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**Teaberry Stalker IX and XV Service Manual**

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# Service Manual



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## Specifications (Nominal)

Power Source .....	117V AC/13.8V DC
Size .....	14 <sup>3</sup> / <sub>4</sub> " x 13" x 5 <sup>1</sup> / <sub>2</sub> "

## Receiver Section

Sensitivity (AM/SSB) .....	0.5/0.25 $\mu$ V
Squelch Threshold (AM/SSB) .....	0.5/0.5 $\mu$ V
Squelch Deepest Point .....	1000 $\mu$ V
"S" Meter S-9 .....	100 $\mu$ V
Clarifier .....	$\pm$ 1.25 KHz
Maximum AF Output Power .....	4.0 W
AF Output Power/10% Distortion .....	3.0 W
Selectivity BW @ 6 dB Down .....	$\pm$ 6 KHz
Adjacent Channel Rejection .....	- 50 dB
Image Rejection .....	- 75 dB
Speaker Impedance .....	8 Ohm

## Transmitter Section

Modulation (Peak) .....	100%
Power Output (AM/SSB) .....	4/12 W
Emission Type AM .....	6A3
Emission Type SSB .....	3A3J
Hum and Noise (Better than) .....	- 60 dB
Frequency Tolerance .....	.003%
Antenna Impedance .....	50 Ohm
Frequency Determining Method .....	PLL

## Public Address

Output Power @ 10% Distortion .....	3.0 W
-------------------------------------	-------

## Alignment of P.L.L. Portion (Refer to Fig. 1)

1. Test equipment required
  - a. RF V.T.V.M. or Oscilloscope (0-50MHz)
  - b. DC Voltmeter (10V full scale)
  - c. Frequency Counter (0-50MHz)
  - d. 50 ohm Load
2. Alignment Procedure  
(Refer to Fig. 2, Test Setup)

Step	Pre-Set Condition	Connections	Adjustment	Remarks
1.	Channel 40 AM, RX mode Clarifier control in middle position	RF V.T.V.M. to TP10	L18	Adjust L18 for the maximum indication on RF V.T.V.M.
2.	same as step 1	DC Voltmeter to TP9	L13	Adjust L13 to obtain approx. 3.5V on the DC Voltmeter.
3.	Channel 19 USB, RX mode	RF V.T.V.M. to secondary of L14 (TP 1) LOCAL OUT	L14	Adjust L14 for the maximum indication on RF V.T.V.M.
4.	same as step 3	Frequency Counter to secondary of L14 (TP 1)	CT3	Adjust CT3 to obtain 34.9875MHz ± 20Hz indication.
5.	Channel 19 AM, RX mode	same as above	L20	Adjust L20 to obtain 34.9850MHz ± 20Hz indication.
6.	Channel 19 LSB, RX mode	same as above	L19	Adjust L19 to obtain 34.9825MHz ± 20Hz indication.
7.	Channel 19 LSB, TX mode	same as above	VR3	Adjust VR3 to obtain 34.9825MHz ± 20Hz indication.

## Alignment of Carrier Oscillator (Refer to Figs. 1 & 2)

1. Test equipment required
  - a. RF V.T.V.M. or Oscilloscope (0-10MHz)
  - b. Frequency Counter (0-10MHz)
  - c. 50 ohm Load

### 2. Alignment Procedure

Step	Preset Condition	Connections	Adjustment	Remarks
1.	Channel 19 USB, RX mode	Frequency Counter to the Base of TR13 (TP-3)	CT 1	Adjust CT1 to obtain 7.8025MHz + 5Hz, - 0Hz indication.
2.	Change over to LSB mode	same as step 1	CT 2	Adjust CT2 to obtain 7.7975MHz + 0Hz, - 5Hz indication.
3.	Channel 19 AM, TX mode. Disconnect TP7, TP8.	same as step 1	L 17	Adjust L17 to obtain 7.8000MHz $\pm$ 5Hz indication.

## Alignment of Transmitter Portion (Refer to Fig. 1)

1. Test equipment required
  - a. AF Signal Generator (1) for 500 Hz & 1,000 Hz
  - b. AF Signal Generator (2) for 2,400 Hz
  - c. AF Attenuator, 600-ohm, attenuation range 0-80dB, 0.1dB step
  - d. AF V.T.V.M. (150mV Full scale)
  - e. RF V.T.V.M. (50V Full scale)
  - f. RF Output Power Meter (10W MAX, Thru-line type)
  - g. 50-ohm Dummy Load
  - h. RF Attenuator (0-80dB)
  - i. Oscilloscope (DC-50MHz)
  - j. Spectrum Analyzer
  - k. DC Voltmeter
  - l. DC Current Meter (150mA Full scale)

### 2. Alignment Procedure

Connect the test equipments according to the test set-up shown in Fig. 3.

Step	Preset Condition	Connections	Adjustment	Remarks
1.	Channel 19 USB, TX mode. No modulation	DC Current Meter TP8	VR8	Adjust VR8 to obtain the current approx. 30 mA. After adjustment connect TP8
2.	same as step 1	DC Current Meter TP7	VR9	Adjust VR9 to obtain the current approx. 50 mA. After adjustment connect TP7.
3.	same as step 1		VR5	Adjust VR5 to obtain the minimum carrier leakage.
4.	same as step 1		VR5	same as above
5.	Repeat Steps 3 and 4, to obtain approximately the same amount of carrier leakage on USB and LSB modes, and at the same time to make the leakage minimum.			
Step	Preset Condition	Connections	Adjustment	Remarks
6.	Channel 19, USB, TX mode. AF input of 2-tone, about 500 mV to Mike Jack.	Set VR7 at C.W. position	L26, L28, L29, L36	Adjust L26, L27, L28, L29 and L36 to obtain the maximum indication on RF V.T.V.M.
7.	Channel 19, USB, TX mode. AF input of 2-tone, RF output of about 4W PEP.	same as above	L26, L27, L28, L29	Adjust L26 and L29 to obtain the maximum indication on the RF V.T.V.M.
8.	Channel 19, AM, TX mode. AF input 500mV to Mike Jack.	same as above	L36	Adjust L36 to obtain the maximum indication on the RF V.T.V.M.
9.	same as step 6		VR7	Adjust VR7 to obtain RF output power of approx. 11.0W PEP.
10.	Channel 19 AM, TX mode. No modulation.		VR6	Adjust VR6 to obtain RF carrier power of 3.8W.
11.	same as step 6.		VR10	Adjust VR10 to obtain an indication of marked position on built-in meter.
12.	same as step 6	same as above	L39	Adjust L39 to minimize 54 MHz 2nd harmonics using Spectrum Analyzer.
13.	Check spurious emissions of AM and SSB using Spectrum Analyzer.			

