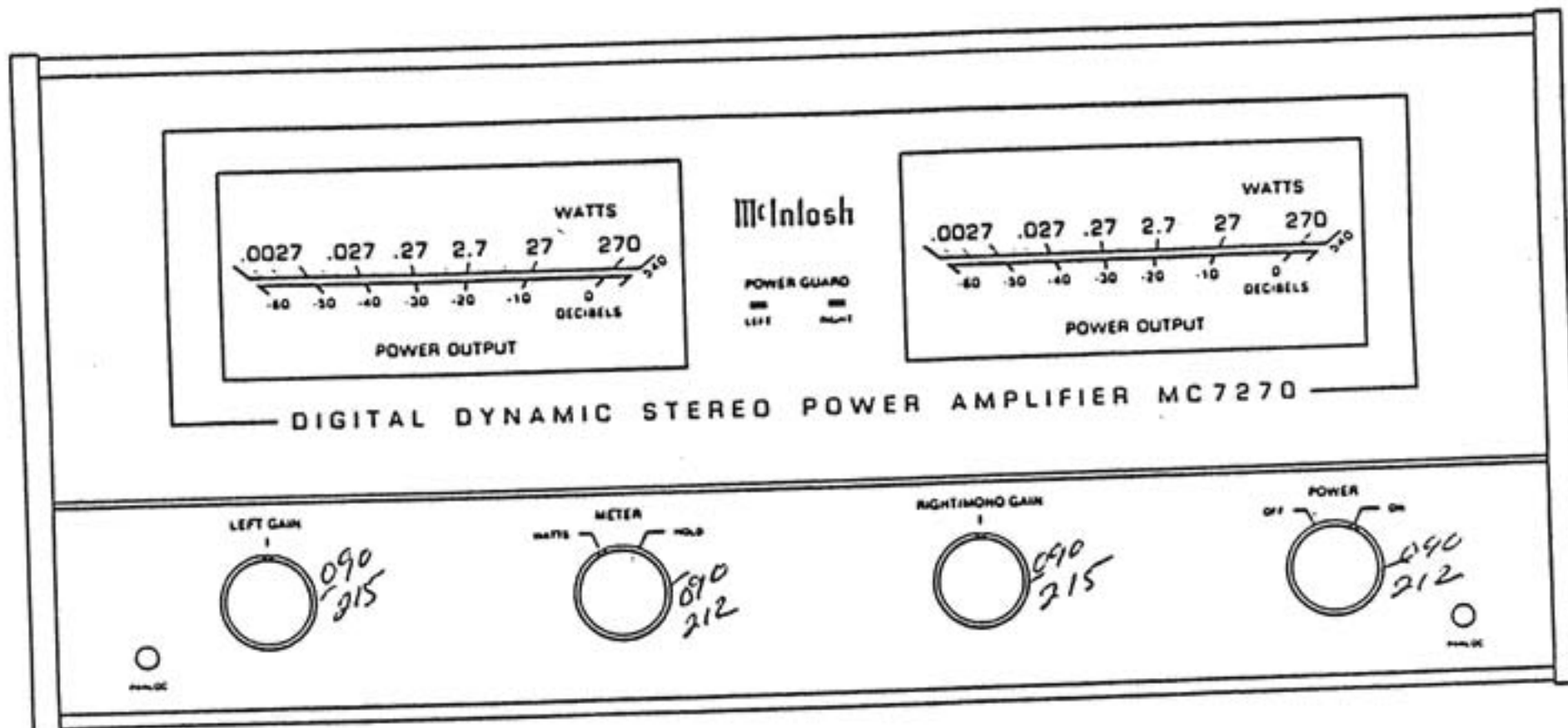


# MC 7270

## POWER AMPLIFIER



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# Performance Specifications

## POWER OUTPUT

### STEREO

270 watts minimum sine wave continuous average power output, per channel, both channels operating into 1 ohm, 2 ohms, 4 ohms, or 8 ohms load impedance, which is:

- 16.4 volts RMS across 1 ohm
- 23.2 volts RMS across 2 ohms
- 32.9 volts RMS across 4 ohms
- 46.5 volts RMS across 8 ohms

### MONO-BRIDGE

540 watts minimum sine wave continuous average power output into 2 ohms, 4 ohms, 8 ohms, or 16 ohms load impedance, which is:

- 32.9 volts RMS across 2 ohms
- 46.5 volts RMS across 4 ohms
- 65.7 volts RMS across 8 ohms
- 93.0 volts RMS across 16 ohms

## OUTPUT LOAD IMPEDANCE

### STEREO

1 ohm, 2 ohms, 4 ohms, and 8 ohms; separate terminals are provided for each output.

### MONO-BRIDGED —

2 ohms, 4 ohms, 8 ohms, or 16 ohms, balanced to ground.

## RATED POWER BAND

20 Hz to 20,000 Hz

## TOTAL HARMONIC DISTORTION

### STEREO

0.02% maximum harmonic distortion at any power level from 250 milliwatts to 270 watts per channel from 20 Hz to 20,000 Hz, both channels operating.

### MONO

0.02% maximum harmonic distortion at any power level from 250 milliwatts to 540 watts from 20 Hz to 20,000 Hz.

## INTERMODULATION DISTORTION

### STEREO

0.02% maximum if instantaneous peak power output is 600 watts or less per channel with both channels operating for any combination of frequencies, 20 Hz to 20,000 Hz.

### MONO

0.02% maximum if instantaneous peak power output is 600 watts or less for any combination of frequencies, 20 Hz to 20,000 Hz.

## FREQUENCY RESPONSE (AT ONE WATT OUTPUT)

20 Hz to 20,000 Hz +0 - 0.25 dB.

10 Hz to 100,000 Hz +0 - 2 dB.

## Ratings

### DAMPING FACTOR

Greater than 30

### INPUT IMPEDANCE

20,000 ohms.

### INPUT SENSITIVITY

Switchable: 0.75 volt or 2.5 volts—level control provided for higher input voltages.

### POWER GUARD

Clipping is prevented and THD does not exceed 2% with up to 20 dB overdrive a 1 kHz.

## General Information

### SEMICONDUCTOR COMPLEMENT

- 79 silicon transistors
- 31 silicon rectifiers and diodes
- 7 integrated circuit

### WEIGHT

82 pounds (37.2 kg) net, 96 pounds (43.5 kg) in shipping carton.

## Notes

- Unless otherwise noted, all voltages indicated on the following schematics are measured under the following conditions:
  - AC input at 120 volts, 50/60Hz.
  - All voltages are  $\pm 10\%$  with respect to ground. A high impedance (10 megohm) voltmeter must be used.
  - Front panel controls set at  
POWER ..... ON
  - Rear panel controls set at  
MODE ..... STEREO  
INPUT LEVEL ..... 2.5V

- The voltages enclosed in a box (Sections 2 and 3) are signal voltages that are measured with a 2.5V, 1kHz signal connected to both channels of the INPUT jacks.
- The heavy lines on the schematics denote the primary signal paths.
  - Unless otherwise specified:
    - Resistor values are in ohms.
    - Capacitor values smaller than 1 are microfarads ( $\mu F$ ), and capacitor values greater than 1 are in picofarads (pF).
    - Inductor values are in microhenries ( $\mu H$ ).

# Mechanical Views

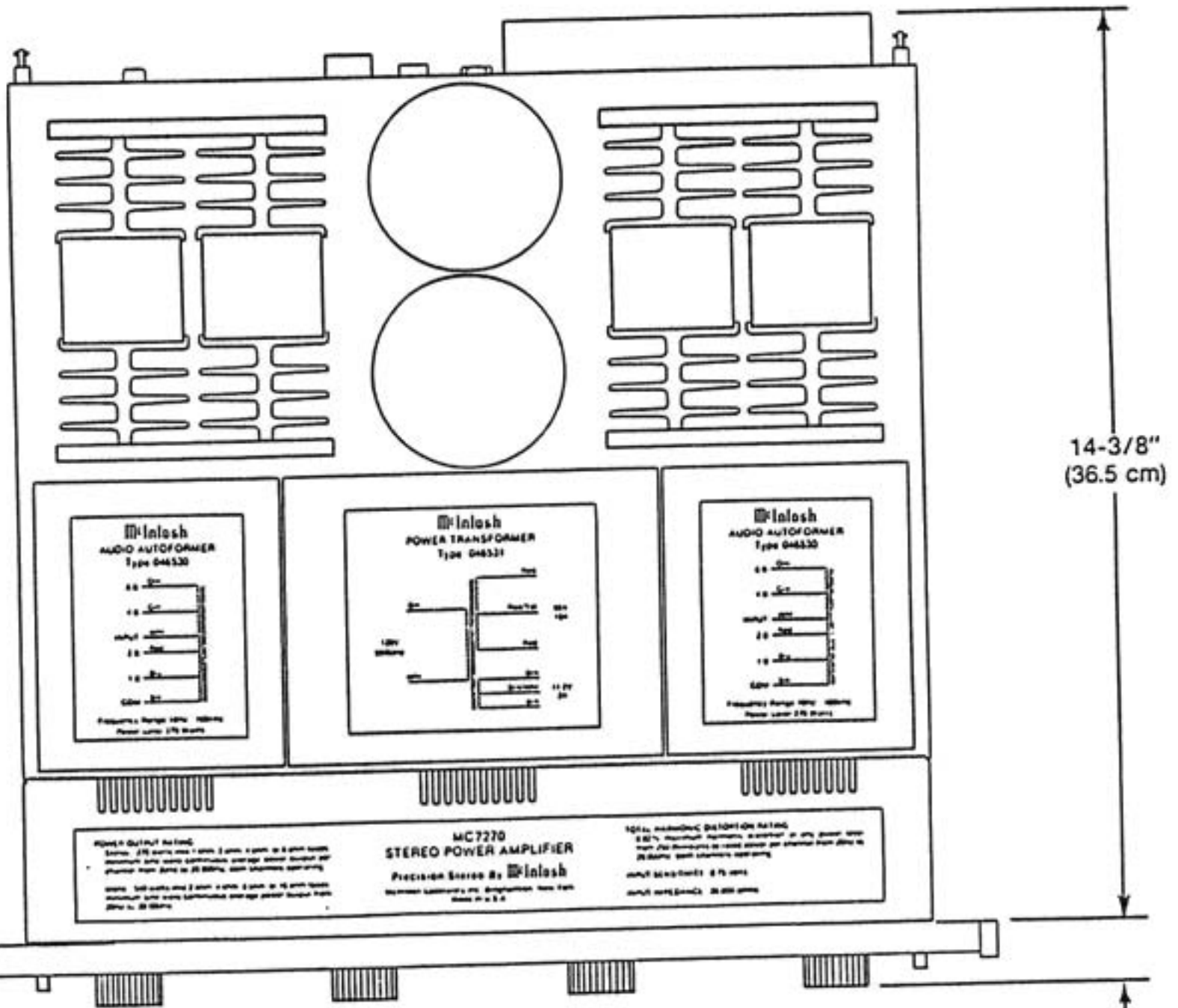


Fig. 1. Top view

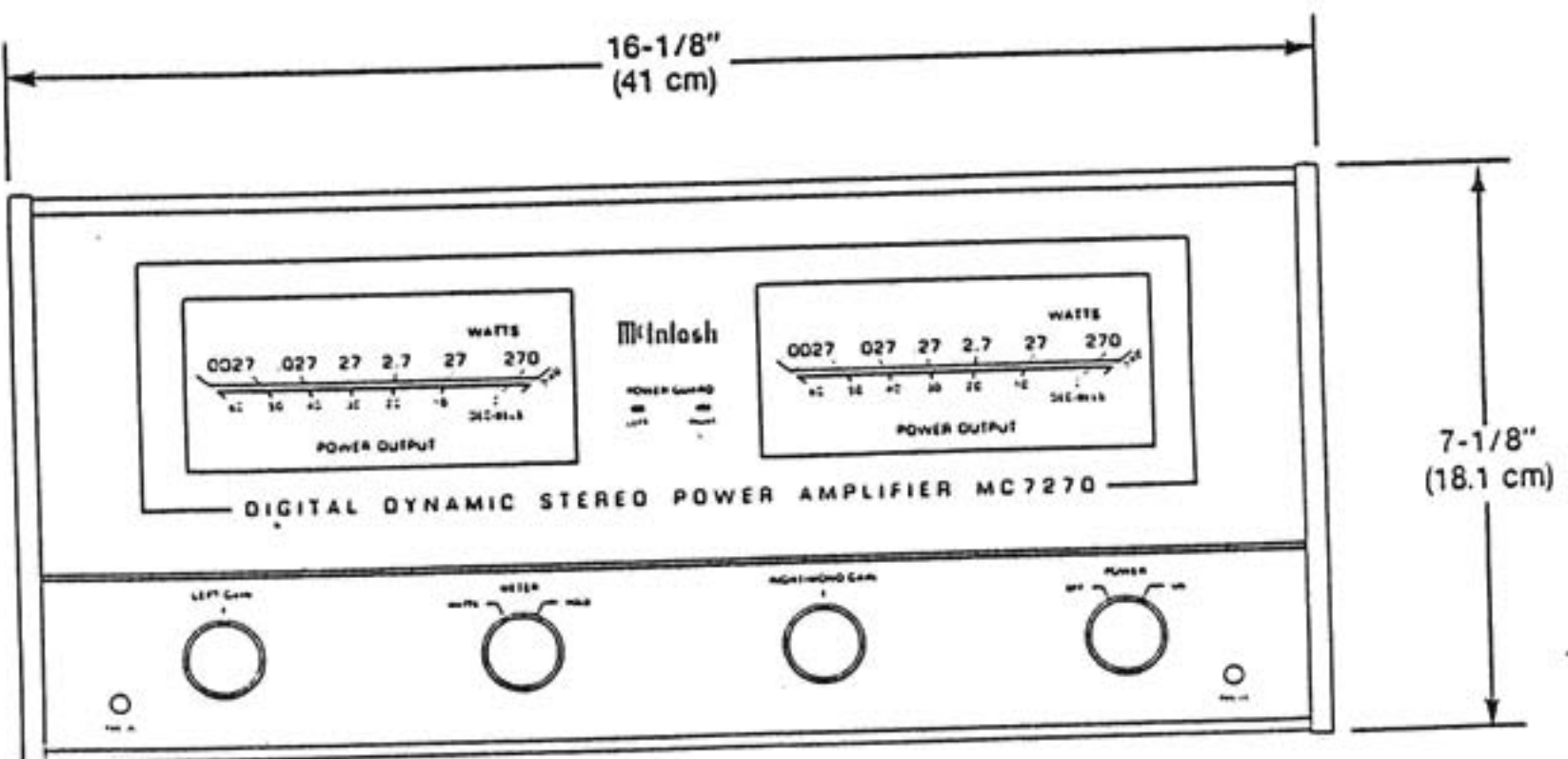


Fig. 2. Front view



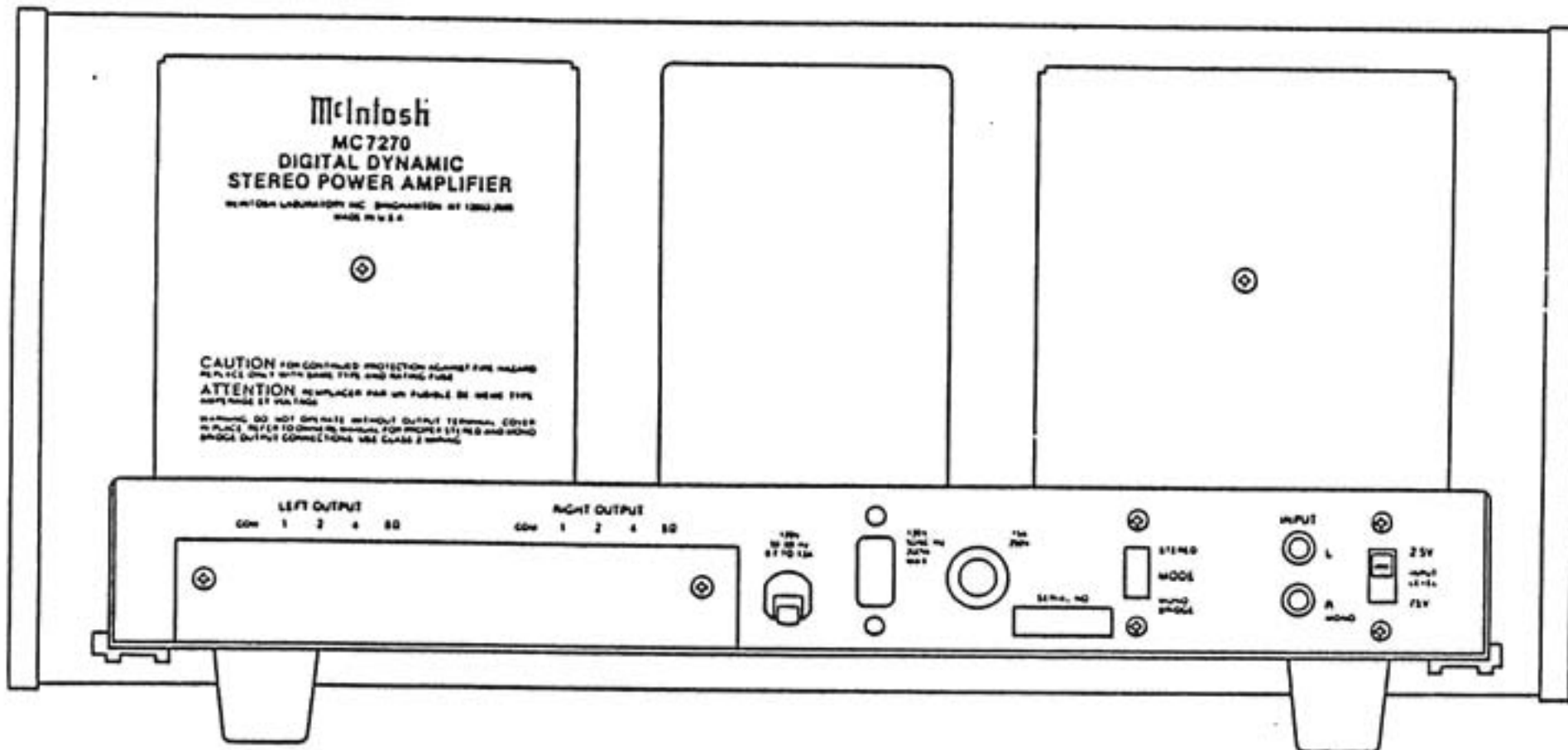


Fig. 3. Rear view

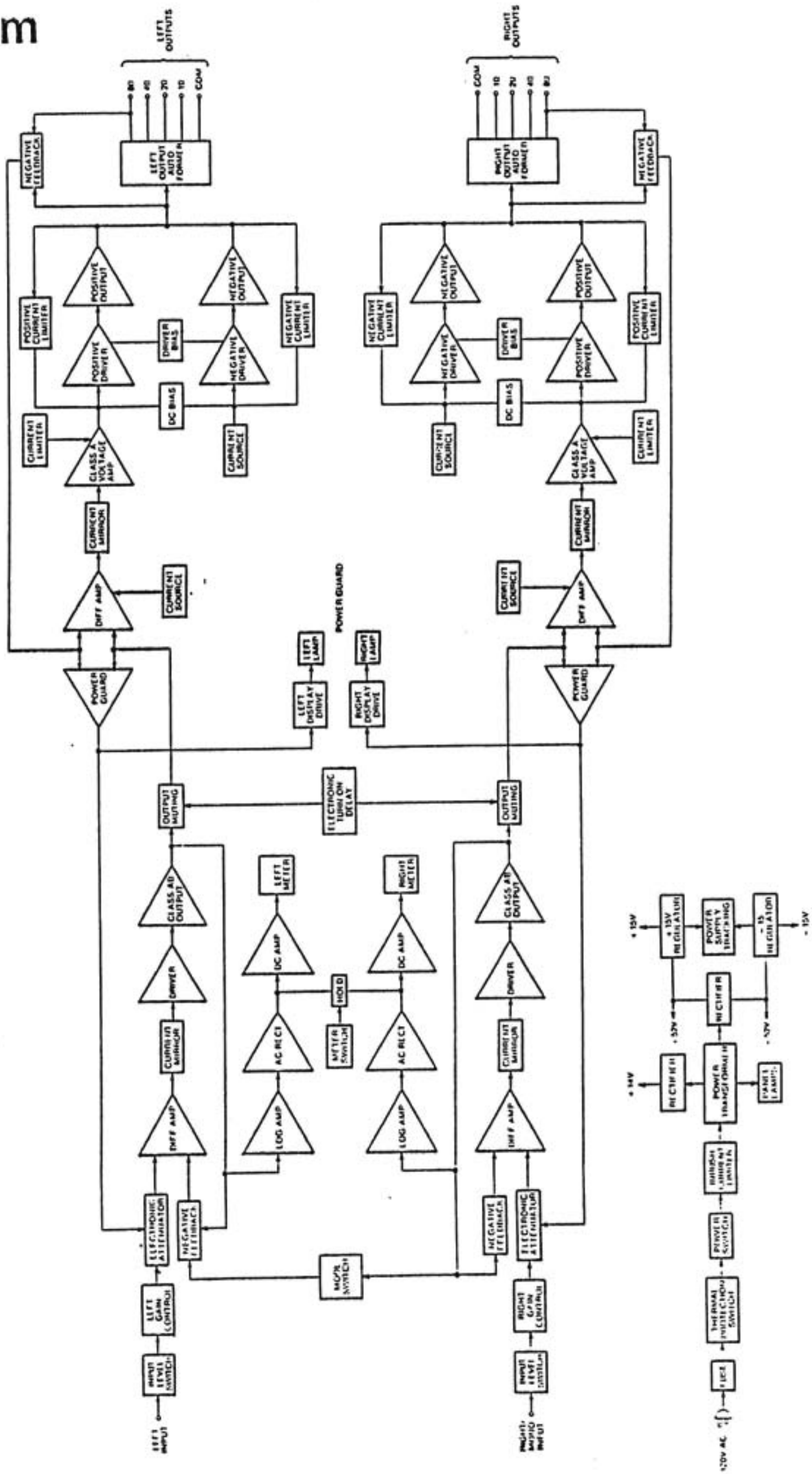
#### INSTALLATION HARDWARE PARTS LIST

Part No.	Description
046537	Hardware Package
043677	Mounting Strips
260588	Mounting Template
003560	Panloc Shell Bracket, Right
003561	Panloc Shell Bracket, Left
017218	Plastic Feet

