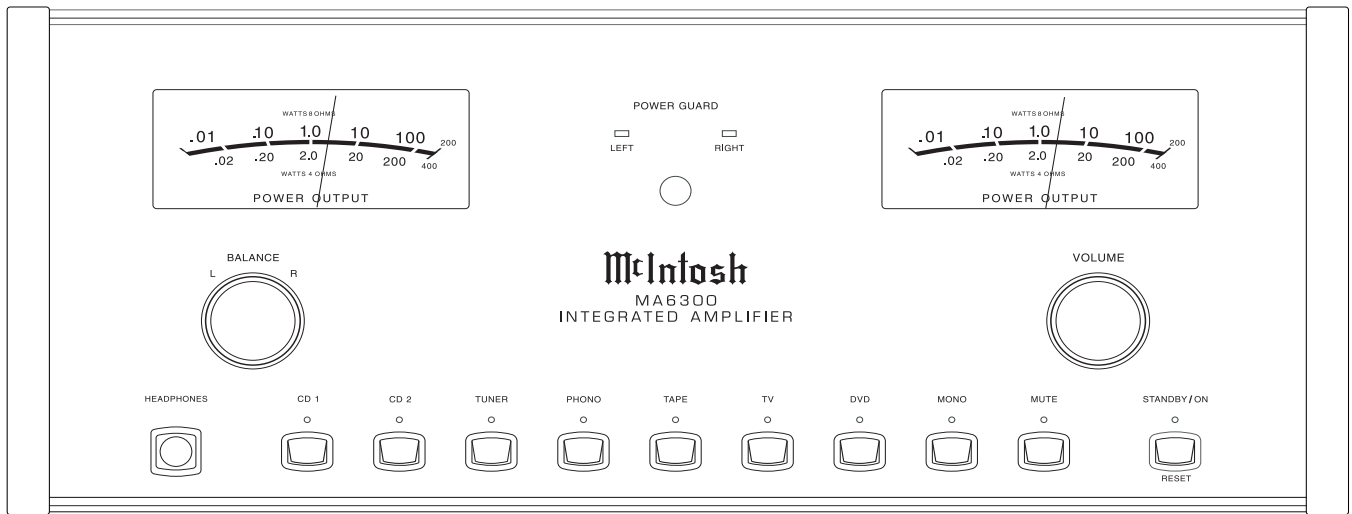




# MA6300

## INTEGRATED AMPLIFIER

SERIAL NO. WR1001 And Above



### CONTENTS

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# SERVICE MANUAL

# PERFORMANCE SPECIFICATIONS

## Power Output

100 watts into an 8 ohm load is the minimum sine wave continuous average power output. The output RMS voltage is 28.3V across 8 ohms

160 watts into a 4 ohm load is the minimum sine wave continuous average power output. The output RMS voltage is 25.3V across 4 ohms

## Output Load Impedance

8 and 4 ohms

## Rated Power Band

20Hz to 20,000Hz

## Total Harmonic Distortion

0.005% maximum harmonic distortion at any power level from 250 milliwatts to rated power, 20Hz to 20,000Hz

## Dynamic Headroom

1.4dB

## Frequency Response

+0, -0.5dB from 20Hz to 20,000Hz

+0, -3dB from 10Hz to 100,000Hz

## Preamplifier Main Output

1V for rated input (8V Maximum)

## Sensitivity (for rated output)

High Level, 250mV unbalanced, 500mV balanced

Phono, 2.5mV

Power Amp In, 1V

## Signal To Noise Ratio (A-Weighted)

High Level, 97dB below rated output

Phono, 90dB below 10mV input

Power Amplifier, 110 below rated output

## Intermodulation Distortion

0.005% maximum, if the instantaneous peak power output is rated power or less per channel with both channels operating for any combination of frequencies from 20Hz to 20,000Hz.

## Wide Band Damping Factor

200 at 8 ohms

100 at 4 ohms

## Input Impedance

High Level, 20K ohms

Phono, 47K ohms; 65pF

Power Amp In, 10K ohms

## Maximum Input Signal

High Level, 8V

Phono, 90mV

Power Amplifier In, 8V

## Main Output Impedance

50 ohms

## Power Guard

Less than 2% THD with up to 16dB overdrive at 1,000Hz

## Voltage Gain

High Level to Tape Output: 0dB

High Level to Main Output: 12dB

Phono to Main Output: 52dB

## Power Requirements

100 Volts, 50/60Hz at 3.6 amps

110 Volts, 50/60Hz at 3.6 amps

120 Volts, 50/60Hz at 3.2 amps

220 Volts, 50/60Hz at 1.8 amps

230 Volts, 50/60Hz at 1.8 amps

240 Volts, 50/60Hz at 1.8 amps

Note: Refer to the rear panel of the MA6300 for the correct voltage.

## Overall Dimensions

Width is 17-1/2 inches (44.45cm)

Height is 7-5/8 inches (19.37cm) including feet

Depth is 22 inches (55.88cm) including the Front Panel, Knobs and Cables

## Weight

37 pounds (16.8 kg) net, 55 pounds (24.9 kg) in shipping carton


## Shipping Carton Dimensions

Width is 25 inches (63.5cm)

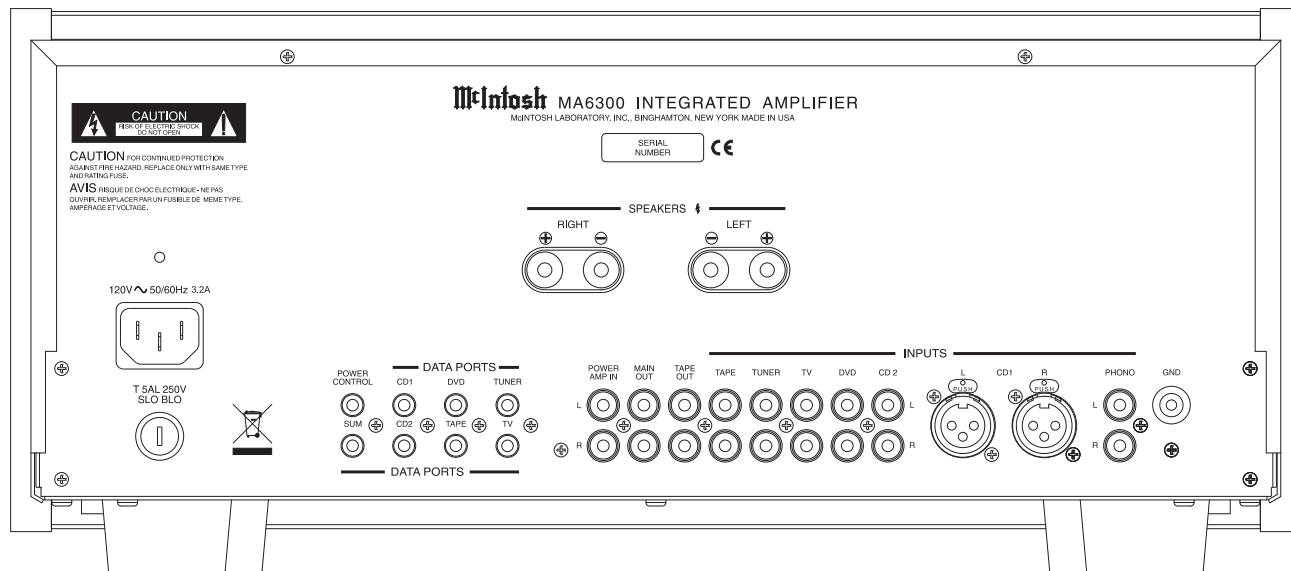
Depth is 27 inches (68.6cm)

Height is 12 inches (30.5cm)

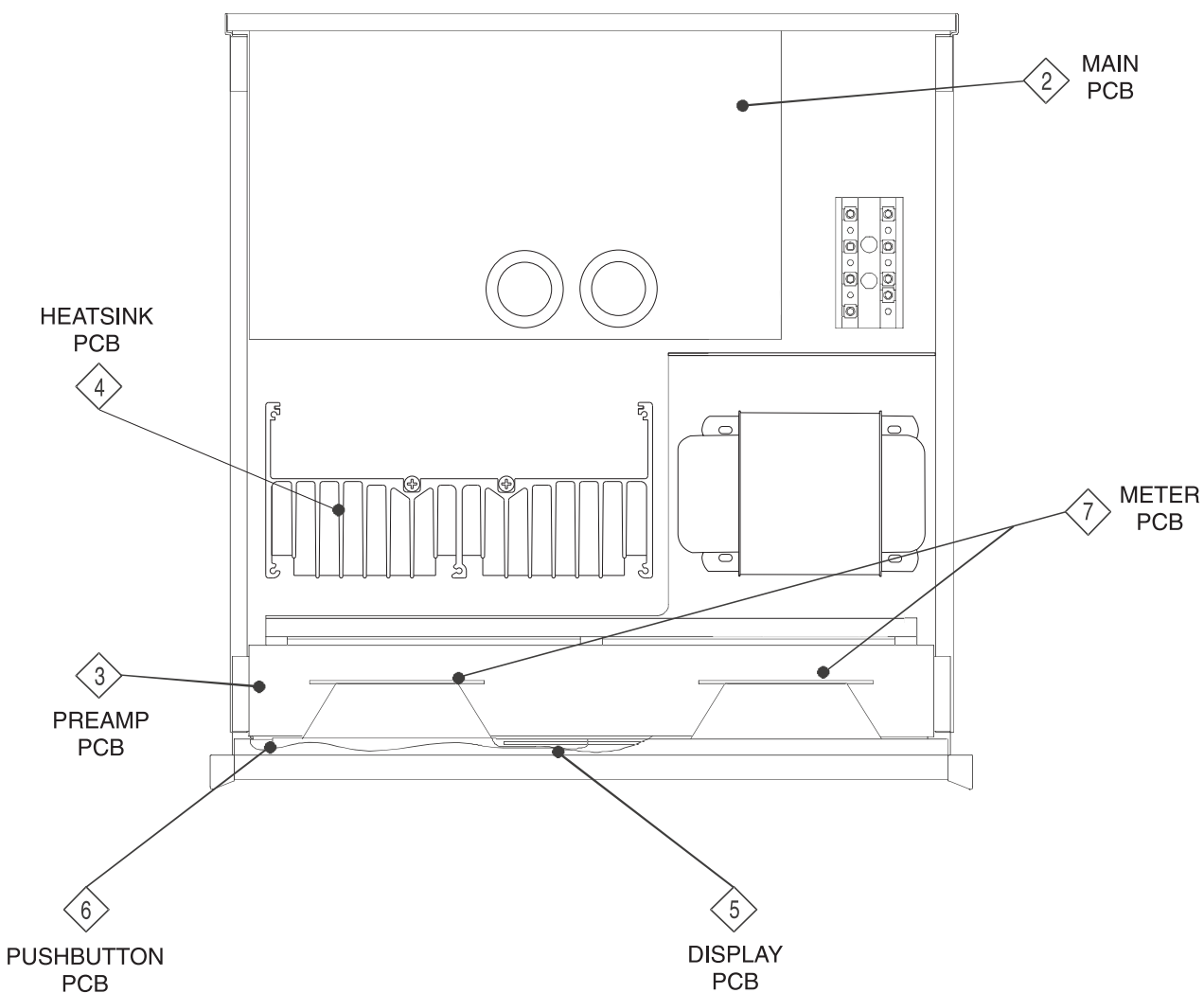
# NOTES

1. The heavy lines on the schematics denote the primary signal path.
2. Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
  - a. AC input at 120 volts, 50/60Hz
  - b. All voltages are  $\pm 10\%$  with respect to ground. A high impedance (10megaohm) voltmeter must be used.
3. Unless otherwise specified:
  - a. Resistors values are in ohms.
  - b. Capacitor values are in microfarads ( $\mu\text{F}$ ).
  - c. Inductor values are in microhenries ( $\mu\text{H}$ ).
4. On PC Board Drawings, Square Pad Indicates:
  - a. Polarized Capacitors - Positive
  - b. Diode - Cathode
  - c. Others - Pin 1
5. WARNING:  
Parts marked with the symbol  have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

