



Servicing Information

3457996-502

3-Minute Timer Module

TECHNICAL DATA

Power Requirements 13.6 VDC $\pm 20\%$ 2.0 mA, K1 de-energized 20.0 mA, K1 energized Control Power Requirements 13.6 VDC $\pm 20\%$ 2.0 mA Operating Temperature Range -30°C to +65°C	Cycle Timing 150 S. (Minimum) 180 S. (Maximum) Output Relay Form C contact, 1A at 29 VDC N.C. contact, controlled timing circuit N.O. contact, accessory or alarm purposes
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CIRCUIT DESCRIPTION

The 3-Minute Timer Module establishes a time limit on continuous keying of the repeat transmitter. A COS or TOS (Carrier or Tone Operated Switch) signal is applied to the timer turn-on terminal, pin 1. Emitter follower Q1 and regulator diode CR4 develop a regulated voltage for the timer circuit (about 8.5 volts).

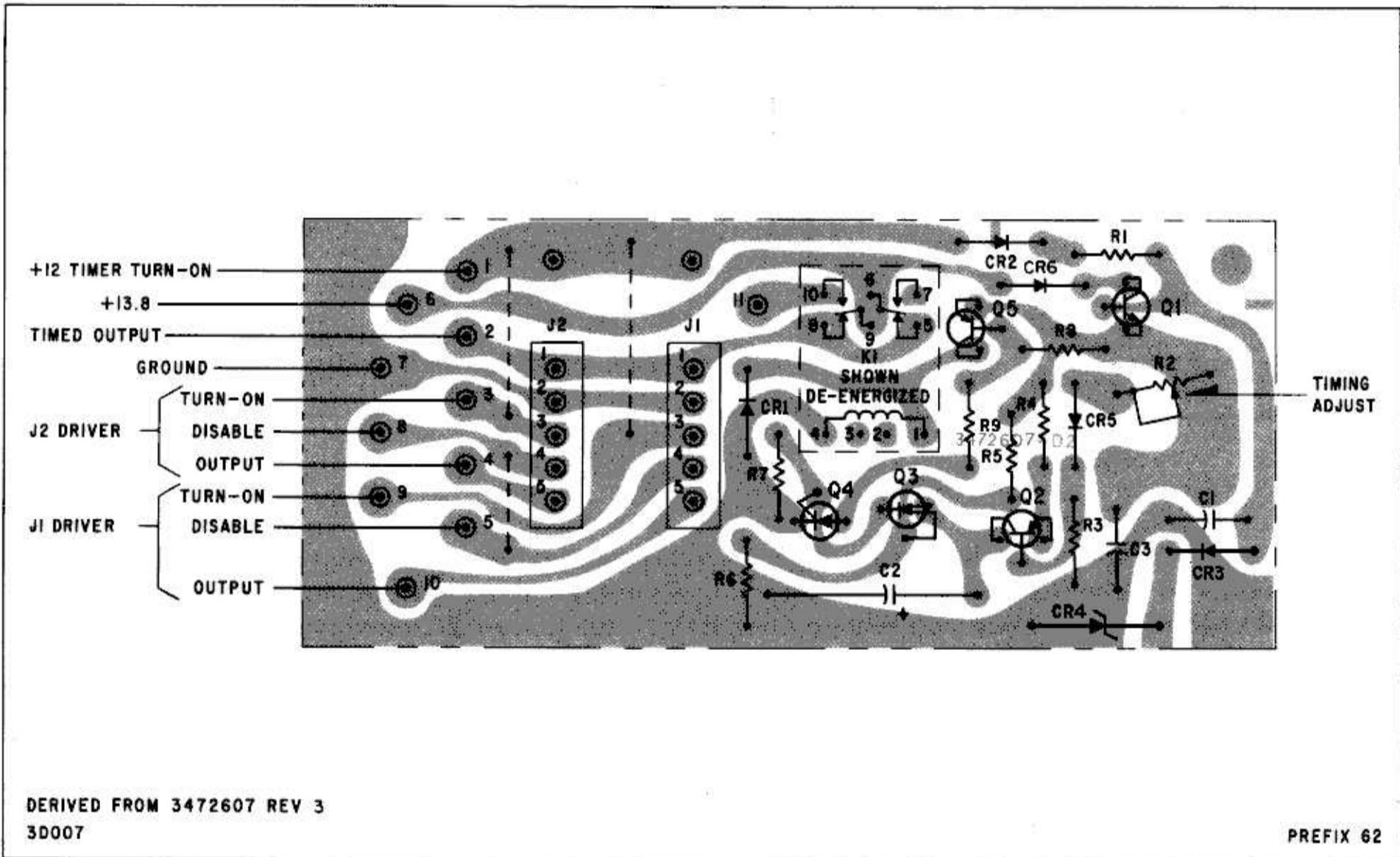
Switch transistor Q2 turns on, charging timing capacitor C2. Over a period of 3-minutes, C2 charges to about 6 volts. At this point, programmable unijunction transistor Q3 fires, applying a gate signal to semiconductor controlled rectifier Q4.