#### FRONT PANEL AND TRIM PARTS LIST

Part No.	Description
046540	Front Panel, Complete
046539	Front Panel, Glass
018345	End Cap
090212	Knobs
090215	Knobs
104017	Felt Washers, Knobs
018239	Top Panel Rail
018347	Bottom Extrusion

# Block Diagram



# Section Locations

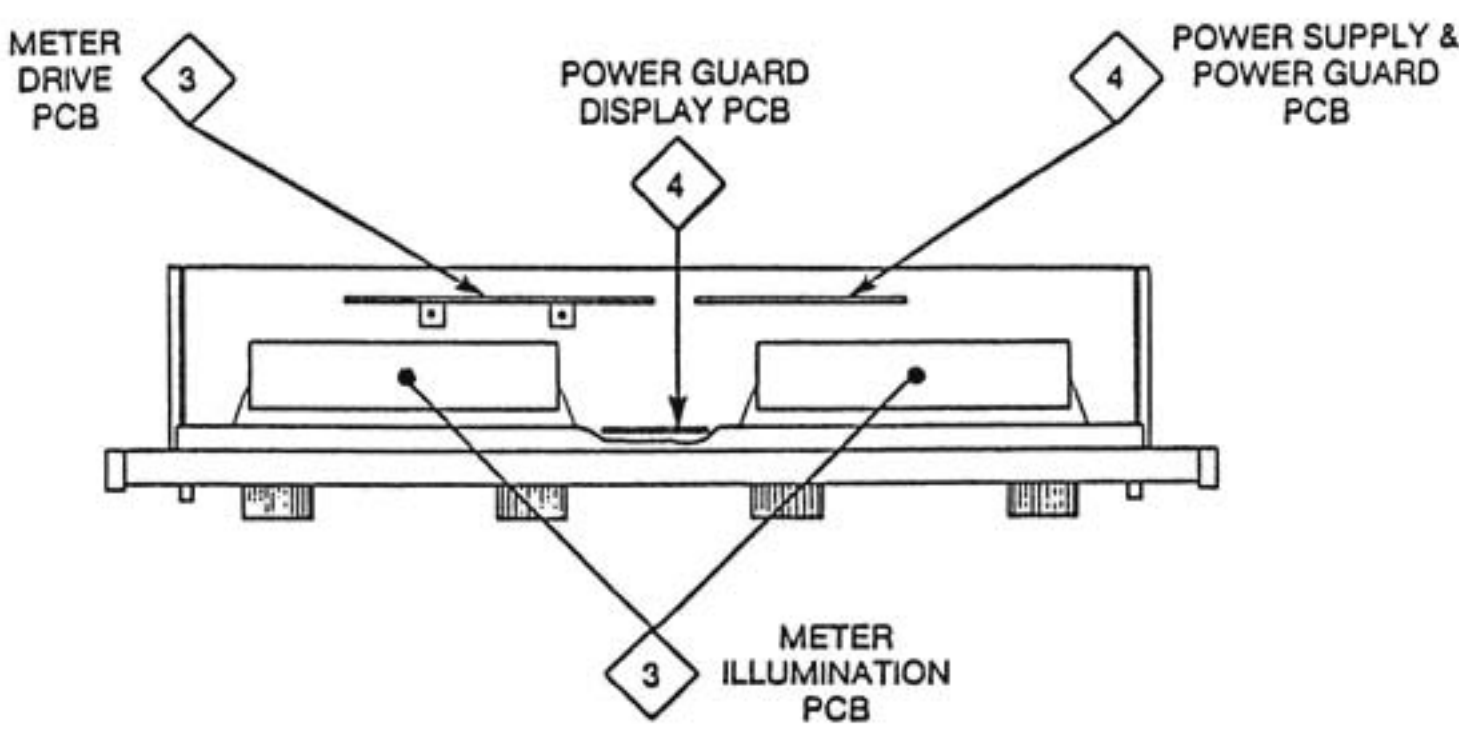


Fig. 4. Partial top view with cover removed

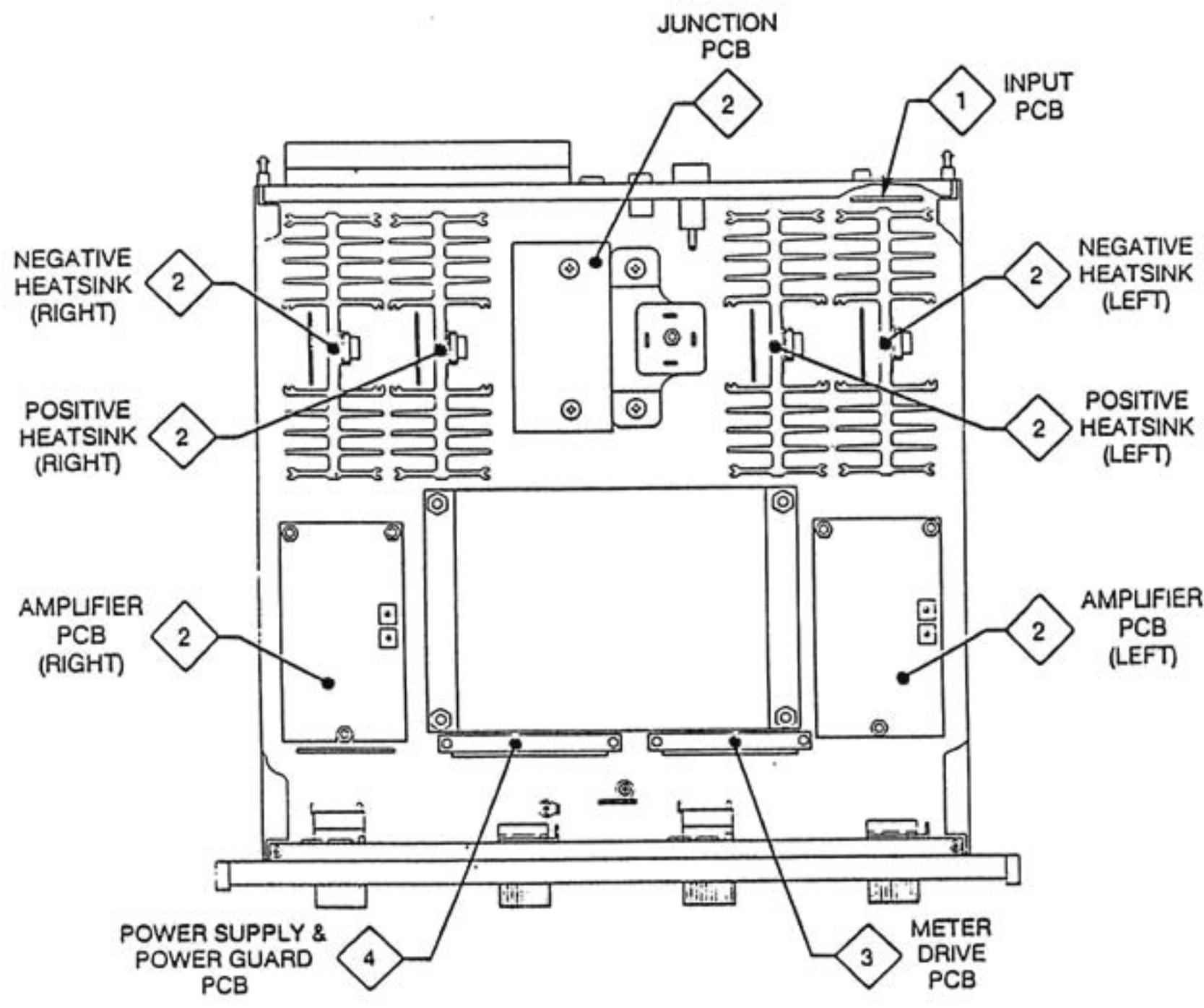


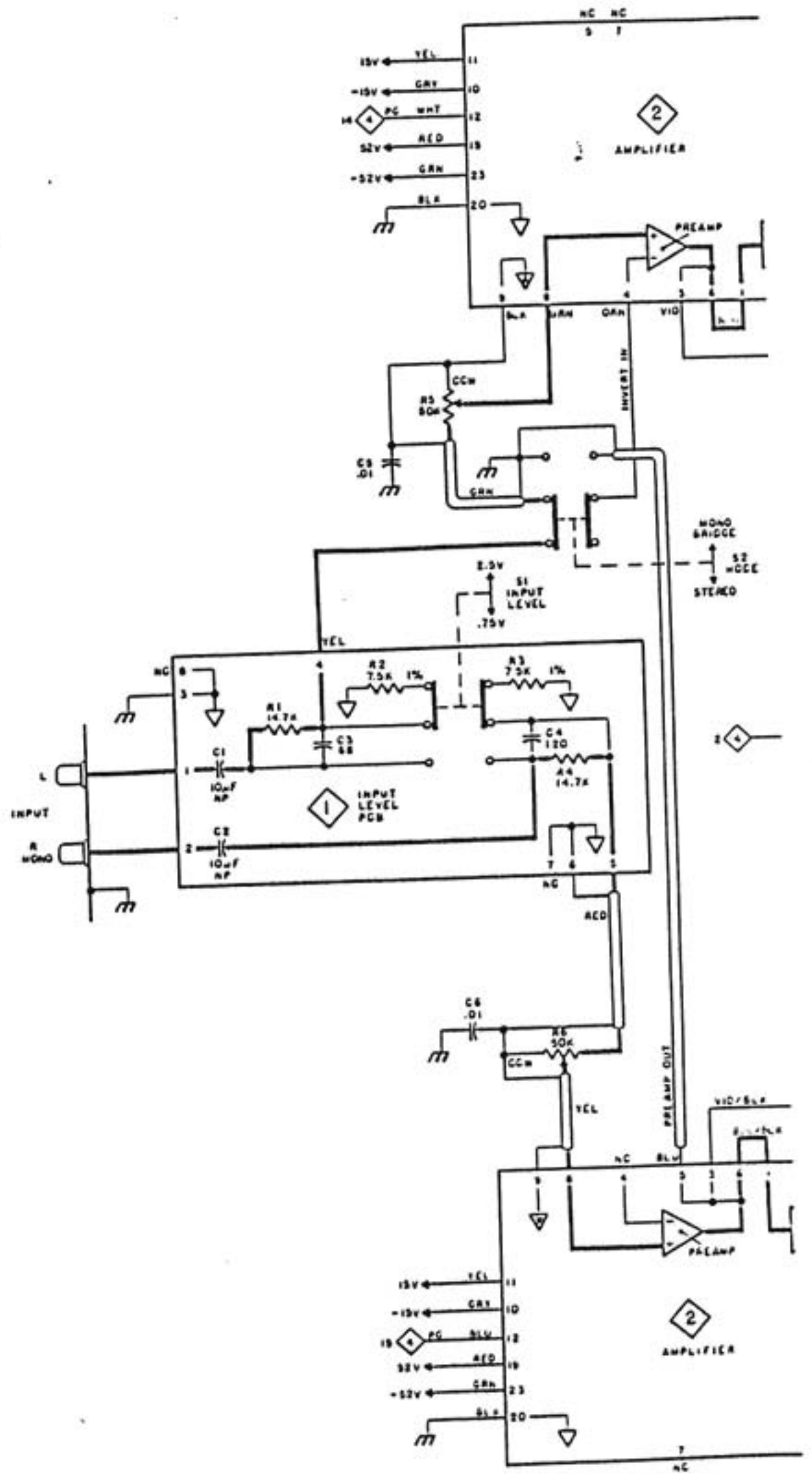
Fig. 5. Bottom view with cover removed

# Interconnection Diagram

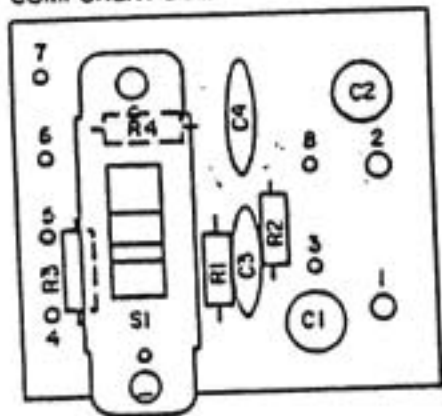


## INTERCONNECTION PARTS LIST

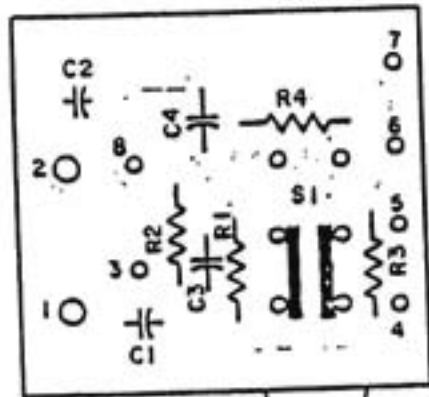
Symbol No.	Part No.	Description
<b>DIODES</b>		
D1	070092	BRID, RECT, 200 V, 35A, MDA3502
<b>FUSES AND FUSEHOLDERS</b>		
F1	174188	#30 Solid Copper Wire (Fusible Link)
F2	089042	Fuse, FA, 15A, 250V, ABC15
	178122	Fuseholder
<b>METERS</b>		
M1, M2	124042	Meter
<b>RESISTORS</b>		
R5, R6	134433	Gain Control, 50K $\Omega$
<b>SWITCHES</b>		
S1	148053	Input Level
S2	146183	Meter
S4	146183	Power
<b>THERMISTORS</b>		
RT1, RT2	144151	Thermistor, 5 $\Omega$
<b>TRANSFORMERS</b>		
T1, T2	046530	Output
T3	046531	Power