# REAR PANEL



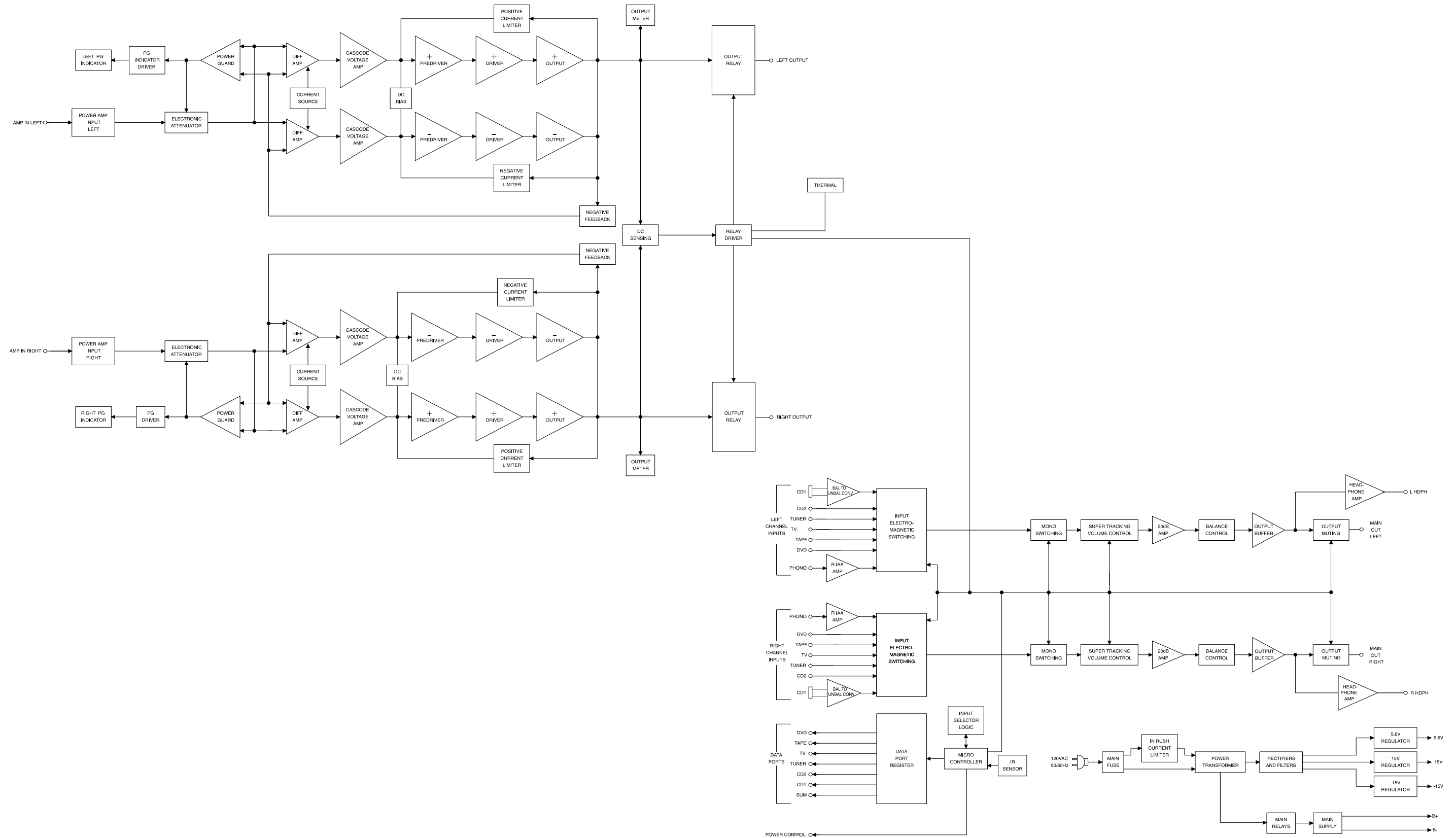
# SECTION LOCATIONS



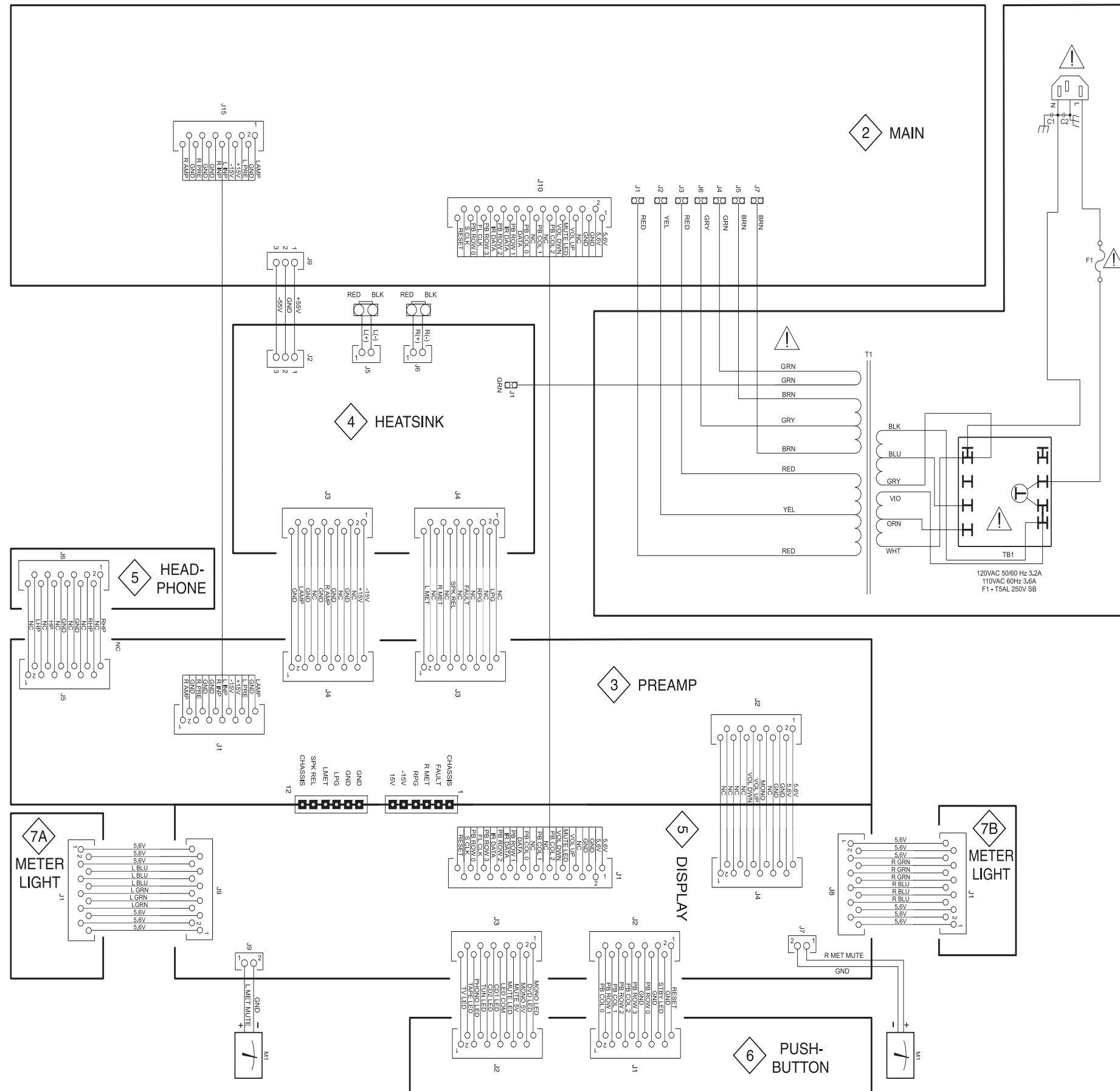
TOP VIEW WITH COVER REMOVED

**MA6300**  
INTEGRATED AMPLIFIER

*BLOCK DIAGRAM*



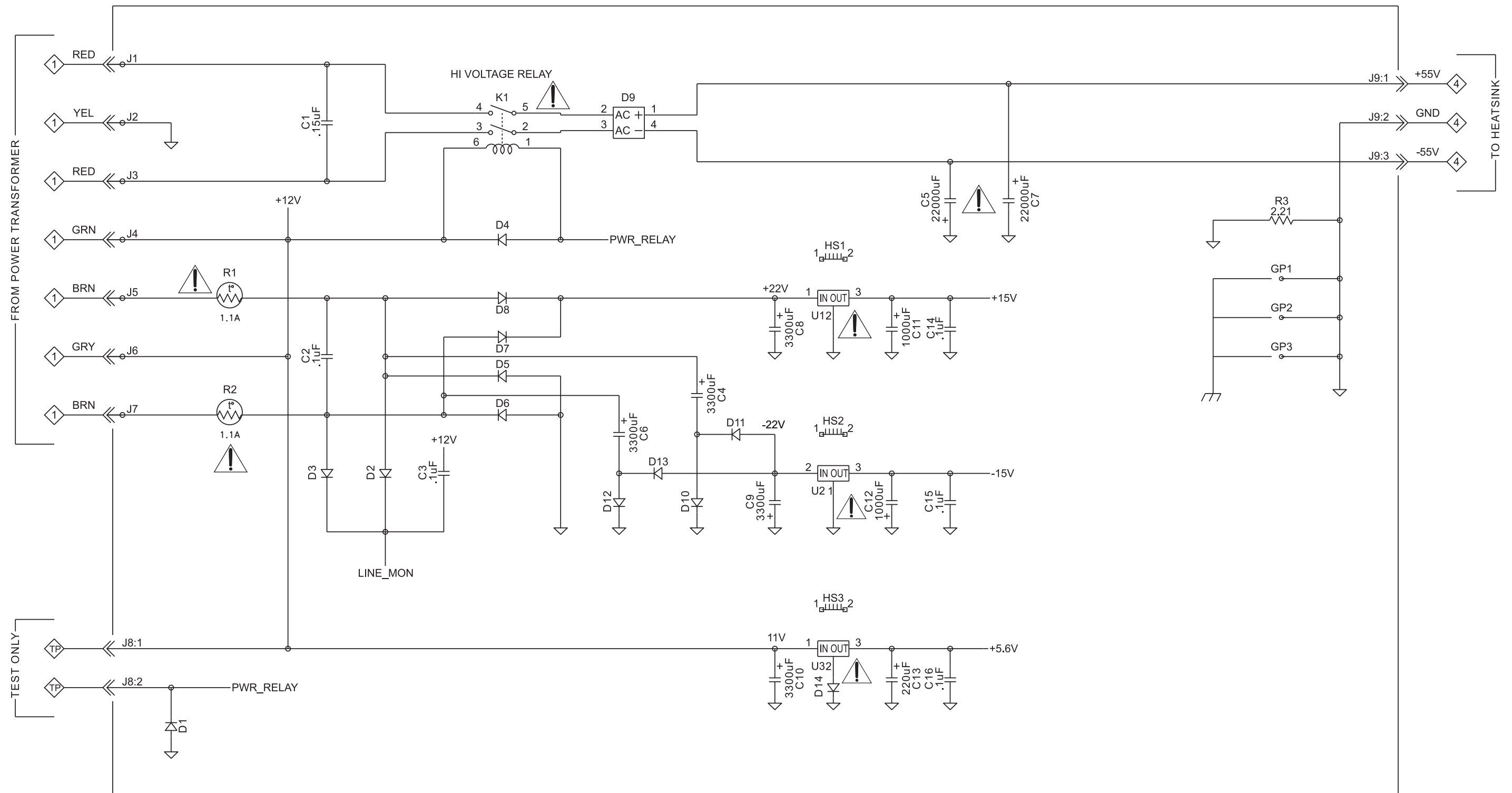
# INTERCONNECT



**WARNING** Parts marked with a triangle and exclamation mark have critical characteristics. Use only replacement parts recommended by the manufacturer.

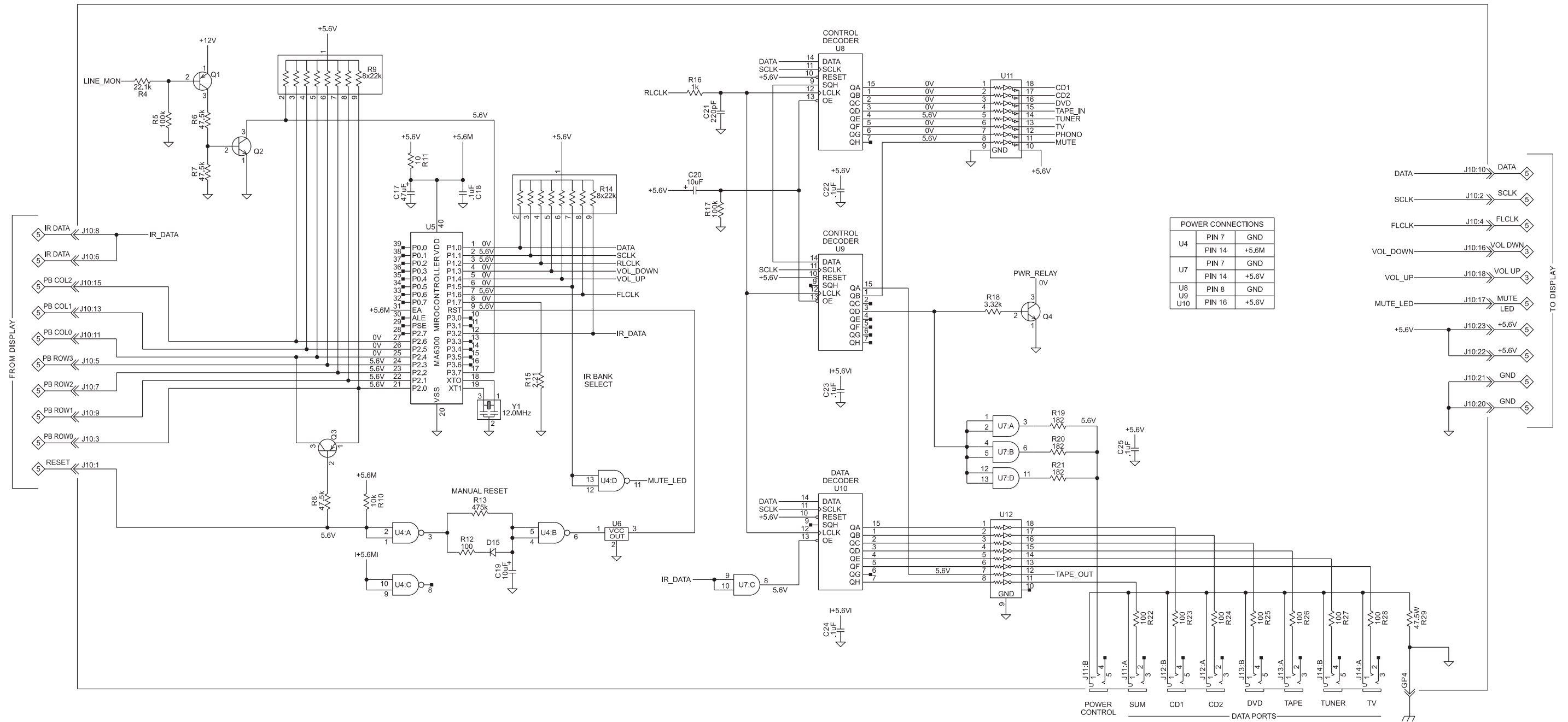
**MA6300**  
INTEGRATED AMPLIFIER

**2** MAIN 050276 SCH 1 OF 3



**!** WARNING Parts marked with a triangle and exclamation mark have critical characteristics. Use only replacement parts recommended by the manufacturer.