## Alignment of Receiver Portion (Refer to Figs. 1 & 2)

### 1. Test Equipment Required

- a. Signal Generator (27MHz band. 1,000Hz 30% amplitude modulation must be available and 50 ohm output impedance)
- b. DC, Volt Meter
- c. AF V.T.V.M. (5V Full scale)
- d. 8-ohm DUMMY Load

### 2. Alignment Procedure

Connect the AF V.T.V.M. & 8-ohm DUMMY Load to EXT SP Jack (J402) during the alignment of receiver portion.

Step	Preset Condition	Condition of Signal Generator	Adjustment	Remarks
1.	Channel 19 NB: OFF ANL: OFF SQL: Min. RF GAIN: Max. VOL: Max. MODE: USB PA-CB: CB	27.185MHz No modulation Output level: 0.25uV	Frequency of Signal Generator	Adjust frequency of Signal Generator to obtain AF output signal of 1,000Hz at CLARIFIER control in middle position.
2.	same as step 1	same as step 1	L3, L4, L5, L6 L7, L8, L9, L10	Adjust L3, L4, L5, L6, L7, L8, L9, L10 for the maximum AF output power.
3.	same as step 1, except mode AM.	1KHz 30% mod. 27.185MHz Output level: 1uV	L3	Adjust L3 for the maximum indication on AF V.T.V.M.
4.	same as step 1	27.185MHz No modulation Output level: 100uV	VR1	Adjust VR1 to obtain "S-9" indication of S-meter.
5.	same as step 1, except SQL: Max.	27.185MHz No modulation Output Level: 1,000uV	VR2	Adjust VR2 till AF signal observed. After adjustment set SQL at minimum.
6.	Channel 19 NB: ON SQL: Min. RF GAIN: Max. VOL: Max. MODE: AM	same as step 5	L1, L2	Adjust L1, L2 to obtain the maximum DC voltage at TP6.



## Alignment of Built-In DC Power Supply (Refer to Fig. 3)

1. Test equipment required
  - a. DC Voltmeter (15V Full scale)
2. Alignment Procedure

Step	Preset Condition	Connections	Adjustment	Remarks
1	Channel 19 or arbitrary channel. AM, RX mode.	DC voltmeter to the emitter of transistor TR401.		
2	same as step 1	AC power cable to 117V/60Hz source.	RT301	Adjust RT301 on the power supply board to obtain 13.8V on the DC voltmeter.