When Q4 fires, bias is applied to relay driver transistor Q5; relay K1 is energized. Contacts of K1 break the A+ line to the Driver Module which controls repeat transmitter keying.

EMERGENCY SUBSTITUTES - SOLID STATE DEVICES

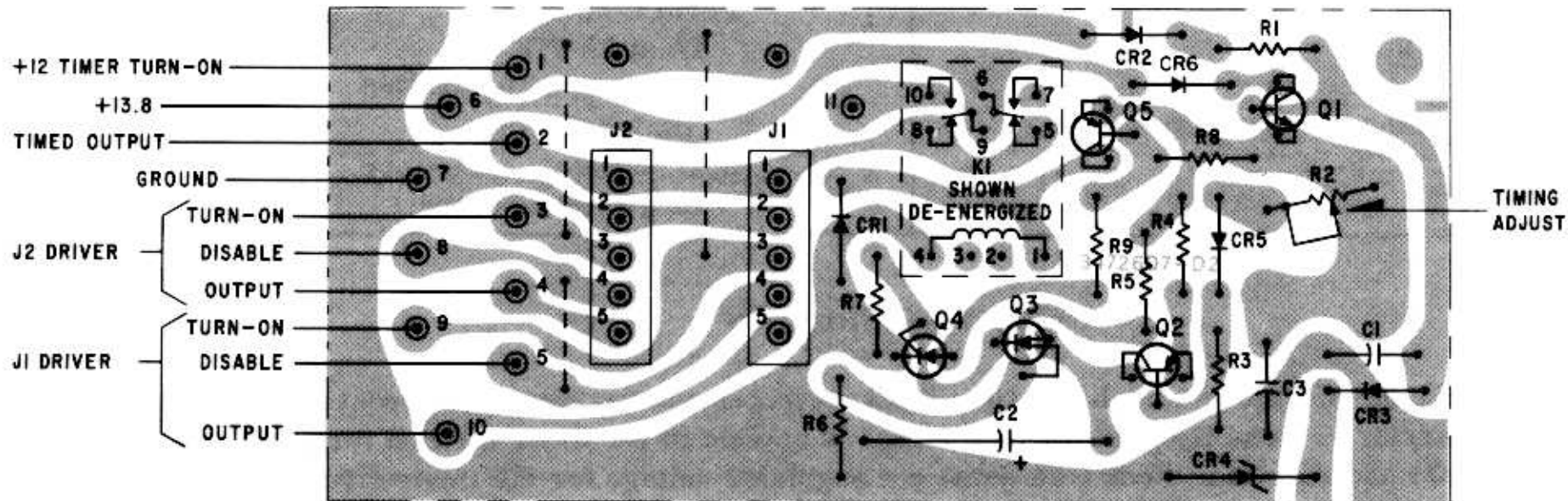
In the event of semi-conductor failure, the exact replacement found in the replacement parts list should be used. In an emergency, to minimize equipment downtime, the following common semiconductor types may be temporarily used. However, use of substitutes may result in degraded system performance and the exact replacement part should be used as soon as possible.