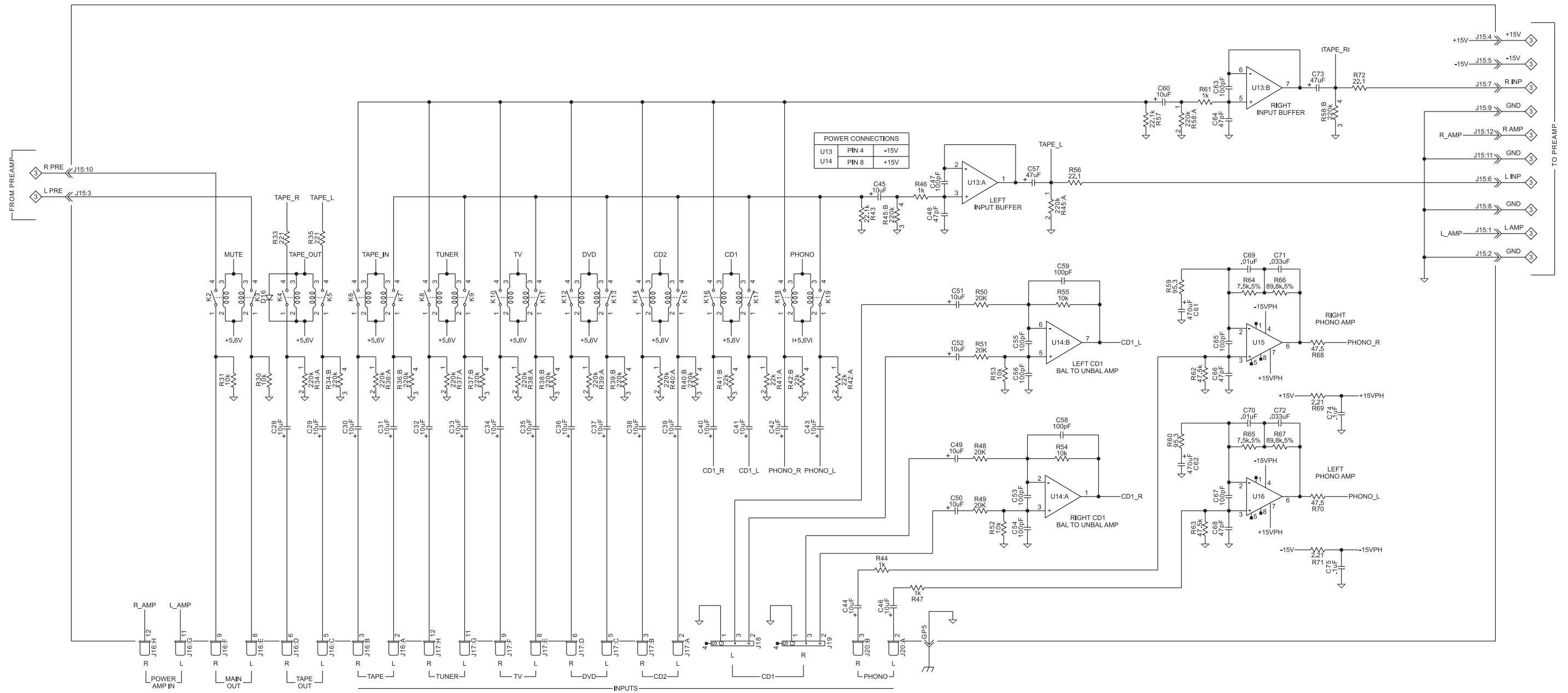
**2** MAIN 050276 SCH 2 OF 3



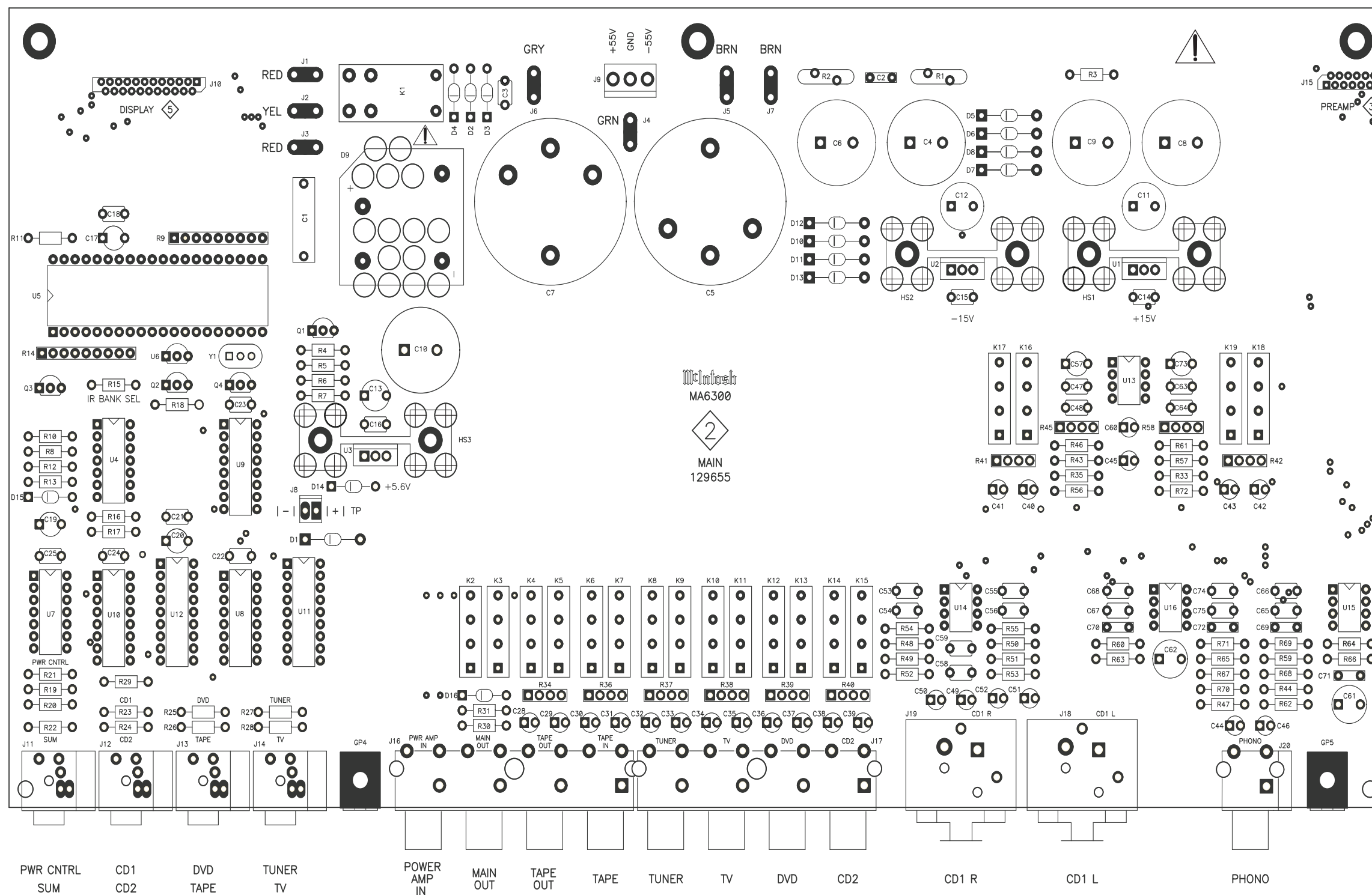
POWER CONNECTIONS

U4	PIN 7	GND
	PIN 14	+5.6M
U7	PIN 7	GND
	PIN 14	+5.6V
U8	PIN 8	GND
U9		
U10	PIN 16	+5.6V





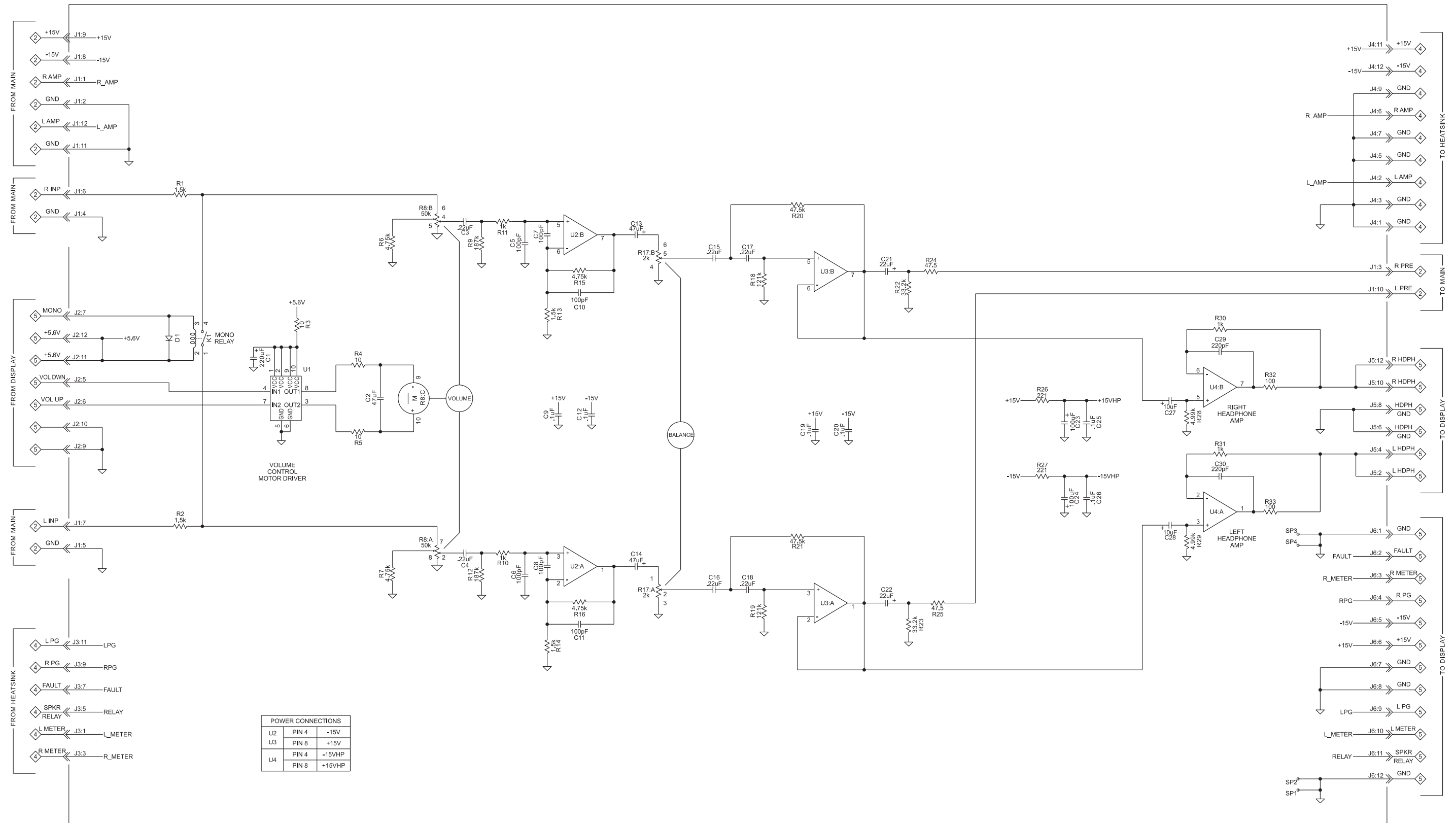
# 2 MAIN 050276 PCB



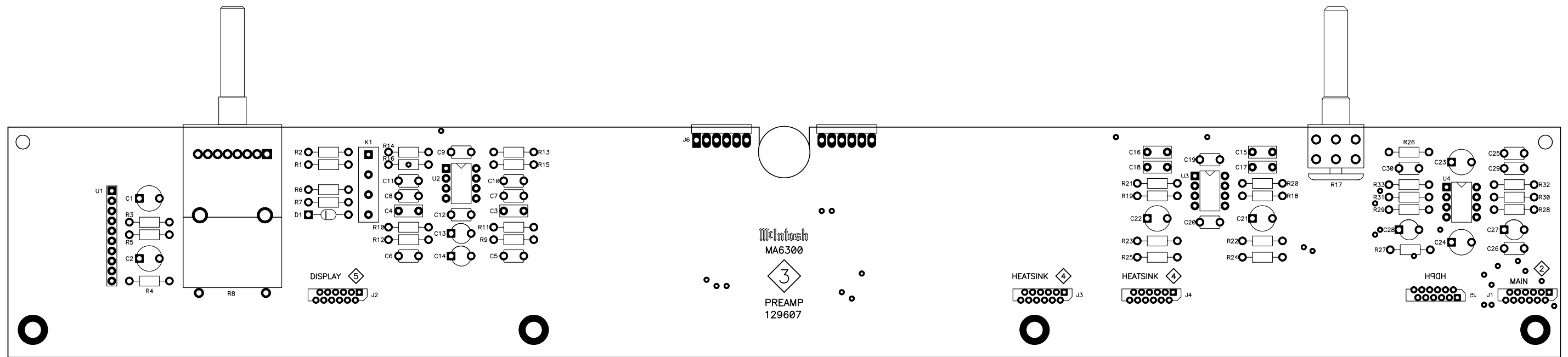
**!** WARNING Parts marked with a triangle and exclamation mark have critical characteristics. Use only replacement parts recommended by the manufacturer.