Fig. 1

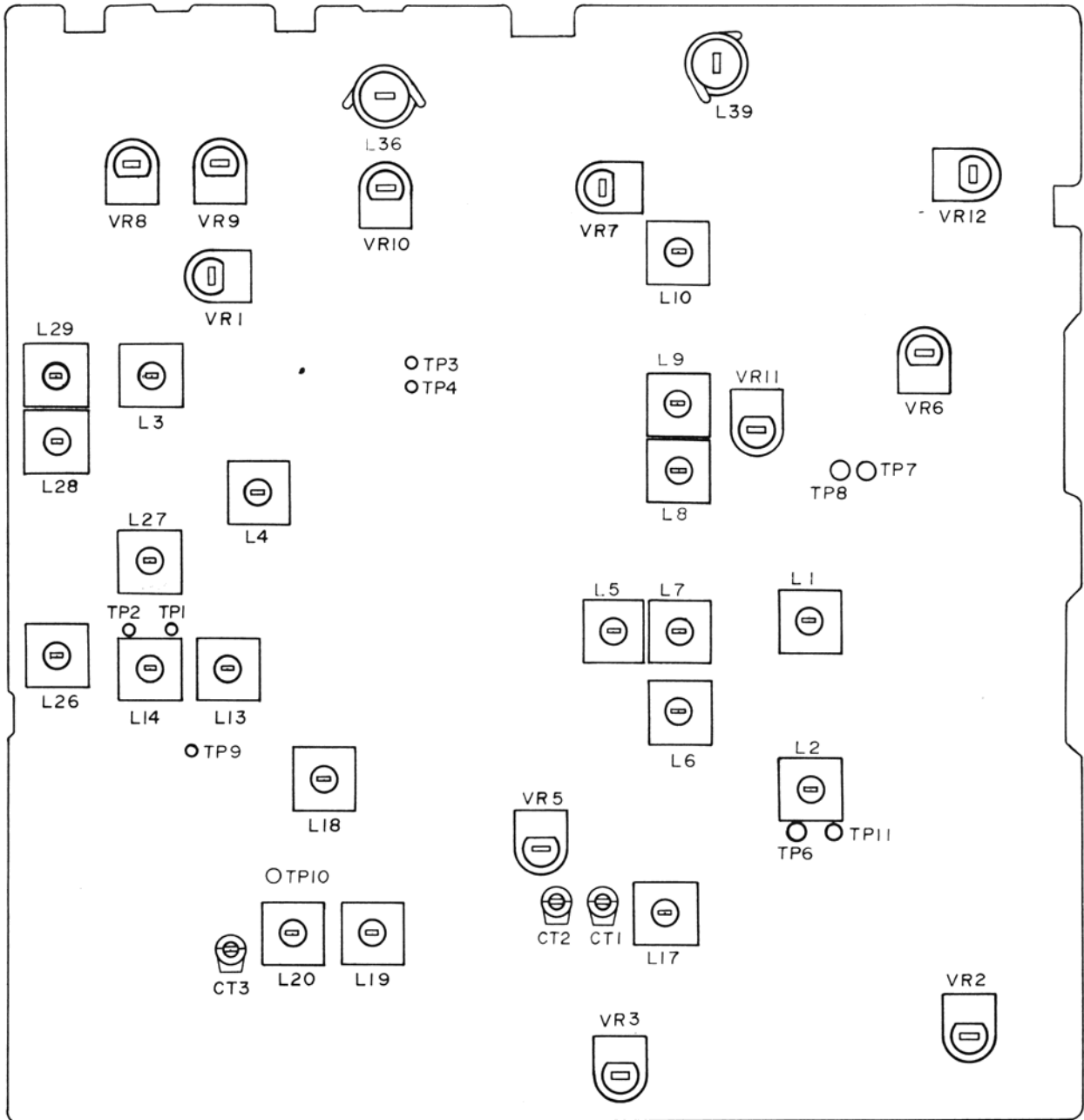


Fig. 2 PLL and Receiver Test Setup

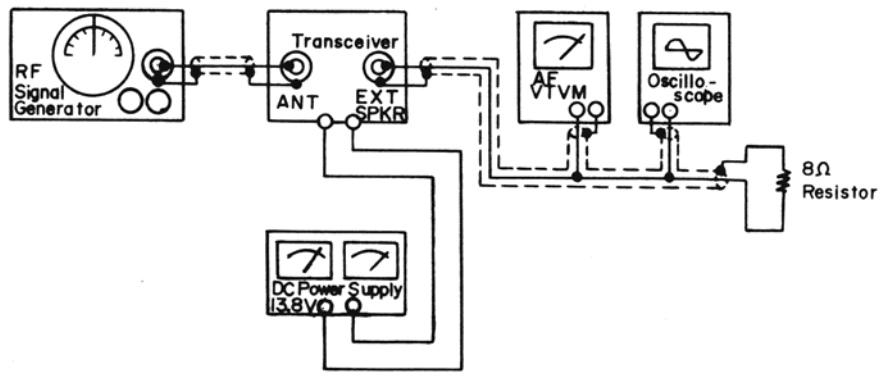
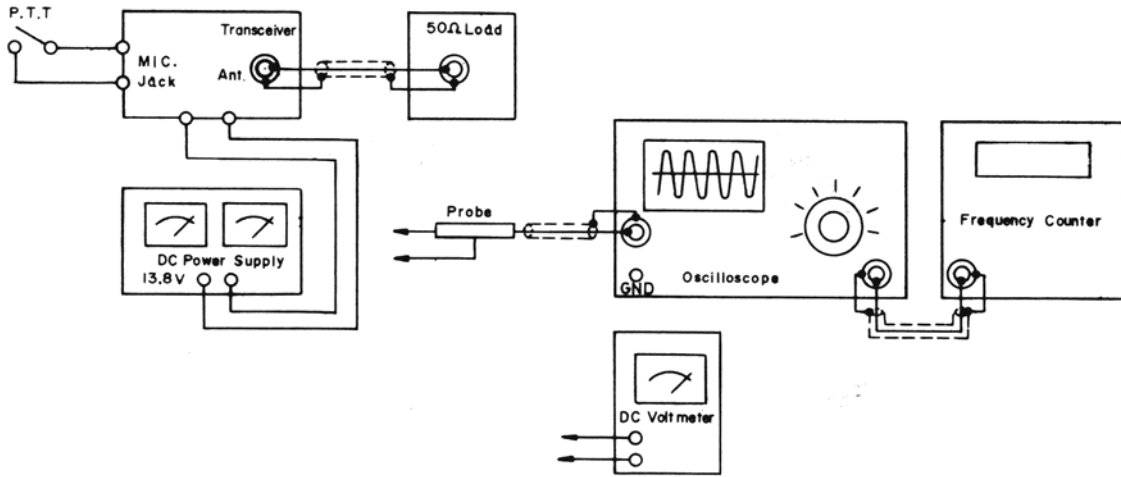
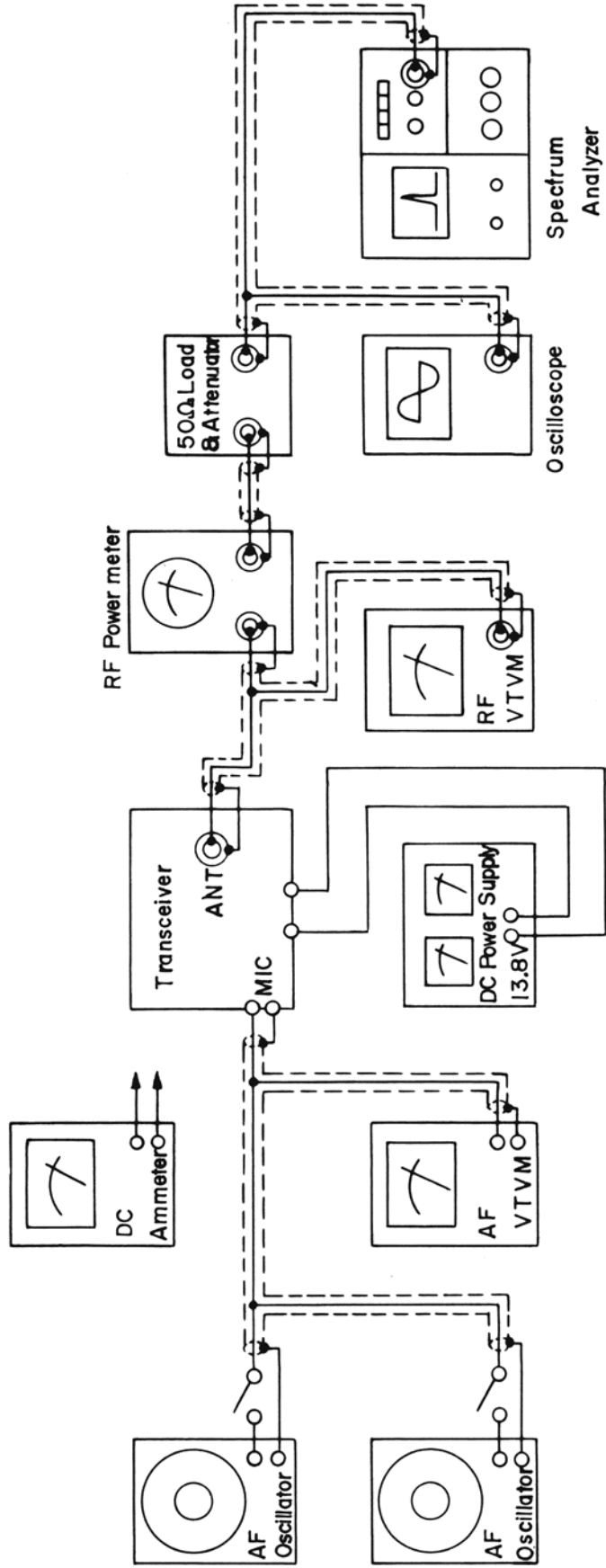