Component Designation	Emergency Substitute	Component Designation	Emergency Substitute
CR1, CR2	1N914	Q1	2N4124
CR3	1N4830	Q2	2N4126
CR4	8.5V Zener, 5%	Q3	D13T2
CR5	1N4828	Q4	2N5060
CR6	1N914	Q5	2N4126

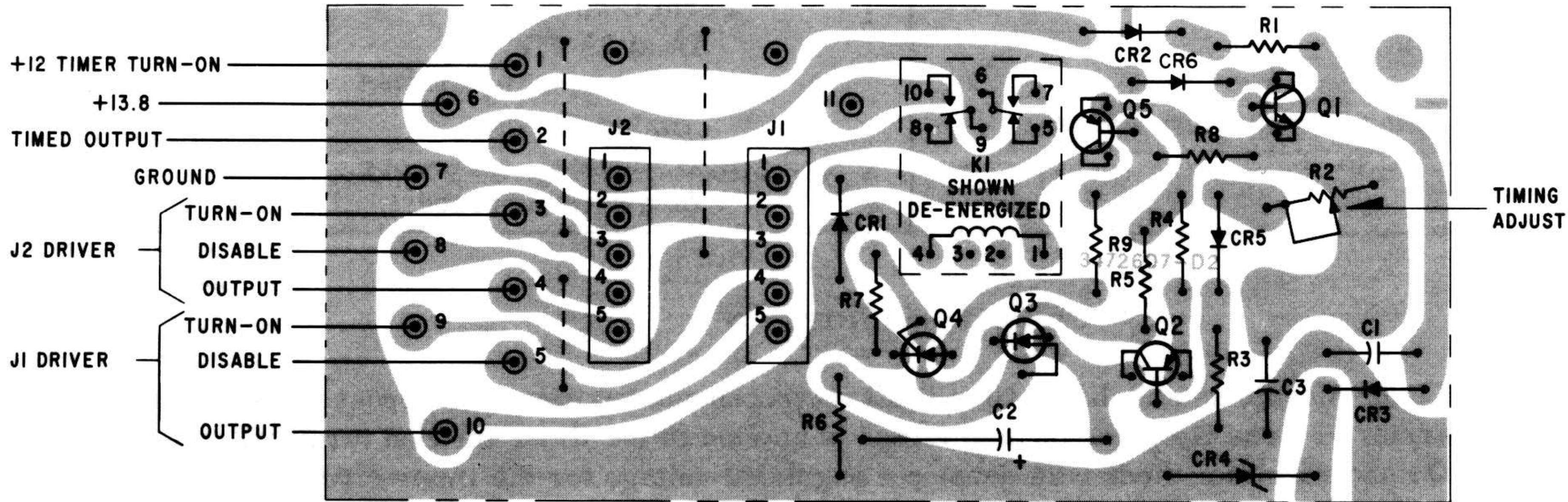


3457996-502 CODE A

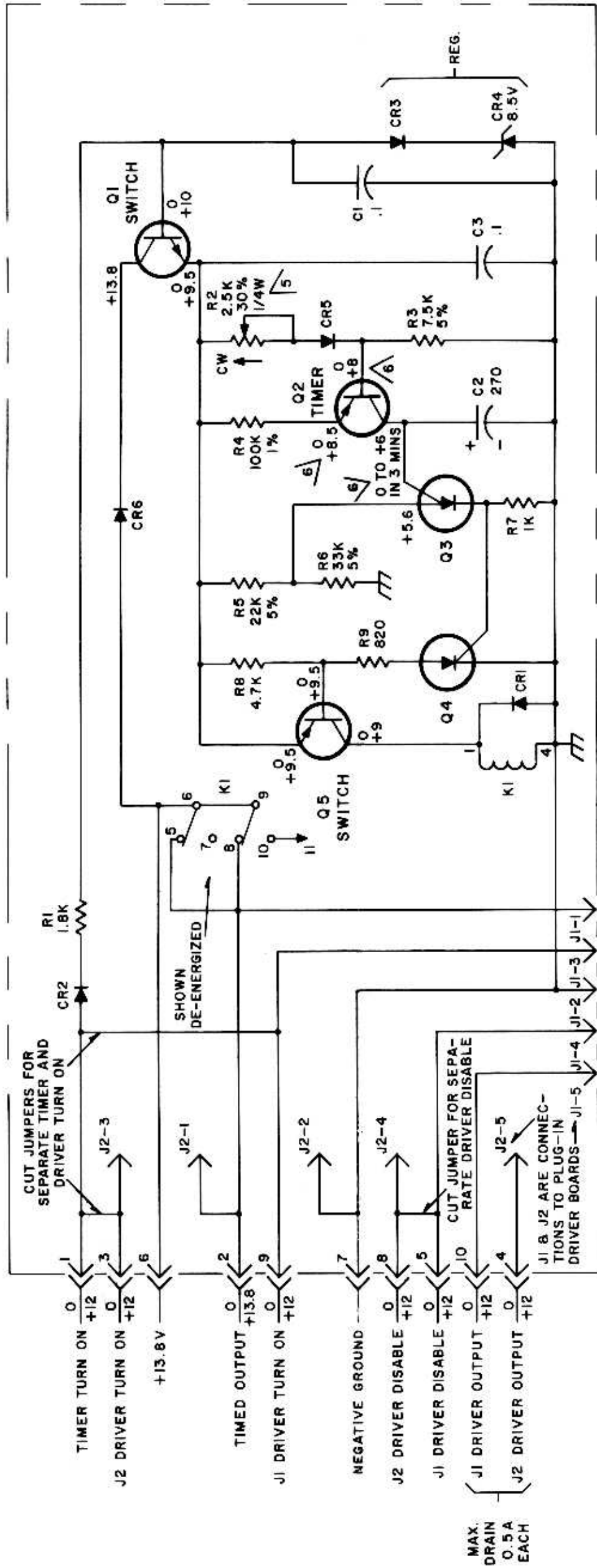
Pathfinder Diagram



N3LKL



3-MINUTE TIMER MODULE P/L 3457996-502 CODE A 62



5. R2 ADJUSTMENT: SET FOR +8.5 READING AT Q2 EMITTER, THEN EXPERIMENTALLY ALTER SETTING SLIGHTLY FOR 3-MINUTE CYCLE.
CAUTION: DO NOT EXCEED A 3-MINUTE CYCLE.
6. CRITICAL TIMING VOLTAGES, FACTORY SET.
7. UPPER VOLTAGE = NOT KEYS
LOWER VOLTAGE = KEYS

- NOTES:
1. RESISTORS IN OHMS, 1/4W, 10% EXCEPT AS NOTED.
 2. CAPACITORS IN μ F EXCEPT AS NOTED.
 3. DC VOLTAGES ARE TYPICAL, MEASURED TO CHASSIS WITH 20,000 Ω/V VOM.
 4. IF EXTERNAL POWER SUPPLY IS USED WHEN TESTING THIS BOARD, SUPPLY SHOULD BE VOLTAGE-REGULATED AND CURRENT-LIMITED.

Schematic Diagram

REPLACEMENT PARTS

<i>Symbol</i>	<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
----	425752	3457996-502	3-MINUTE TIMER MODULE P/L 3457996-502 REV 10 CODE A