COMPONENT SIDE



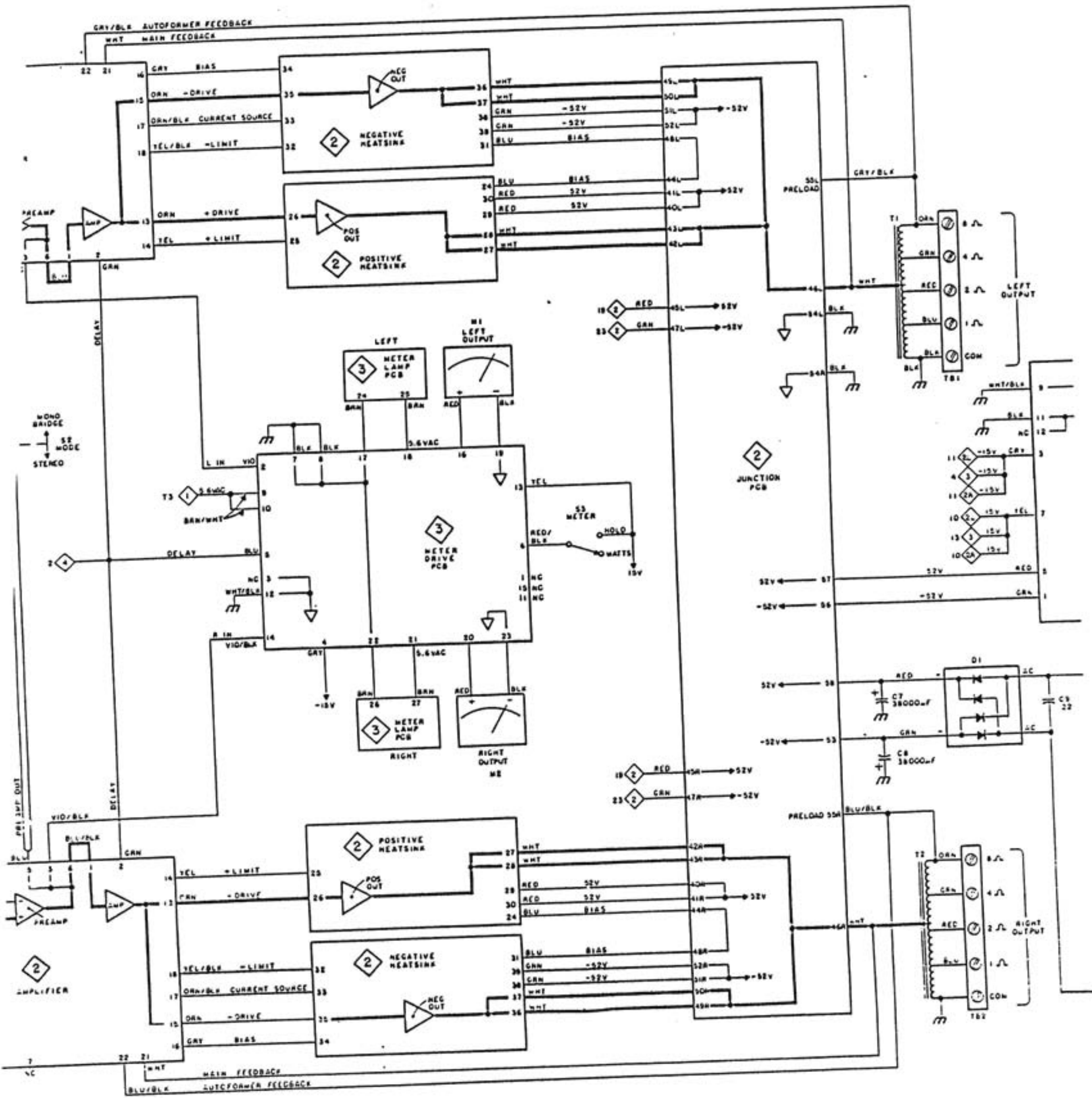
CIRCUIT SIDE



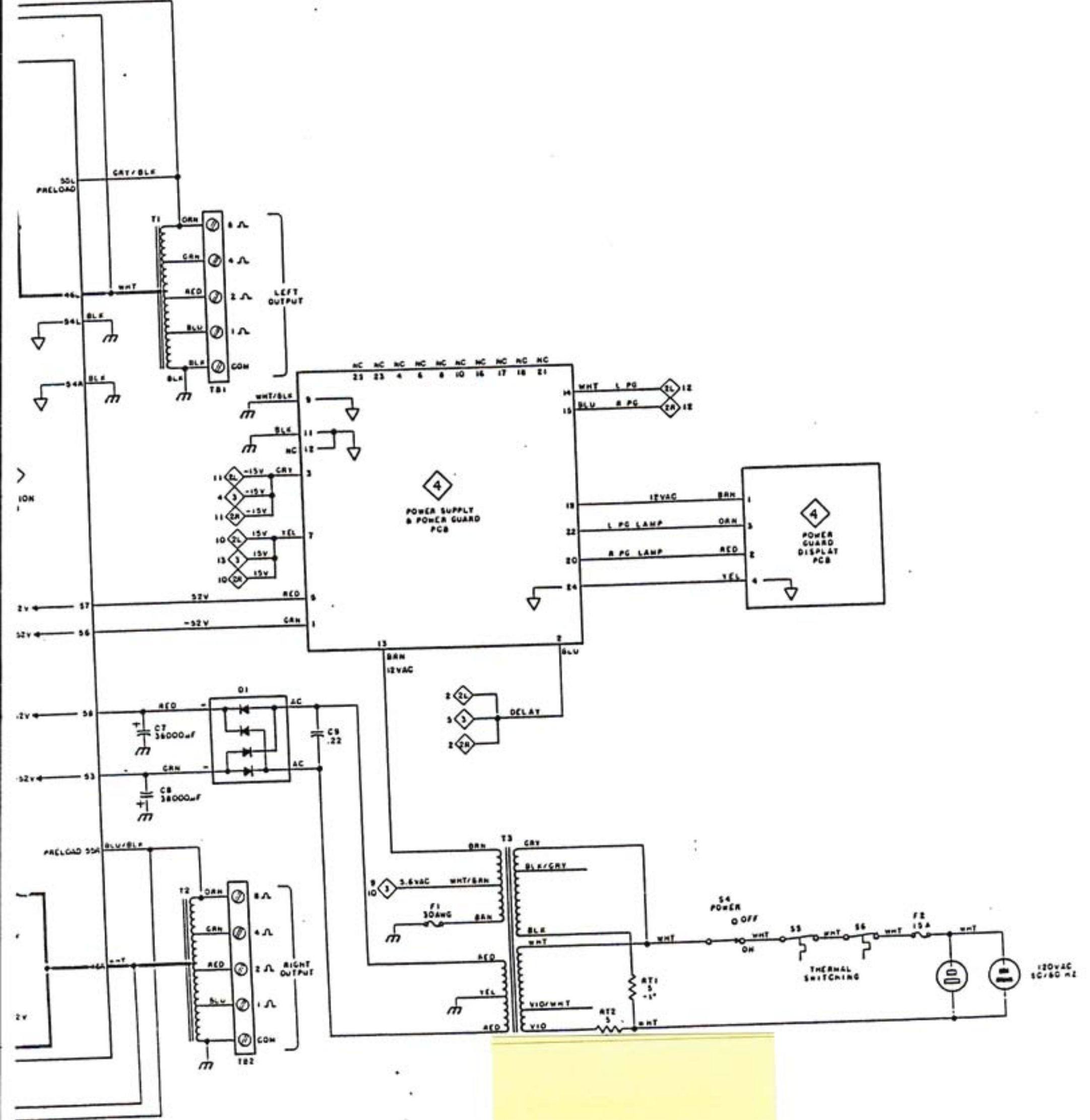
INPUT LEVEL PCB 046552



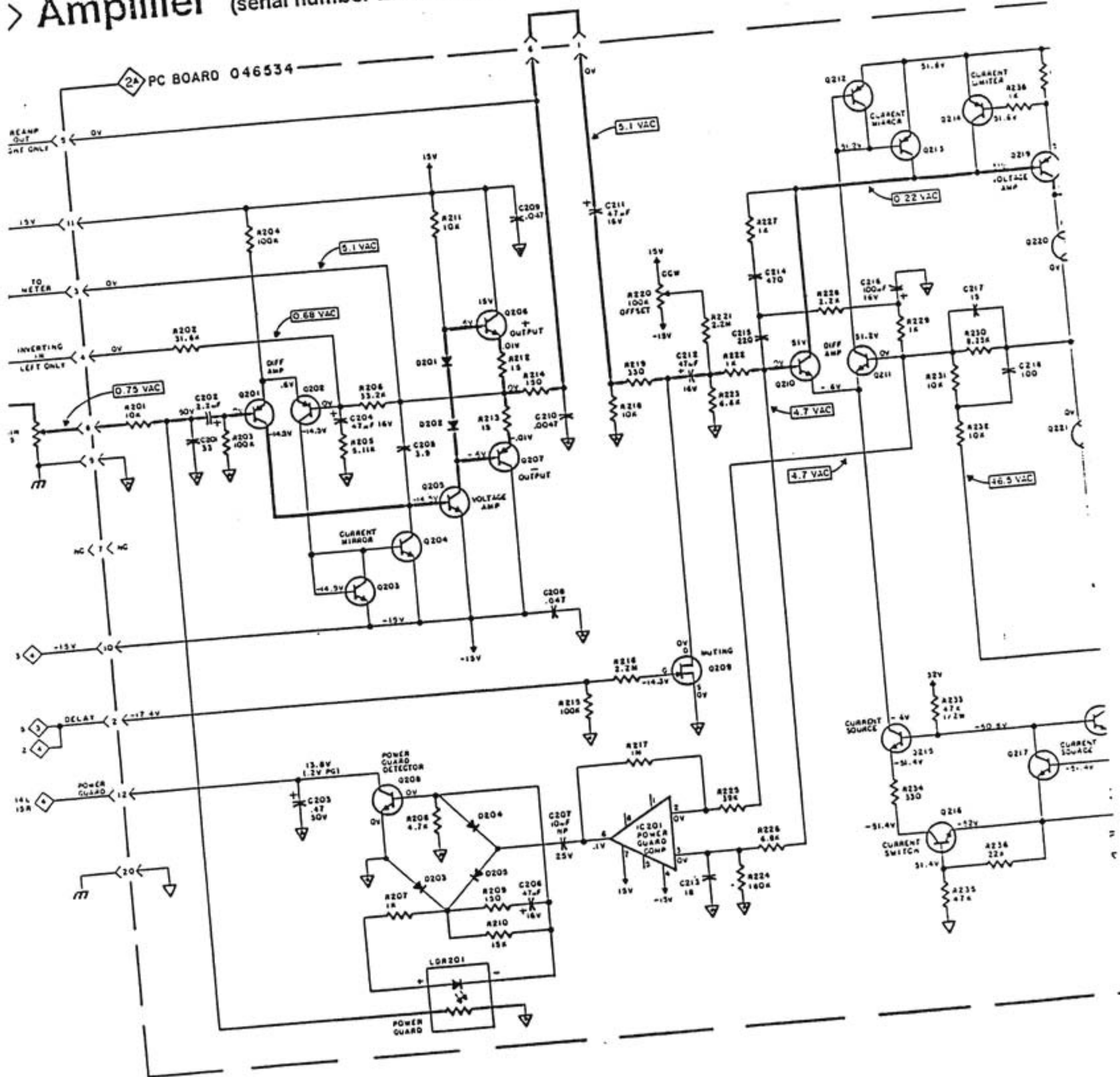
D1

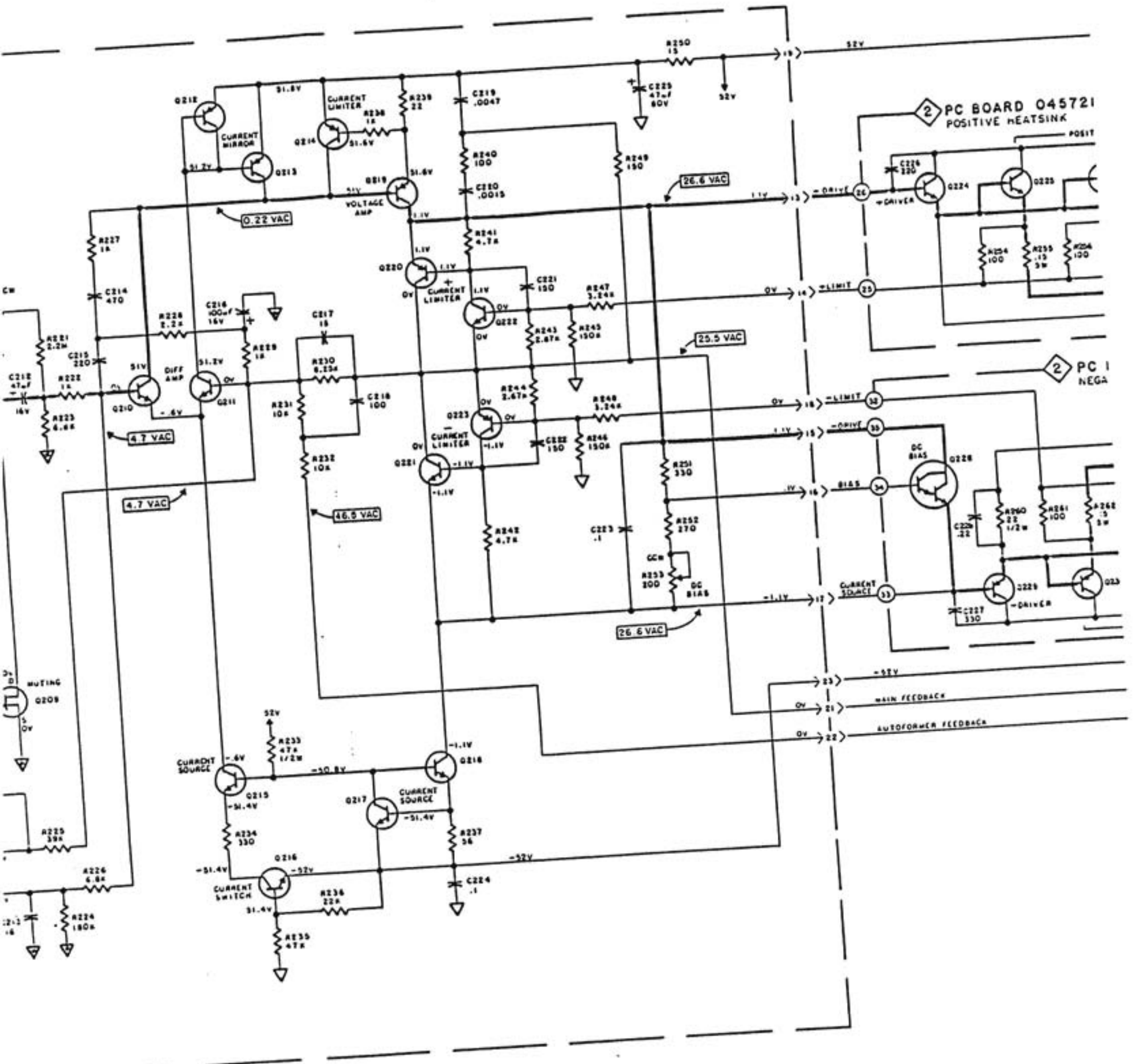


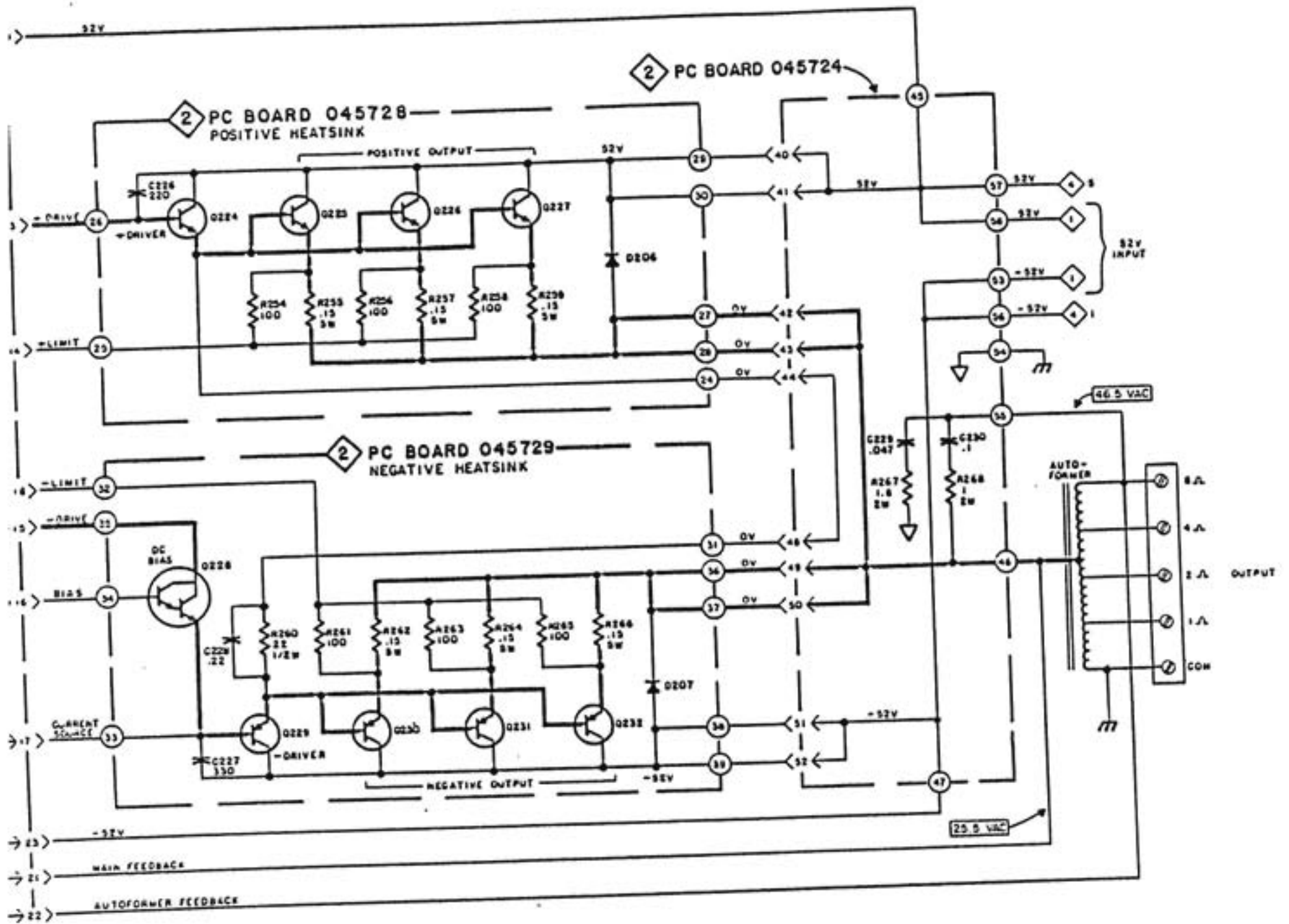




# > Amplifier (serial number EA1001 to EA3499)

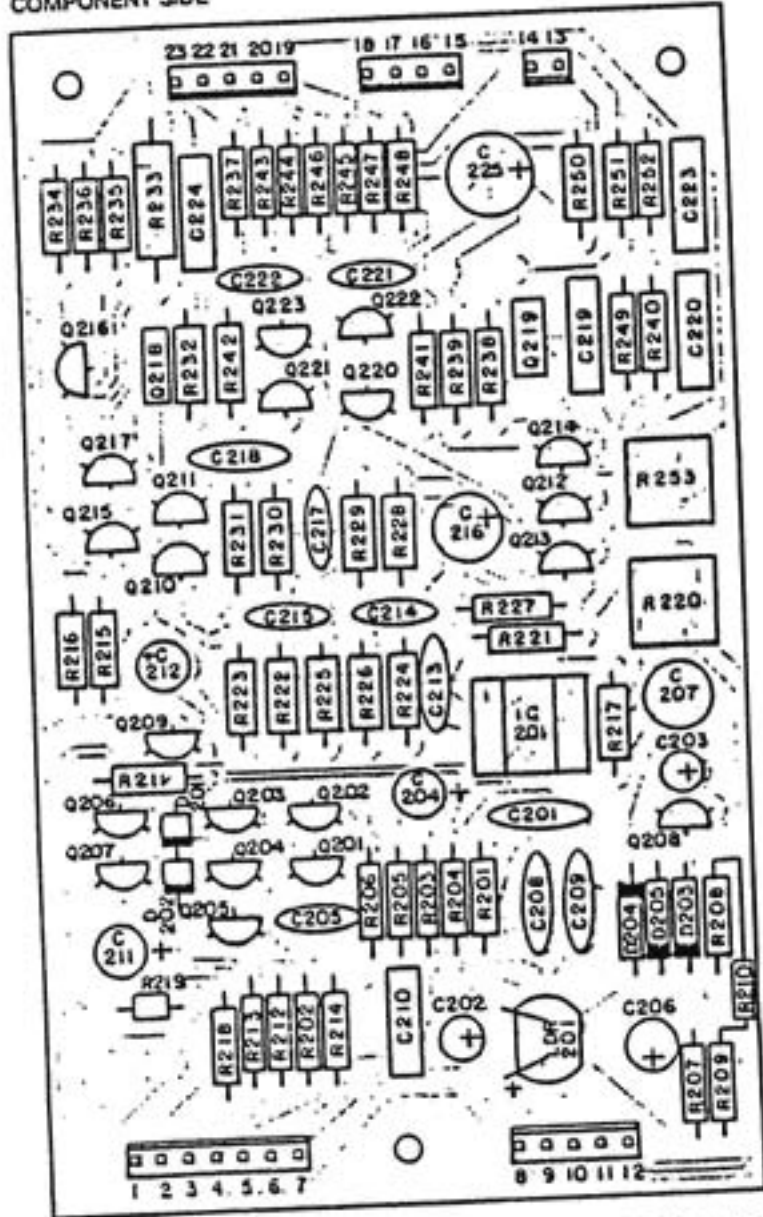




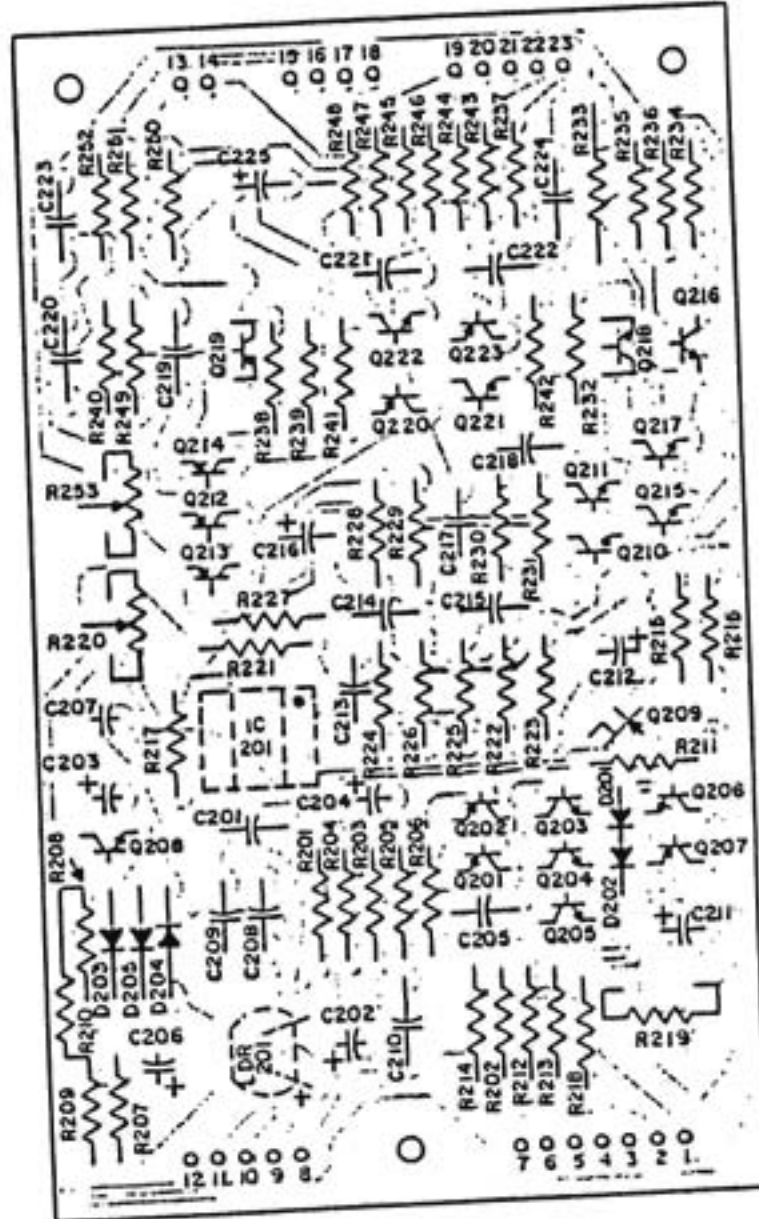




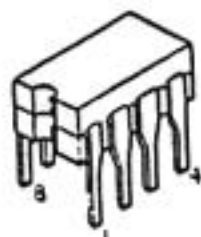
COMPONENT SIDE



CIRCUIT SIDE



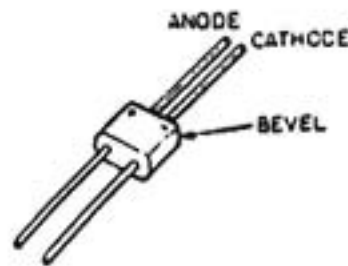
AMPLIFIER DRIVER PCB 046534



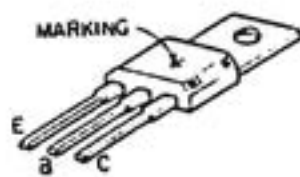
IC201



Q209



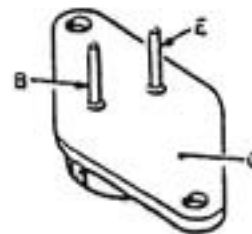
LDR201



Q218-Q219



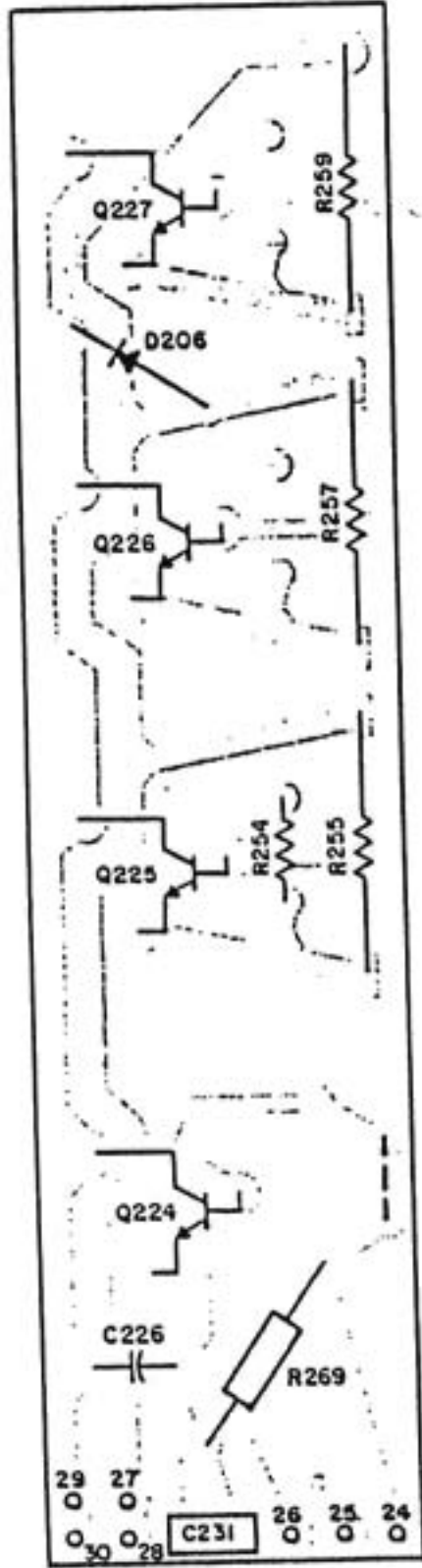
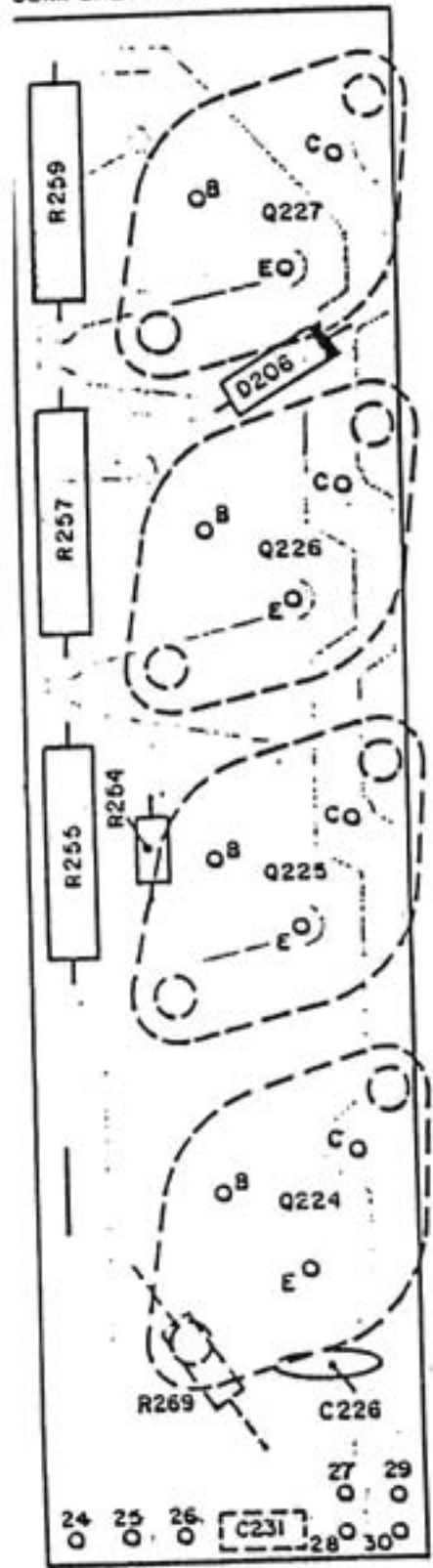
Q201-Q208, Q210-Q217  
Q220-Q223, Q228



Q224-Q227  
Q229-Q232

COMPONENT SIDE

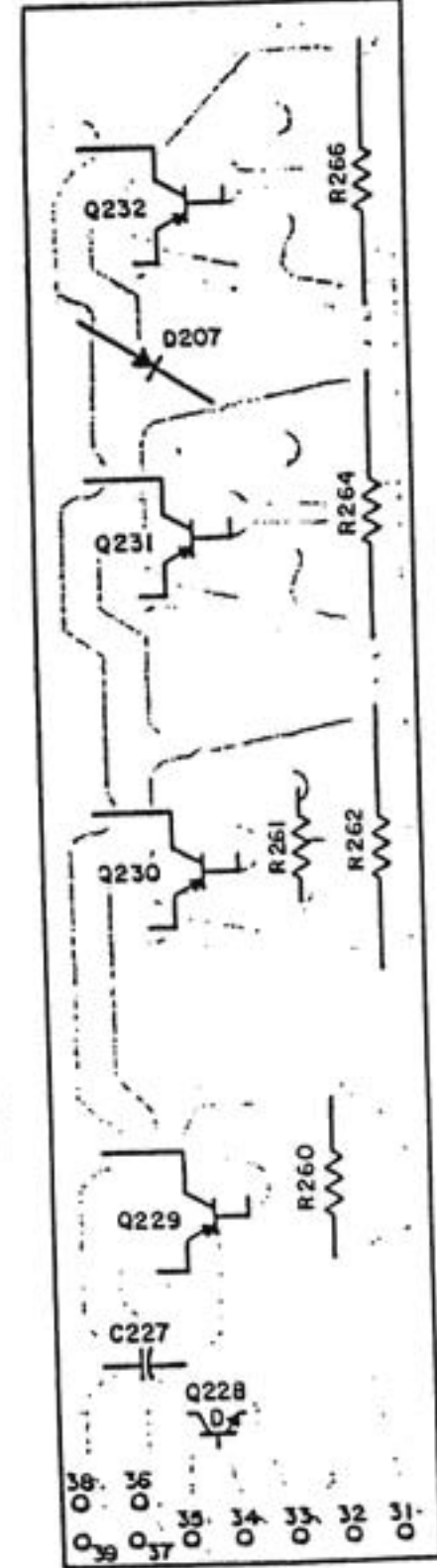
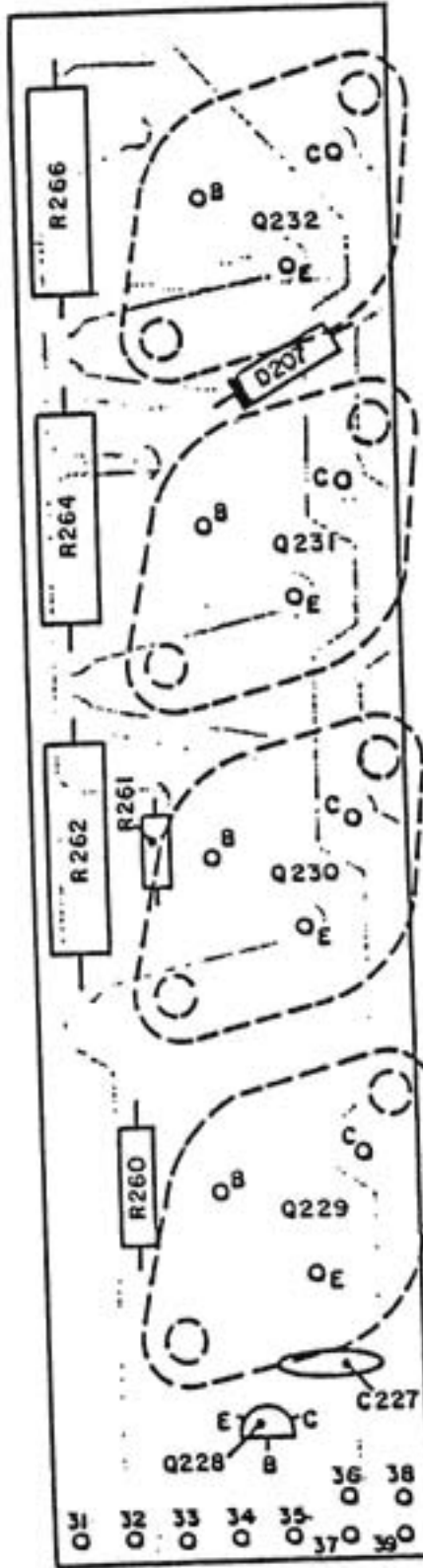
CIRCUIT SIDE



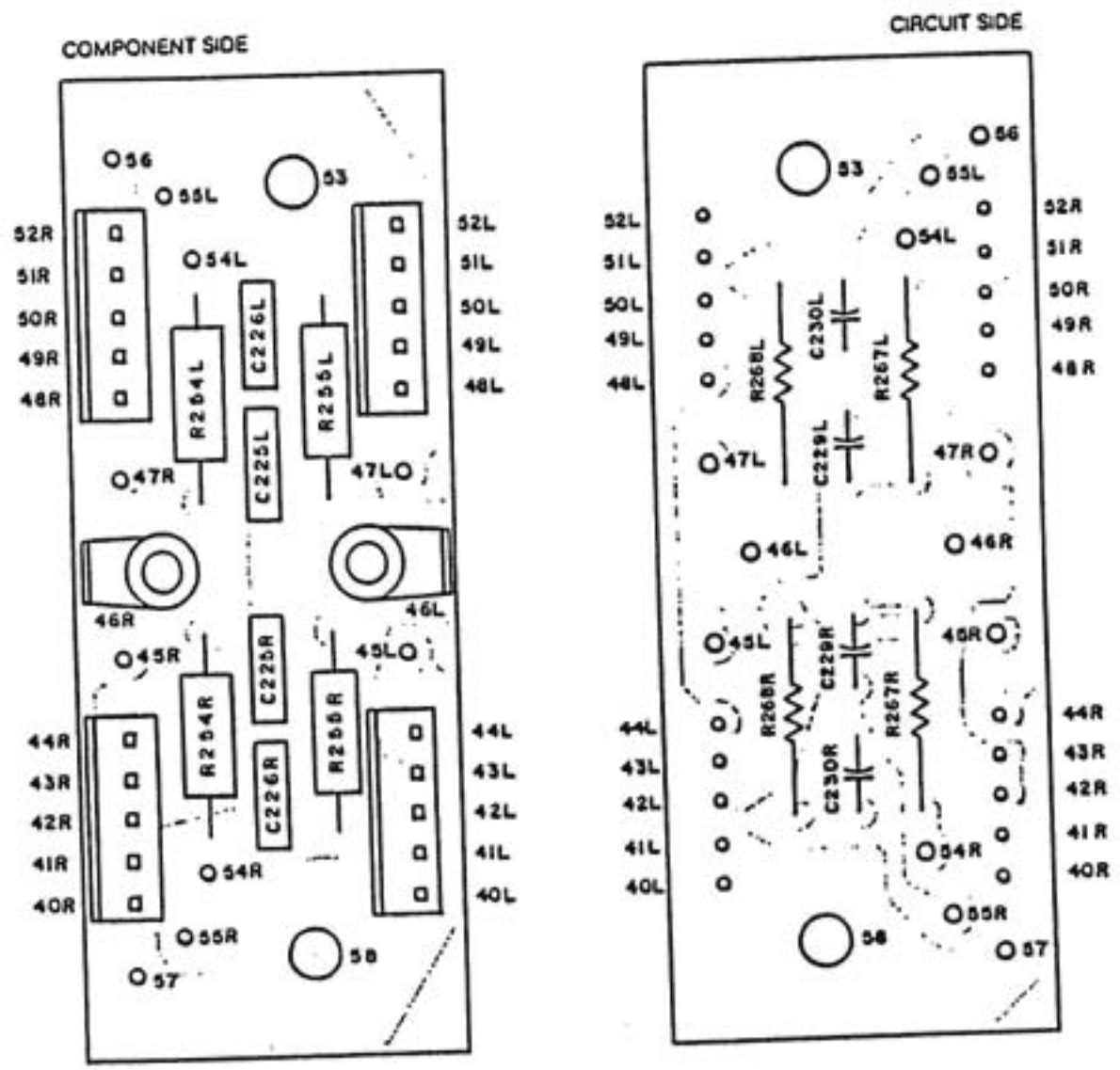
POSITIVE HEATSINK PCB 045728

COMPONENT SIDE

CIRCUIT SIDE



NEGATIVE HEATSINK PCB 045729



