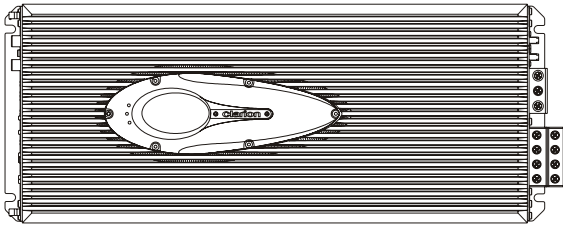


Service Manual



160W x 4 Channel Power Amplifier

Model APA4320

(GA-980E-51)

SPECIFICATIONS

Rated Output:	80W x 4 (4-channel mode) (20Hz to 20kHz, 0.05%, 4ohm, 4-channel simultaneous output) 80W x 2 + 230W x 1 (3-channel mode) 230W x 2 (2-channel mode)
Maximum Power:	160W x 4
Frequency Response:	10Hz to 50kHz (+/-1.0dB)
Harmonic Distortion:	0.025% (1kHz, 10W, 4ohm)
S/N Rate:	100dB
Applicable	
Speaker Impedance:	4ohm (2ohm~8ohm)
Input Sensibility:	200mV to 6,000mV
Power Source Voltage:	14.4V
Ground:	Negative
Power Consumption:	37 (with 80Wx4 rate output) 1.6A (amplifier ON, no input)
Dimensions(mm):	165(w) x 56(h) x 409(D)mm
Weight:	3.9Kg

NOTE

- We cannot supply PWB with component parts in principle.
- When a circuit on PWB has failure, please repair it by component parts base. Parts, which are not mentioned in service manual, are not supplied.
- For improvement purposes, specifications and design are subject to change without prior notice.

FEATURES

1. Maximum Power Output 640W
2. Continuous Average Power Output 320W (80W x 4 Into 4ohm 20Hz to 20kHz at 0.05% THD)
3. Typical 2-Ohm Stereo 115W x 4 at 0.2% THD
4. Typical 2-Ohm Bridged Power 230W x 2 at 0.2% THD
5. Bass Extender Control 0~15dB at 45Hz
6. Adjustable 55Hz to 550Hz, 12dB/oct. High/Low-Pass Crossover
7. Mixed- Mode Operation
8. 4-, 3-, or 2- Channel Operation

9. MOSFET Output Design
10. Speaker Level Inputs
11. Double-Sided FR4 PC Board

To engineers in charge of repair or inspection of our products

Before repair or inspection, make sure to follow the instructions so that customers and Engineers in charge of repair or inspection can avoid suffering any risk or injury. Remodeling for which we shall not be liable, the onus of product liability (PL) shall not be our responsibility in cases where an accident or failure is as a result of unspecified parts being used or due to negligence during repair.

1. Use specified parts.
The system uses parts with special safety features against fire and voltage. Use only parts with equivalent characteristics when replacing them.
2. Place the parts and wiring back in their original positions after replacement or re-wiring.
For proper circuit construction, use of insulation tubes, bonding, gaps to PWB, etc, is involved. The wiring connection and routing to the PWB are specially planned using clamps to keep away from heated and high voltage parts. Ensure that they are placed back in their original positions after repair or inspection.
3. Check for safety after repair.
Check that the screws, parts and wires are put back securely in their original position after repair. Ensure for safety reasons there is no possibility of secondary problems around the repaired spots.
4. Caution in removal and making wiring connection to the parts for the automobile.
Disconnect the battery terminal after turning the ignition key off. If wrong wiring connections are made with the battery connected, a short circuit and/or fire may occur.

5. Cautions regarding chips.
 Do not reuse removed chips even when no abnormality is observed in their appearance. Always replace them with new ones. (The chip parts include resistors, capacitors, diodes, transistors, etc). The negative pole of tantalum capacitors is highly susceptible to heat, so use special care when replacing them and check the operation afterwards.

temperature is around 270 Celsius degree.
 Take care not to apply the iron tip repeatedly (more than three times) to the same patterns. Also take care not to apply the tip with force.

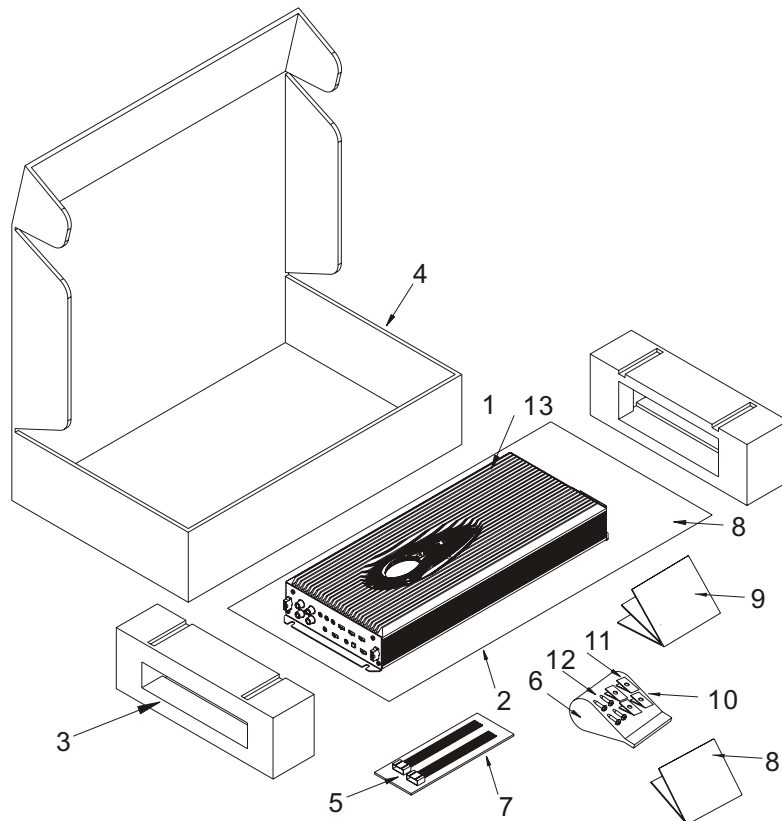
6. Cautions in handling flexible PWB Before working with a soldering iron, make sure that the iron tip

7. Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
No audio	Low or no turn-on voltage	Check remote connections at amplifier and head unit.
	Blown fuse	Replace with new fast-blown fuse (same rating).
	Power wires not connected	-Check power and ground connection at amplifier. -Check battery connections.
	Speakers not connected or blown	-Check speaker connections at amplifier. -Measure coil impedance.
Audio cycles on and off	Thermal protection circuits are shutting amplifier off	- Check location for adequate ventilation. - Consult an authorized Clarion dealer
Disturbed sound	Gain controls is not set properly, or damaged speaker cones	-Adjust gain control -Check each speaker cone for signs of damage (e.g. frozen cone, burning smell, etc)
Sound lacks punch	Speakers wired incorrectly, which causes cancellation of bass frequencies	Check polarity of wires from amplifier to each speakers as illustrated in connection examples.
Whining or ticking noise in the sound with engine on	Amplifier is picking up alternator noise or radiated noise	-Check power and ground connections on amplifier. -Check or move audio cables. -Install an in-line noise filter on main units power wire. -Test for weak battery or add water to battery. -Check alternator and / or voltage regulator.

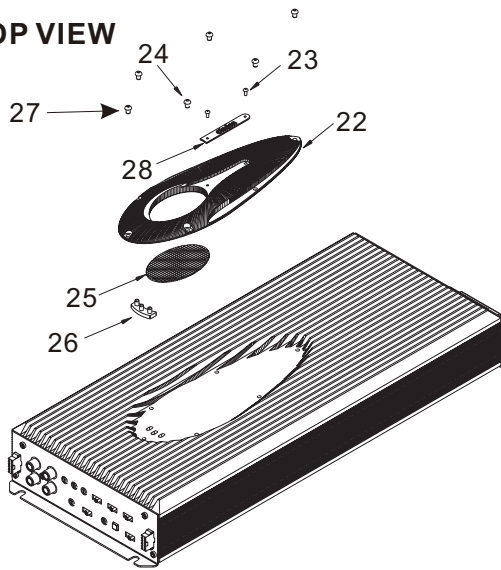
COMPONENTS / PARTS LIST



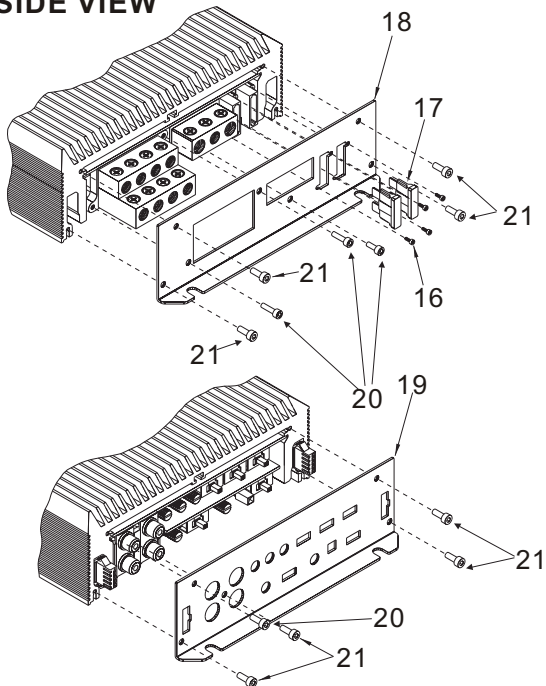
NO	PART NO	MANUFACTURE NO	DESCRIPTION	SPECIFICATION	Q'TY
1	653-0437-24	81-00304-00	SET PLATE	APA4320(CLARION)	1
2	-----	78-00051-00	PE BAG	30*55CM	1
3	-----	79-00APA-00	CARD BOARD	APA4320	2
4	-----	79-A4320-GK	GIFT BOX	APA4320(CLARION)	1
5	653-0437-12	35-00121-00	INPUT CONNECTOR (PACK)	H7755P-05 WIRE 300	2
6	-----	78-00294-00	ZIPPER BAG	#2, 6*8.5CM	1
7	-----	78-00294-01	ZIPPER BAG	#4,8.5*12mm	2
8	-----	82-00APA-WW	WARRANTY CARD	CLARION	1
9	-----	80-04320-WW	I/B	CLARION	1
10	653-0433-16	74-00173-00	PLATE NUT	ATTACHMENT	4
11	653-0437-18	76-00374-00	RUBBER WASHER	13mmX5mmX2mm	4
12	653-0433-44	ST-RP440-20	SCREW	R-HEAD BLACK 4*20	4
13	-----	81-00301-00	BARCODE	APA4320	1

EXPLODED VIEW / PARTS LIST

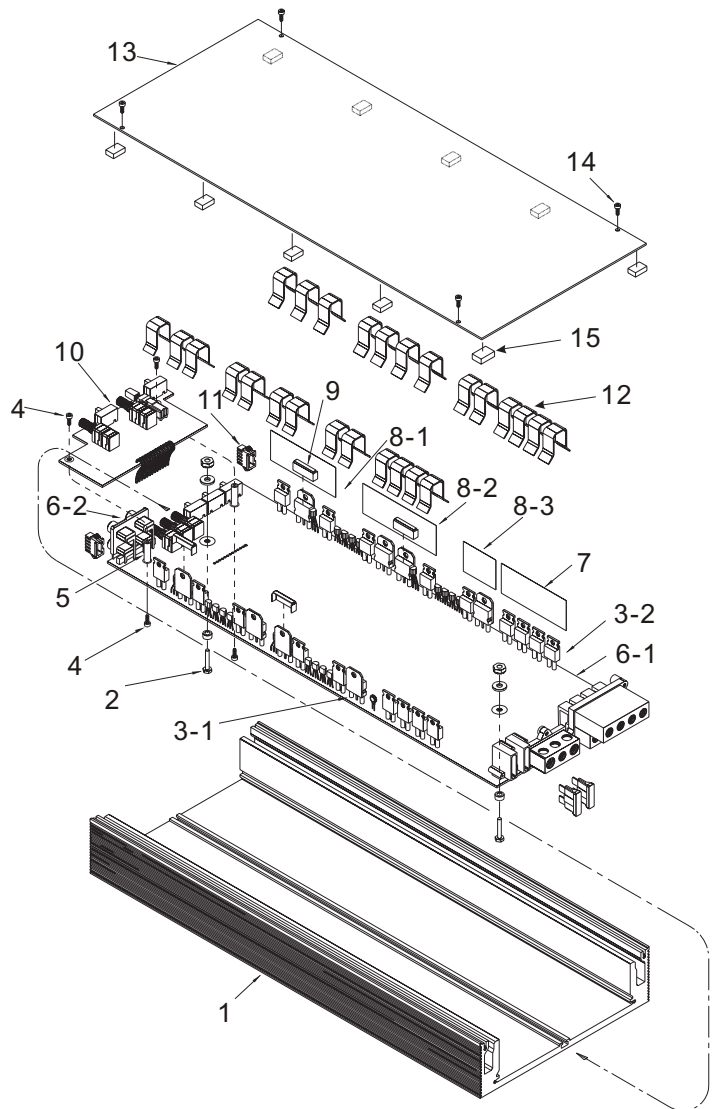
TOP VIEW



SIDE VIEW



BOTTOM VIEW



EXPLODED VIEW / PARTS LIST

NO.	PART NO.	MANUFACTURE NO.	DESCRIPTION	SPEC	QTY.
1	653-0437-19	77-00286-00	HEAT SINK	381.1mm BLACK	1
2	653-0433-45	YH-00007-00	SCREW	A+B+C+D	2
3-1	653-0433-23	78-00284-00	SILICON TUBE	2mm*6mm	16
3-2	653-0433-24	78-00292-00	SILICON TUBE	2mm*8mm	36
4	653-0437-25	SM-RP230-06	SCREW	R-HEAD NI- PLATED 3*6	4
5	653-0437-16	74-00154-00	COPPER BAR	16mm	2
6-1	653-0437-06	11-A4320-00	P.C.B.	APA4320	1
6-2	653-0437-10	32-20425-03	RCA JACK4P RL-	1418-4G	1
7	653-0433-31	78-00310-00	KAPTON	25mm*65mm	1
8-1	653-0433-28	78-00305-00	MICA	25*30mm	4
8-2	653-0433-29	78-00306-00	MICA	25*40mm	8
8-3	653-0433-30	78-00307-00	MICA	25*50mm	2
9	653-0433-14	74-00165-00	CLIP	- 0.5mm	4
10	653-0437-05	11-4320X-00	P.C.B.	APA4320 XOVER	1
11	653-0437-11	34-00150-02	INPUT CONNECTOR (ONBOARD)	H7755R-05 WIRE 140	2
12	653-0433-13	74-00153-00	CLIP	BLACK	26
13	653-0437-15	72-00384-00	BOTTOM COVER		1
14	653-0433-43	ST-RP430-06	SCREW	R-HEAD BLACK 3*6	6
15	653-0433-27	78-00296-00	SPONGE / ADHESIVE	10*20mm, 3mm(TH)	16
16	653-0433-42	ST-RP220-08	SCREW	R-HEAD NICKEL PLATED 2*8	4
17	653-0437-17	76-00279-00	FUSE	ATC-25A	2
18	653-0437-14	71-00559-00	REAR PANNEL	CLARION	1
19	653-0437-13	71-00558-00	FRONT PANNEL		1
20	653-0433-41	ST-IH230-12	SCREW	HEX NICKEL PLATED 3*12	4
21	653-0433-40	ST-IH230-08	SCREW	HEX NICKEL PLATED 3*8	8
22	653-0433-15	74-00172-00	EGG ALUMINUMFOGGY CHROME	MATEL COLOR	1
23	653-0433-37	SM-RH220-05	SCREW	NICKEL PLATED M2*5	2
24	653-0433-39	SM-RH230-05	SCREW	NICKEL PLATED M3*5	5
25	653-0433-12	73-00132-00	MESH	APA	1
26	653-0433-20	76-00382-00	LED PLATE	APA2160,4320	1
27	653-0433-38	SM-RH230-03	SCREW	NICKEL PLATED M3*3	1
28	653-0433-17	75-00020-00	BADGE	CLARION	1

ELECTRICAL PART LIST

MAIN PWB SECTION

NO.	PART NO.	MANUFACTURE NO.	DESCRIPTION	SPEC	QTY.
C1	653-0432-55	03-21040-04	POLY CAP	104J	1
C2	653-0432-50	02-24701-21	ELE. CAPACITOR	47uF/16V	1
C3	653-0432-55	03-21040-04	POLY CAP	104J	1
C4	653-0432-55	03-21040-04	POLY CAP	104J	1
C5	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C6	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C7	653-0432-55	03-21040-04	POLY CAP	104J	1
C8	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C9	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C10	653-0432-55	03-21040-04	POLY CAP	104J	1
C11	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C12	653-0432-55	03-21040-04	POLY CAP	104J	1
C13	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C14	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1