**MA6300**  
INTEGRATED AMPLIFIER

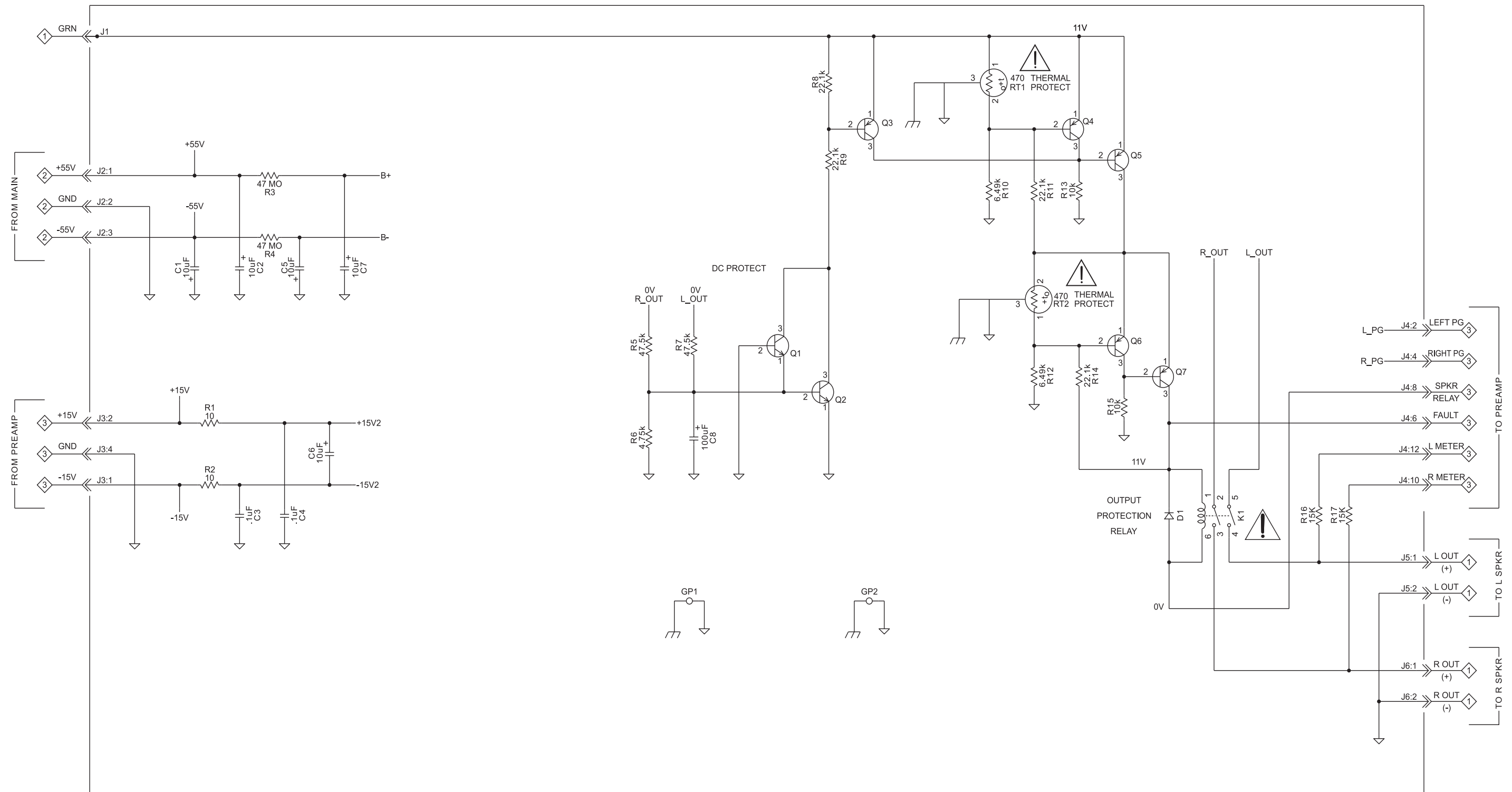
**3** *PREAMP 050279 SCH*



**3** *PREAMP* 050279 PCB

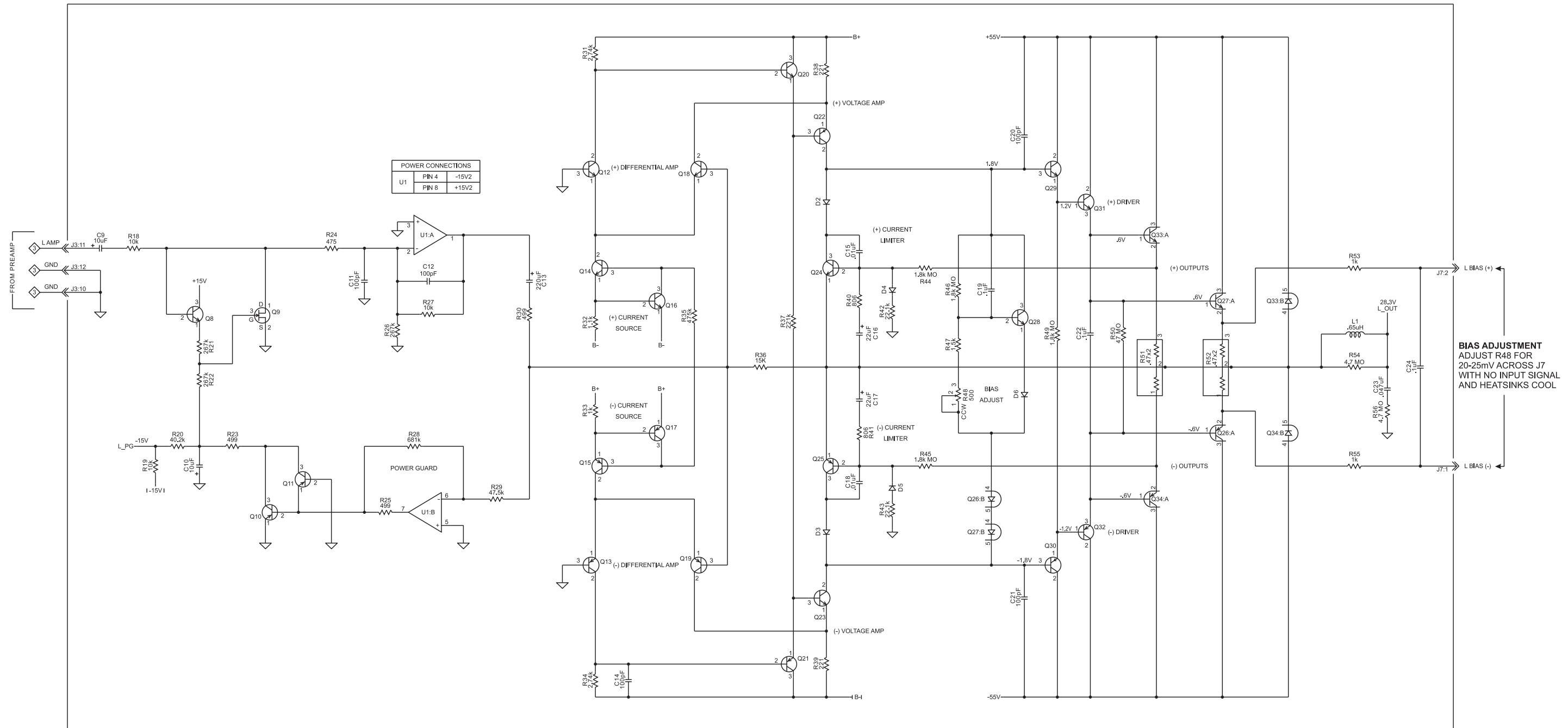


4 HEATSINK 050280 SCH 1 OF 3



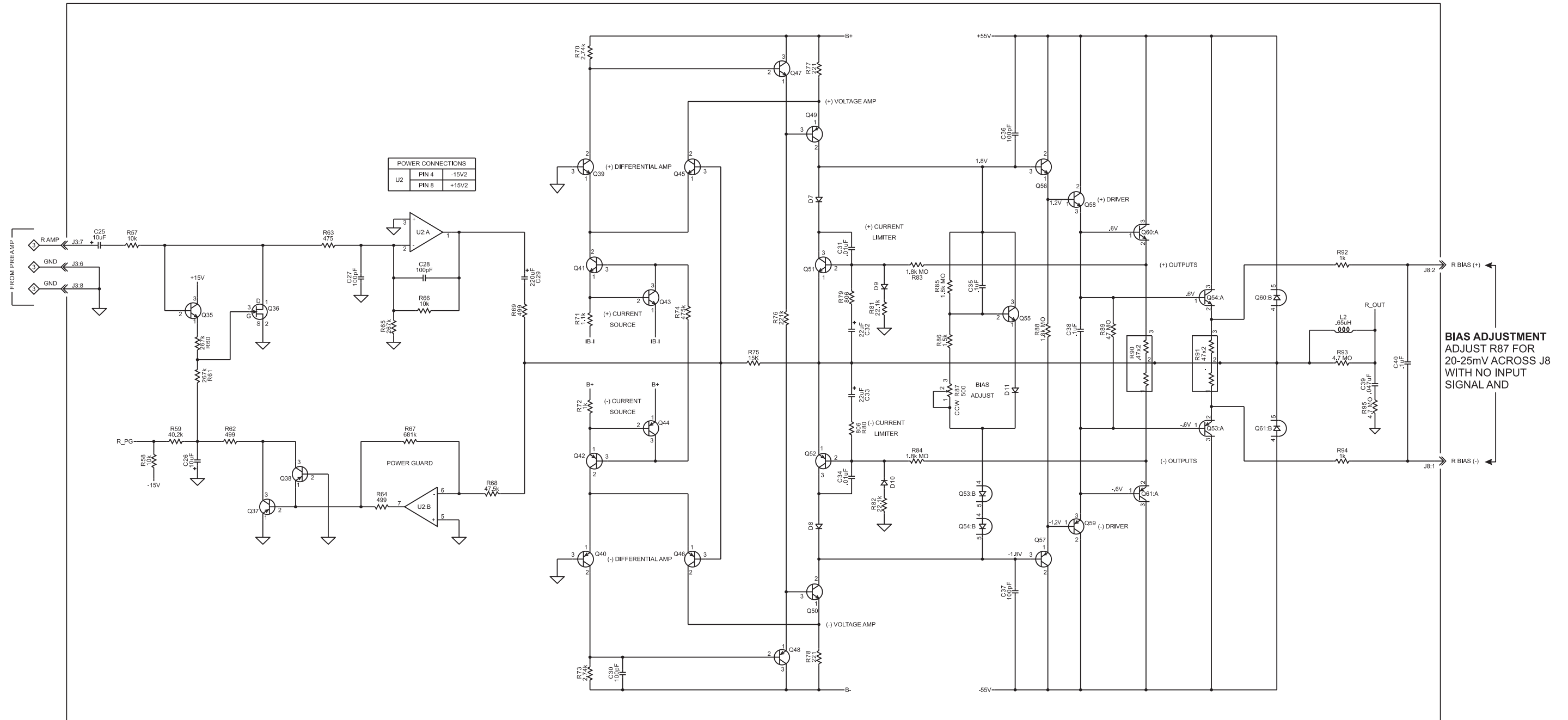
**!** WARNING Parts marked with a triangle and exclamation mark have critical characteristics. Use only replacement parts recommended by the manufacturer.