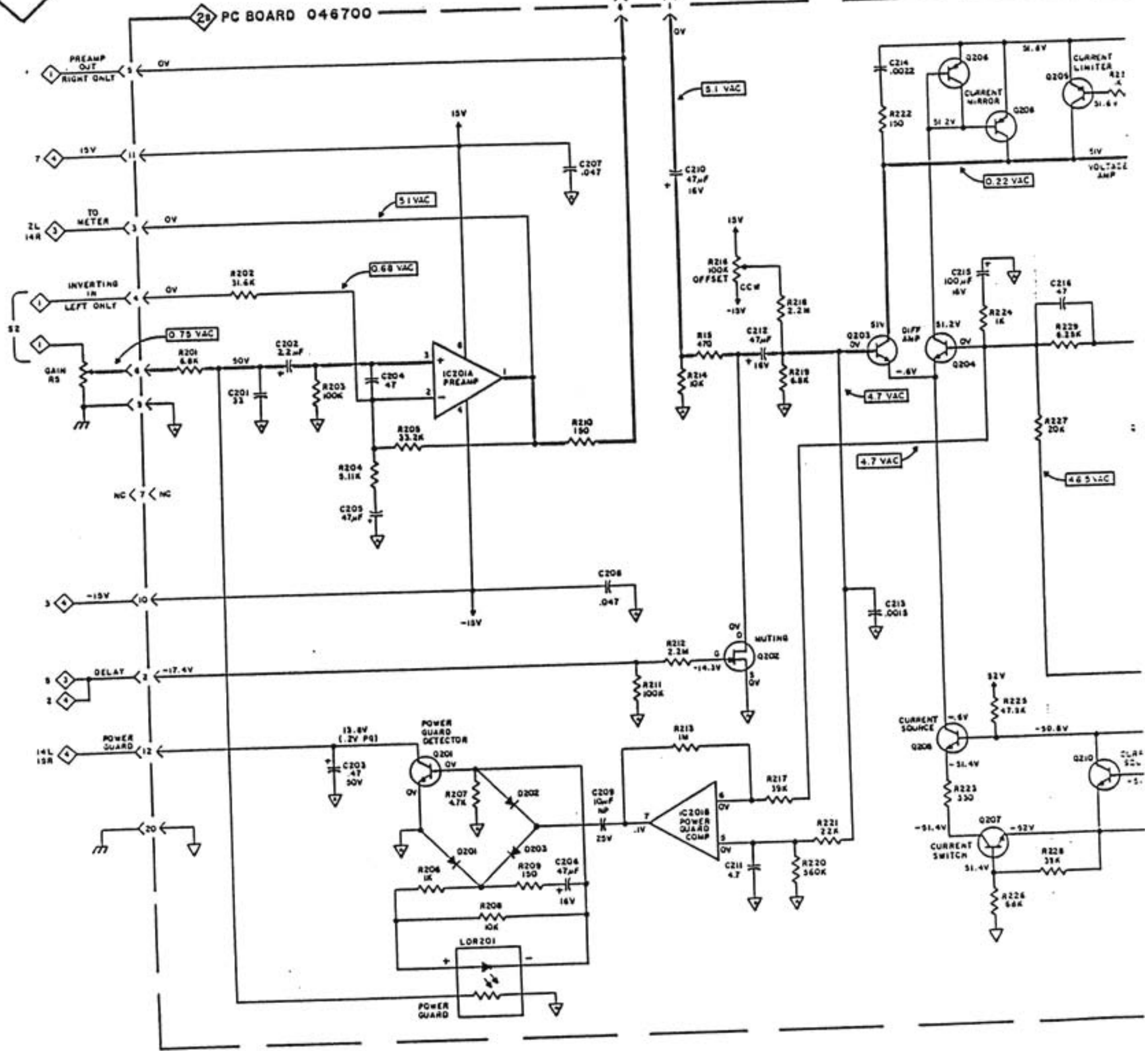
**JUNCTION PCB 045724**

**AMPLIFIER PARTS LIST**

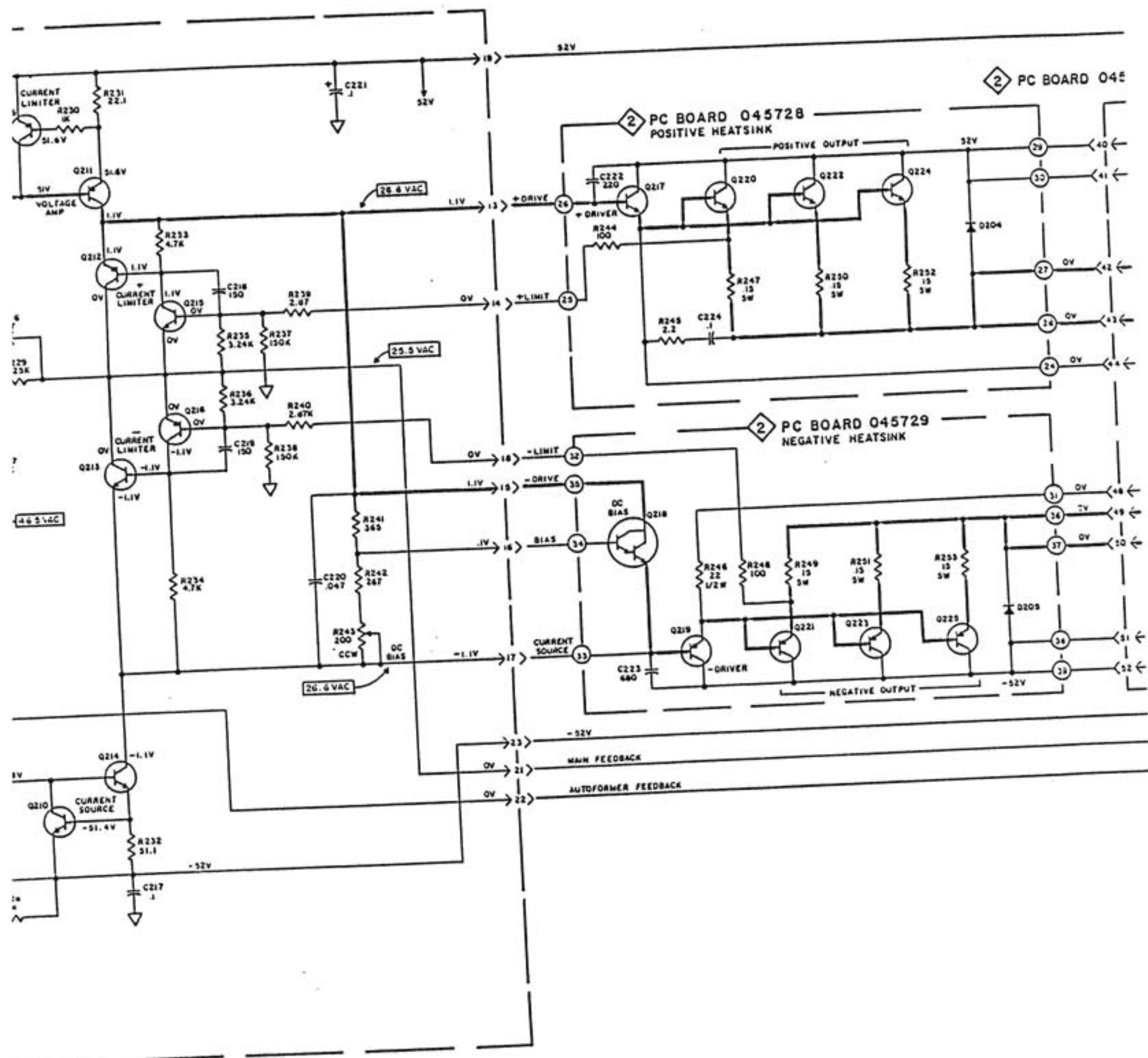
Symbol No.	Part No.	Description
<b>DIODES</b>		
D201-D205	070047	SIG, 75V, 10mA, 1N4148
D206, D207	070031	RECT, 400V, 1.5A, 1N4820
<b>INTEGRATED CIRCUITS</b>		
IC201	133066	Dual Operational Amp, NE5534N
<b>LIGHT DEPENDENT RESISTORS</b>		
LDR201	144179	LDR, VTL5C9
<b>TRANSISTORS</b>		
Q201, Q202	132056	PNP, 2N5087
Q203, Q204	132223	NPN, MPS4124
Q205	132185	NPN, Selected 2N6429A
Q206	132171	NPN, MPSA05
Q207	132172	PNP, MPSA55
Q208	132223	NPN, MPS4124
Q209	132222	N, FET, J108
Q210, Q211	132185	NPN, Selected 2N6429A
Q212, Q213	132056	PNP, 2N5087
Q214	132224	PNP, MPS4126
Q215	132185	NPN, Selected 2N6429A
Q216, Q217	132223	NPN, MPS4124
Q218	132196	NPN, Selected 2N6553
Q219	132194	PNP, Selected 2N6556
Q220	132224	PNP, MPS4126
Q221, Q222	132223	NPN, MPS4124
Q223	132224	PNP, MPS4126
Q224	132203	NPN, Selected MJ4248
Q225-Q227	132188	NPN
Q228	132090	NPN, DAR, Selected MPSA14
Q229	132204	PNP, Selected MJ4238
Q230-Q232	132189	PNP