C15	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C16	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C17	653-0432-55	03-21040-04	POLY CAP	104J	1
C18	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C19	653-0432-60	03-24740-04	POLY CAP	474J	1
C20	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C21	653-0432-54	03-21030-04	POLY CAP	103J	1
C22	653-0432-55	03-21040-04	POLY CAP	104J	1
C23	653-0432-55	03-21040-04	POLY CAP	104J	1
C24	653-0432-55	03-21040-04	POLY CAP	104J	1
C25	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C26	653-0432-55	03-21040-04	POLY CAP	104J	1
C27	653-0432-55	03-21040-04	POLY CAP	104J	1
C28	653-0432-55	03-21040-04	POLY CAP	104J	1
C29	653-0432-55	03-21040-04	POLY CAP	104J	1
C30	653-0432-55	03-21040-04	POLY CAP	104J	1
C31	653-0432-55	03-21040-04	POLY CAP	104J	1
C32	653-0432-55	03-21040-04	POLY CAP	104J	1
C34	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C35	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C37	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C33	653-0432-53	03-21020-04	POLY CAP	102J	1
C38	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C36	653-0432-53	03-21020-04	POLY CAP	102J	1
C39	653-0432-54	03-21030-04	POLY CAP	103J	1
C40	653-0432-55	03-21040-04	POLY CAP	104J	1
C41	653-0432-58	03-24720-04	POLY CAP	472J	1
C42	653-0432-60	03-24740-04	POLY CAP	474J	1
C43	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C44	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C45	653-0432-59	03-24730-04	POLY CAP	473J	1
C46	653-0432-63	03-26820-04	POLY CAP	682J	1
C47	653-0432-55	03-21040-04	POLY CAP	104J	1
C48	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C49	653-0432-55	03-21040-04	POLY CAP	104J	1
C50	653-0432-55	03-21040-04	POLY CAP	104J	1
C51	653-0432-60	03-24740-04	POLY CAP	474J	1
C52	653-0432-55	03-21040-04	POLY CAP	104J	1
C53	653-0432-52	02-26803-21	ELE. CAPACITOR	6800uf/16V ESR	1
C54	653-0432-55	03-21040-04	POLY CAP	104J	1
C55	653-0432-55	03-21040-04	POLY CAP	104J	1
C56	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C57	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C58	653-0432-63	03-26820-04	POLY CAP	682J	1
C59	653-0432-55	03-21040-04	POLY CAP	104J	1
C60	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C61	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C62	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C63	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C64	653-0432-52	02-26803-21	ELE. CAPACITOR	6800uf/16V ESR	1
C65	653-0432-52	02-26803-21	ELE. CAPACITOR	6800uf/16V ESR	1
C66	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C67	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C68	653-0432-53	03-21020-04	POLY CAP	102J	1
C69	653-0432-53	03-21020-04	POLY CAP	102J	1

C70	653-0432-51	02-24702-21	ELE. CAPACITOR	470uf/16V	1
C71	653-0432-51	02-24702-21	ELE. CAPACITOR	470uf/16V	1
C72	653-0432-55	03-21040-04	POLY CAP	104J	1
C73	653-0432-46	02-21000-41	ELE. CAPACITOR	1uf/50V	1
C74	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C75	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C76	653-0432-55	03-21040-04	POLY CAP	104J	1
C77	653-0432-55	03-21040-04	POLY CAP	104J	1
C78	653-0432-55	03-21040-04	POLY CAP	104J	1
C79	653-0432-57	03-22720-04	POLY CAP	272J	1
C80	653-0432-55	03-21040-04	POLY CAP	104J	1
C81	653-0432-55	03-21040-04	POLY CAP	104J	1
C82	653-0432-55	03-21040-04	POLY CAP	104J	1
C83	653-0432-55	03-21040-04	POLY CAP	104J	1
C84	653-0432-55	03-21040-04	POLY CAP	104J	1
C85	653-0432-54	03-21030-04	POLY CAP	103J	1
C86	653-0432-55	03-21040-04	POLY CAP	104J	1
C87	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C88	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C89	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C90	653-0432-55	03-21040-04	POLY CAP	104J	1
C91	653-0432-55	03-21040-04	POLY CAP	104J	1
C92	653-0432-55	03-21040-04	POLY CAP	104J	1
C93	653-0432-60	03-24740-04	POLY CAP	474J	1
C94	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C95	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C96	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C97	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C98	653-0432-55	03-21040-04	POLY CAP	104J	1
C99	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C100	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C101	653-0432-57	03-22720-04	POLY CAP	272J	1
C102	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C103	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C104	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C105	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C106	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C107	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C108	653-0432-55	03-21040-04	POLY CAP	104J	1
C109	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C110	653-0432-55	03-21040-04	POLY CAP	104J	1
C111	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C112	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C113	653-0432-55	03-21040-04	POLY CAP	104J	1
C114	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C115	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C116	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C117	653-0432-50	02-24701-21	ELE. CAPACITOR	47uF/16V	1
C118	653-0432-55	03-21040-04	POLY CAP	104J	1
C119	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
D1	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D2	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D3	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D4	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D5	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1

D6	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D7	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D8	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D9	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D10	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D11	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D12	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D13	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D14	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D15	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D16	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D17	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D18	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D19	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D20	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D21	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D22	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D23	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D24	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D25	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D26	653-0432-87	09-15401-01	DIODE	IN5402 3A/200V	1
D27	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D28	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
DZ1	653-0432-88	09-20100-03	ZENER DIODE	HZ11-2TA 10V	1
DZ2	653-0432-90	09-20160-03	ZENER DIODE	HZ16-2TA 16V	1
DZ3	653-0432-89	09-20120-03	ZENER DIODE	1N759A 12V 1/2W	1
DZ4	653-0432-90	09-20160-03	ZENER DIODE	HZ16-2TA 16V	1
DZ5	653-0432-84	09-00680-00	ZENER 68V	1N981B,1N5266B	1
DZ6	653-0432-84	09-00680-00	ZENER 68V	1N981B,1N5266B	1
FH1	653-0433-19	76-00239-00	FUSE HOLD	JEF-703E	1
FH2	653-0433-19	76-00239-00	FUSE HOLD	JEF-703E	1
J2	653-0437-08	26-00348-00	CONNECTOR CABLE	13PIN 60mm 3*3	1
J3	653-0433-04	32-00655-00	TERMINAL	SL-KOR-3P	1
L1	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L2	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L3	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L4	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L5	653-0433-02	20-00144-00	CHOKER MH-7380	TOROID PWRIN	1
LED1	653-0432-99	19-00302-01	LED BLUE	BB437C	1
LED2	653-0432-99	19-00302-01	LED BLUE	BB437C	1
LED3	653-0432-99	19-00302-01	LED BLUE	BB437C	1
M1	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
M2	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
M3	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
M4	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
Q1	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1
Q2	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q3	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q4	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q5	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q6	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q7	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q8	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q9	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
Q10	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1

Q11	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q12	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q13	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q14	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q15	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q16	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q17	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q18	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
Q19	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q20	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q21	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q22	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q23	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q24	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q24	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q25	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q26	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q27	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q28	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q29	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q30	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q31	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q32	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q33	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q34	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q35	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q36	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q37	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q38	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q39	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q40	653-0432-83	08-26715-00	TRANSISTOR	2N6715 2A 50V	1
Q41	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q43	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1
Q44	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q45	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q46	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q47	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q48	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q49	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q50	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
Q51	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q52	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1
Q53	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q54	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q55	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q56	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q57	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q58	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q59	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
R1	653-0432-22	01-52710-63	RESISTOR 1%	274 ohm 1/8W	1
R2	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R3	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R4	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R5	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R6	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1

R7	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R8	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R9	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R10	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R11	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R12	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R13	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R14	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R15	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R16	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R17	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R18	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R19	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R20	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R22	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R23	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R24	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R25	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R26	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R27	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R28	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R29	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R30	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R31	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R32	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R33	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R34	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R35	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R36	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R37	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R38	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R39	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R40	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R41	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R42	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R43	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R44	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R45	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R46	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R47	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R48	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R49	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R50	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R51	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R52	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R53	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R54	653-0432-40	01-57510-63	RESISTOR 1%	750 ohm 1/8W	1
R55	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R56	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R57	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R58	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R59	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R60	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R61	653-0432-44	01-59300-63	RESISTOR 1%	93.1 ohm 1/8W	1
R62	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1

R63	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R64	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R65	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R66	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R67	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R68	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R69	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R70	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R71	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R72	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R73	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R74	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R75	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R76	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R77	653-0432-33	01-54740-63	RESISTOR 1%	475 K 1/8W	1
R78	653-0432-08	01-51101-63	RESISTOR 1%	1.1 K 1/8W	1
R79	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R80	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R81	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R82	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R83	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R84	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R85	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R86	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R87	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R88	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R89	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R90	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R91	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R92	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R93	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R94	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R95	653-0432-33	01-54740-63	RESISTOR 1%	475 K 1/8W	1
R96	653-0432-08	01-51101-63	RESISTOR 1%	1.1 K 1/8W	1
R97	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R98	653-0432-20	01-52440-63	RESISTOR 1%	243 K 1/8W	1
R99	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R100	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R101	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R102	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R103	653-0432-44	01-59300-63	RESISTOR 1%	93.1 ohm 1/8W	1
R104	653-0432-03	01-13000-22	RESISTOR -MO-	30 ohm 1/2W	1
R105	653-0432-40	01-57510-63	RESISTOR 1%	750 ohm 1/8W	1
R106	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R107	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R108	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R109	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R110	653-0432-17	01-52200-63	RESISTOR 1%	221 ohm 1/8W	1
R111	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R112	653-0432-20	01-52440-63	RESISTOR 1%	243 K 1/8W	1
R113	653-0432-23	01-53120-22	RESISTOR 1%	3.16 K 1/2W	1
R114	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R115	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R116	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R117	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1

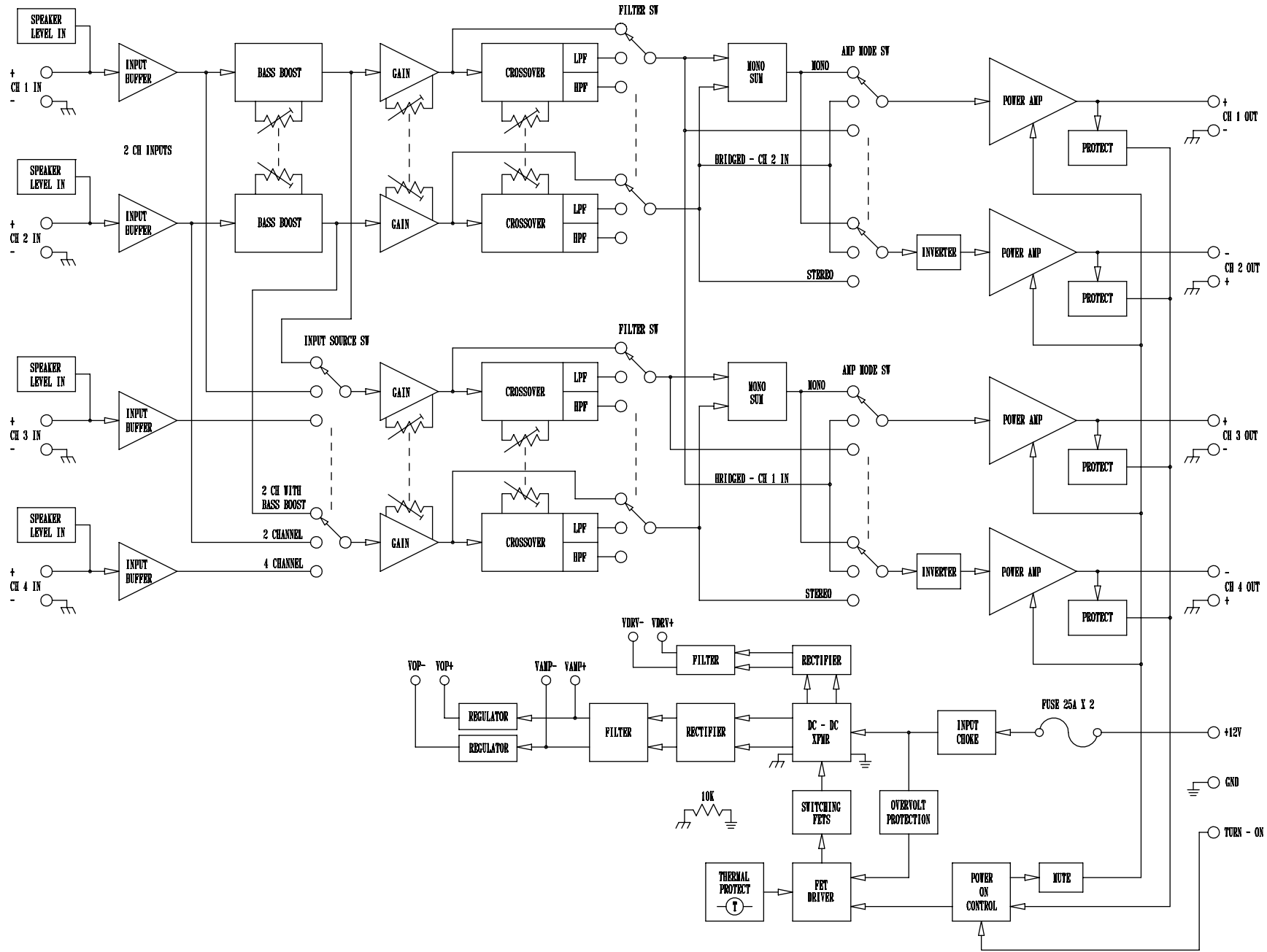
R118	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R119	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R120	653-0432-23	01-53120-22	RESISTOR 1%	3.16 K 1/2W	1
R121	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R122	653-0432-23	01-53120-22	RESISTOR 1%	3.16 K 1/2W	1
R123	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R124	653-0432-11	01-51538-63	RESISTOR 1%	15.8 K 1/8W	1
R125	653-0432-29	01-54710-43	RESISTOR 1%	475 ohm 1/4W	1
R126	653-0432-25	01-53340-63	RESISTOR 1%	332 K 1/8W	1
R127	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R128	653-0432-28	01-54340-63	RESISTOR 1%	432 K 1/8W	1
R129	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R130	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R131	653-0432-32	01-54730-63	RESISTOR 1%	47.5 K 1/8W	1
R132	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R133	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R134	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R136	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R137	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R138	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R139	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R140	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R141	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R142	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R143	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R144	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R145	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R146	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R147	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R148	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R149	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R150	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R151	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R152	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R153	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R154	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R155	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R156	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R157	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R158	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R159	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R160	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R161	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R162	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R163	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R164	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R165	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R166	653-0432-02	01-12750-63	RESISTOR	2.7 M 1/8W	1
R168	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R167	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R169	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R170	653-0432-45	01-59320-63	RESISTOR 1%	9.31 K 1/8W	1
R171	653-0437-02	01-51411-63	RESISTOR 1%	143 ohm 1/8W	1
R172	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R173	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1

R174	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R175	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R176	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R177	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R178	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R179	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R180	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R181	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R182	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R183	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R184	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R185	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R186	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R187	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R188	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R189	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R190	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R191	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R192	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R193	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R194	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R195	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R196	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R197	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R198	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R199	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R200	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R201	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R202	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R203	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R204	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R205	653-0432-02	01-12750-63	RESISTOR	2.7 M 1/8W	1
R206	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R207	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R208	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R209	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R210	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R211	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R212	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R213	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R214	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R215	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R216	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R217	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R218	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R219	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R220	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R221	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R222	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R223	653-0432-04	01-51000-63	RESISTOR 1%	10 ohm 1/8W	1
R224	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R225	653-0432-04	01-51000-63	RESISTOR 1%	10 ohm 1/8W	1
R226	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R227	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R228	653-0432-33	01-54740-63	RESISTOR 1%	475 K 1/8W	1

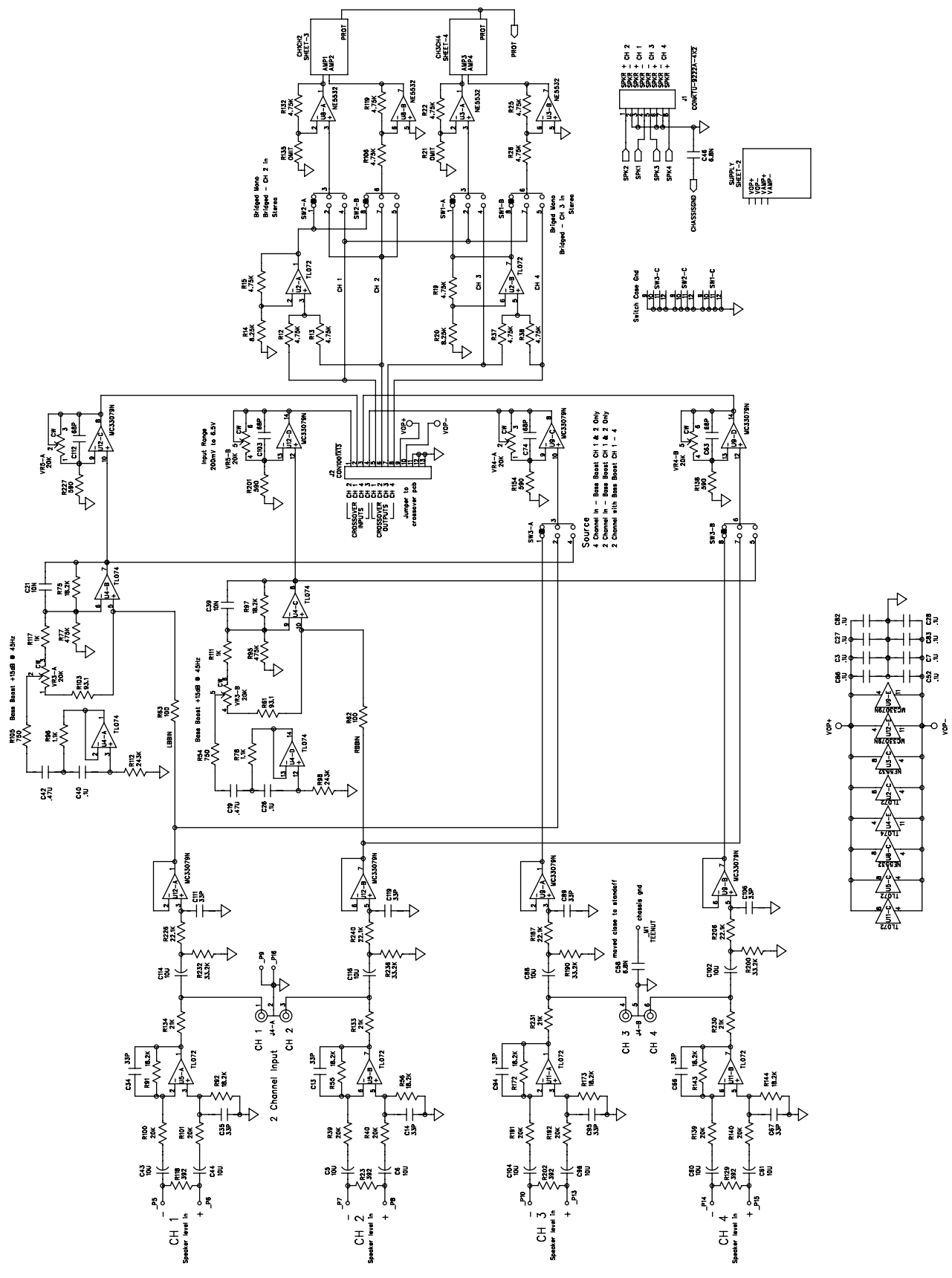
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R230	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R231	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R232	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R233	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R234	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R235	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R236	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R237	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R238	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R239	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R240	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R241	653-0432-22	01-52710-63	RESISTOR 1%	274 ohm 1/8W	1
R242	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R243	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R244	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R245	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R246	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R247	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R248	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R249	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R250	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R251	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R252	653-0437-03	01-52430-63	RESISTOR 1%	24.3 K 1/8W	1
R253	653-0437-01	01-51040-63	RESISTOR 1%	100 K 1/8W	1
R254	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R255	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
SW1	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
SW2	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
SW3	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
TH1	653-0432-94	13-11003-00	THERMISTOR BEAD	TDC05D410L 100K	1
TH2	653-0432-94	13-11003-00	THERMISTOR BEAD	TDC05D410L 100K	1
U1	653-0432-71	07-00337-00	I.C.	KA337TU	1
U2	653-0432-68	07-00072-01	I.C	TL072	1
U3	653-0432-75	07-05532-00	I.C.	NTM5532D	1
U4	653-0432-69	07-00074-01	I.C.	TLO74	1
U5	653-0432-68	07-00072-01	I.C	TL072	1
U6	653-0432-67	07-00025-00	I.C.	4N25	1
U7	653-0432-75	07-05532-00	I.C.	NTM5532D	1
U8	653-0432-75	07-05532-00	I.C.	NTM5532D	1
U9	653-0432-73	07-00837-00	I.C. (SGS)	MC33079N, LM837N	1
U10	653-0432-67	07-00025-00	I.C.	4N25	1
U11	653-0432-68	07-00072-01	I.C	TL072	1
U12	653-0432-73	07-00837-00	I.C. (SGS)	MC33079N, LM837N	1
U13	653-0432-72	07-00393-01	I.C	LM393N	1
U14	653-0432-74	07-03525-01	I.C.	SG3525AN	1
U15	653-0432-70	07-00317-00	I.C.	KA317TU	1
VR1	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
VR2	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
VR3	653-0432-95	15-20203-15	VR 20KB*2	RK097122011K	1
VR4	653-0432-95	15-20203-15	VR 20KB*2	RK097122011K	1
VR5	653-0432-95	15-20203-15	VR 20KB*2	RK097122011K	1
VR6	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
VR7	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
X1	653-0437-07	20-00146-00	TRANSFORMER	APA4320	1
J4	653-0437-10	32-20425-03	RCAJACK4PRL-	1418-4G	1

