R89
R42
C61
R40
R41
R44
R42
Q9
R43
C37
C36
R46
R45
R48
R47
R49
Q10
FL3
C57
R88
R87
Q19
R90
Q20
R93
R91
C58
C60
R71
C59
R70
R72
CR12
C55
CR11
C49
CR9
C51
R78
C52
C90
R50
R51
Q11
R55
R54
CR10
R75
Q15
Q16
R77
R80
C54
Q12
R58
R57
R76
C50
R79
C44
Q13
R59
R60
C43
R56
R53
C42
C56
R74
R73
U1
C53
R82
Q18
R81
R83
Q17
R85
R84
1
2
3
4



6. ALL TRANSISTORS ARE 2N3904 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W. 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

OUT OF SEQUENCE LOCATION TABLE	
REF NO.	APPROX LOCATION
R86	NEAR Q1

NOT USED: C35
R19
CR8
Z9,10,12

23000 10.7 MHz IF, (7001-0616)
CE-45A

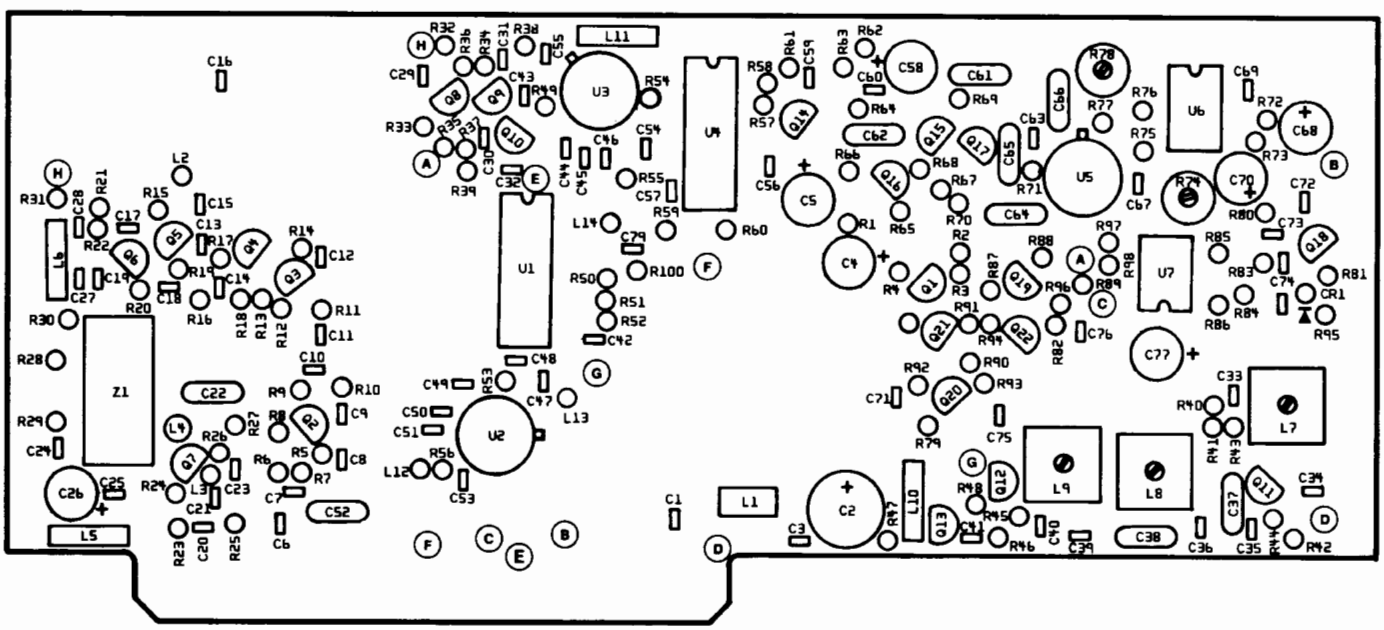
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
23000	PCB ASSY - 10.7 MHz IF	7001-0616	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-1060	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 20	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 21	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 22	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 23	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 24	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-560PF 5% 300V DIP MICA	1002-0037	SANGAMO	D155F561
C 29	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 36	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 37	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 40	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 42	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 43	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 44	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 45	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 46	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 47	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 48	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 49	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 50	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 51	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 52	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 53	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 54	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 55	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 56	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 57	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3

CE-50 FAMILY

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 3	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 4	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 5	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 6	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 7	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 8	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 9	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 10	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 11	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 14	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 15	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 16	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 17	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 18	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 22	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 23	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 24	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 25	RES-91 OHM 5% 1/4W CC	1066-9105	ALLEN BRADLEY	CB 9105
R 26	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 27	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 28	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 29	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 30	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 31	RES-36K 5% 1/4W CC	1066-3635	ALLEN BRADLEY	CB3635
R 32	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 33	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 34	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 35	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 36	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 37	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 40	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 43	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 44	RES-91 OHM 5% 1/4W CC	1066-9105	ALLEN BRADLEY	CB 9105
R 45	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 46	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 47	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 48	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 49	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 50	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 51	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 53	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 54	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 55	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 56	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 57	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 58	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 59	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 60	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 61	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 62	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 59	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 60	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 61	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 10	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 11	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 12	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
	FILTER			
FL 1	FLTR-XTAL 10.7MHZ 3DB BW 22KHZ	1040-0041	PIEZO	C/E DWG
FL 2	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP	10.70MHZ RED ONLY
FL 3	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP	10.70MHZ RED ONLY
	INDUCTOR			
L 1	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	COIL 3.9 MHZ	1596-0104		
L 4	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 5	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 6	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 7	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 8	COIL 3.9 MHZ	1596-0104		
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N4416 SI TO 72 J-FET N-CHAN	1272-0048	INTERSIL	2N4416
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 6	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 7	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 8	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 9	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 12	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 13	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 14	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 15	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 16	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 17	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 18	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 19	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 20	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 63	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 64	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 65	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 66	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 67	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 68	RES-3.3 OHM 5% 1/4W CC	1066-0006	ALLEN BRADLEY	CB33G5
R 69	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 70	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 71	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 72	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 73	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 74	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 75	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 76	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 77	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 78	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 79	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 80	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 81	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 82	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 83	RES-5.6MEG 5% 1/4W CC	1066-5655	ALLEN BRADLEY	CB 5655
R 84	RES-36K 5% 1/4W CC	1066-3635	ALLEN BRADLEY	CB3635
R 85	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 86	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500
R 87	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 88	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 89	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 90	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 91	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 92	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 93	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
	INTEGRATED CIRCUIT			
U 1	IC-CA 3140E 8 PIN DIP OP AMPL	2025-0237		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L2
R32
R36
R34
C31
R38
L11
C55
C29
C43
U3
R54
R49
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R37
Q10
C46
C54
A
C30
C44
C45
R55
C57
R39
E
U1
L14
C79
R59
R60
R50
R100
F
R51
R52
C42
C48
C49
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G
C47
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C51
U2
R56
L12
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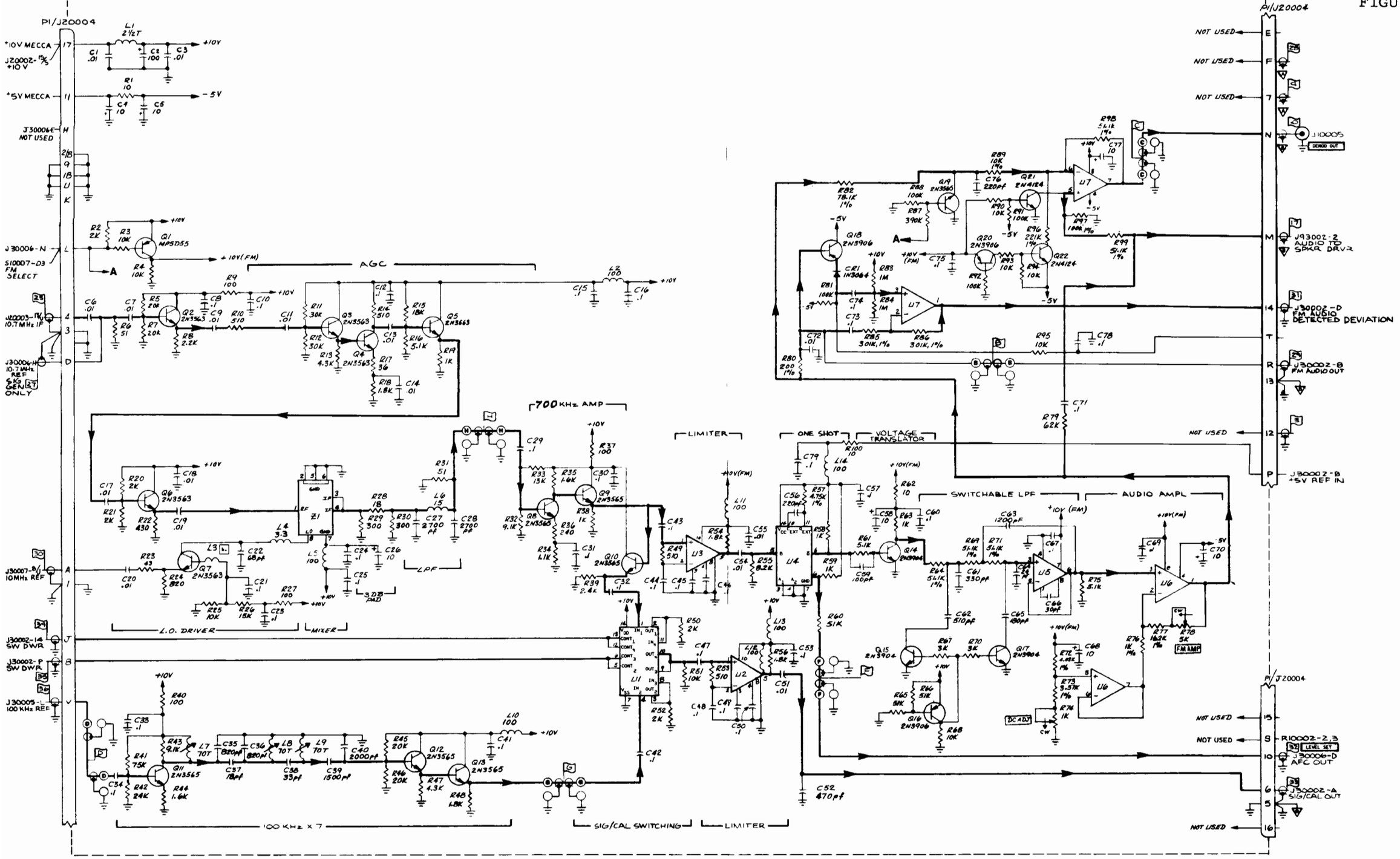
C70
R74
C67
R75
R76
U6
R78
R77
C66
C63
C65
Q17
Q15
R68
R67
R71
U5
C64
R70
R65
Q16
R66
C62
R64
C60
R62
R63
C58
C61
R69
R61
C59
Q14
R58
R57
C56
C5
R1
C4
R4
Q1
R3
R2
Q19
R87
C69
R72
C68
R73
B
R31
H
C28
R21
C17
R15
C15
C13
L6
R22
Q6
Q5
R17
Q4
R14
C12
R19
C14
Q3
C19
C27
C18
R20
R16
R18
R13
R12
R11
C11
R30
R28
Z1
C10
C22
R9
R10
C9
R29
C24
L4
R26
R27
R8
Q2
R5
C8
Q7
R6
R7
C26
C25
R24
L3
C23
C7
C52
C21
L5
R23
C20
R25
C6



U NO.	PART NO.	+V	-V
1	MC1596G	16	7
2,3	CA3012	10	8
4	SN74121	14	7
5	CA3130	9	4
6	MC4558	8	4
7	TL082	8	4

OUT OF SEQUENCE LOCATION TABLE	
REF NO.	APPROX LOCATION
C79	NEAR U4
R100	NEAR Q14

FERRITE BEAD

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

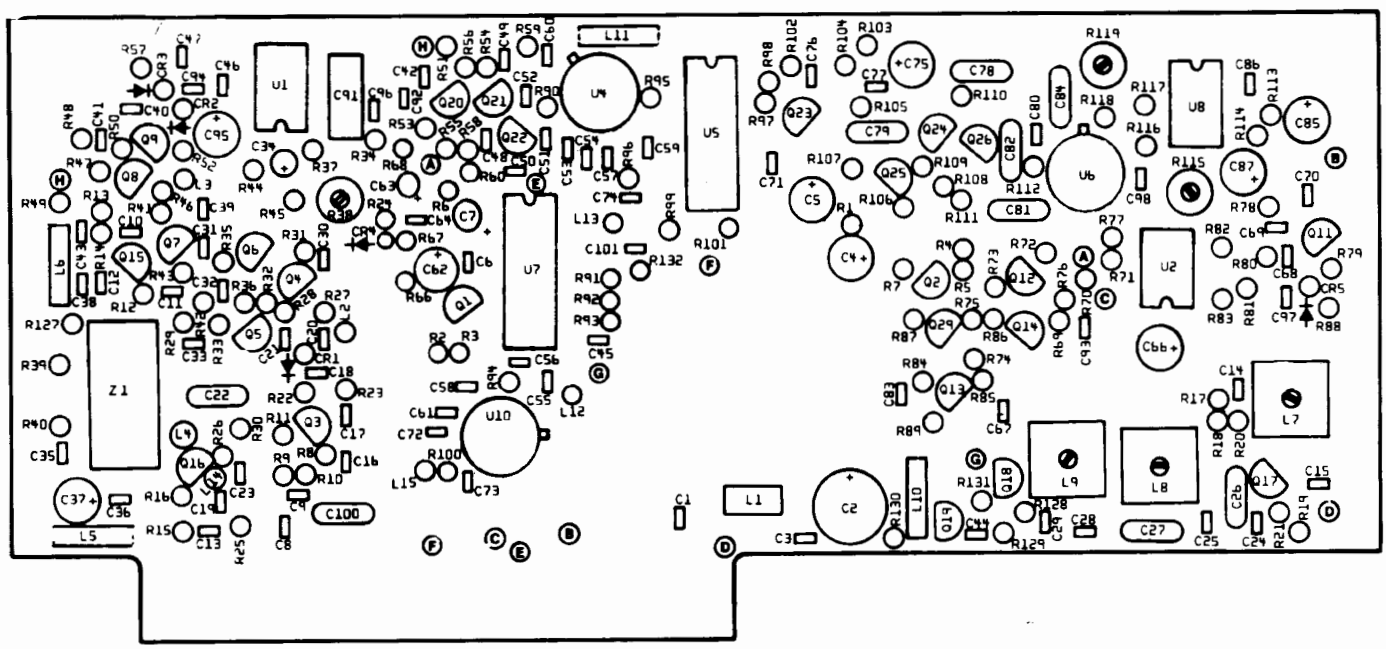
24000 FM Detector No. 1, (7001-0621)
CE-45A

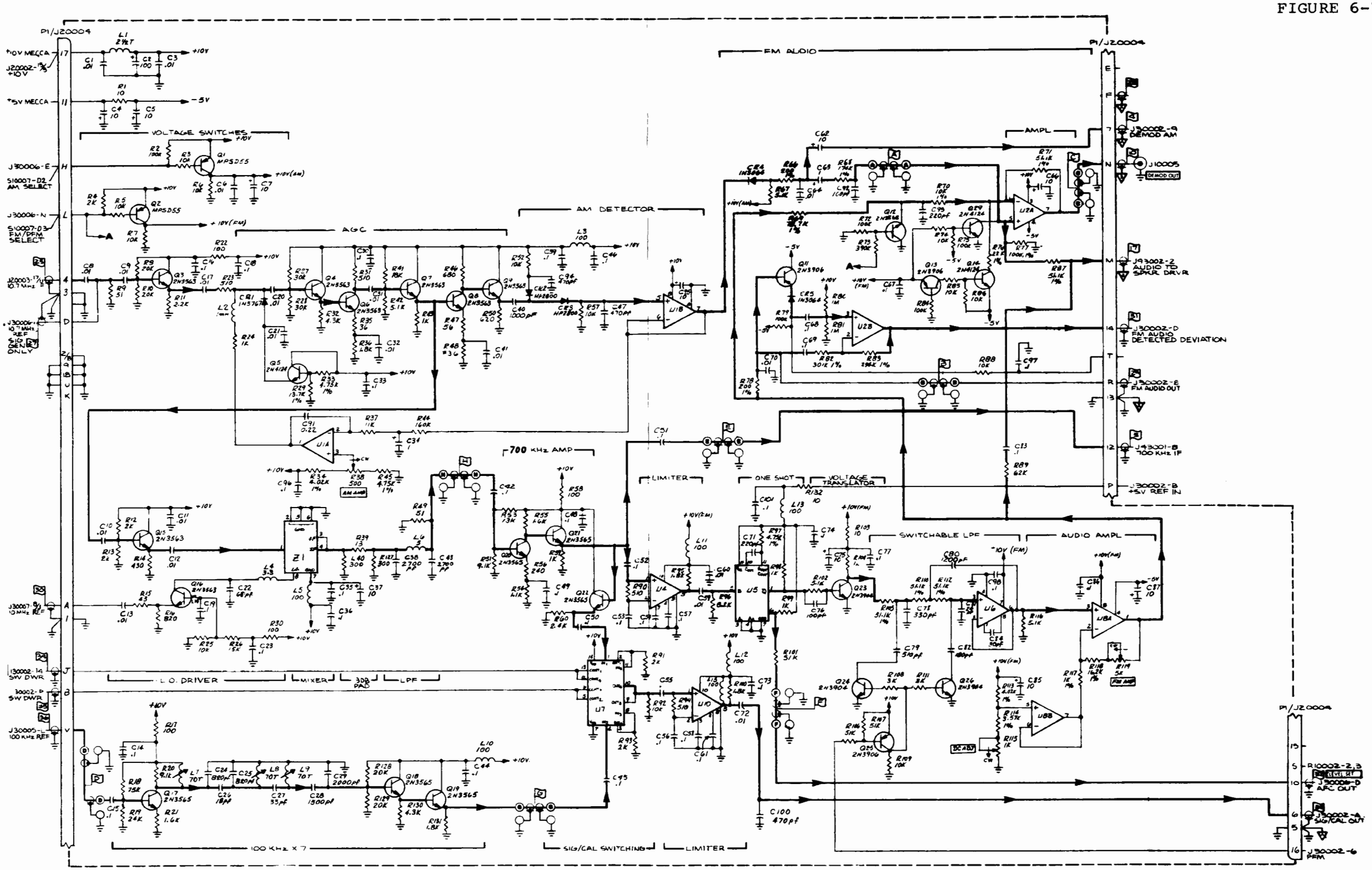
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
24000	PCB ASSY - FM/AM DETECTOR NO. 1	7001-0621	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-1031	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-82PF 5% 500V DIP MICA	1002-0020	ELMENCO	DM15-E-820J
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 26	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 27	CAP-[illegible]00PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 28	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 29	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 32	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 35	CAP-820 PF 5% 100V NPO MINTR CER	1005-0126	CENTRE	200-100-NPO-821J
C 36	CAP-820 PF 5% 100V NPO MINTR CER	1005-0126	CENTRE	200-100-NPO-821J
C 37	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 38	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 39	CAP-1500PF 5% 100V NPO MINTR CER	1005-0128	CENTRE	200-100-NPO-152J
C 40	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
C 41	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 44	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 45	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 46	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 47	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 48	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 49	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 50	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 51	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 52	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 53	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 55	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 56	CAP-220PF 5% 100V NPO MINTR CER	1005-0134		
C 57	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 58	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 59	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 60	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 61	CAP-680PF 5% 300V DIP MICA	1002-0022	ELMENCO	DM15-F-681J
C 63	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 64	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 66	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 67	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 68	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 69	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 70	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 71	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 72	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 73	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 76	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRRO-221K
C 77	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 79	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIF	8121-050-651-104M
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 4	CH-3.3UH 10% RF MLD AXL .16DX.38L	1585-0037	DELEVAN	1537-24
L 5	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-15UH 10% RF MLD AXL .10DX.25L	1585-0051	DELEVAN	1025-48
L 7	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 8	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 9	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 10	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
	TRANSISTOR			
Q 1	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 2	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 3	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 4	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 5	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 12	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 13	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 14	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 3	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 6	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 7	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 8	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 9	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 10	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 11	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 12	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 13	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 14	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 15	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 16	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 17	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 18	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 21	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 22	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 23	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 24	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 27	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 28	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 29	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 30	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 31	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 32	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 33	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 34	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 35	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 36	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 37	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 38	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 39	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 40	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 41	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 42	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 43	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 44	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 45	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 46	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 47	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 48	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 49	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 50	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 51	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 52	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 53	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 54	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 55	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 56	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 57	RES-4.53K 1% 100PPM FILM	1075-0053	CAT LIST	55-100
R 58	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 59	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 60	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 61	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 62	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 63	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 64	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 69	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 71	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 72	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 73	RES-3.57K 1% 100PPM FILM	1075-0056	CAT.LIST	55-100
R 74	POT-1K 10% 1/2W 1T CERMET TRMR	1215-0052	ALLEN BRADLEY	A2A102
R 75	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 76	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 77	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100
R 78	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 79	RES-62K 5% 1/4W CC	1066-6235	ALLEN BRADLEY	CB 6235
R 80	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 82	RES-78.7K 1% 100PPM FILM	1075-0060	CAT.LIST	55-100
R 83	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 84	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 85	RES-301K 1% 150PPM FILM	1074-1037	CAT.LIST	55-100
R 86	RES-301K 1% 150PPM FILM	1074-1037	CAT.LIST	55-100
R 89	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 96	RES-221K 1% 100PPM FILM	1075-0040	CAT.LIST	55-100
R 98	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 99	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 100	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-4066B 14 PIN DIP QUAD BILATERAL SW	2025-0193	MOTOROLA	MC14066BCP
U 2	IC-CA3012	2025-0013	RCA	CA3012
U 3	IC-CA3012	2025-0013	RCA	CA3012
U 4	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N
U 5	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-4558 8 PIN DIP DUAL OP AMPL	2025-0213		
U 7	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1





U NO.	PART NO.	+V	-V
1,2	TL082	8	4
3,10	CA3012	10	4
5	SN74LS21	14	7
6	CA3730	7	4
7	MC14066	14	7
8	MC4558	8	-

NOT USED: C45,88,89,90,99
R61;62;63;89;95;125;131;132;133;139;135;136
U3,9

NOTE:
1. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
2. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. CAPACITORS - VALUES IN pF UNLESS OTHERWISE NOTED.
5. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

24000 FM Detector No. 1, (7001-0651)
CE-46A

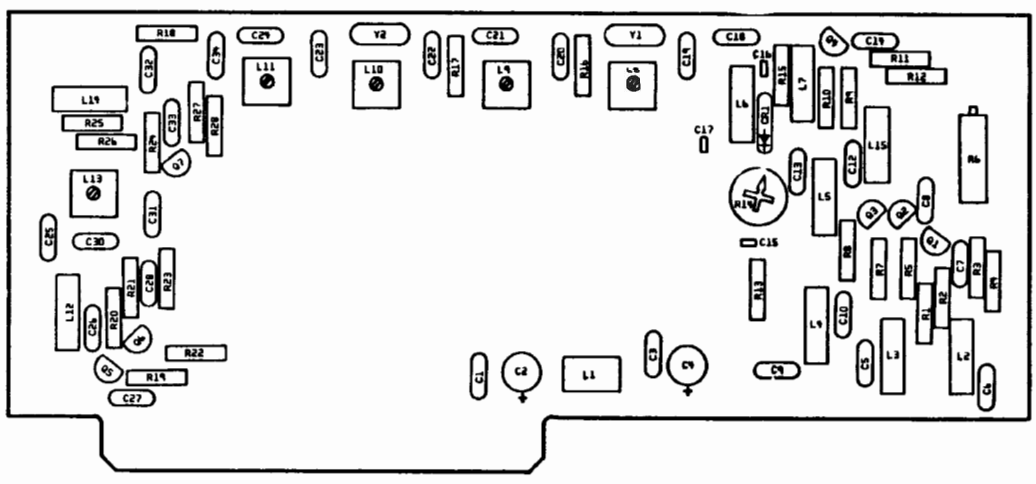
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
24000	PCB ASSY - FM/AM DETECTOR NO. 1	7001-0651	CUSHMAN	CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-1031	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-82PF 5% 500V DIP MICA	1002-0020	ELMENCO	DM15-E-820J
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-820 PF 5% 100V NPO MINTR CER	1005-0126	CENTRE	200-100-NPO-821J
C 25	CAP-820 PF 5% 100V NPO MINTR CER	1005-0126	CENTRE	200-100-NPO-821J
C 26	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 27	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 28	CAP-1500PF 5% 100V NPO MINTR CER	1005-0128	CENTRE	200-100-NPO-152J
C 29	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 32	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 33	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 34	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 35	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 36	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 37	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 38	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 39	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 40	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 41	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 44	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 45	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 46	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 47	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 48	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 49	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 50	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 51	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 52	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 53	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 55	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 56	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 57	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 58	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 59	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 60	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 61	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 62	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 63	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 64	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 66	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 67	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 69	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 70	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 71	CAP-220PF 5% 100V NPO MINTR CER	1005-0134		
C 72	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 73	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 74	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 75	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 76	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 77	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 78	CAP-330PF 5% 500V DIP MICA	1002-0032	ELMENCO	DM15-F-331J
C 79	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 80	CAP-1200PF 5% 100V NPO MINTR CER	1005-0127	CENTRE	200-100-NPO-122J
C 81	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 82	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 83	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 84	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 85	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 86	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 87	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 91	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 92	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 93	CAP-220PF 10% 100V W5R MINTR CER	1005-0075	ERIE	8101-100-XRR0-221K
C 94	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 95	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 96	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 98	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 100	CAP-470PF 5% 500V DIP MICA	1002-0035	SANGAMO	D155F471
C 101	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N5767 SI PIN A1AH	1281-0075	NIPPON ELECT	1SV34
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 3	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-1000UH 10% RF MLD AXL.10DX.25L	1585-0085	DELEVAN	1025-92
L 3	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 4	CH-3.3UH 10% RF MLD AXL .16DX.38L	1585-0037	DELEVAN	1537-24
L 5	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-15UH 10% RF MLD AXL .10DX.25L	1585-0051	DELEVAN	1025-48
L 7	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 8	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO
L 9	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 10	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 15	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
	TRANSISTOR			
Q 1	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 2	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 3	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 4	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 8	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 9	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 12	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 13	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 14	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 17	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 18	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 19	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 20	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 21	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 22	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 23	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 24	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 25	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 26	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 29	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 3	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 4	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 9	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 10	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 11	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 13	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 14	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 15	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 16	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 17	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 18	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 19	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 20	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 21	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 22	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 23	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 24	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 27	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 28	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 29	RES-13.7K 1% 100PPM FILM	1075-0154	CAT. LIST	55-100
R 30	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 31	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 32	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 33	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 34	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 35	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 36	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 37	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 38	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 39	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 40	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 41	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 42	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 43	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 44	RES-160K 5% 1/4W CC	1066-1645	ALLEN BRADLEY	CB1645
R 45	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 46	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 47	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 48	RES-36 OHM 5% 1/4W CC	1066-3605	ALLEN BRADLEY	CB3605
R 49	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 50	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 51	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 52	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 53	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 54	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 55	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 56	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 57	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 58	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 59	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 60	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 66	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 67	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 68	RES-174K 1% 100 PPM FILM	1075-0201	SOURCE APPROVAL LIST	CAT. 55-100
R 69	RES-78.7K 1% 100PPM FILM	1075-0060	CAT.LIST	55-100
R 70	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 71	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 72	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 73	RES-390K 5% 1/4W CC	1066-3945	ALLEN BRADLEY	CB 3945
R 74	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 75	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 76	RES-221K 1% 100PPM FILM	1075-0040	CAT.LIST	55-100
R 77	RES-100K 1% 100PPM FILM	1074-0109	CAT.LIST	55-025
R 78	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 80	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 81	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 82	RES-301K 1% 150PPM FILM	1074-1037	CAT.LIST	55-100
R 83	RES-294K 1% 100PPM FILM	1075-0028	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 84	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 85	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 86	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 87	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 89	RES-62K 5% 1/4W CC	1066-6235	ALLEN BRADLEY	CB 6235
R 90	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 91	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 92	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 93	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 94	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 95	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 96	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 97	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 98	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 99	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 100	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 101	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 102	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 103	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 104	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 105	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 106	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 107	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 108	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 109	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 110	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 111	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 112	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 113	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
R 114	RES-3.57K 1% 100PPM FILM	1075-0056	CAT.LIST	55-100
R 115	POT-1K 10% 1/2W 1T CERMET TRMR	1215-0052	ALLEN BRADLEY	A2A102
R 116	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 117	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 118	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 119	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 127	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 128	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 129	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 130	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 131	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 132	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 2	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 4	IC-CA3012	2025-0013	RCA	CA3012
U 5	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-4066B 14 PIN DIP QUAD BILATERAL SW	2025-0193	MOTOROLA	MC14066BCP
U 8	IC-4558 8 PIN DIP DUAL OP AMPL	2025-0213		
U 10	IC-CA3012	2025-0013	RCA	CA3012
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1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C29
Y2
C21
Y1
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C19
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L19
R25
R26
L13
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R19
C27
C1
C2
L1
C3
C9
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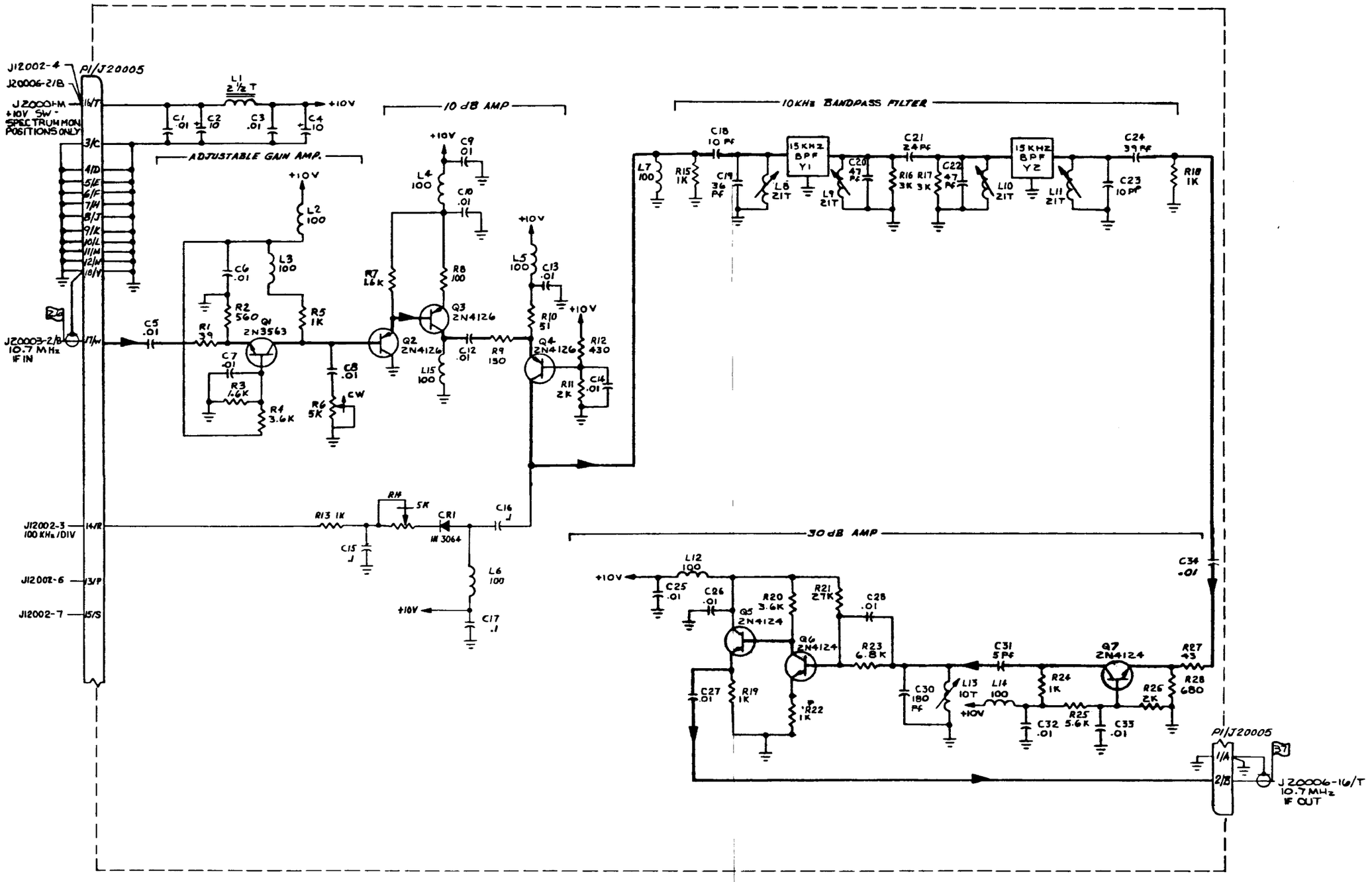
C25
C29



OUT OF SEQUENCE LOCATION TABLE	
REF NO	APPROX LOCATION
L15	NEAR Q3

C11 NOT USED
C29 NOT USED

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

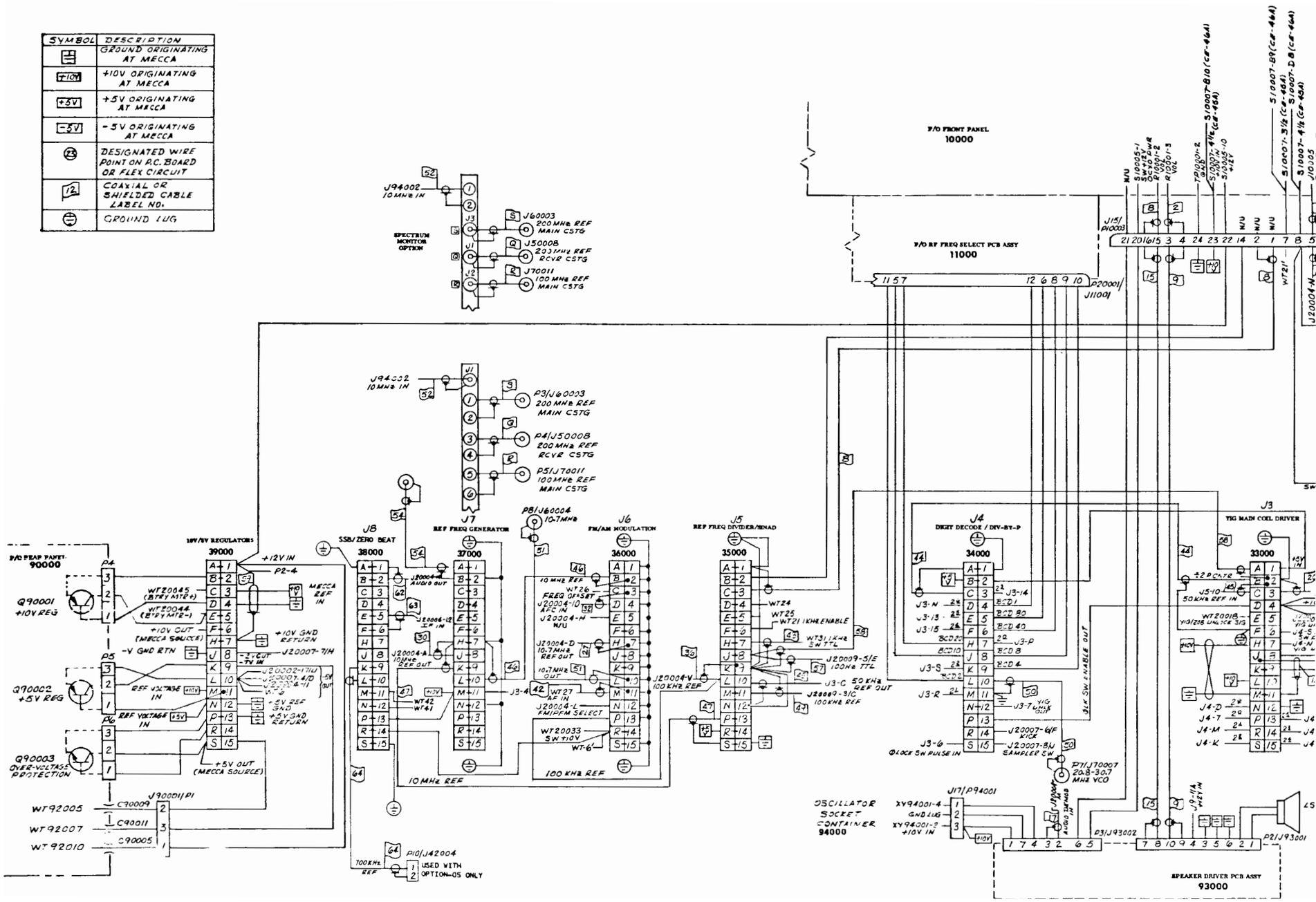
25000 Bandpass Filter, (7001-0625)
CE-46A

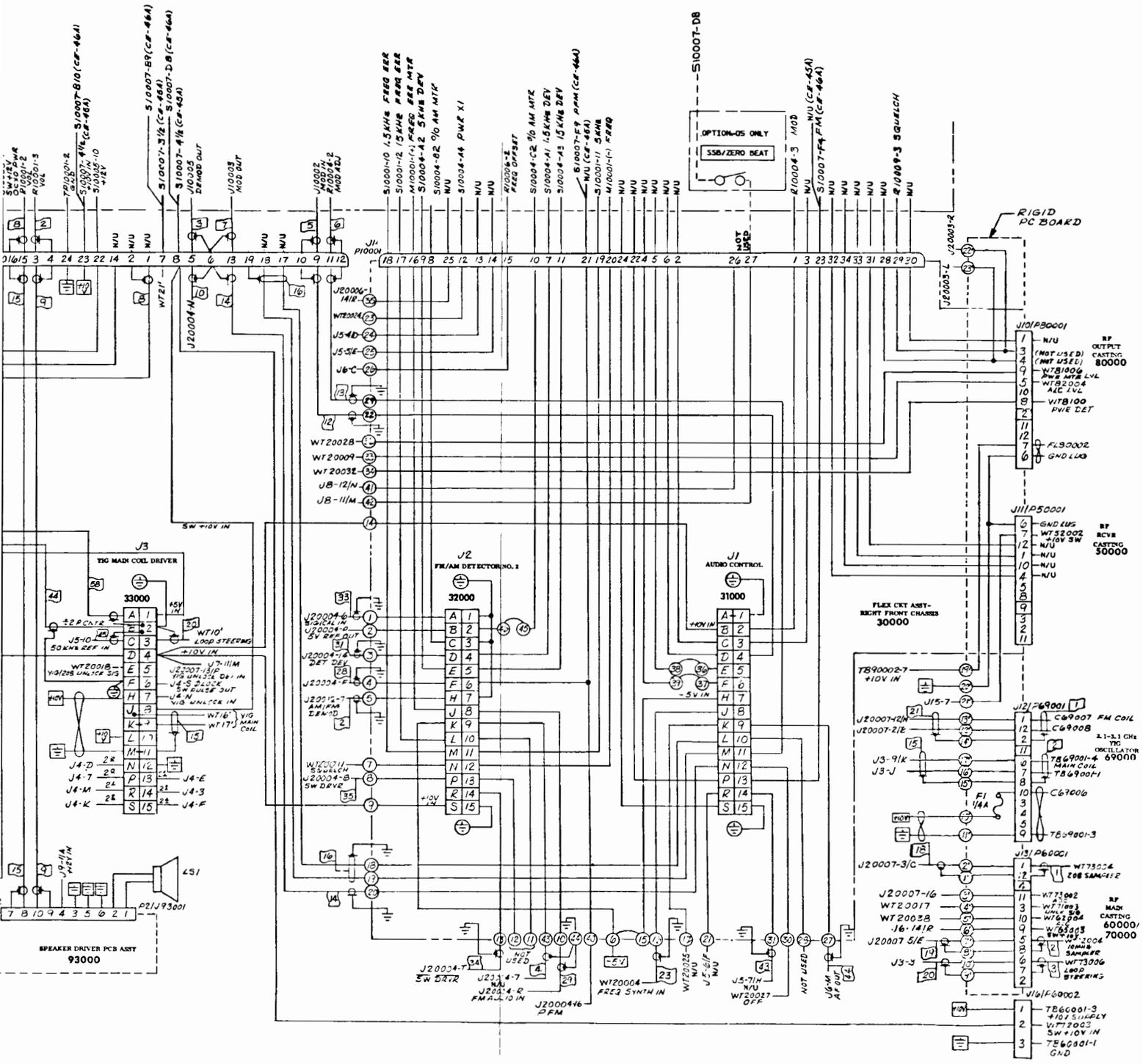
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
25000	PCB ASSY - BPF	7001-0625	CUSHMAN	CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-1091	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 7	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 19	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 20	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 21	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 22	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 23	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 24	CAP-39PF 5% 500V DIP MICA	1002-0018	ELMENCO	DM15-E-390J
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 31	CAP-5PF .5PF 500V DIP MICA	1002-0028	ELMENCO	DM15-C-050D
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 6	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 7	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 8	COIL 3.9 MHZ	1596-0104		
L 9	COIL 3.9 MHZ	1596-0104		
L 10	COIL 3.9 MHZ	1596-0104		
L 11	COIL 3.9 MHZ	1596-0104		
L 12	CH-100UH 5% RF MLD AXL 16DX.38L	1585-0017	DELEVAN	1537-76
L 13	COIL-VARIABLE IF	7050-0131		
L 14	CH-100UH 5% RF MLD AXL 16DX.38L	1585-0017	DELEVAN	1537-76
L 15	CH-100UH 5% RF MLD AXL 16DX.38L	1585-0017	DELEVAN	1537-76