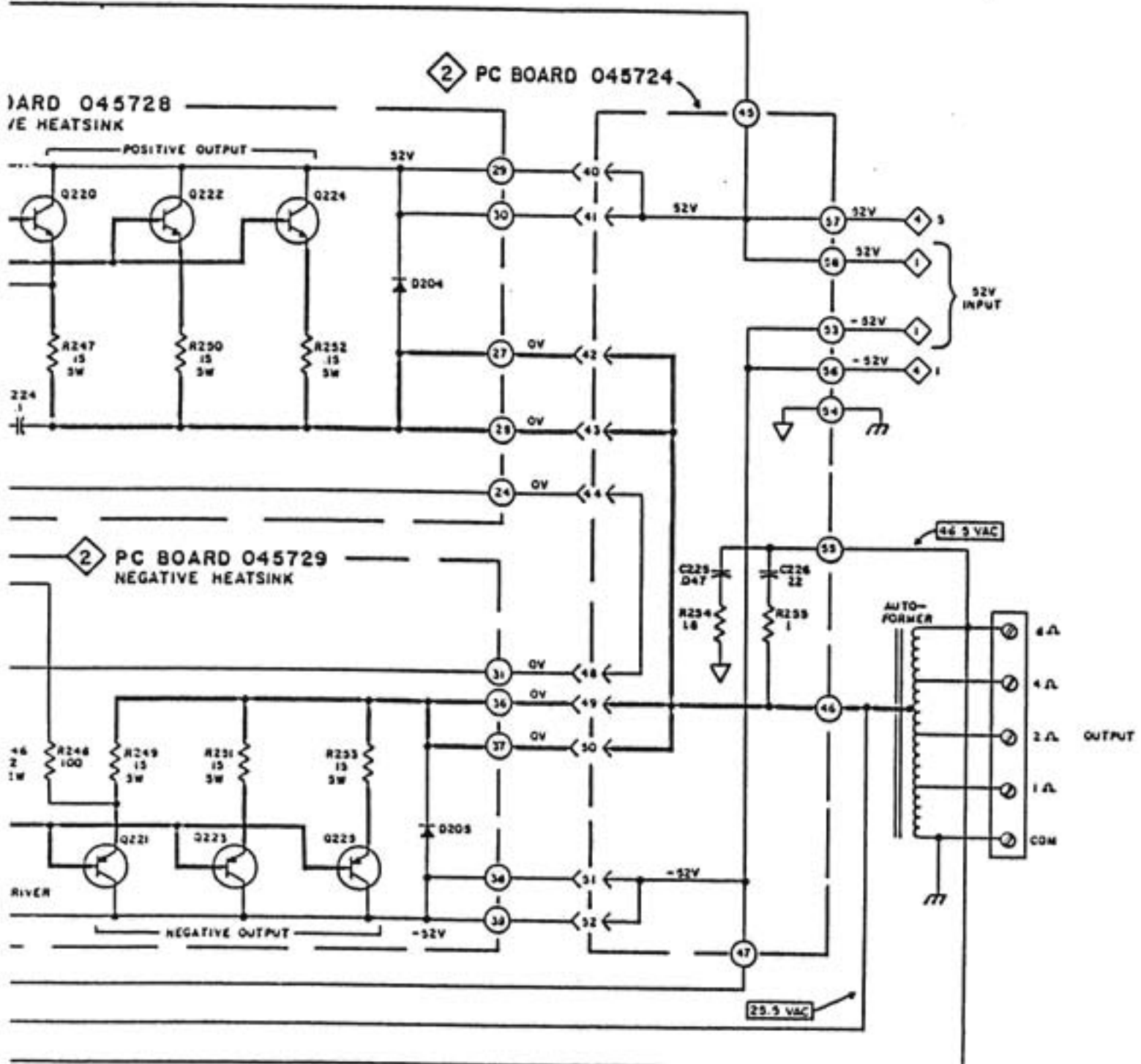


# 2B Amplifier (serial number 3500 and above)



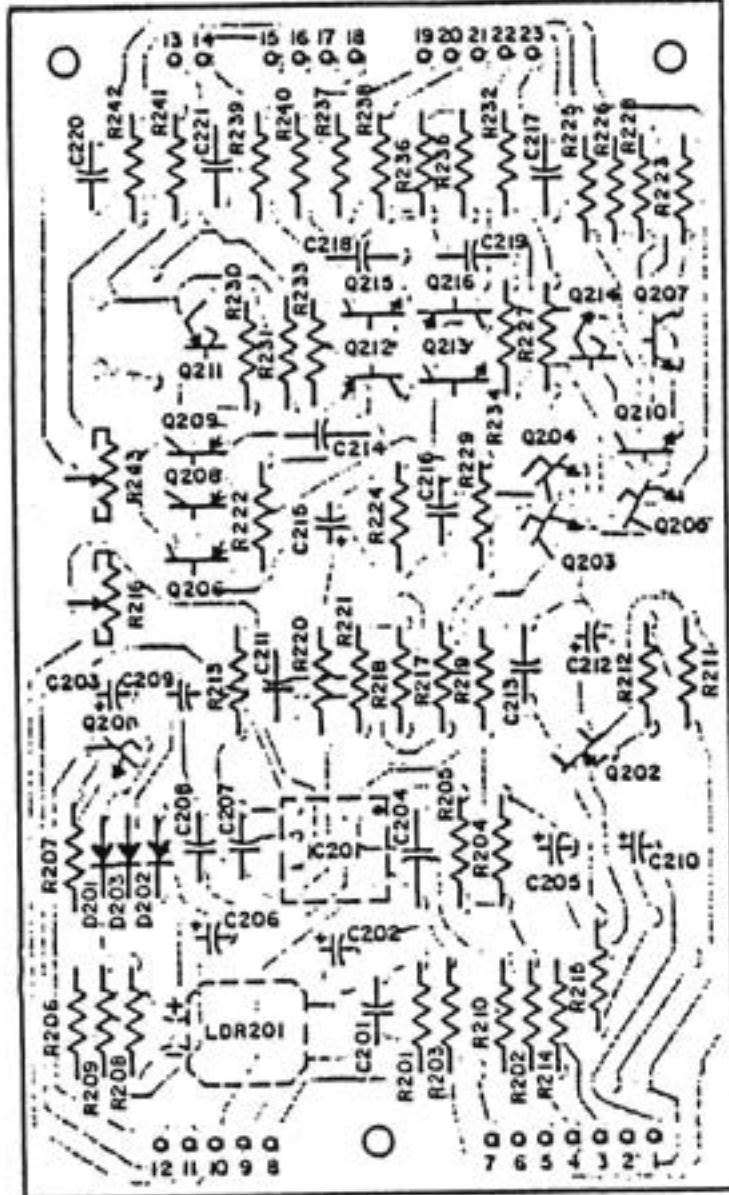
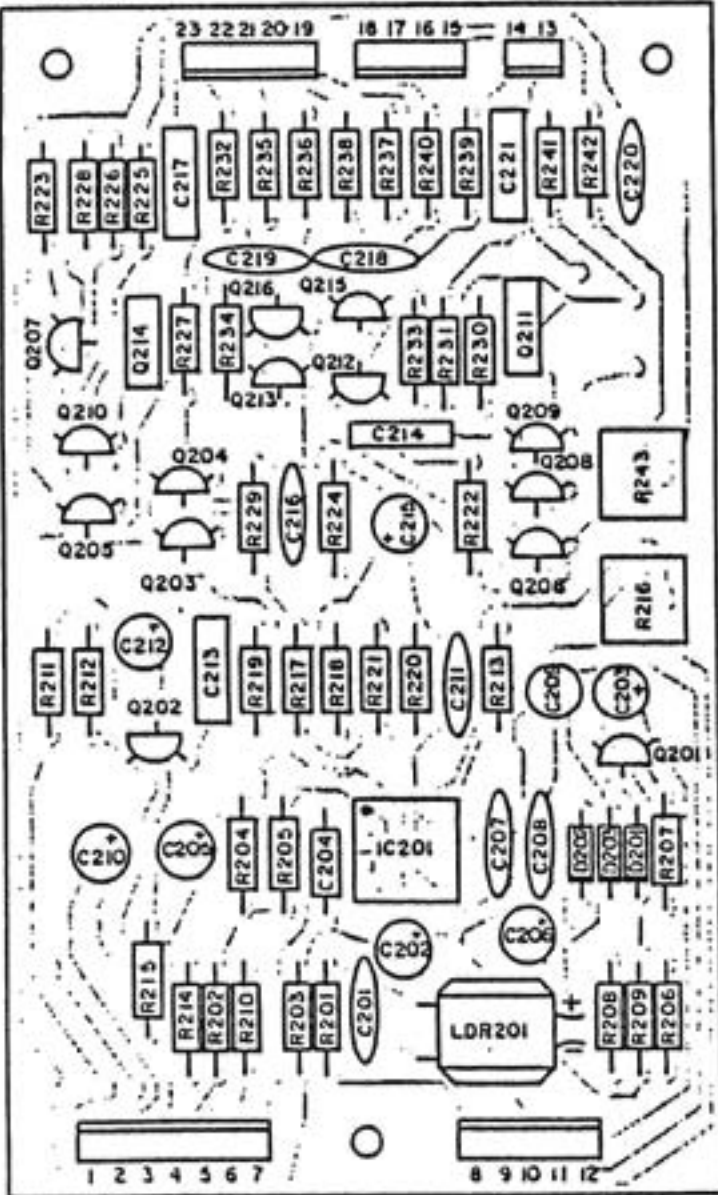




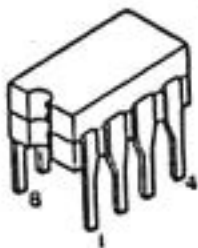


COMPONENT SIDE

CIRCUIT SIDE



AMPLIFIER DRIVER PCB 046700



IC201



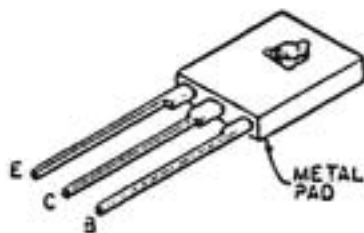
Q201, Q206-Q210  
Q212, Q213, Q215  
Q216, Q218