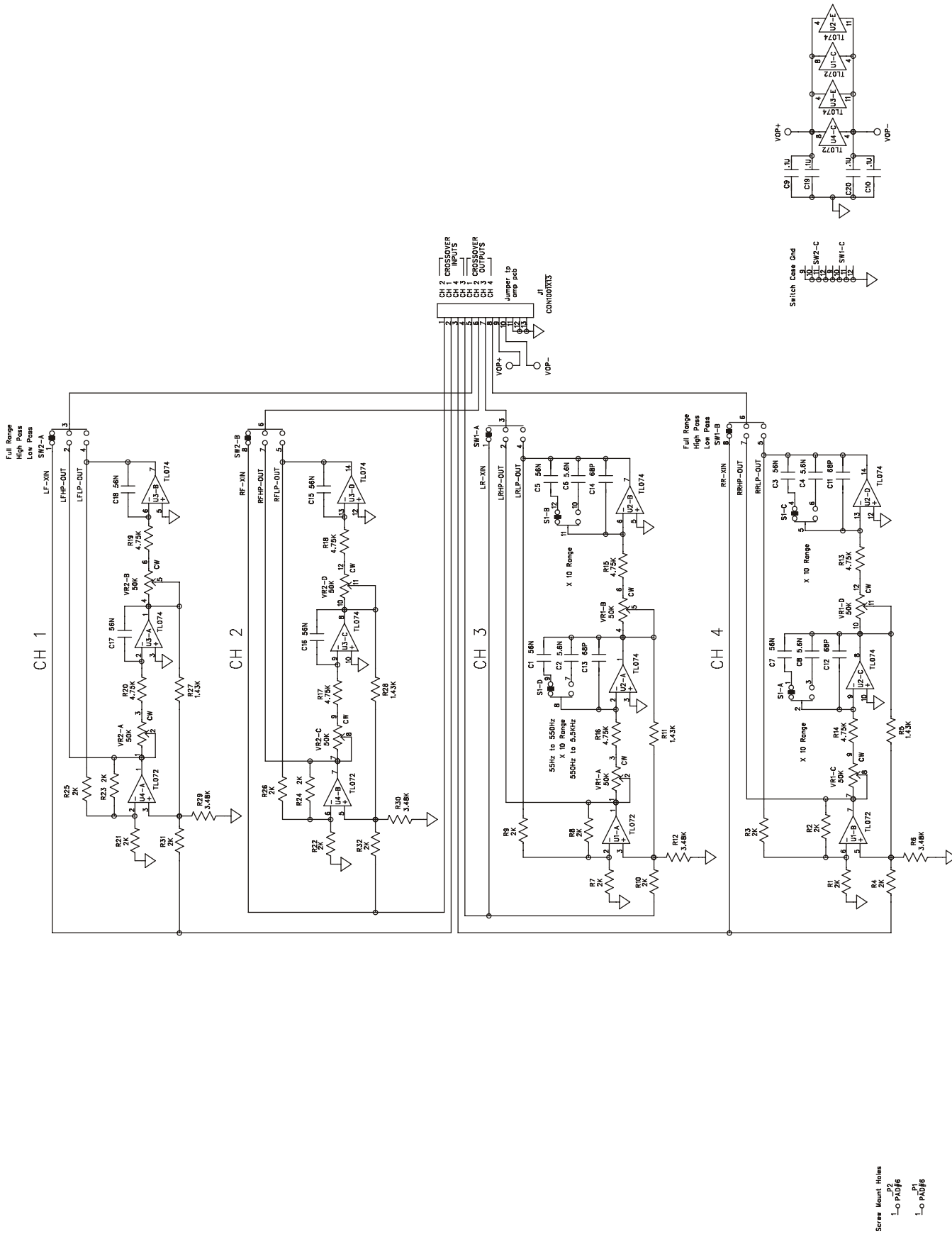
CROSS-OVER

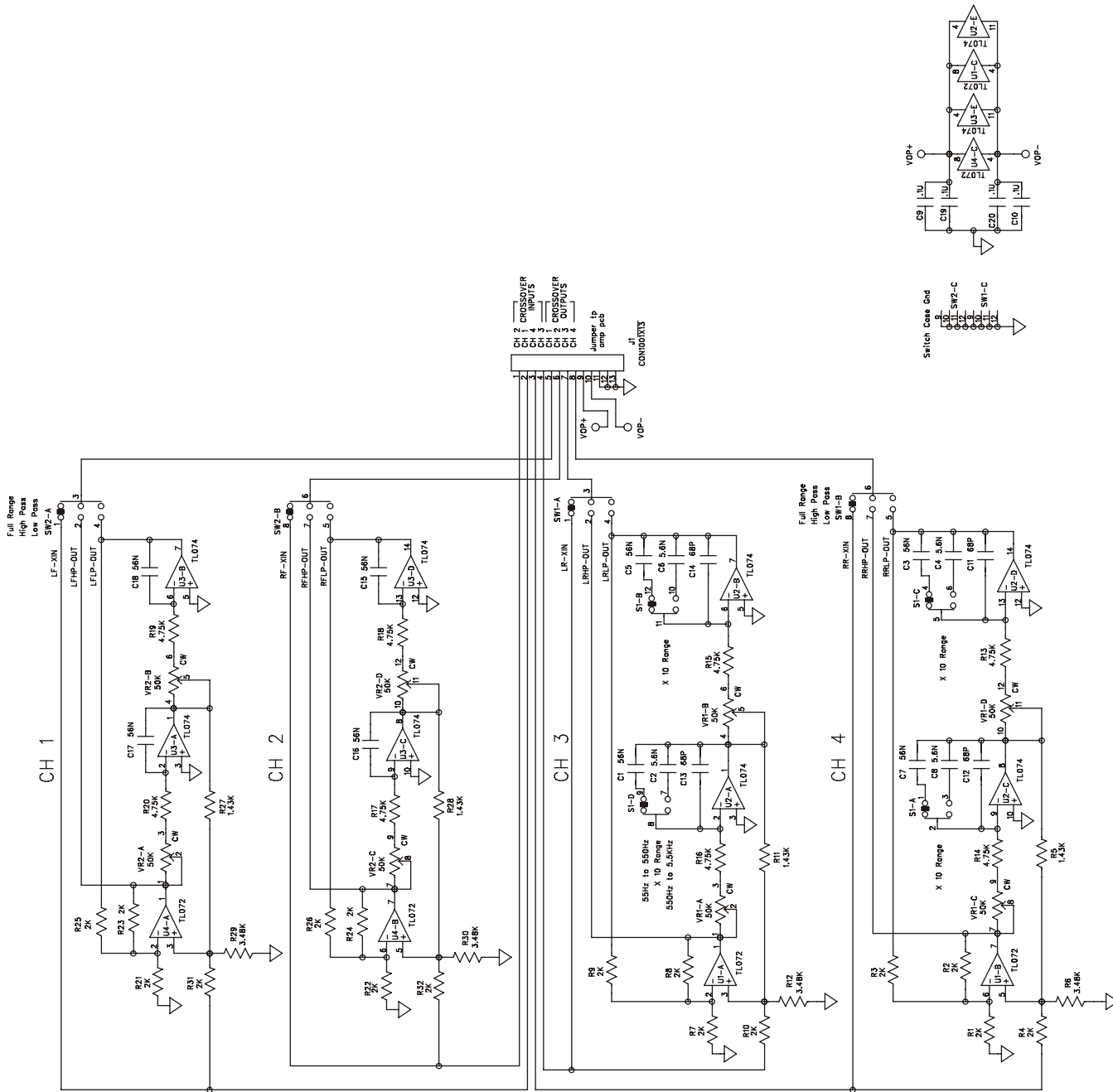
REF. NO	PARTNO	MANUFACTURE NO	DESCREPTION	SPECIFICATION	Q'TY
C1	653-0432-62	03-25630-04	POLY CAP	563J	1
C2	653-0432-61	03-25620-04	POLY CAP	562J	1
C3	653-0432-62	03-25630-04	POLY CAP	563J	1
C4	653-0432-61	03-25620-04	POLY CAP	562J	1
C5	653-0432-62	03-25630-04	POLY CAP	563J	1
C6	653-0432-61	03-25620-04	POLY CAP	562J	1
C7	653-0432-62	03-25630-04	POLY CAP	563J	1
C8	653-0432-61	03-25620-04	POLY CAP	562J	1
C9	653-0432-55	03-21040-04	POLY CAP	104J	1
C10	653-0432-55	03-21040-04	POLY CAP	104J	1
C11	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C12	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C13	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C14	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C15	653-0432-62	03-25630-04	POLY CAP	563J	1
C16	653-0432-62	03-25630-04	POLY CAP	563J	1
C17	653-0432-62	03-25630-04	POLY CAP	563J	1
C18	653-0432-62	03-25630-04	POLY CAP	563J	1
C19	653-0432-55	03-21040-04	POLY CAP	104J	1
C20	653-0432-55	03-21040-04	POLY CAP	104J	1
J1	653-0437-09	32-00656-00	TERMINAL	SLL-KOR-4P*2	1
R1	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R2	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R3	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R4	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R5	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R6	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R7	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R8	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R9	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R10	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R11	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R12	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R13	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R14	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R15	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R16	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R17	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R18	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R19	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R20	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R21	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R22	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R23	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R24	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R25	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R26	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R27	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R28	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R29	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R30	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R31	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1



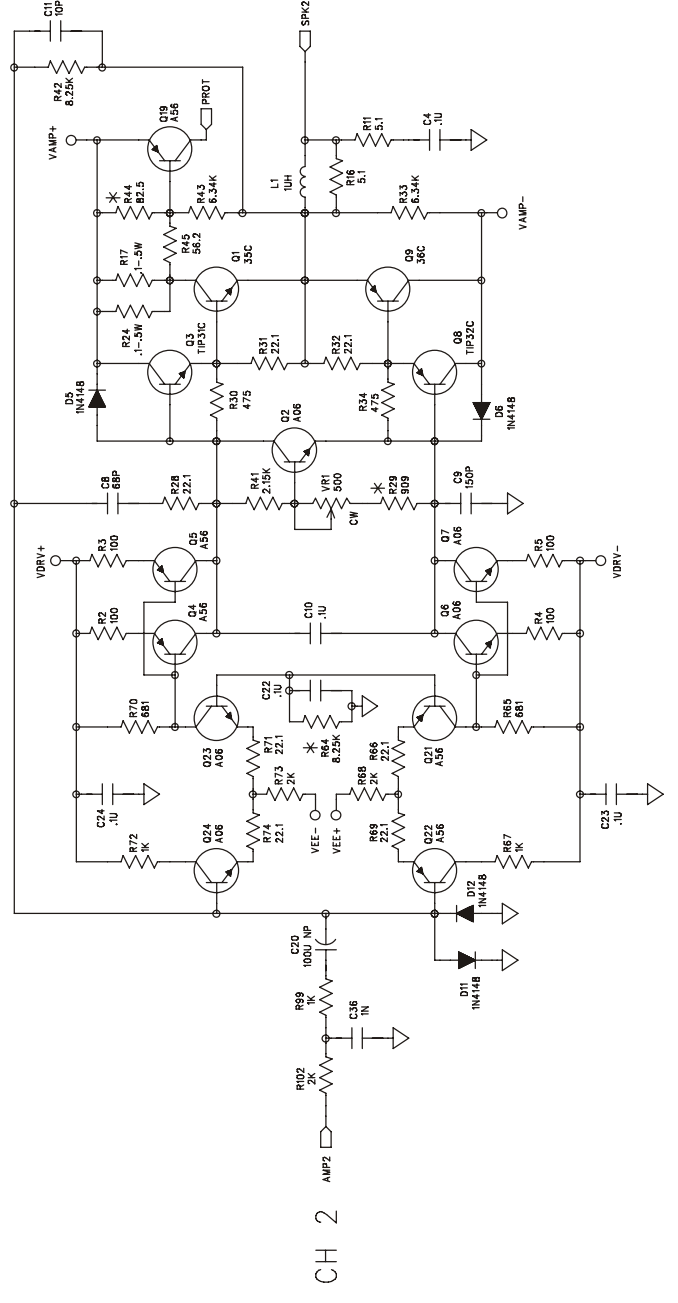
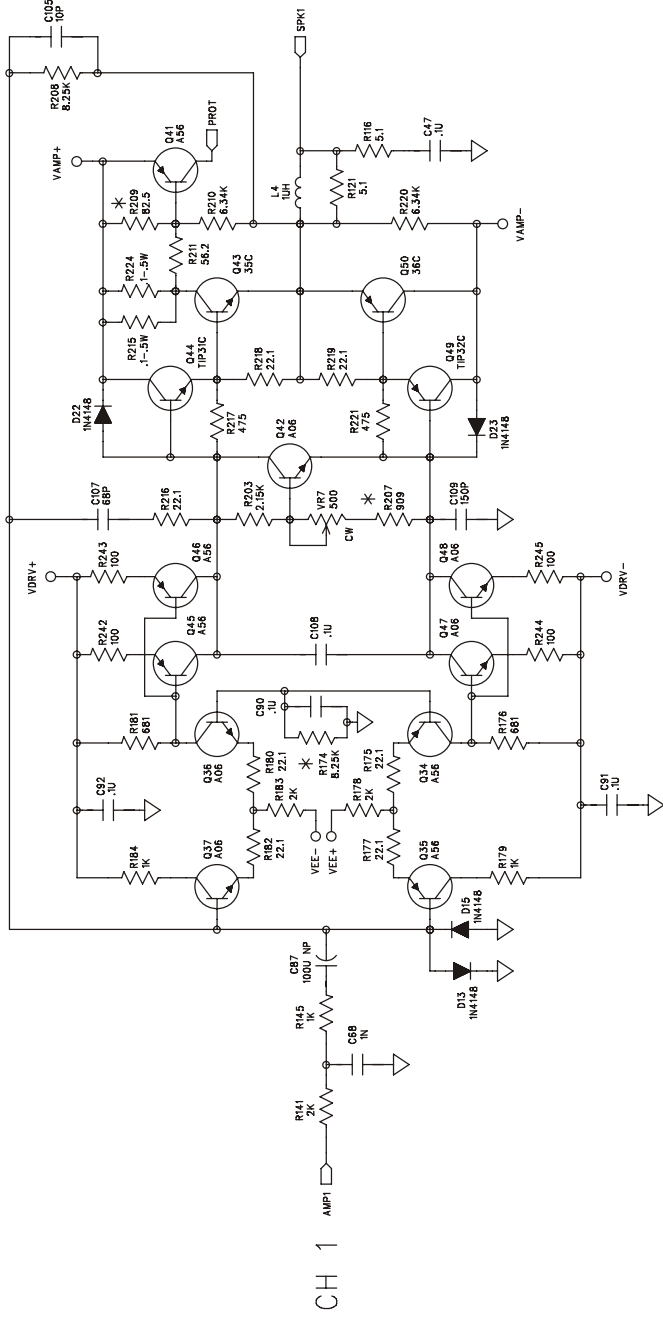
CIRCUIT DIAGRAM