Fig. 3 Transmitter Test Setup



## Voltage Chart

### TRANSISTOR

NO	1		2		3		4		5		6		7		8		9	
	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
TX or RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
BASE	0	1.2	0	0.7	0	2.4	0	0	0	0	0	0	0	7.3	0	0	0	2.1 (0.45)
COLLECTOR	0	7.8	0	2.4	0	7.5	0	8.0	0	8.0	0	7.3	0	0	0	0	0	7.8 (8.0)
EMITTER	0	0.5	0	0	0	1.6	0	0.5	0	0	0	0	0	8.0	0	0	0	1.4 (0)
REMARKS	NB ON		NB ON		NB ON		NB ON		NB ON								()---RF Gain MIN	

10		11		12		13		14		15		16		17		18		19	
TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
0	0.3	0	3.0	0	0	0	1.2 (1.3)	2.8	7.7 (7.0)	0	0 (2.5)	0	2.9	0	0.73	0	2.5	3.9	3.9
0	7.8	7.3	2.3	0	8.0	0	1.7 (7.8)	0	8.0 (7.3)	0	8.0 (7.3)	0	7	0	3.6	0	7.0	8.0	8.0
0	0.1	0	2.3	0	0.5	0	0.6 (1.7)	0	0.6 (8.0)	0	0.5 (1.9)	0	2.2	0	0	0	1.8	3.3	3.3
						()---SQ MAX		()---SQ MAX		()---SQ MAX									

20			21			22		23		24		25		26		27		28		29	
AM TX	AM RX	SSB TX	AM TX	AM RX	SSB TX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
0	0	2.5	0.75	0.2	0.2 (0.2)	2.2	2.2	1.4	1.4	3.5	3.5	0 (0)	0	/		1.5 (4.3)	4.0 (4.3)	1.7	1.7	0.9	0.9
7.5	0.2	0	0	0	0 (1.8)	7.5	7.5	7.9	7.9	7.2	7.2	6.5 (6.5)	6.5			1.8 (0.1)	0.2 (0)	3.0	3.0	1.7	1.7
0	0	0	0	0	0 (0)	1.5	1.5	0.9	0.9	2.8	2.8	3.5 (1.7)	0			1.2 (8.0)	2.8 (2.8)	1.1	1.1	0.35	0.35
			SSB --- ( )---SSB											()---AM ( )---SSB							

30			31		32		33		34		35		36		37			38		
TX	RX	PA	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	PA	TX	RX	
3.0	3.0	1.4	6.5	6.5	0	0.7	0.85 (0.85)	0.85	5.6 (6.0)	6.0	5.6 (6.0)	6.5	0	3.3	0.6	7.6	7.6	1.2	0	
0	0	2.0	0	0.7	0	0	6.5 (6.5)	6.5	13.8 (13.8)	13.8	13.8 (13.8)	13.8	0	6.2	0	13.8	13.8	8.0	0	
3.0	3.0	2.0	6.8	6.8	0	0	1.5 (4.3)	4.0	5.0 (13.8)	13.8	5.6 (6.0)	6.0	0	2.6	0	7.4	7.4	0.55	0	
							()---AM ( )---SSB		()---AM ( )---SSB		()---AM ( )---SSB									