# 4 HEATSINK 050280 SCH 2 OF 3

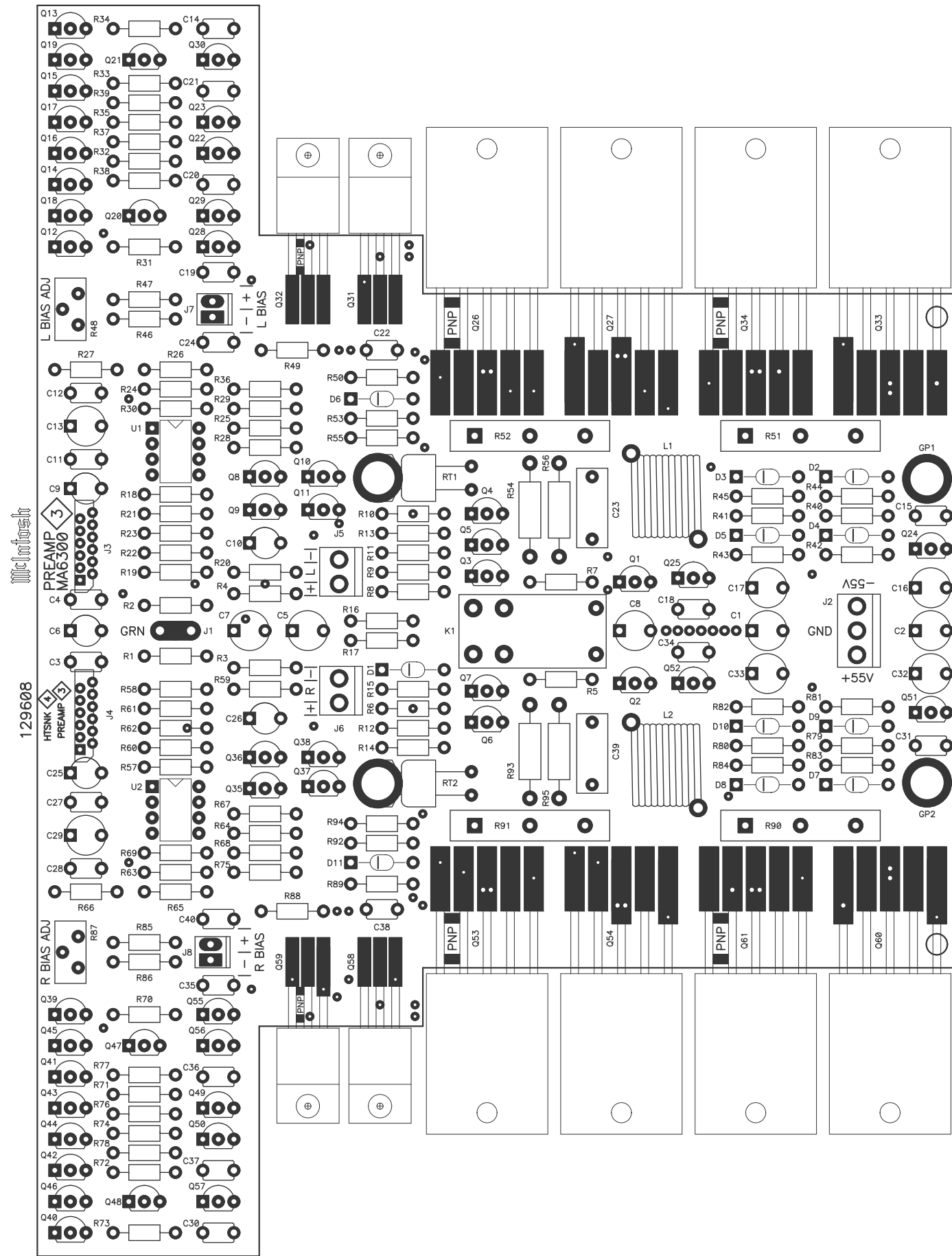


**4** HEATSINK 050280 SCH 3 OF 3

**MA6300**  
INTEGRATED AMPLIFIER



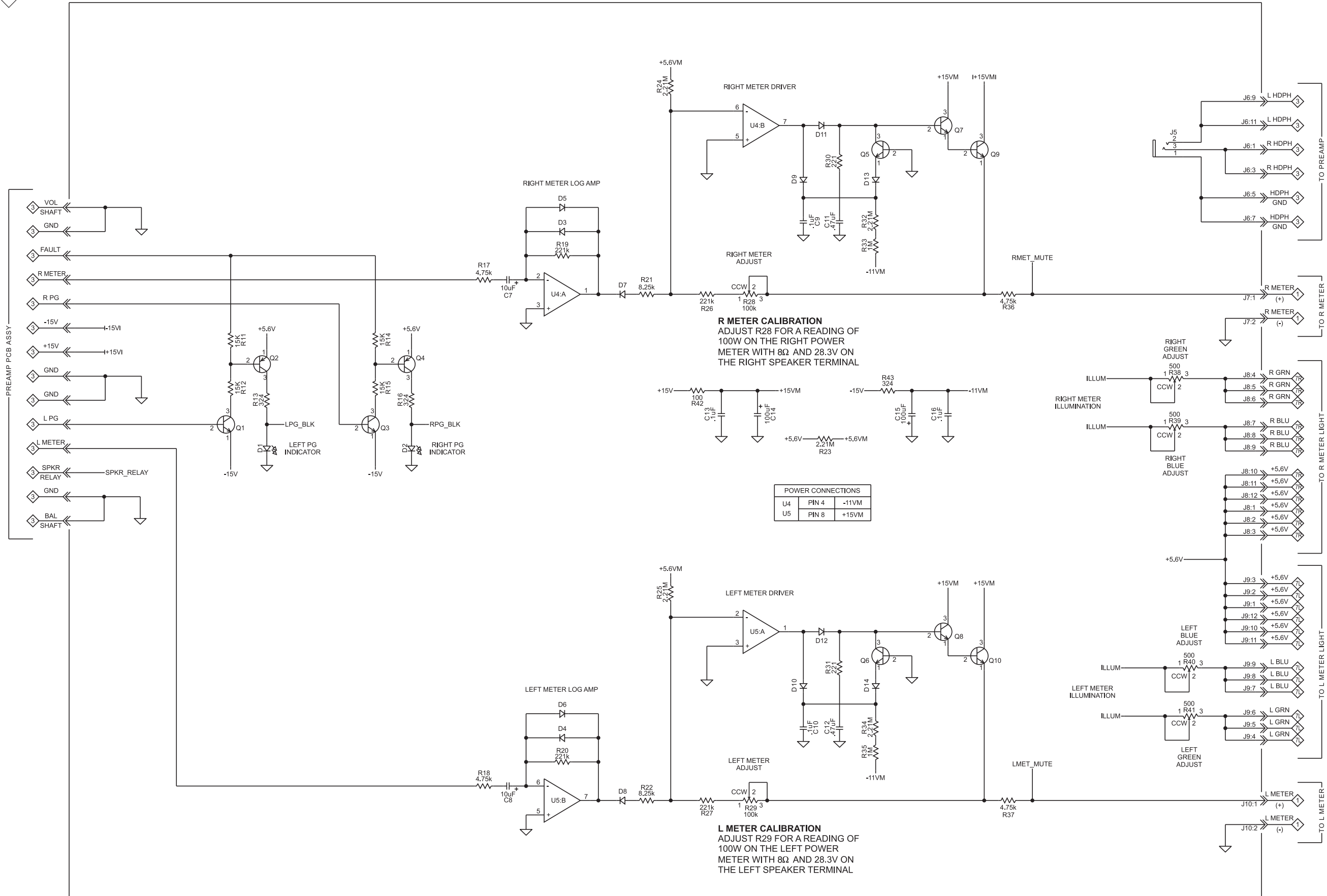
**4** HEATSINK 050280 PCB



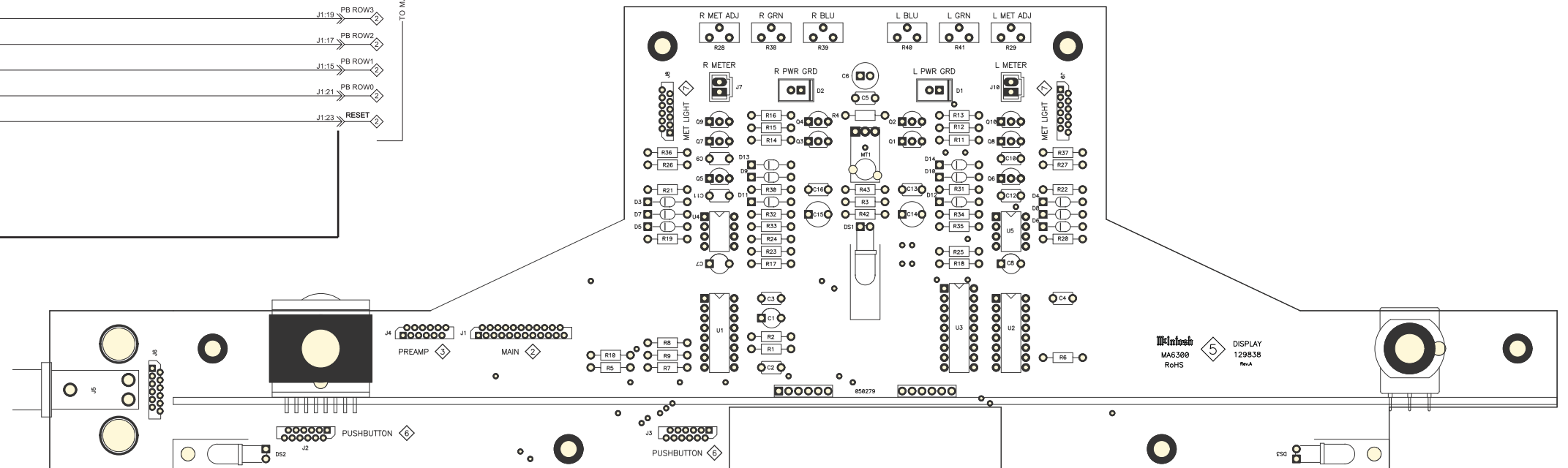
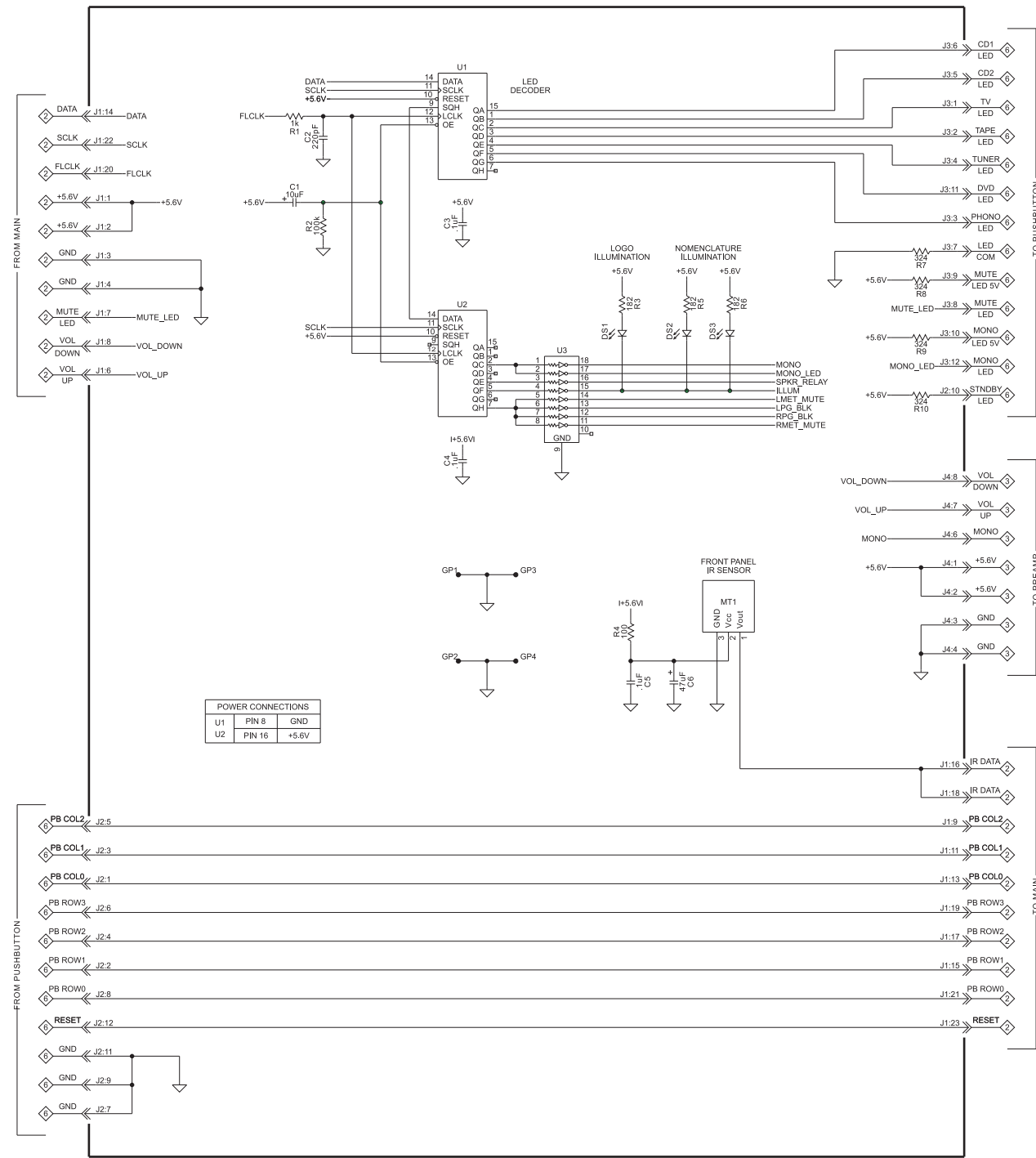


**MA6300**  
INTEGRATED AMPLIFIER

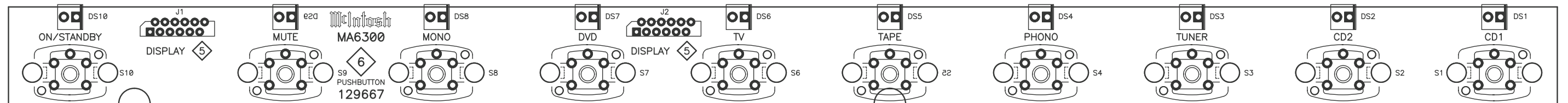
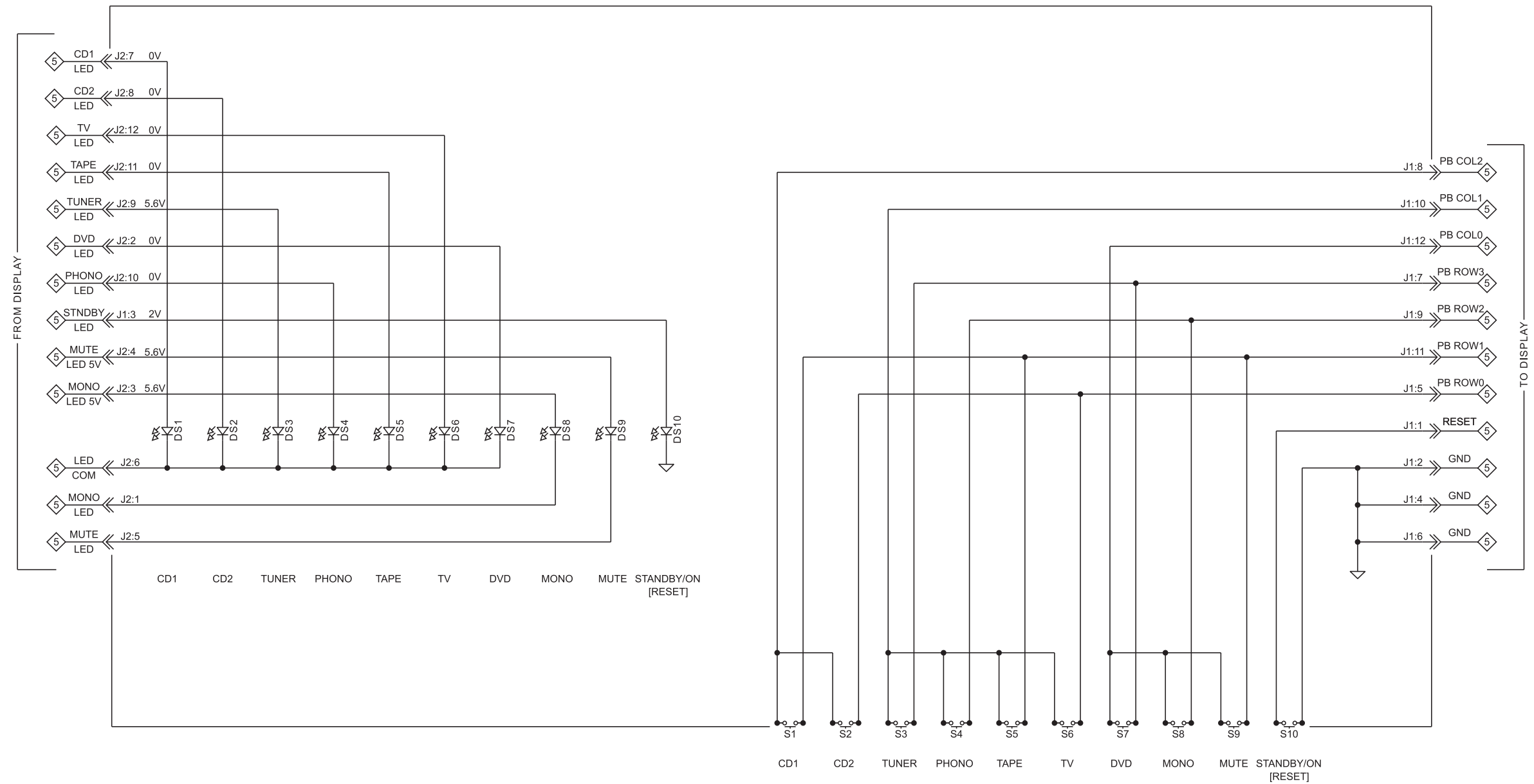
**5** *DISPLAY 050277 SCH 1 of 2*



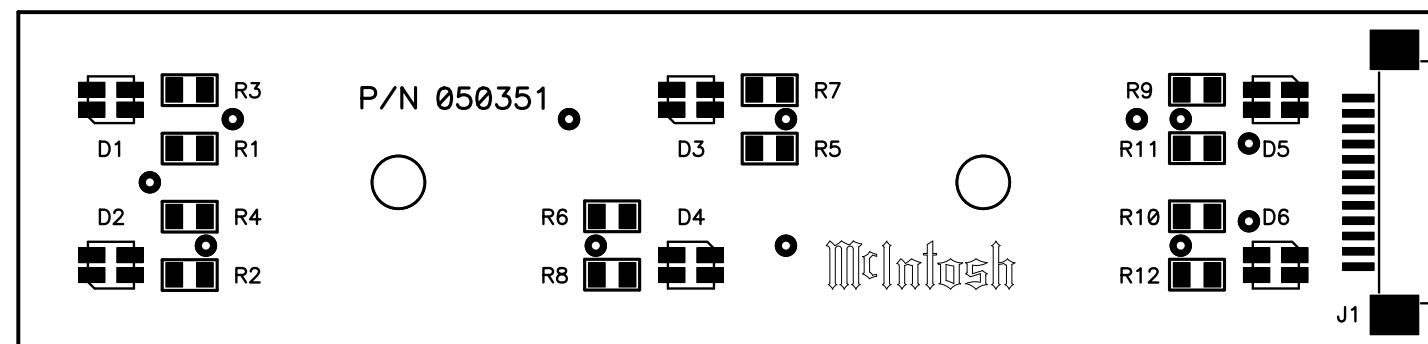
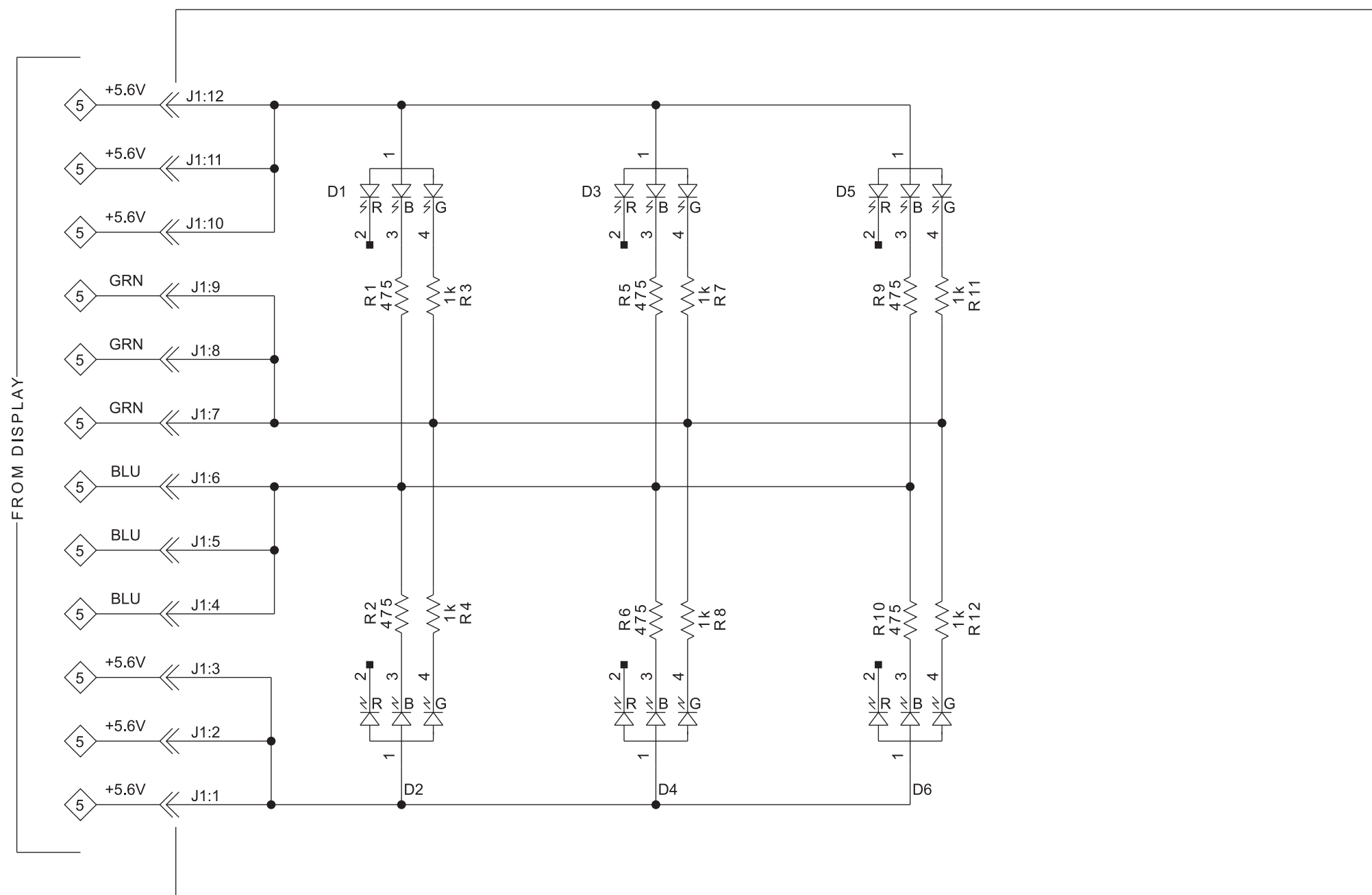
# 5 DISPLAY 050277 SCH 2 of 2 and PCB