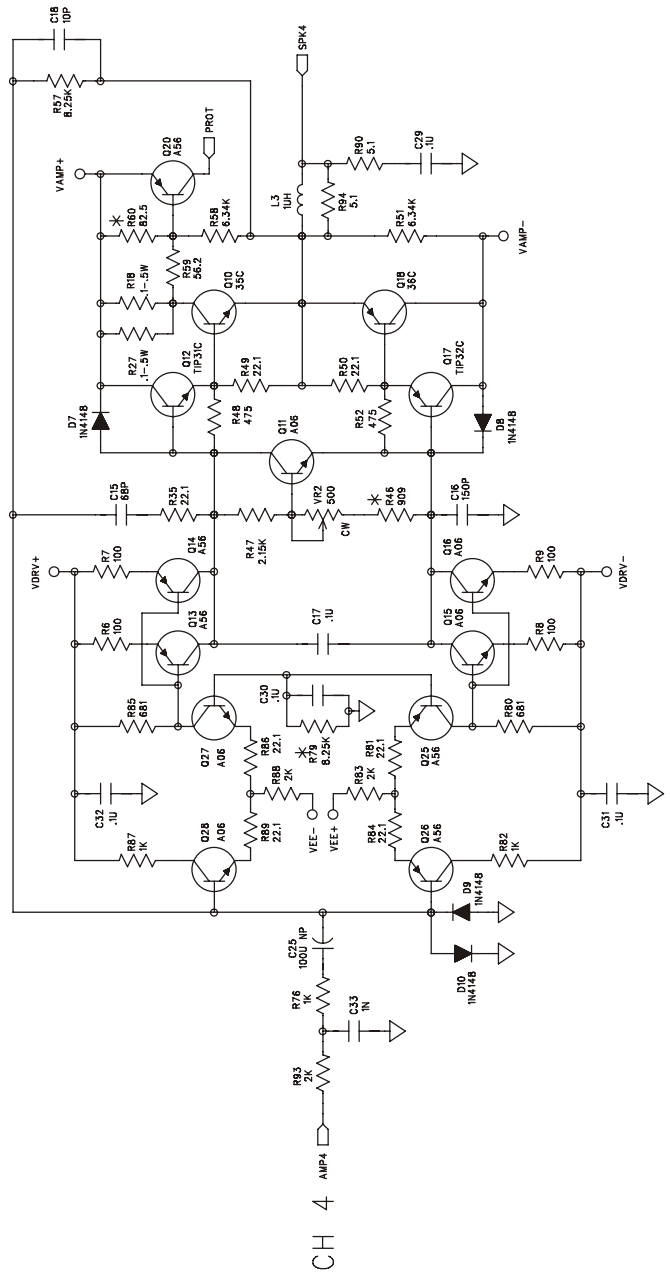
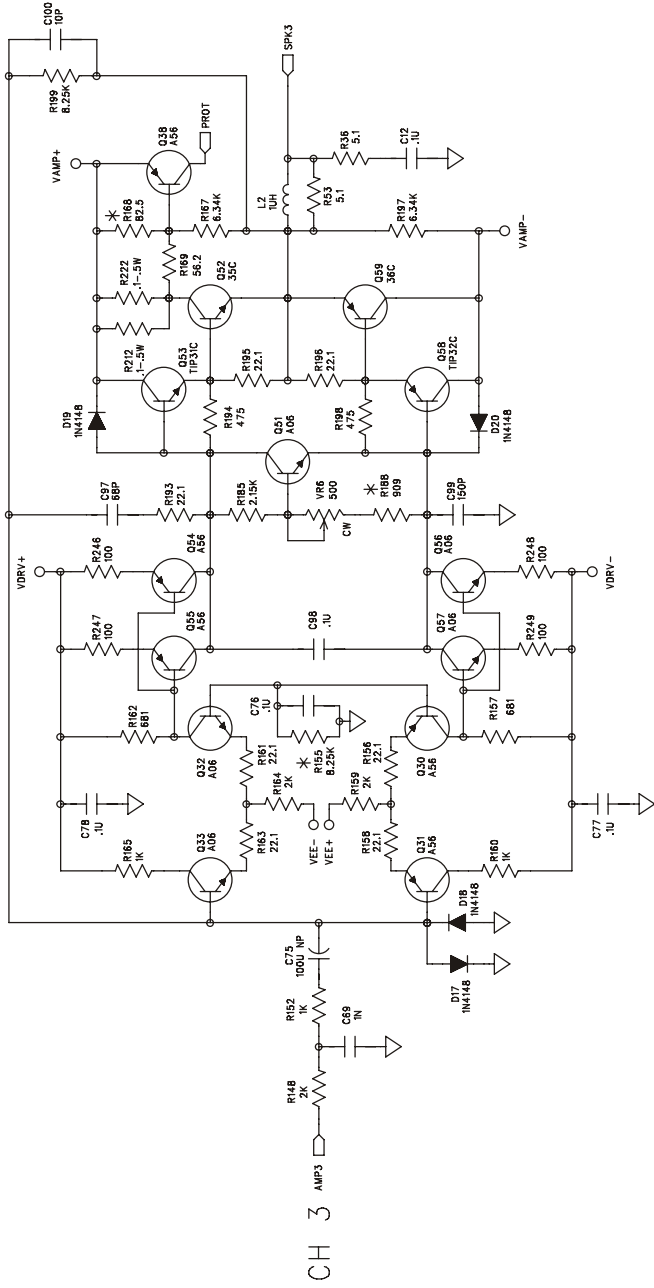






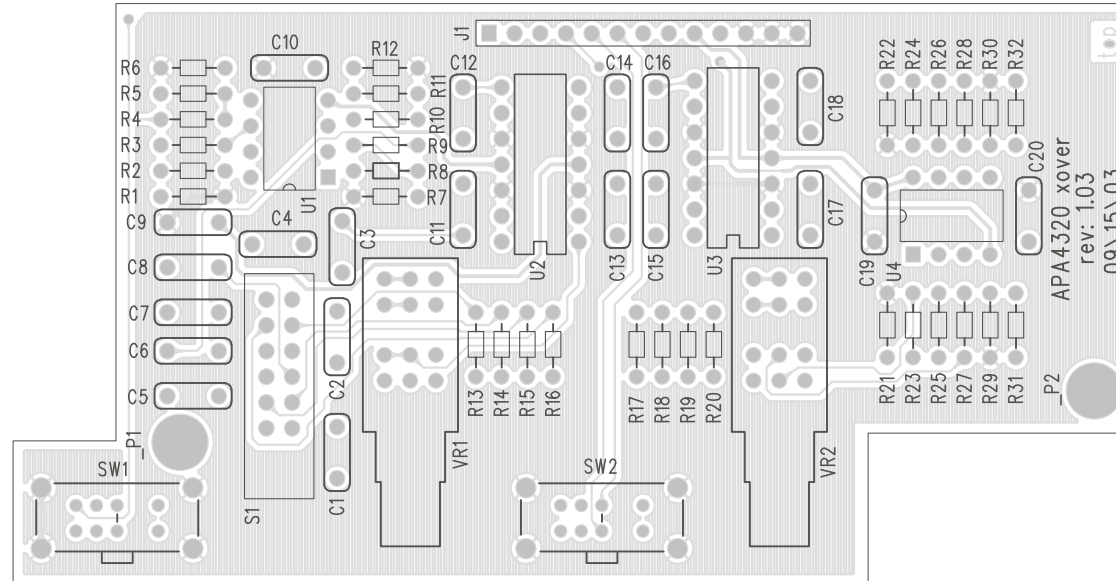
Screw Mount Holes
 L-O PAD#6
 L-O PAD#6
 L-O PAD#6



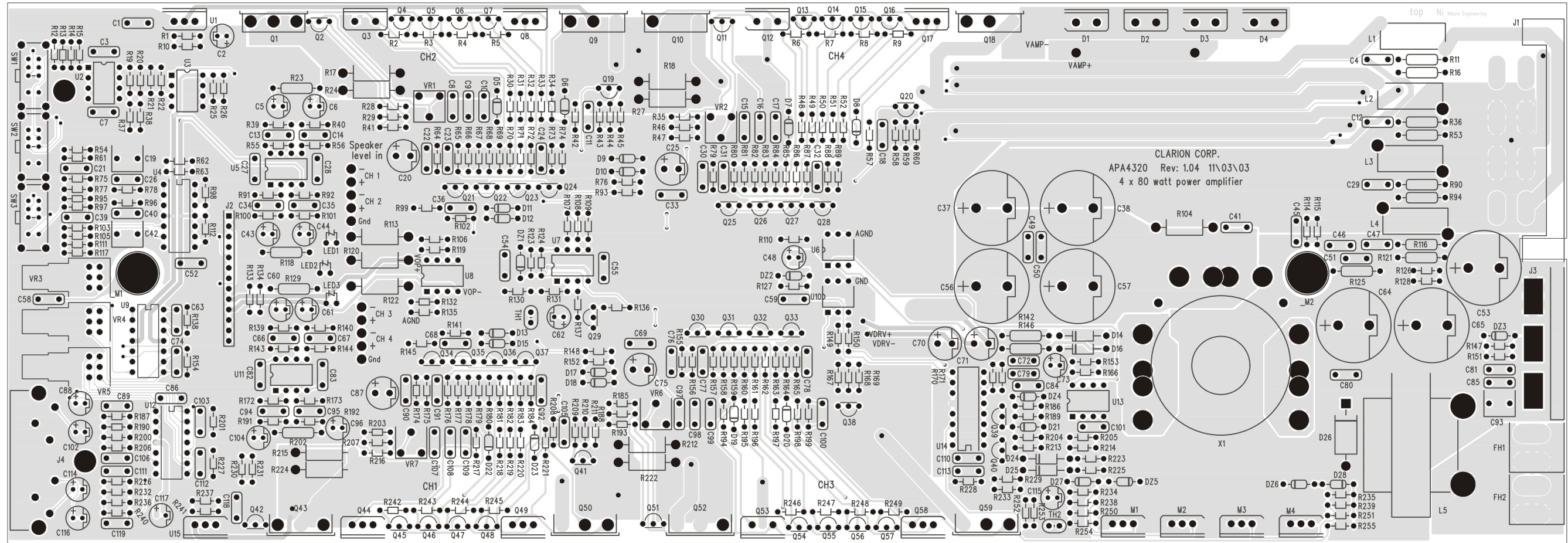


**PRINTED WIRING BOARD
MAIN PWB/CROSS-OVER PWB Section
PARTS SIDE VIEW**

CROSS-OVER PWB



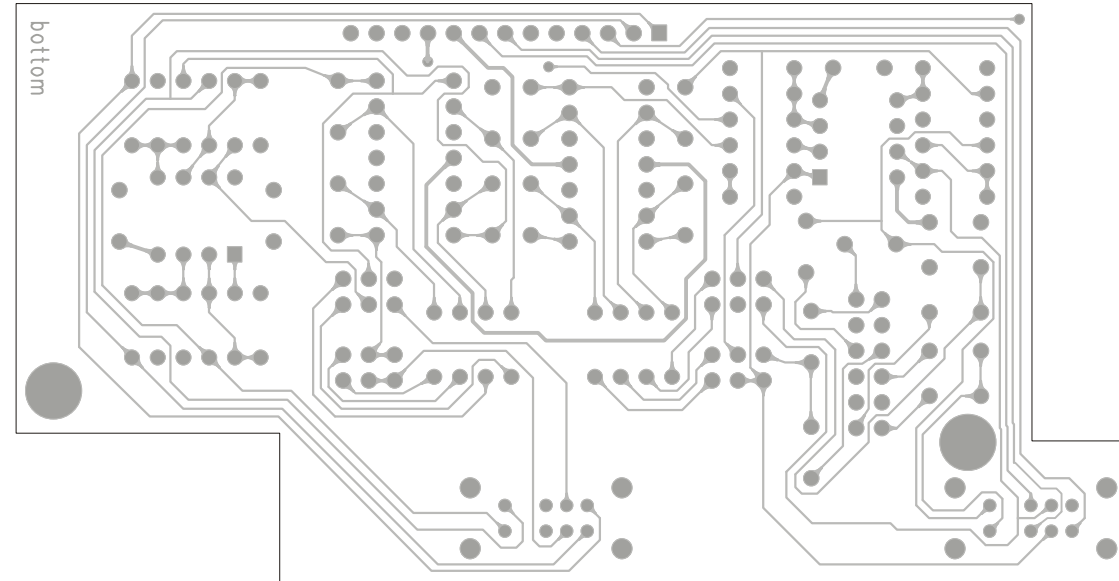
MAIN PWB



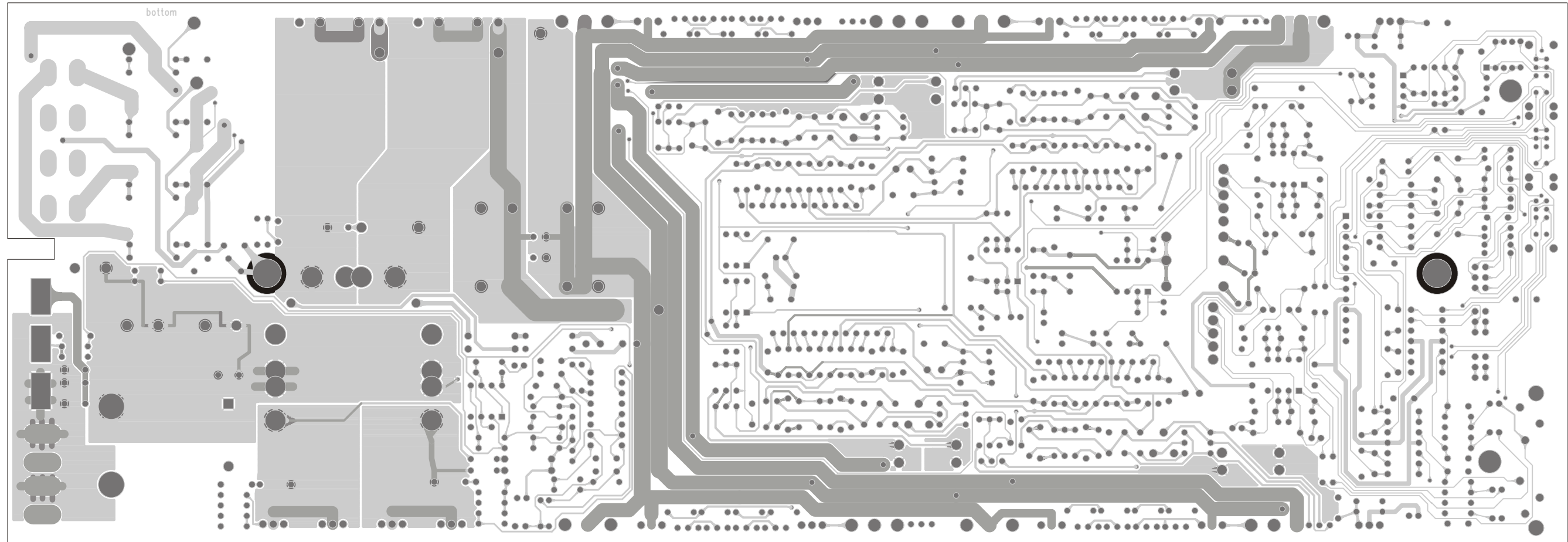
U2	U12 u4	U3 U1 U15	U11 U5	U8	U7	U6 U10	U13	IC
	Q1 Q42	Q2 Q43	Q3 Q44	Q4 Q45	Q5 Q34 Q46	Q6 Q21 Q35 Q47	Q7 Q22 Q36 Q48	Q8 Q23 Q37 Q49
				Q24	Q9 Q19 Q29 Q41 Q50	Q10 Q51	Q30 Q52	Q11 Q25 Q31
						Q12 Q26 Q32 Q53	Q13 Q27 Q33 Q54	Q14 Q28 Q38 Q55
						Q15 Q38 Q56	Q16 Q20 Q57	Q17 Q58
								Q18 Q39 Q40 Q59

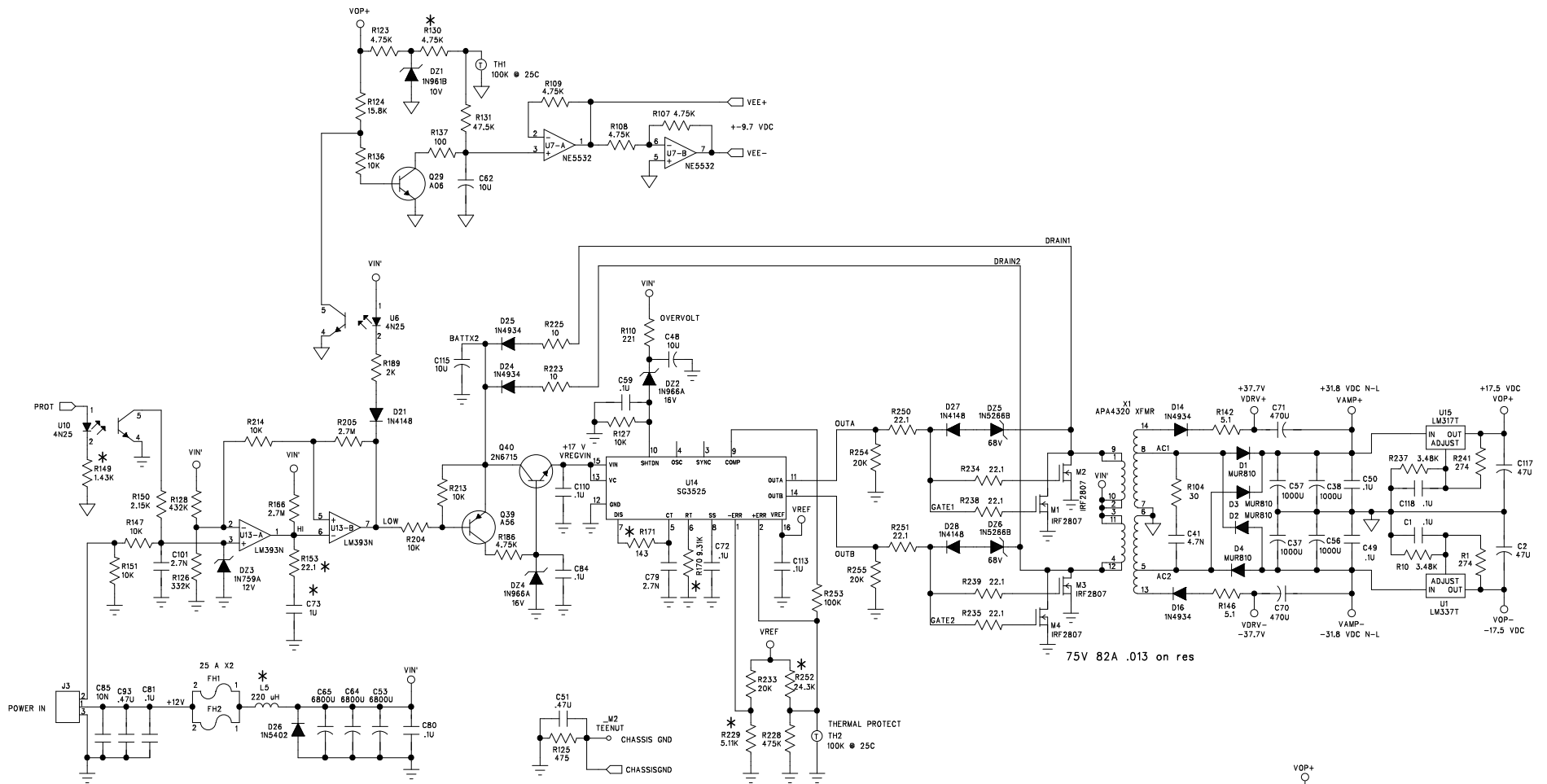
**PRINTED WIRING BOARD
MAIN PWB/CROSS-OVER PWB Section
SOLDER SIDE VIEW**