### TRANSISTOR

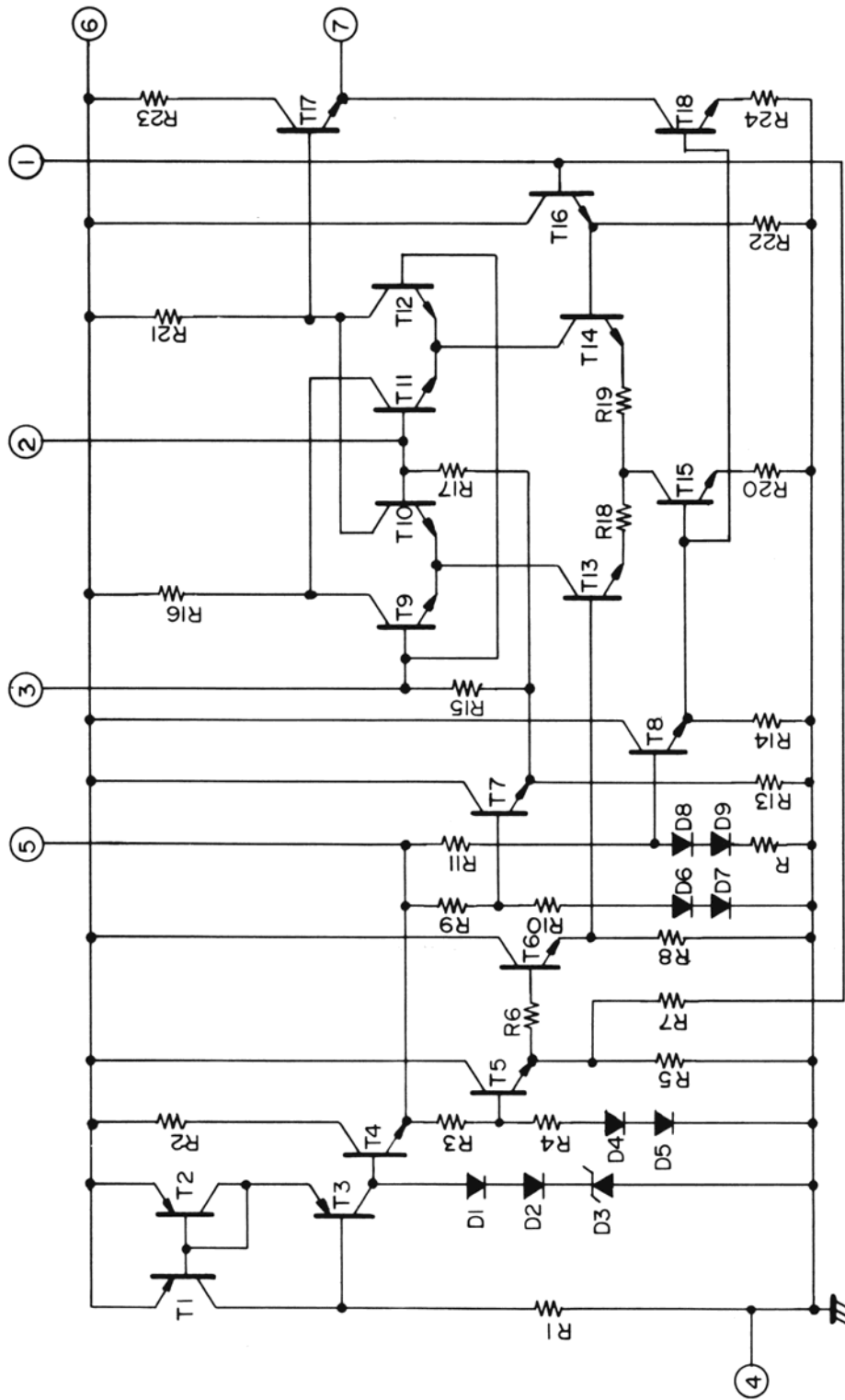
NO	TR 39		40		41		42		44		45		301		302		401	
	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
TX or RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX	TX	RX
BASE	0.7 (0.7)	0	1.2	0	0.7 (0.7)	0	0	3.6	0.6	0	1.4	8.0	6.5	6.5	15.0	15.0	14.4	14.4
COLLECTOR	5.0 (13.8)	13.8	7.6	0	5.0 (13.8)	13.8	0	8.0	0	0	0	0	5.0	15.0	18.0	22.0	18.0	22.0
EMITTER	0 (0)	0	0.7	0	0 (0)	0	0	2.9	0	0	0	6.0	6.0	6.0	14.4	14.4	13.8	13.8
REMARKS	()---AM ( )---SSB				()---AM ( )---SSB													