**6** *PUSH BUTTON* 050278 SCH and PCB



**7** *METER 050351 SCH and PCB*



## PARTS LIST

## ◆ MAIN PCB 050276

Ref No.	Description	Part No.	Ref No.	Description	Part No.
C1	CAP POLYPROP 0.15UF 10% 250VDC	064363	C63	CAP MONO 100PF 100V 10% NPO	061341
C2	CAP MPF 0.1UF 5% 63VDC	064325	C64	CAP MONO 47PF 200V 10% NPO	061340
C3	CAP MONO .1UF 50V 20% Z5U	061346	C65	CAP MONO 100PF 100V 10% NPO	061341
C4	CAP ELECT 3300UF 35V	066509	C66	CAP MONO 47PF 200V 10% NPO	061340
C5	CAP ELECT 22000UF 63V	066557	C67	CAP MONO 100PF 100V 10% NPO	061341
C6	CAP ELECT 3300UF 35V	066509	C68	CAP MONO 47PF 200V 10% NPO	061340
C7	CAP ELECT 22000UF 63V	066557	C69	CAP MPF 0.01UF 5% 63VDC	064312
C8	CAP ELECT 3300UF 35V	066509	C70	CAP MPF 0.01UF 5% 63VDC	064312
C9	CAP ELECT 3300UF 35V	066509	C71	CAP MPF 0.033UF 5% 63VDC	064318
C10	CAP ELECT 3300UF 35V	066509	C72	CAP MPF 0.033UF 5% 63VDC	064318
C11	CAP ELECT 1000UF 25V	066513	C73	CAP ELECT 47UF 35V	066446
C12	CAP ELECT 1000UF 25V	066513	C74	CAP MONO .1UF 50V 20% Z5U	061346
C13	CAP ELECT 220UF 25V	066507	C75	CAP MONO .1UF 50V 20% Z5U	061346
C14	CAP MONO .1UF 50V 20% Z5U	061346	D1	DIODE RECTIFIER	070175
C15	CAP MONO .1UF 50V 20% Z5U	061346	D2	DIODE SILICON	070174
C16	CAP MONO .1UF 50V 20% Z5U	061346	D3	DIODE SILICON	070174
C17	CAP ELECT 47UF 35V	066446	D4	DIODE SILICON	070174
C18	CAP MONO .1UF 50V 20% Z5U	061346	D5	DIODE SIL 400 PIV @ 1.5A	070031
C19	CAP ELECT 10UF 50V	066445	D6	DIODE SIL 400 PIV @ 1.5A	070031
C20	CAP ELECT 10UF 50V	066445	D7	DIODE SIL 400 PIV @ 1.5A	070031
C21	CAP MONO 220PF 200V 10% NPO	061342	D8	DIODE SIL 400 PIV @ 1.5A	070031
C22	CAP MONO .1UF 50V 20% Z5U	061346	D9	RECTIFIER BRIDGE PCB 35A 600V	070187
C23	CAP MONO .1UF 50V 20% Z5U	061346	D10	DIODE SIL 400 PIV @ 1.5A	070031
C24	CAP MONO .1UF 50V 20% Z5U	061346	D11	DIODE SIL 400 PIV @ 1.5A	070031
C25	CAP MONO .1UF 50V 20% Z5U	061346	D12	DIODE SIL 400 PIV @ 1.5A	070031
C28	CAP ELECT 10UF 16V	066580	D13	DIODE SIL 400 PIV @ 1.5A	070031
C29	CAP ELECT 10UF 16V	066580	D14	DIODE SILICON	070174
C30	CAP ELECT 10UF 16V	066580	D15	DIODE SILICON	070174
C31	CAP ELECT 10UF 16V	066580	D16	DIODE SILICON	070174
C32	CAP ELECT 10UF 16V	066580	GP4	BRACKET PCB CARD MOUNTING	003611
C33	CAP ELECT 10UF 16V	066580	(GP4)	RIVET 1/8X3/16 STEEL	108011
C34	CAP ELECT 10UF 16V	066580	GP5	BRACKET PCB CARD MOUNTING	003611
C35	CAP ELECT 10UF 16V	066580	(GP5)	RIVET 1/8X3/16 STEEL	108011
C36	CAP ELECT 10UF 16V	066580	HS1	HEATSINK T0220	080021
C37	CAP ELECT 10UF 16V	066580	(HS1)	SCREW MACH 4-40X1/4 PAN PH BLK	400121
C38	CAP ELECT 10UF 16V	066580	(HS1)	NUT KEP 4-40 CLR	402001
C39	CAP ELECT 10UF 16V	066580	(HS1)	INSULATOR ISOSTRATE TO 220	084133
C40	CAP ELECT 10UF 16V	066580	HS2	HEATSINK T0220	080021
C41	CAP ELECT 10UF 16V	066580	(HS2)	SCREW MACH 4-40X1/4 PAN PH BLK	400121
C42	CAP ELECT 10UF 16V	066580	(HS2)	NUT KEP 4-40 CLR	402001
C43	CAP ELECT 10UF 16V	066580	(HS2)	INSULATOR ISOSTRATE TO 220	084133
C44	CAP ELECT 10UF 16V	066580	HS3	HEATSINK T0220	080021
C45	CAP ELECT 10UF 16V	066580	(HS3)	SCREW MACH 4-40X1/4 PAN PH BLK	400121
C46	CAP ELECT 10UF 16V	066580	(HS3)	NUT KEP 4-40 CLR	402001
C47	CAP MONO 100PF 100V 10% NPO	061341	(HS3)	INSULATOR ISOSTRATE TO 220	084133
C48	CAP MONO 47PF 200V 10% NPO	061340	J1	BLADE FASTON W/FEET	117708
C49	CAP ELECT 10UF 16V	066580	J2	BLADE FASTON W/FEET	117708
C50	CAP ELECT 10UF 16V	066580	J3	BLADE FASTON W/FEET	117708
C51	CAP ELECT 10UF 16V	066580	J4	BLADE FASTON W/FEET	117708
C52	CAP ELECT 10UF 16V	066580	J5	BLADE FASTON W/FEET	117708
C53	CAP MONO 100PF 100V 10% NPO	061341	J6	BLADE FASTON W/FEET	117708
C54	CAP MONO 100PF 100V 10% NPO	061341	J7	BLADE FASTON W/FEET	117708
C55	CAP MONO 100PF 100V 10% NPO	061341	J8	CONN 2 PIN MALE	117213
C56	CAP MONO 100PF 100V 10% NPO	061341	J9	CONN 3 POS MALE LARGE FRCTN LK	117293
C57	CAP ELECT 47UF 35V	066446	J10	CONN 23 PIN FFC	117906
C58	CAP MONO 100PF 100V 10% NPO	061341	J11	JACK HEADPHONE DUAL BLACK 1/8"	117549
C59	CAP MONO 100PF 100V 10% NPO	061341	J12	JACK HEADPHONE DUAL BLACK 1/8"	117549
C60	CAP ELECT 10UF 16V	066580	J13	JACK HEADPHONE DUAL BLACK 1/8"	117549
C61	CAP ELECT 470UF 16V	066508	J14	JACK HEADPHONE DUAL BLACK 1/8"	117549
C62	CAP ELECT 470UF 16V	066508	J15	CONN 12 PIN FFC	117907

# PARTS LIST *cont'd.*

## MAIN PCB 050276 (Cont'd.)

Ref No.	Description	Part No.	Ref No.	Description	Part No.
J16	JACK RCA 4X2 WHT/RED 14MM	117791	R31	RES MF 10K 1% 1/4W	144504
J17	JACK RCA 4X2 WHT/RED 14MM	117791	R33	RES MF 221 OHM 1% 1/4W	144559
J18	CONN XLR FEM HORIZ PCB LATCH	117814	R34	RES NETWORK 2X220K ISO	144678
J19	CONN XLR FEM HORIZ PCB LATCH	117814	R35	RES MF 221 OHM 1% 1/4W	144559
J20	JACK RCA 1X2 WHT/RED 14MM	117788	R36	RES NETWORK 2X220K ISO	144678
K1	RELAY 12VDC 5A 250VAC TV-4	087077	R37	RES NETWORK 2X220K ISO	144678
K2	RELAY REED SPST-NO 5V 1.2A	087078	R38	RES NETWORK 2X220K ISO	144678
K3	RELAY REED SPST-NO 5V 1.2A	087078	R39	RES NETWORK 2X220K ISO	144678
K4	RELAY REED SPST-NO 5V 1.2A	087078	R40	RES NETWORK 2X220K ISO	144678
K5	RELAY REED SPST-NO 5V 1.2A	087078	R41	RES NET 2 X 22K ISOLATED	144689
K6	RELAY REED SPST-NO 5V 1.2A	087078	R42	RES NET 2 X 22K ISOLATED	144689
K7	RELAY REED SPST-NO 5V 1.2A	087078	R43	RES MF 22.1K OHM 1% 1/4W	144564
K8	RELAY REED SPST-NO 5V 1.2A	087078	R44	RES MF 1K 1% 1/4W	144513
K9	RELAY REED SPST-NO 5V 1.2A	087078	R45	RES NETWORK 2X220K ISO	144678
K10	RELAY REED SPST-NO 5V 1.2A	087078	R46	RES MF 1K 1% 1/4W	144513
K11	RELAY REED SPST-NO 5V 1.2A	087078	R47	RES MF 1K 1% 1/4W	144513
K12	RELAY REED SPST-NO 5V 1.2A	087078	R48	RES MF 20K 1% 1/4W	144524
K13	RELAY REED SPST-NO 5V 1.2A	087078	R49	RES MF 20K 1% 1/4W	144524
K14	RELAY REED SPST-NO 5V 1.2A	087078	R50	RES MF 20K 1% 1/4W	144524
K15	RELAY REED SPST-NO 5V 1.2A	087078	R51	RES MF 20K 1% 1/4W	144524
K16	RELAY REED SPST-NO 5V 1.2A	087078	R52	RES MF 10K 1% 1/4W	144504
K17	RELAY REED SPST-NO 5V 1.2A	087078	R53	RES MF 10K 1% 1/4W	144504
K18	RELAY REED SPST-NO 5V 1.2A	087078	R54	RES MF 10K 1% 1/4W	144504
K19	RELAY REED SPST-NO 5V 1.2A	087078	R55	RES MF 10K 1% 1/4W	144504
PCB1	PC BD MAIN	129655	R56	RES MF 22.1 OHM 1% 1/4W	144554
Q1	TRANSISTOR PNP SILICON	132304	R57	RES MF 22.1K OHM 1% 1/4W	144564
Q2	TRANSISTOR NPN SILICON	132317	R58	RES NETWORK 2X220K ISO	144678
Q3	TRANSISTOR PNP SILICON	132304	R59	RES MF 95.3 OHM 1% 1/4W	144572
Q4	TRANSISTOR NPN SILICON	132317	R60	RES MF 95.3 OHM 1% 1/4W	144572
R1	RES POLYSWITCH RXE110	144671	R61	RES MF 1K 1% 1/4W	144513
R2	RES POLYSWITCH RXE110	144671	R62	RES MF 47.5K 1% 1/4W	144526
R3	RES MF 2.21 OHM 1% 1/4W	144607	R63	RES MF 47.5K 1% 1/4W	144526
R4	RES MF 22.1K OHM 1% 1/4W	144564	R64	RES MF 7.5K OHM 0.5% 1/4W	144605
R5	RES MF 100K 1% 1/4W	144528	R65	RES MF 7.5K OHM 0.5% 1/4W	144605
R6	RES MF 47.5K 1% 1/4W	144526	R66	RES MF 89.8K 0.5% 1/4W	144606
R7	RES MF 47.5K 1% 1/4W	144526	R67	RES MF 89.8K 0.5% 1/4W	144606
R8	RES MF 47.5K 1% 1/4W	144526	R68	RES MF 47.5 OHM 1% 1/4W	144642
R9	RES NETWORK 9X-1-223	144498	R69	RES MF 2.21 OHM 1% 1/4W	144607
R10	RES MF 10K 1% 1/4W	144504	R70	RES MF 47.5 OHM 1% 1/4W	144642
R11	RES MF 10 OHM 1% 1/4W	144553	R71	RES MF 2.21 OHM 1% 1/4W	144607
R12	RES MF 100 OHM 1% 1/4W	144568	R72	RES MF 22.1 OHM 1% 1/4W	144554
R13	RES MF 475K 1% 1/4W	144604	U1	IC REGULATOR 15V	133589
R14	RES NETWORK 9X-1-223	144498	U2	IC REGULATOR -15V	133588
R15	RES MF 2.21 OHM 1% 1/4W	144607	U3	IC REGULATOR 5V 1.5A LOW DROP	133610
R16	RES MF 1K 1% 1/4W	144513	U4	IC NAND 2 INPUT X 4	133575
R17	RES MF 100K 1% 1/4W	144528	U5	IC PROGRAMMED V1.00 MA6300	133563
R18	RES MF 3.32K 1% 1/4W	144518	(U5)	SOCKET IC 40-PIN	178133
R19	RES MF 182 OHM 1% 1/4W	144579	U6	IC MICRO RESET POS	133241
R20	RES MF 182 OHM 1% 1/4W	144579	U7	IC AND 2 INPUT X 4	133577
R21	RES MF 182 OHM 1% 1/4W	144579	U8	IC SHFT REG SER-PAR	133594
R22	RES MF 100 OHM 1% 1/4W	144568	U9	IC SHFT REG SER-PAR	133594
R23	RES MF 100 OHM 1% 1/4W	144568	U10	IC SHFT REG SER-PAR	133594
R24	RES MF 100 OHM 1% 1/4W	144568	U11	IC OCTAL DAR TRNS ARRY W/DIODE	133624
R25	RES MF 100 OHM 1% 1/4W	144568	U12	IC 8 LN DRIVER ARRAY	133180
R26	RES MF 100 OHM 1% 1/4W	144568	U13	IC DUAL OPERATIONAL AMPLIFIER	133578
R27	RES MF 100 OHM 1% 1/4W	144568	U14	IC DUAL OPERATIONAL AMPLIFIER	133578
R28	RES MF 100 OHM 1% 1/4W	144568	U15	IC OPERATIONAL AMP LOW NOISE	133565
R29	RES MET OX 47 OHM 5% 1/2W	137102	U16	IC OPERATIONAL AMP LOW NOISE	133565
R30	RES MF 10K 1% 1/4W	144504	Y1	CERAMIC RESONATOR 12MHZ	180059