CROSS-OVER PWB

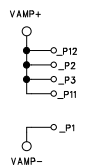
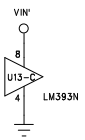
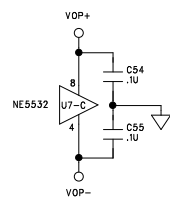
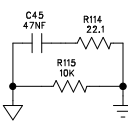
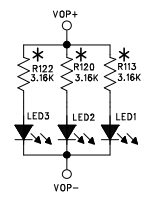


MAIN PWB

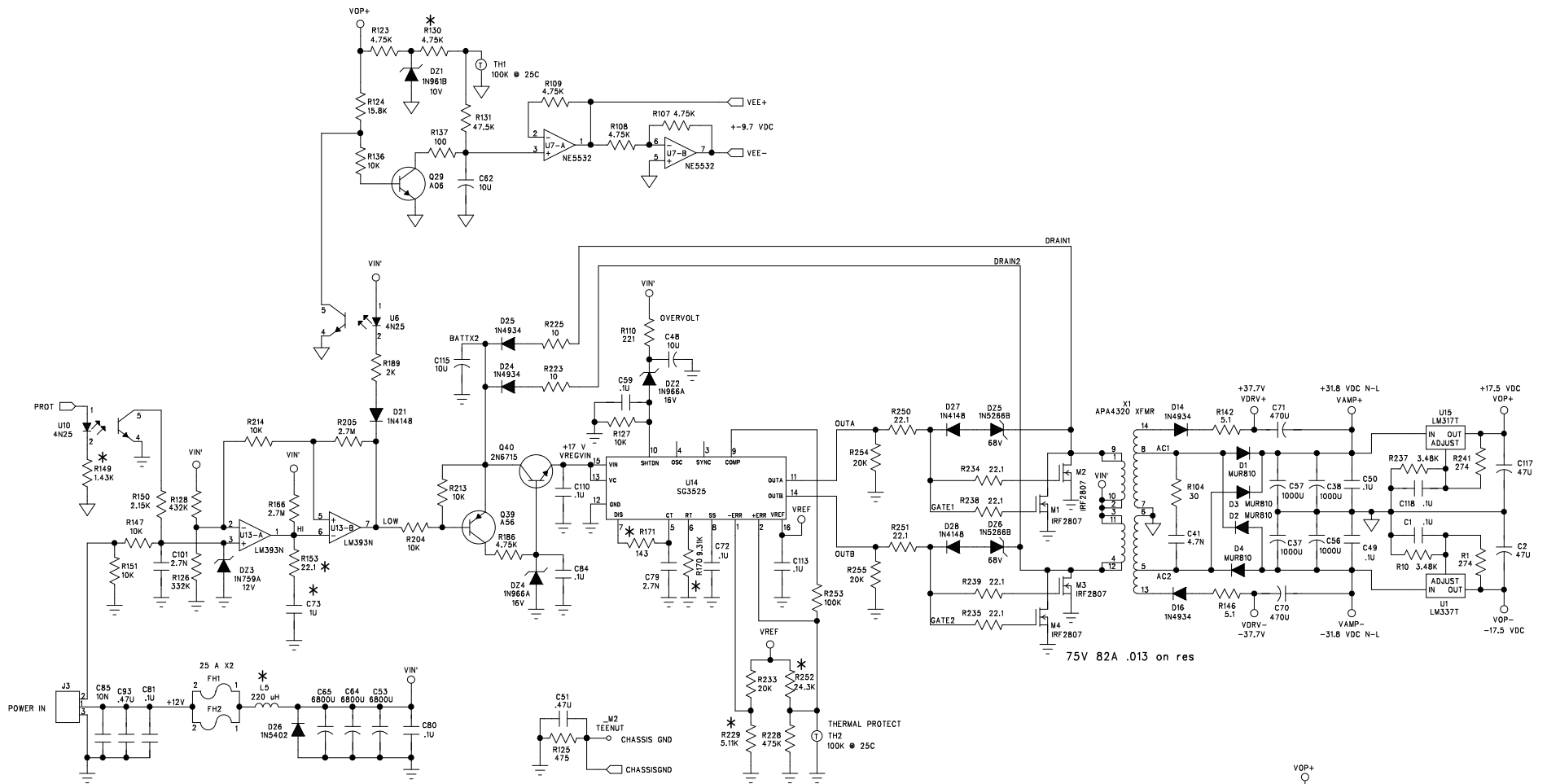




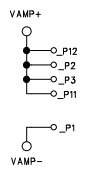
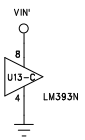
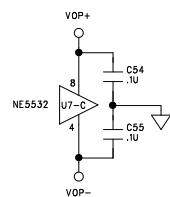
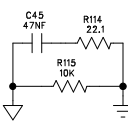
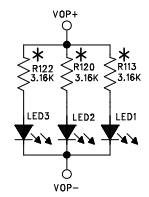
75V 82A .013 on res

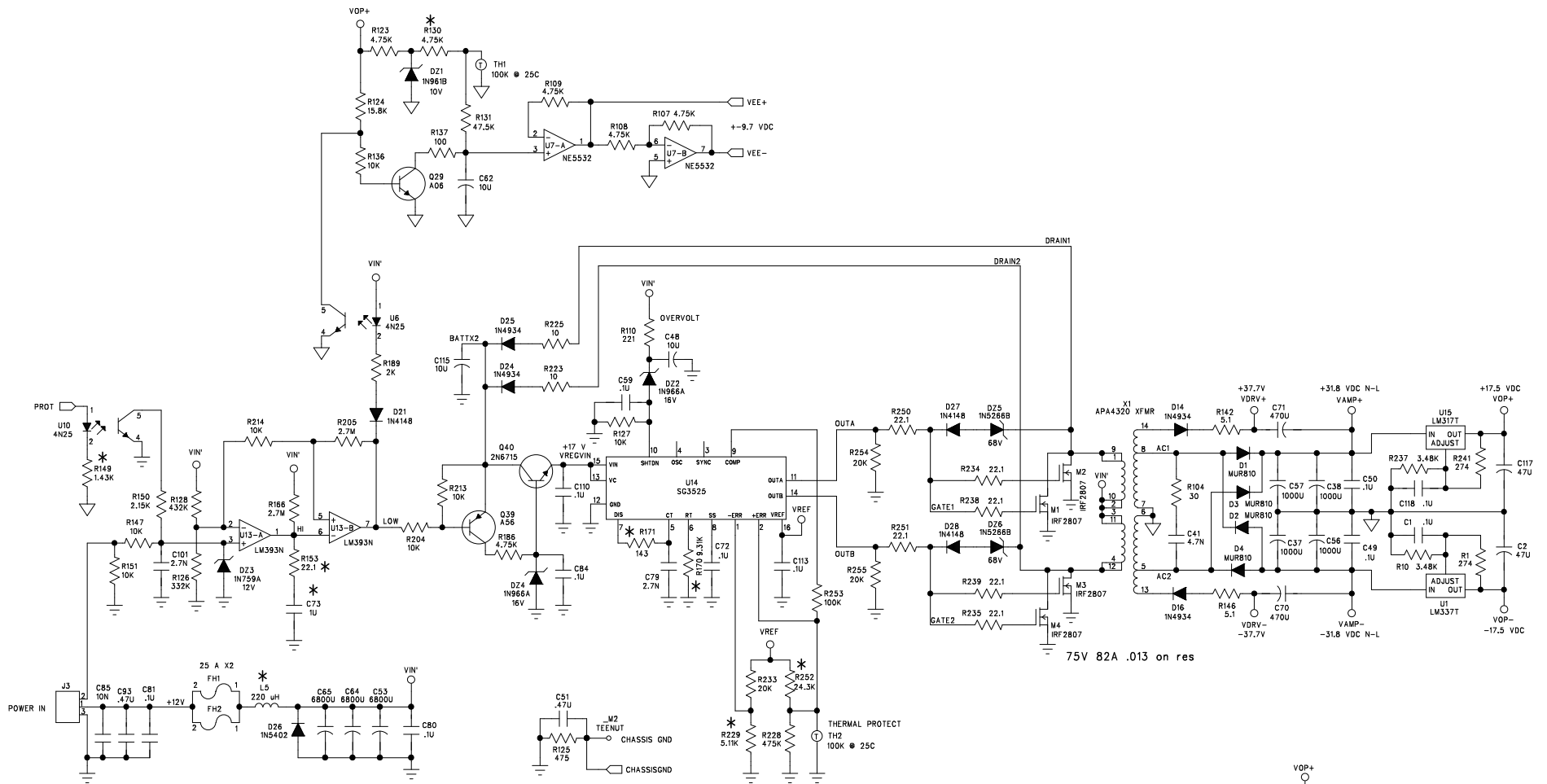


R32	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
S1	653-0432-97	18-00862-00	SW SP70300-0402	11SB-N W/KNOB BLACK	1
SW1	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
SW2	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
U1	653-0432-68	07-00072-01	I.C	TL072	1
U2	653-0432-69	07-00074-01	I.C.	TLO74	1
U3	653-0432-69	07-00074-01	I.C.	TLO74	1
U4	653-0432-68	07-00072-01	I.C	TL072	1
VR1	653-0432-96	15-40050-05	VR C50K*4	RK097142001E	1
VR2	653-0432-96	15-40050-05	VR C50K*4	RK097142001E	1

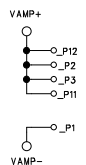
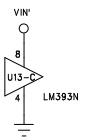
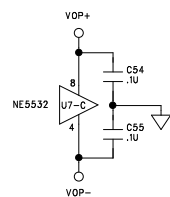
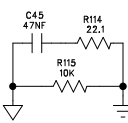
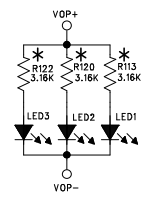


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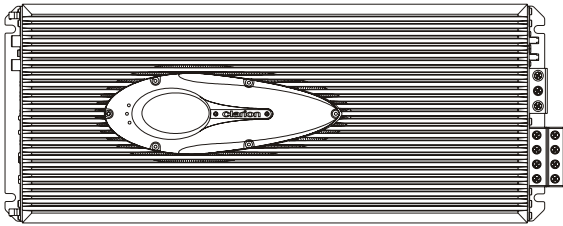




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Service Manual



160W x 4 Channel Power Amplifier

Model APA4320

(GA-980E-51)

SPECIFICATIONS

Rated Output:	80W x 4 (4-channel mode) (20Hz to 20kHz, 0.05%, 4ohm, 4-channel simultaneous output) 80W x 2 + 230W x 1 (3-channel mode) 230W x 2 (2-channel mode)
Maximum Power:	160W x 4
Frequency Response:	10Hz to 50kHz (+/-1.0dB)
Harmonic Distortion:	0.025% (1kHz, 10W, 4ohm)
S/N Rate:	100dB
Applicable	
Speaker Impedance:	4ohm (2ohm~8ohm)
Input Sensibility:	200mV to 6,000mV
Power Source Voltage:	14.4V
Ground:	Negative
Power Consumption:	37 (with 80Wx4 rate output) 1.6A (amplifier ON, no input)
Dimensions(mm):	165(w) x 56(h) x 409(D)mm
Weight:	3.9Kg

NOTE

- We cannot supply PWB with component parts in principle.
- When a circuit on PWB has failure, please repair it by component parts base. Parts, which are not mentioned in service manual, are not supplied.
- For improvement purposes, specifications and design are subject to change without prior notice.

FEATURES

1. Maximum Power Output 640W
2. Continuous Average Power Output 320W (80W x 4 Into 4ohm 20Hz to 20kHz at 0.05% THD)
3. Typical 2-Ohm Stereo 115W x 4 at 0.2% THD
4. Typical 2-Ohm Bridged Power 230W x 2 at 0.2% THD
5. Bass Extender Control 0~15dB at 45Hz
6. Adjustable 55Hz to 550Hz, 12dB/oct. High/Low-Pass Crossover
7. Mixed- Mode Operation
8. 4-, 3-, or 2- Channel Operation

9. MOSFET Output Design
10. Speaker Level Inputs
11. Double-Sided FR4 PC Board

To engineers in charge of repair or inspection of our products

Before repair or inspection, make sure to follow the instructions so that customers and Engineers in charge of repair or inspection can avoid suffering any risk or injury. Remodeling for which we shall not be liable, the onus of product liability (PL) shall not be our responsibility in cases where an accident or failure is as a result of unspecified parts being used or due to negligence during repair.

1. Use specified parts.
The system uses parts with special safety features against fire and voltage. Use only parts with equivalent characteristics when replacing them.
2. Place the parts and wiring back in their original positions after replacement or re-wiring.
For proper circuit construction, use of insulation tubes, bonding, gaps to PWB, etc, is involved. The wiring connection and routing to the PWB are specially planned using clamps to keep away from heated and high voltage parts. Ensure that they are placed back in their original positions after repair or inspection.
3. Check for safety after repair.
Check that the screws, parts and wires are put back securely in their original position after repair. Ensure for safety reasons there is no possibility of secondary problems around the repaired spots.
4. Caution in removal and making wiring connection to the parts for the automobile.
Disconnect the battery terminal after turning the ignition key off. If wrong wiring connections are made with the battery connected, a short circuit and/or fire may occur.

5. Cautions regarding chips.

Do not reuse removed chips even when no abnormality is observed in their appearance. Always replace them with new ones. (The chip parts include resistors, capacitors, diodes, transistors, etc). The negative pole of tantalum capacitors is highly susceptible to heat, so use special care when replacing them and check the operation afterwards.

temperature is around 270 Celsius degree.

Take care not to apply the iron tip repeatedly (more than three times) to the same patterns. Also take care not to apply the tip with force.

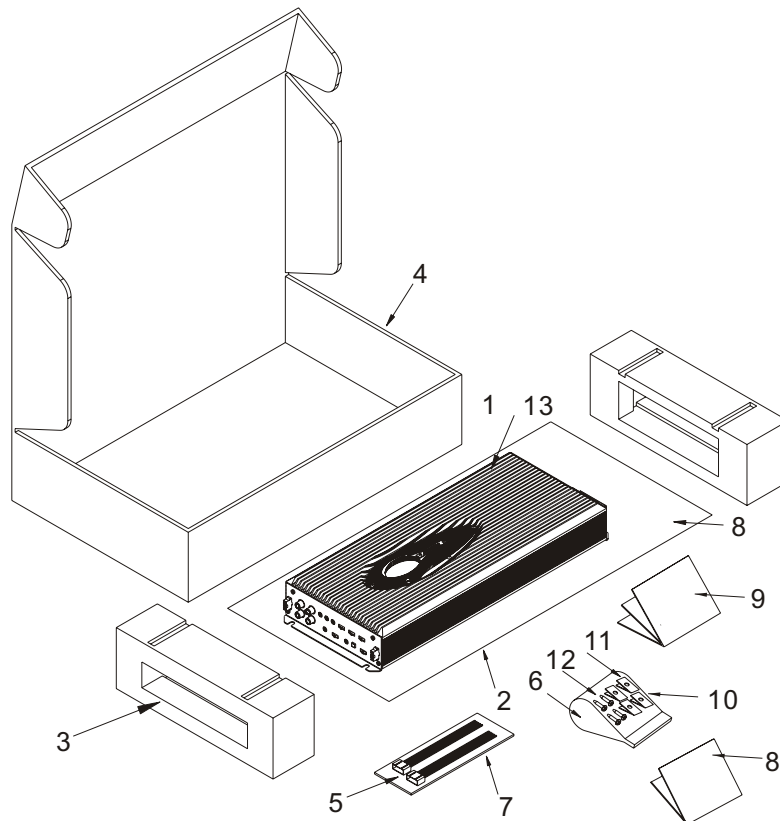
7. Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

6. Cautions in handling flexible PWB Before working with a soldering iron, make sure that the iron tip

TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
No audio	Low or no turn-on voltage	Check remote connections at amplifier and head unit.
	Blown fuse	Replace with new fast-blown fuse (same rating).
	Power wires not connected	-Check power and ground connection at amplifier. -Check battery connections.
	Speakers not connected or blown	-Check speaker connections at amplifier. -Measure coil impedance.
Audio cycles on and off	Thermal protection circuits are shutting amplifier off	- Check location for adequate ventilation. - Consult an authorized Clarion dealer
Disturbed sound	Gain controls is not set properly, or damaged speaker cones	-Adjust gain control -Check each speaker cone for signs of damage (e.g. frozen cone, burning smell, etc)
Sound lacks punch	Speakers wired incorrectly, which causes cancellation of bass frequencies	Check polarity of wires from amplifier to each speakers as illustrated in connection examples.
Whining or ticking noise in the sound with engine on	Amplifier is picking up alternator noise or radiated noise	-Check power and ground connections on amplifier. -Check or move audio cables. -Install an in-line noise filter on main units power wire. -Test for weak battery or add water to battery. -Check alternator and / or voltage regulator.