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 2	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 3	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 2	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 3	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 4	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 5	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 6	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 7	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 8	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 9	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 10	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 11	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 12	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 17	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 21	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 22	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 23	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 24	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 25	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 26	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 27	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 28	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
	CRYSTAL			
Y 1	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0040	PIEZO	C/E DWG(2194F)
Y 2	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0039	CTS KNIGHTS	C/E DWG

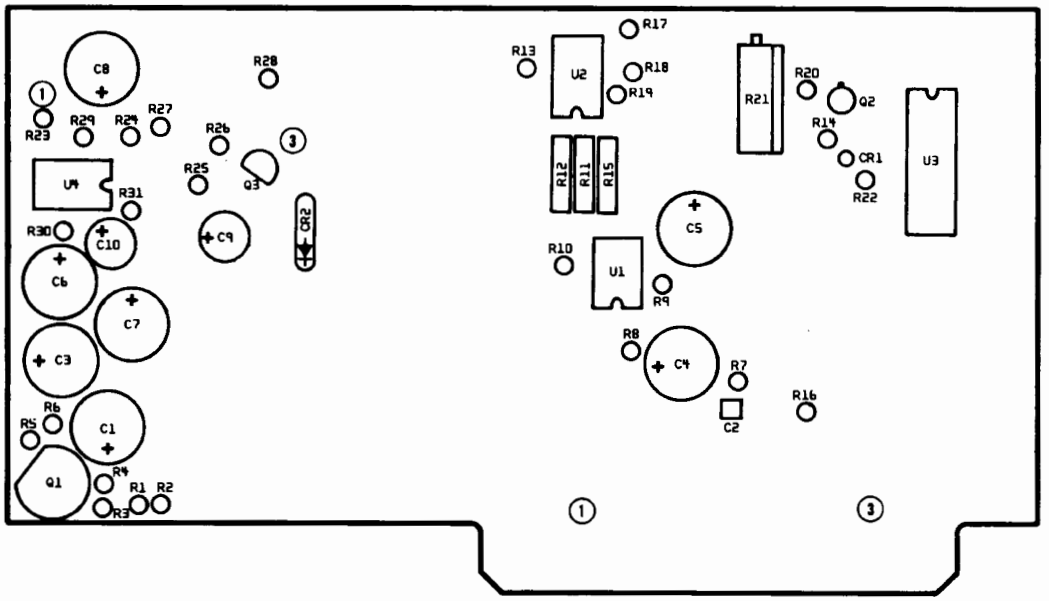
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
25000	PCB ASSY - BPF	7001-0625	CUSHMAN	CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-1091	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 7	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 19	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 20	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 21	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 22	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 23	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 24	CAP-39PF 5% 500V DIP MICA	1002-0018	ELMENCO	DM15-E-390J
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 31	CAP-5PF .5PF 500V DIP MICA	1002-0028	ELMENCO	DM15-C-050D
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 6	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 7	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 8	COIL 3.9 MHZ	1596-0104		
L 9	COIL 3.9 MHZ	1596-0104		
L 10	COIL 3.9 MHZ	1596-0104		
L 11	COIL 3.9 MHZ	1596-0104		
L 12	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 13	COIL-VARIABLE IF	7050-0131		
L 14	CH-100UH 5% RF MLD AXL 16DX.38L	1585-0017	DELEVAN	1537-76
L 15	CH-100UH 5% RF MLD AXL 16DX.38L	1585-0017	DELEVAN	1537-76

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 2	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 3	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 2	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 3	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 4	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 5	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 6	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 7	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 8	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 9	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 10	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 11	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 12	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 17	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 21	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 22	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 23	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 24	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 25	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 26	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 27	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 28	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
	CRYSTAL			
Y 1	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0040	PIEZO	C/E DWG(2194F)
Y 2	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0039	CTS KNIGHTS	C/E DWG


SYMBOL
DESCRIPTION
GROUND ORIGINATING AT MECCA
+10V ORIGINATING AT MECCA
+5V ORIGINATING AT MECCA
-5V ORIGINATING AT MECCA
DESIGNATED WIRE POINT ON P.C. BOARD OR FLEX CIRCUIT
COAXIAL OR SHIELDED CABLE LABEL NO.
GROUND LUG
P/O FRONT PANEL 10000
P/O RF FREQ SELECT PCB ASSY 11000
J94002 10MHz IN
SPECTRUM MONITOR OPTION
J60003 200MHz REF MAIN CSTG
J50008 203MHz REF RCVR CSTG
J70011 100MHz REF MAIN CSTG
P3/J60003 200MHz REF MAIN CSTG
P4/J50008 200MHz REF RCVR CSTG
P5/J70011 100MHz REF MAIN CSTG
P8/J60004 10.7MHz
J7 REF FREQ GENERATOR 37000
J8 SSB/ZERO BEAT 38000
J6 FM/AM MODULATION 36000
J5 REF FREQ DIVIDER/SENAD 35000
J4 DIGIT DECODE / DIV-BY-P 34000
J3 TIG MAIN COIL DRIVER 33000
10V/5V REGULATORS 39000
P/O FRAP PANEL 90000
Q90001 +10V REG
Q90002 +5V REG
Q90003 OVER-VOLTAGE PROTECTION
+12V IN
+10V GND RETURN
+5V GND RETURN
+5V OUT (MECCA SOURCE)
MECCA REF IN
10MHz REF
100 KHz REF
OSCILLATOR SOCKET CONTAINER 94000
SPEAKER DRIVER PCB ASSY 93000
P10/J42004
USED WITH OPTION-05 ONLY



30000 Right Main Chassis Interconnect Diagram, (8000-0731)
CE-45A/46A


C8
R28
R23
R29
R24
R27
R26
R25
Q3
U4
R31
R30
C10
C9
CR2
C6
C7
C3
R6
R5
C1
Q1
R4
R1
R2
R3
R17
R13
U2
R18
R19
R21
R20
Q2
R14
CR1
R22
U3
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R10
U1
R9
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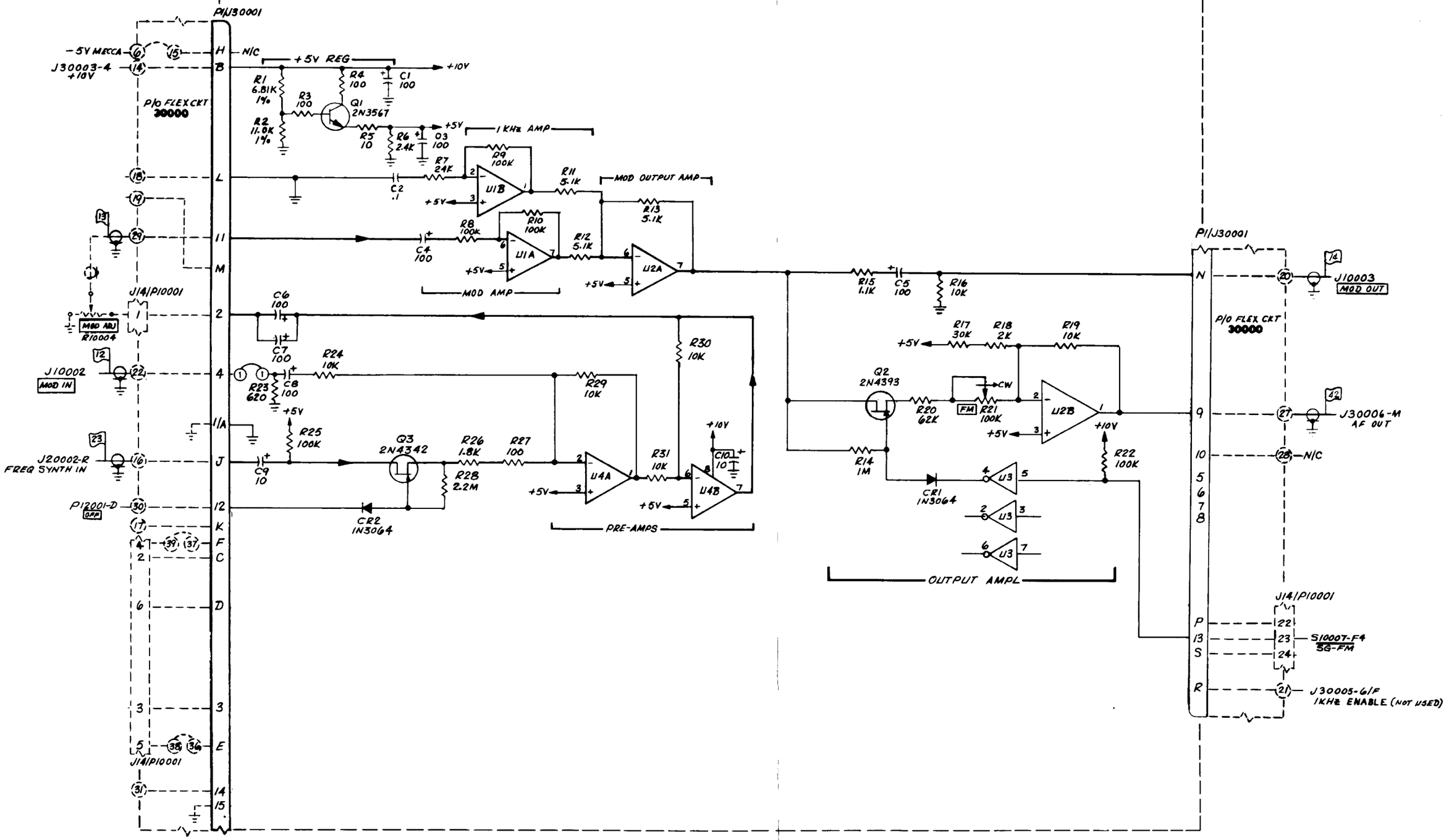
C4
R7
C2
R16
1
3

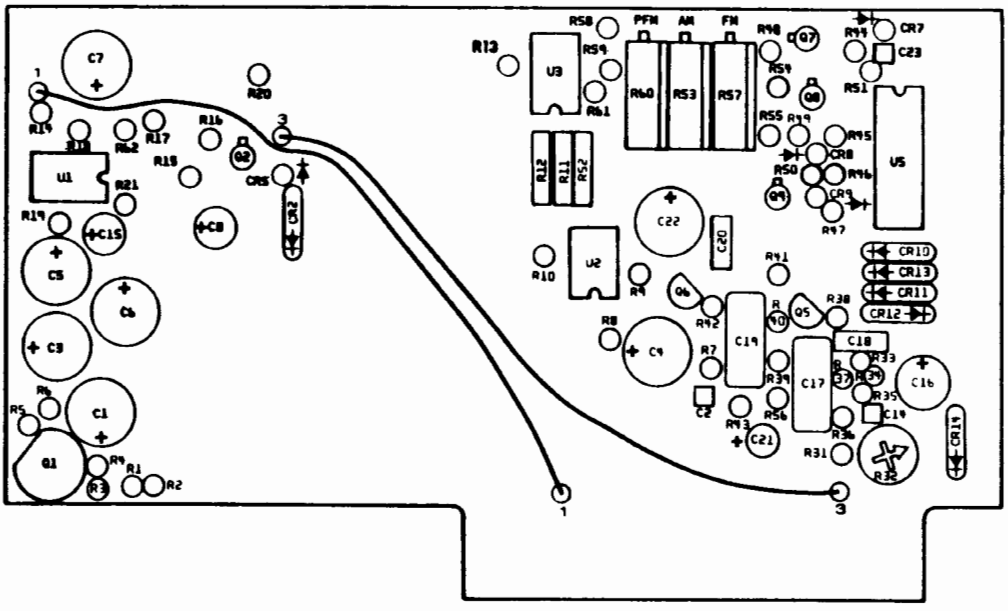


U NO.	PART NO.	VCC	GND
1,2,4	MC1458	8	4
3	MC14049	1	8

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
31000	PCB ASSY - AUDIO CONTROL	7001-0619	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-0858	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 8	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 9	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 10	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	TRANSISTOR			
Q 1	XSTR-2N3567 NPN SI TO 105 LOW PWR	1272-0014		
Q 2	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 3	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
	RESISTOR			
R 1	RES-6.81K 1% 100PPM FILM	1075-0140	CAT. LIST	55-100
R 2	RES-11K 1% 100PPM FILM	1074-0106	CAT.LIST	55-100
R 3	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 4	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 5	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 6	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 7	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 10	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 13	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 14	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H ONLY
R 15	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 16	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 17	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 18	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-62K 5% 1/4W CC	1066-6235	ALLEN BRADLEY	CB 6235
R 21	POT-100K 10% 3/4W 15T CERMET TRMR	1215-0006	BECKMAN	89WR
R 22	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 23	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 25	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 26	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 27	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 28	RES-2.2MEG 5% 1/4W CC	1066-2255	ALLEN BRADLEY	CB2255
R 29	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INTEGRATED CIRCUIT			
U 1	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-4049 16 PIN DIP HEX INVT/BUFFER	2025-0189	MOTOROLA	MC14049UBP
U 4	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB


C7
R20
R14
R17
R16
R18
Q2
CR5
CR2
U1
R21
R19
C15
C8
C5
C6
C3
C1
R5
Q1
R4
R1
R2
R3
R13
R58
R59
R61
U3
PFM
AM
FM
R60
R53
R57
R48
Q7
R54
CR7
C23
R51
R49
R55
R45
CR8
R50
R46
Q4
CR9
R47
U5
R12
R11
R52
C22
C20
U2
R10
R4
Q6
R41
R42
C19
Q5
R38
R8
C9
R7
R39
C17
C18
R33
C16
C2
R43
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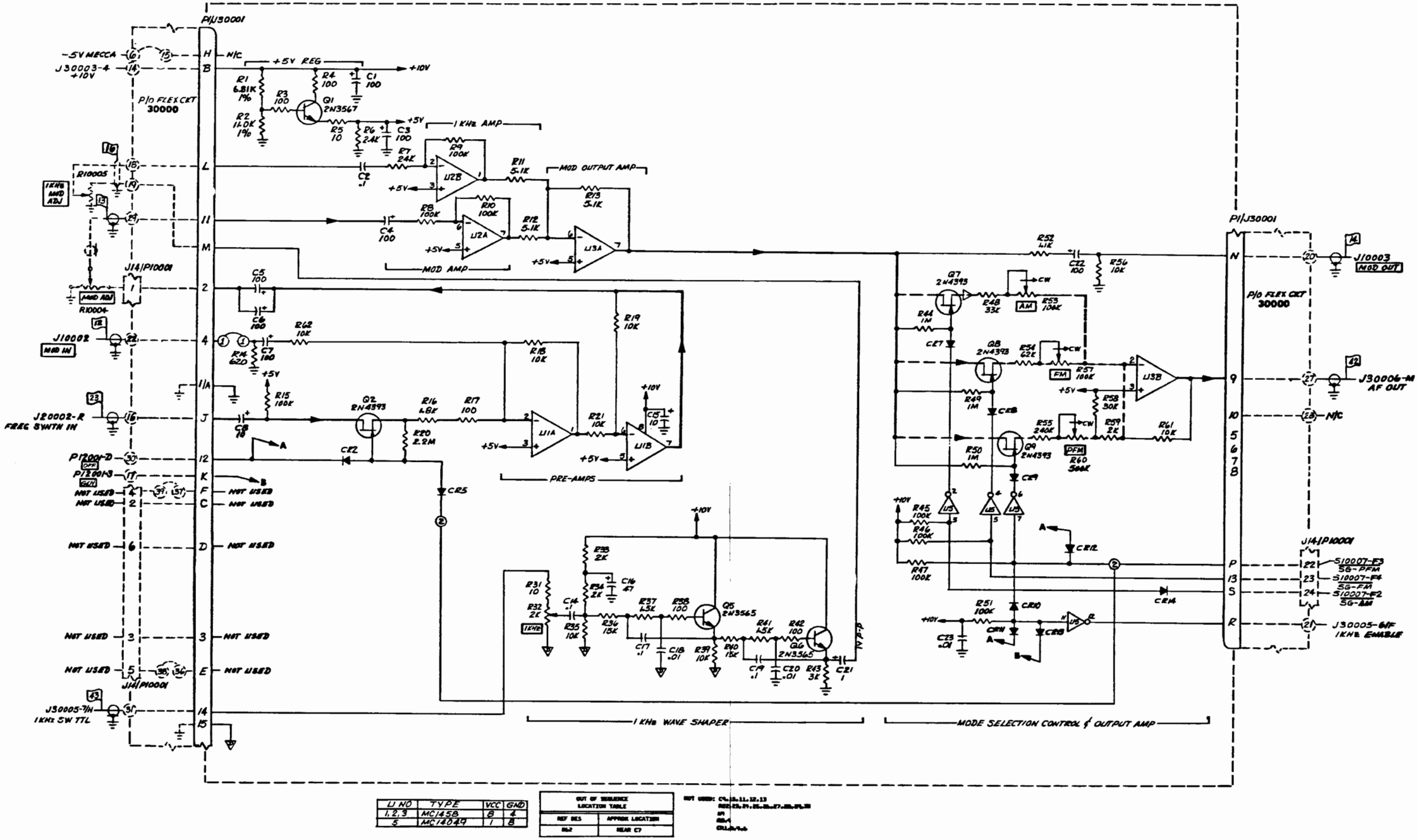
CR12
1
3
1
3



U NO	TYPE	VCC	GND
1, 2, 3	MC1458	8	4
5	MC14049	1	8

OUT OF SEQUENCE LOCATION TABLE	
REF DES	APPROX LOCATION
[illegible]	NEAR C7

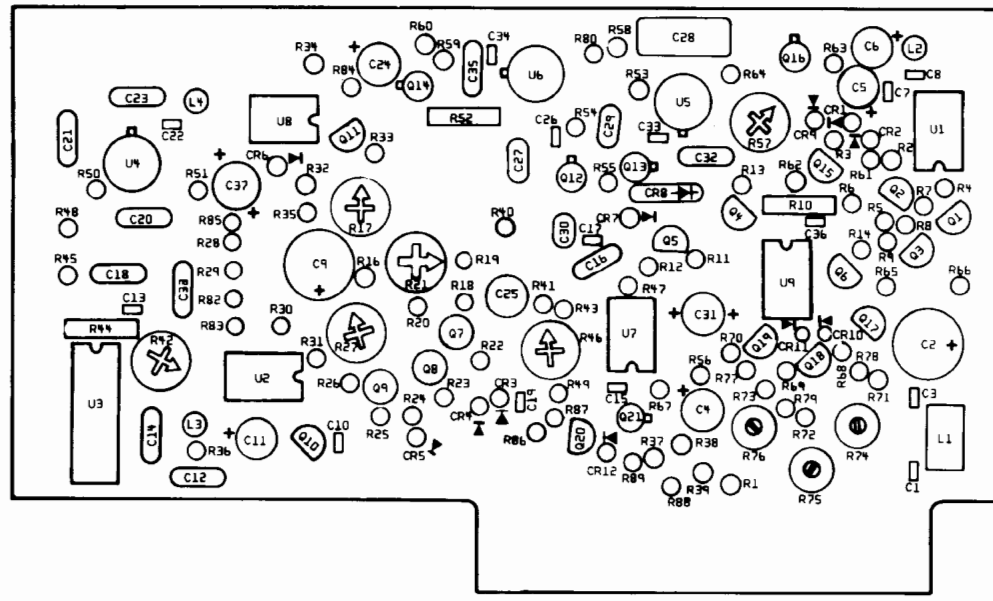
NOT USED: C9, 10, 11, 12, 13
[illegible]

NOTE:
1. ALL DIODES ARE IN4004 UNLESS OTHERWISE NOTED.
2. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
3. *FACTORY SELECT. TYPICAL VALUE SHOWN.
4. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
5. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
6. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

31000 Audio Control, (7001-0626)
CE-46A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
31000	PCB ASSY - AUDIO CONTROL	7001-0626	CUSHMAN	CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-0858	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 8	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 14	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 16	CAP-47UF 20% 20V RDL TANT	1011-0009	DICKSON	D47GS1C20M
C 17	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 18	CAP-.01UF 10% 200V MLD CER	1005-0065	AEROVOX	CK06BX103K
C 19	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 20	CAP-.01UF 10% 200V MLD CER	1005-0065	AEROVOX	CK06BX103K
C 21	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 22	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	TRANSISTOR			
Q 1	XSTR-2N3567 NPN SI TO 105 LOW PWR	1272-0014		
Q 2	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 8	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 9	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
	RESISTOR			
R 1	RES-6.81K 1% 100PPM FILM	1075-0140	CAT. LIST	55-100
R 2	RES-11K 1% 100PPM FILM	1074-0106	CAT.LIST	55-100
R 3	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 4	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 5	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 6	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 7	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 10	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 13	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 14	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 15	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 16	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 17	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-2.2MEG 5% 1/4W CC	1066-2255	ALLEN BRADLEY	CB2255
R 21	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 31	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 32	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 33	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 34	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 35	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 36	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 37	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 38	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 39	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 40	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 41	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 42	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 43	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 44	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 45	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 46	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 47	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 48	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 49	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 50	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 51	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 52	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 53	POT-100K 10% 3/4W 15T CERMET TRMR	1215-0006	BECKMAN	89WR
R 54	RES-62K 5% 1/4W CC	1066-6235	ALLEN BRADLEY	CB 6235
R 55	RES-240K 5% 1/4W CC	1066-2445	ALLEN BRADLEY	CB2445
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-100K 10% 3/4W 15T CERMET TRMR	1215-0006	BECKMAN	89WR
R 58	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 59	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 60	POT-500K 10% 3/4W 15T CERMET TRMR	1215-0041	BECKMAN	89WR500K
R 61	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
	INTEGRATED CIRCUIT			
U 1	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 5	IC-4049 16 PIN DIP HEX INVT/BUFFER	2025-0189	MOTOROLA	MC14049UBP


R60
R59
C34
R58
C28
R34
C24
C35
U6
R80
Q16
R63
C6
L2
R84
Q14
R53
R64
C5
C8
C23
L4
R52
U5
C7
U8
C26
R54
C29
C33
CR1
U1
C21
C22
U4
Q11
R33
R57
CR2
CR4
R3
R2
C27
C32
R13
R62
Q15
R61
R50
CR6
R51
C37
R32
Q12
R55
Q13
CR8
R6
Q2
R7
R4
R48
C20
R85
R35
R17
R40
R10
Q4
R5
R8
Q1
R28
C30
C17
CR7
C36
R14
R9
Q3
R45
C18
R29
C9
R16
R21
R19
Q5
R12
R11
R66
R65
Q6
C38
R82
C25
R41
R18
R47
U9
C13
R30
R20
R43
C31
R70
Q17
R44
R83
Q7
R22
R46
U7
Q14
CR11
CR10
C2
R42
R27
R31
R56
R77
R78
R68
U3
U2
R26
Q9
Q8
R23
CR3
R49
R73
R69
R71
C3
R24
C19
C15
R67
C4
R79
C14
L3
R36
C11
C10
Q10
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R74
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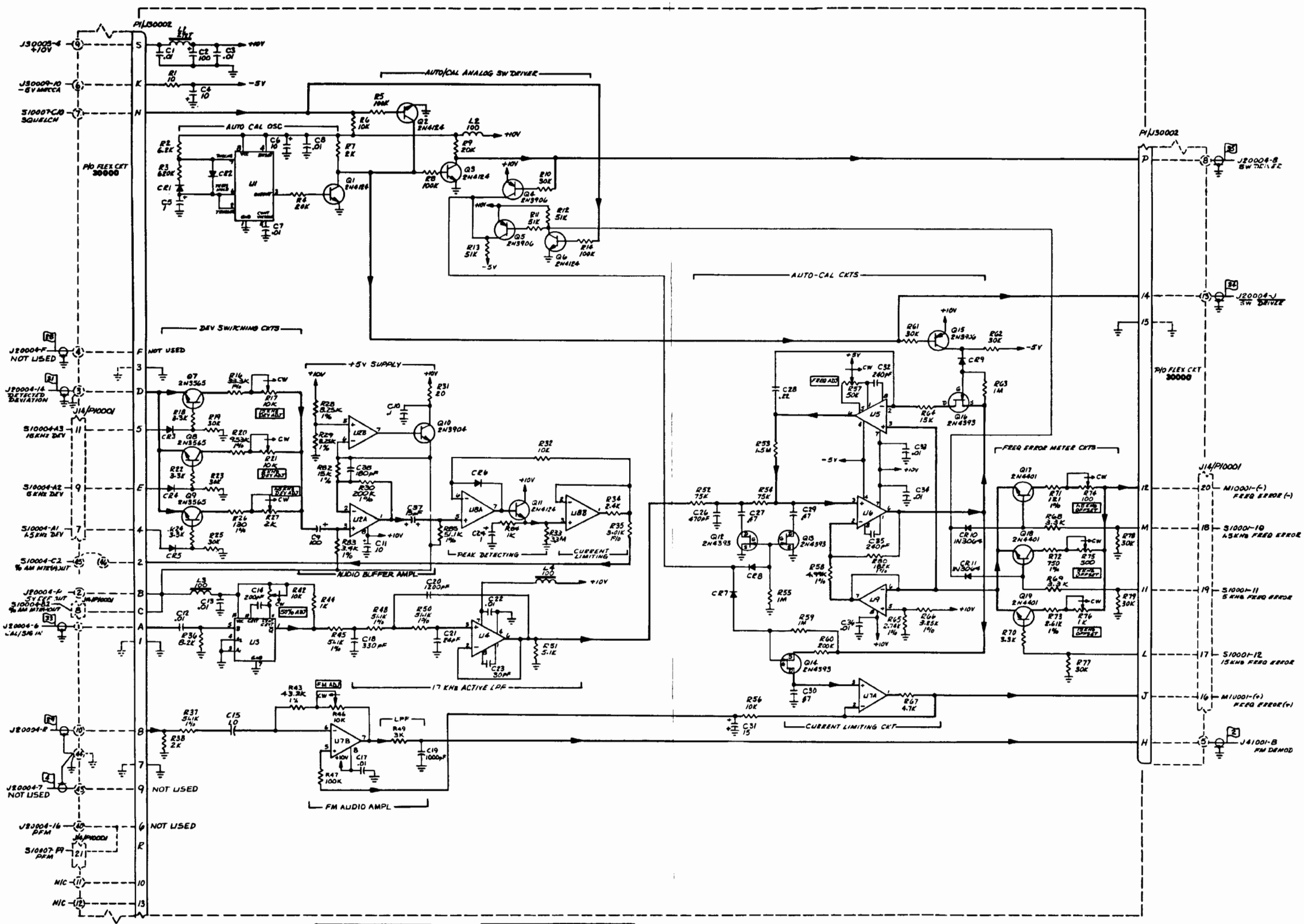
R88
C12



U NO	TYPE	VCC	GND
1	1458	8	4
2, 4, 8	1458	8	4
3	SN74LS11	14	7
5, 6, 7	CA3130	7	4
9	74C02	8	4

OUT OF SEQUENCE LOCATION CHART	
REF	APPROX LOCATION
R50	U6
R82, R83	U2 A
R84	Q11

NOT USED: C16, 25
R15, 39, 40, 41, 81

NOTE:
6. ALL DIODES ARE IN3069 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

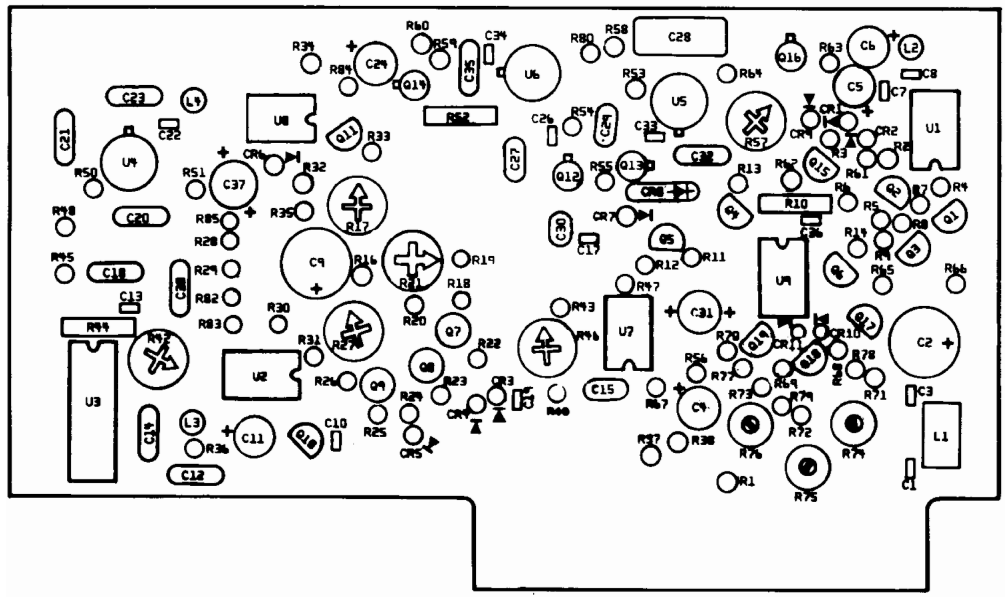
32000 FM/AM Detector #2, (7001-0701)
CE-45A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
32000	PCB ASSY - FM/AM DETECTOR NO. 2	7001-0701	CUSHMAN	CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-1086	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 6	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 15	CAP-1UF 5% 50V AXL POLYCARBONATE	1008-0081	ELECTROCUBE	625B1A105J
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-330PF 5% 500V DIP MICA	1002-0032	ELMENCO	DM15-F-331J
C 19	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 20	CAP-1200PF 5% 500V DIP MICA	1002-0090	ELMENCO	DM19-F-122J
C 21	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 24	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 26	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 27	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 28	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 29	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 30	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 31	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-1
C 32	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 33	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 34	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 35	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-1
C 38	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 4	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 13	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 14	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 15	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 16	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 17	XSTR-2N4401 NPN SI T092 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 18	XSTR-2N4401 NPN SI T092 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 19	XSTR-2N4401 NPN SI T092 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 3	RES-620K 5% 1/4W CC	1066-6245	ALLEN BRADLEY	CB 6245
R 4	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 5	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 10	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 11	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 12	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 13	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 14	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 16	RES-33.3K 1% 100PPM FILM	1075-0072	CAT.LIST	55-100
R 17	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 18	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 19	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 20	RES-9.53K 1% 100PPM FILM	1074-1001	CAT.LIST	55-100
R 21	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 22	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 25	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 26	RES-130 OHM 1% 100PPM FILM	1075-0101	DALE	MFF-1/8
R 27	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 28	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 29	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 30	RES-200K 1% 100PPM FILM	1075-0148	CAT LIST	55-100
R 31	RES-20 OHM 5% 1/4W CC	1066-2005	ALLEN BRADLEY	CB2005
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 34	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 35	RES-3.01K 1% 100PPM FILM	1075-0127	CAT. LIST	55-100
R 36	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 37	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 38	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 42	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 43	RES-43.2K 1% 100PPM FILM	1075-0117		
R 44	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 45	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 46	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 47	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 48	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 49	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 50	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 51	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 52	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 53	RES-1.5MEG 5% 1/4W CC	1066-1555	ALLEN BRADLEY	CB1555
R 54	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 55	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 58	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 59	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H ONLY
R 60	RES-200K **5% 1/4W** CC	1066-2045	ALLEN BRADLEY	CB2045
R 61	RES-30K **5% 1/4W** CC	1066-3035	ALLEN BRADLEY	CB3035
R 62	RES-30K **5% 1/4W** CC	1066-3035	ALLEN BRADLEY	CB3035
R 63	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 64	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 65	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 66	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 67	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 68	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 69	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 70	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 71	RES-121 OHM 1% 100PPM FILM	1075-0006	CAT.LIST	55-100
R 72	RES-750 OHM 1% 100PPM FILM	1075-0043	CAT.LIST	55-100
R 73	RES-2.61K 1% 100PPM FILM	1075-0090	CAT.LIST	55-100
R 74	POT-100 OHM 10% 1/2W 1T CERMET TRMR	1215-0056	ALLEN BRADLEY	A2A101
R 75	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 76	POT-1K 10% 1/2W 1T CERMET TRMR	1215-0052	ALLEN BRADLEY	A2A102
R 77	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 78	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 79	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 80	RES-182K 1% 100PPM FILM	1075-0147	CAT LIST	55-160
R 82	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100
R 83	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 84	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 85	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
	INTEGRATED CIRCUIT			
U 1	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 5	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 8	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 9	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB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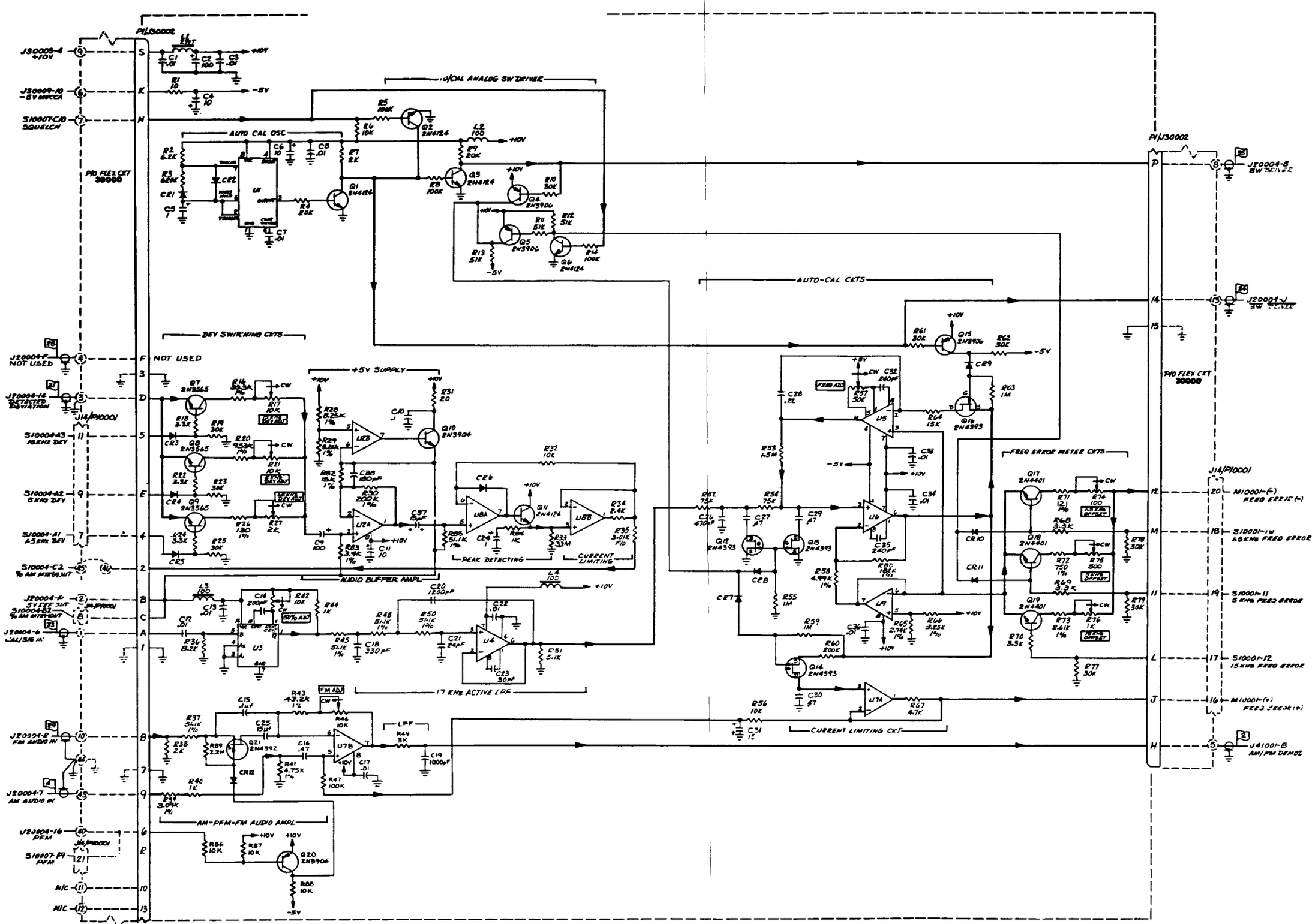


U NO	TYPE	VCC	GND
1	1458	8	1
2,4,8	1458	8	4
3	SN74L(2)	14	7
4,5,6	CA3122	7	4
7	TL082	8	4

OUT OF SEQUENCE LOCATION CHART	
REF	APPROX LOCATION
R80	U6
R82, R85	U2 A
R84	U8

NOTE:
6. ALL DIODES ARE [illegible] UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/9W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