PARTS LIST *cont'd.*

## ③ PREAMP PCB 050279

Ref No.	Description	Part No.
C1	CAP ELECT 220UF 25V	066507
C2	CAP ELECT 47UF 25V 20% BP	066556
C3	CAP MPF 0.22UF 5% 63VDC	064329
C4	CAP MPF 0.22UF 5% 63VDC	064329
C5	CAP MONO 100PF 100V 10% NPO	061341
C6	CAP MONO 100PF 100V 10% NPO	061341
C7	CAP MONO 100PF 100V 10% NPO	061341
C8	CAP MONO 100PF 100V 10% NPO	061341
C9	CAP MONO .1UF 50V 20% Z5U	061346
C10	CAP MONO 100PF 100V 10% NPO	061341
C11	CAP MONO 100PF 100V 10% NPO	061341
C12	CAP MONO .1UF 50V 20% Z5U	061346
C13	CAP ELECT 47UF 35V	066446
C14	CAP ELECT 47UF 35V	066446
C15	CAP MPF 0.22UF 5% 63VDC	064329
C16	CAP MPF 0.22UF 5% 63VDC	064329
C17	CAP MPF 0.22UF 5% 63VDC	064329
C18	CAP MPF 0.22UF 5% 63VDC	064329
C19	CAP MONO .1UF 50V 20% Z5U	061346
C20	CAP MONO .1UF 50V 20% Z5U	061346
C21	CAP ELECT 22UF 100V	066574
C22	CAP ELECT 22UF 100V	066574
C23	CAP ELECT 100UF 25V	066447
C24	CAP ELECT 100UF 25V	066447
C25	CAP MONO .1UF 50V 20% Z5U	061346
C29	CAP MONO 220PF 200V 10%	061342
C30	CAP MONO 220PF 200V 10%	061342
C26	CAP MONO .1UF 50V 20% Z5U	061346
C27	CAP ELECT 10UF 50V	066445
C28	CAP ELECT 10UF 50V	066445
D1	DIODE SILICON	070174
J1	CONN 12 PIN FFC	117720
J2	CONN 12 PIN FFC	117720
J3	CONN 12 PIN FFC	117720
J4	CONN 12 PIN FFC	117720
J5	CONN 12 PIN FFC	117720
J6	CONN 12 POS MALE RT ANGLE	117816
K1	RELAY REED SPST-NO 5V 1.2A	087078
PCB1	PC BD PREAMP	129607
R1	RES MF 1.5K 1% 1/4W	144539
R2	RES MF 1.5K 1% 1/4W	144539
R3	RES MF 10 OHM 1% 1/4W	144553
R4	RES MF 10 OHM 1% 1/4W	144553
R5	RES MF 10 OHM 1% 1/4W	144553
R6	RES MF 4.75K 1% 1/4W	144520
R7	RES MF 4.75K 1% 1/4W	144520
R8	POT 50KAX2	134490
R9	RES MF 187K 1% 1/4W	144621
R10	RES MF 1K 1% 1/4W	144513
R11	RES MF 1K 1% 1/4W	144513
R12	RES MF 187K 1% 1/4W	144621
R13	RES MF 1.5K 1% 1/4W	144539
R14	RES MF 1.5K 1% 1/4W	144539
R15	RES MF 4.75K 1% 1/4W	144520
R16	RES MF 4.75K 1% 1/4W	144520
R17	POT BALANCE 2KOHM	134464
R18	RES MF 121K 1% 1/4W	144626
R19	RES MF 121K 1% 1/4W	144626
R20	RES MF 47.5K 1% 1/4W	144526
R21	RES MF 47.5K 1% 1/4W	144526

Ref No.	Description	Part No.
R22	RES MF 33.2K 1% 1/4W	144694
R23	RES MF 33.2K 1% 1/4W	144694
R24	RES MF 47.5 OHM 1% 1/4W	144642
R25	RES MF 47.5 OHM 1% 1/4W	144642
R26	RES MF 221 OHM 1% 1/4W	144559
R27	RES MF 221 OHM 1% 1/4W	144559
R28	RES MF 4.99K 1% 1/4W	144521
R29	RES MF 4.99K 1% 1/4W	144521
R30	RES MF 1K 1% 1/4W	144513
R31	RES MF 1K 1% 1/4W	144513
R32	RES MF 100 OHM 1% 1/4W	144568
R33	RES MF 100 OHM 1% 1/4W	144568
U1	IC DC MOTOR DRIVER	133191
U2	IC DUAL OPERATIONAL AMPLIFIER	133260
U3	IC DUAL OPERATIONAL AMPLIFIER	133260
U4	IC DUAL OPERATIONAL AMPLIFIER	133260

## ④ HEATSINK PCB 050280

C1	CAP ELECT 10UF 100VDC	066462
C2	CAP ELECT 10UF 100VDC	066462
C3	CAP MONO .1UF 50V 20% Z5U	061346
C4	CAP MONO .1UF 50V 20% Z5U	061346
C5	CAP ELECT 10UF 100VDC	066462
C6	CAP ELECT 10UF 50V	066445
C7	CAP ELECT 10UF 100VDC	066462
C8	CAP ELECT 100UF 25V	066573
C9	CAP ELECT 10UF 50V	066445
C10	CAP ELECT 10UF 50V	066445
C11	CAP MONO 100PF 100V 10% NPO	061341
C12	CAP MONO 100PF 100V 10% NPO	061341
C13	CAP ELECT 220UF 25V	066507
C14	CAP MONO 100PF 100V 10% NPO	061341
C15	CAP MONO .01UF 50V 20% X7R	061345
C16	CAP ELECT 22UF 100V	066574
C17	CAP ELECT 22UF 100V	066574
C18	CAP MONO .01UF 50V 20% X7R	061345
C19	CAP MONO .1UF 50V 20% Z5U	061346
C20	CAP MONO 100PF 100V 10% NPO	061341
C21	CAP MONO 100PF 100V 10% NPO	061341
C22	CAP MONO .1UF 50V 20% Z5U	061346
C23	CAP POLYPROP .047UF 10% 250VDC	064364
C24	CAP MONO .1UF 50V 20% Z5U	061346
C25	CAP ELECT 10UF 50V	066445
C26	CAP ELECT 10UF 50V	066445
C27	CAP MONO 100PF 100V 10% NPO	061341
C28	CAP MONO 100PF 100V 10% NPO	061341
C29	CAP ELECT 220UF 25V	066507
C30	CAP MONO 100PF 100V 10% NPO	061341
C31	CAP MONO .01UF 50V 20% X7R	061345
C32	CAP ELECT 22UF 100V	066574
C33	CAP ELECT 22UF 100V	066574
C34	CAP MONO .01UF 50V 20% X7R	061345
C35	CAP MONO .1UF 50V 20% Z5U	061346
C36	CAP MONO 100PF 100V 10% NPO	061341
C37	CAP MONO 100PF 100V 10% NPO	061341
C38	CAP MONO .1UF 50V 20% Z5U	061346
C39	CAP POLYPROP .047UF 10% 250VDC	064364
C40	CAP MONO .1UF 50V 20% Z5U	061346

# PARTS LIST *cont'd.*

## HEATSINK PCB 050280 (Cont'd.)

Ref No.	Description	Part No.	Ref No.	Description	Part No.
D1	DIODE SILICON	070174	Q46	TRANSISTOR PNP 120V	132255
D2	DIODE SILICON	070174	Q47	TRANSISTOR NPN 2K/REEL	132317
D3	DIODE SILICON	070174	Q48	TRANSISTOR PNP	132304
D4	DIODE SILICON	070174	Q49	TRANSISTOR PNP	132321
D5	DIODE SILICON	070174	Q50	TRANSISTOR NPN	132322
D6	DIODE SILICON	070174	Q51	TRANSISTOR NPN 2K/REEL	132317
D7	DIODE SILICON	070174	Q52	TRANSISTOR PNP	132304
D8	DIODE SILICON	070174	Q55	TRANSISTOR NPN 2K/REEL	132317
D9	DIODE SILICON	070174	Q56	TRANSISTOR NPN	132322
D10	DIODE SILICON	070174	Q57	TRANSISTOR PNP	132321
D11	DIODE SILICON	070174	R1	RES FP 10 OHM 5% 1/4W	137105
GP1	STANDOFF 6-32 X 1/4 MOUNT PCB	112130	R2	RES FP 10 OHM 5% 1/4W	137105
GP2	STANDOFF 6-32 X 1/4 MOUNT PCB	112130	R3	RES MET OX 47 OHM 5% 1/2W	137102
J7 J8	CONN 2 PIN MALE	117213	R4	RES MET OX 47 OHM 5% 1/2W	137102
J2	CONN 3 POS MALE LARGE FRCTN LK	117293	R6	RES MF 4.75K 1% 1/4W	144520
J5 J6	CONN HEADER 2 PIN 0.156	117404	R5	RES MF 47.5K 1% 1/4W	144526
J1	BLADE FASTON W/FEET	117708	R7	RES MF 47.5K 1% 1/4W	144526
J3 J4	CONN 12 PIN FFC	117720	R8	RES MF 22.1K 1% 1/4W	144564
K1	RELAY 12VDC 5A 250VAC TV-4	087077	R9	RES MF 22.1K 1% 1/4W	144564
L1 L2	CHOKE 0.65UH OUTPUT	122297	R10	RES MF 6.49K 1% 1/4W	144617
PCB1	PD BD HEATSINK	129608	R11	RES MF 22.1K 1% 1/4W	144564
Q1	TRANSISTOR NPN 2K/REEL	132317	R12	RES MF 6.49K 1% 1/4W	144617
Q2	TRANSISTOR NPN 2K/REEL	132317	R13	RES MF 10K 1% 1/4W	144504
Q3	TRANSISTOR PNP	132304	R14	RES MF 22.1K 1% 1/4W	144564
Q4	TRANSISTOR PNP	132304	R15	RES MF 10K 1% 1/4W	144504
Q5	TRANSISTOR PNP	132304	R16	RES MF 15K 1% 1/4W	144623
Q6	TRANSISTOR PNP	132304	R17	RES MF 15K 1% 1/4W	144623
Q7	TRANSISTOR PNP	132304	R18	RES MF 10K 1% 1/4W	144504
Q8	TRANSISTOR NPN 2K/REEL	132317	R19	RES MF 10K 1% 1/4W	144504
Q9	TRANSISTOR N JFET	132318	R20	RES MF 40.2K 1% 1/4W	144525
Q10	TRANSISTOR PNP	132304	R21	RES MF 267K 1% 1/4W	144532
Q11	TRANSISTOR PNP	132304	R22	RES MF 267K 1% 1/4W	144532
Q12	TRANSISTOR NPN	132254	R23	RES MF 499 OHM 1% 1/4W	144510
Q13	TRANSISTOR PNP 120V	132255	R24	RES MF 475 OHM 1% 1/4W	144509
Q14	TRANSISTOR NPN	132254	R25	RES MF 499 OHM 1% 1/4W	144510
Q15	TRANSISTOR PNP 120V	132255	R26	RES MF 267K 1% 1/4W	144532
Q16	TRANSISTOR NPN 2K/REEL	132317	R27	RES MF 10K 1% 1/4W	144504
Q17	TRANSISTOR PNP	132304	R28	RES MF 681K 1% 1/4W	144643
Q18	TRANSISTOR NPN	132254	R29	RES MF 47.5K 1% 1/4W	144526
Q19	TRANSISTOR PNP 120V	132255	R30	RES MF 499 OHM 1% 1/4W	144510
Q20	TRANSISTOR NPN 2K/REEL	132317	R31	RES MF 2.74K 1% 1/4W	144587
Q21	TRANSISTOR PNP	132304	R32	RES MF 1.1K 1% 1/4W	144514
Q22	TRANSISTOR PNP	132321	R33	RES MF 1K 1% 1/4W	144513
Q23	TRANSISTOR NPN	132322	R34	RES MF 2.74K 1% 1/4W	144587
Q24	TRANSISTOR NPN 2K/REEL	132317	R35	RES MF 475K 1% 1/4W	144604
Q25	TRANSISTOR PNP	132304	R36	RES MF 15K 1% 1/4W	144623
Q28	TRANSISTOR NPN 2K/REEL	132317	R37	RES MF 221K 1% 1/4W	144629
Q29	TRANSISTOR NPN	132322	R38	RES MF 221 OHM 1% 1/4W	144559
Q30	TRANSISTOR PNP	132321	R39	RES MF 221 OHM 1% 1/4W	144559
Q35	TRANSISTOR NPN 2K/REEL	132317	R40	RES MF 806 OHM 1% 1/4W	144512
Q36	TRANSISTOR N JFET	132318	R41	RES MF 806 OHM 1% 1/4W	144512
Q37	TRANSISTOR PNP	132304	R42	RES MF 22.1K 1% 1/4W	144564
Q38	TRANSISTOR PNP	132304	R43	RES MF 22.1K 1% 1/4W	144564
Q39	TRANSISTOR NPN	132254	R44	RES MET OX 1.8K 5% 1/2W	137100
Q40	TRANSISTOR PNP 120V	132255	R45	RES MET OX 1.8K 5% 1/2W	137100
Q41	TRANSISTOR NPN	132254	R47	RES MET OX 1.8K 5% 1/2W	137100
Q42	TRANSISTOR PNP 120V	132255	R47	RES MF 1.5K 1% 1/4W	144539
Q43	TRANSISTOR NPN 2K/REEL	132317	R48	POT TRIM 500 OHM 20% HORIZ ADJ	134410
Q44	TRANSISTOR PNP	132304	R49	RES MET OX 1.8K 5% 1/2W	137100
Q45	TRANSISTOR NPN	132254	R50	RES MET OX 47 OHM 5% 1/2W	137102