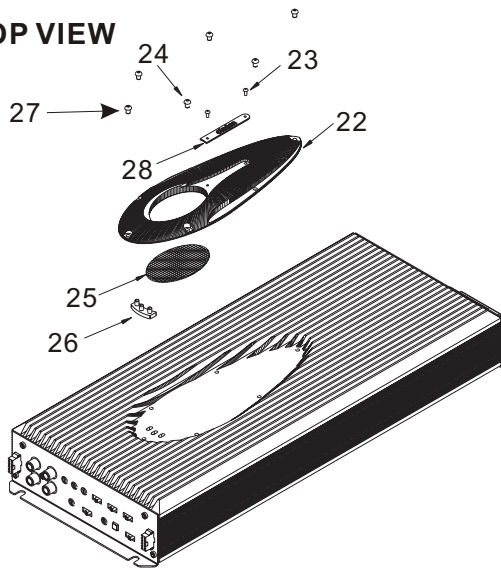
COMPONENTS / PARTS LIST



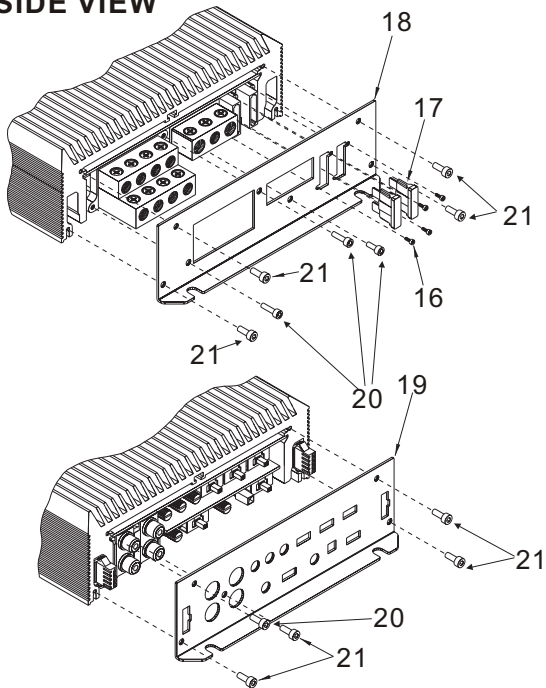
NO	PART NO	MANUFACTURE NO	DESCRIPTION	SPECIFICATION	Q'TY
1	653-0437-24	81-00304-00	SET PLATE	APA4320(CLARION)	1
2	-----	78-00051-00	PE BAG	30*55CM	1
3	-----	79-00APA-00	CARD BOARD	APA4320	2
4	-----	79-A4320-GK	GIFT BOX	APA4320(CLARION)	1
5	653-0437-12	35-00121-00	INPUT CONNECTOR (PACK)	H7755P-05 WIRE 300	2
6	-----	78-00294-00	ZIPPER BAG	#2, 6*8.5CM	1
7	-----	78-00294-01	ZIPPER BAG	#4,8.5*12mm	2
8	-----	82-00APA-WW	WARRANTY CARD	CLARION	1
9	-----	80-04320-WW	I/B	CLARION	1
10	653-0433-16	74-00173-00	PLATE NUT	ATTACHMENT	4
11	653-0437-18	76-00374-00	RUBBER WASHER	13mmX5mmX2mm	4
12	653-0433-44	ST-RP440-20	SCREW	R-HEAD BLACK 4*20	4
13	-----	81-00301-00	BARCODE	APA4320	1

EXPLODED VIEW / PARTS LIST

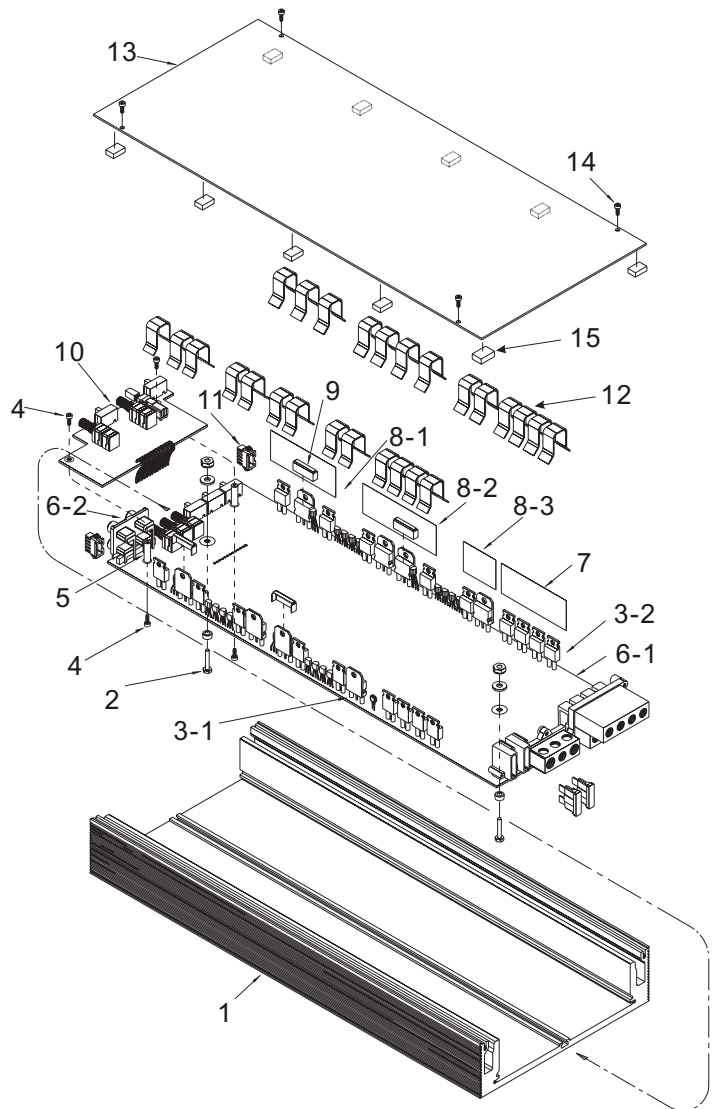
TOP VIEW



SIDE VIEW



BOTTOM VIEW



EXPLODED VIEW / PARTS LIST

NO.	PART NO.	MANUFACTURE NO.	DESCRIPTION	SPEC	QTY.
1	653-0437-19	77-00286-00	HEAT SINK	381.1mm BLACK	1
2	653-0433-45	YH-00007-00	SCREW	A+B+C+D	2
3-1	653-0433-23	78-00284-00	SILICON TUBE	2mm*6mm	16
3-2	653-0433-24	78-00292-00	SILICON TUBE	2mm*8mm	36
4	653-0437-25	SM-RP230-06	SCREW	R-HEAD NI- PLATED 3*6	4
5	653-0437-16	74-00154-00	COPPER BAR	16mm	2
6-1	653-0437-06	11-A4320-00	P.C.B.	APA4320	1
6-2	653-0437-10	32-20425-03	RCA JACK4P RL-	1418-4G	1
7	653-0433-31	78-00310-00	KAPTON	25mm*65mm	1
8-1	653-0433-28	78-00305-00	MICA	25*30mm	4
8-2	653-0433-29	78-00306-00	MICA	25*40mm	8
8-3	653-0433-30	78-00307-00	MICA	25*50mm	2
9	653-0433-14	74-00165-00	CLIP	- 0.5mm	4
10	653-0437-05	11-4320X-00	P.C.B.	APA4320 XOVER	1
11	653-0437-11	34-00150-02	INPUT CONNECTOR (ONBOARD)	H7755R-05 WIRE 140	2
12	653-0433-13	74-00153-00	CLIP	BLACK	26
13	653-0437-15	72-00384-00	BOTTOM COVER		1
14	653-0433-43	ST-RP430-06	SCREW	R-HEAD BLACK 3*6	6
15	653-0433-27	78-00296-00	SPONGE / ADHESIVE	10*20mm, 3mm(TH)	16
16	653-0433-42	ST-RP220-08	SCREW	R-HEAD NICKEL PLATED 2*8	4
17	653-0437-17	76-00279-00	FUSE	ATC-25A	2
18	653-0437-14	71-00559-00	REAR PANNEL	CLARION	1
19	653-0437-13	71-00558-00	FRONT PANNEL		1
20	653-0433-41	ST-IH230-12	SCREW	HEX NICKEL PLATED 3*12	4
21	653-0433-40	ST-IH230-08	SCREW	HEX NICKEL PLATED 3*8	8
22	653-0433-15	74-00172-00	EGG ALUMINUMFOGGY CHROME	MATEL COLOR	1
23	653-0433-37	SM-RH220-05	SCREW	NICKEL PLATED M2*5	2
24	653-0433-39	SM-RH230-05	SCREW	NICKEL PLATED M3*5	5
25	653-0433-12	73-00132-00	MESH	APA	1
26	653-0433-20	76-00382-00	LED PLATE	APA2160,4320	1
27	653-0433-38	SM-RH230-03	SCREW	NICKEL PLATED M3*3	1
28	653-0433-17	75-00020-00	BADGE	CLARION	1

ELECTRICAL PART LIST

MAIN PWB SECTION

NO.	PART NO.	MANUFACTURE NO.	DESCRIPTION	SPEC	QTY.
C1	653-0432-55	03-21040-04	POLY CAP	104J	1
C2	653-0432-50	02-24701-21	ELE. CAPACITOR	47uF/16V	1
C3	653-0432-55	03-21040-04	POLY CAP	104J	1
C4	653-0432-55	03-21040-04	POLY CAP	104J	1
C5	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C6	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C7	653-0432-55	03-21040-04	POLY CAP	104J	1
C8	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C9	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C10	653-0432-55	03-21040-04	POLY CAP	104J	1
C11	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C12	653-0432-55	03-21040-04	POLY CAP	104J	1
C13	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C14	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1

C15	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C16	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C17	653-0432-55	03-21040-04	POLY CAP	104J	1
C18	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C19	653-0432-60	03-24740-04	POLY CAP	474J	1
C20	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C21	653-0432-54	03-21030-04	POLY CAP	103J	1
C22	653-0432-55	03-21040-04	POLY CAP	104J	1
C23	653-0432-55	03-21040-04	POLY CAP	104J	1
C24	653-0432-55	03-21040-04	POLY CAP	104J	1
C25	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C26	653-0432-55	03-21040-04	POLY CAP	104J	1
C27	653-0432-55	03-21040-04	POLY CAP	104J	1
C28	653-0432-55	03-21040-04	POLY CAP	104J	1
C29	653-0432-55	03-21040-04	POLY CAP	104J	1
C30	653-0432-55	03-21040-04	POLY CAP	104J	1
C31	653-0432-55	03-21040-04	POLY CAP	104J	1
C32	653-0432-55	03-21040-04	POLY CAP	104J	1
C34	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C35	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C37	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C33	653-0432-53	03-21020-04	POLY CAP	102J	1
C38	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C36	653-0432-53	03-21020-04	POLY CAP	102J	1
C39	653-0432-54	03-21030-04	POLY CAP	103J	1
C40	653-0432-55	03-21040-04	POLY CAP	104J	1
C41	653-0432-58	03-24720-04	POLY CAP	472J	1
C42	653-0432-60	03-24740-04	POLY CAP	474J	1
C43	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C44	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C45	653-0432-59	03-24730-04	POLY CAP	473J	1
C46	653-0432-63	03-26820-04	POLY CAP	682J	1
C47	653-0432-55	03-21040-04	POLY CAP	104J	1
C48	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C49	653-0432-55	03-21040-04	POLY CAP	104J	1
C50	653-0432-55	03-21040-04	POLY CAP	104J	1
C51	653-0432-60	03-24740-04	POLY CAP	474J	1
C52	653-0432-55	03-21040-04	POLY CAP	104J	1
C53	653-0432-52	02-26803-21	ELE. CAPACITOR	6800uf/16V ESR	1
C54	653-0432-55	03-21040-04	POLY CAP	104J	1
C55	653-0432-55	03-21040-04	POLY CAP	104J	1
C56	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C57	653-0432-49	02-21003-41	E/C.16*32 L ESR	1000uf/50V 105C	1
C58	653-0432-63	03-26820-04	POLY CAP	682J	1
C59	653-0432-55	03-21040-04	POLY CAP	104J	1
C60	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C61	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C62	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C63	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C64	653-0432-52	02-26803-21	ELE. CAPACITOR	6800uf/16V ESR	1
C65	653-0432-52	02-26803-21	ELE. CAPACITOR	6800uf/16V ESR	1
C66	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C67	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C68	653-0432-53	03-21020-04	POLY CAP	102J	1
C69	653-0432-53	03-21020-04	POLY CAP	102J	1

C70	653-0432-51	02-24702-21	ELE. CAPACITOR	470uf/16V	1
C71	653-0432-51	02-24702-21	ELE. CAPACITOR	470uf/16V	1
C72	653-0432-55	03-21040-04	POLY CAP	104J	1
C73	653-0432-46	02-21000-41	ELE. CAPACITOR	1uf/50V	1
C74	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C75	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C76	653-0432-55	03-21040-04	POLY CAP	104J	1
C77	653-0432-55	03-21040-04	POLY CAP	104J	1
C78	653-0432-55	03-21040-04	POLY CAP	104J	1
C79	653-0432-57	03-22720-04	POLY CAP	272J	1
C80	653-0432-55	03-21040-04	POLY CAP	104J	1
C81	653-0432-55	03-21040-04	POLY CAP	104J	1
C82	653-0432-55	03-21040-04	POLY CAP	104J	1
C83	653-0432-55	03-21040-04	POLY CAP	104J	1
C84	653-0432-55	03-21040-04	POLY CAP	104J	1
C85	653-0432-54	03-21030-04	POLY CAP	103J	1
C86	653-0432-55	03-21040-04	POLY CAP	104J	1
C87	653-0437-04	02-21002-21	ELE. CAPACITOR	100uF/16V	1
C88	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C89	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C90	653-0432-55	03-21040-04	POLY CAP	104J	1
C91	653-0432-55	03-21040-04	POLY CAP	104J	1
C92	653-0432-55	03-21040-04	POLY CAP	104J	1
C93	653-0432-60	03-24740-04	POLY CAP	474J	1
C94	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C95	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C96	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C97	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C98	653-0432-55	03-21040-04	POLY CAP	104J	1
C99	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C100	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C101	653-0432-57	03-22720-04	POLY CAP	272J	1
C102	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C103	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C104	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C105	653-0432-64	04-20100-02	CERAMIC	10P -NPO- 50V	1
C106	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C107	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C108	653-0432-55	03-21040-04	POLY CAP	104J	1
C109	653-0432-56	03-21510-05	CERAMIC CAPACITOR	151P/K	1
C110	653-0432-55	03-21040-04	POLY CAP	104J	1
C111	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
C112	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C113	653-0432-55	03-21040-04	POLY CAP	104J	1
C114	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C115	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C116	653-0432-47	02-21001-41	ELE. CAPACITOR	10uf/50V	1
C117	653-0432-50	02-24701-21	ELE. CAPACITOR	47uF/16V	1
C118	653-0432-55	03-21040-04	POLY CAP	104J	1
C119	653-0432-65	04-20330-02	CERAMIC	33P -NPO- 100V	1
D1	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D2	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D3	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D4	653-0432-91	09-40008-00	RECT ULTRAFAST	FES8DT,MUR820	1
D5	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1

D6	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D7	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D8	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D9	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D10	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D11	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D12	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D13	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D14	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D15	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D16	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D17	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D18	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D19	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D20	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D21	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D22	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D23	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D24	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D25	653-0432-86	09-14934-00	DIODE FAST 100V	1N4934,1N4734	1
D26	653-0432-87	09-15401-01	DIODE	IN5402 3A/200V	1
D27	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
D28	653-0432-85	09-14148-01	DIODE 1N4148	DO-35 50mA 100V	1
DZ1	653-0432-88	09-20100-03	ZENER DIODE	HZ11-2TA 10V	1
DZ2	653-0432-90	09-20160-03	ZENER DIODE	HZ16-2TA 16V	1
DZ3	653-0432-89	09-20120-03	ZENER DIODE	1N759A 12V 1/2W	1
DZ4	653-0432-90	09-20160-03	ZENER DIODE	HZ16-2TA 16V	1
DZ5	653-0432-84	09-00680-00	ZENER 68V	1N981B,1N5266B	1
DZ6	653-0432-84	09-00680-00	ZENER 68V	1N981B,1N5266B	1
FH1	653-0433-19	76-00239-00	FUSE HOLD	JEF-703E	1
FH2	653-0433-19	76-00239-00	FUSE HOLD	JEF-703E	1
J2	653-0437-08	26-00348-00	CONNECTOR CABLE	13PIN 60mm 3*3	1
J3	653-0433-04	32-00655-00	TERMINAL	SL-KOR-3P	1
L1	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L2	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L3	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L4	653-0433-01	20-00107-00	COIL (17-1/2)	SMALL ZIBBLE	1
L5	653-0433-02	20-00144-00	CHOKER MH-7380	TOROID PWRIN	1
LED1	653-0432-99	19-00302-01	LED BLUE	BB437C	1
LED2	653-0432-99	19-00302-01	LED BLUE	BB437C	1
LED3	653-0432-99	19-00302-01	LED BLUE	BB437C	1
M1	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
M2	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
M3	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
M4	653-0432-80	08-02807-00	HEXFET	IRF2807 82A 75V	1
Q1	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1
Q2	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q3	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q4	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q5	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q6	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q7	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q8	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q9	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
Q10	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1