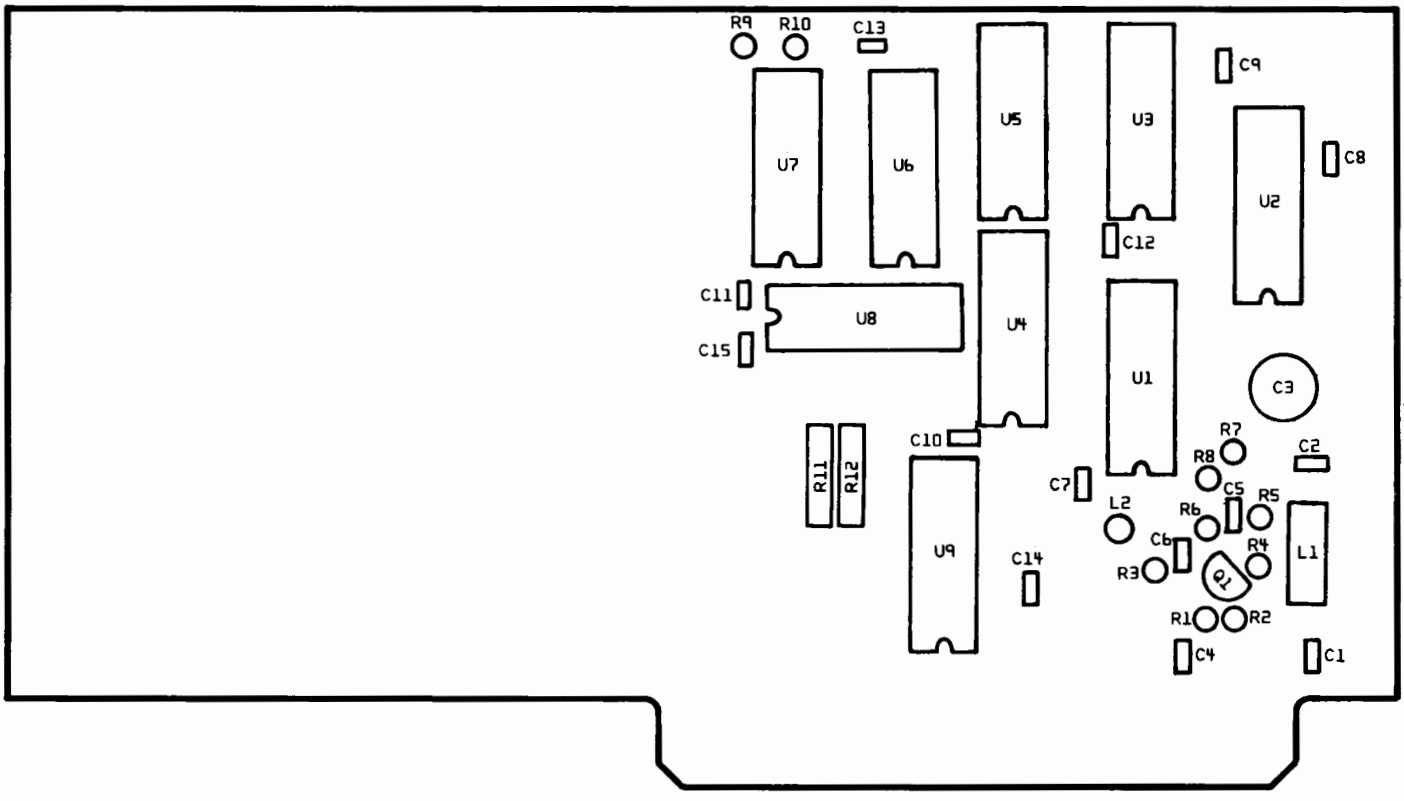
32000 FM/AM Detector #2, (7001-0702)
CE-46A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
32000	PCB ASSY - FM/AM DETECTOR NO. 2	7001-0702	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-1086	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 5	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 6	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 14	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 15	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 16	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-330PF 5% 500V DIP MICA	1002-0032	ELMENCO	DM15-F-331J
C 19	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 20	CAP-1200PF 5% 500V DIP MICA	1002-0090	ELMENCO	DM19-F-122J
C 21	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 22	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 23	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 24	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 25	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-1
C 26	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 27	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 28	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 29	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 30	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 31	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-1
C 32	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 33	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 34	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 35	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-1
C 38	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 4	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 12	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 13	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 14	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 15	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 16	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
Q 17	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 18	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 19	XSTR-2N4401 NPN SI TO92 LOW PWR/SW	1272-0116	MOTOROLA	2N 4401
Q 20	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 21	XSTR-2N4392 SI T018 J-FET N-CHAN	1272-0054	TELEDYNE	2N4392
	RESISTOR			
R 1	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 2	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 3	RES-620K 5% 1/4W CC	1066-6245	ALLEN BRADLEY	CB 6245
R 4	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 5	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 8	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 9	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 10	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 11	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 12	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 13	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 14	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 16	RES-33.3K 1% 100PPM FILM	1075-0072	CAT.LIST	55-100
R 17	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 18	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 19	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 20	RES-9.53K 1% 100PPM FILM	1074-1001	CAT.LIST	55-100
R 21	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 22	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 25	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 26	RES-130 OHM 1% 100PPM FILM	1075-0101	DALE	MFF-1/8

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 27	POT-2K 20% 1/2W 1T CERMET TRMR	1203-0072	BECKMAN	91A-R2K
R 28	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 29	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 30	RES-200K 1% 100PPM FILM	1075-0148	CAT LIST	55-100
R 31	RES-20 OHM 5% 1/4W CC	1066-2005	ALLEN BRADLEY	CB2005
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-3.3MEG 5% 1/4W CC	1066-3355	ALLEN BRADLEY	CB3355
R 34	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 35	RES-3.01K 1% 100PPM FILM	1075-0127	CAT LIST	55-100
R 36	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 37	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 38	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 39	RES-3.09K 1% 100PPM FILM	1075-0091	CAT.LIST	55-100
R 40	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 41	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 42	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 43	RES-43.2K 1% 100PPM FILM	1075-0117		
R 44	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 45	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 46	POT-10K 20% 1/2W 1T CERMET TRMR	1215-0043	BECKMAN	91AR10K
R 47	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 48	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 49	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 50	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 51	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 52	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 53	RES-1.5MEG 5% 1/4W CC	1066-1555	ALLEN BRADLEY	CB1555
R 54	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 55	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 56	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 57	POT-50K 20% 1/2W 1T CERMET TRMR	1203-0070	BECKMAN	91AR50K
R 58	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 59	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 60	RES-200K 5% 1/4W CC	1066-2045	ALLEN BRADLEY	CB2045
R 61	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 62	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 63	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H ONLY
R 64	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 65	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 66	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 67	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 68	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 69	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 70	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 71	RES-121 OHM 1% 100PPM FILM	1075-0006	CAT.LIST	55-100
R 72	RES-750 OHM 1% 100PPM FILM	1075-0043	CAT.LIST	55-100
R 73	RES-2.61K 1% 100PPM FILM	1075-0090	CAT.LIST	55-100
R 74	POT-100 OHM 10% 1/2W 1T CERMET TRMR	1215-0056	ALLEN BRADLEY	A2A101
R 75	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 76	POT-1K 10% 1/2W 1T CERMET TRMR	1215-0052	ALLEN BRADLEY	A2A102
R 77	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 78	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 79	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 80	RES-182K 1% 100PPM FILM	1075-0147	CAT LIST	55-100
R 82	RES-15K 1% 100PPM FILM	1075-0081	CAT.LIST	55-100
R 83	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 84	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 85	RES-51.1K 1% 100PPM FILM	1075-0099	CAT.LIST	55-100
R 86	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 87	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 88	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 89	RES-2.2MEG 5% 1/4W CC	1066-2255	ALLEN BRADLEY	CB2255
	INTEGRATED CIRCUIT			
U 1	IC-MC1455P1 TIMING CIRCUIT	2025-0091	MOTOROLA	MC1455P1
U 2	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 3	IC-74121 14 PIN DIP MONOSTABLE MV	2025-0272	T.I	SN74121N
U 4	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 5	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 6	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 7	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP
U 8	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 9	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB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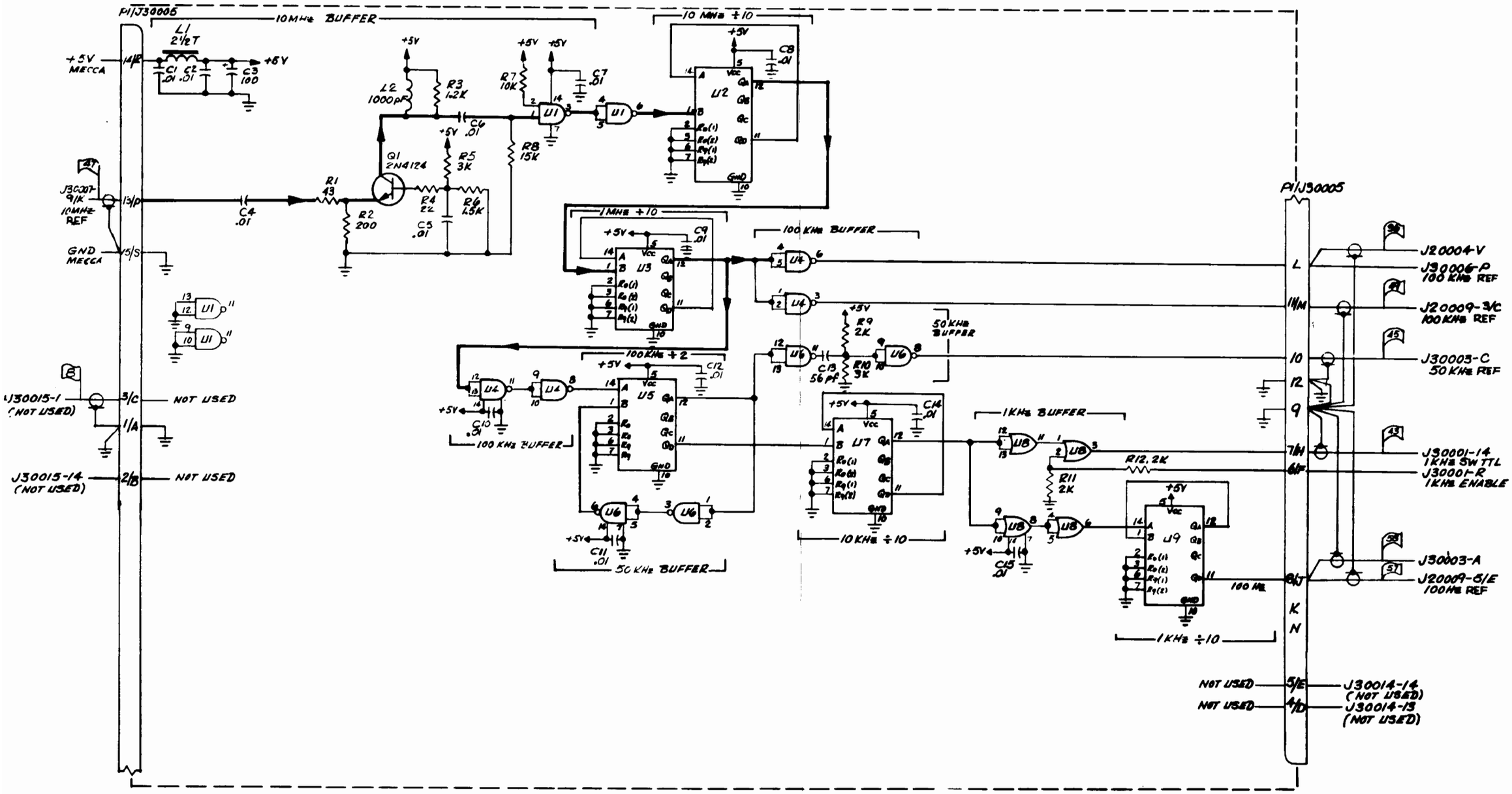
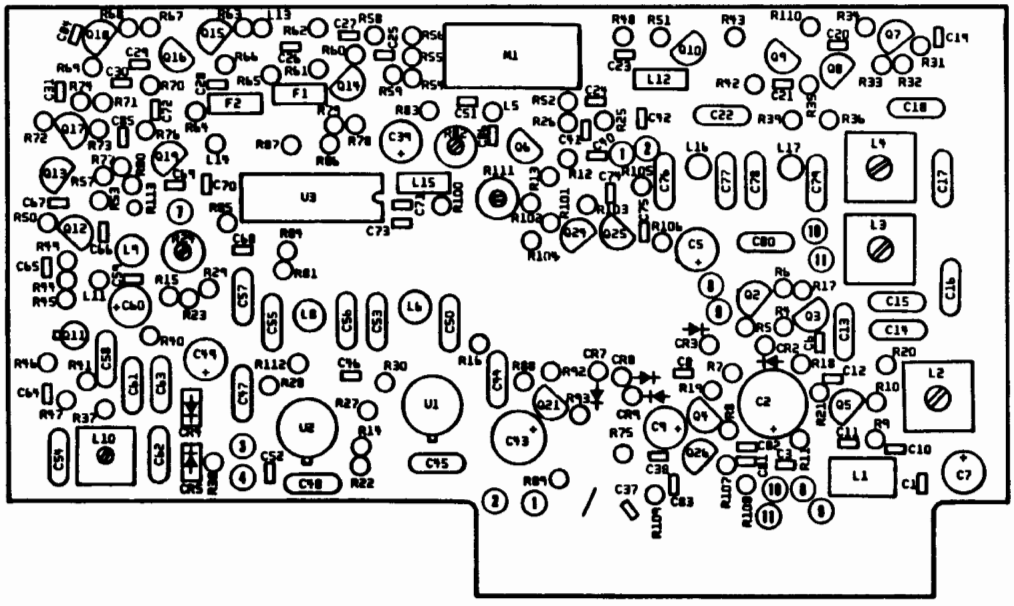


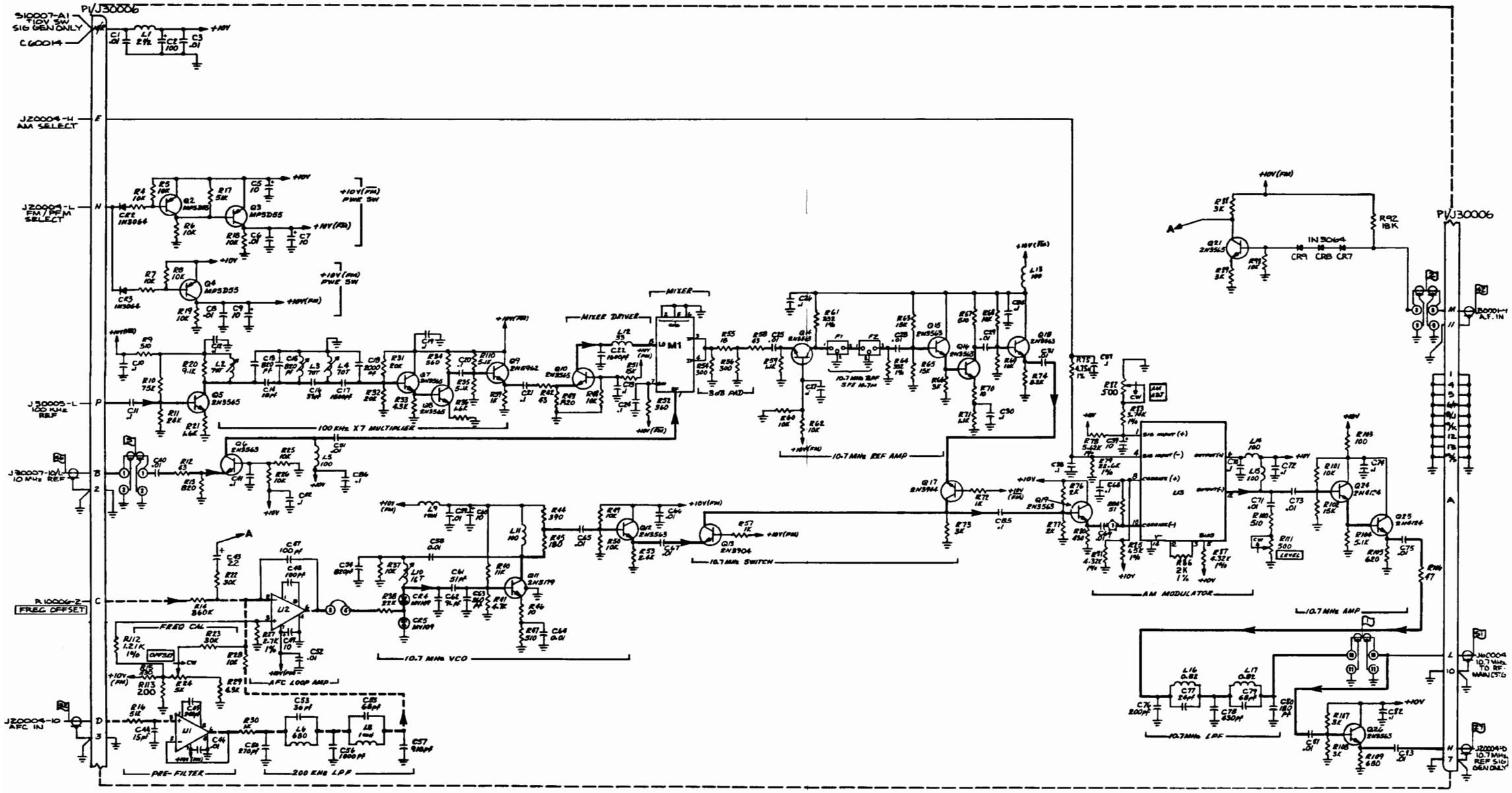
U NO.	PART NO	Vcc	GND
1,4,6	74LS00	14	7
2,3,5,7,9	74LS90	5	10
8	74LS32	14	7

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4w, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

35000 Ref Freq Divider (7001-0618)
CE-45A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
35000	PCB ASSY - REF FREQ. DIVIDER	7001-0618	CUSHMAN	CE-45A, CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-1050	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-1000UH 5% RF MLD AXL .19DX .44L	1585-0020	DELEVAN	2500-28
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 2	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 3	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 4	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 5	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 6	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 9	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 10	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 11	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
	INTEGRATED CIRCUIT			
U 1	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 2	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 3	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 4	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 5	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 6	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 7	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 8	IC-SN74LS32N QUAD 2-INPUT POS-OR GATE	2025-0085	TI	SN74LS32N
U 9	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N





U NO	TYPE	VCC	GND
U1	MC1496	8	12
U2	CA3130	7	4

OUT OF SEQUENCE LOCATION TABLE	
REF DESIG	APPROX LOC
R110	Q9
R111	U5
R112, R113	U2
CR4	Q18
CR5	Q17
CR6	Q16

1. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
2. *FACTORY SELECT, TYPICAL VALUE SHOWN.
3. RESISTORS - VALUES IN Ω OR KΩ UNLESS OTHERWISE NOTED.
4. CAPACITORS - VALUES IN μf UNLESS OTHERWISE NOTED.
5. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

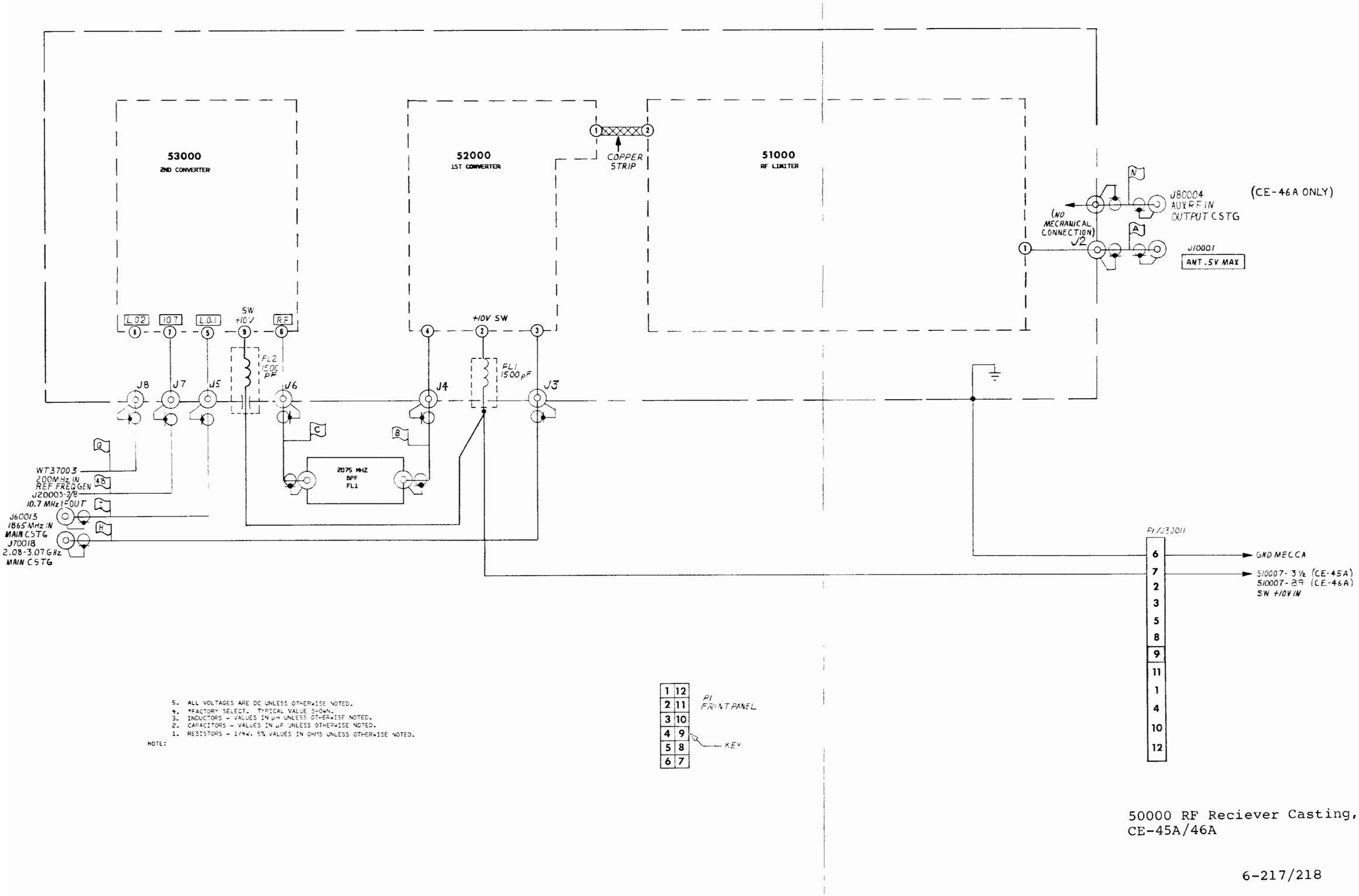
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
36000	PCB ASSY - FM/AM MODULATION	7001-0622	CUSHMAN	CE-45A ONLY
	PRINTED CIRCUIT BOARD	1780-1030	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 14	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 15	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 16	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 17	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 18	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-1600PF 5% 500V DIP MICA	1002-0072	ELMENCO	DM19-F-162J
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 38	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 39	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 40	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 41	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
C 44	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 45	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 46	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 47	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 48	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 49	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 50	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 51	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 52	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 53	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 54	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 55	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 56	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 57	CAP-910PF 5% 100V DIP MICA	1002-0062	ELMENCO	DM15-F-911J
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 59	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 60	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 61	CAP-51PF 5% 500V DIP MICA	1002-0045	ELMENCO	DM15-E-510J
C 62	CAP-96PF 1% 500V DIP MICA	1002-0049	ELMENCO	DM15-F-960F
C 63	CAP-360PF 5% 500V DIP MICA	1002-0040	ELMENCO	DM15-F-361J
C 64	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 65	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 66	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 67	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 68	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 69	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 70	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 71	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 72	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 73	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 74	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 75	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 76	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 77	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 78	CAP-430PF 5% 500V DIP MICA	1002-0034		
C 79	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 80	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 81	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 82	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 83	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 84	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 85	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 86	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 5	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	FILTER			
F 1	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP	10.70MHZ RED ONLY
F 2	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP.	10.70MHZ RED ONLY
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 5	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-680UH 5% RF MLD AXL .19DX.44L	1585-0023	DELEVAN	2500-20
L 8	CH-1000UH 5% RF MLD AXL .19DX.44L	1585-0020	DELEVAN	2500-28
L 9	CH-1000UH 5% RF MLD AXL 19DX.44L	1585-0020	DELEVAN	2500-28
L 10	COIL-VAR IF L31-6/30GA/16T	1596-0292		
L 11	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-33UH 10% RF MLD AXL .10DX.25L	1585-0071	DELEVAN	1025-56
L 13	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 15	CH-100UH 10% RF MLD AXL 10DX 25L	1585-0054	DELEVAN	1025-68
L 16	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
L 17	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10
	TRANSISTOR			
Q 2	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 3	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 4	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N5962 NPN SI T092 LOW PWR	1272-0059	FAIRCHILD	2N5962
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 12	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 13	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 14	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 17	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 18	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 19	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 21	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 24	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 25	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 26	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
	RESISTOR			
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 10	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 11	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 12	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 13	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 14	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 15	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 16	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 17	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 21	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 31	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 32	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 33	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 34	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 35	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 36	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 37	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 38	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 40	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 43	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 44	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 45	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 46	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 47	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 50	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 51	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 52	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 53	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 54	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 55	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 56	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 57	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 58	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 59	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 61	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 63	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 64	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 65	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 66	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 67	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 68	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 69	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 70	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 71	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 72	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 73	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 74	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 75	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 76	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 77	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 78	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 79	RES-22.6K 1% 100PPM FILM	1074-1056	CAT.LIST	55-100
R 80	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 81	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 82	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 83	RES-3.74K 1% 150PPM FILM	1074-1017	CAT.LIST	55-100
R 84	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 85	RES-1.5K 1% 100PPM FILM	1075-0039	CAT.LIST	55-100
R 86	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 87	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 88	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 89	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 92	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 93	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 100	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 101	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 102	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 103	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 104	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 105	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 106	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 107	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 108	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 109	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 110	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 111	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 112	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 113	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-1496 14 PIN DIP	2025-0197	MOTOROLA	MC1496P
	MIXER			
Z 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1

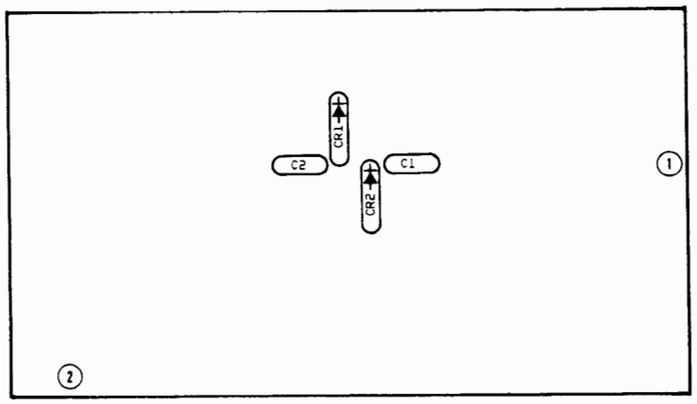


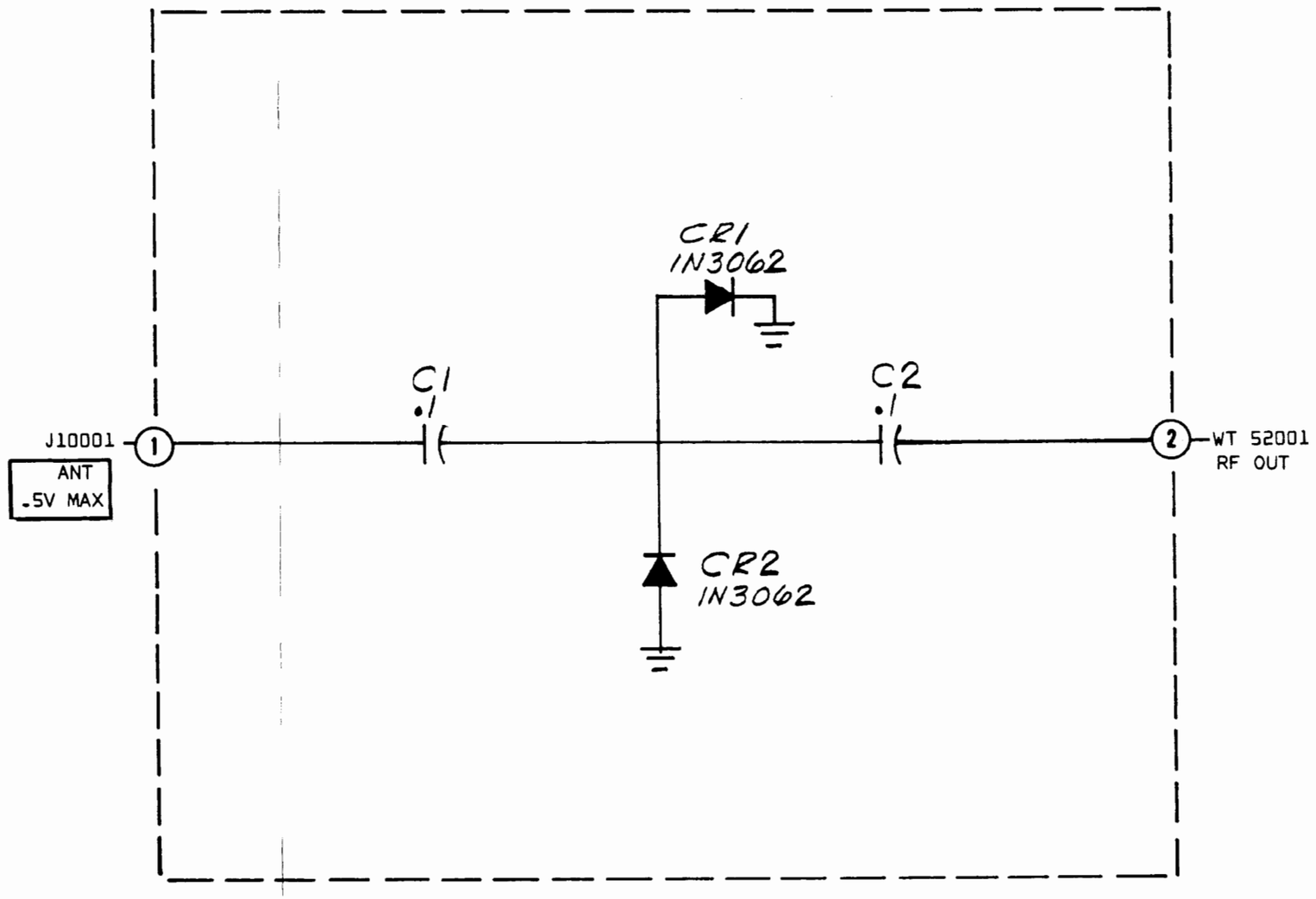
NOTE:

5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

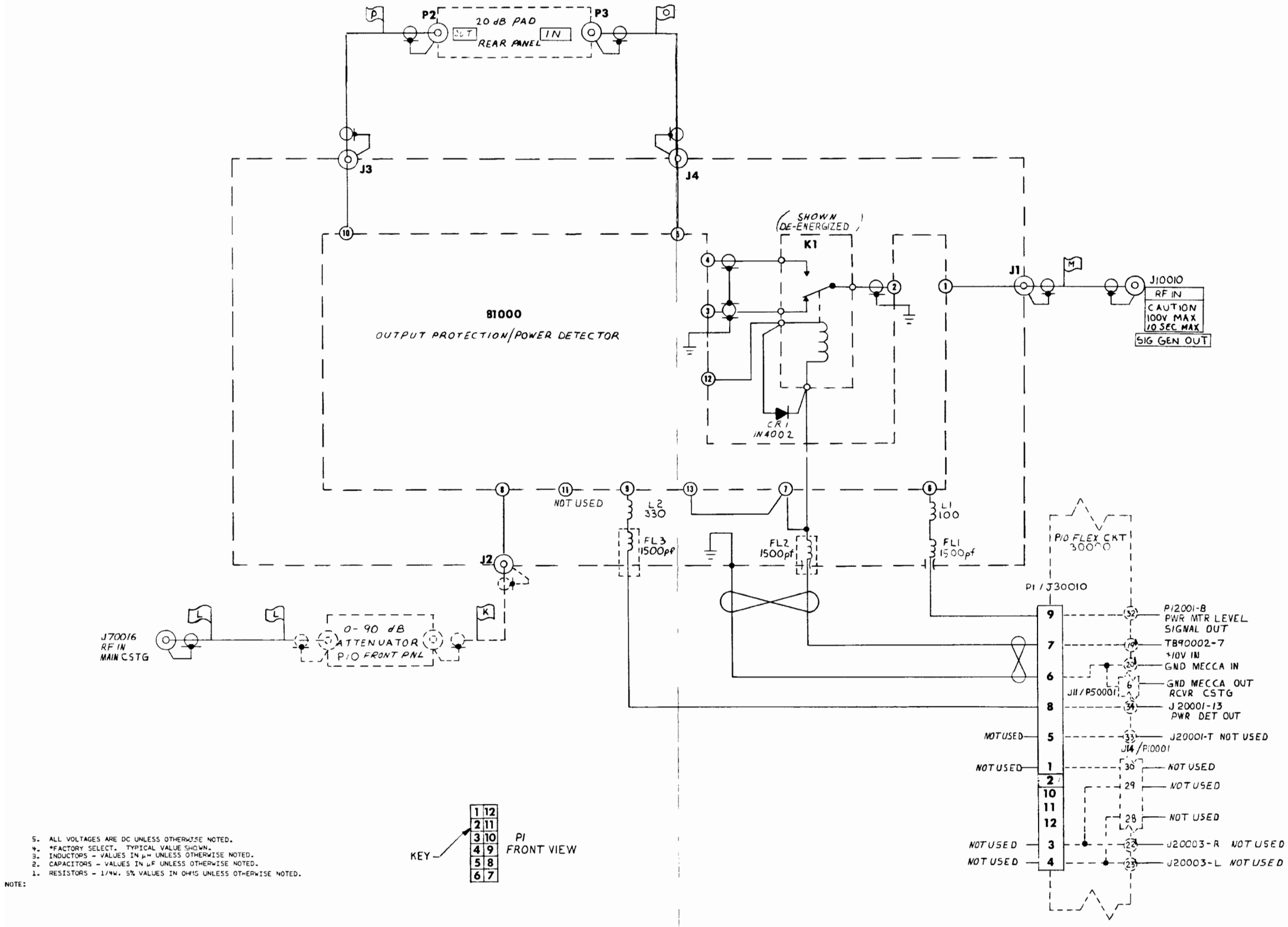
50000 RF Reciever Casting, (8000-0726)
CE-45A/46A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
51000	PCB ASSY - RF LIMITER	7001-0624	CUSHMAN	CE-45A, CE-46A ONLY
	PRINTED CIRCUIT BOARD	1780-1087	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3062 SI SW D07 1PF 75PRV	1281-0080	ITT	1N3062
CR 2	DIO-1N3062 SI SW D07 1PF 75PRV	1281-0080	ITT	1N3062





51000 RF Attenuator, (7001-0624)
CE-45A, 46A

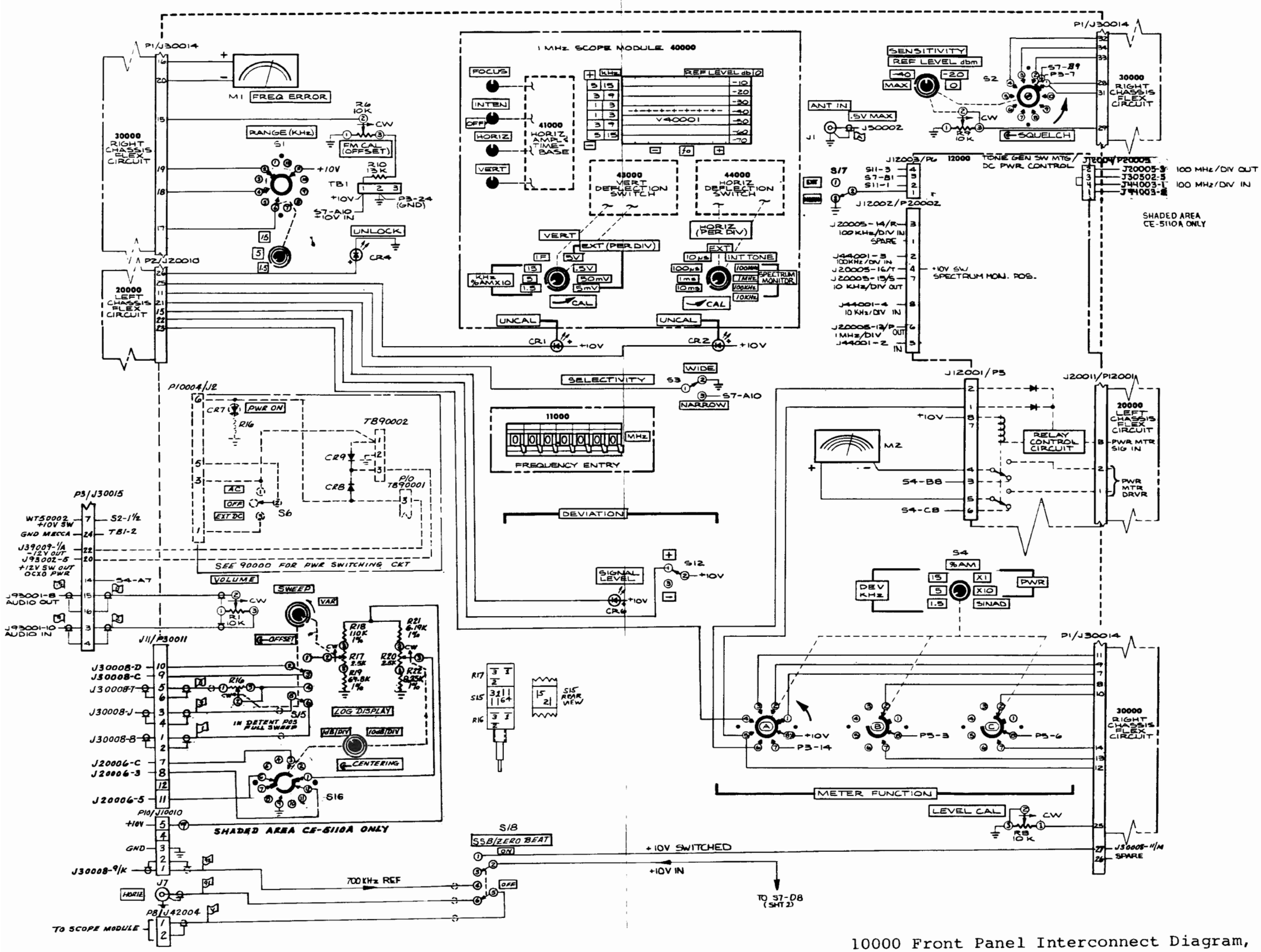


NOTE:

5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

80000 RF Output Casting, (8000-0727)
CE-45A

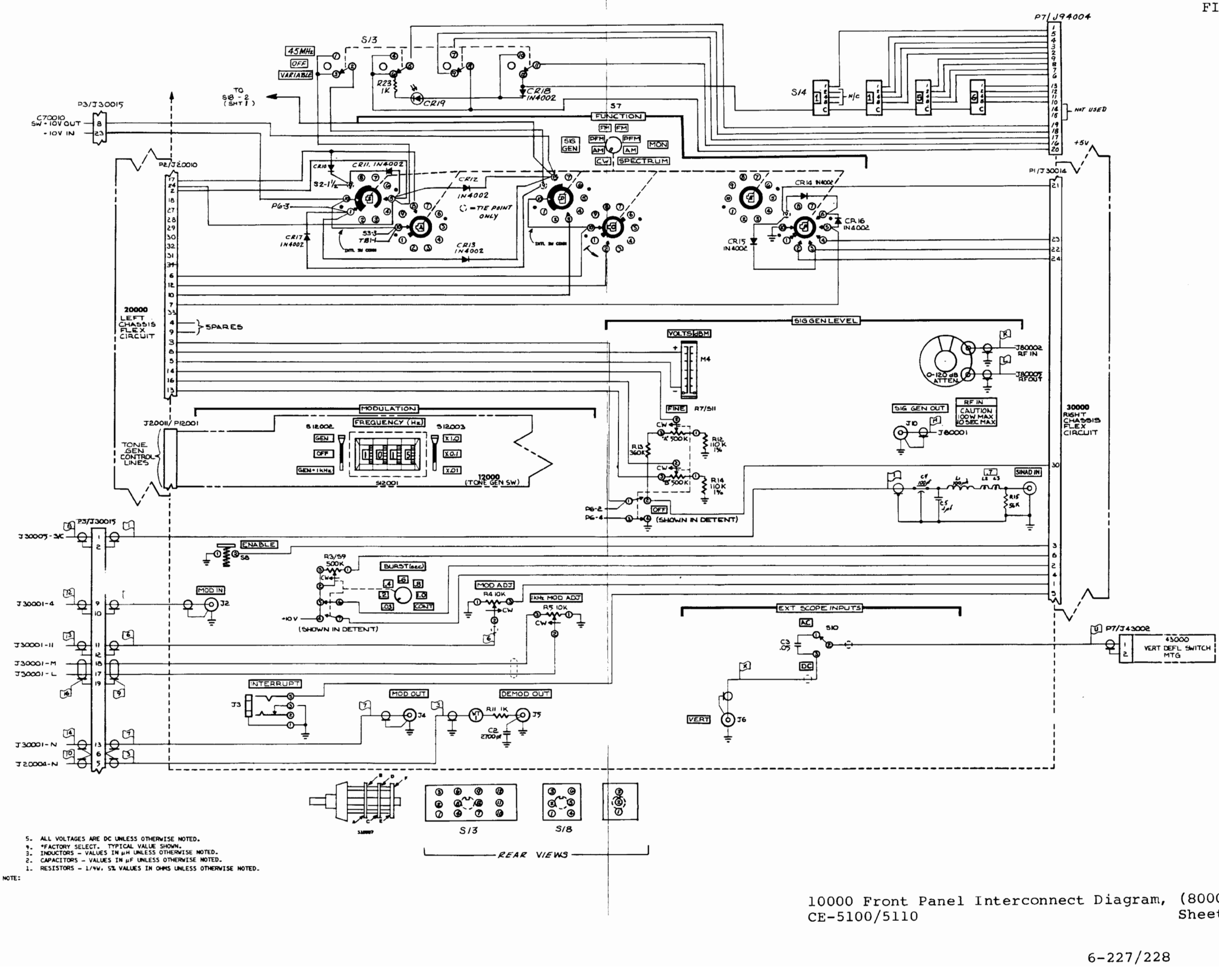
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
10000	FRONT PANEL ASSY	7003-0154	CUSHMAN	CE-5100 SERIES
	LOG/SWEEP PANEL ASSY	7011-0038	CUSHMAN	CE-5110 ONLY
	CAPACITOR			
C 2	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 3	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
C 4	CAP-1000PF +100-0% 300V CER FEED-THRU	1005-0077	SPECTRUM	54-802-002 W/SOLDER
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 2	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 4	DIO-LT EMIT RED 5V SNAP-IN MT	1281-0113	DIALCO	559-0101-001
CR 5	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 6	DIO-LT EMIT GRN 5V SNAP-IN MT	1281-0145	DIALCO	559-0201-001
CR 7	DIO-LT EMIT YEL 5V SNAP-IN MT	1281-0146	DIALCO	559-0301-001
CR 8	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 9	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 10	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 11	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 12	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 13	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 14	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 15	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 16	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 17	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
CR 18	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
	CONNECTOR			
J 2	CONN-BNC JACK RECT PANEL MT.	2536-0010	KINGS	KC79-35
J 4	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 5	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 6	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 7	CONN-BNC JACK RECT. PANEL MT.	2536-0010	KINGS	KC79-35
J 9	CONN-BNC JACK RECT PANEL MT.	2536-0010	KINGS	KC79-35
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
	MIXER			
M 1	MTR-DC 500-0-500 UA FREQ	1402-0038	MODUTEC	TIW1-DVA-5H5
M 4	MTR-DC 0-500UA OUTPUT LEVEL	1402-0040	WESTON	C/E DWG
	RESISTOR			
R 1	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 3	POT-500K 10% 1/2W LIN 1/8SFT CC W/SPDT	1203-0076	ALLEN BRADLEY	C/E DWG 14M158
R 4	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 5	POT-10K 20% 1/4W LOG 1/8 SFT CC	1203-0097		
R 6	POT-10K 20% 3/4W LIN 1/8 SFT CERMET	1203-0080	CTS BERNE	X6P1313 SERIES VA305
R 8	POT-10K 10% 3/4W 20T CERMET TRMR	1215-0034	SPECTROL	43P103T000
R 9	SW-RTRY CONC 1 POLE 4 POS W/POT	1851-0122		
R 10	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 11	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 12	RES-110K 1% 100PPM FILM	1075-0162	CAT LIST	55-100



10000 Front Panel Interconnect Diagram, (8000-0777), CE-5100/5110 Sheet 1 of 2

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 13	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 14	RES-110K 1% 100PPM FILM	1075-0162	CAT LIST	55-100
R 15	RES-56K 5% 1/4W CC	1066-5635	ALLEN BRADLEY	CB 3635
R 16	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 16	POT-2.5K/2.5K 10% LIN CERMET W/SW	1203-0118	BOURNS	86J3A-L36-A12R70A12
R 17	POT-2.5K/2.5K 10% LIN CERMET W/SW	1203-0118	BOURNS	86J3A-L36-A12R70A12
R 18	RES-110K 1% 100PPM FILM	1075-0162	CAT. LIST	55-100
R 19	RES-69.8K 1% 100PPM FILM	1075-0100	CAT.LIST	55-100
R 20	SW-RTRY CONC 2POLE 2POSN W/POT PNL MT	1851-0135	CTS KEENE	C/E DWG(X5P11903A)
R 21	RES-6.19K 1% 100PPM FILM	1075-0109	CAT.LIST	55-100
R 22	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 23	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 7A	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		
R 7B	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		
	SWITCH			
S 1	SW-RTRY 1 POLE 3 POSN PNL MT	1851-0138	CTS KEENE	C/E DWG
S 2	SW-RTRY CONC 1 POLE 4 POS W/POT	1851-0122		
S 3	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 4	SW-RTRY 3 POLE 7 POSN PNL MT	1851-0133	OAK INDUSTRIES	C/E DWG
S 6	SW-TOGGLE SPDT ON-OFF-ON ROUND HDL	1850-0036	C & K	7103,NUT STYLE 7760
S 7	SW-RTRY 5 POLE 8 POSN PNL MT	1851-0134	OAK INDUSTRIES	C/E DWG
S 8	SW-SPXT SUBMINI MON NO PB W/OVER TER	1852-0025	C&K COMPONENTS	8531-W/A7002
S 9	POT-500K 10% 1/2W LIN 1/8SFT CC W/SPDT	1203-0076	ALLEN BRADLEY	C/E DWG 14M158
S 10	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 11	POT-500K/500K 10% 1/8 SFT CERMET W/SW	1203-0098		
S 12	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 13	SW-TOGGLE 4P3P ON-OFF-ON RD HDL	1850-0042	ALCO SWITCH	MTA-406P
S 14	SW-THWL 4 SEC BCD CODE	1851-0137	CHERRY	C/E DWG (T50-34MD)
S 15	POT-2.5K/2.5K 10% LIN CERMET W/SW	1203-0118	BOURNS	86J3A-L36-A12R70A12
S 16	SW-RTRY CONC 2POLE 2POSN W/POT PNL MT	1851-0135	CTS KEENE	C/E DWG(X5P11903A)
S 17	SW-TOGGLE SPDT	1850-0008	C&K COMPONENTS	7101
S 18	SW-TOGGLE DPDT	1850-0014	C & K	7201

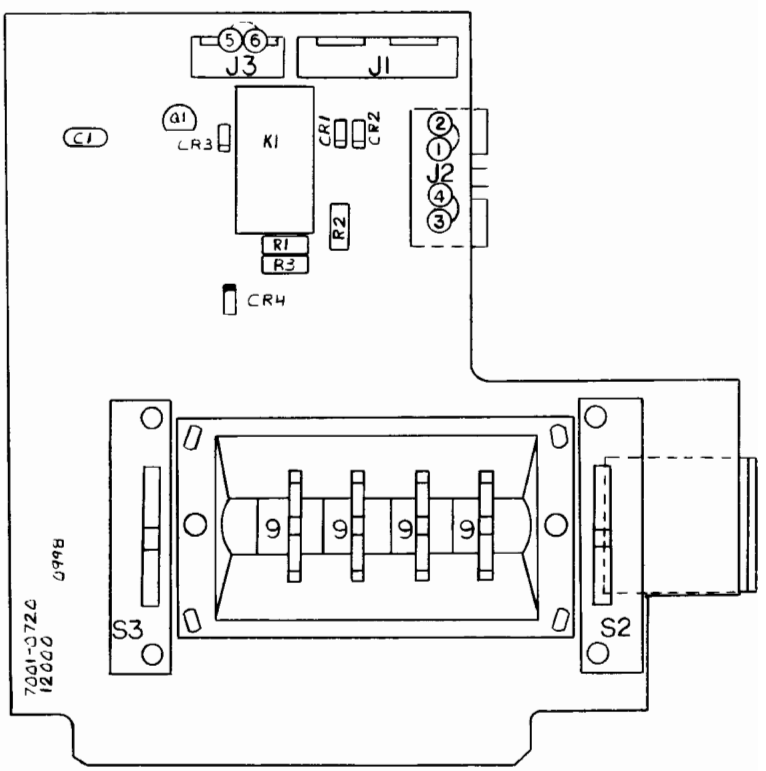
FIGURE 6-86



5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

10000 Front Panel Interconnect Diagram, (8000-0777), CE-5100/5110 Sheet 2 of 2


J3
J1
Q1
C1
CR3
K1
CR1
CR2
J2
R1
R3
R2
CR4
S3
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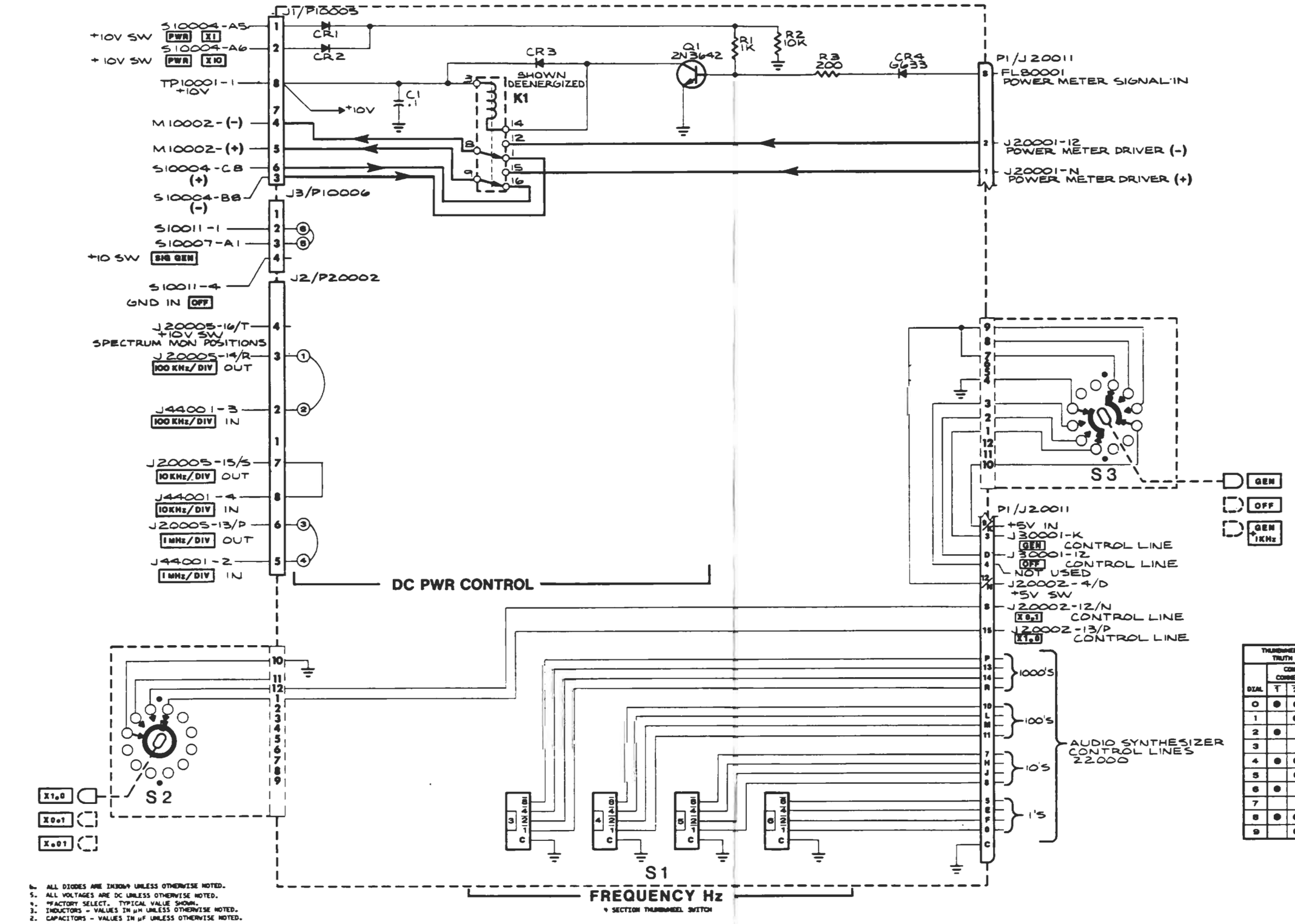
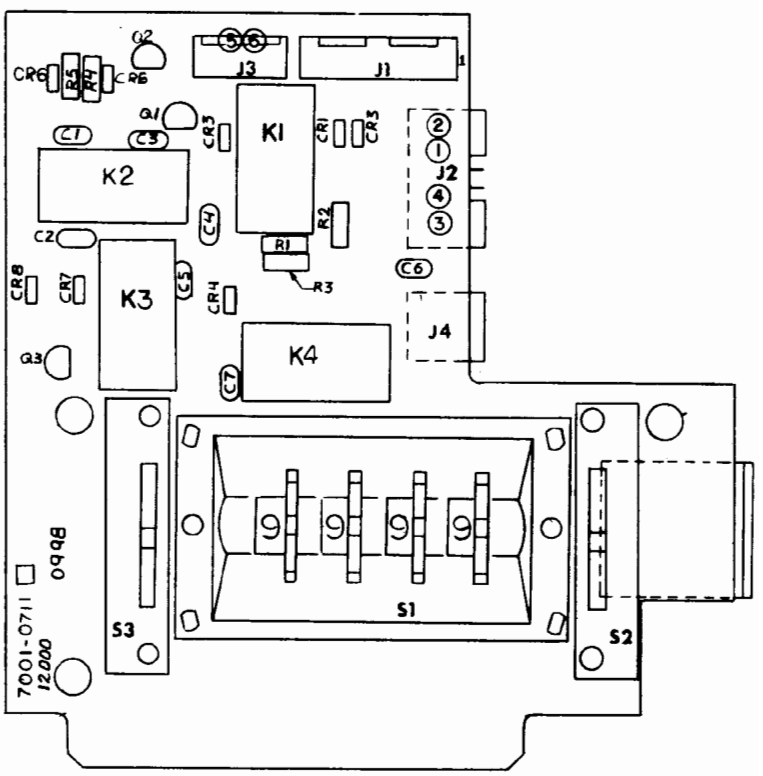
9
7001-0726
12000
0998



12000 Tone Gen Sw Mtg/DC Pwr Cont. (7001-0720)
CE-5100A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
12000	PCB ASSY - TONE GEN SW MTG/DC PWR	7001-0720	CUSHMAN	CE-5100A ONLY
	PRINTED CIRCUIT BOARD	1780-0998	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
	CONNECTOR			
J 1	CONN-8 PIN .1SP STR UCG PCB MT JK	2535-0141	METHODE	1100-8-108-01
J 2	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 3	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
	RELAY			
K 1	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	SWITCH			
S 1	SW ASSY-4 SELECTOR THUMBWHEEL	7011-0028		
S 2	SW-LEVER 1P 3 POS PCB MOUNT	1851-0094	OAK	C/E DWG
S 3	SW-LEVER 2 POLE 3 POSN PCB MT	1851-0115	OAK	C/E DWG


Q2
CR6
R5
R4
R6
J3
J1
Q1
C1
C3
CR5
K1
CR1
CR3
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C4
R2
C2
R1
R3
C6
CR8
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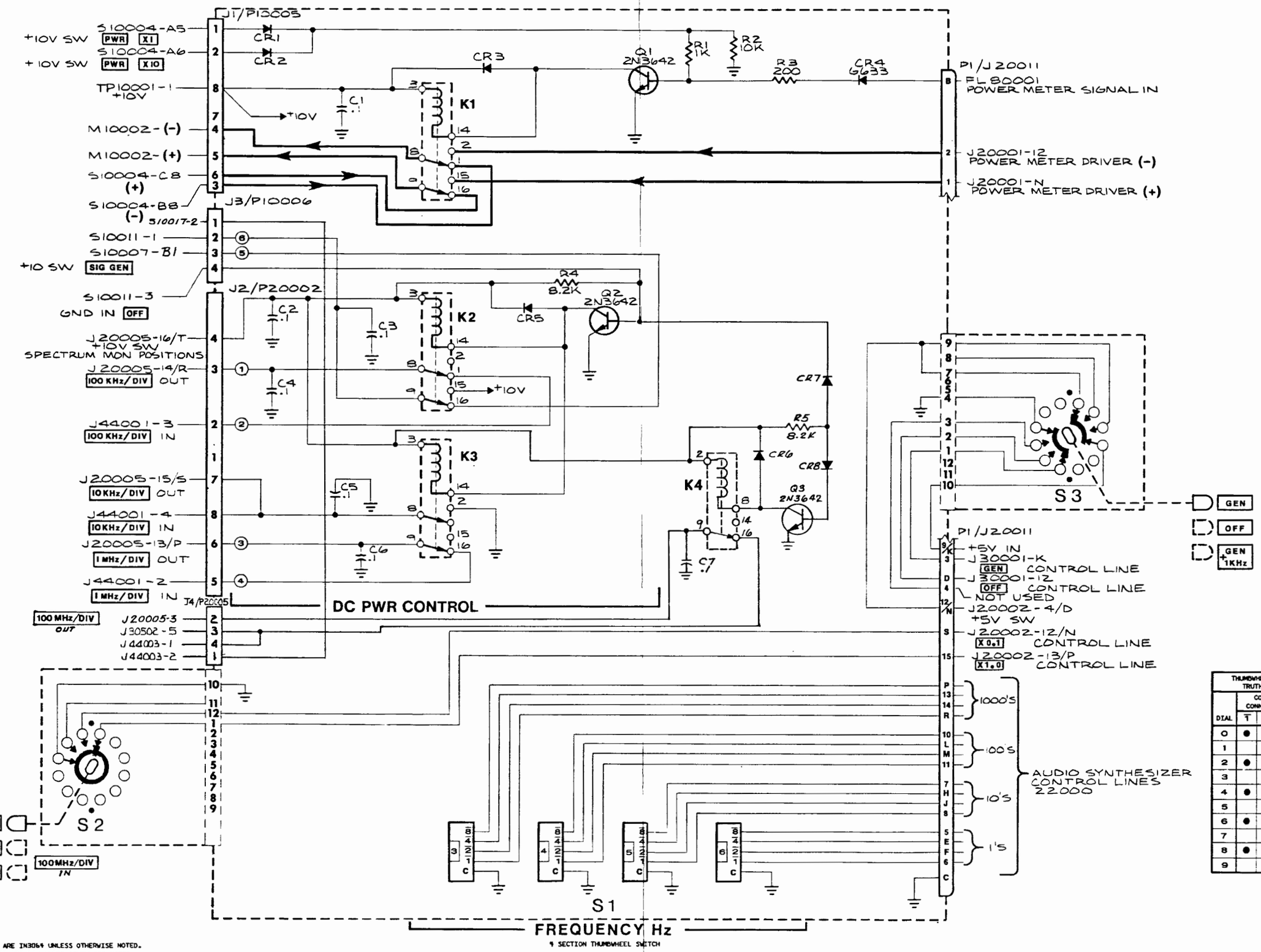


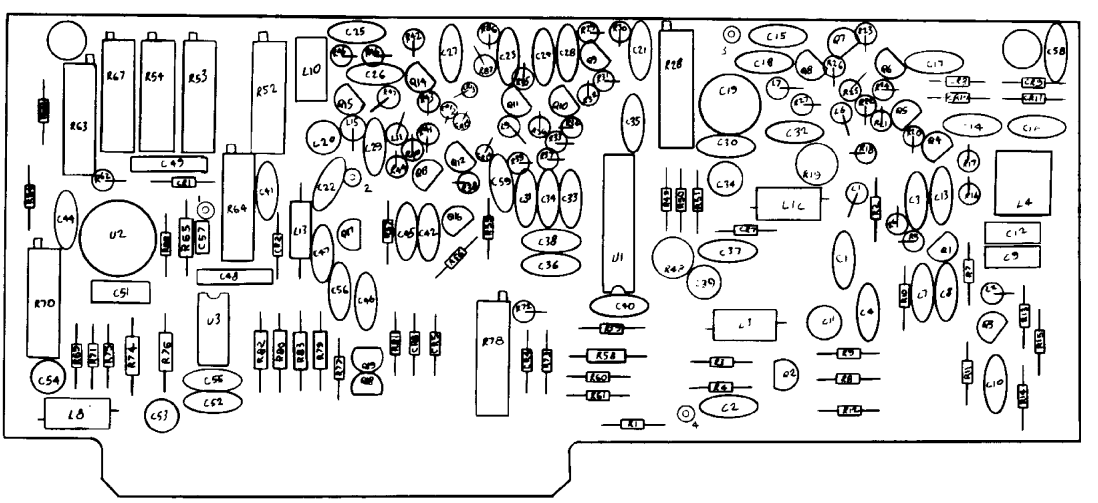
THUMBWHEEL SWITCH TRUTH TABLE

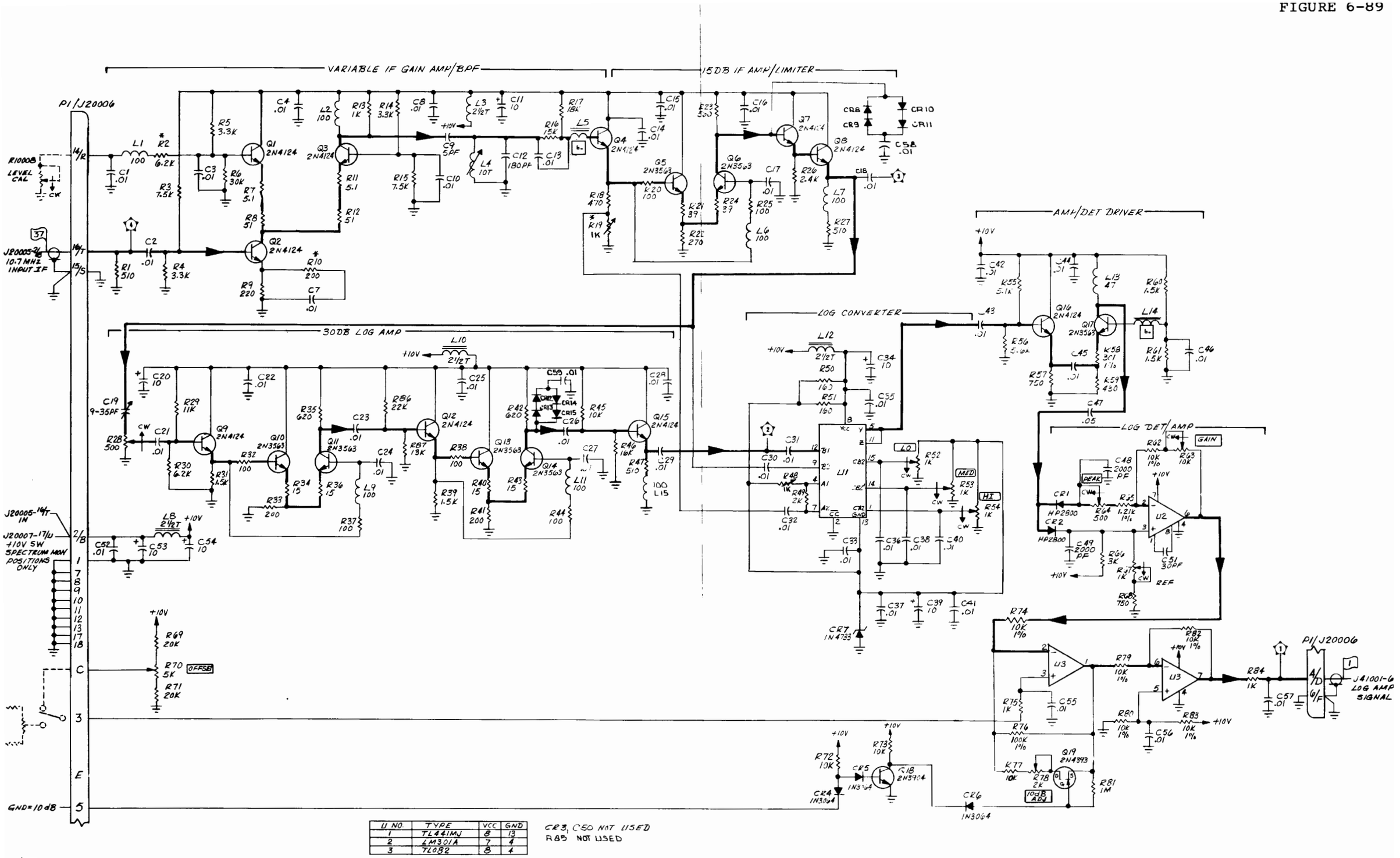
DIAL	COMMON "C" CONNECTED TO 1	2	4	8
0	●	●	●	●
1		●	●	●
2	●		●	●
3			●	●
4	●	●		●
5		●		●
6	●			●
7				●
8	●	●	●	
9		●	●	

NOTE:
6. ALL DIODES ARE IN3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

12000 Tone Gen Sw Mtg/DC Pwr Cont. (7001-0711), CE-5110A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
12000	PCB ASSY - TONE GEN SW MTG/DC PWR	7001-0711	CUSHMAN	CE-5110A ONLY
	PRINTED CIRCUIT BOARD	1780-1075	CUSHMAN	
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 4	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 5	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 7	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-G633 GE SIG D07 1.5PF 40PRV	1282-0005	ITT	C/E DWG G633
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-8 PIN .1SP STR UCG PCB MT JK	2535-0141	METHODE	1100-8-108-01
J 2	CONN-8 PIN .1SP RTANG LKG PCB MT JK	2535-0178		
J 3	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 4	CONN-4 PIN .1SP RTANG LKG PCB MT JK	2535-0174	METHODE	1100-9-104-01
	RELAY			
K 1	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP	HB2-12V
K 2	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP	HB2-12V
K 3	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
K 4	RLY-SPDT 12VDC COIL FORM C PCB MT	1313-0026	ARROW-M	HBI-DC12V
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 2	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 3	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
R 1	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 4	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 5	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
S 1	SW ASSY-4 SELECTOR THUMBWHEEL	7011-0028		
S 2	SW-LEVER 1P 3 POS PCB MOUNT	1851-0094	OAK	C/E DWG
S 3	SW-LEVER 2 POLE 3 POSN PCB MT	1851-0115	OAK	C/E DWG





U NO.	TYPE	VCC	GND
1	TL441MJ	8	13
2	LM301A	7	4
3	TL082	8	4

CR3, C50 NOT USED
R85 NOT USED

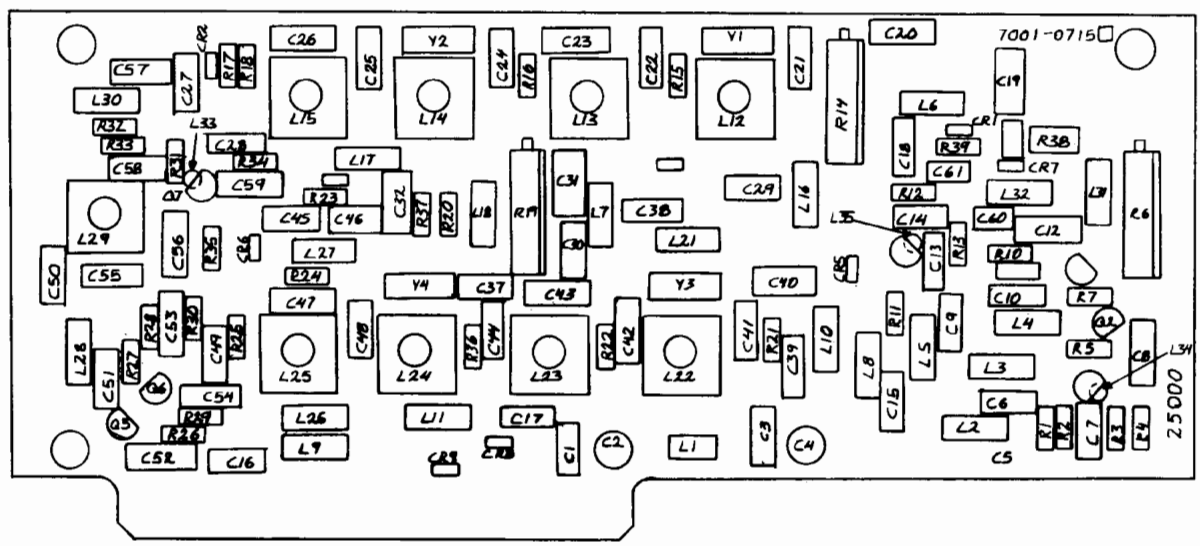
NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

25000 Assy Bandpass Filter (7001-0715)
CE-5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
25000	PCB ASSY - B.P.F.	7001-0715	CUSHMAN	CE-5110A ONLY
	PRINTED CIRCUIT BOARD	1780-1089	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 3	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 4	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 7	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 20	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 21	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 22	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 23	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 24	CAP-47PF 5% 500V DIP MICA	1002-0012	ELMENCO	DM15-E-470J
C 25	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 26	CAP-39PF 5% 500V DIP MICA	1002-0018	ELMENCO	DM15-E-390J
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 37	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 38	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 39	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 40	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 41	CAP-91PF 5% 500V DIP MICA	1002-0027	ELMENCO	DM15-F-910J
C 42	CAP-91PF 5% 500V DIP MICA	1002-0027	ELMENCO	DM15-F-910J
C 43	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 44	CAP-91PF 1% 500V DIP MICA	1002-0048	ELMENCO	DM15-F-910F
C 45	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 46	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 47	CAP-27PF 5% 500V DIP MICA	1002-0008	ELMENCO	DM15-E-270J
C 48	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J
C 49	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 50	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 51	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 52	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 53	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 55	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 56	CAP-5PF .5PF 500V DIP MICA	1002-0028	ELMENCO	DM15-C-050D
C 57	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 59	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 60	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 61	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 62	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 4	DIO-BA379 SI PIN	1281-0101	SIEMENS	BA379
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 3	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 6	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 7	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 8	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 9	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 10	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 11	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 12	COIL 3.9 MHZ	1596-0104		
L 13	COIL 3.9 MHZ	1596-0104		
L 14	COIL 3.9 MHZ	1596-0104		
L 15	COIL 3.9 MHZ	1596-0104		
L 16	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 17	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 18	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 21	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 22	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 23	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 24	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 25	COIL ASSY-VARIABLE	7050-0128	CUSHMAN	IN HOUSE
L 26	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 27	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 28	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 29	COIL-VARIABLE IF	7050-0131		
L 30	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 31	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 32	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 33	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 34	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 35	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
	TRANSISTOR			
Q 1	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 2	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 3	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 4	XSTR-2N4126 PNP SI T092 LOW PWR	1272-0090	FAIRCHILD	2N4126
Q 5	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
Q 6	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
	RESISTOR			
R 1	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 2	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 3	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 4	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 5	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 6	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 7	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 9	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 10	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 11	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 13	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 14	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 15	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 16	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 17	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 22	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 23	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 25	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 26	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 27	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 28	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 29	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 30	RES-6.8K 5% 1/4W CC	1066-6825	ALLEN BRADLEY	CB 6825
R 31	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 32	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 33	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 34	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 35	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 36	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 37	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 38	POT-5K 20% 1/2W 1T CERMET TRMR	1203-0071	BECKMAN	91AR5K
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
	CRYSTAL			
Y 1	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0040	PIEZO	C/E DWG(2194F)
Y 2	FLTR-XTAL 10.7MHZ 3DB BW 15KHZ	1040-0039	CTS KNIGHTS	C/E DWG
Y 3	FLTR-XTAL 10.7MHZ 3DB BW 2KHZ	1040-0038	CTS KNIGHTS	C/E DWG
Y 4	FLTR-XTAL 10.7MHZ 3DB BW 2KHZ	1040-0038	CTS KNIGHTS	C/E DWG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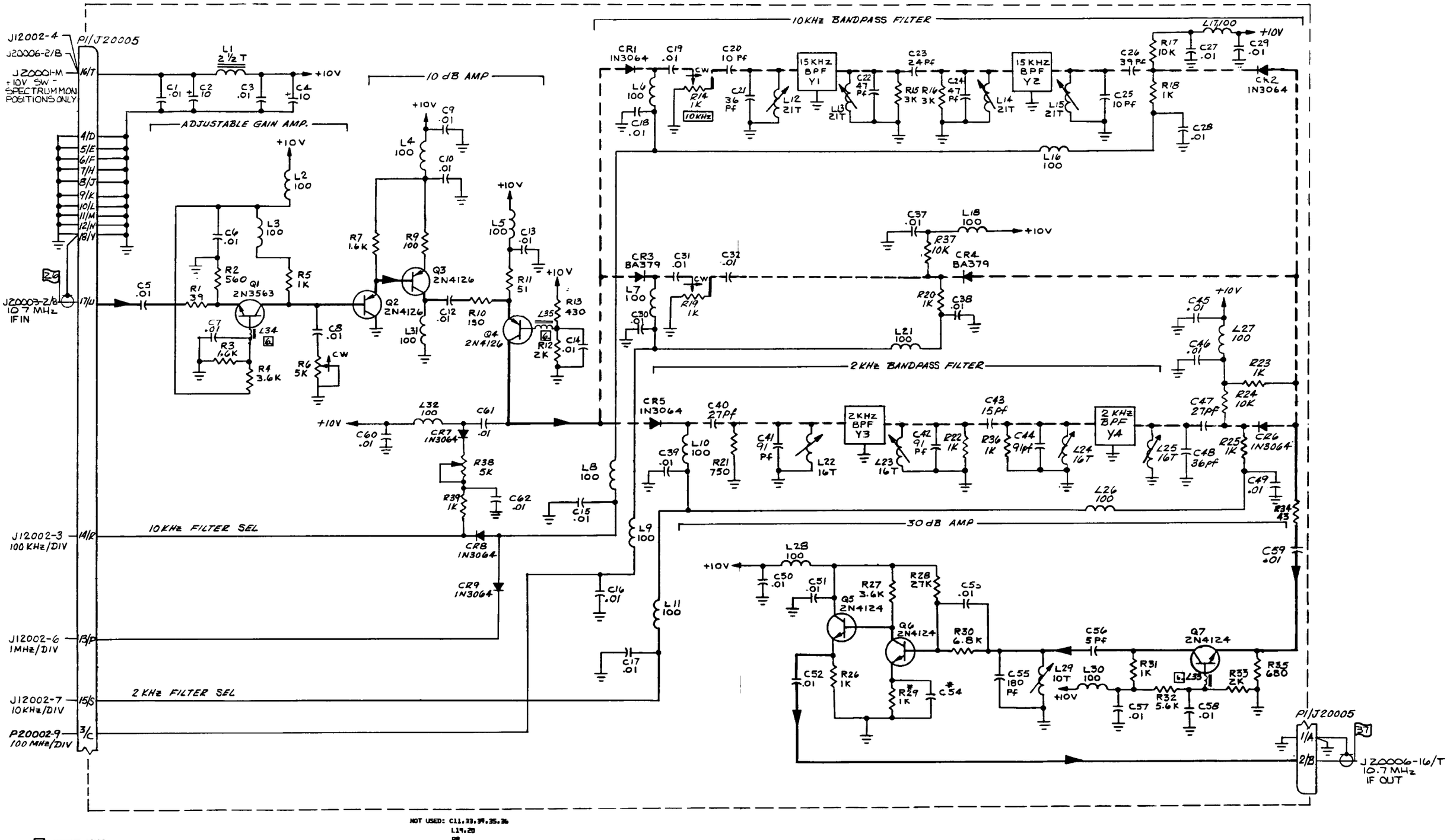


NOT USED: C11,33,39,35,36
L19,20
R8

[L] FERRITE BEADS.