VOLTAGE CHART

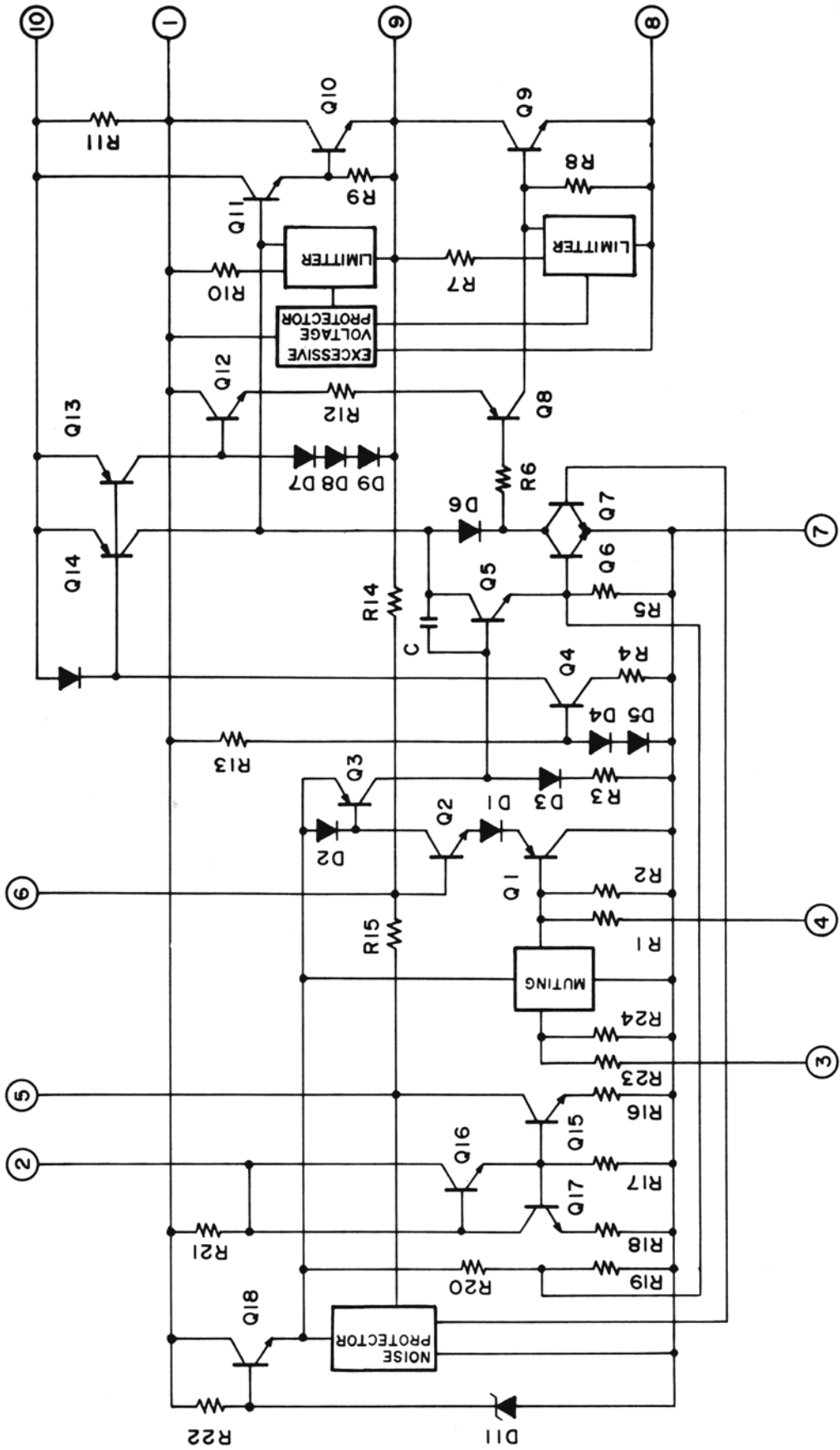
I.C. PIN NO.																			REMARKS
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
IC1	7.8	0	0	0	3.0	0	0	8.0	7.3	4.0									TX & RX
IC2	3.0	4.0	5.0	3.0	3.0	8.0	4.0	4.5	8.0	0	4.8	0	0	4.8	0	4.8	3.5	0	TX & RX
IC3	2.8	3.2	3.2	0	5.7	7.2	7.4 (3.8)												( ) ---TX
IC4	13.8	3.0	0	0	1.8	1.8	0	0	7.0	13.2									TX & RX
IC5	8.0	13.8	8.0	0	13.8 (0)	8	—	0 (8.0)											( ) ---TX
IC6	0	0 (7.8)	0 (7.8)	0	0 (7.8)	0 (0)	0 (2.8)	0 (2.8)	0	0 (1.5)	0 (1.4)	0 (1.4)	0 (1.4)	0					( ) ---TX