Q11	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q12	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q13	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q14	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q15	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q16	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q17	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q18	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
Q19	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q20	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q21	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q22	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q23	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q24	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q24	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q25	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q26	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q27	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q28	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q29	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q30	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q31	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q32	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q33	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q34	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q35	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q36	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q37	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q38	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q39	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q40	653-0432-83	08-26715-00	TRANSISTOR	2N6715 2A 50V	1
Q41	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q43	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1
Q44	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q45	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q46	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q47	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q48	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q49	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q50	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
Q51	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q52	653-0432-78	08-00035-00	TRANSISTOR	TIP35C	1
Q53	653-0432-76	08-00031-00	TRANSISTOR	TIP31C	1
Q54	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q55	653-0432-82	08-10056-01	T.R	MPSA56 (bulk)	1
Q56	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q57	653-0432-81	08-10006-01	T.R	MPSA06 (bulk)	1
Q58	653-0432-77	08-00032-00	TRANSISTOR	TIP32C	1
Q59	653-0432-79	08-00036-00	TRANSISTOR	TIP36C	1
R1	653-0432-22	01-52710-63	RESISTOR 1%	274 ohm 1/8W	1
R2	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R3	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R4	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R5	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R6	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1

R7	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R8	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R9	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R10	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R11	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R12	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R13	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R14	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R15	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R16	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R17	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R18	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R19	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R20	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R22	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R23	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R24	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R25	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R26	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R27	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R28	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R29	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R30	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R31	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R32	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R33	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R34	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R35	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R36	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R37	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R38	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R39	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R40	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R41	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R42	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R43	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R44	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R45	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R46	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R47	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R48	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R49	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R50	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R51	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R52	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R53	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R54	653-0432-40	01-57510-63	RESISTOR 1%	750 ohm 1/8W	1
R55	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R56	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R57	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R58	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R59	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R60	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R61	653-0432-44	01-59300-63	RESISTOR 1%	93.1 ohm 1/8W	1
R62	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1

R63	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R64	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R65	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R66	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R67	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R68	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R69	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R70	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R71	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R72	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R73	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R74	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R75	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R76	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R77	653-0432-33	01-54740-63	RESISTOR 1%	475 K 1/8W	1
R78	653-0432-08	01-51101-63	RESISTOR 1%	1.1 K 1/8W	1
R79	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R80	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R81	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R82	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R83	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R84	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R85	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R86	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R87	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R88	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R89	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R90	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R91	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R92	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R93	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R94	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R95	653-0432-33	01-54740-63	RESISTOR 1%	475 K 1/8W	1
R96	653-0432-08	01-51101-63	RESISTOR 1%	1.1 K 1/8W	1
R97	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R98	653-0432-20	01-52440-63	RESISTOR 1%	243 K 1/8W	1
R99	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R100	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R101	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R102	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R103	653-0432-44	01-59300-63	RESISTOR 1%	93.1 ohm 1/8W	1
R104	653-0432-03	01-13000-22	RESISTOR -MO-	30 ohm 1/2W	1
R105	653-0432-40	01-57510-63	RESISTOR 1%	750 ohm 1/8W	1
R106	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R107	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R108	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R109	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R110	653-0432-17	01-52200-63	RESISTOR 1%	221 ohm 1/8W	1
R111	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R112	653-0432-20	01-52440-63	RESISTOR 1%	243 K 1/8W	1
R113	653-0432-23	01-53120-22	RESISTOR 1%	3.16 K 1/2W	1
R114	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R115	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R116	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R117	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1

R118	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R119	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R120	653-0432-23	01-53120-22	RESISTOR 1%	3.16 K 1/2W	1
R121	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R122	653-0432-23	01-53120-22	RESISTOR 1%	3.16 K 1/2W	1
R123	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R124	653-0432-11	01-51538-63	RESISTOR 1%	15.8 K 1/8W	1
R125	653-0432-29	01-54710-43	RESISTOR 1%	475 ohm 1/4W	1
R126	653-0432-25	01-53340-63	RESISTOR 1%	332 K 1/8W	1
R127	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R128	653-0432-28	01-54340-63	RESISTOR 1%	432 K 1/8W	1
R129	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R130	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R131	653-0432-32	01-54730-63	RESISTOR 1%	47.5 K 1/8W	1
R132	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R133	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R134	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R136	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R137	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R138	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R139	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R140	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R141	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R142	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R143	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R144	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R145	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R146	653-0432-34	01-55001-43	RESISTOR 1%	5.1 ohm 1/4W	1
R147	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R148	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R149	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R150	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R151	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R152	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R153	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R154	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R155	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R156	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R157	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R158	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R159	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R160	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R161	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R162	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R163	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R164	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R165	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R166	653-0432-02	01-12750-63	RESISTOR	2.7 M 1/8W	1
R168	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R167	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R169	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R170	653-0432-45	01-59320-63	RESISTOR 1%	9.31 K 1/8W	1
R171	653-0437-02	01-51411-63	RESISTOR 1%	143 ohm 1/8W	1
R172	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1
R173	653-0432-12	01-51830-63	RESISTOR 1%	18.2 K 1/8W	1

R174	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R175	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R176	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R177	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R178	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R179	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R180	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R181	653-0432-39	01-56800-63	RESISTOR 1%	681 ohm 1/8W	1
R182	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R183	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R184	653-0432-06	01-51020-63	RESISTOR 1%	1 K 1/8W	1
R185	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R186	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R187	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R188	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R189	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R190	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R191	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R192	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R193	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R194	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R195	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R196	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R197	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R198	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R199	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R200	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R201	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R202	653-0432-27	01-53910-43	RESISTOR 1%	392 ohm 1/4W	1
R203	653-0432-15	01-52120-63	RESISTOR 1%	2.15 K 1/8W	1
R204	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R205	653-0432-02	01-12750-63	RESISTOR	2.7 M 1/8W	1
R206	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R207	653-0432-43	01-59000-63	RESISTOR 1%	909 ohm 1/8W	1
R208	653-0432-42	01-58220-63	RESISTOR 1%	8.25 K 1/8W	1
R209	653-0432-41	01-58200-63	RESISTOR 1%	82.5 ohm 1/8W	1
R210	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R211	653-0432-36	01-55618-63	RESISTOR 1%	56.2 ohm 1/8W	1
R212	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R213	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R214	653-0432-07	01-51030-63	RESISTOR 1%	10 K 1/8W	1
R215	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R216	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R217	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R218	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R219	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R220	653-0432-38	01-56320-63	RESISTOR 1%	6.34 K 1/8W	1
R221	653-0432-30	01-54710-63	RESISTOR 1%	475 ohm 1/8W	1
R222	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R223	653-0432-04	01-51000-63	RESISTOR 1%	10 ohm 1/8W	1
R224	653-0432-01	01-10001-22	RESISTOR -MO-	0.1 ohm 1/2W	1
R225	653-0432-04	01-51000-63	RESISTOR 1%	10 ohm 1/8W	1
R226	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R227	653-0432-37	01-55910-63	RESISTOR 1%	590 ohm 1/8W	1
R228	653-0432-33	01-54740-63	RESISTOR 1%	475 K 1/8W	1

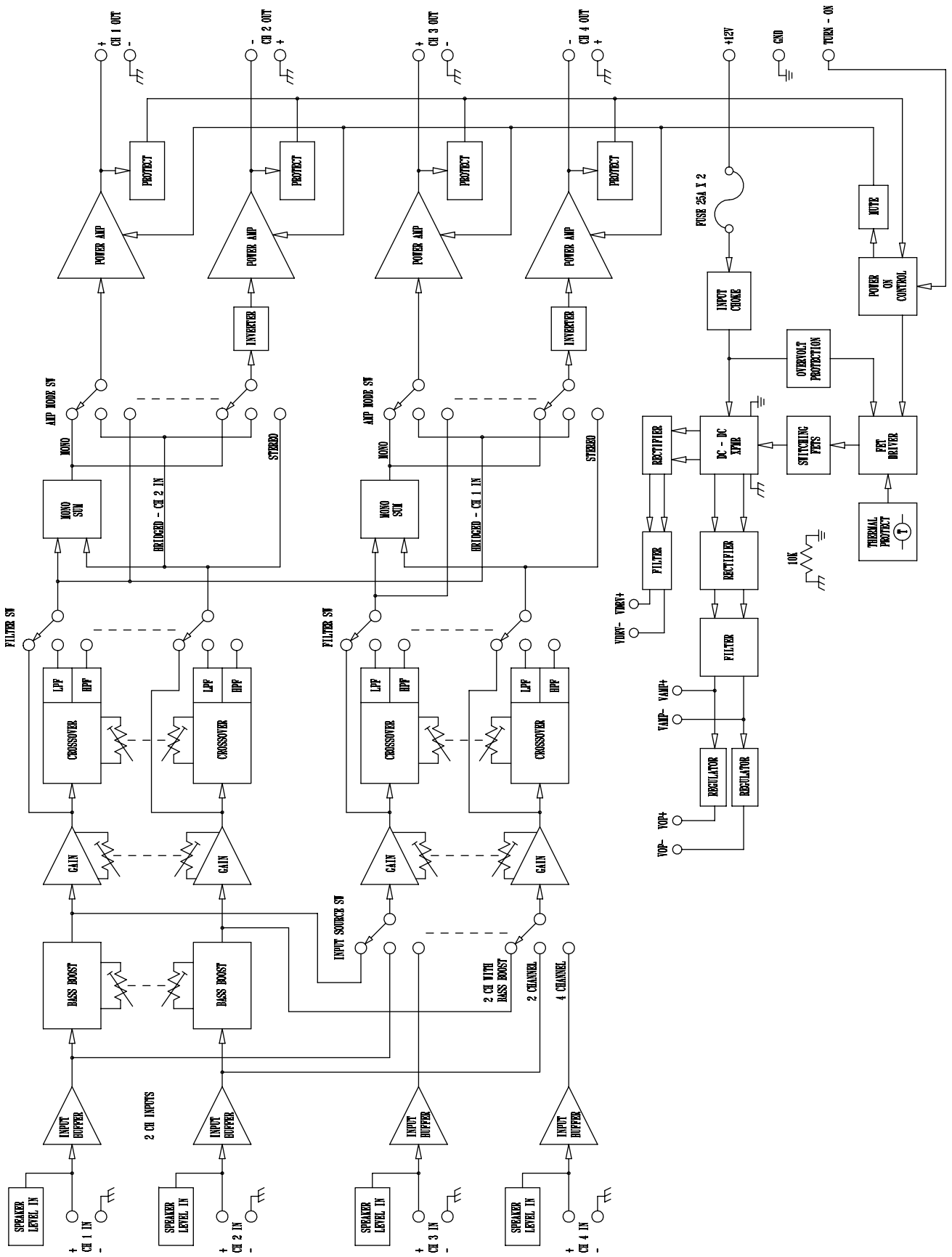
R229	653-0432-35	01-55120-63	RESISTOR 1%	5.11 K 1/8W	1
R230	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R231	653-0432-16	01-52130-63	RESISTOR 1%	21 K 1/8W	1
R232	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R233	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R234	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R235	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R236	653-0432-24	01-53330-63	RESISTOR 1%	33.2 K 1/8W	1
R237	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R238	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R239	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R240	653-0432-19	01-52230-63	RESISTOR 1%	22.1 K 1/8W	1
R241	653-0432-22	01-52710-63	RESISTOR 1%	274 ohm 1/8W	1
R242	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R243	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R244	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R245	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R246	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R247	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R248	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R249	653-0432-05	01-51010-63	RESISTOR 1%	100 ohm 1/8W	1
R250	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R251	653-0432-18	01-52206-63	RESISTOR 1%	22.1 ohm 1/8W	1
R252	653-0437-03	01-52430-63	RESISTOR 1%	24.3 K 1/8W	1
R253	653-0437-01	01-51040-63	RESISTOR 1%	100 K 1/8W	1
R254	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
R255	653-0432-14	01-52030-63	RESISTOR 1%	20 K 1/8W	1
SW1	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
SW2	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
SW3	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
TH1	653-0432-94	13-11003-00	THERMISTOR BEAD	TDC05D410L 100K	1
TH2	653-0432-94	13-11003-00	THERMISTOR BEAD	TDC05D410L 100K	1
U1	653-0432-71	07-00337-00	I.C.	KA337TU	1
U2	653-0432-68	07-00072-01	I.C	TL072	1
U3	653-0432-75	07-05532-00	I.C.	NTM5532D	1
U4	653-0432-69	07-00074-01	I.C.	TLO74	1
U5	653-0432-68	07-00072-01	I.C	TL072	1
U6	653-0432-67	07-00025-00	I.C.	4N25	1
U7	653-0432-75	07-05532-00	I.C.	NTM5532D	1
U8	653-0432-75	07-05532-00	I.C.	NTM5532D	1
U9	653-0432-73	07-00837-00	I.C. (SGS)	MC33079N, LM837N	1
U10	653-0432-67	07-00025-00	I.C.	4N25	1
U11	653-0432-68	07-00072-01	I.C	TL072	1
U12	653-0432-73	07-00837-00	I.C. (SGS)	MC33079N, LM837N	1
U13	653-0432-72	07-00393-01	I.C	LM393N	1
U14	653-0432-74	07-03525-01	I.C.	SG3525AN	1
U15	653-0432-70	07-00317-00	I.C.	KA317TU	1
VR1	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
VR2	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
VR3	653-0432-95	15-20203-15	VR 20KB*2	RK097122011K	1
VR4	653-0432-95	15-20203-15	VR 20KB*2	RK097122011K	1
VR5	653-0432-95	15-20203-15	VR 20KB*2	RK097122011K	1
VR6	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
VR7	653-0432-93	13-00207-00	TRIM-6-VERT-500	500 ohm	1
X1	653-0437-07	20-00146-00	TRANSFORMER	APA4320	1
J4	653-0437-10	32-20425-03	RCAJACK4PRL-	1418-4G	1

CROSS-OVER

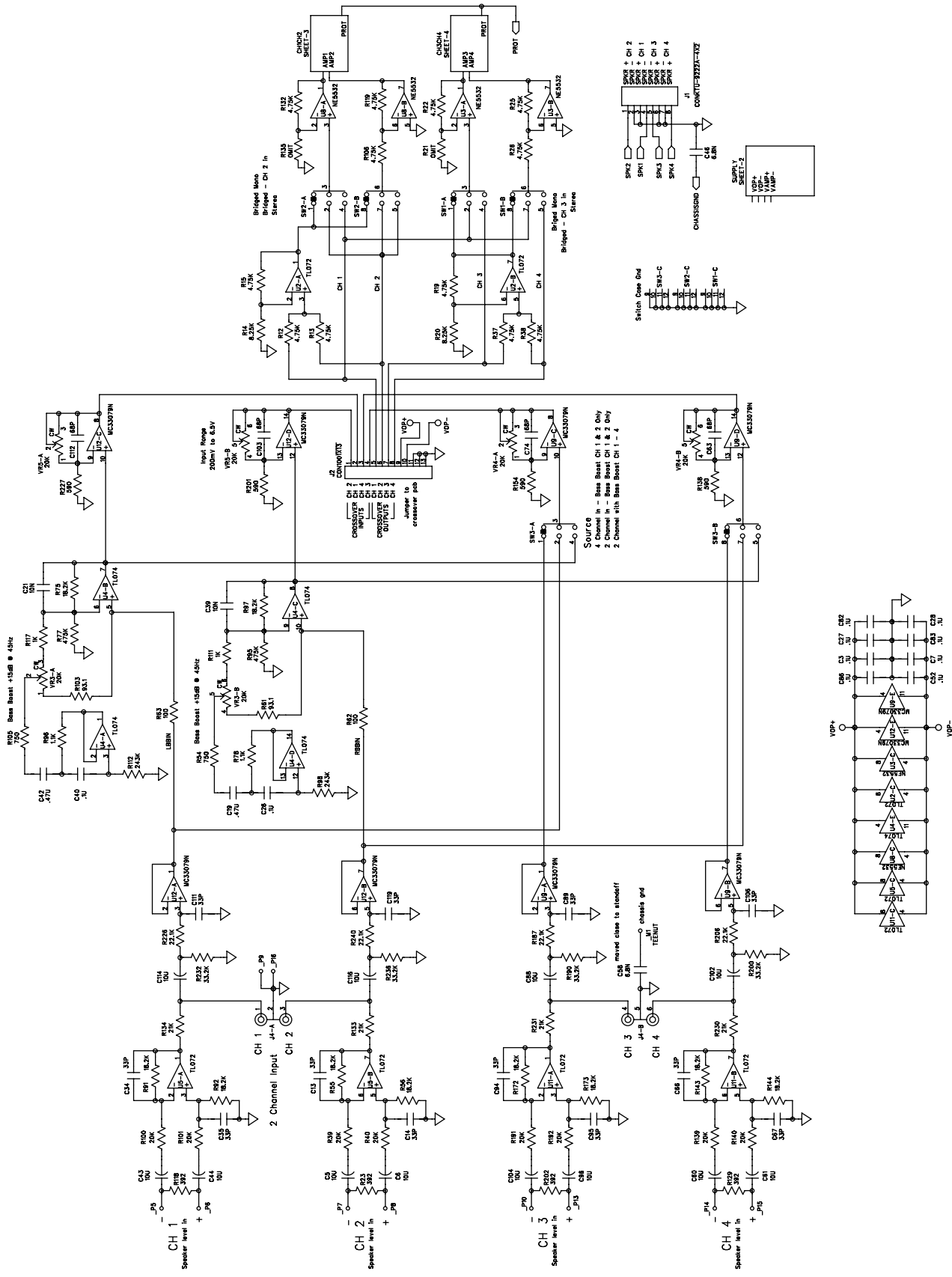
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C1	653-0432-62	03-25630-04	POLY CAP	563J	1
C2	653-0432-61	03-25620-04	POLY CAP	562J	1
C3	653-0432-62	03-25630-04	POLY CAP	563J	1
C4	653-0432-61	03-25620-04	POLY CAP	562J	1
C5	653-0432-62	03-25630-04	POLY CAP	563J	1
C6	653-0432-61	03-25620-04	POLY CAP	562J	1
C7	653-0432-62	03-25630-04	POLY CAP	563J	1
C8	653-0432-61	03-25620-04	POLY CAP	562J	1
C9	653-0432-55	03-21040-04	POLY CAP	104J	1
C10	653-0432-55	03-21040-04	POLY CAP	104J	1
C11	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C12	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C13	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C14	653-0432-66	04-20680-02	CERAMIC	68P -NPO- 50V	1
C15	653-0432-62	03-25630-04	POLY CAP	563J	1
C16	653-0432-62	03-25630-04	POLY CAP	563J	1
C17	653-0432-62	03-25630-04	POLY CAP	563J	1
C18	653-0432-62	03-25630-04	POLY CAP	563J	1
C19	653-0432-55	03-21040-04	POLY CAP	104J	1
C20	653-0432-55	03-21040-04	POLY CAP	104J	1
J1	653-0437-09	32-00656-00	TERMINAL	SLL-KOR-4P*2	1
R1	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R2	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R3	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R4	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R5	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R6	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R7	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R8	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R9	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R10	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R11	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R12	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R13	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R14	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R15	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R16	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R17	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R18	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R19	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R20	653-0432-31	01-54720-63	RESISTOR 1%	4.75 K 1/8W	1
R21	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R22	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R23	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R24	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R25	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R26	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
R27	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R28	653-0432-10	01-51420-63	RESISTOR 1%	1.43 K 1/8W	1
R29	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R30	653-0432-26	01-53420-63	RESISTOR 1%	3.48 K 1/8W	1
R31	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1