PARTS LIST *cont'd.*

## HEATSINK PCB 050280 (Cont'd.)

Ref No.	Description	Part No.	Ref No.	Description	Part No.
R51	RES WW DUAL .47 OHM 5% 5W	139199	C7	CAP ELECT 10UF 50V	066445
R52	RES WW DUAL .47 OHM 5% 5W	139199	C8	CAP ELECT 10UF 50V	066445
R53	RES MF 1K 1% 1/4W	144513	C9	CAP MONO .1UF 50V 20% Z5U	061346
R54	RES MO 4.7 OHM 1W 5%	144464	C10	CAP MONO .1UF 50V 20% Z5U	061346
R55	RES MF 1K 1% 1/4W	144513	C11	CAP DISC MONO .47UF 50V	061320
R56	RES MO 4.7 OHM 1W 5%	144464	C12	CAP DISC MONO .47UF 50V	061320
R57	RES MF 10K 1% 1/4W	144504	C13	CAP MONO .1UF 50V 20% Z5U	061346
R58	RES MF 10K 1% 1/4W	144504	C14	CAP ELECT 100UF 25V	066573
R59	RES MF 40.2K 1% 1/4W	144525	C15	CAP ELECT 100UF 25V	066573
R60	RES MF 267K 1% 1/4W	144532	C16	CAP MONO .1UF 50V 20% Z5U	061346
R61	RES MF 267K 1% 1/4W	144532	D1	LED AMBER	058133
R62	RES MF 499 OHM 1% 1/4W	144510	D2	LED AMBER	058133
R63	RES MF 475 OHM 1% 1/4W	144509	D3	DIODE SILICON	070174
R64	RES MF 499 OHM 1% 1/4W	144510	D4	DIODE SILICON	070174
R65	RES MF 267K 1% 1/4W	144532	D5	DIODE SILICON	070174
R66	RES MF 10K 1% 1/4W	144504	D6	DIODE SILICON	070174
R67	RES MF 681K 1% 1/4W	144643	D7	DIODE SILICON	070174
R68	RES MF 47.5K 1% 1/4W	144526	D8	DIODE SILICON	070174
R69	RES MF 499 OHM 1% 1/4W	144510	D9	DIODE SILICON	070174
R70	RES MF 2.74K 1% 1/4W	144587	D10	DIODE SILICON	070174
R71	RES MF 1.1K 1% 1/4W	144514	D11	DIODE SILICON	070174
R72	RES MF 1K 1% 1/4W	144513	D12	DIODE SILICON	070174
R73	RES MF 2.74K 1% 1/4W	144587	D13	DIODE SILICON	070174
R74	RES MF 475K 1% 1/4W	144604	D14	DIODE SILICON	070174
R75	RES MF 15K 1% 1/4W	144623	DS1	LED GRN 5MM HI-INTENSITY	058165
R76	RES MF 221K 1% 1/4W	144629	(DS1)	SPACER LED	112108
R77	RES MF 221 OHM 1% 1/4W	144559	DS2	LED GRN 5MM HI-INTENSITY	058165
R78	RES MF 221 OHM 1% 1/4W	144559	(DS2)	SPACER LED	112108
R79	RES MF 806 OHM 1% 1/4W	144512	DS3	LED GRN 5MM HI-INTENSITY	058165
R80	RES MF 806 OHM 1% 1/4W	144512	(DS3)	SPACER LED	112108
R81	RES MF 22.1K 1% 1/4W	144564		GROMMET	078031
R82	RES MF 22.1K 1% 1/4W	144564	J1	CONN 23 PIN FFC	117715
R83	RES MET OX 1.8K 5% 1/2W	137100	J2	CONN 12 PIN FFC	117720
R84	RES MET OX 1.8K 5% 1/2W	137100	J3	CONN 12 PIN FFC	117720
R85	RES MET OX 1.8K 5% 1/2W	137100	J4	CONN 12 PIN FFC	117720
R86	RES MF 1.5K 1% 1/4W	144539	J5	"HEADPHONE JACK 1/4"'"'"	117881
R87	POT TRIM 500 OHM 20% HORIZ ADJ	134410	J6	CONN 12 PIN FFC	117720
R88	RES MET OX 1.8K 5% 1/2W	137100	J7	HEADER 2 PIN LATCHING	117766
R89	RES MET OX 47 OHM 5% 1/2W	137102	J8	CONN 12 PIN FFC	117720
R90	RES WW DUAL .47 OHM 5% 5W	139199	J9	CONN 12 PIN FFC	117720
R91	RES WW DUAL .47 OHM 5% 5W	139199	J10	HEADER 2 PIN LATCHING	117766
R92	RES MF 1K 1% 1/4W	144513	MT1	SENSOR IR 38KHZ	121046
R93	RES MO 4.7 OHM 1W 5%	144464	PCB1	PC BD DISPLAY	129605
R94	RES MF 1K 1% 1/4W	144513	Q1	TRANSISTOR NPN SILICON	132317
R95	RES MO 4.7 OHM 1W 5%	144464	Q2	TRANSISTOR PNP SILICON	132304
RT1	THERMISTOR 100	144279	Q3	TRANSISTOR NPN SILICON	132317
(RT1)	STANDOFF 6-32 X 1/4 MOUNT PCB	112130	Q4	TRANSISTOR PNP SILICON	132304
RT2	THERMISTOR 100	144279	Q5	TRANSISTOR NPN SILICON	132317
(RT2)	STANDOFF 6-32 X 1/4 MOUNT PCB	112130	Q6	TRANSISTOR NPN SILICON	132317
U1	IC DUAL OPERATIONAL AMPLIFIER	133260	Q7	TRANSISTOR NPN SILICON	132317
U2	IC DUAL OPERATIONAL AMPLIFIER	133260	Q8	TRANSISTOR NPN SILICON	132317
			Q9	TRANSISTOR NPN SILICON	132317
			Q10	TRANSISTOR NPN SILICON	132317
			R1	RES MF 1K 1% 1/4W	144513
			R2	RES MF 100K 1% 1/4W	144528
			R3	RES MF 182 OHM 1% 1/4W	144579
			R4	RES MF 100 OHM 1% 1/4W	144568
			R5	RES MF 182 OHM 1% 1/4W	144579
			R6	RES MF 182 OHM 1% 1/4W	144579
			R7	RES MF 324 OHM 1% 1/4W	144597

## 5 DISPLAY PCB 050277

C1	CAP ELECT 10UF 50V	066445
C2	CAP MONO 220PF 200V 10% NPO	061342
C3	CAP MONO .1UF 50V 20% Z5U	061346
C4	CAP MONO .1UF 50V 20% Z5U	061346
C5	CAP MONO .1UF 50V 20% Z5U	061346
C6	CAP ELECT 47UF 16V	066380

PARTS LIST *cont'd.*

## DISPLAY PCB 050277 (Cont'd.)

Ref No.	Description	Part No.
R8	RES MF 324 OHM 1% 1/4W	144597
R9	RES MF 324 OHM 1% 1/4W	144597
R10	RES MF 324 OHM 1% 1/4W	144597
R11	RES MF 15K 1% 1/4W	144623
R12	RES MF 15K 1% 1/4W	144623
R13	RES MF 324 OHM 1% 1/4W	144597
R14	RES MF 15K 1% 1/4W	144623
R15	RES MF 15K 1% 1/4W	144623
R16	RES MF 324 OHM 1% 1/4W	144597
R17	RES MF 4.75K 1% 1/4W	144520
R18	RES MF 4.75K 1% 1/4W	144520
R19	RES MF 221K 1% 1/4W	144629
R20	RES MF 221K 1% 1/4W	144629
R21	RES MF 8.25K OHM 1% 1/4W	144549
R22	RES MF 8.25K OHM 1% 1/4W	144549
R23	RES MF 2.21M 1/4W	144576
R24	RES MF 2.21M 1/4W	144576
R25	RES MF 2.21M 1/4W	144576
R26	RES MF 221K 1% 1/4W	144629
R27	RES MF 221K 1% 1/4W	144629
R28	POT TRIM 100K OHM 20%	134383
R29	POT TRIM 100K OHM 20%	134383
R30	RES MF 221 OHM 1% 1/4W	144559
R31	RES MF 221 OHM 1% 1/4W	144559
R32	RES MF 2.21M 1/4W	144576
R33	RES MF 1M 1/4W	144577
R34	RES MF 2.21M 1/4W	144576
R35	RES MF 1M 1/4W	144577
R36	RES MF 4.75K 1% 1/4W	144520
R37	RES MF 4.75K 1% 1/4W	144520
R38	POT TRIM 500 OHM 20% HORIZ ADJ	134410
R39	POT TRIM 500 OHM 20% HORIZ ADJ	134410
R40	POT TRIM 500 OHM 20% HORIZ ADJ	134410
R41	POT TRIM 500 OHM 20% HORIZ ADJ	134410
R42	RES MF 100 OHM 1% 1/4W	144568
R43	RES MF 324 OHM 1% 1/4W	144597
U1	IC SHFT REG SER-PAR	133186
U2	IC SHFT REG SER-PAR	133186
U3	IC 8 LN DRIVER ARRAY	133180
U4	IC DUAL OPERATIONAL AMPLIFIER	133260
U5	IC DUAL OPERATIONAL AMPLIFIER	133260
	LED SPACER .220 LENGTH	163001

## PUSHBUTTON PCB 050278

Ref No.	Description	Part No.
DS1	LED SQUARE RED	058109
(DS1)	LED SPACER .220 LENGTH	163001
DS2	LED SQUARE RED	058109
(DS2)	LED SPACER .220 LENGTH	163001
DS3	LED SQUARE RED	058109
(DS3)	LED SPACER .220 LENGTH	163001
DS4	LED SQUARE RED	058109
(DS4)	LED SPACER .220 LENGTH	163001
DS5	LED SQUARE RED	058109
(DS5)	LED SPACER .220 LENGTH	163001
DS6	LED SQUARE RED	058109
(DS6)	LED SPACER .220 LENGTH	163001
DS7	LED SQUARE RED	058109
(DS7)	LED SPACER .220 LENGTH	163001
DS8	LED SQUARE RED	058109
(DS8)	LED SPACER .220 LENGTH	163001
DS9	LED SQUARE RED	058109
(DS9)	LED SPACER .220 LENGTH	163001
DS10	LED SQUARE RED	058109
(DS10)	LED SPACER .220 LENGTH	163001
	TUBING SHRINK 1/4ID BLK	077041
J1	CONN 12 PIN FFC	117720
J2	CONN 12 PIN FFC	117720
PCB1	PC BD PUSHBUTTON	129667
S1	SWITCH TACT	150058
S2	SWITCH TACT	150058
S3	SWITCH TACT	150058
S4	SWITCH TACT	150058
S5	SWITCH TACT	150058
S6	SWITCH TACT	150058
S7	SWITCH TACT	150058
S8	SWITCH TACT	150058
S9	SWITCH TACT	150058
S10	SWITCH TACT	150058

# REPACKING INSTRUCTION

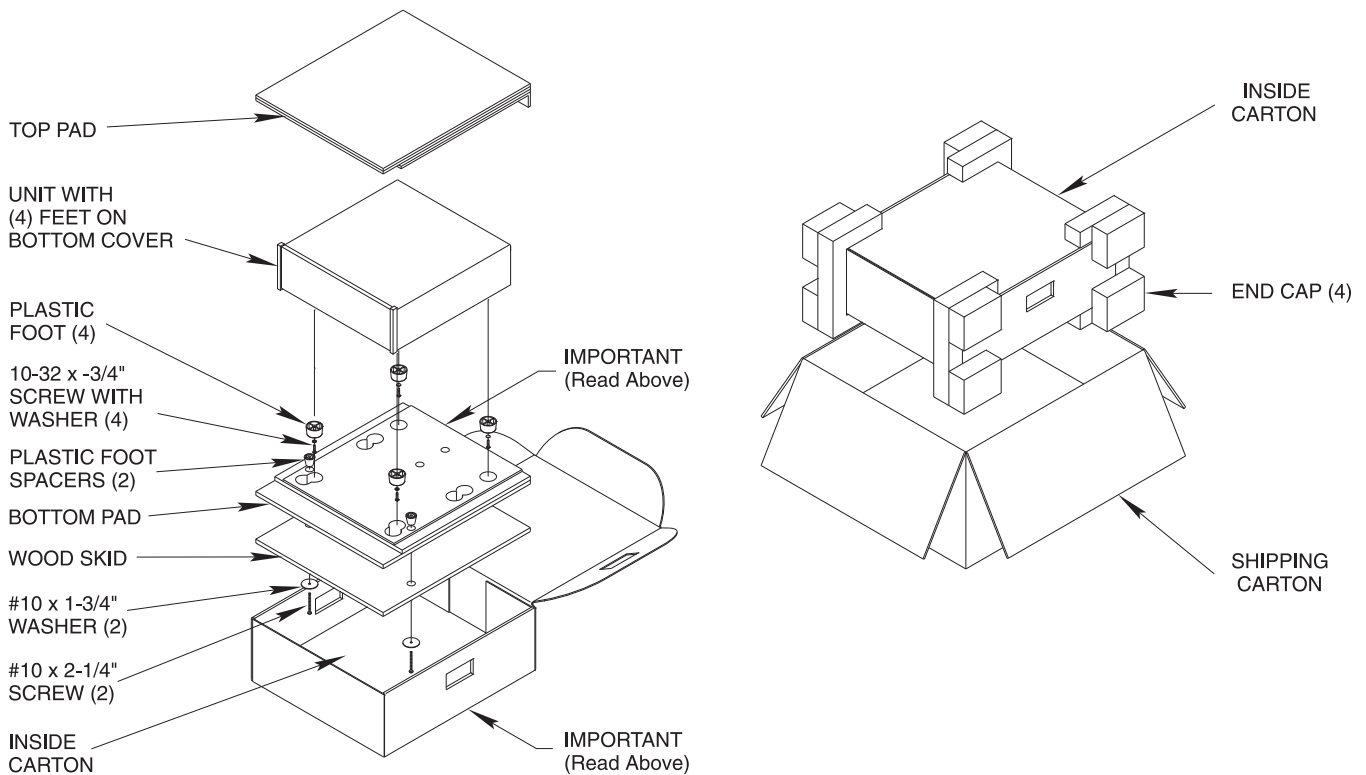
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below.

*IMPORTANT - The four plastic feet must be attached to the bottom of the unit so they will locate in the four holes of the bottom pad. Two #10 x 2-1/4" screws and washers must be used to fasten the unit securely to the bottom pad and wood skid. Failure to do this will result in shipping damage.*

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are in good serviceable condition.

Qty.	Part No.	Description
1	033888	Shipping carton only
4	033887	End cap (Foam pad)
1	033697	Inside carton only
1	033725	Top pad
1	034301	Bottom pad
2	017218	Plastic foot (spacer)
1	033699	Wood skid
2	401204	#10 x 2-1/2" Wood screw
2	404033	#10 x 1-3/4" Flat washer
4	017937	Plastic foot
4	400159	#10-32 x 3/4" Machine screw
4	404080	#10 x 7/16" Flat washer



# MA6300

## INTEGRATED AMPLIFIER

### SERVICE MANUAL

SERIAL NO. WR1001 And Above



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