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

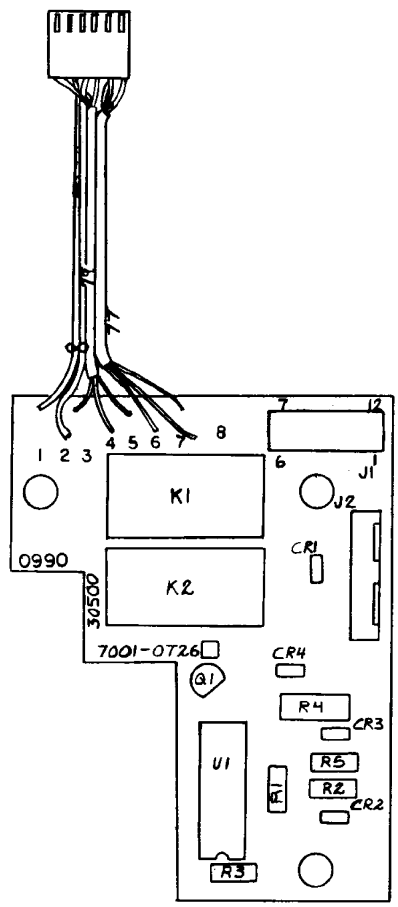
26000 Assy Log Converter (7001-0716)
CE-5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
26000	PCB ASSY - LOG CONVERTER	7001-0716	CUSHMAN	CE-5110A ONLY
	PRINTED CIRCUIT BOARD	1780-0994	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 2	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 3	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 4	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 5	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 6	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 7	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 9	CAP-5PF .5PF 500V DIP MICA	1002-0028	ELMENCO	DM15-C-050D
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 12	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 13	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-9-35PF 200V N650 V MT CER TRMR	1001-0006	ERIE	CV31D350
C 20	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 21	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 22	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 23	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 24	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 25	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 30	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 34	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 35	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 36	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 37	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 38	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 39	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 40	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 41	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 42	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 43	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 44	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 45	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 46	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 47	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 48	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 49	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 51	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 52	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 53	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 55	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 56	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 57	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
	DIODE			
CR 1	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 2	DIO-HP2800 SI HOT CARR A1N 2PF 70PRV	1283-0001	HP	5082-2800
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N4733 SI ZENER A98A 5.1V 10% 1W	1281-0015	MOTOROLA	1N4733
	INDUCTOR			
L 1	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 2	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 3	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 4	COIL-VARIABLE IF	7050-0131		
L 5	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 6	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 7	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 8	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 9	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 10	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 11	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 12	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 13	CH-47UH 5% RF MLD AXL .16DX.38L	1585-0010	DELEVAN	1537-60
L 14	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 3	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 4	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 5	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 8	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 9	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 10	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 11	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 12	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 13	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 14	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 15	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 16	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 17	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 18	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 19	XSTR-2N4393 SI T018 J-FET N-CHAN	1272-0055	TELEDYNE	2N4393
	RESISTOR			
R 1	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 2	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 3	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 4	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 5	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 6	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 7	RES-5.1 OHM 5% 1/4W CC	1066-0002	ALLEN BRADLEY	CB51G5
R 8	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 9	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 10	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 11	RES-5.1 OHM 5% 1/4W CC	1066-0002	ALLEN BRADLEY	CB51G5
R 12	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 15	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 16	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 17	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 18	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 19	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 20	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 21	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 22	RES-270 OHM 5% 1/4W CC	1066-2715	ALLEN BRADLEY	CB2715
R 23	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 24	RES-39 OHM 5% 1/4W CC	1066-3905	ALLEN BRADLEY	CB 3905
R 25	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 26	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 27	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 28	POT-500 OHM 10% 3/4W 15T CERMET TRMR	1215-0011	HELITRIM	89WR
R 29	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 30	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 33	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 34	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 35	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 36	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 37	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 38	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 39	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 40	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 41	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 42	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 43	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 44	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 45	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 46	RES-16K 5% 1/4W CC	1066-1635	ALLEN BRADLEY	CB1635
R 47	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 48	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 49	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 50	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 51	RES-160 OHM 5% 1/4W CC	1066-1615	ALLEN BRADLEY	CB1615
R 52	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 53	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 54	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 55	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 56	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 57	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 58	RES-301 OHM 1% 100PPM FILM	1075-0048	CAT.LIST	55-100
R 59	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 60	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 61	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 62	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 63	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 64	POT-500 OHM 10% 3/4W 15T CERMET TRMR	1215-0011	HELITRIM	89WR
R 65	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 66	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 67	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 68	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 69	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 70	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 71	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 72	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 73	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 74	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 75	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 76	RES-100K 1% 100PPM FILM	1074-0109	CAT.LIST	55-025
R 77	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 78	POT-2K 10% 3/4W 15T CERMET TRMR	1215-0015	BECKMAN	89WR2K
R 79	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 80	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 81	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 82	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 83	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 84	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 85	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 86	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 87	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
	INTEGRATED CIRCUIT			
U 1	IC-TL441MJ LOGARITHMIC AMP	2025-0049	TI	SN56502N
U 2	IC-LM301A OP AMP	2025-0032	NATIONAL	LM301AH
U 3	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP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7
12
6
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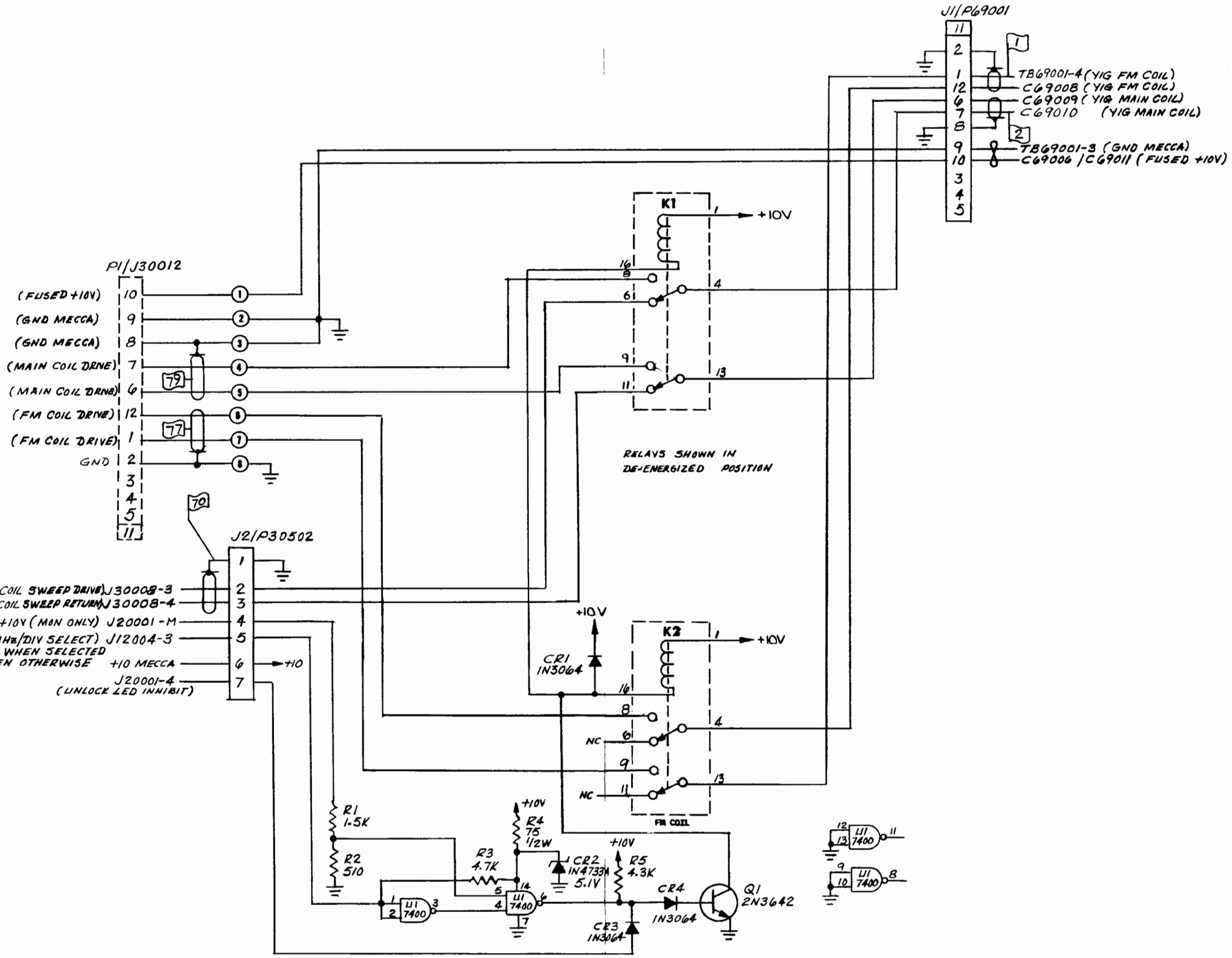
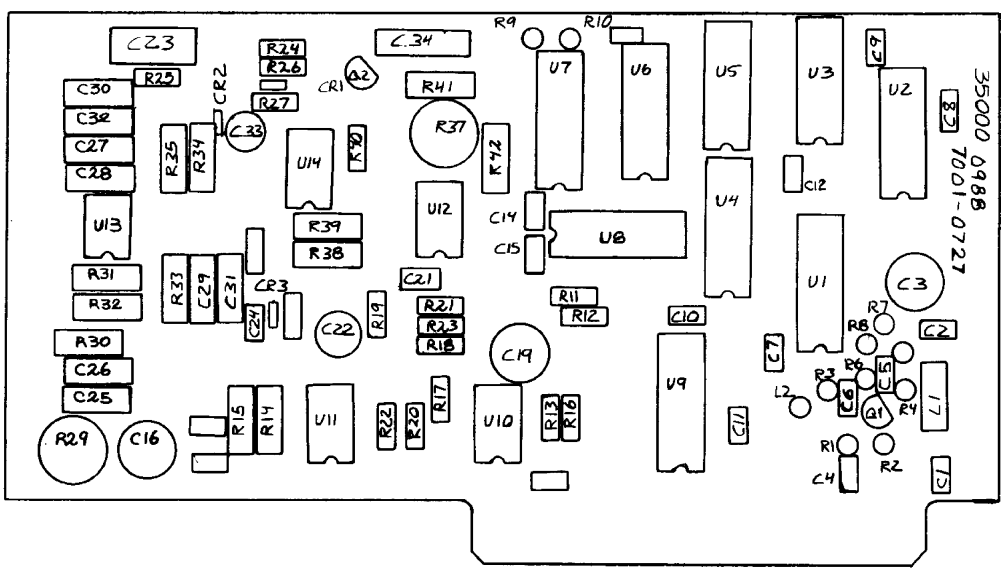
R3



5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
30500	PCB ASSY - SWEEPER RELAY	7001-0726	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0990	CUSHMAN	
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N4733A SI ZENER D041 5.1V 5% 1W	1281-0031	MOTOROLA	1N4733A
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-12 (2X6)PIN .1X.1SP STR PCB MT JK	2535-0110	AMP	87227-6
J 2	CONN-7 PIN .1SP STR LKG PCB MT JK	2535-0147	METHODE	1100-8-107-01
	RELAY			
K 1	RLY-DDT 12VDC COIL 2A CONT 16 PIN DIP	1313-0032	GOULD	DR-2C-12VDC
K 2	RLY-DDT 12VDC COIL 2A CONT 16 PIN DIP	1313-0032	GOULD	DR-2C-12VDC
	TRANSISTOR			
Q 1	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 2	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 3	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 4	RES-75 OHM 5% 1/2W CC	1067-7505	ALLEN BRADLEY	EB7505
R 5	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
	INTEGRATED CIRCUIT			
U 1	IC-SN7400N TTL NAND GATES	2025-0003	TI	SN7400N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C31
CR3
C21
R11
R12
C10
U1
C3
R7
R8
C2
C24
C22
R19
R21
R23
R18
C19
C7
R6
R3
C6
C5
L2
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R4
L1
R30
C26
C25
R29
C16
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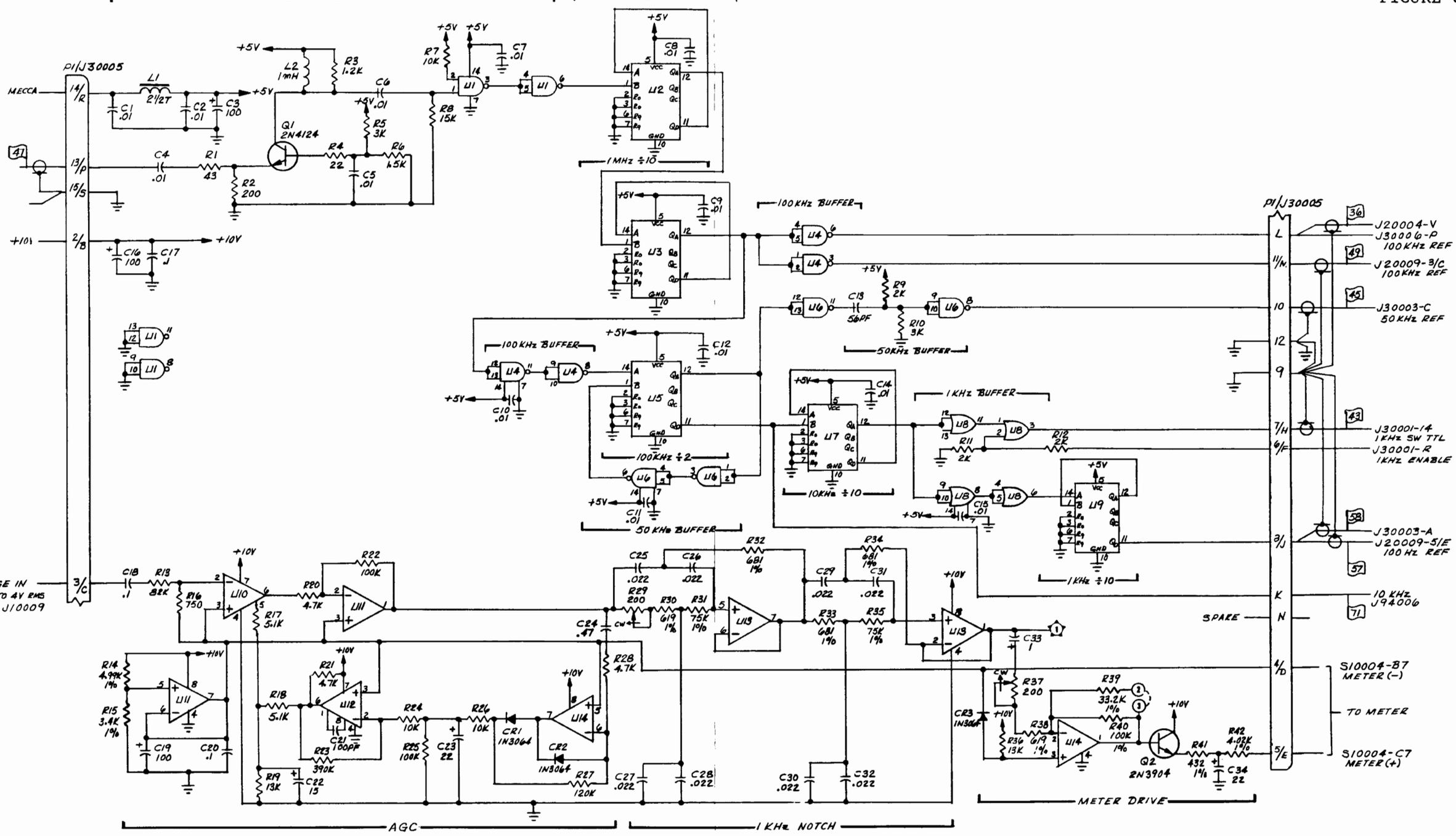
R2
C4
C13

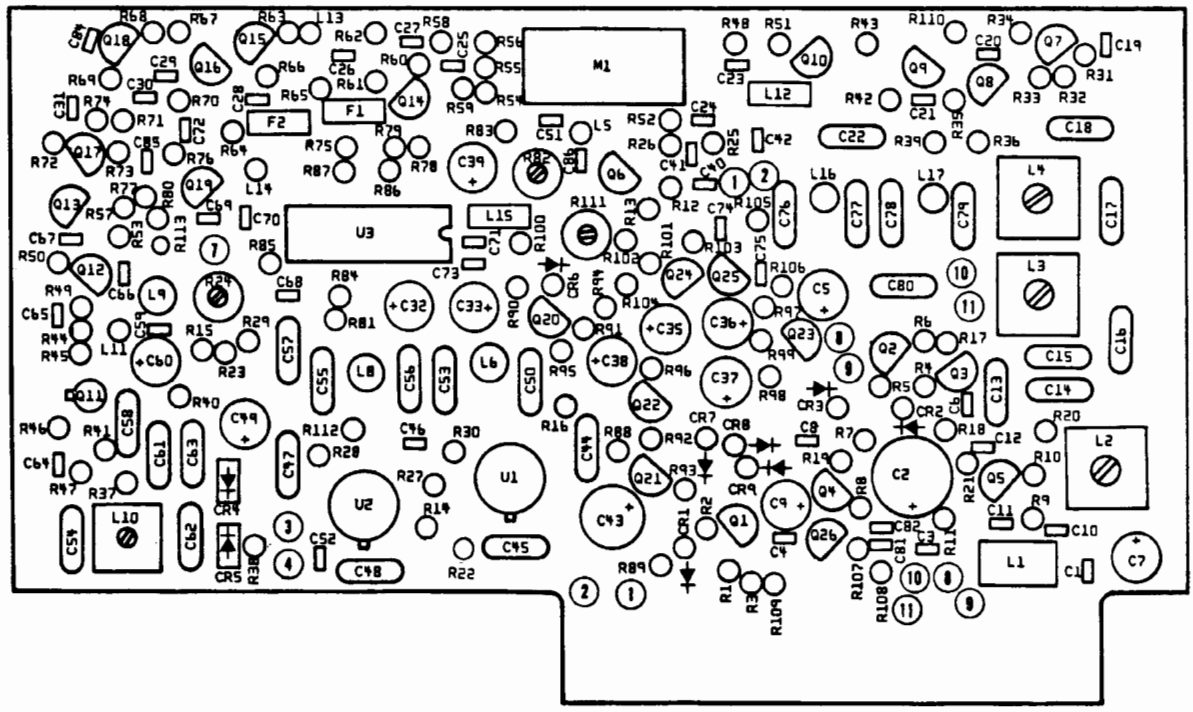


U NO	TYPE	VCC	GND
1,4,6	74LS00	14	7
2,3,5,7,9	74LS90	5	10
8	74LS32	14	7
10	3080	7	4
11,13	1458	8	4
12	CA3130	7	4
14	TL082	8	4

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
35000	PCB ASSY - REF FREQ DIVIDER/SINAD	7001-0727	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0988	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 13	CAP-56PF 10% 100V NPO MINTR CER	1005-0109	TUSONIX	8121-100-C0G0-560K
C 14	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 17	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 22	CAP-15UF +100-10% 25V RDL NP ELCTLT	1013-0042	ALLINS INDUSTRIES	CSR-NP15-25-1
C 23	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
C 24	CAP-.47UF 10% 50V MLD CER	1005-0092	AEROVOX	CK06BX474K
C 25	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 26	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 27	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 28	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 29	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 30	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 31	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 32	CAP-.022UF 1% 100V AXL MET-MYLAR	1008-0082	CAPCO	MME.022MF100V 1%
C 33	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 34	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	CH-1000UH 5% RF MLD AXL .19DX.44L	1585-0020	DELEVAN	2500-28
	TRANSISTOR			
Q 1	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 2	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 3	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 4	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 5	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 6	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 9	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 10	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 11	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 12	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 13	RES-82K 5% 1/4W CC	1066-8235	ALLEN BRADLEY	CB 8235
R 14	RES-4.99K 1% 100PPM FILM	1075-0095	CAT.LIST	55-100
R 15	RES-3.4K 1% 100PPM FILM	1075-0020	CAT.LIST	55-100
R 16	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 17	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 18	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 19	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 20	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 21	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 22	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 23	RES-390K 5% 1/4W CC	1066-3945	ALLEN BRADLEY	CB 3945
R 24	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 25	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-120K 5% 1/4W CC	1066-1245	ALLEN BRADLEY	CB1245
R 28	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 29	POT-200 OHM 20% 1/2W 1T CERMET TRMR	1215-0055	BECKMAN	91AR200
R 30	RES-619 OHM 1% 100PPM FILM	1075-0063	CAT.LIST	55-100
R 31	RES-75K 1% 100PPM FILM	1075-0135	CAT. LIST	55-100
R 32	RES-681 OHM 1% 100PPM FILM	1075-0164	CAT. LIST	55-100
R 33	RES-681 OHM 1% 100PPM FILM	1075-0164	CAT LIST	55-100
R 34	RES-681 OHM 1% 100PPM FILM	1075-0164	CAT. LIST	55-100
R 35	RES-75K 1% 100PPM FILM	1075-0135	CAT. LIST	55-100
R 36	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 37	POT-200 OHM 20% 1/2W 1T CERMET TRMR	1215-0055	BECKMAN	91AR200
R 38	RES-619 OHM 1% 100PPM FILM	1075-0063	CAT.LIST	55-100
R 39	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100
R 40	RES-100K 1% 100PPM FILM	1075-0105	CAT.LIST	55-100
R 41	RES-432 OHM 1% 100PPM FILM	1075-0142	CAT LIST	55-100
R 42	RES-4.02K 1% 100PPM FILM	1075-0094	CAT.LIST	55-100
	INTEGRATED CIRCUIT			
U 1	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 2	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 3	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 4	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 5	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 6	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 7	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 8	IC-SN74LS32N QUAD 2-INPUT POS-OR GATE	2025-0085	TI	SN74LS32N
U 9	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 10	IC-3080 8 PIN OP TRANSCONO AMPL	2025-0275	RCA	CA3080E
U 11	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 12	IC-3130 8 PIN DIP OP AMPL	2025-0269	RCA	CA3130E
U 13	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 14	IC-TL082 8 PIN DIP BIFET OP AMPL	2025-0192	TI	TL082CP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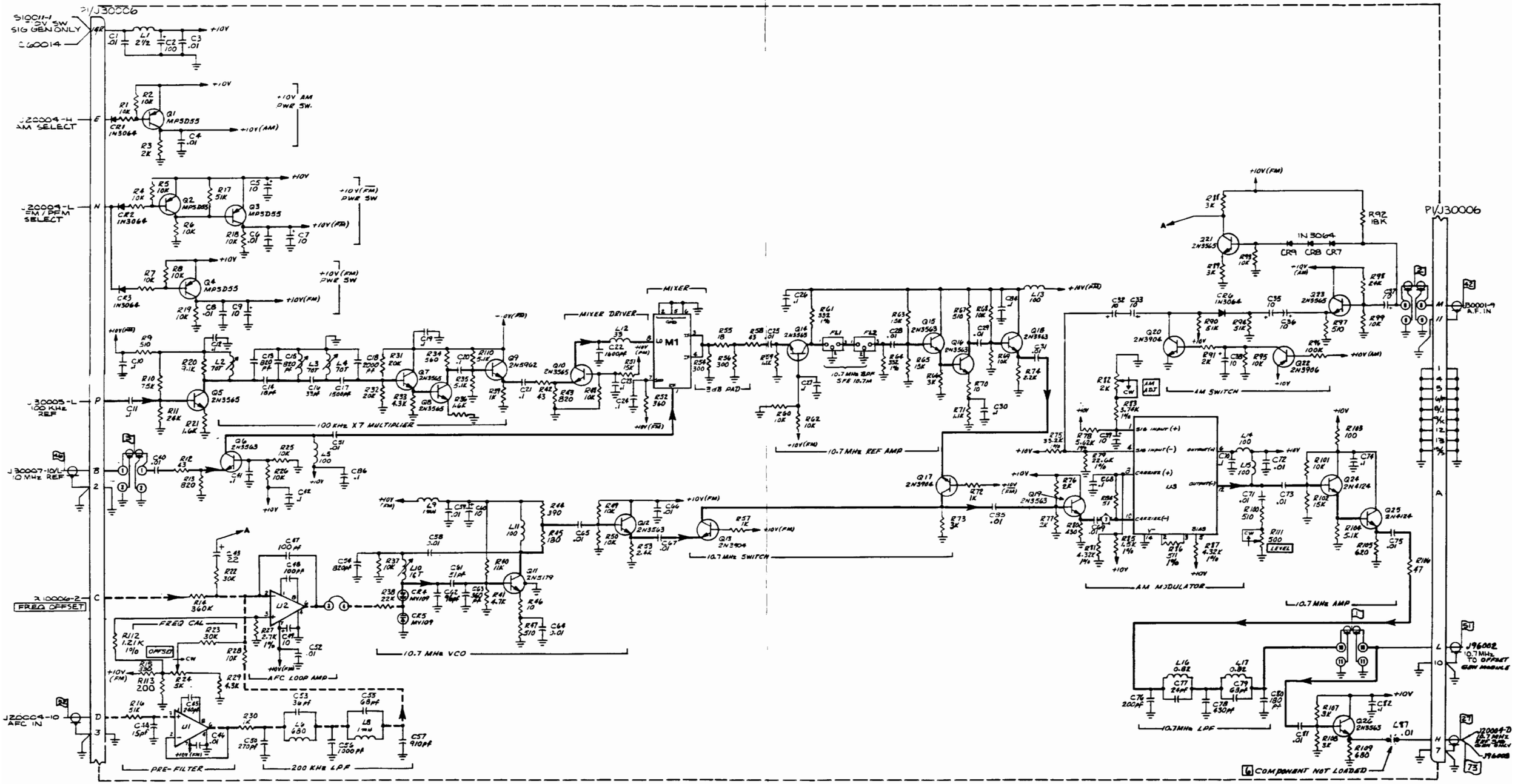


U NO	TYPE	VCC	GND
5	MC1496		12
1,2	CA3130	7	4

REF DES NOT USED: C39, C83, L7

NOTE:
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
6. LS7 INSTALLED & REMOVED DURING BOARD TEST.

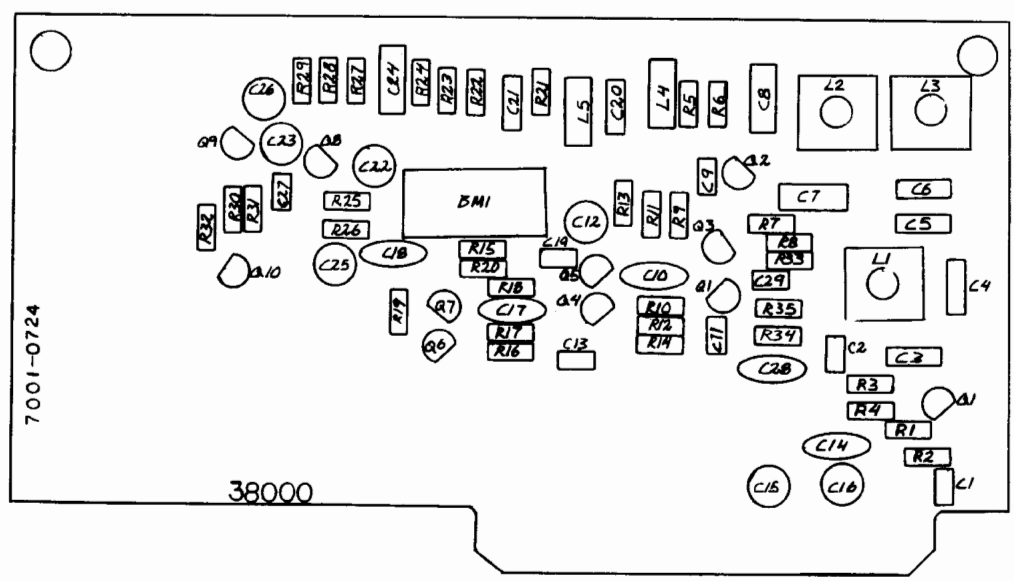
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
36000	PCB ASSY - FM/AM MODULATION	7001-0732	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-1030	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 4	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 5	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 13	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 14	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 15	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 16	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 17	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 18	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 22	CAP-1600PF 5% 500V DIP MICA	1002-0072	ELMENCO	DM19-F-162J
C 23	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 24	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 31	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 32	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 33	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 35	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 36	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 37	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 38	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 39	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 40	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 41	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 42	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 43	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
C 44	CAP-15PF 5% 500V DIP MICA	1002-0001	ELMENCO	DM15-C-150J
C 45	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 46	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 47	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 48	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 49	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 50	CAP-270PF 5% 500V DIP MICA	1002-0031	ELMENCO	DM15-F-2715
C 51	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 52	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 53	CAP-36PF 5% 500V DIP MICA	1002-0041	ELMENCO	DM15-E-360J

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 54	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 55	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 56	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 57	CAP-910PF 5% 100V DIP MICA	1002-0062	ELMENCO	DM15-F-911J
C 58	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 59	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 60	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 61	CAP-51PF 5% 500V DIP MICA	1002-0045	ELMENCO	DM15-E-510J
C 62	CAP-96PF 1% 500V DIP MICA	1002-0049	ELMENCO	DM15-F-960F
C 63	CAP-360PF 5% 500V DIP MICA	1002-0040	ELMENCO	DM15-F-361J
C 64	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 65	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 66	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 67	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 68	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 69	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 70	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 71	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 72	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 73	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 74	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 75	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 76	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 77	CAP-24PF 5% 500V DIP MICA	1002-0051	ELMENCO	DM15-C-240J
C 78	CAP-430PF 5% 500V DIP MICA	1002-0034		
C 79	CAP-68PF 5% 500V DIP MICA	1002-0013	ELMENCO	DM15-E-680J
C 80	CAP-180PF 5% 500V DIP MICA	1002-0005	ELMENCO	DM15-F-181J
C 81	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 82	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 84	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 85	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 86	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 5	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	FILTER			
FL 1	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP.	10.70MHZ RED ONLY
FL 2	FLTR-CER 10.7 MHZ 3DB BW 280 KHZ	1040-0043	MURATA CORP	10.70MHZ RED ONLY
	INDUCTOR			
L 1	CH-2 1/2 TURN WIDEBAND 4B	1586-0003	FERROXCUBE	VK20020/4B
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 5	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 6	CH-680UH 5% RF MLD AXL .19DX.44L	1585-0023	DELEVAN	2500-20
L 8	CH-1000UH 5% RF MLD AXL .19DX 44L	1585-0020	DELEVAN	2500-28

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
L 9	CH-1000UH 5% RF MLD AXL 19DX.44L	1585-0020	DELEVAN	2500-28
L 10	COIL-VAR IF L31-6/30GA/16T	1596-0292		
L 11	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 12	CH-33UH 10% RF MLD AXL .10DX.25L	1585-0071	DELEVAN	1025-56
L 13	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 14	CH-100UH 10% RF MLD AXL 10DX.25L	1585-0054	DELEVAN	1025-68
L 15	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 16	CH-.82UH 10% RF MLD AXL .16DX.38L	1585-0061	DELEVAN	1537-10
L 17	CH-.82UH 10% RF MLD AXL 16DX.38L	1585-0061	DELEVAN	1537-10
	MIXER			
M 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	TRANSISTOR			
Q 1	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 2	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 3	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 4	XSTR-MPSD55 PNP SI T092 LOW PWR	1272-0092	MOTOROLA	MPS-D55
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N5962 NPN SI T092 LOW PWR	1272-0059	FAIRCHILD	2N5962
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 12	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 13	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 14	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 15	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 16	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 17	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 18	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 19	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 20	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 21	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 22	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 23	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 24	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 25	XSTR-2N4124 NPN SI T092 LOW PWR	1272-0091	FAIRCHILD	2N4124
Q 26	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 3	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 4	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 5	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 6	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 7	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 8	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 9	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 10	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 11	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 12	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 13	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 14	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 15	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 16	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 17	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 21	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 31	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 32	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 33	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 34	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 35	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 36	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 37	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 38	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 40	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 43	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 44	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 45	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 46	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 47	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 50	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 51	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 52	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 53	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 54	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 55	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 56	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 57	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 58	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 59	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 61	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 63	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 64	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 65	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 66	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 67	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 68	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 69	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 70	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 71	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 72	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 73	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 74	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 75	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100
R 76	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 77	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 78	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 79	RES-22.6K 1% 100PPM FILM	1074-1056	CAT.LIST	55-100
R 80	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 81	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 82	POT-2K 10% 1/2W 1T CERMET TRMR	1215-0057	ALLEN BRADLEY	A2A202
R 83	RES-3.74K 1% 150PPM FILM	1074-1017	CAT.LIST	55-100
R 84	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 85	RES-1.5K 1% 100PPM FILM	1075-0039	CAT.LIST	55-100
R 86	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 87	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 88	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 89	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 90	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 91	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 92	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 93	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 94	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 95	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 96	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 97	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 98	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 99	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 100	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 101	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 102	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 103	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 104	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 105	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 106	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 107	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 108	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 109	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 110	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 111	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 112	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 113	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-1496 14 PIN DIP	2025-0197	MOTOROLA	MC1496P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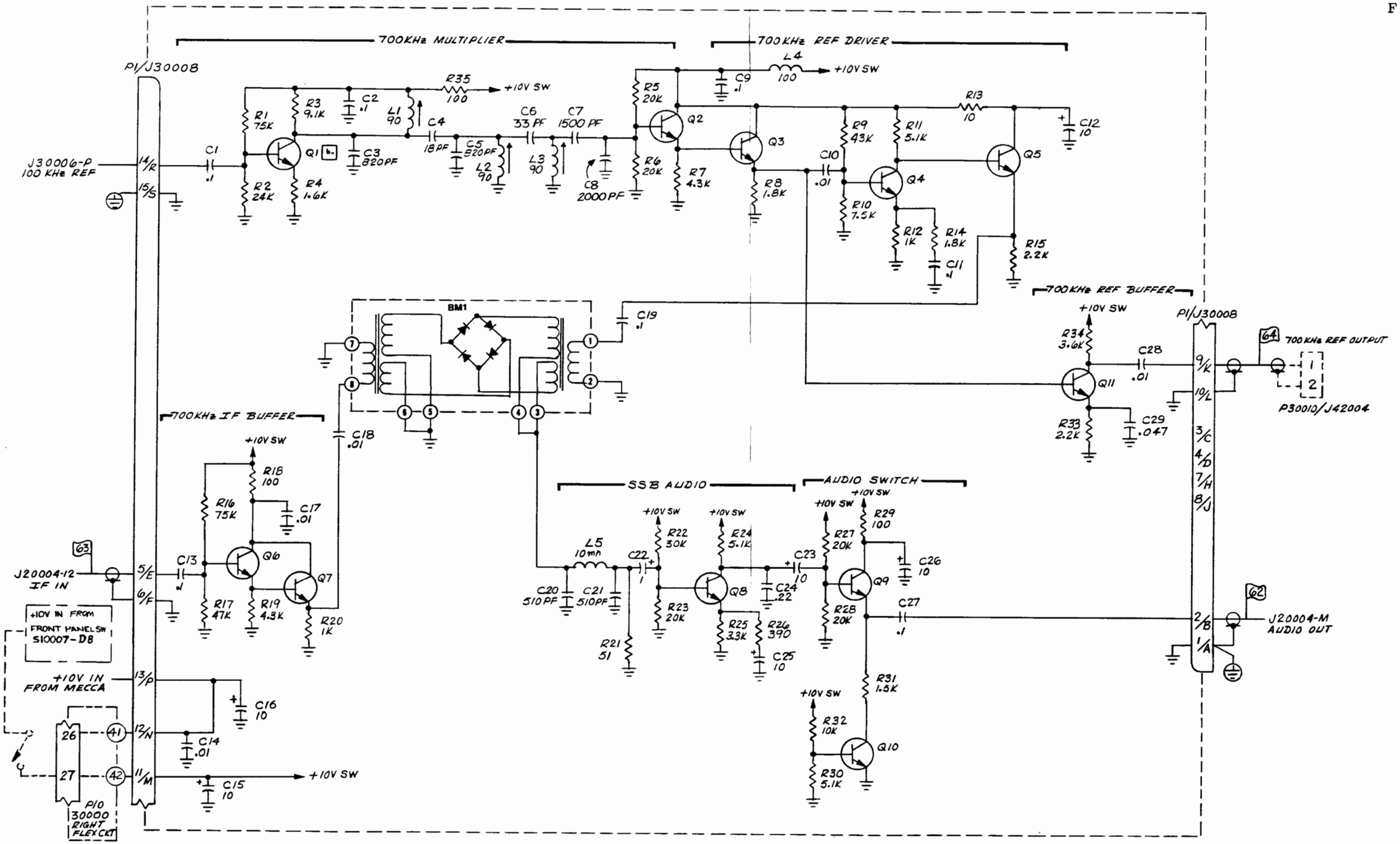


OUT OF SEQUENCE	
R35	NEAR Q1

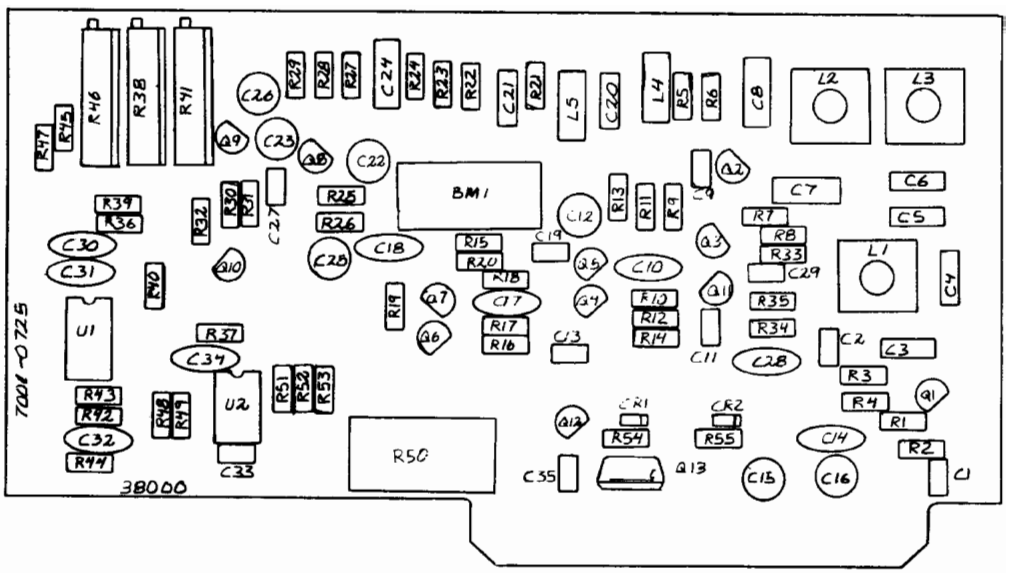
NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

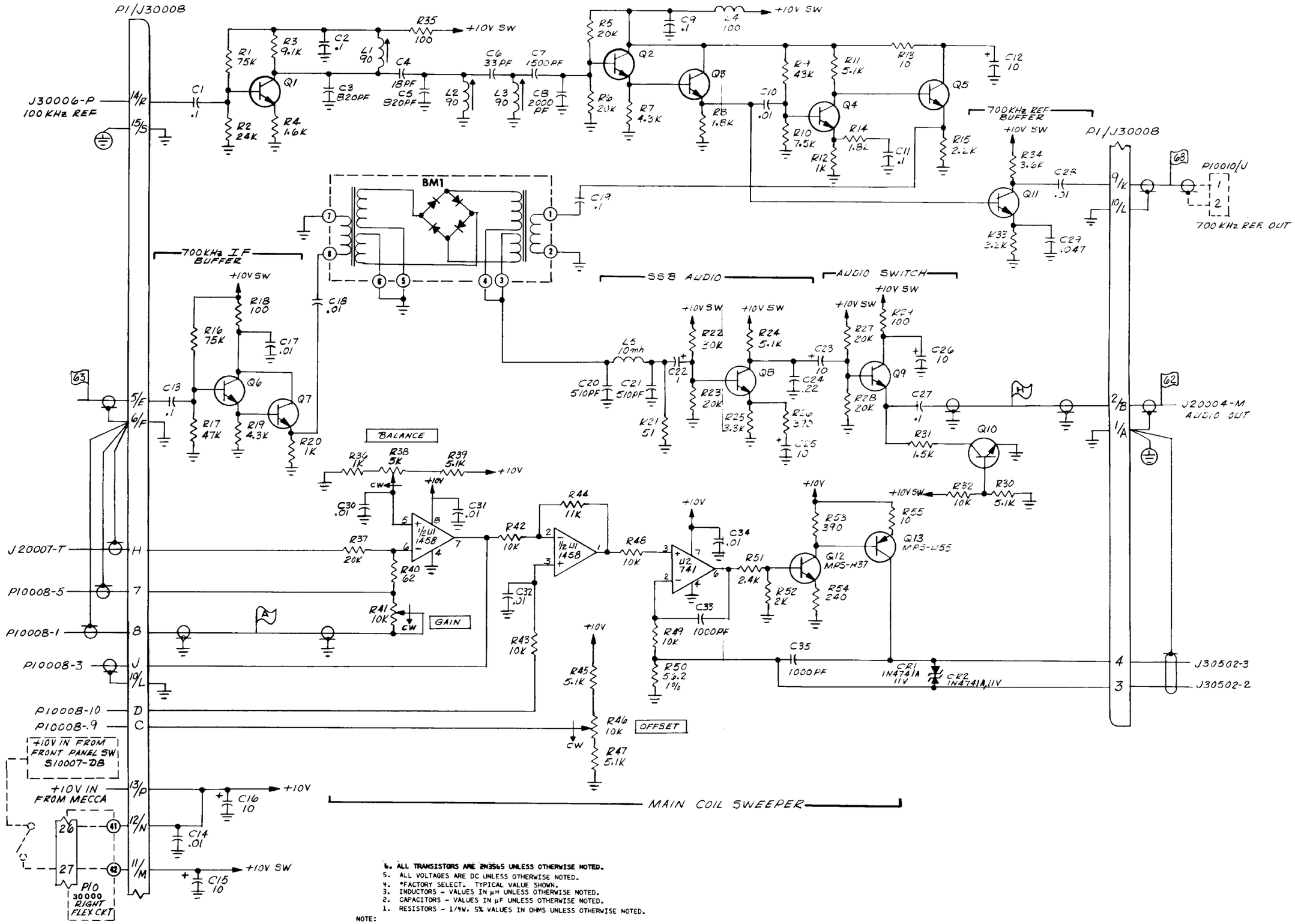
[b.] ALL TRANSISTORS ARE 2N3565 UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
38000	PCB ASSY - SSB/ZERO BEAT	7001-0724	CUSHMAN	CE-5100A
	PRINTED CIRCUIT BOARD	1780-0991	CUSHMAN	
	MIXER			
BM 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 4	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 5	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 6	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 7	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 8	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 16	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 21	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 22	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 23	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 24	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 25	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 26	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
	INDUCTOR			
L 1	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
	TRANSISTOR			
Q 1	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 2	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 3	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 4	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 2	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 3	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 4	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 5	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 6	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 7	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 8	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 9	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 10	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 14	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 15	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 16	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 17	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 18	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 19	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 24	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 25	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 26	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 27	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 28	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 29	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 30	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 34	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 35	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015



MAIN COIL SWEEPER / SSB / ZERO BEAT
7001-0725



NOTE:

6. ALL TRANSISTORS ARE 2N3565 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

38000 SSB/Zero Beat/Sweep Driver (7001-0725)
CE-5110

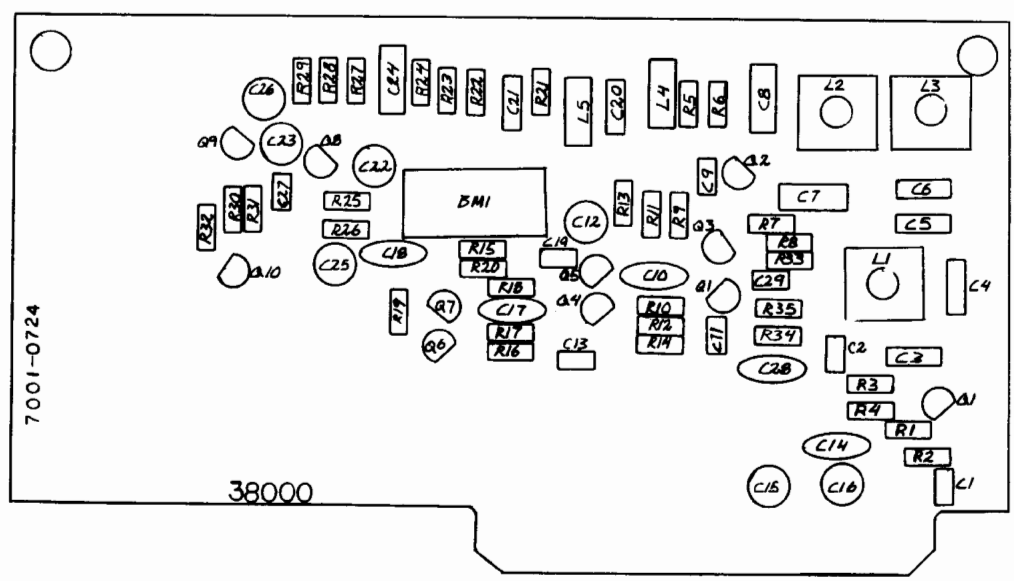
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
38000	PCB ASSY - MAIN COIL SWEEP/SSB/ZB	7001-0725	CUSHMAN	CE-5110A ONLY
	PRINTED CIRCUIT BOARD	1780-0991	CUSHMAN	
	MIXER			
BM 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 4	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 5	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 6	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 7	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 8	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 16	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 21	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 22	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 23	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 24	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 25	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 26	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
C 30	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 35	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
	DIODE			
CR 1	DIO-1N4741A SI ZENER A98A 11V 5% 1W	1281-0107	MOTOROLA	1N4741A
CR 2	DIO-1N4741A SI ZENER A98A 11V 5% 1W	1281-0107	MOTOROLA	1N4741A
	INDUCTOR			
L 1	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 2	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 3	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 4	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 12	XSTR-MPS-H37 NPN SI T092 LOW PWR	1272-0073	MOTOROLA	MPS-H37
Q 13	XSTR-MPS-U55 PNP SI B18 HIGH PWR	1272-0074		
	RESISTOR			
R 1	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 2	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 3	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 4	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 5	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 6	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 7	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 8	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 9	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 10	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 14	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 15	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 16	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 17	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 18	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 19	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 24	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 25	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 26	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 27	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 28	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 29	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 30	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 34	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 35	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 36	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 37	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 38	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 39	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 40	RES-62 OHM 5% 1/4W CC	1066-6205	ALLEN BRADLEY	CB 6205

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 41	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 42	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 43	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 44	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 45	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 46	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 47	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 50	RES-56.2 OHM 1% 1W 2PPM AXL WW	1157-0001	JORDAN	5-190+OR-2PPM 1%
R 51	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 52	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 53	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 54	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 55	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 2	IC-UA741CP	2025-0067	TI	UA741CP

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 14	RES-360K 5% 1/4W CC	1066-3645	ALLEN BRADLEY	CB3645
R 15	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 16	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 17	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 18	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 19	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 20	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 21	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 24	POT-5K 10% 1/2W 1T CERMET TRMR	1215-0053	ALLEN BRADLEY	A2A502
R 25	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 26	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 27	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 30	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 31	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 32	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 33	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 34	RES-560 OHM 5% 1/4W CC	1066-5615	ALLEN BRADLEY	CB 5615
R 35	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 36	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 37	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 38	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 39	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 40	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 41	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 42	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 43	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 44	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 45	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 46	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 47	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 50	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 51	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 52	RES-360 OHM 5% 1/4W CC	1066-3615	ALLEN BRADLEY	CB3615
R 53	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 54	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 55	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 56	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 57	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 58	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 59	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 61	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 62	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 63	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 64	RES-332 OHM 1% 100PPM FILM	1075-0024	CAT.LIST	55-100
R 65	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 66	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 67	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 68	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 69	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 70	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 71	RES-1.1K 5% 1/4W CC	1066-1125	ALLEN BRADLEY	CB1125
R 72	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 73	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 74	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 75	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100
R 76	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 77	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 78	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 79	RES-22.6K 1% 100PPM FILM	1074-1056	CAT.LIST	55-100
R 80	RES-430 OHM 5% 1/4W CC	1066-4315	ALLEN BRADLEY	CB 4315
R 81	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 82	POT-2K 10% 1/2W 1T CERMET TRMR	1215-0057	ALLEN BRADLEY	A2A202
R 83	RES-3.74K 1% 150PPM FILM	1074-1017	CAT.LIST	55-100
R 84	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 85	RES-1.5K 1% 100PPM FILM	1075-0039	CAT.LIST	55-100
R 86	RES-511 OHM 1% 150 PPM FILM	1074-1008	CAT.LIST	55-100
R 87	RES-4.32K 1% 100PPM FILM	1075-0111	CAT.LIST	55-100
R 88	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 89	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 90	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 91	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 92	RES-18K 5% 1/4W CC	1066-1835	ALLEN BRADLEY	CB1835
R 93	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 94	RES-51K 5% 1/4W CC	1066-5135	ALLEN BRADLEY	CB 5135
R 95	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 96	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 97	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 98	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 99	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 100	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 101	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 102	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 103	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 104	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 105	RES-620 OHM 5% 1/4W CC	1066-6215	ALLEN BRADLEY	CB 6215
R 106	RES-47 OHM 5% 1/4W CC	1066-4705	ALLEN BRADLEY	CB 4705
R 107	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 108	RES-3K 5% 1/4W CC	1066-3025	ALLEN BRADLEY	CB3025
R 109	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 110	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 111	POT-500 OHM 10% 1/2W 1T CERMET TRMR	1215-0051	ALLEN BRADLEY	A2A501
R 112	RES-1.21K 1% 100PPM FILM	1075-0042	CAT.LIST	55-100
R 113	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
	INTEGRATED CIRCUIT			
U 1	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 2	IC-CA3130T OP AMPL	2025-0161	RCA	CA3130T
U 3	IC-1496 14 PIN DIP	2025-0197	MOTOROLA	MC1496P


7001-0724
38000
BM1
L1
L2
L3
L4
L5
C1
C2
C3
C4
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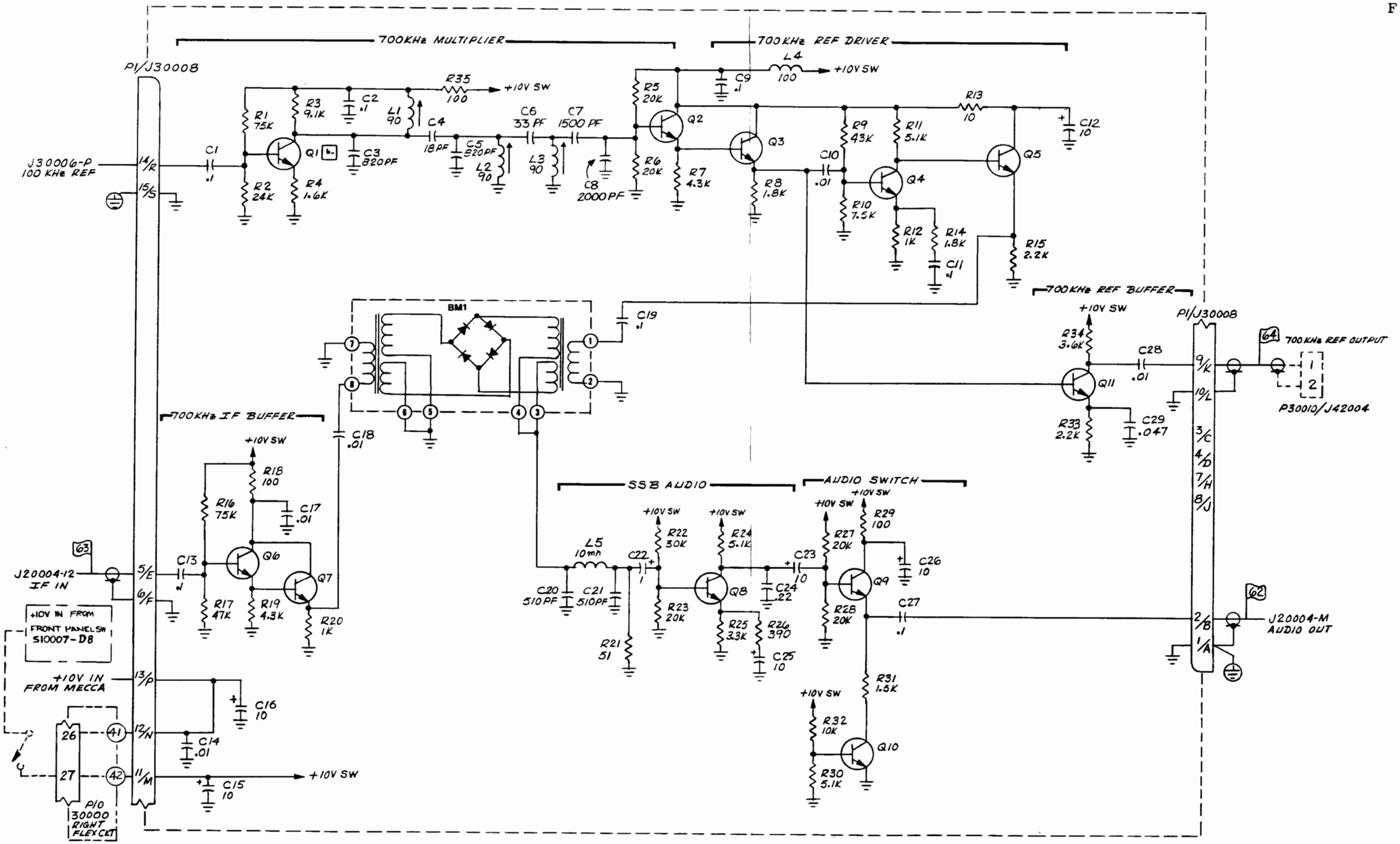


OUT OF SEQUENCE	
R35	NEAR Q1

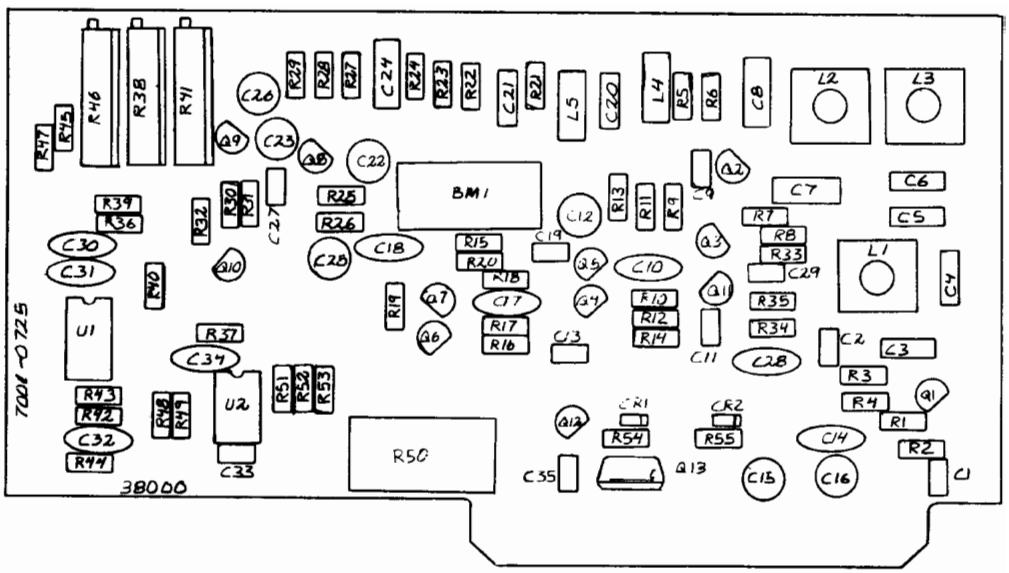
NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

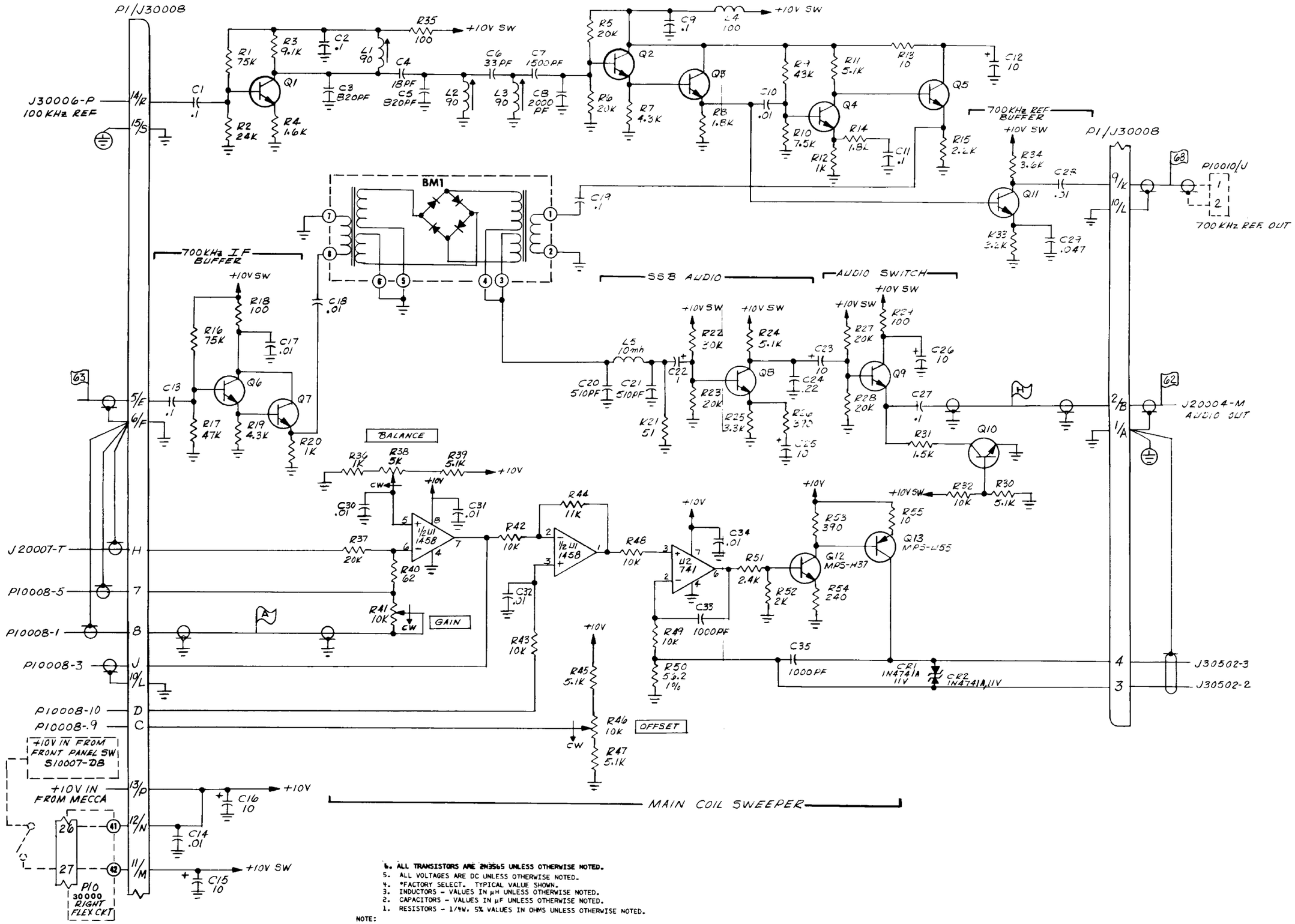
[b.] ALL TRANSISTORS ARE 2N3565 UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
38000	PCB ASSY - SSB/ZERO BEAT	7001-0724	CUSHMAN	CE-5100A
	PRINTED CIRCUIT BOARD	1780-0991	CUSHMAN	
	MIXER			
BM 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 4	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 5	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 6	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 7	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 8	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 16	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 21	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 22	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 23	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 24	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 25	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 26	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
	INDUCTOR			
L 1	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36
	TRANSISTOR			
Q 1	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 2	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 3	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 4	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 2	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 3	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 4	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 5	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 6	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 7	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 8	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 9	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 10	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 14	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 15	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 16	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 17	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 18	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 19	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 24	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 25	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 26	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 27	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 28	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 29	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 30	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 34	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 35	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015



MAIN COIL SWEEPER / SSB / ZERO BEAT
7001-0725



NOTE:

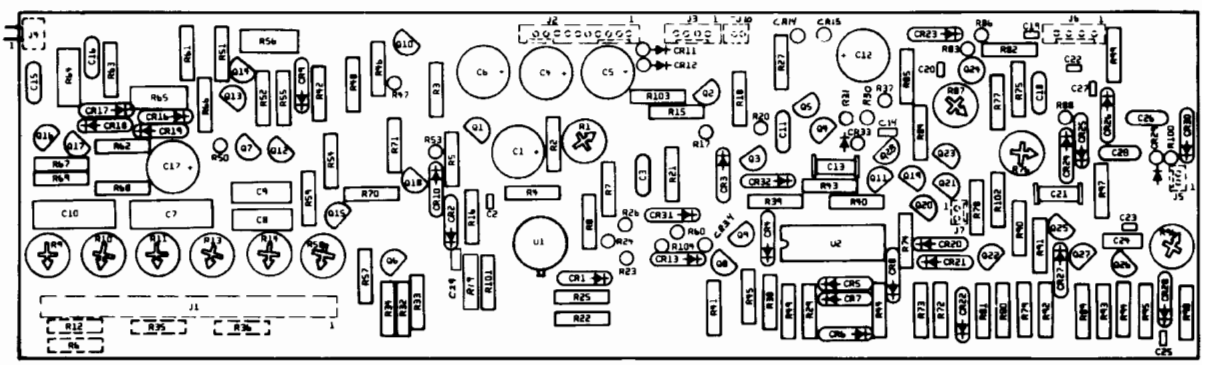
6. ALL TRANSISTORS ARE 2N3565 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

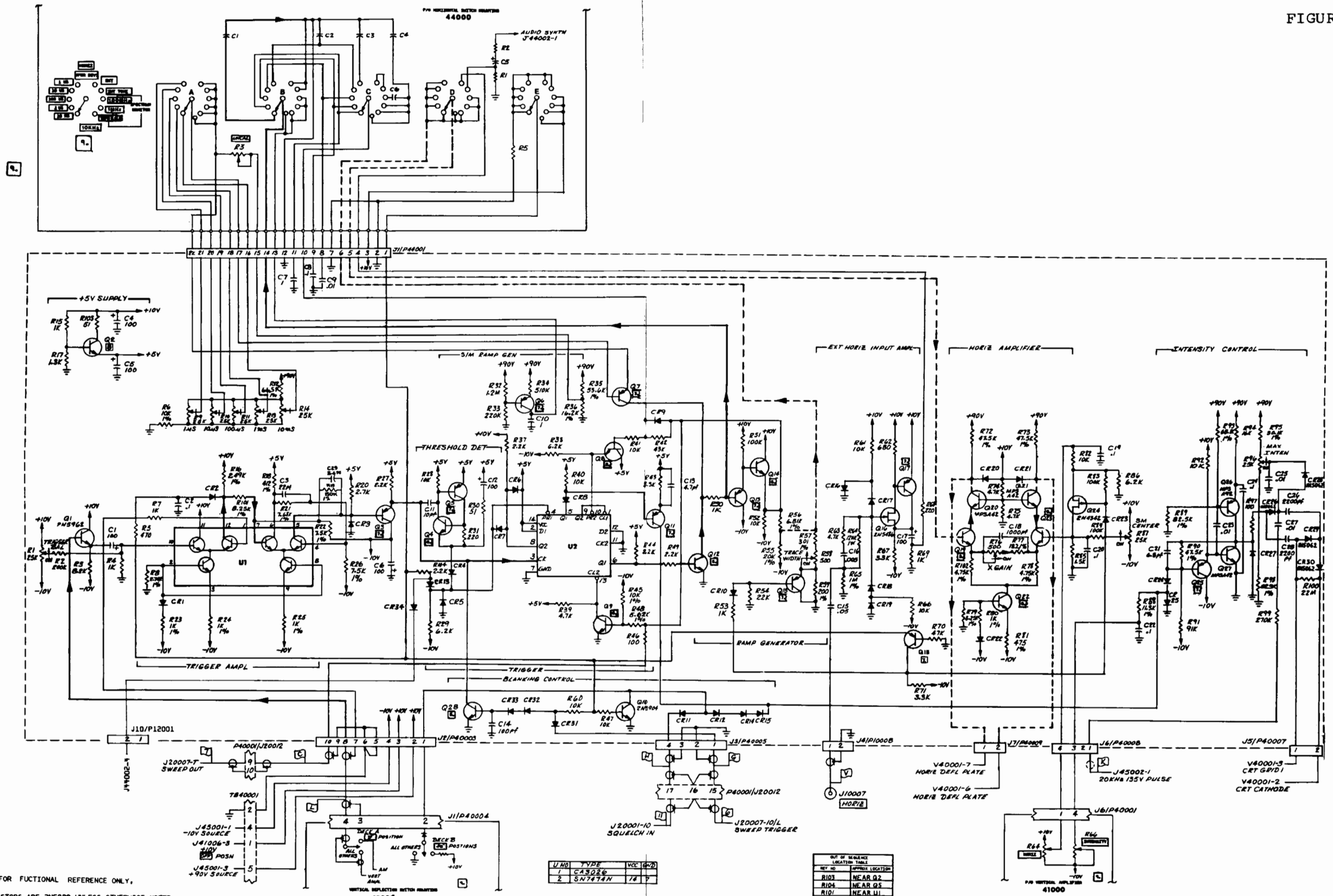
38000 SSB/Zero Beat/Sweep Driver (7001-0725)
CE-5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
38000	PCB ASSY - MAIN COIL SWEEP/SSB/ZB	7001-0725	CUSHMAN	CE-5110A ONLY
	PRINTED CIRCUIT BOARD	1780-0991	CUSHMAN	
	MIXER			
BM 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	CAPACITOR			
C 1	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 4	CAP-18PF 5% 500V DIP MICA	1002-0014	ELMENCO	DM15-C-180J
C 5	CAP-820PF 5% 300V DIP MICA	1002-0039	ELMENCO	DM15-F-821J
C 6	CAP-33PF 5% 500V DIP MICA	1002-0024	ELMENCO	DM15-E-220J
C 7	CAP-1500PF 5% 500V DIP MICA	1002-0083	ELMENCO	DM19-E-152J
C 8	CAP-2000PF 5% 500V DIP MICA	1002-0077	ELMENCO	DM-19-E-202J
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 13	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 14	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 15	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 16	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 21	CAP-510PF 5% 500V DIP MICA	1002-0036	ELMENCO	DM15-F-511J
C 22	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 23	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP	10PC25
C 24	CAP-.22UF 10% 100V RDL MET-MYLAR	1008-0091	ELECTROCUBE	232A1B224K
C 25	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 26	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 27	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 28	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 29	CAP-.047UF 20% 100V V5W MINTR CER	1005-0096	ERIE	8121-100-651-473M
C 30	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 31	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 32	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 33	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 34	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 35	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
	DIODE			
CR 1	DIO-1N4741A SI ZENER A98A 11V 5% 1W	1281-0107	MOTOROLA	1N4741A
CR 2	DIO-1N4741A SI ZENER A98A 11V 5% 1W	1281-0107	MOTOROLA	1N4741A
	INDUCTOR			
L 1	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 2	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 3	COIL-VAR IF L45-1/5/44 LITZ/70T	1596-0290		
L 4	CH-100UH 5% RF MLD AXL .16DX.38L	1585-0017	DELEVAN	1537-76
L 5	CH-10UH 10% RF MLD AXL .16DX.38L	1585-0016	DELEVAN	1537-36

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 2	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 3	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 4	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 5	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 6	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 7	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 8	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 9	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 10	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 11	XSTR-2N3565 NPN SI R110 LOW PWR	1272-0017	FAIRCHILD	2N3565
Q 12	XSTR-MPS-H37 NPN SI T092 LOW PWR	1272-0073	MOTOROLA	MPS-H37
Q 13	XSTR-MPS-U55 PNP SI B18 HIGH PWR	1272-0074		
	RESISTOR			
R 1	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 2	RES-24K 5% 1/4W CC	1066-2435	ALLEN BRADLEY	CB2435
R 3	RES-9.1K 5% 1/4W CC	1066-9125	ALLEN BRADLEY	CB 9125
R 4	RES-1.6K 5% 1/4W CC	1066-1625	ALLEN BRADLEY	CB1625
R 5	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 6	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 7	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 8	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 9	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 10	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 11	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 12	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 13	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 14	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 15	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 16	RES-75K 5% 1/4W CC	1066-7535	ALLEN BRADLEY	CB 7535
R 17	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 18	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 19	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 22	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 23	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 24	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 25	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 26	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 27	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 28	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 29	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 30	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 31	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 32	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 33	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 34	RES-3.6K 5% 1/4W CC	1066-3625	ALLEN BRADLEY	CB3625
R 35	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 36	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 37	RES-20K 5% 1/4W CC	1066-2035	ALLEN BRADLEY	CB2035
R 38	POT-5K 10% 3/4W 15T CERMET TRMR	1215-0012	HELITRIM	89WR5K
R 39	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 40	RES-62 OHM 5% 1/4W CC	1066-6205	ALLEN BRADLEY	CB 6205

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 41	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 42	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 43	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 44	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 45	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 46	POT-10K 10% 3/4W 15T CERMET TRMR	1215-0014	HELITRIM	89WR10K
R 47	RES-5.1K 5% 1/4W CC	1066-5125	ALLEN BRADLEY	CB 5125
R 48	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 49	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 50	RES-56.2 OHM 1% 1W 2PPM AXL WW	1157-0001	JORDAN	5-190+OR-2PPM 1%
R 51	RES-2.4K 5% 1/4W CC	1066-2425	ALLEN BRADLEY	CB2425
R 52	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 53	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 54	RES-240 OHM 5% 1/4W CC	1066-2415	ALLEN BRADLEY	CB2415
R 55	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
	INTEGRATED CIRCUIT			
U 1	IC-1458 DUAL OP AMP 8PIN DIP	2025-0058	RAYTHEON	RC1458NB
U 2	IC-UA741CP	2025-0067	TI	UA741CP





U NO	TYPE	VCC	GND
1	CA3026		
2	SN7474N	14	7

OUT OF SEQUENCE LOCATION TABLE	
REF NO	APPROX LOCATION
R103	NEAR Q2
R104	NEAR Q5
R101	NEAR U1
R102	NEAR Q19
C29	NEAR R19

9. VIEW SHOWN FOR FUCTIONAL REFERENCE ONLY.
8. ALL TRANSISTORS ARE 2N5089 UNLESS OTHERWISE NOTED.
7. ALL TRANSISTORS ARE 2N5087 UNLESS OTHERWISE NOTED.
6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

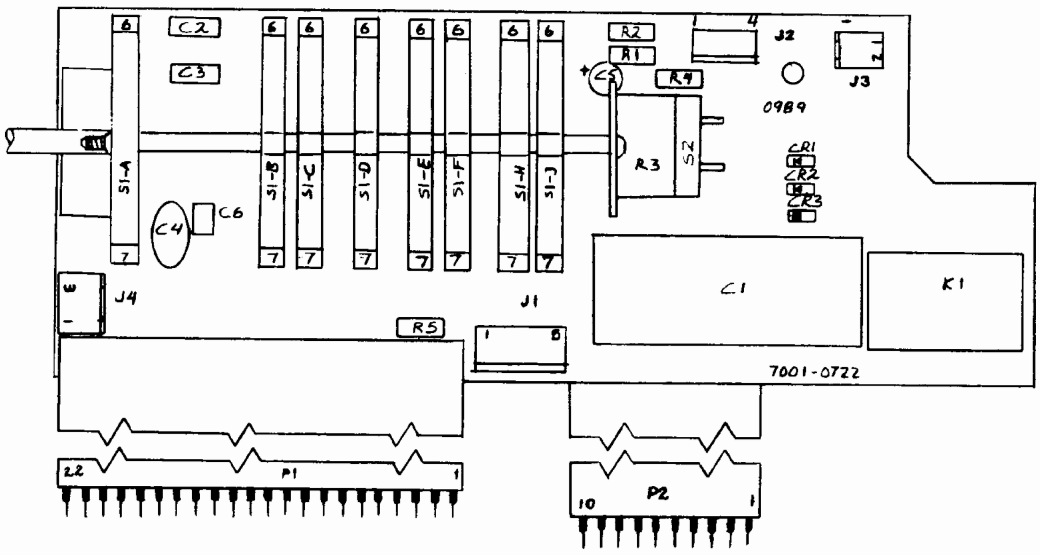
42000 Time Base & Horizontal Amp, (7001-0717)
CE-5100A and 5110A

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
42000	PCB ASSY - TIME BASE & HORIZ AMP	7001-0717	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0999	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 3	CAP-22PF 5% 500V DIP MICA	1002-0023	CORNELL DUBILIER	CD15CD220J
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-1UF 10% 100V RDL MET-POLYESTER	1008-010(	PLESSEY	60H105K100
C 8	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 9	CAP-.01UF 10% 600V RDL MET-POLYESTER	1008-0099	PLESSEY	60103K630
C 10	CAP-1UF 10% 100V RDL MET-POLYESTER	1008-0100	PLESSEY	60H105K100
C 11	CAP-10PF 5% 500V DIP MICA	1002-0016	ELMENCO	DM15-C-100J
C 12	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 13	CAP-4.7PF .25PF 500V NPO CER TUB	1005-0015	TUSONIX	301-000-C0H0-479C
C 14	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
C 15	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
C 16	CAP-.005UF GMV 1KV Z5U CER DISC	1005-0009	CENTRALAB	DD-502
C 17	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 18	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 21	CAP-6.8PF .25PF 500V NPO CER TUB	1005-0006	TUSONIX	301-000-C0H0-689C
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 24	CAP-.1UF 10% 100V MLD CER	1005-0064	AEROVOX	CK06BX104K
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 29	CAP-5.6PF 10% 100V NPO MINTR CER	1005-0111	TUSONIX	8101-100-C0G0-569D
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 12	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 13	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 14	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 15	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 21	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 23	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 24	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 25	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 26	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E.	1N5062
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E	1N5062
CR 29	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E.	1N5062
CR 30	DIO-1N5062 SI RECT A94G 800PRV	1281-0030	G.E	1N5062
CR 31	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 32	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 33	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 34	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-10PIN .1SP RTANG FLAT CA JK	2535-0185	BURNDY	HBRB10R-1
J 1	CONN-12PIN .1SP RTANG FLAT CA JK	2535-0186	BURNDY	HBRB12R-1
J 2	CONN-10 PIN .1SP STR LKG PCB MT JK	2535-0150	METHODE	100-8-110-01
J 3	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 4	CONN-2 PIN .1SP RTANG LKG PCB MT JK	2525-0172	METHODE	1100-9-102-01
J 5	CONN-2 PIN .1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
J 6	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 7	CONN-2 PIN .1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
J 10	CONN-2 PIN .1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
	TRANSISTOR			
Q 1	XSTR-2N5962 NPN SI T092 LOW PWR	1272-0059	FAIRCHILD	2N5962
Q 2	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 3	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 4	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 5	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 6	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 7	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 8	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 9	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 12	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 13	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 14	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 15	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 16	XSTR-2N5486 SI T092 J-FET N-CHAN	1272-0093	MOTOROLA	2N5486
Q 17	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 18	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 19	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 20	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 21	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 22	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 23	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 24	XSTR-2N4342 SI R124B J-FET P-CHAN	1272-0027	MOTOROLA	2N4342
Q 25	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 26	XSTR-MPSA92 PNP SI T092 LOW PWR	1272-0088	MOTOROLA	MPSA92
Q 27	XSTR-MPSA42 NPN SI T092 LOW PWR	1272-0089	MOTOROLA	MPSA42
Q 28	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
	RELAY			
R 1	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 2	RES-200K 5% 1/4W CC	1066-2045	ALLEN BRADLEY	CB2045

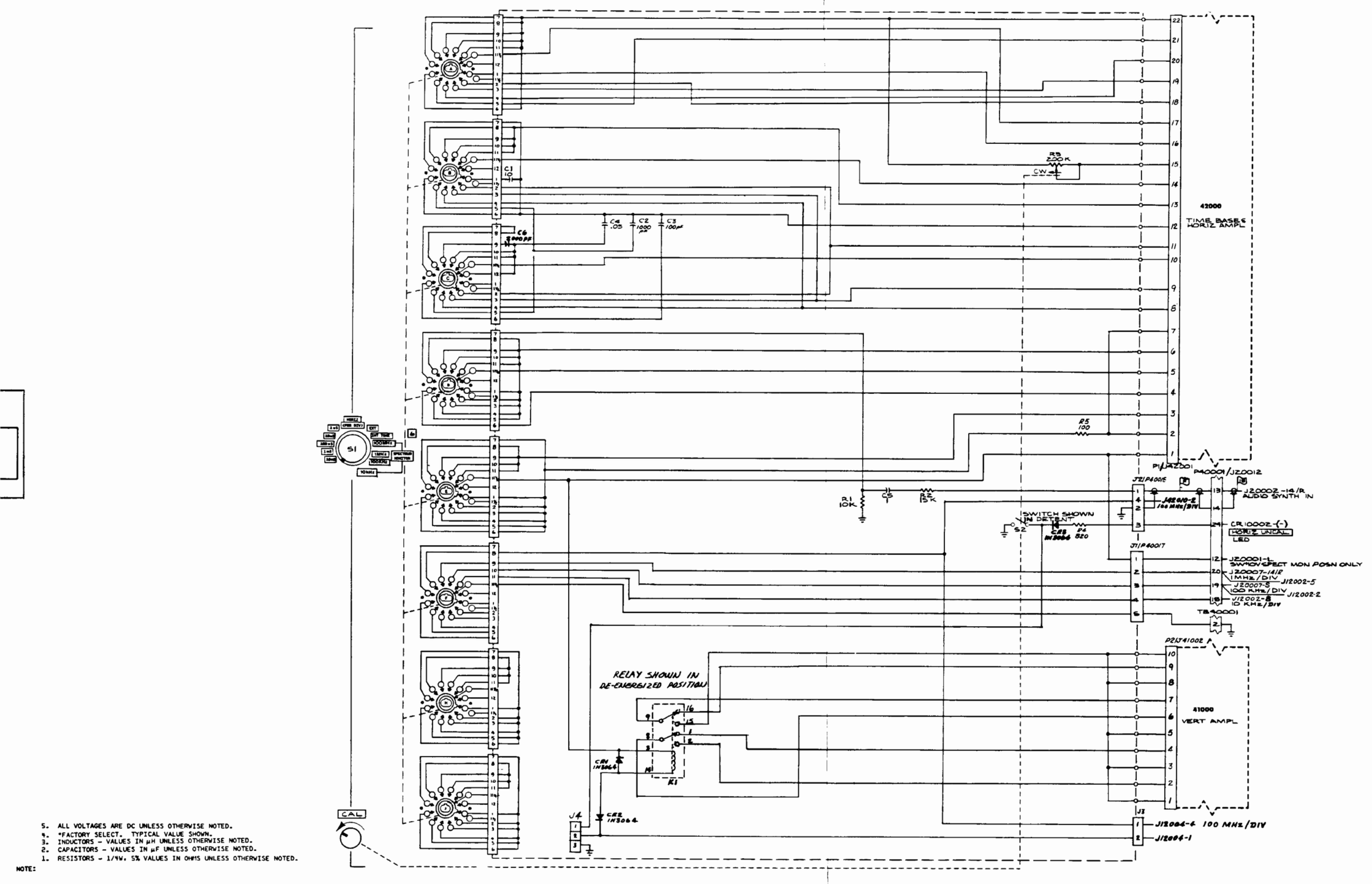
CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 3	RES-8.2K 5% 1/4W CC	1066-8225	ALLEN BRADLEY	CB 8225
R 4	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 5	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 6	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 7	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 8	RES-2.74K 1% 100PPM FILM	1075-0071	CAT.LIST	55-025
R 9	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 10	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 11	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 12	RES-66.5K 1% 100PPM FILM	1075-0143	CAT LIST	55-100
R 13	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 14	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-2.49K 1% 100PPM FILM	1075-0027	CAT.LIST	55-100
R 17	RES-1.3K 5% 1/4W CC	1066-1325	ALLEN BRADLEY	CB1325
R 18	RES-412 OHM 1% 100PPM FILM	1075-0084	CAT.LIST	55-100
R 19	RES-150 OHM 1% 100PPM FILM	1075-0125	CAT. LIST	55-100
R 20	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 21	RES-7.68K 1% 100PPM FILM	1075-0054	CAT.LIST	55-100
R 22	RES-7.5K 1% 100PPM FILM	1075-0158	CAT. LIST	55-100
R 23	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 24	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 25	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 26	RES-7.5K 1% 100PPM FILM	1075-0158	CAT. LIST	55-100
R 27	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 28	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 29	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 30	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 31	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 32	RES-1.2MEG 5% 1/4W CC	1066-1255	ALLEN BRADLEY	CB1255
R 33	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 34	RES-510K 5% 1/4W CC	1066-5145	ALLEN BRADLEY	CB 5145
R 35	RES-53.6K 1% 150PPM FILM	1074-1023	CAT.LIST	55-100
R 36	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 37	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 38	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 39	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 40	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 41	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 42	RES-43K 5% 1/4W CC	1066-4335	ALLEN BRADLEY	CB 4335
R 43	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 44	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 45	RES-10K 1% 100PPM FILM	1075-0009	CAT.LIST	55-100
R 46	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 47	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 48	RES-5.62K 1% 100PPM FILM	1075-0013	CAT.LIST	55-100
R 49	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 50	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 51	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 52	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 53	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 54	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 55	RES-20K 1% 100PPM FILM	1075-0096	CAT.LIST	55-100
R 56	*RES-6.81K 1% 100PPM FILM	1075-0140	CAT LIST	55-100
R 57	RES-301 OHM 1% 100PPM FILM	1075-0048	CAT.LIST	55-100
R 58	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 59	RES-200 OHM 1% 100PPM FILM	1075-0082	CAT.LIST	55-100
R 60	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 61	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 62	RES-680 OHM 5% 1/4W CC	1066-6815	ALLEN BRADLEY	CB 6815
R 63	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 64	RES-120K 5% 1W CC	1068-1245	ALLEN BRADLEY	GB 1245
R 65	RES-1MEG 1% 150PPM FILM	1074-1039	CAT.LIST	55-100
R 66	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 67	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 68	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 69	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 70	RES-47K 5% 1/4W CC	1066-4735	ALLEN BRADLEY	CB 4735
R 71	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 72	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 73	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 74	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 75	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 76	POT-500 OHM 20% 1/2W 1T CERMET TRMR	1215-0042	BECKMAN	91AR500
R 77	RES-182 OHM 1% 150PPM FILM	1074-1014	CAT.LIST	55-100 55-100
R 78	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 79	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 80	RES-1K 1% 100PPM FILM	1075-0037	CAT.LIST	55-100
R 81	RES-475 OHM 1% 100PPM FILM	1075-0023	CAT.LIST	55-100
R 82	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 83	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 84	RES-100K 5% 1/4W CC	1066-1045	ALLEN BRADLEY	CB1045
R 85	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 86	RES-6.2K 5% 1/4W CC	1066-6225	ALLEN BRADLEY	CB 6225
R 87	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 88	RES-11.3K 1% 100PPM FILM	1075-0034	CAT.LIST	55-100
R 89	RES-82.5K 1% 25PPM FILM	1075-0161	CAT. LIST	55-025
R 90	RES-47.5K 1% 100PPM FILM	1075-0076	CAT.LIST	55-100
R 91	RES-91K 5% 1/4W CC	1066-9135	ALLEN BRADLEY	CB 9135
R 92	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 93	RES-68.1K 1% 100PPM FILM	1075-0136	DALE	MFF 1/8 TI
R 94	RES-16K 5% 1/4W CC	1066-1635	ALLEN BRADLEY	CB1635
R 95	RES-30.1K 1% 25PPM FILM	1074-0107	CAT.LIST	55-025
R 96	POT-25K 20% 1/2W 1T CERMET TRMR	1215-0045	BECKMAN	91AR25K
R 97	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 98	RES-82.5K 1% 25PPM FILM	1075-0161	CAT. LIST	55-025
R 99	RES-270K 5% 1/4W CC	1066-2745	ALLEN BRADLEY	CB2745
R 100	RES-22MEG 5% 1/4W CC	1066-2265	ALLEN BRADLEY	CB2265
R 101	RES-8.25K 1% 100PPM FILM	1075-0014	CAT.LIST	55-100
R 102	RES-4.75K 1% 100PPM FILM	1075-0038	CAT.LIST	55-100
R 103	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 104	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	INTEGRATED CIRCUIT			
U 1	IC-CA3026	2025-0026	RCA	CA3026
U 2	IC-7474 DUAL D POS EDG TRIG FF W/P&C	2025-0166	TI	SN7474N