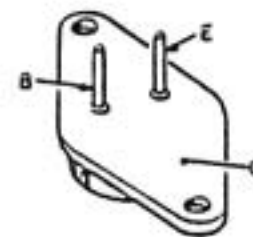
Q202



Q203-Q205

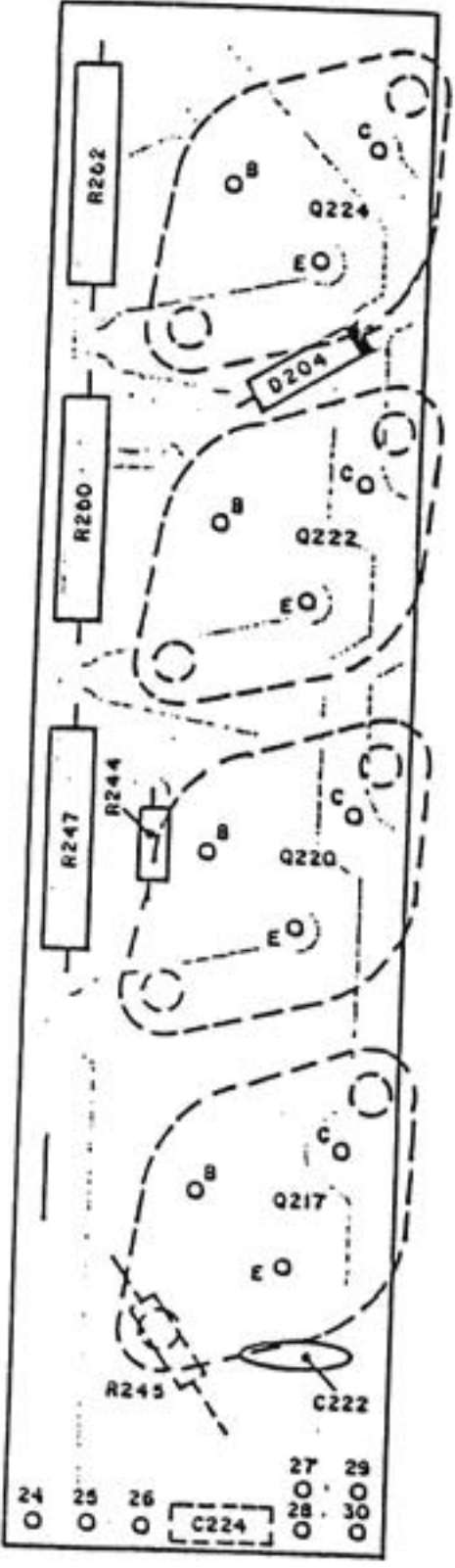


Q211, Q214

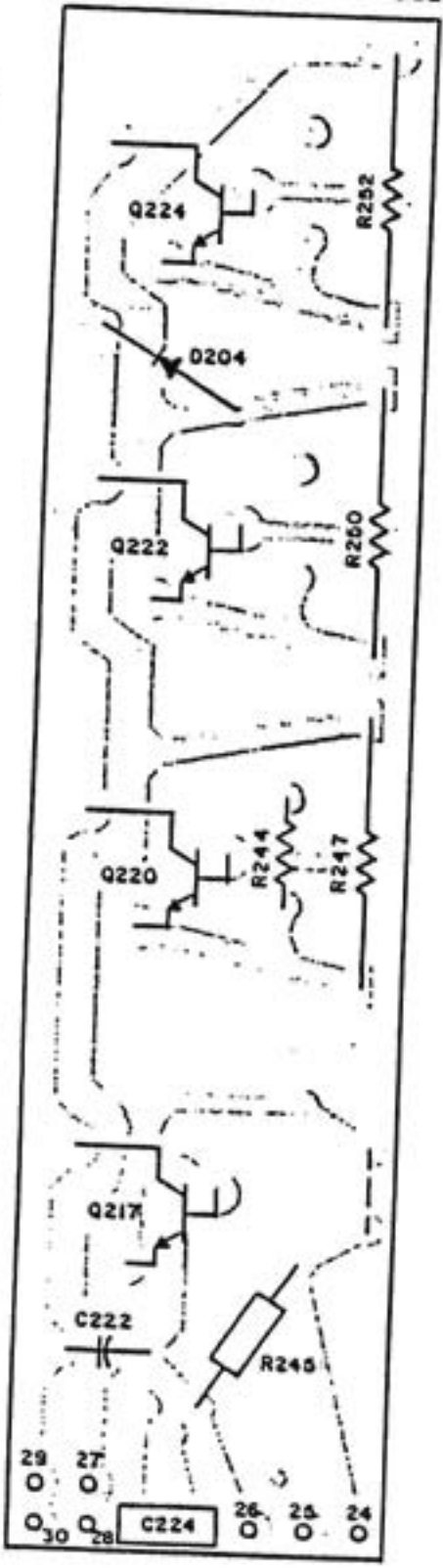


Q217, Q219-Q225

COMPONENT SIDE

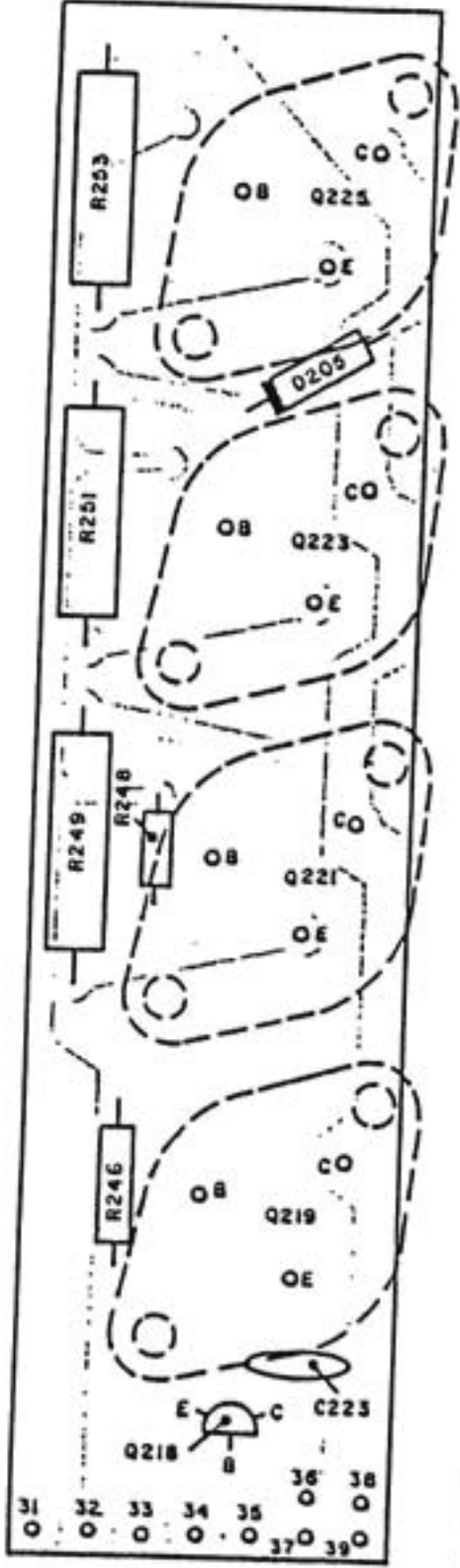


CIRCUIT SIDE

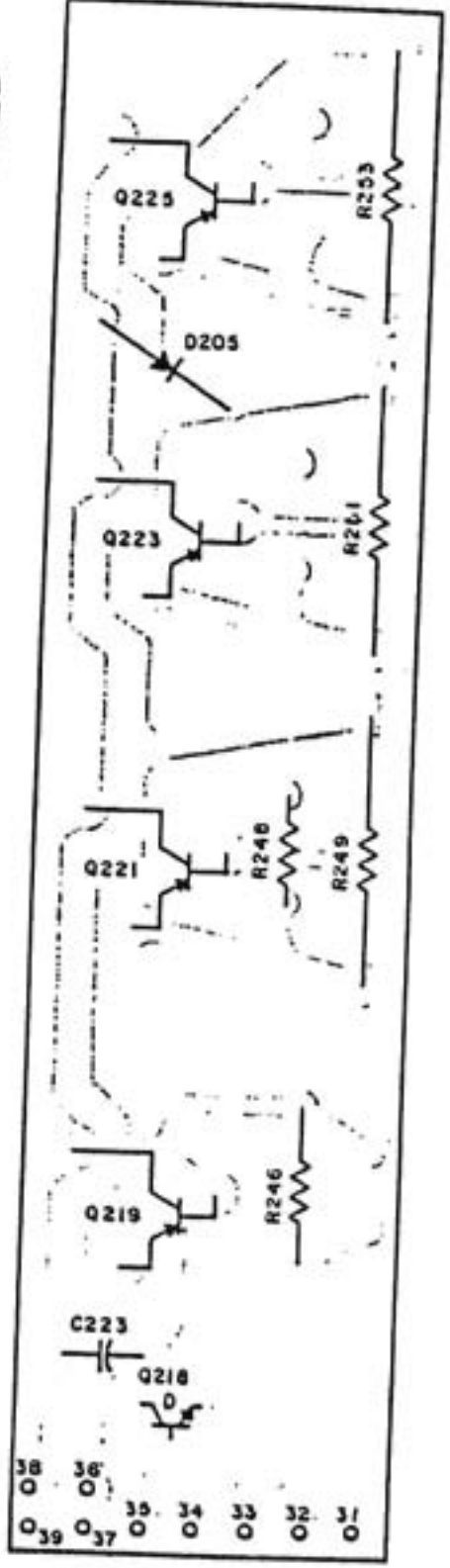


POSITIVE HEATSINK PCB 045728

COMPONENT SIDE

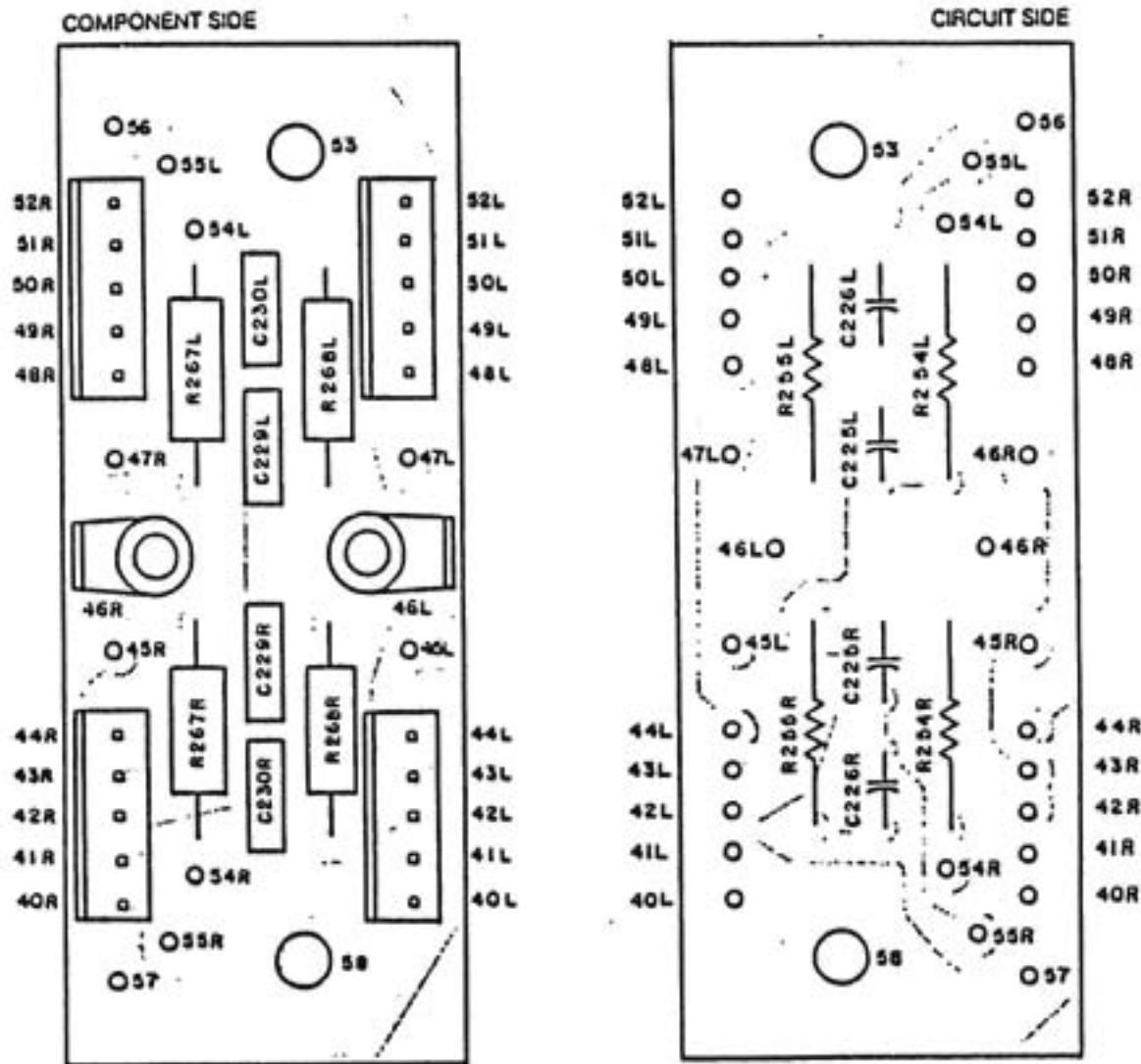


CIRCUIT SIDE



NEGATIVE HEATSINK PCB 045729





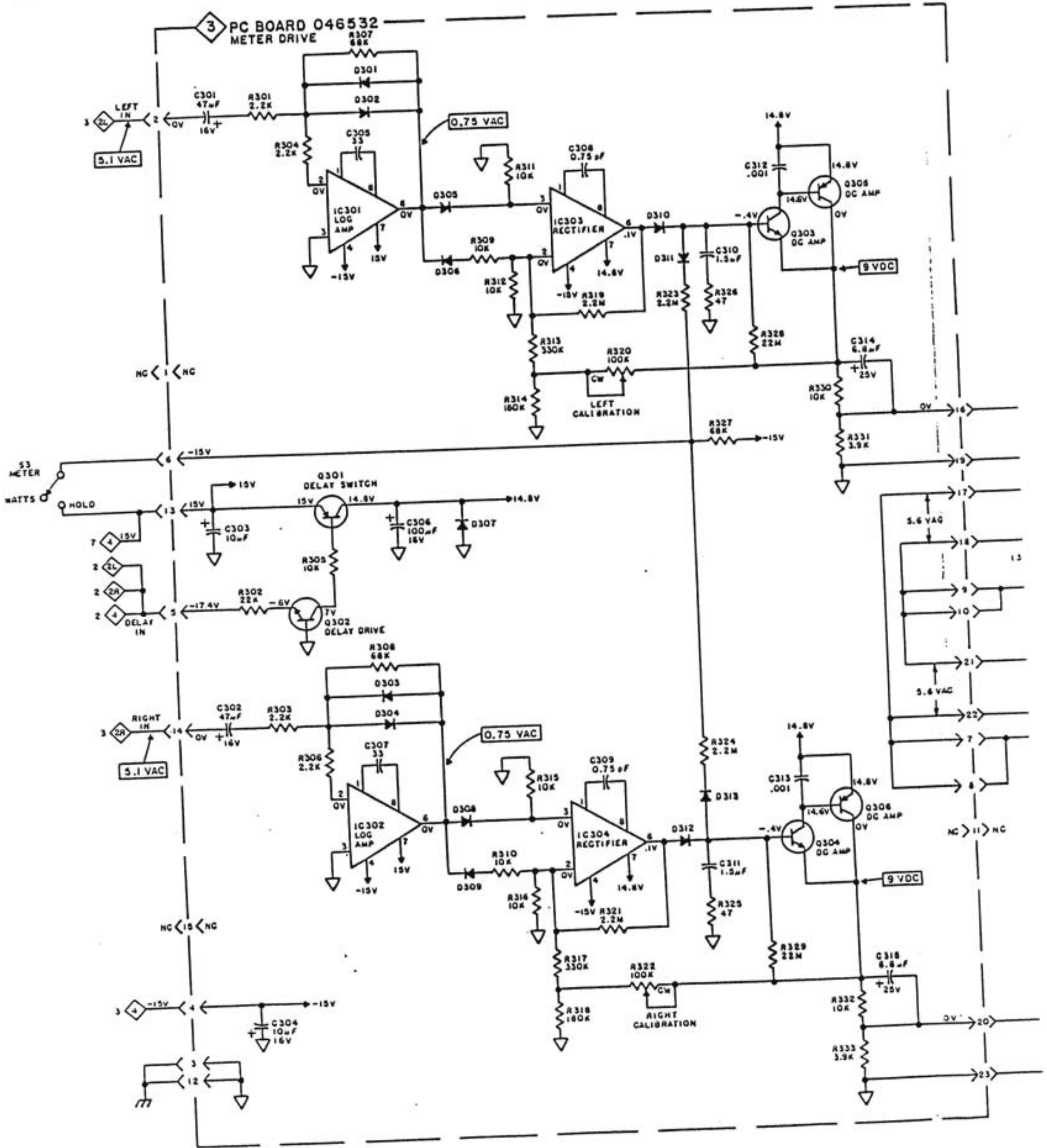
JUNCTION PCB 045724

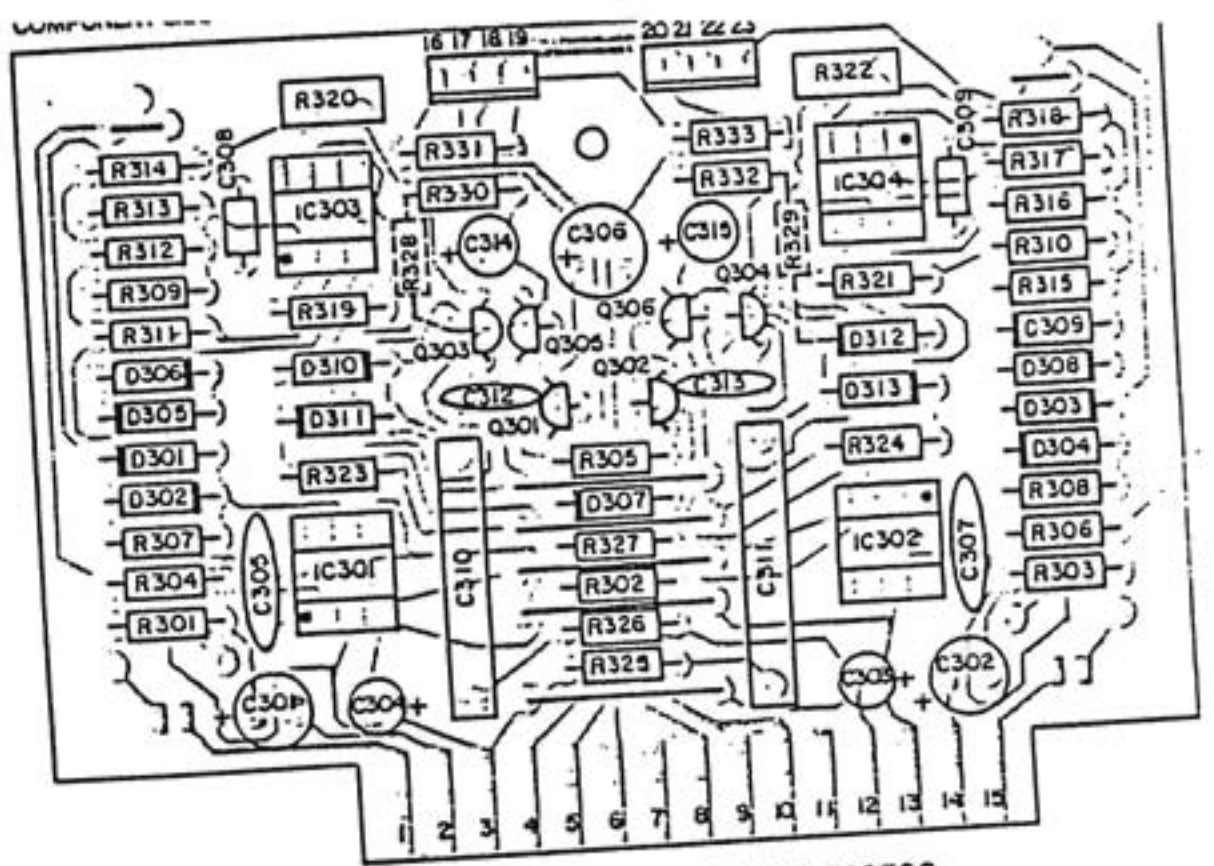
**AMPLIFIER PARTS LIST**

Symbol No.	Part No.	Description
<b>DIODES</b>		
D201-D203	070047	SIG, 75V, 10mA, 1N4148
D204, D205	070031	RECT, 400V, 1.5A, 1N4820
<b>INTEGRATED CIRCUITS</b>		
IC201	133094	Dual Operational Amp, NE5532N
<b>TRANSISTORS</b>		
Q201	132223	NPN, MPS4124
Q202	132222	N, FET, J108
Q203-Q205	132235	NPN, 2SC-2240-BL
Q206	132056	PNP, 2N5087
Q207	132223	NPN, MPS4124
Q208	132056	PNP, 2N5087
Q209	132224	PNP, MPS4126
Q210	132223	NPN, MPS4124
Q211	132234	PNP, 2SA 1360
Q212	132224	PNP, MPS4126
Q213	132223	NPN, MPS4124
Q214	132233	NPN, 2SC3423
Q215	132223	NPN, MPS4124
Q216	132224	PNP, MPS4126
Q217	132229	NPN, MJ15018
Q218	132090	NPN, DAR, Selected MPSA14
Q219	132230	PNP, MJ15019
Q220	132188	NPN
Q221	132189	PNP
Q222	132188	NPN
Q223	132189	PNP
Q224	132188	NPN
Q225	132189	PNP

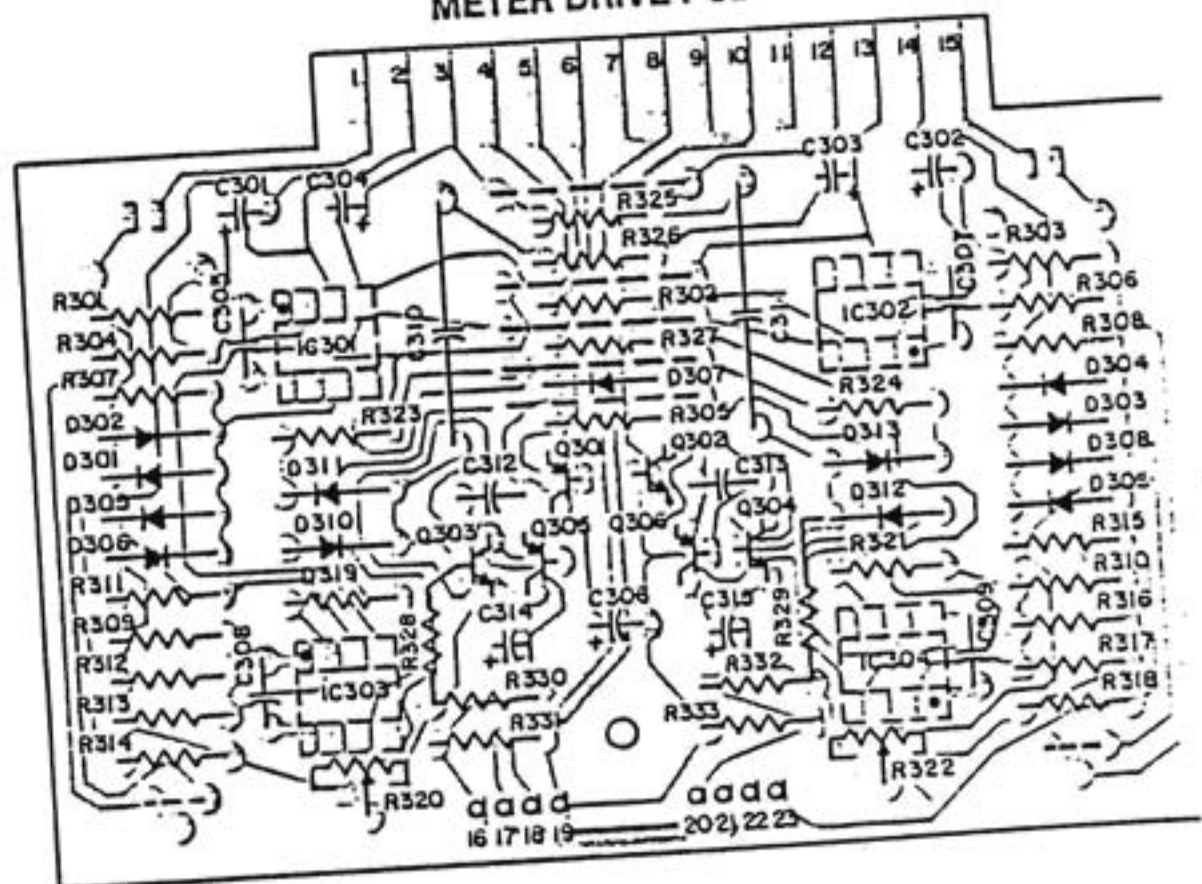
# 3

## Meter Drive and Illumination

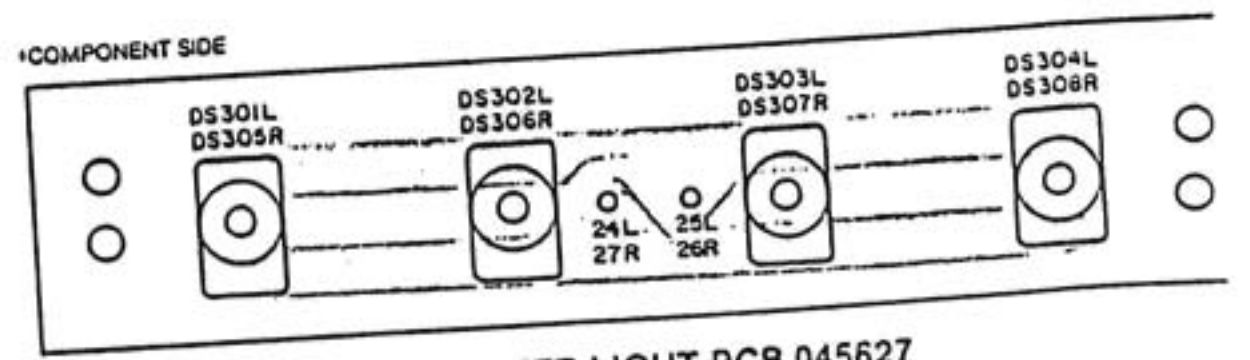




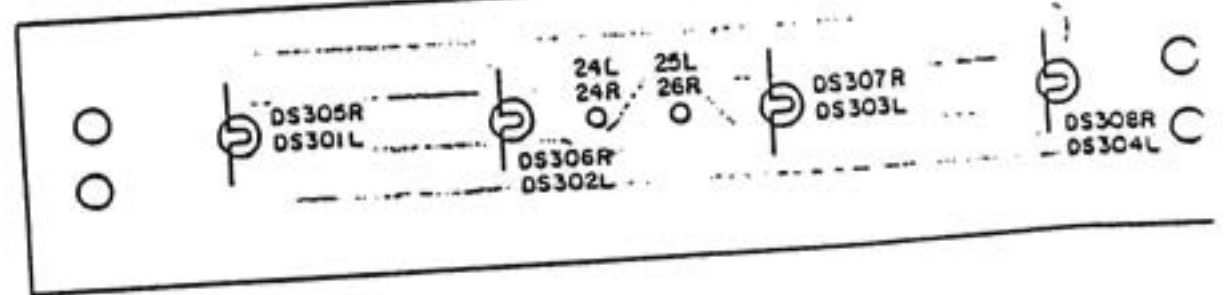
METER DRIVE PCB 046532



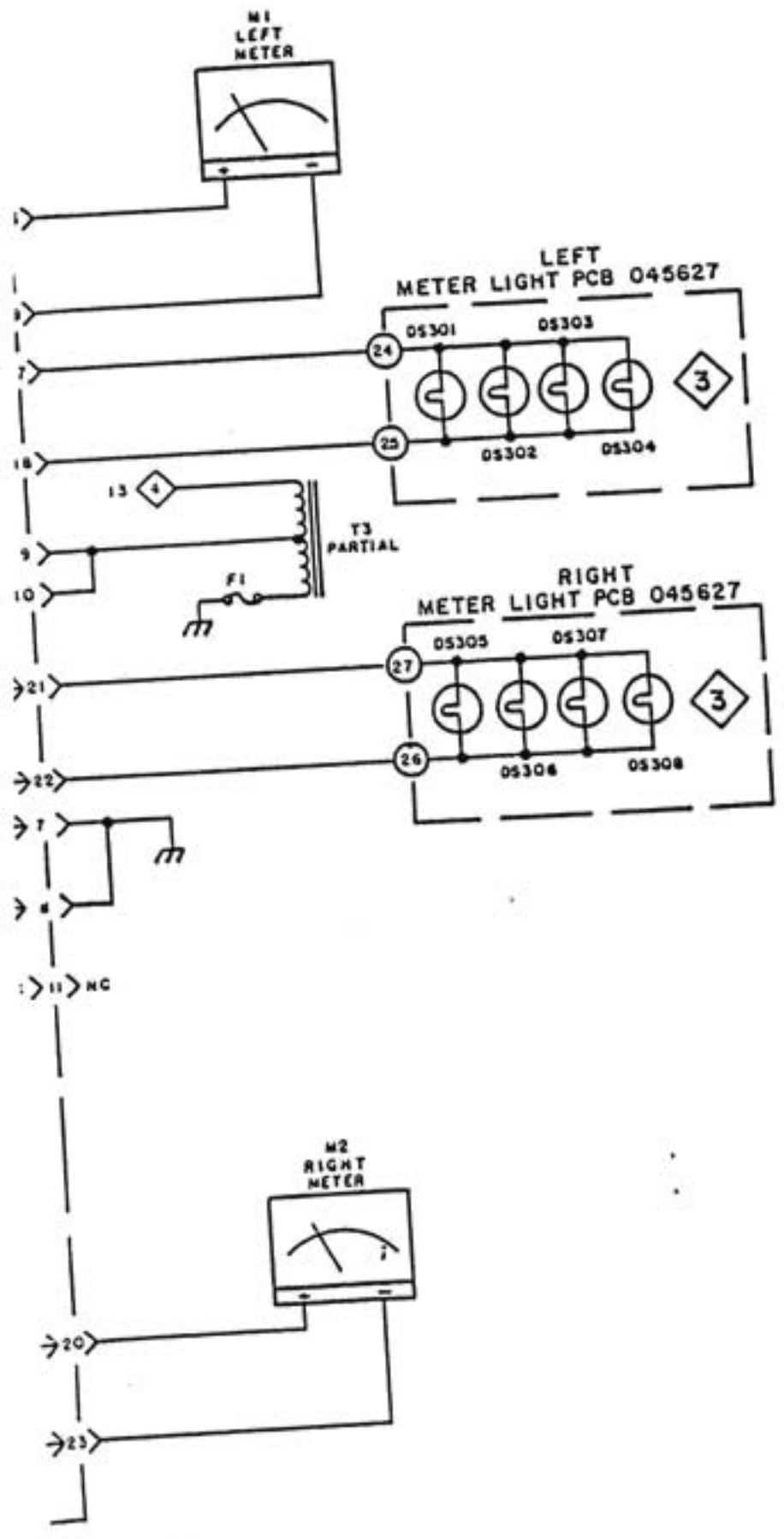
CIRCUIT SIDE



METER LIGHT PCB 045627



CIRCUIT SIDE





# METER DRIVE AND ILLUMINATION PARTS LIST

Symbol No.	Part No.	Description
<b>DIODES</b>		
Q301-Q313	070047	SIG, 75V, 10mA, 1N4148
<b>LIGHTING DEVICES</b>		
DS301-DS308	058055	INC, 6.3V, GE259
<b>INTEGRATED CIRCUITS</b>		
IC301-IC304	133068	Operational Amp, LM201AN
<b>TRANSISTORS</b>		
Q301, Q302	132224	PNP, MPS4126
Q303, Q304	132093	NPN, BC239C
Q305, Q306	132056	PNP, 2N5087