F.E.T. NO.	FET I	
	TX	RX
TX or RX	0	0.2
GATE	0	3.3
SOURCE	0	8.0
DRAIN		
REMARKS		

AN612

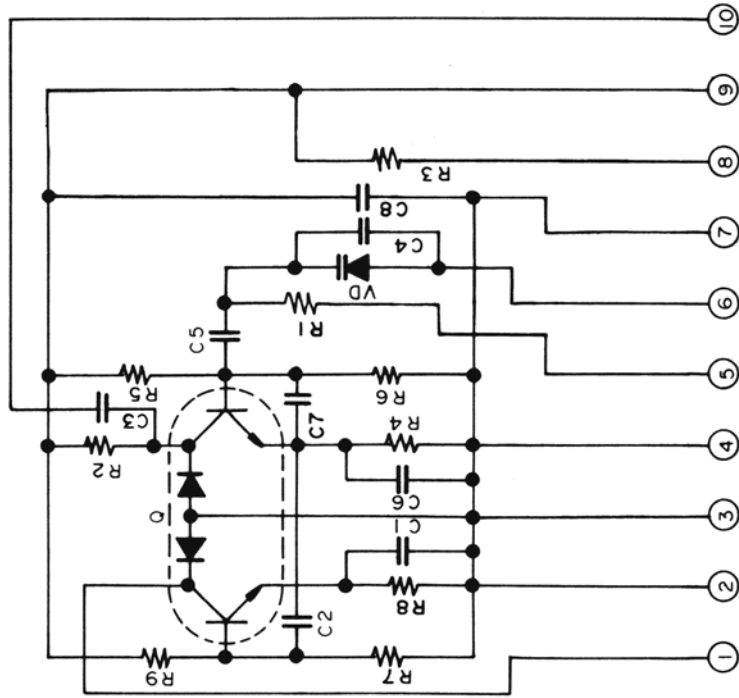


TA7222P

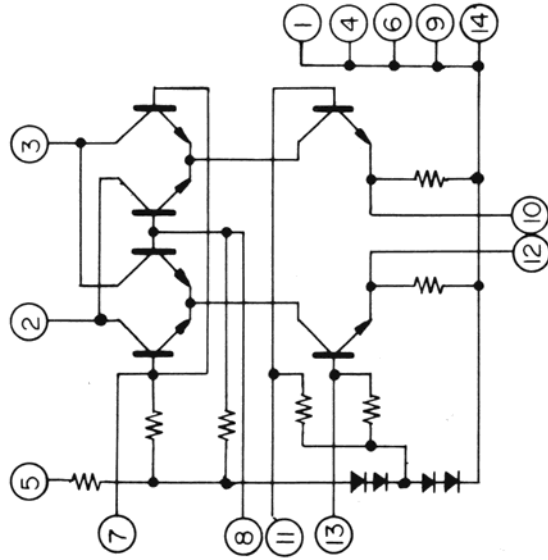




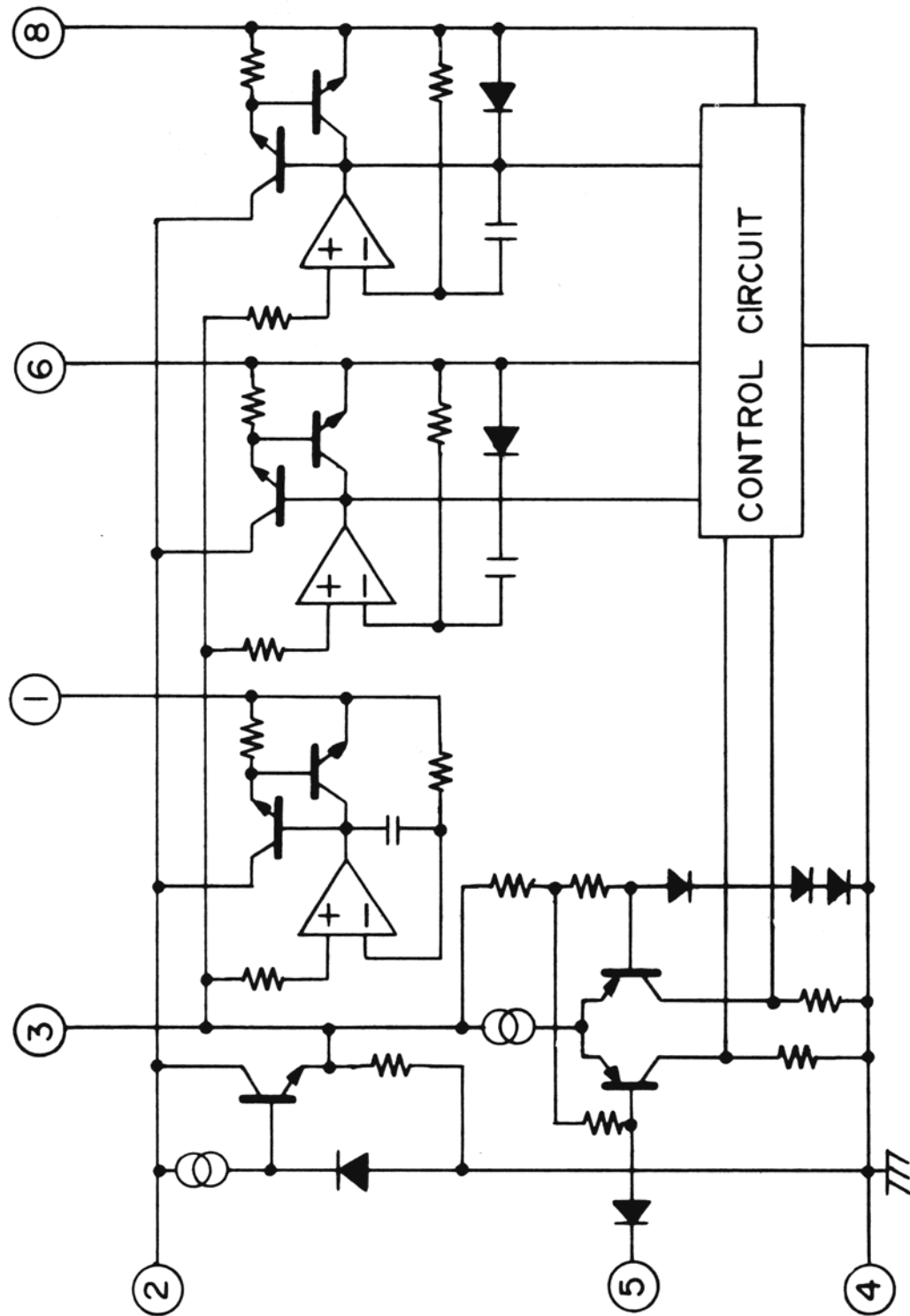
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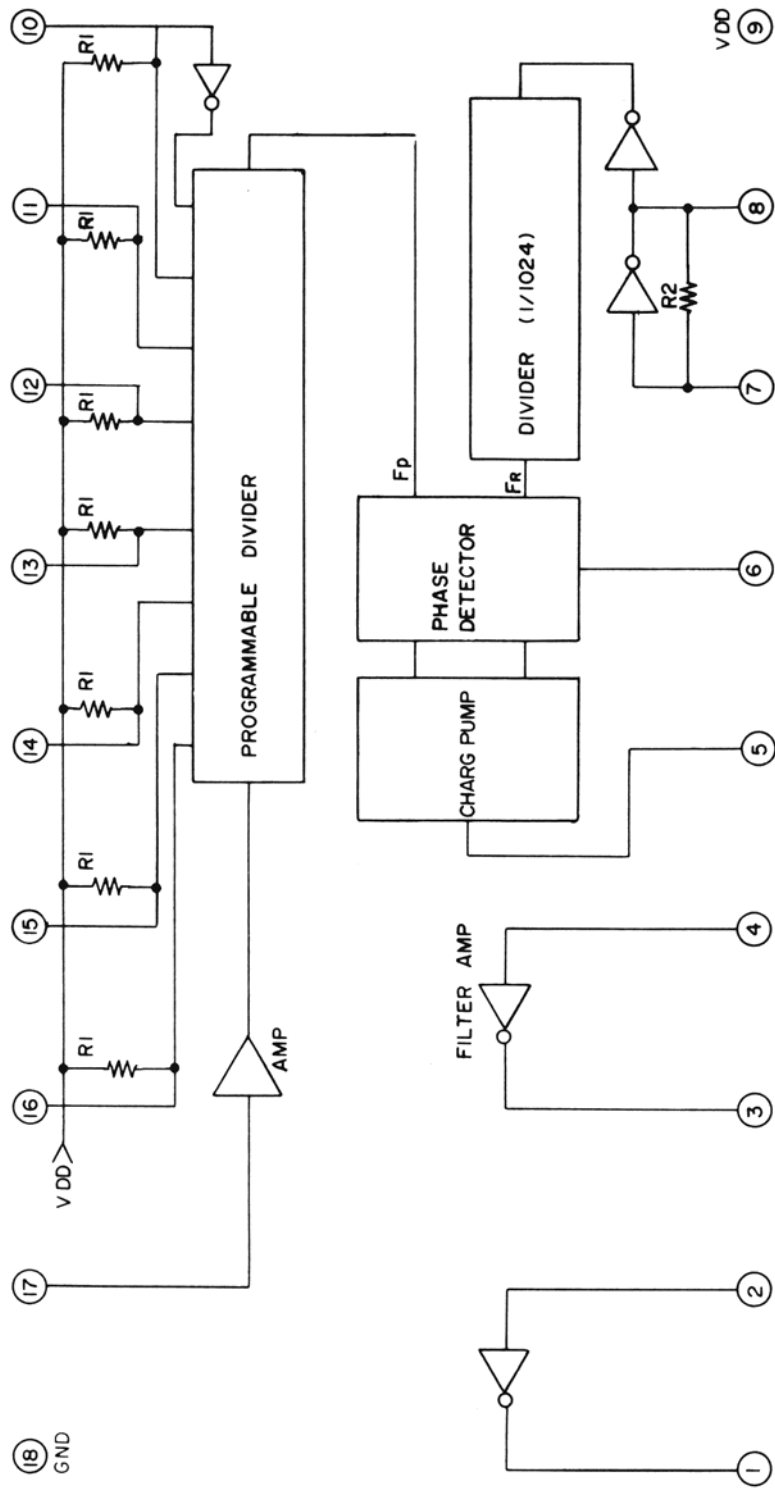
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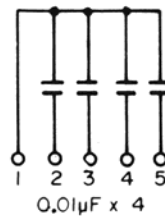
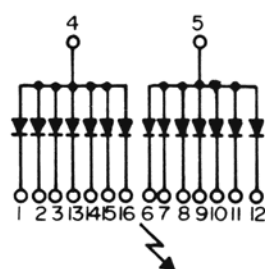
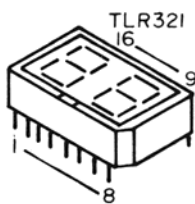
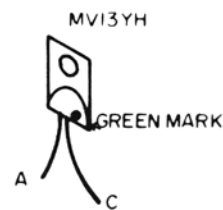
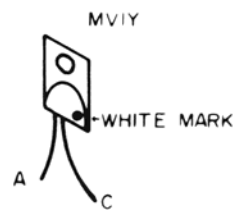
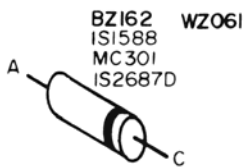
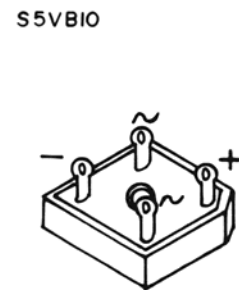
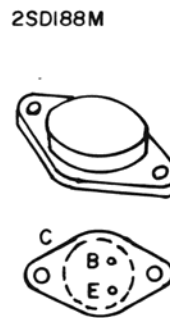