5. ALI
4. *FA
3. IND
2. CAI
1. RES

NOTE:

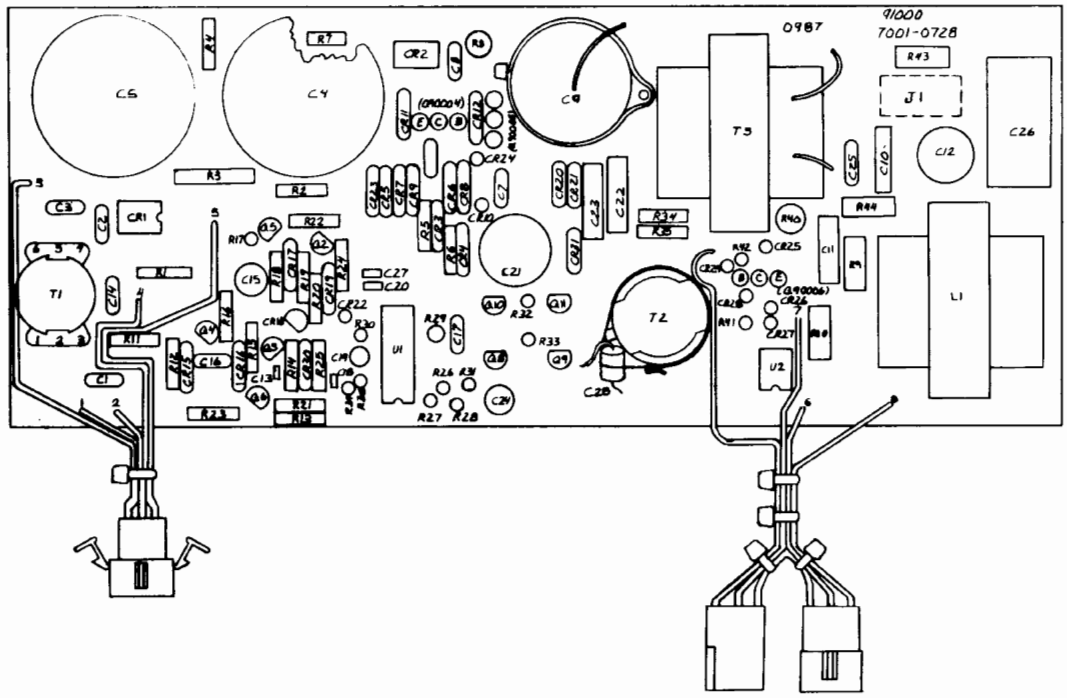


NOTE:

5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

44000 Horizontal Deflection Switch Mtg, (7001-0722), CE-5100/5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
44000	PCB ASSY - HORZ DEFLECT SW MTG	7001-0722	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0989	CUSHMAN	
	CAPACITOR			
C 1	CAP-10UF 10% 50V RDL MET-POLYESTER	1008-0101	PLESSEY	60R106K100
C 2	CAP-1000PF 5% 100V DIP MICA	1002-0015	ELMENCO	DM15-F-102J
C 3	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
C 4	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 5	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 6	CAP-2000PF 5% 100V NPO MINTR CER	1005-0129	CENTRE	200-100-NPO-202J
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	CONNECTOR			
J 1	CONN-5 PIN .1SP STR LKG PCB MT JK	2535-0145	MOLEX INC	22-27-2051
J 2	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 3	CONN-2 PIN .1SP STR LKG PCB MT JK	2535-0142	MOLEX INC	22-27-2021
J 4	CONN-3 PIN .1SP STR LKG PCB MT JK	2535-0143	METHODE	1100-8-103-01
	RELAY			
K 1	RLY-DPDT 12VC COIL 2 FORM C PCB MT	1313-0029	AROMAT CORP.	HB2-12V
	RESISTOR			
R 1	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 2	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 3	SW-RTRY CNCTRC 8 POLE W/POT/SPST	1851-0136	CTS	C/E DWG
R 4	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 5	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
	SWITCH			
S 1	SW-RTRY CNCTRC 8 POLE W/POT/SPST	1851-0136	CTS	C/E DWG
S 2	SW-RTRY CNCTRC 8 POLE W/POT/SPST	1851-0136	CTS	C/E DWG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7001-0728
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C5
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T3
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C10
C25
R43
R44
R40
C11
L1
T1
T2
U1
U2
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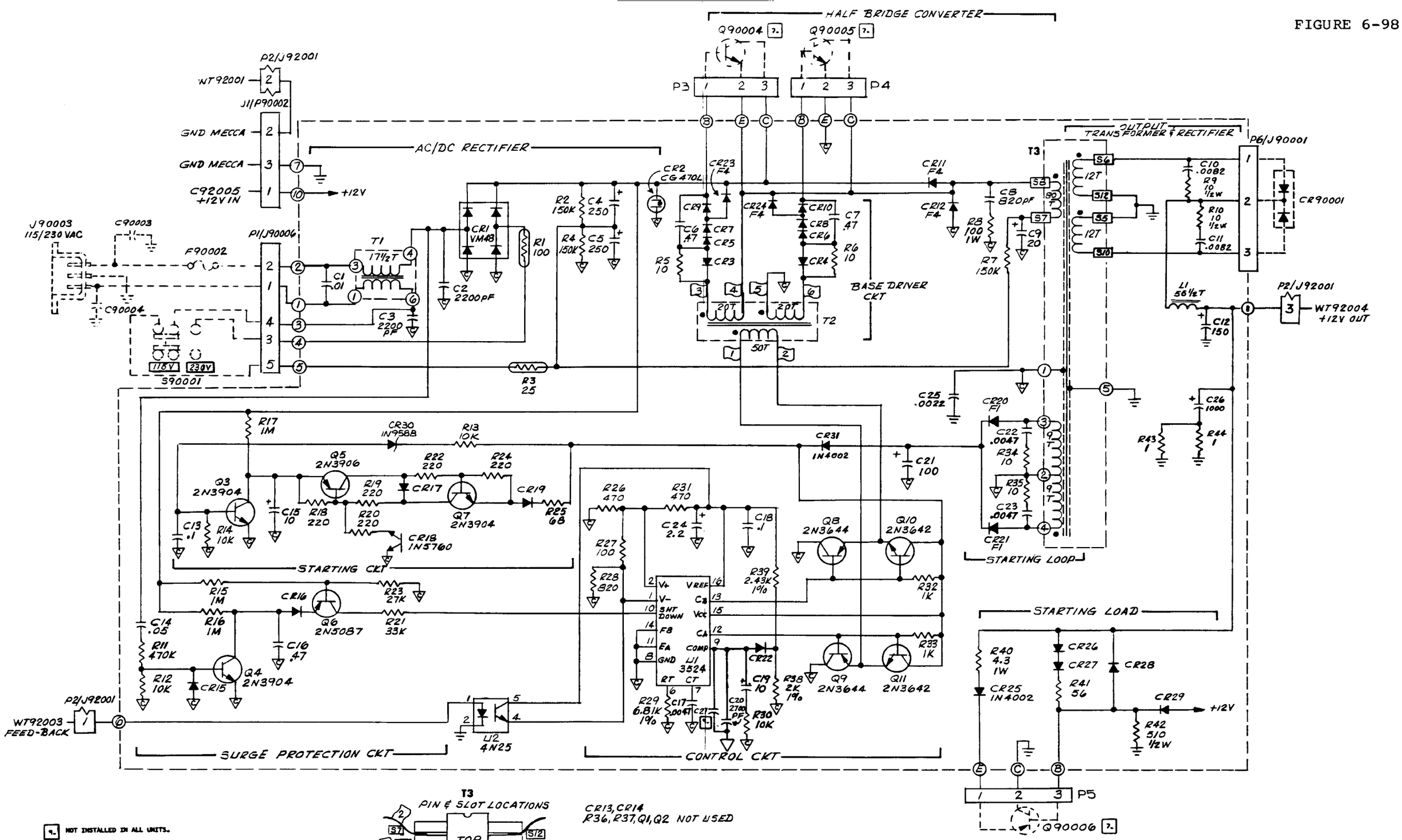
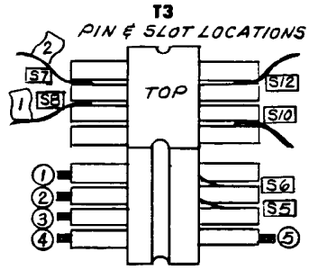
C20



T3
PIN & SLOT LOCATIONS



CR13, CR14
R36, R37, Q1, Q2 NOT USED

NOTE:

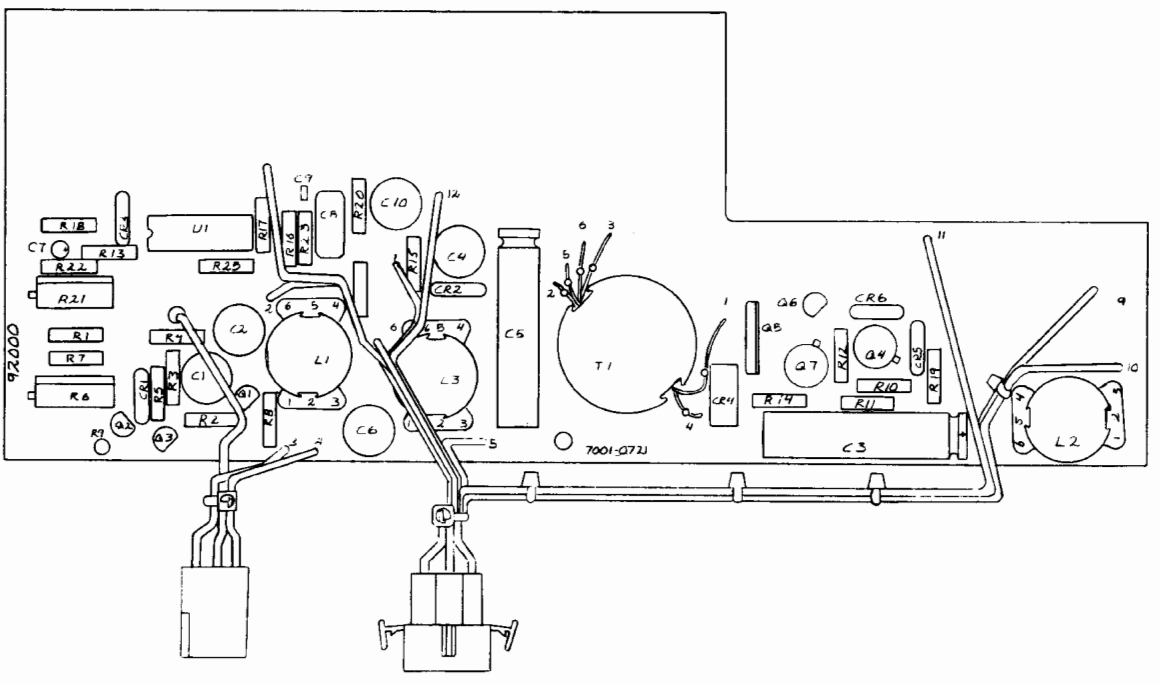
7. NOT INSTALLED IN ALL UNITS.
8. C COMMON CONNECTION. NOT CONNECTED TO CHASSIS GROUND.
7. MOUNTED TO PANEL
6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

91000 AC/DC Switching Supply #1, (7001-0728), CE-5100/5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
91000	PCB ASSY - AC/DC SW SUPPLY NO. 1	7001-0728	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0987	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 1.4KV CER DISC	1005-0051	SPRAGUE	125L-S10
C 2	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 3	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 4	CAP-250 UF+75-10% 200V 120L ELCTLT SCR	1013-0040	CORNELL DUBILIER	FAH-25-200-A1
C 5	CAP-250 UF+75-10% 200V 120L ELCTLT SCR	1013-0040	CORNELL DUBILIER	FAH-25-200-A1
C 6	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 7	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 8	CAP-820PF 10% 1KV Z5R CER DISC	1005-0047	CENTRALAB	DD821
C 9	CAP-20UF +50-10% 450V AXL ELCTLT	1014-0023	CORNELL DUBILIER	WBR20-450
C 10	CAP-.0082UF 5% 600V RDL POLYESTER	1008-0095	PLESSEY CAP.	60C822V630
C 11	CAP-.0082UF 5% 600V RDL POLYESTER	1008-0095	PLESSEY CAP.	60C822V630
C 12	CAP-150 UF 20% 35V RDL ELCTLT	1013-0048	ILLINOIS CAP	157RLR035M
C 13	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 14	CAP-.05UF +80-20% 500V Z5U CER DISC	1005-0052	SPRAGUE	5HK-S50
C 15	CAP-10UF 20% 50V RDL ELCTLT	1013-0046	NICHICON	50UKB-10-M
C 16	CAP-.47UF 10% 100V AXL MET-MYLAR	1008-0038	ELECTROCUBE	230B1B474K
C 17	CAP-.0047UF 10% 100V AXL POLYESTER	1008-0085	SPRAGUE	225P47291WD3
C 18	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 19	CAP-10UF 20% 35V RDL TANT	1011-0006	MATSUO	221L3502106M3
C 20	CAP-2700PF 5% 100V NPO MINTR CER	1005-0130	CENTRE	200-100-NPO-272J
C 21	CAP-100UF +100-10% 50V RDL ELCTLT	1013-0036	ILL. CAP.	100-R-50
C 22	CAP-.0047UF 10% 100V AXL POLYESTER	1008-0085	SPRAGUE	225P47291WD3
C 23	CAP-.0047UF 10% 100V AXL POLYESTER	1008-0085	SPRAGUE	225P47291WD3
C 24	CAP-2.2UF 10% 35V RDL TANT	1011-0001	SPRAGUE	196D225X9035JA1
C 25	CAP-2200PF 20% 3KV Z5U CER DISC	1005-0098	CRL	DD30222M
C 26	CAP-1000UF +50-10% 25V ELCTLT	1014-0006	ILLINOIS	108TTA025A
	DIODE			
CR 1	DIO-VM48 SI BRDG RECT 6 PIN DIP 400PRV	1281-0103	VARO	VM48
CR 2	DIO-CG2-470L 470V 15% SURGE ARRESTOR	1281-0130	CLARET CO	CG2-4706
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 7	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 8	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 9	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 10	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 11	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 12	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 15	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 16	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 17	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 18	DIO-1N 5760 SI BILATERAL TRIG 28V .3W	1281-0132	MOTOROLA	1N5760
CR 19	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 20	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 21	DIO-F1 SI SW A294A 100PRV .5A	1281-0128	SEMTECH	F1
CR 22	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 23	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 24	DIO-F4 SI SW A294A 400PRV.5A	1281-0129	SEMTECH	F4
CR 25	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
CR 26	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 27	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 28	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 29	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 30	DIO-1N958B SI ZENER D07 7.5V 5% .4W	1281-0071	MOTOROLA	1N958B
CR 31	DIO-1N4002 SI RECT A23F 100PRV 1A	1281-0023	ITT	1N4002
	CONNECTOR			
J 1	CONN-3 PIN.1SP RTANG LKG PCB MT JK	2535-0173	METHODE	100-9-103-01
	INDUCTOR			
L 1	INDCTR-E-TYPE CORE 41X39/55.5T/16GA	1596-0260		
	TRANSISTOR			
Q 3	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 4	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 5	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 6	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 7	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 8	XSTR-2N3644 PNP SI R110A LOW PWR/SW	1272-0040	FAIRCHILD	2N3644
Q 9	XSTR-2N3644 PNP SI R110A LOW PWR/SW	1272-0040	FAIRCHILD	2N3644
Q 10	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
Q 11	XSTR-2N3642 NPN SI R110A LOW PWR	1272-0018	FAIRCHILD	PN3642
	RESISTOR			
R 1	THMS-100 OHM 10% 8MW AXL/RDL DISC	1253-0006		LB21L2
R 2	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 3	THMS-25 OHM 10% 25MW AXL/RDL DISC	1253-0005	RODAN INDUSTRIES	5DB250K
R 4	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 5	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 6	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 7	RES-150K 5% 1/4W CC	1066-1545	ALLEN BRADLEY	CB1545
R 8	RES-100 OHM 5% 1W CC	1068-1015	ALLEN BRADLEY	GB 1015
R 9	RES-10 OHM 5% 1/2W CC	1067-1005	ALLEN BRADLEY	EB 1005
R 10	RES-10 OHM 5% 1/2W CC	1067-1005	ALLEN BRADLEY	EB 1005
R 11	RES-470K 5% 1/4W CC	1066-4745	ALLEN BRADLEY	CB 4745
R 12	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 13	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 14	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 15	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 16	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 17	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 18	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 19	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 20	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 21	RES-33K 5% 1/4W CC	1066-3335	ALLEN BRADLEY	CB3335
R 22	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 23	RES-27K 5% 1/4W CC	1066-2735	ALLEN BRADLEY	CB2735
R 24	RES-220 OHM 5% 1/4W CC	1066-2215	ALLEN BRADLEY	CB2215
R 25	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 26	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 27	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 28	RES-820 OHM 5% 1/4W CC	1066-8215	ALLEN BRADLEY	CB 8215
R 29	RES-6.81K 1% 100PPM FILM	1075-0140	CAT. LIST	55-100
R 30	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 31	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715
R 32	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 33	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 34	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 35	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 38	RES-2K 1% 100PPM FILM	1075-0103	CAT.LIST	55-100
R 39	RES-2.43K 1% 100PPM FILM	1075-0019	CAT.LIST	55-100
R 40	RES-4.3OHM 5% 1W CC	1068-0001	ALLEN BRADLEY	GB43G5
R 41	RES-56 OHM 5% 1/4W CC	1066-5605	ALLEN BRADLEY	CB 5605
R 42	RES-510 OHM 5% 1/2W CC	1067-5115	ALLEN BRADLEY	EB5115
R 43	RES-1 OHM 5% 1/2W CC	1067-0001	ALLEN BRADLEY	EB 0001
R 44	RES-1 OHM 5% 1/2W CC	1067-0001	ALLEN BRADLEY	EB 0001
	TRANSFORMER			
T 1	XFMR-POT CORE 18X11	1575-0054		
T 2	XFMR-POT CORE 22X13	1575-0055		
T 3	XFMR-E-TYPE CORE 41X39	1575-0053	MINI-MAGNETICS	C/E DWG
	INTEGRATED CIRCUIT			
U 1	IC-3524 16 PIN DIP RGLT PLS WD MOP	2025-0179	SILICON GENERAL	SG35245
U 2	IC-4N25 OPTO-ISOLATOR 2500V	2025-0159	MONSANTO	4N25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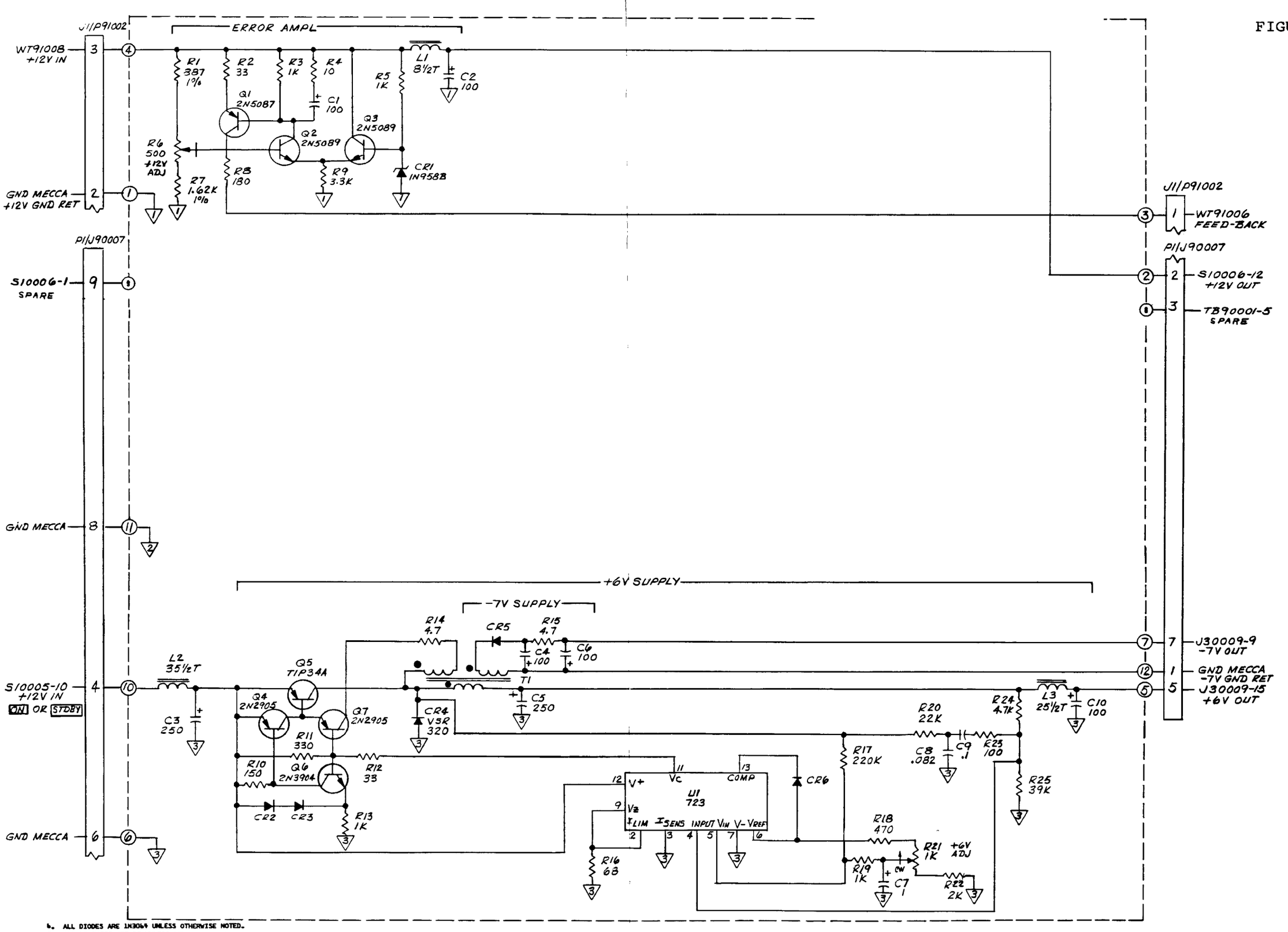


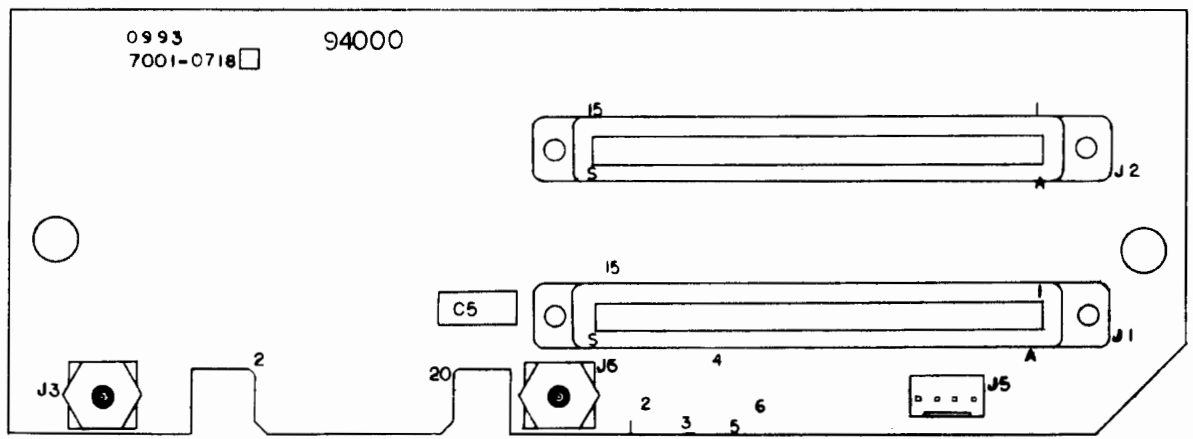
NOTE:

6. ALL DIODES ARE 1N3064 UNLESS OTHERWISE NOTED.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN µH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN µF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

92000 AC/DC Switching Supply #2, (7001-0721), CE-5100/5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
92000	PCB ASSY - AC/DC SW SUPPLY NO. 2	7001-0721	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-1042	CUSHMAN	
	CAPACITOR			
C 1	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 2	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 3	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 4	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 5	CAP-250UF +75-10% 16V AXL ELCTLT	1013-0016	CORNELL DUBILIER	NLW250-16
C 6	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 7	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 8	CAP-.082UF 10% 100V RDL POLYESTER	1008-0023	SPRAGUE	225P82391WA3
C 9	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 10	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
	DIODE			
CR 1	DIO-1N958B SI ZENER D07 7.5V 5% .4W	1281-0071	MOTOROLA	1N958B
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 4	DIO-VSK320 SI RECT 20PRV 3A	1281-0127	VARO	VSK320
CR 5	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 6	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
	INDUCTOR			
L 1	INDCTR-POT CORE 18X11/8.5T/18GA	1596-0264		
L 2	INDCTR-POT CORE 18X11/35.5T/24GA	1596-0262		
L 3	INDCTR-POT CORE 18X11/25.5T/22GA	1596-0263		
	TRANSISTOR			
Q 1	XSTR-2N5087 PNP SI TO 92 LOW PWR	1272-0038	MOTOROLA	2N5087
Q 2	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 3	XSTR-2N5089 NPN SI TO 92 LOW PWR	1272-0031	MOTOROLA	2N5089
Q 4	XSTR-2N2905 PNP SI TO 5 LOW PWR/SW	1272-0035	MOTOROLA	2N2905
Q 5	XSTR-TIP34A PNP SI B19 HIGH PWR/SW	1272-0095	TI	TIP34A
Q 6	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 7	XSTR-2N2905 PNP SI TO 5 LOW PWR/SW	1272-0035	MOTOROLA	2N2905
	RESISTOR			
R 1	RES-887 OHM 1% 100PPM FILM	1075-0022	CAT.LIST	55-100
R 2	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 3	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 4	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 5	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 6	POT-500 OHM 10% 3/4W 15T CERMET TRMR	1215-0011	HELITRIM	89WR
R 7	RES-1.62K 1% 100PPM FILM	1075-0104	CAT.LIST	55-100
R 8	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 9	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 10	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 11	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 12	RES-33 OHM 5% 1/4W CC	1066-3305	ALLEN BRADLEY	CB3305
R 13	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 14	RES-4.7 OHM 5% 1/4W CC	1066-0001	ALLEN BRADLEY	CB47G5
R 15	RES-4.7 OHM 5% 1/4W CC	1066-0001	ALLEN BRADLEY	CB47G5
R 16	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 17	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 18	RES-470 OHM 5% 1/4W CC	1066-4715	ALLEN BRADLEY	CB 4715

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 19	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 20	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 21	POT-1K 10% 3/4W 15T CERMET TRMR	1215-0013	HELITRIM	89WR
R 22	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 23	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 24	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 25	RES-39K 5% 1/4W CC	1066-3935	ALLEN BRADLEY	CB 3935
	TRANSFORMER			
T 1	XFMR-POT CORE 26X16	1575-0056		
	INTEGRATED CIRCUIT			
U 1	IC-723 PREC VOLTAGE REG	2025-0155	FAIRCHILD	723DC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94000
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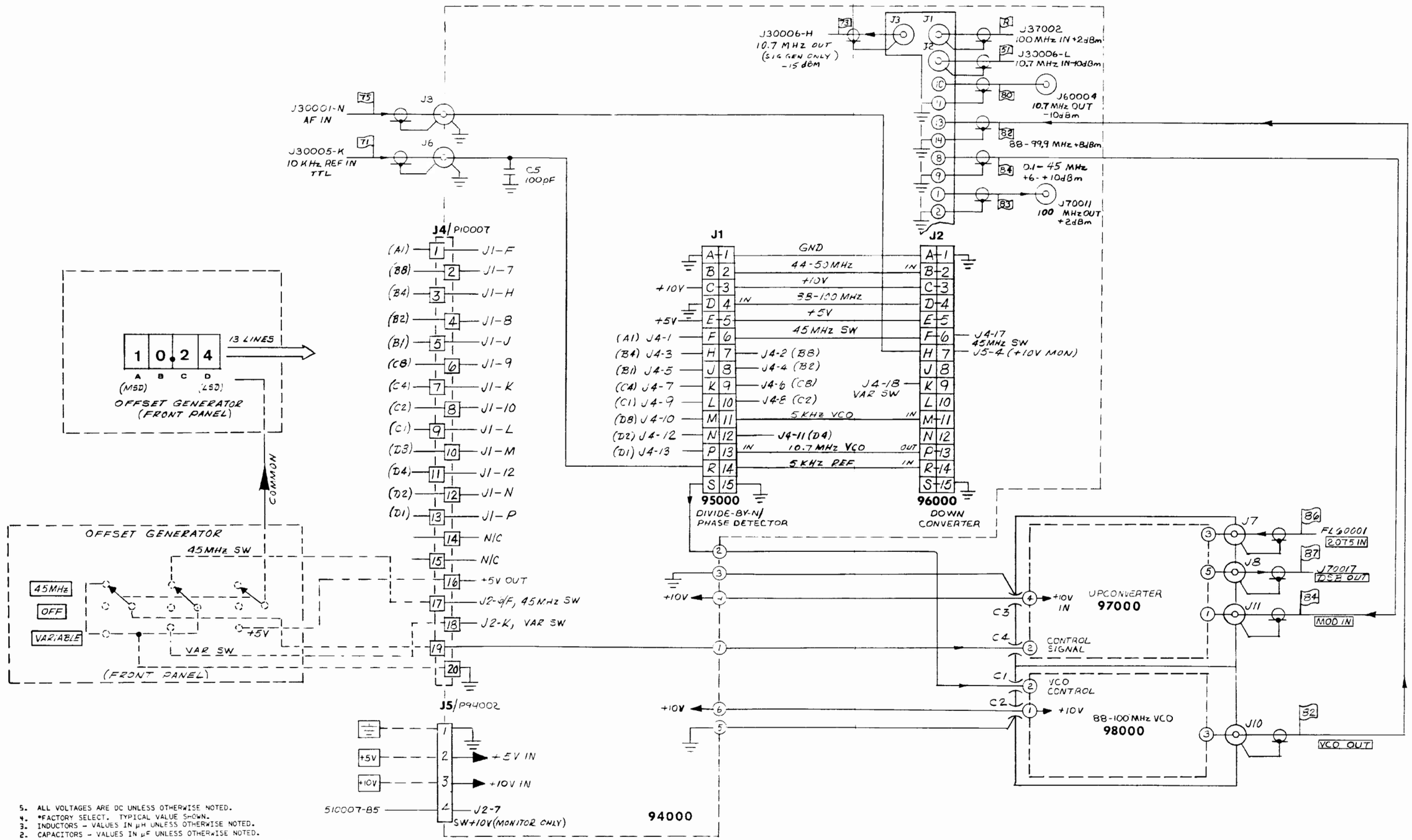
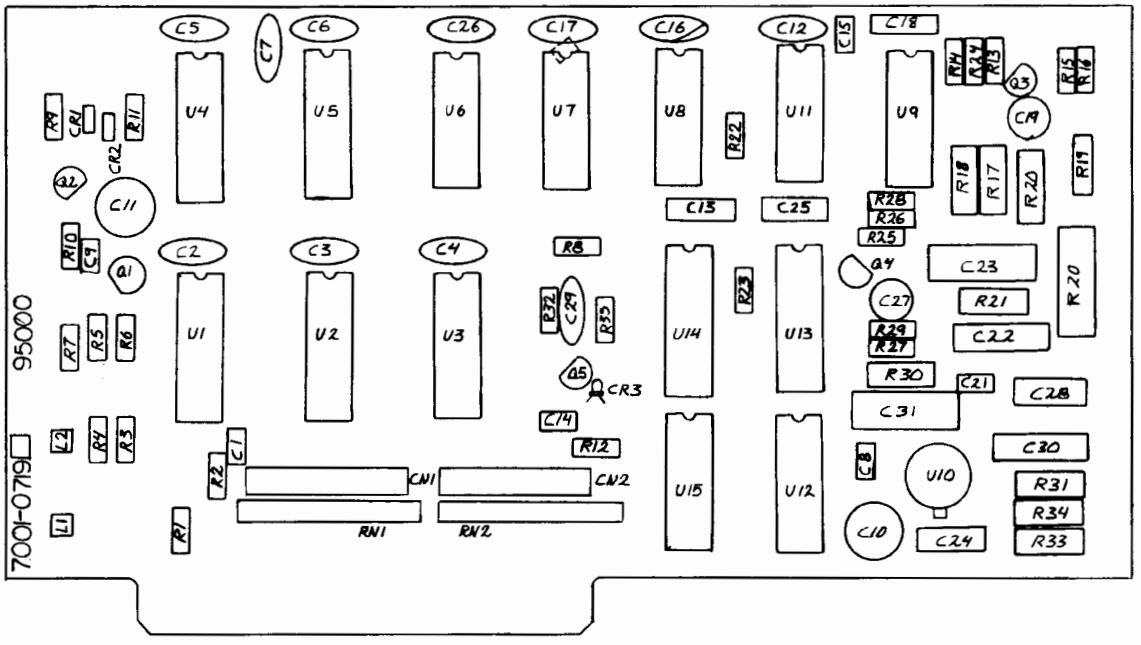


5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

94000 Offset Generator Interconnect (7001-0718)
CE-5100/5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
94000	PCB ASSY - OFFSET GEN INTERCON	7001-0718	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0993	CUSHMAN	
	CAPACITOR			
C 94005	CAP-100PF 5% 500V DIP MICA	1002-0011	ELMENCO	DM15-F-101J
	CONNECTOR			
J 94001	CONN-30 CONT DBL ROW DIP TERM PCB JK	2535-0077	CONTINENTAL CONN.	K600-11-30YA
J 94002	CONN-30 CONT DBL ROW DIP TERM PCB JK	2535-0077	CONTINENTAL CONN.	K600-11-30YA
J 94003	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
J 94005	CONN-4PIN .1SP STR LKG PCB MT JK	2535-0144	MOLEX INC	22-27-2041
J 94006	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000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7001-0719
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C26
C17
C16
C12
C15
C18
C7
U4
U5
U6
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U8
U11
U9
R14
R24
R13
Q3
C19
R15
R16
R9
CR1
R11
CR2
Q2
C11
R22
R18
R17
R20
R19
R28
R26
R25
C13
C25
R10
C9
Q1
C2
C3
C4
R8
C23
Q4
C27
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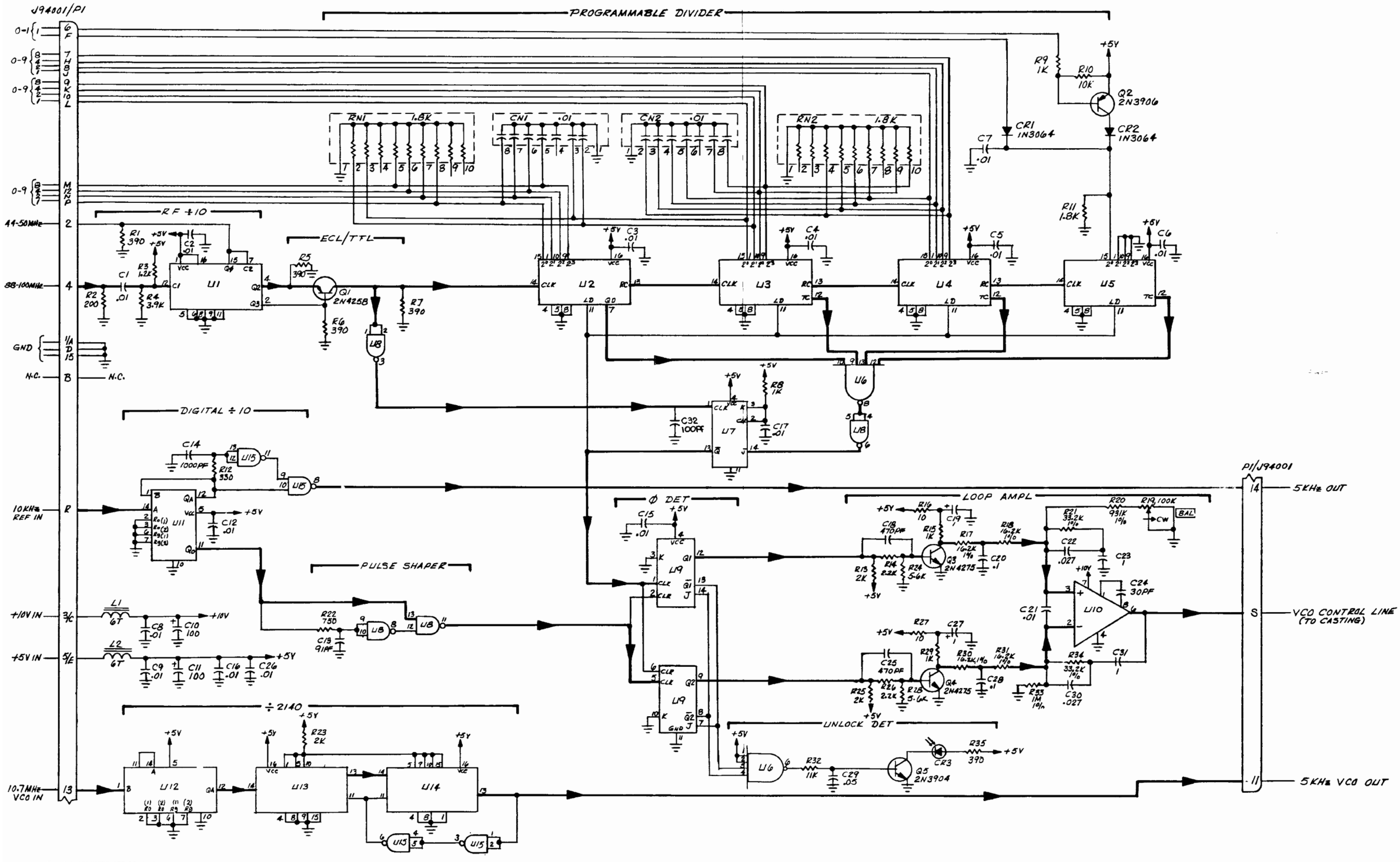
C24