62C1	227444	3460490-002	CERAMIC, 0.1 MF 25 W VDC
62C2	247819	3731243-103	TANTALUM, 270 MF 10% 10 W VDC
62C3	227444	3460490-002	CERAMIC, 0.1 MF 25 W VDC
62CR1	242522	3464611-001	DIODE
62CR2	242522	3464611-001	DIODE
62CR3	242721	3731160-001	DIODE
62CR4	242755	3464597-001	DIODE
62CR5	244093	3731193-004	DIODE
62CR6	242522	3464611-001	DIODE
62J1		3457934-105	POST
62J2		3457934-105	POST
62K1	246554	3467471-006	RELAY - 8.5 MA 85 MW 1000 OHMS
62Q1	242759	3468182-002	TRANSISTOR
62Q2	241884	3468183-002	TRANSISTOR
62Q3	245047	3457852-002	TRANSISTOR
62Q4	245048	3457853-001	TRANSISTOR
62Q5	241884	3468183-002	TRANSISTOR
62R1	219460	99206-065	1800 OHMS 10% 1/4W
62R2	247820	3464828-008	VARIABLE, 2500 OHMS 1/4W
62R3	218760	99206-180	7500 OHMS 5% 1/4 W
62R4	235491	990478-501	FILM, 100,000 OHMS 1% 1/8W
62R5	285421	99206-191	22,000 OHMS 5% 1/4W
62R6	285404	99206-195	33,000 OHMS 5% 1/4W
62R7	108865	99206-062	1000 OHMS 10% 1/4W
62R8	300739	99206-070	4700 OHMS 10% 1/4W
62R9	300689	99206-061	820 OHMS 10% 1/4W
62XK1	231434	3467276-003	SOCKET - RELAY
30	228124	3450797-003	PIN CONTACT, .093 DIA. - PACKAGE OF 5
END	END	END	END