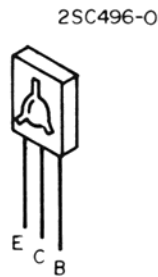
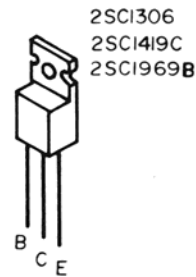
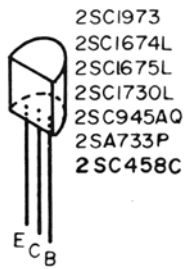
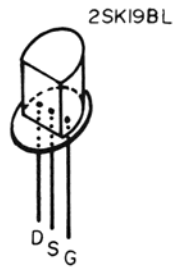
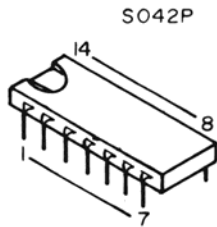
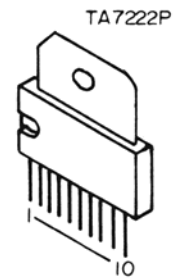
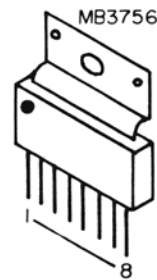
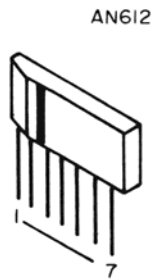
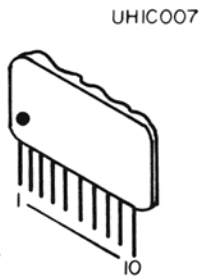
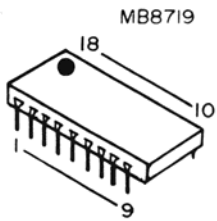


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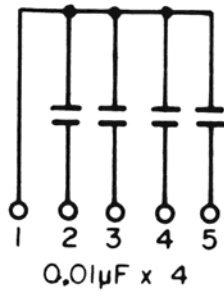
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FET D — DRAIN  
S — SOURCE  
G — GATE

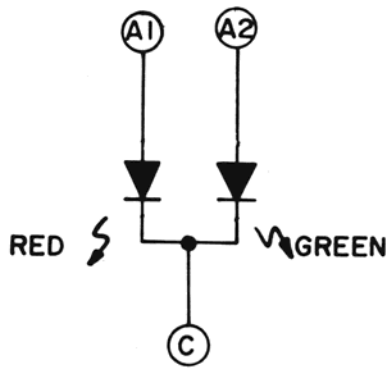
TR. E — EMITTER  
C — COLLECTOR  
B — BASE

DIODE A — ANODE  
C — CATHODE

HA003



TLRG 101



TLR 321