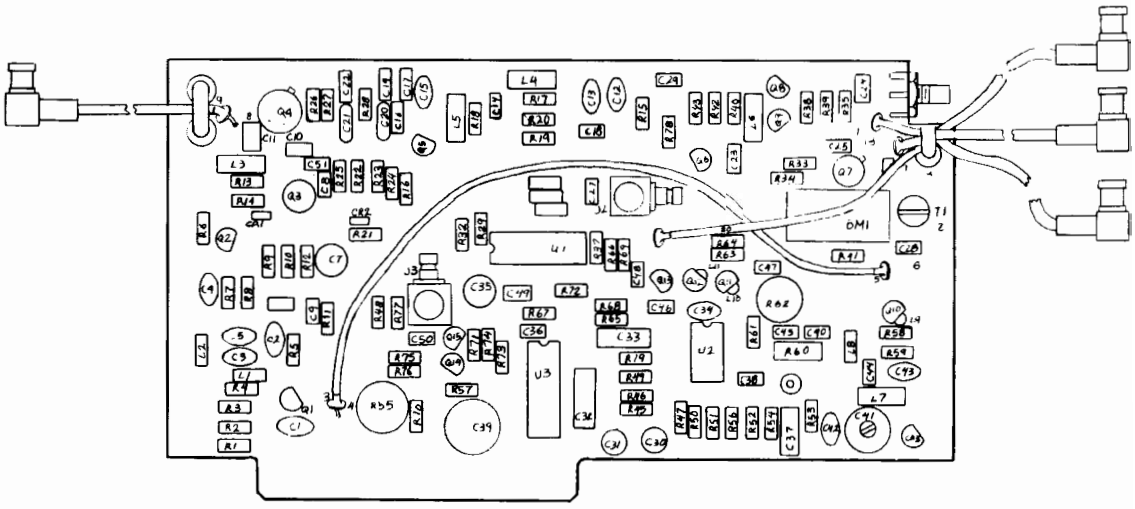
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

95000 Divide-By-N/Phase Detector (7001-0719)
CE-5100/5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
95000	PCB ASSY - DIV-BY-N/PHASE DET	7001-0719	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0992	CUSHMAN	
	CAPACITOR			
C 1	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 2	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 3	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 4	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 5	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 6	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 7	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 8	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 11	CAP-100UF -10+75% 16V RDL ELCTLT	1013-0033	PANASONIC	ECEA1CV101S
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-91PF 5% 500V DIP MICA	1002-0027	ELMENCO	DM15-F-910J
C 14	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 15	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 16	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 17	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 18	CAP-470PF 1% 500V DIP MICA	1002-0044	CORNELL DUBILIER	CD15FD471F
C 19	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 20	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 21	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 22	CAP-.027UF 10% 100V RDL POLYESTER	1008-0032	SPRAGUE	225P27391WA3
C 23	CAP-1UF 5% 50V AXL POLYCARBONATE	1008-0081	ELECTROCUBE	625B1A105J
C 24	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 25	CAP-470PF 1% 500V DIP MICA	1002-0044	CORNELL DUBILIER	CD15FD471F
C 26	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 27	CAP-1UF -10+50% 50V RDL ELCTLT	1013-0047	PANASONIC	ECEA1HV010S
C 28	CAP-.1UF 10% 100V RDL MET-POLYESTER	1008-0098	PLESSEY	60C104K100
C 29	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 30	CAP-.027UF 10% 100V RDL POLYESTER	1008-0032	SPRAGUE	225P27391WA3
C 31	CAP-1UF 5% 50V AXL POLYCARBONATE	1008-0081	ELECTROCUBE	625B1A105J
C 32	CAP-100PF 5% 100V NPO MINTR CER	1005-0082	TUSONIX	8121-100-C0G0-101J
CN 1	CAP-7/.01UF 20% 100VX7R 8 PIN SIP NTWK	1007-0001	SPRAGUE	460CH103XOPD
CN 2	CAP-7/.01UF 20% 100VX7R 8 PIN SIP NTWK	1007-0001	SPRAGUE	460CH103XOPD
	DIODE			
CR 1	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 2	DIO-1N3064 SI SW D07/D035 75PRV .25W	1281-0013	FAIRCHILD	1N3064
CR 3	DIO-LT EMIT RED 1.6V W ANG T1	1281-0137	HP	5082-4484
	INDUCTOR			
L 1	CH-3B FERRITE BEAD 30GA/6T	1586-0007		
L 2	CH-3B FERRITE BEAD 30GA/6T	1586-0007		
	TRANSISTOR			
Q 1	XSTR-2N4258 PNP SI R110 LOW PWR/SW	1272-0097	FAIRCHILD	2N4258
Q 2	XSTR-2N3906 PNP SI TO 92 LOW PWR/SW	1272-0037	MOTOROLA	2N3906
Q 3	XSTR-2N4275 NPN SI R110 LOW PWR/SW	1272-0016	FAIRCHILD	2N4275
Q 4	XSTR-2N4275 NPN SI R110 LOW PWR/SW	1272-0016	FAIRCHILD	2N4275
Q 5	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	RESISTOR			
R 1	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 2	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 3	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 4	RES-3.9K 5% 1/4W CC	1066-3925	ALLEN BRADLEY	CB 3925
R 5	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 6	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 7	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
R 8	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 9	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 9	POT-100K 10% 1/2W 25T CERMET TRMR	1215-0049	BOURNS	3299X1-104
R 10	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 11	RES-1.8K 5% 1/4W CC	1066-1825	ALLEN BRADLEY	CB1825
R 12	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 13	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 14	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 15	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 16	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 17	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 18	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 20	RES-931K 1% 1/2W 100PPM MF	1076-0004		
R 21	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100
R 22	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 23	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 24	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 25	RES-2K 5% 1/4W CC	1066-2025	ALLEN BRADLEY	CB2025
R 26	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 27	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 28	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 29	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 30	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 31	RES-16.2K 1% 100PPM FILM	1075-0057	CAT.LIST	55-100
R 32	RES-11K 5% 1/4W CC	1066-1135	ALLEN BRADLEY	CB1135
R 33	RES-1 MEG .5% 100PPM FILM	1075-0180	SHELLY RODABAUGH	CMF55
R 34	RES-33.2K 1% 100PPM FILM	1075-0098	CAT.LIST	55-100
R 35	RES-390 OHM 5% 1/4W CC	1066-3915	ALLEN BRADLEY	CB 3915
RN 1	RNET-9/1.8K 2% 100PPM 10 PIN SIP	1115-0004	DALE	MSP10C01-182G
RN 2	RNET-9/1.8K 2% 100PPM 10 PIN SIP	1115-0004	DALE	MSP10C01-182G
	INTEGRATED CIRCUIT			
U 1	IC-10138 16PIN DIP BI-QUINARY CNTR	2025-0274	MOTOROLA	MC10138P
U 2	IC-74LS190 16 PIN DIP BCD UP/DOWN CNTR	2025-0263	TEXAS INSTRUMENTS	SN74LS190N
U 3	IC-74LS190 16 PIN DIP BCD UP/DOWN CNTR	2025-0263	TEXAS INSTRUMENTS	SN74LS190N
U 4	IC-74LS190 16 PIN DIP BCD UP/DOWN CNTR	2025-0263	TEXAS INSTRUMENTS	SN74LS190N
U 5	IC-74LS190 16 PIN DIP BCD UP/DOWN CNTR	2025-0263	TEXAS INSTRUMENTS	SN74LS190N
U 6	IC-74LS20 14 PIN DIP DUAL 4-INP NAND	2025-0216	NATIONAL	DM74LS20N
U 7	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N
U 8	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N
U 9	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N
U 10	IC-OP-08 8 PIN CAN OP AMPL	2025-0187	PRECISION MONOLITHIC	OP-0865
U 11	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 12	IC-SN74LS90N DECADE COUNTER	2025-0113	TI	SN74LS90N
U 13	IC-SN74LS191N SYN UP/DOWN COUNTERS	2025-0115	TI	SN74LS191N
U 14	IC-SN74LS191N SYN UP/DOWN COUNTERS	2025-0115	TI	SN74LS191N
U 15	IC-SN74LS00N TTL NAND GATES	2025-0114	TI	SN74LS00N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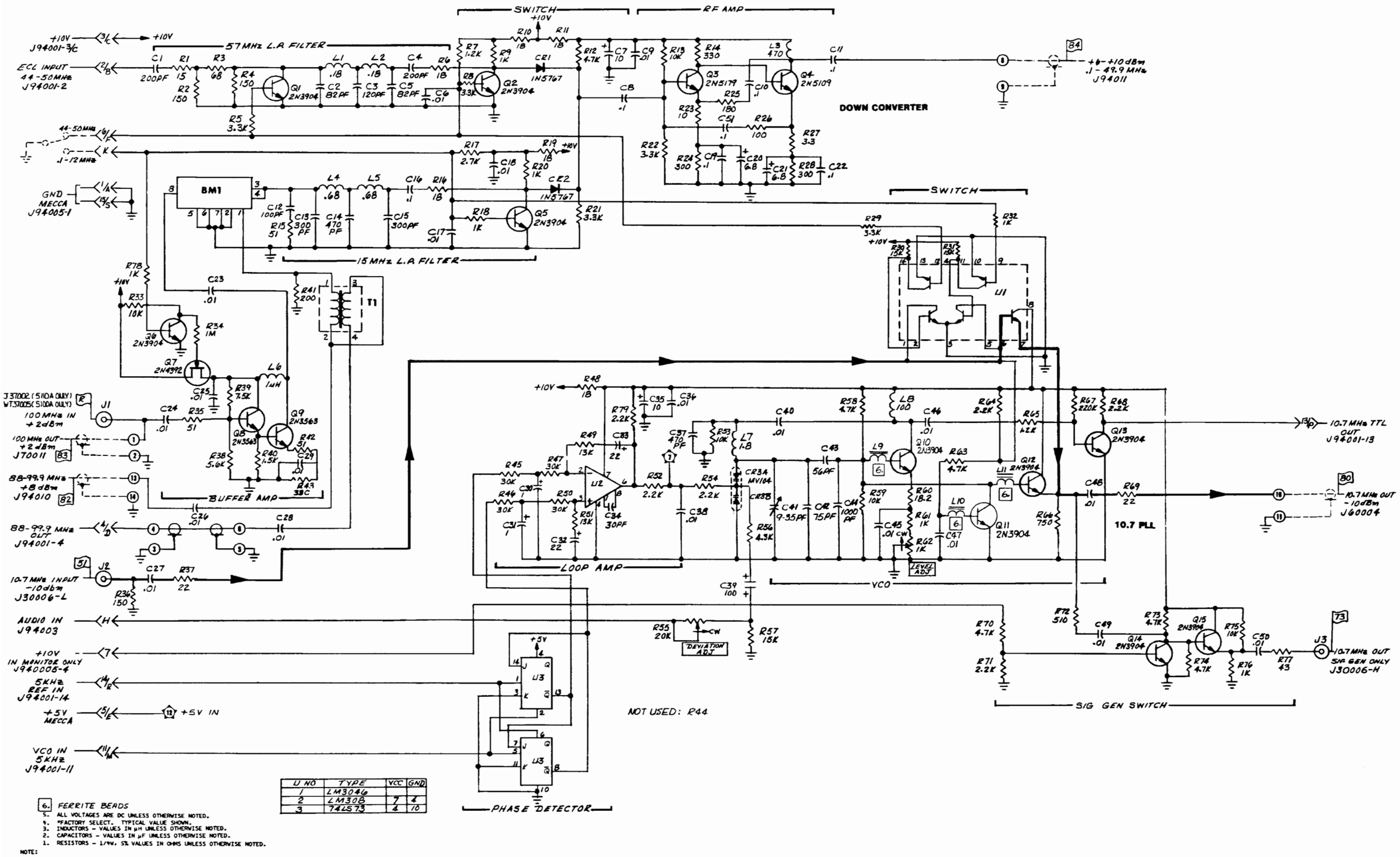


U NO	TYPE	VCC	GND
1	LM3046		
2	LM308	7	4
3	74LS73	4	10

6. FERRITE BEADS

NOTE:
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

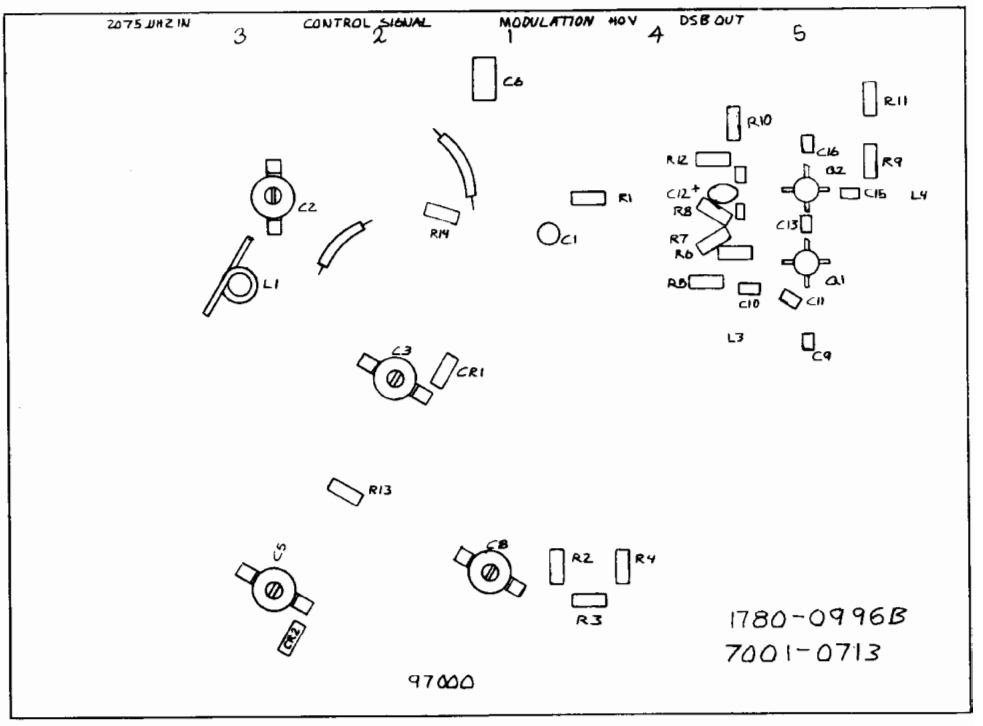
96000 Down Converter (7001-0714)
CE-5100/5110

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
96000	PCB ASSY - DOWN CONVERTER	7001-0714	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0995	CUSHMAN	
	MIXER			
BM 1	MXR-SBL-1 DBL BAL 1-500MHZ	2010-0009	MINI-CIRCUITS LAB	SBL-1
	CAPACITOR			
C 1	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 2	CAP-82PF 5% 500V DIP MICA	1002-0020	ELMENCO	DM15-E-820J
C 3	CAP-120PF 5% 500V DIP MICA	1002-0010	ELMENCO	DM15-F-121J
C 4	CAP-200PF 5% 500V DIP MICA	1002-0042	ELMENCO	DM15-F-201J
C 5	CAP-82PF 5% 500V DIP MICA	1002-0020	ELMENCO	DM15-E-820J
C 6	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 7	CAP-10UF 20% 35V RDL ELCTLT	1013-0044	NICHICON	35UKB10M
C 8	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 9	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 10	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 11	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 12	CAP-100PF 2% 500V DIP MICA	1002-0050	ELMENCO	DM15-F-101G
C 13	CAP-300PF 5% 500V DIP MICA	1002-0059	ELMENCO	DM15-F-301J
C 14	CAP-470PF 10% 50V X7R MINTR CER	1005-0105	TUSONIX	8111-050-X7R-471K
C 15	CAP-300PF 5% 500V DIP MICA	1002-0059	ELMENCO	DM15-F-301J
C 16	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 17	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 18	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 19	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 20	CAP-6.8UF 10% 35V RDL TANT	1011-0002	DICKSON	D6R8GS1B35K
C 21	CAP-6.8UF 10% 35V RDL TANT	1011-0002	DICKSON	D6R8GS1B35K
C 22	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 23	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 24	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 25	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 26	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 27	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 28	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 29	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 30	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 31	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 32	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
C 33	CAP-22UF 10% 15V AXL TANT	1011-0003	SPRAGUE	150D226X9015B2
C 34	CAP-30PF 5% 500V DIP MICA	1002-0043	ELMENCO	DM15-E-300J
C 35	CAP-10UF 20% 35V RDL ELCTLT	1013-0044	NICHICON	35UKB10M
C 36	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 37	CAP-470PF 1% 500V DIP MICA	1002-0044	CORNELL DUBILIER	CD15FD471F
C 38	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 39	CAP-100UF +100-30% 16V RDL NP ELCTLT	1013-0029	MATSUSHITA	ECE-A16N100
C 40	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 41	CAP-9-35PF 200V N650 V MT CER TRMR	1001-0006	ERIE	CV31D350
C 42	CAP-75PF 5% 500V DIP MICA	1002-0025	ELMENCO	DM15-E-750J
C 43	CAP-56PF 5% 500V DIP MICA	1002-0019	ELMENCO	DM15-E-560J
C 44	CAP-1000PF 10% 100V W5R MINTR CER	1005-0081	TUSONIX	8111-100-X7R0-102K
C 45	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 46	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 47	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 48	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 49	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 50	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
C 51	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
	DIODE			
CR 1	DIO-1N5767 SI PIN A1AH	1281-0075	NIPPON ELECT	1SV34
CR 2	DIO-1N5767 SI PIN A1AH	1281-0075	NIPPON ELECT	1SV34
CR 3	DIO-MV104 SI DUAL VARICAP T092 40PF 32	1281-0058	MOTOROLA	MV104
	CONNECTOR			
J 1	CONN-SMB 50 OHM STR JK PC MT SNAP-ON	2536-0071	SEALECTRO	51-051-0000
J 2	CONN-SMB 50 OHM RTANG JK PC MT SNAP-ON	2536-0060	CABLEWAVE	700214NP
J 3	CONN-SMB 50 OHM RTANG JK PC MT SNAP-ON	2536-0060	CABLEWAVE	700214NP
	INDUCTOR			
L 1	CH-.18UH 10% RF MLD AXL .10DX.25L	1585-0074	DELEVAN	1025-02
L 2	CH-.18UH 10% RF MLD AXL .10DX.25L	1585-0074	DELEVAN	1025-02
L 3	CH-470UH 5% RF MLD AXL .19DX.44L	1585-0019	DELEVAN	2500-12
L 4	CH-.68UH 10% RF MLD AXL .16DX.38L	1585-0024	DELEVAN	1537-08
L 5	CH-.68UH 10% RF MLD AXL .16DX.38L	1585-0024	DELEVAN	1537-08
L 6	CH-1UH 10% RF MLD AXL .16DX.38L	1585-0027	DELEVAN	1537-12
L 7	CH-1.8UH 10% RF MLD AXL .16DX.38L	1585-0072	DELEVAN	1537-18
L 8	CH-100UH 10% RF MLD AXL .10DX.25L	1585-0054	DELEVAN	1025-68
L 9	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 10	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
L 11	CH-.047X.138X.118 FERRITE BEAD 4B	1586-0004	FERROXCUBE	56-590-65/4B
	TRANSISTOR			
Q 1	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 2	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 3	XSTR-2N5179 NPN SI T072 LOW PWR (MOTA)	1272-0060	MOTOROLA	2N5179
Q 4	XSTR-2N5109 NPN SI TO39 HIGH PWR	1272-0110	MOTOROLA	2N5109
Q 5	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 6	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 7	XSTR-2N4392 SI T018 J-FET N-CHAN	1272-0054	TELEDYNE	2N4392
Q 8	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 9	XSTR-2N3563 NPN SI R110 LOW PWR	1272-0022	FAIRCHILD	2N3563
Q 10	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 11	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 12	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 13	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 14	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
Q 15	XSTR-2N3904 NPN SI TO 92 LOW PWR/SW	1272-0032	MOTOROLA	2N3904
	RESISTOR			
R 1	RES-15 OHM 5% 1/4W CC	1066-1505	ALLEN BRADLEY	CB1505
R 2	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 3	RES-68 OHM 5% 1/4W CC	1066-6805	ALLEN BRADLEY	CB 6805
R 4	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 5	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 6	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 7	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 8	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 9	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 10	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 11	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 12	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 13	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 14	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 15	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 16	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 17	RES-2.7K 5% 1/4W CC	1066-2725	ALLEN BRADLEY	CB2725
R 18	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 19	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 20	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 21	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 22	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 23	RES-10 OHM 5% 1/4W CC	1066-1005	ALLEN BRADLEY	CB1005
R 24	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 25	RES-180 OHM 5% 1/4W CC	1066-1815	ALLEN BRADLEY	CB1815
R 26	RES-100 OHM 5% 1/4W CC	1066-1015	ALLEN BRADLEY	CB1015
R 27	RES-3.3 OHM 5% 1/4W CC	1066-0006	ALLEN BRADLEY	CB33G5
R 28	RES-300 OHM 5% 1/4W CC	1066-3015	ALLEN BRADLEY	CB3015
R 29	RES-3.3K 5% 1/4W CC	1066-3325	ALLEN BRADLEY	CB3325
R 30	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 31	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 32	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 33	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 34	RES-1MEG 5% 1/4W CC	1066-1055	OHMITE	G.H. ONLY
R 35	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 36	RES-150 OHM 5% 1/4W CC	1066-1515	ALLEN BRADLEY	CB1515
R 37	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 38	RES-5.6K 5% 1/4W CC	1066-5625	ALLEN BRADLEY	CB 5625
R 39	RES-7.5K 5% 1/4W CC	1066-7525	ALLEN BRADLEY	CB 7525
R 40	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 41	RES-200 OHM 5% 1/4W CC	1066-2015	ALLEN BRADLEY	CB2015
R 42	RES-51 OHM 5% 1/4W CC	1066-5105	ALLEN BRADLEY	CB 5105
R 43	RES-330 OHM 5% 1/4W CC	1066-3315	ALLEN BRADLEY	CB3315
R 45	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 46	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 47	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 48	RES-18 OHM 5% 1/4W CC	1066-1805	ALLEN BRADLEY	CB1805
R 49	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 50	RES-30K 5% 1/4W CC	1066-3035	ALLEN BRADLEY	CB3035
R 51	RES-13K 5% 1/4W CC	1066-1335	ALLEN BRADLEY	CB1335
R 52	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 53	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 54	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 55	POT-20K 20% 1/2W 1T CERMET TRMR	1215-0044	BECKMAN	91AR20K
R 56	RES-4.3K 5% 1/4W CC	1066-4325	ALLEN BRADLEY	CB 4325
R 57	RES-15K 5% 1/4W CC	1066-1535	ALLEN BRADLEY	CB1535
R 58	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 59	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 60	RES-18.2 OHM 1% 100PPM FILM	1075-0157	CAT LIST	55-100
R 61	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 62	POT-1K 20% 1/2W 1T CERMET TRMR	1215-0058	BECKMAN	91AR1K
R 63	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 64	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 65	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 66	RES-750 OHM 5% 1/4W CC	1066-7515	ALLEN BRADLEY	CB 7515
R 67	RES-220K 5% 1/4W CC	1066-2245	ALLEN BRADLEY	CB2245
R 68	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 69	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 70	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
R 71	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 72	RES-510 OHM 5% 1/4W CC	1066-5115	ALLEN BRADLEY	CB 5115
R 73	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 74	RES-4.7K 5% 1/4W CC	1066-4725	ALLEN BRADLEY	CB 4725
R 75	RES-10K 5% 1/4W CC	1066-1035	ALLEN BRADLEY	CB1035
R 76	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 77	RES-43 OHM 5% 1/4W CC	1066-4305	ALLEN BRADLEY	CB 4305
R 78	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025
R 79	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
	TRANSFORMER			
T 1	XFMR-ASSY TOROIDAL BIFILAR	1579-0027		
	INTEGRATED CIRCUIT			
U 1	IC-CA 3046 XSTR AND D10 ARRAY	2025-0171	RCA	CA3046
U 2	IC-LM308N OP AMPL 8 PIN	2025-0070	NATIONAL	LM308N
U 3	IC-SN74LS73N DUAL J-K FLIP FLOP	2025-0110	TI	SN74LS73N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3
CONTROL SIGNAL
2
MODULATION
1
+10V
4
DSB OUT
5
C6
R10
R11
C16
Q2
R9
R12
C12
R8
C15
L4
C13
R7
R6
Q1
R5
C10
C11
L3
C9
C2
L1
R14
C1
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CR1
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C5
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R3
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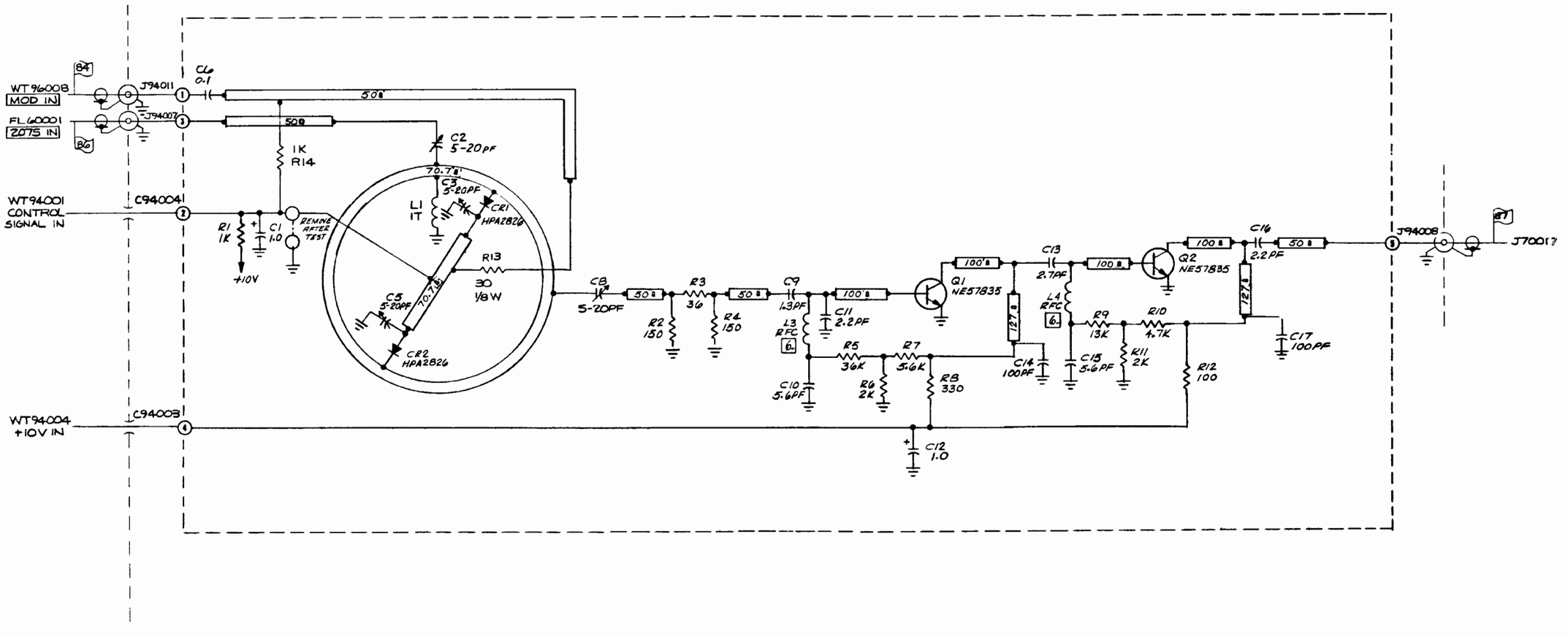
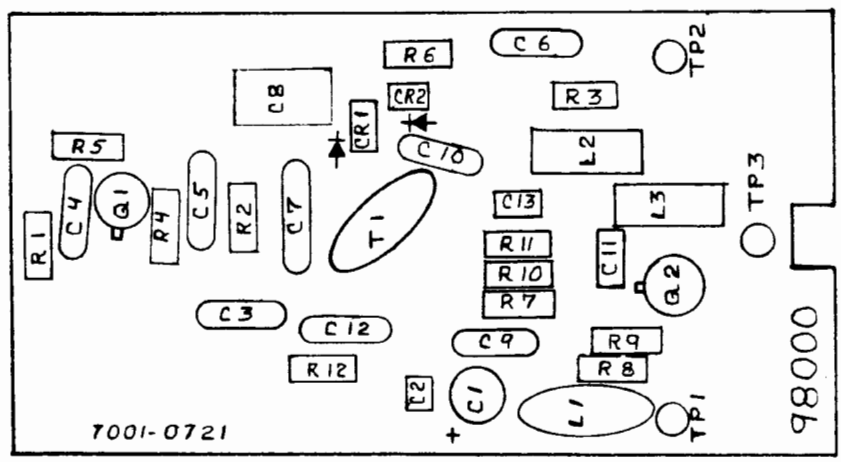


8. ⊏ 50Ω ⊐ IS MICROSTRIP TRANSMISSION LINE OF DESIGNATED CHARACTERISTIC IMPEDANCE.
7. ALL CAPS ARE CHIP TYPE EXCEPT .01 UF AND 1 UF WHICH ARE MINI-CERAMIC AND ELECTROLYTIC.
6. PRINTED ON PCB.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
1. RESISTORS - 1/8W 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.

NOTE:

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
97000	PCB ASSY - UP CONVERTER	7001-0713	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0996	CUSHMAN	
	CAPACITOR			
C 1	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 2	CAP-5-20PF 25V NPO V ADJ CER TRMR	1001-0025	TUSONIX	513-012A 3.5-20PF
C 3	CAP-5-20PF 25V NPO V ADJ CER TRMR	1001-0025	TUSONIX	513-012A 3.5-20PF
C 5	CAP-5-20PF 25V NPO V ADJ CER TRMR	1001-0025	TUSONIX	513-012A 3.5-20PF
C 6	CAP-.1UF 20% 50V MINTR CER RED	1005-0097	ERIE	8121-050-651-104M
C 8	CAP-5-20PF 25V NPO V ADJ CER TRMR	1001-0025	TUSONIX	513-012A 3.5-20PF
C 9	CAP-1.3PF .25PF 50V NPO CHIP	1012-0034	JOHANSON	500 R16N143CB
C 10	CAP-5.6PF .5PF 50V NPO CHIP	1012-0011		
C 11	CAP-2.2PF .5PF 50V NPO CHIP	1012-0003	KEMET	C0805C229D5GHH
C 12	CAP-1UF 20% 50V RDL TANT	1011-0013	KEMET	T368A105M050AS
C 13	CAP-2.7PF .25PF 50V NPO CHIP	1012-0032	NOR CAL ASSOC	3BP050S2R7C S
C 14	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
C 15	CAP-5.6PF .5PF 50V NPO CHIP	1012-0011		
C 16	CAP-2.2PF .5PF 50V NPO CHIP	1012-0003	KEMET	C0805C229D5GHH
C 17	CAP-100PF 10% 50V NPO CHIP	1012-0004	NOVACAP	0805N101K500A
	DIODE			
CR 1	DIO-HP2826 HOT CARR 1.2PF AIN 15PRV BM	1283-0005	HP	5082-2826
CR 2	DIO-HP2826 HOT CARR 1.2PF AIN 15PRV BM	1283-0005	HP	5082-2826
	INDUCTOR			
L 1	ASSY-COIL-AIR CORE	1596-0068		
	TRANSISTOR			
Q 1	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
Q 2	XSTR-NE57835 NPN SI LOW PWR	1272-0086	NIPPON ELEC	NE57835
	RESISTOR			
R 1	RES-1K 5% 1/8W CC	1065-1025	ALLEN BRADLEY	BB1025
R 2	RES-150 OHM 5% 1/8W CC	1065-1515	ALLEN BRADLEY	BB1515
R 3	RES-36 OHM 5% 1/8W CC	1065-3605	ALLEN-BRADLEY	BB3605
R 4	RES-150 OHM 5% 1/8W CC	1065-1515	ALLEN BRADLEY	BB1515
R 5	RES-36K 5% 1/8W CC	1065-3635	ALLEN BRADLEY	BB3635
R 6	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 7	RES-5.6K 5% 1/8W CC	1065-5625	ALLEN BRADLEY	BB5625
R 8	RES-330 OHM 5% 1/8W CC	1065-3315	ALLEN BRADLEY	BB3315
R 9	RES-13K 5% 1/8W CC	1065-1335	ALLEN BRADLEY	BB1335
R 10	RES-4.7K 5% 1/8W CC	1065-4725	ALLEN BRADLEY	BB4725
R 11	RES-2K 5% 1/8W CC	1065-2025	ALLEN BRADLEY	BB2025
R 12	RES-100 OHM 5% 1/8W CC	1065-1015	ALLEN BRADLEY	BB1015
R 13	RES-30 OHM 5% 1/8W CC	1065-3005	ALLEN-BRADLEY	BB3005
R 14	RES-1K 5% 1/4W CC	1066-1025	ALLEN BRADLEY	CB1025


R6
C6
TP2
C8
CR2
R3
CR1
C10
L2
R5
C4
Q1
C5
C13
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TP3
R1
R4
R2
C7
T1
R11
C11
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TP1
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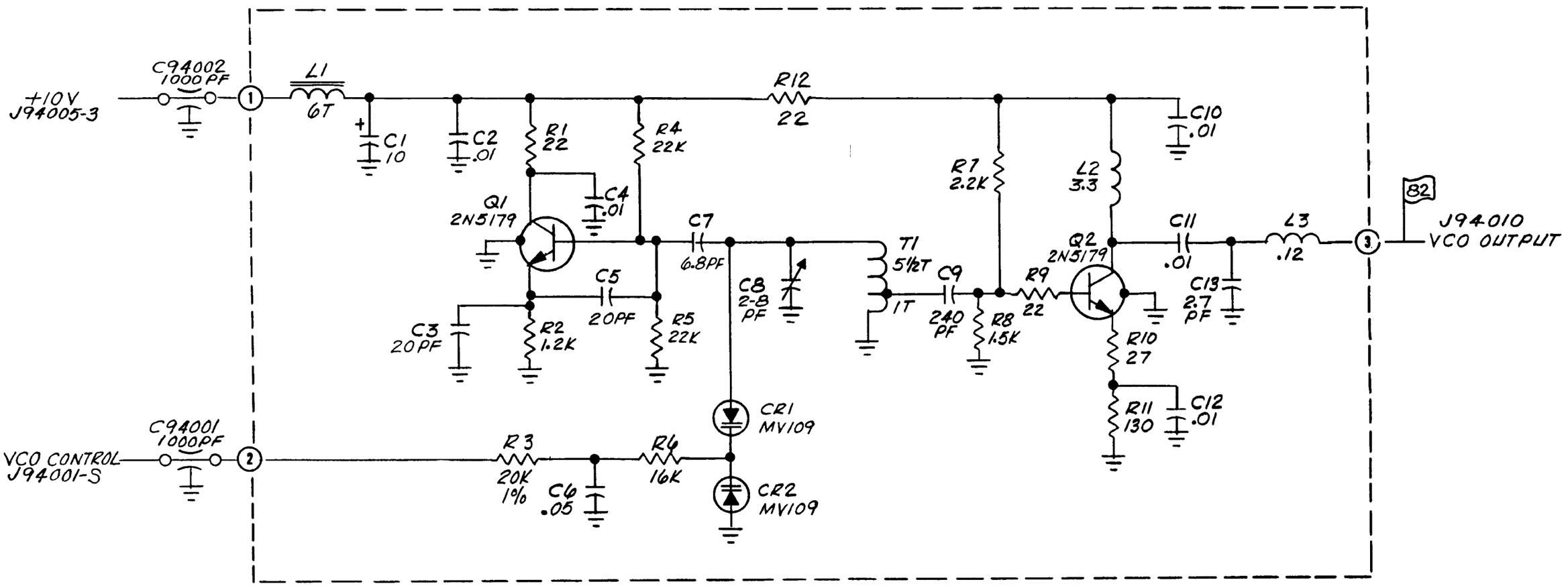

NOTE:

1. RESISTORS - 1/4W, 5% VALUES IN OHMS UNLESS OTHERWISE NOTED.
2. CAPACITORS - VALUES IN μF UNLESS OTHERWISE NOTED.
3. INDUCTORS - VALUES IN μH UNLESS OTHERWISE NOTED.
4. *FACTORY SELECT. TYPICAL VALUE SHOWN.
5. ALL VOLTAGES ARE DC UNLESS OTHERWISE NOTED.

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
98000	PCB ASSY - 88/100 MHz VCO	7001-0712	CUSHMAN	5100 SERIES ONLY
	PRINTED CIRCUIT BOARD	1780-0997	CUSHMAN	
	CAPACITOR			
C 1	CAP-10UF +100-10% 25V RDL ELCTLT	1013-0035	ILLINOIS CAP.	10PC25
C 2	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 3	CAP-20PF 5% 500V DIP MICA	1002-0060	ELMENCO	DM15-E-200J
C 4	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 5	CAP-20PF 5% 500V DIP MICA	1002-0060	ELMENCO	DM15-E-200J
C 6	CAP-.05UF +80-20% 25V Y5U CER DISC	1005-0014	TUSONIX	5835-514-Y5U-503Z
C 7	CAP-6.8PF .25PF 500V NPO CER TUB	1005-0006	TUSONIX	301-000-C0H0-689C
C 8	CAP-2-8PF 350V NPO H MT CER TRMR	1001-0010	TUSONIX	538-006A (2-8)
C 9	CAP-240PF 5% 500V DIP MICA	1002-0030	ELMENCO	DM15-F-241J
C 10	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 11	CAP-.01UF 20% 100V Y5P MINTR CER WHT	1005-0100	ERIE	8121-100-651-103M
C 12	CAP-.01UF +80-20% 25V Y5U CER DISC	1005-0013	TUSONIX	5835-512-Y5U-103Z
C 13	CAP-2.7PF 10% 100V NPO MINTR CER	1005-0124	TUSONIX	8101-100-C0J0-279C
	DIODE			
CR 1	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
CR 2	DIO-MV109 SI VARICAP A276 29PF 30PRV	1281-0064	MOTOROLA	MV109
	CHOKE			
L 1	CH-3B FERRITE BEAD 30GA/6T	1586-0007		
L 2	CH-3.3UH 10% RF MLD AXL .16DX.38L	1585-0037	DELEVAN	1537-24
L 3	CH-.12UH 10% RF MLD AXL .10DX.25L	1585-0068	DELEVAN	1025-96

CKT. REF.	DESCRIPTION	CE STOCK NO.	MFR.	MFR. NO.
	TRANSISTOR			
Q 1	XSTR-2N5179 NPN SI T072 LOW PWR	1272-0060	MOTOROLA	2N5179
Q 2	XSTR-2N5179 NPN SI T072 LOW PWR	1272-0060	MOTOROLA	2N5179
	RESISTOR			
R 1	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 2	RES-1.2K 5% 1/4W CC	1066-1225	ALLEN BRADLEY	CB1225
R 3	RES-20K 1% 100PPM FILM	1075-0096	CAT.LIST	55-100
R 4	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 5	RES-22K 5% 1/4W CC	1066-2235	ALLEN BRADLEY	CB2235
R 6	RES-16K 5% 1/4W CC	1066-1635	ALLEN BRADLEY	CB1635
R 7	RES-2.2K 5% 1/4W CC	1066-2225	ALLEN BRADLEY	CB2225
R 8	RES-1.5K 5% 1/4W CC	1066-1525	ALLEN BRADLEY	CB1525
R 9	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
R 10	RES-27 OHM 5% 1/4W CC	1066-2705	ALLEN BRADLEY	CB2705
R 11	RES-130 OHM 5% 1/4W CC	1066-1315	ALLEN BRADLEY	CB1315
R 12	RES-22 OHM 5% 1/4W CC	1066-2205	ALLEN BRADLEY	CB2205
	TRANSFORMER			
T 1	COIL-NYL CORE 1/4-20/22GA 5.5T W/TAP	1596-0312		