IC301-IC304



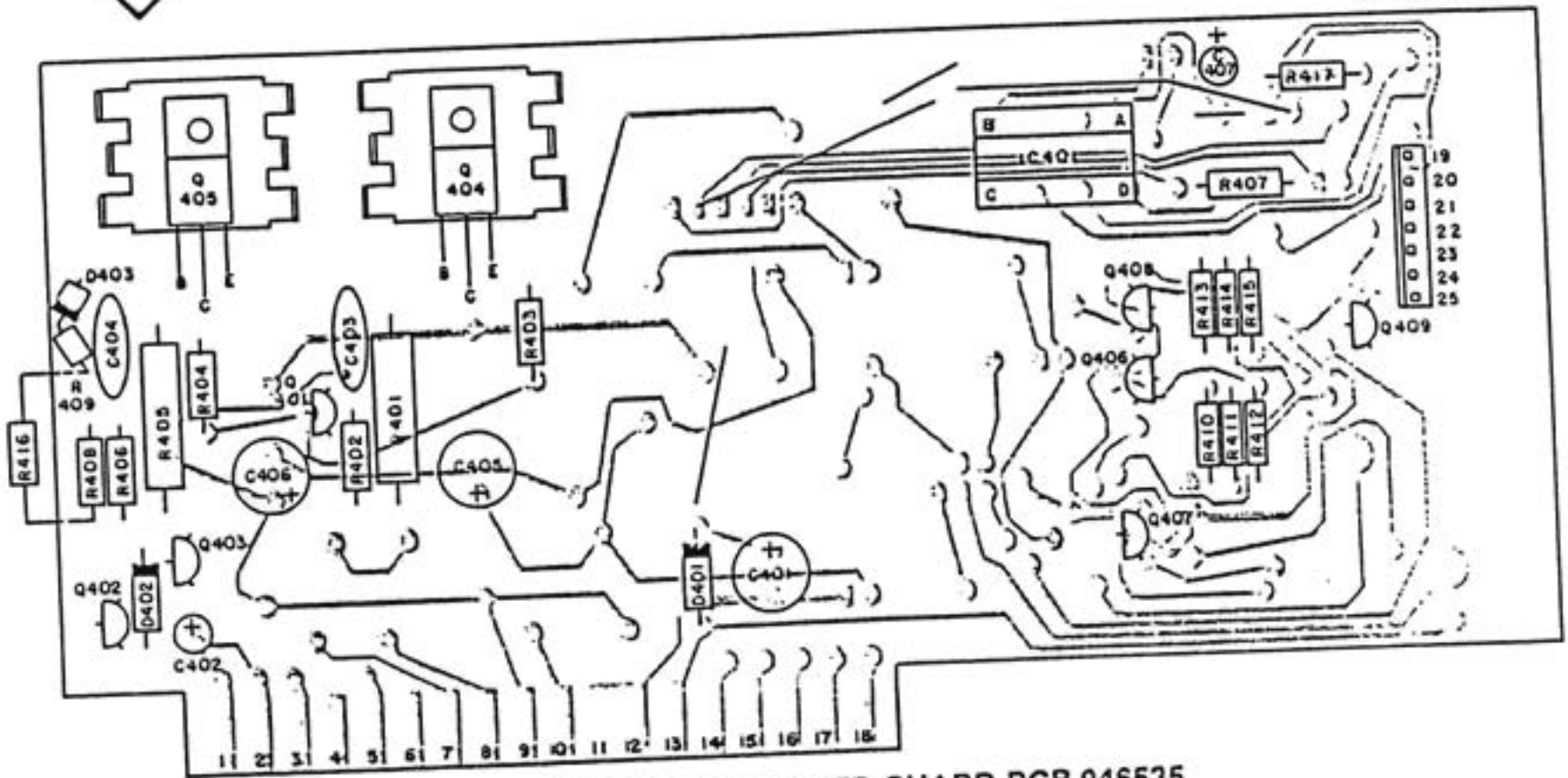
Q301, Q302  
Q305, Q306



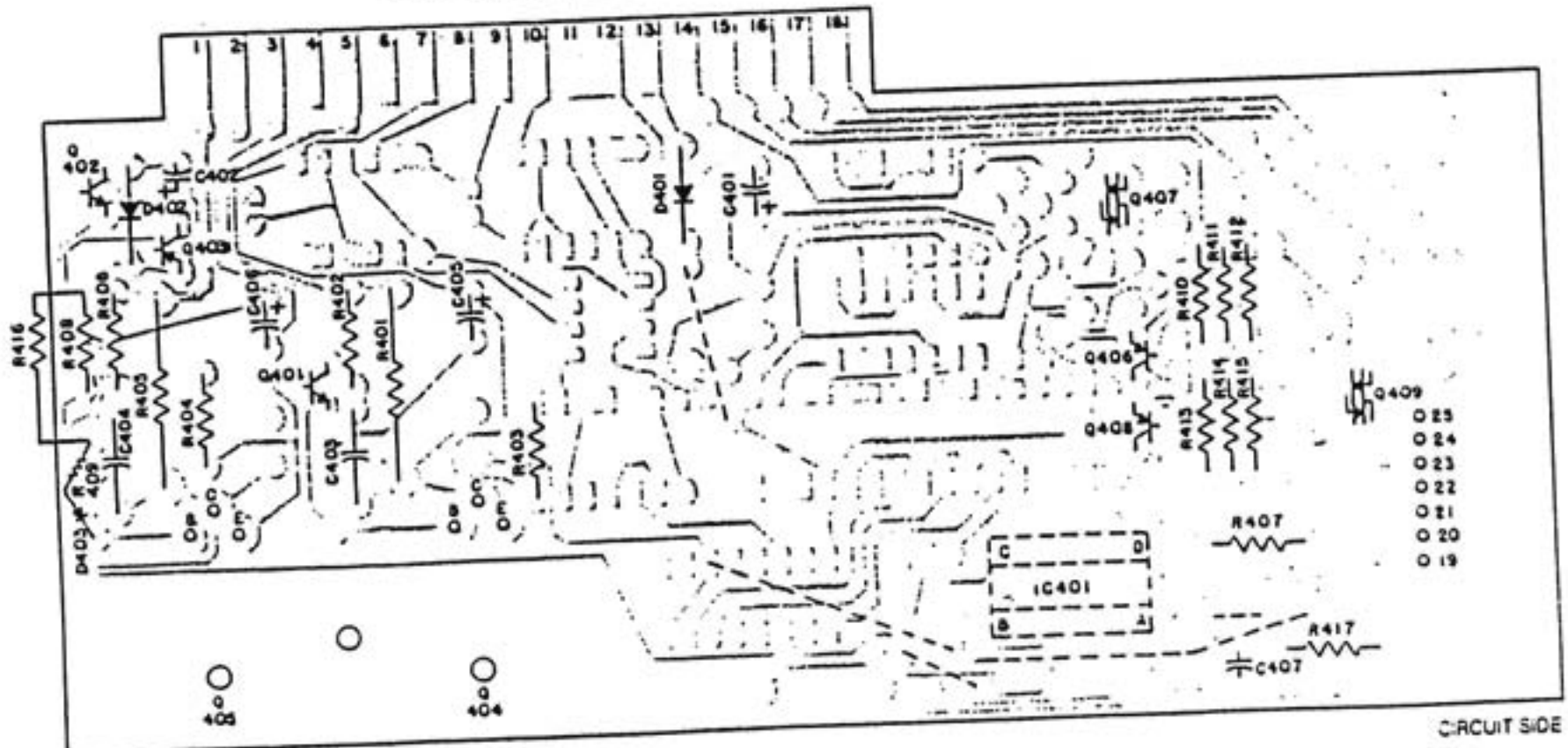
Q303, Q304



COMPONENT SIDE



POWER SUPPLY AND POWER GUARD PCB 046535



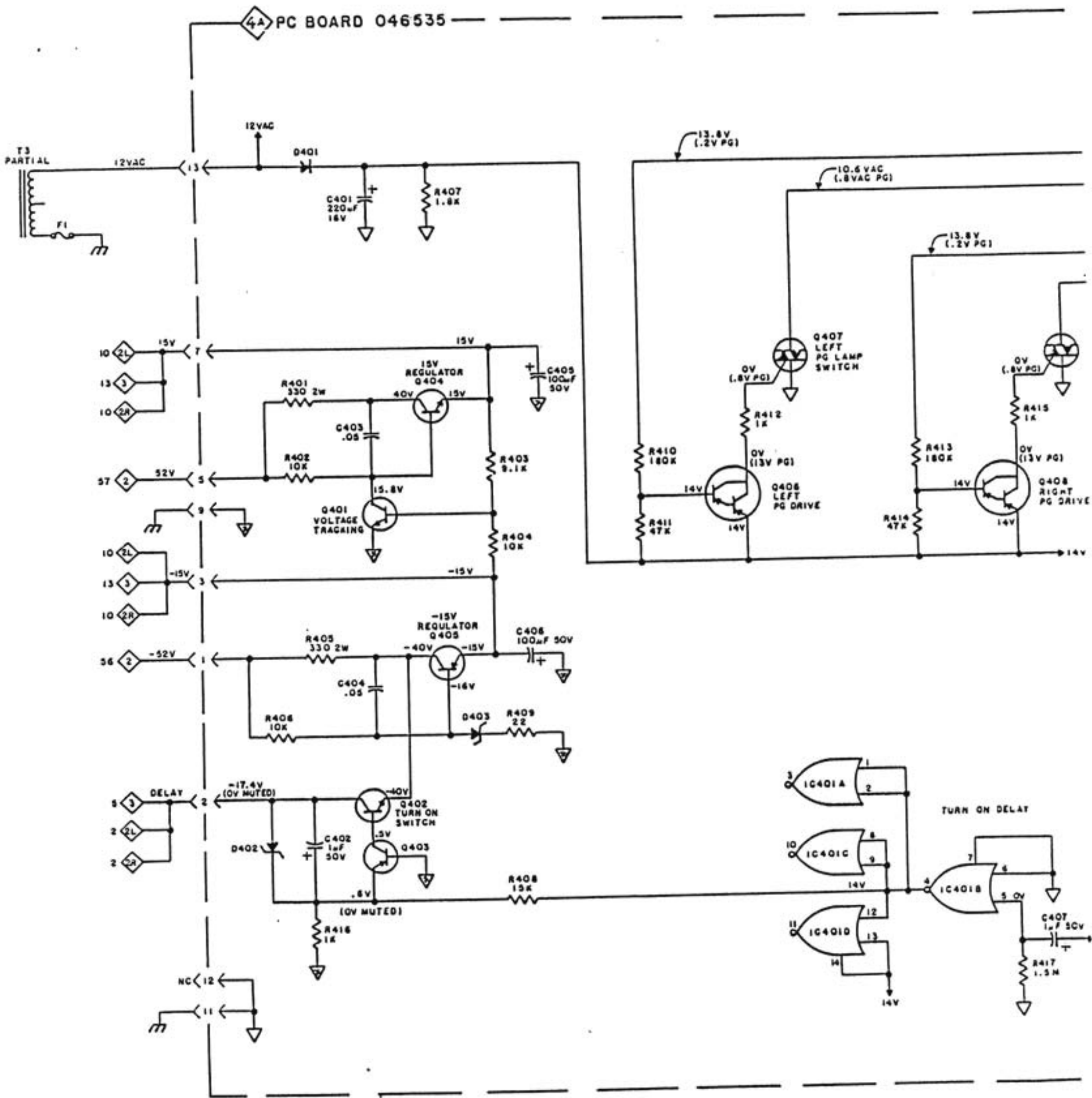
CIRCUIT SIDE

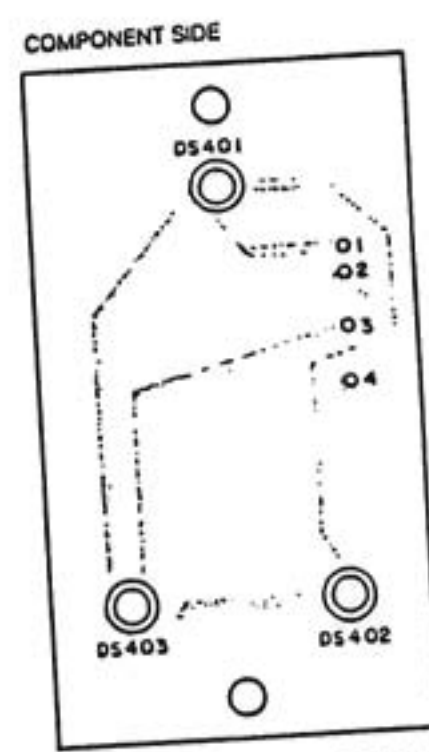
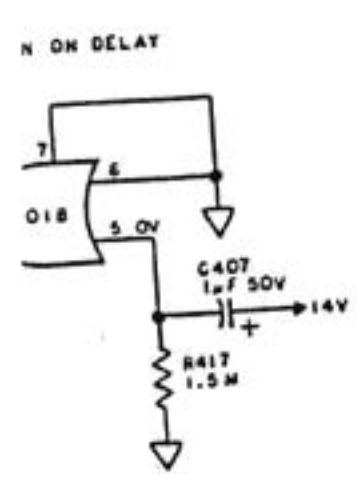
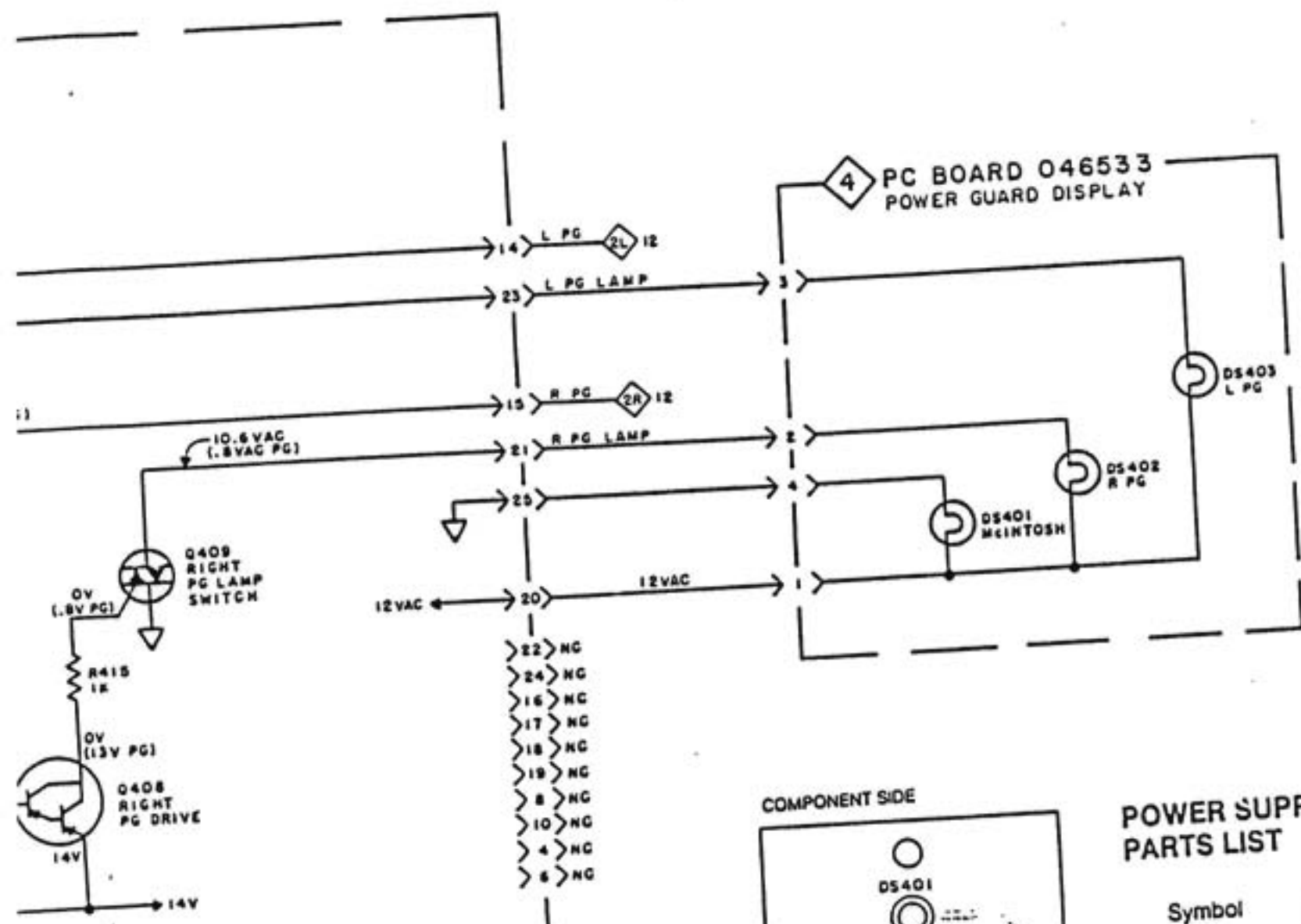


# Power Supply and Power Guard

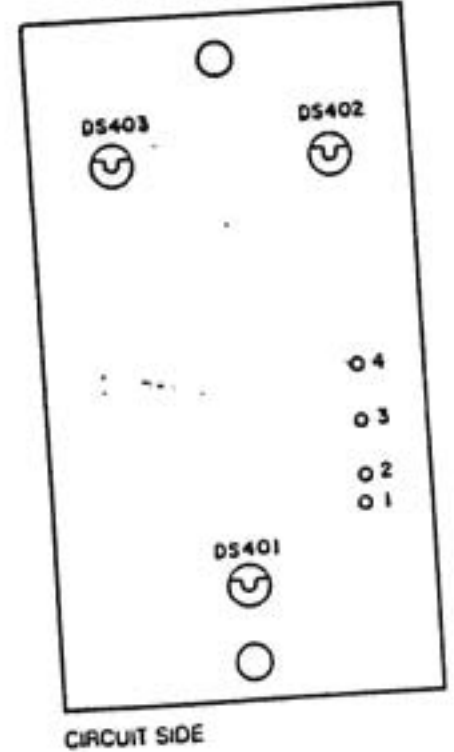
(serial number EA1001 to EA1499)

4A





POWER GUARD DISPLAY  
PCB 046533



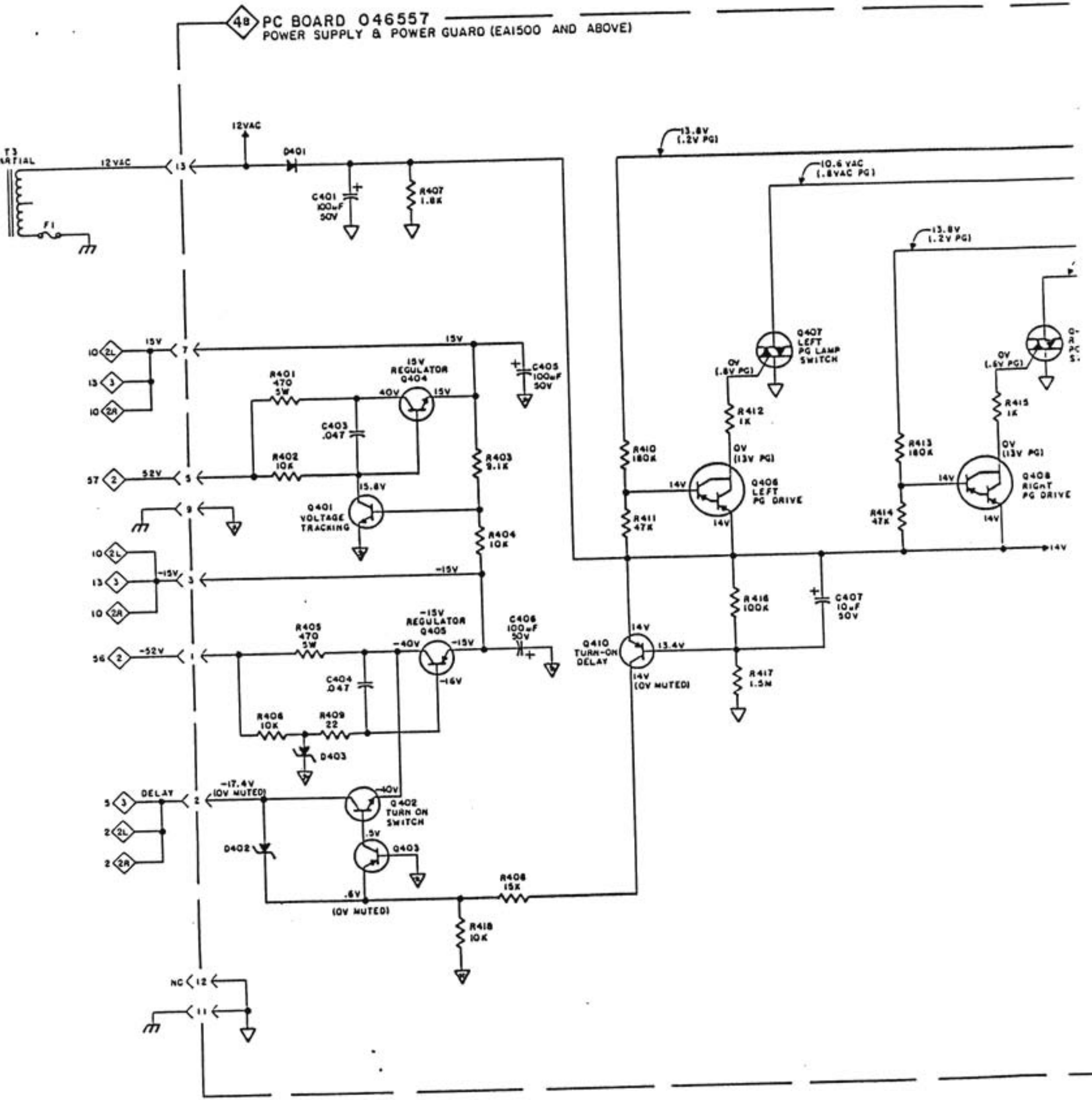
POWER SUPPLY AND POWER GUARD  
PARTS LIST

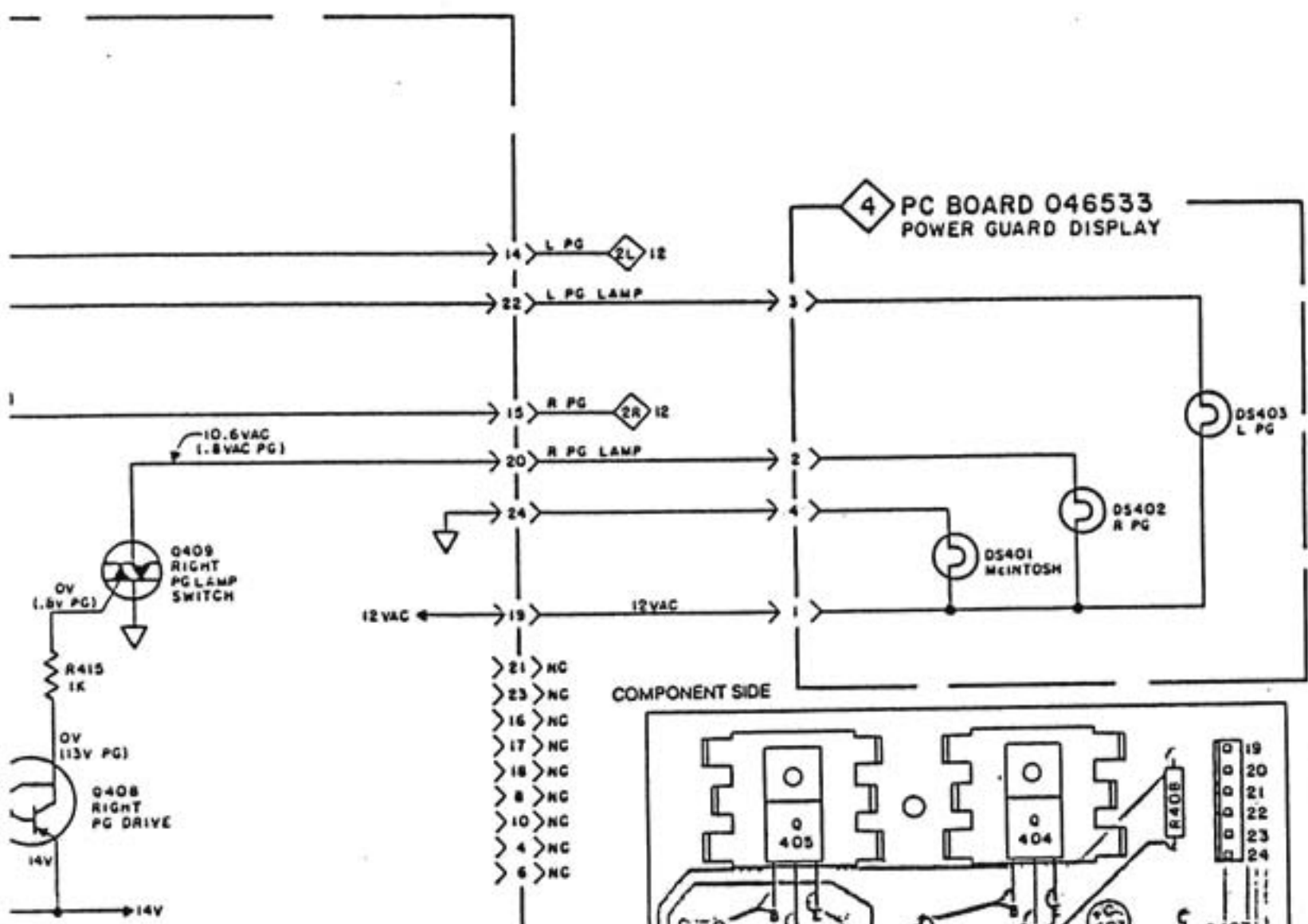
Symbol No.	Part No.	Description
<b>DIODES</b>		
D401	070031	RECT, 400V, 1.5A, 1N4820
D402	070103	ZN, 18V, 5%, 500mW, 1N5248B
D403	070114	ZN, 16V, 5%, 500mW, 1N5246B
<b>LIGHTING DEVICES</b>		
DS401-DS403	058061	INC, 14V, 7382
<b>INTEGRATED CIRCUITS</b>		
IC401	133064	CMOS, Quad 2-Input NOR Gate
<b>TRANSISTORS</b>		
Q401	132223	NPN, MPS4124
Q402	132171	NPN, MP5A05
Q403	132147	PNP, MP5A93
Q404	132174	NPN, Selected MJE3055
Q405	132173	PNP, Selected MJE2955
Q406	132182	PNP, DAR, MP5A64
Q407	131011	Triac, MAC91A-1
Q408	132182	PNP, DAR, MP5A64
Q409	131011	Triac, MAC91A-1

4B

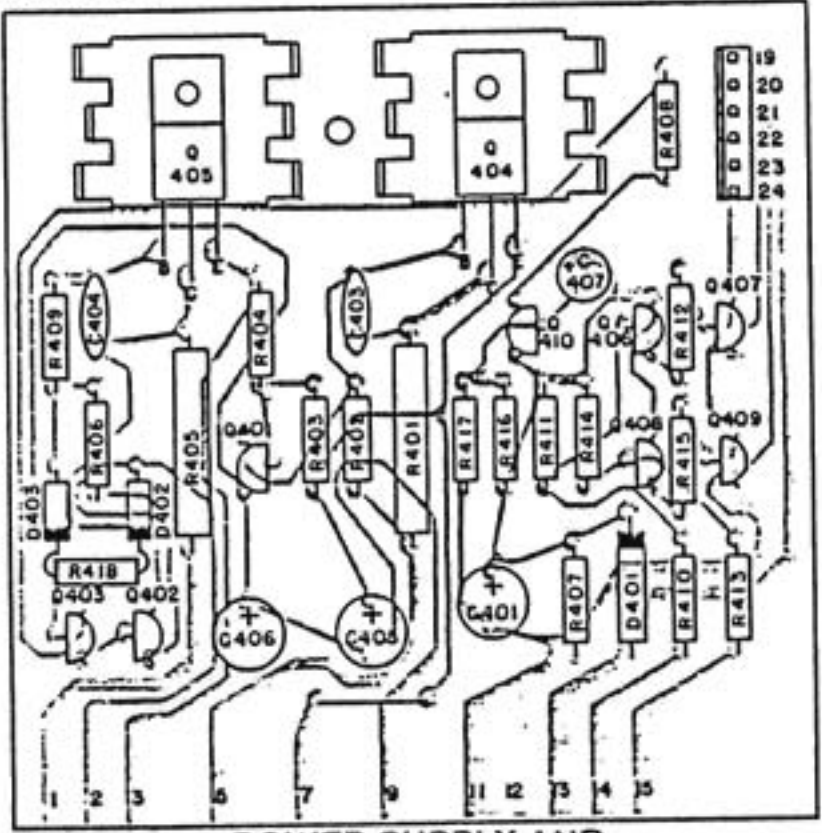
# Power Supply and Power Guard

(serial number EA1500 and above)

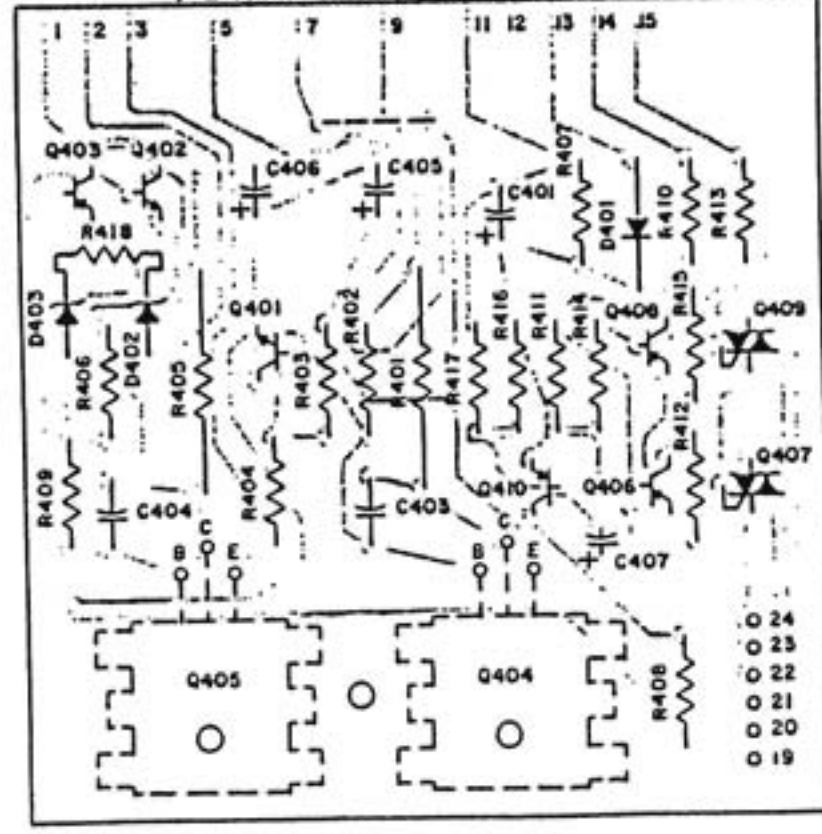




COMPONENT SIDE

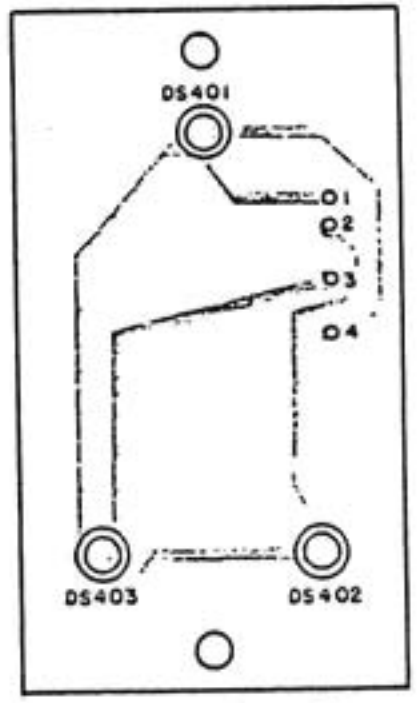


POWER SUPPLY AND  
POWER GUARD PCB 046557

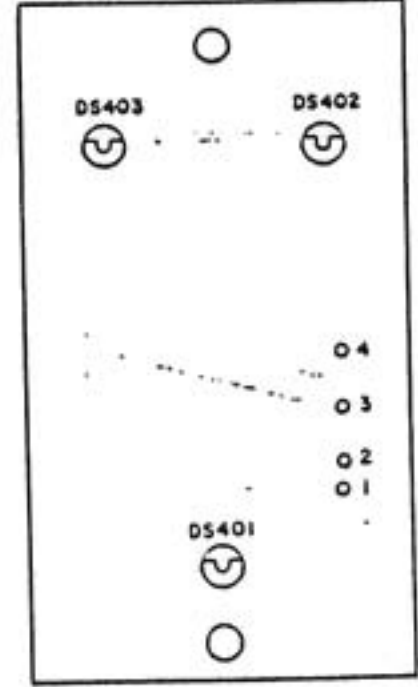


CIRCUIT SIDE

COMPONENT SIDE



POWER GUARD  
DISPLAY  
PCB 046533



CIRCUIT SIDE





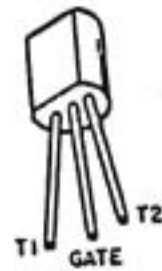
Q401, Q402  
Q406, Q408, Q410

**POWER SUPPLY AND POWER GUARD  
PARTS LIST**

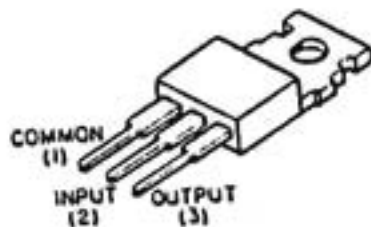
Symbol No.	Part No.	Description
<b>DIODES</b>		
D401	070131	RECT, 400V, 1A, 1N4004
D402	070103	ZN, 18V, 5%, 500mW, 1N5248B
D403	070114	ZN, 16V, 5%, 500mW
<b>LIGHTING DEVICES</b>		
DS401-DS403	058061	INC, 14V, 7382
<b>TRANSISTORS</b>		
Q401	132223	NPN, MPS4124
Q402	132171	NPN, MPSA05
Q403	132236	PNP, 25A 970-BL
Q404	132227	NPN, TIP41B
Q405	132228	PNP, TIP42B
Q406	132182	PNP, DAR, MPSA64
Q407	131011	Triac, MAC91A-1
Q408	132182	PNP, DAR, MPSA64
Q409	131011	Triac, MAC91A-1
Q410	132224	PNP, MPS4126



Q403



Q407, Q410



Q404, Q405

## METER CALIBRATION

Operate the amplifier at 1kHz with rated output into an 8 ohm load. Adjust both calibration pots, R320 left and R322 right, so that each meter reads 270 watts.

## OFFSET ADJUSTMENT

Operate the amplifier with no signal output. Adjust R216 in both channels (or R220 on the earlier schematic) for zero  $\pm 3$  millivolts DC across the 8 ohm outputs.

## BIAS ADJUSTMENT

Operate the amplifier with no signal output and the heatsinks cool. Adjust R243 in both channels (or R253 on the earlier schematic) for  $5 \pm 1$  millivolts DC across pins 14 and 18 of the amplifier PCB.

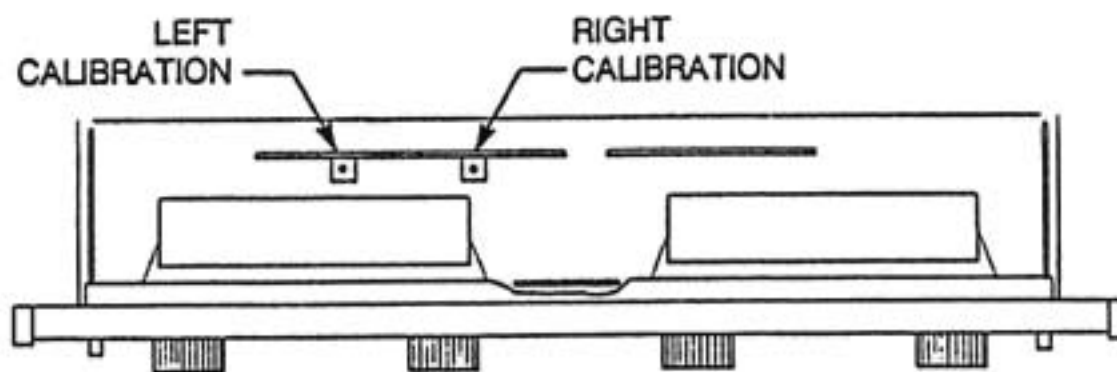


Fig. 6. Partial top view with cover removed

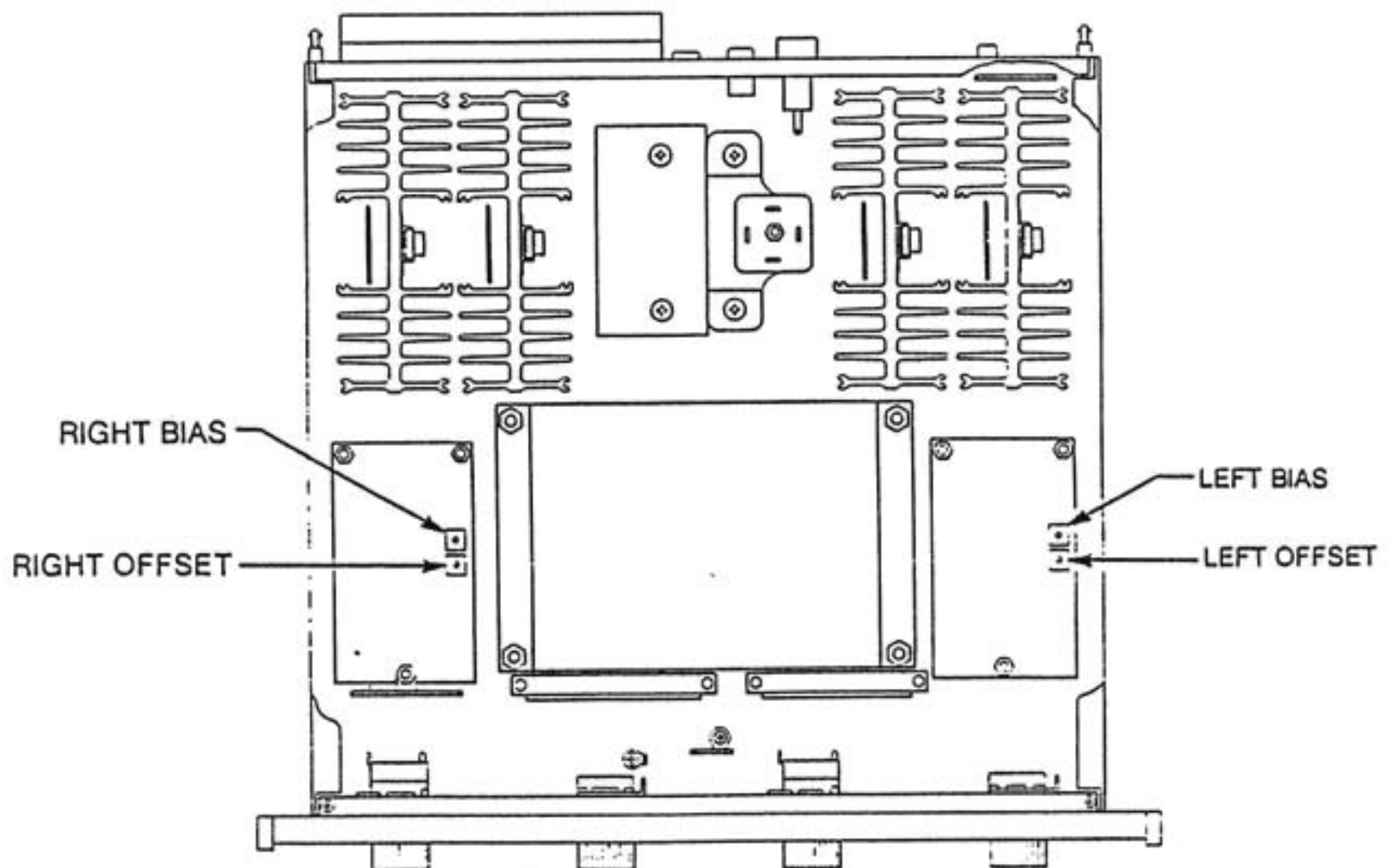


Fig. 7. Bottom view with cover removed

# Repacking Instructions

In the event it is necessary to return the MC 7270 to McIntosh Laboratory for service, the unit must be packed exactly as shown below. It is not necessary to return the shelf brackets, although their position in the carton is shown.

The four plastic feet must be attached to the bottom of the MC 7270 so they will locate in the four holes of the base pad.

If a shipping carton is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order using the part numbers on the accompanying list.

Use the original shipping carton only if all pads and cartons are in good serviceable condition.

QTY.	PART NO.	DESCRIPTION
1	033467	Shipping carton only
1	033335	Panloc pad
1	033336	Top pad
1	033465	Bottom pad
4	033346	Corner post
4	033086	12" x 18" Air-cushion pad
2	033087	18" x 36" Air-cushion pad
1	033241	Shipping skid
3	101034	#10 x 2 screw for 033241
3	104033	#10 flat washer for 101034
4	017218	Bottom cover feet
4	101072	#8 x 3/4" screw for 017218
1	033344	Inside carton only
1	033519	Shipping carton complete