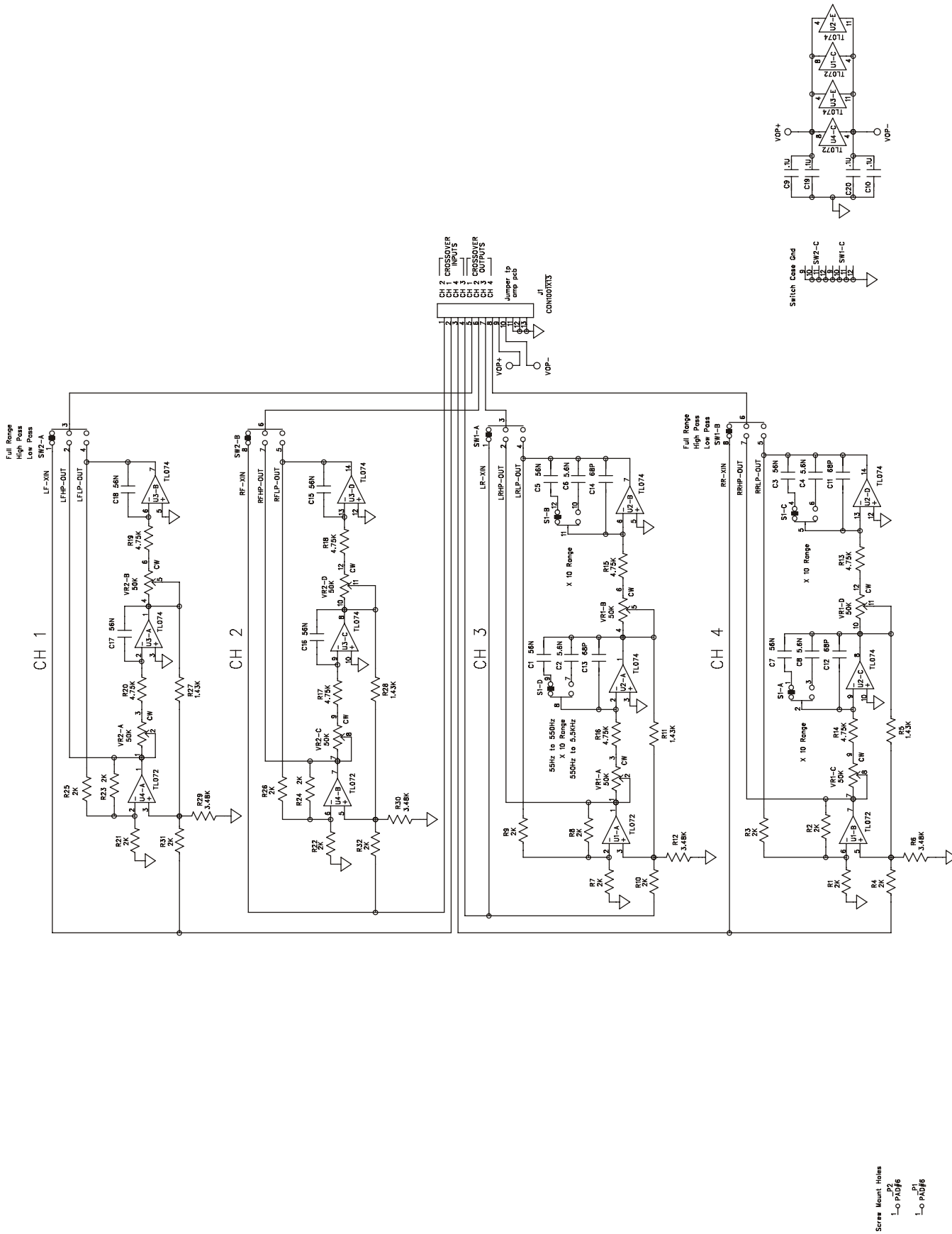
R32	653-0432-13	01-52020-63	RESISTOR 1%	2 K 1/8W	1
S1	653-0432-97	18-00862-00	SW SP70300-0402	11SB-N W/KNOB BLACK	1
SW1	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
SW2	653-0432-98	18-30001-01	SWITCH SV65020	H0203-6H-01-FN	1
U1	653-0432-68	07-00072-01	I.C	TL072	1
U2	653-0432-69	07-00074-01	I.C.	TLO74	1
U3	653-0432-69	07-00074-01	I.C.	TLO74	1
U4	653-0432-68	07-00072-01	I.C	TL072	1
VR1	653-0432-96	15-40050-05	VR C50K*4	RK097142001E	1
VR2	653-0432-96	15-40050-05	VR C50K*4	RK097142001E	1

BLOCK DIAGRAM

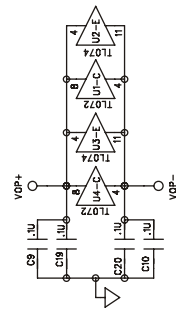
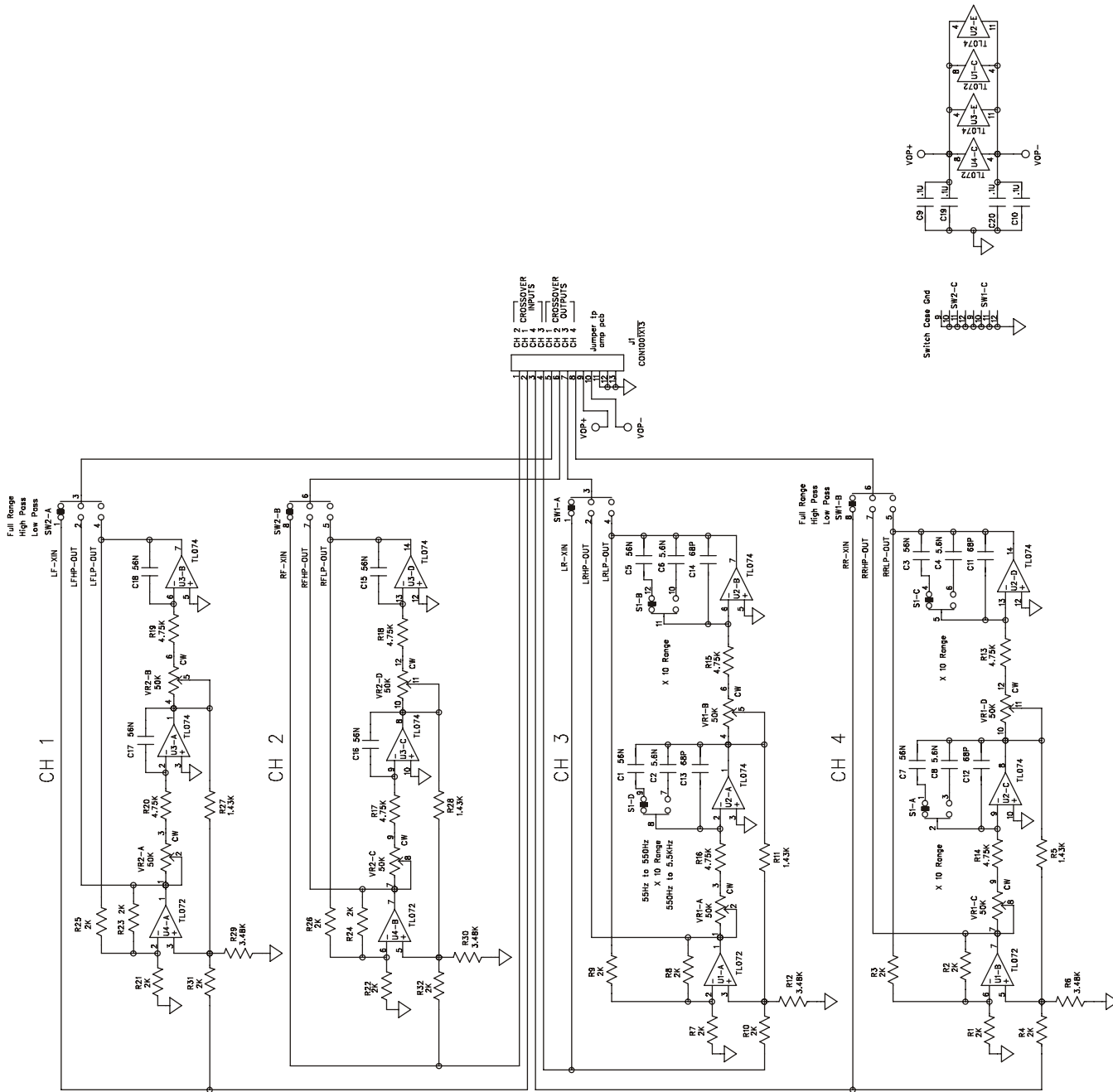


CIRCUIT DIAGRAM

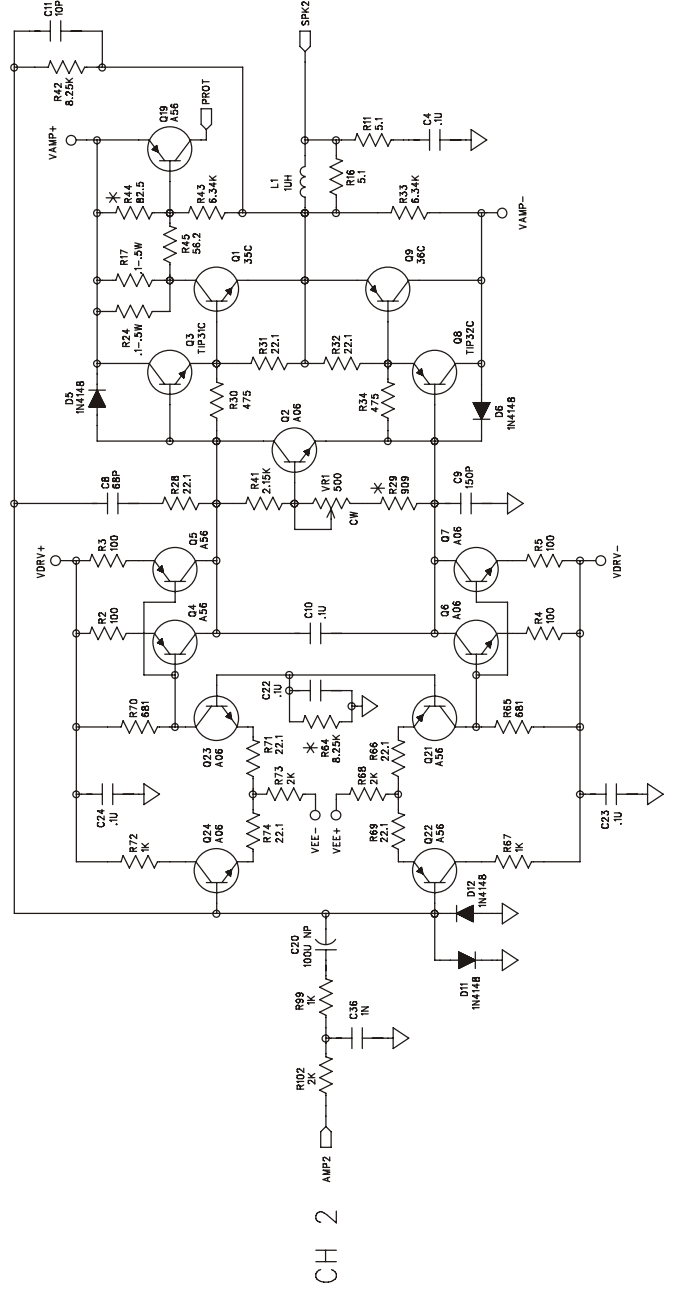
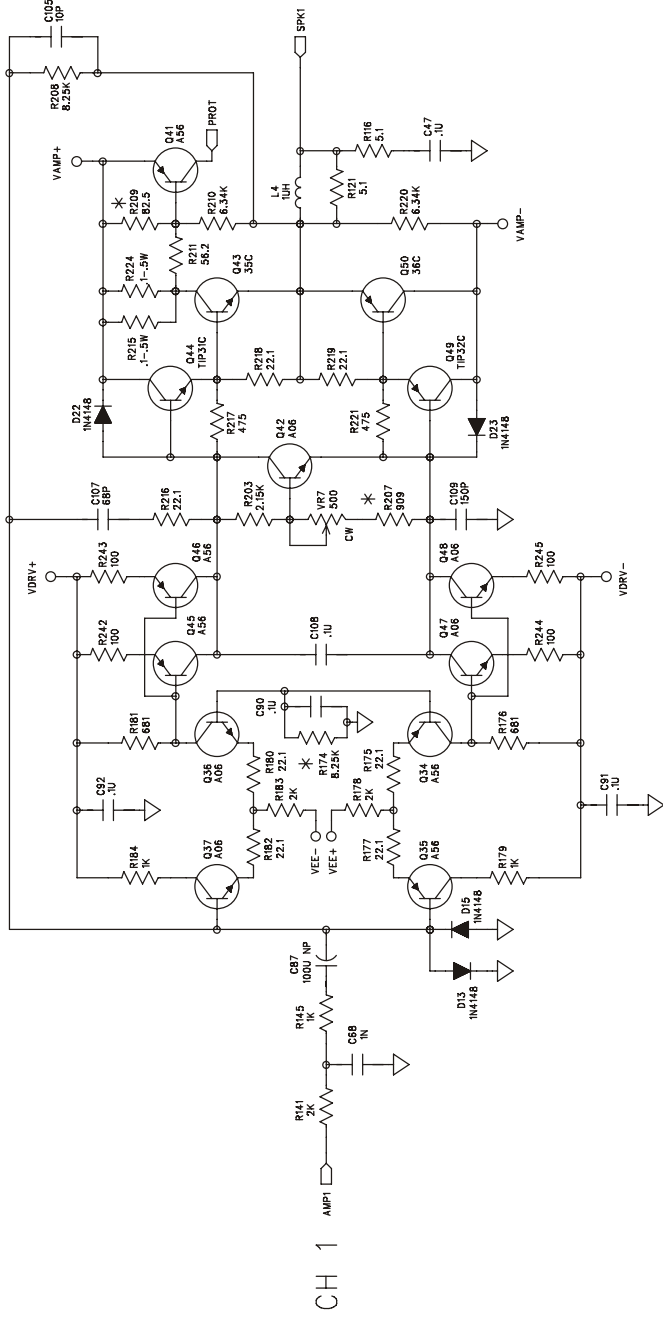


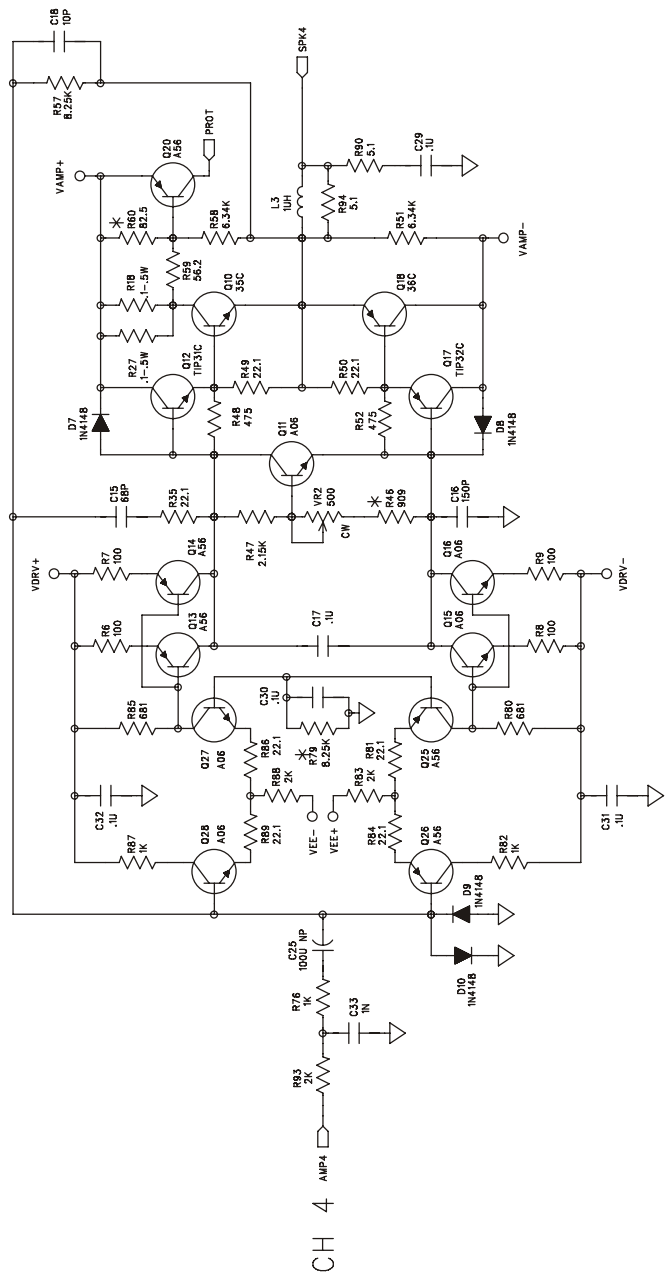
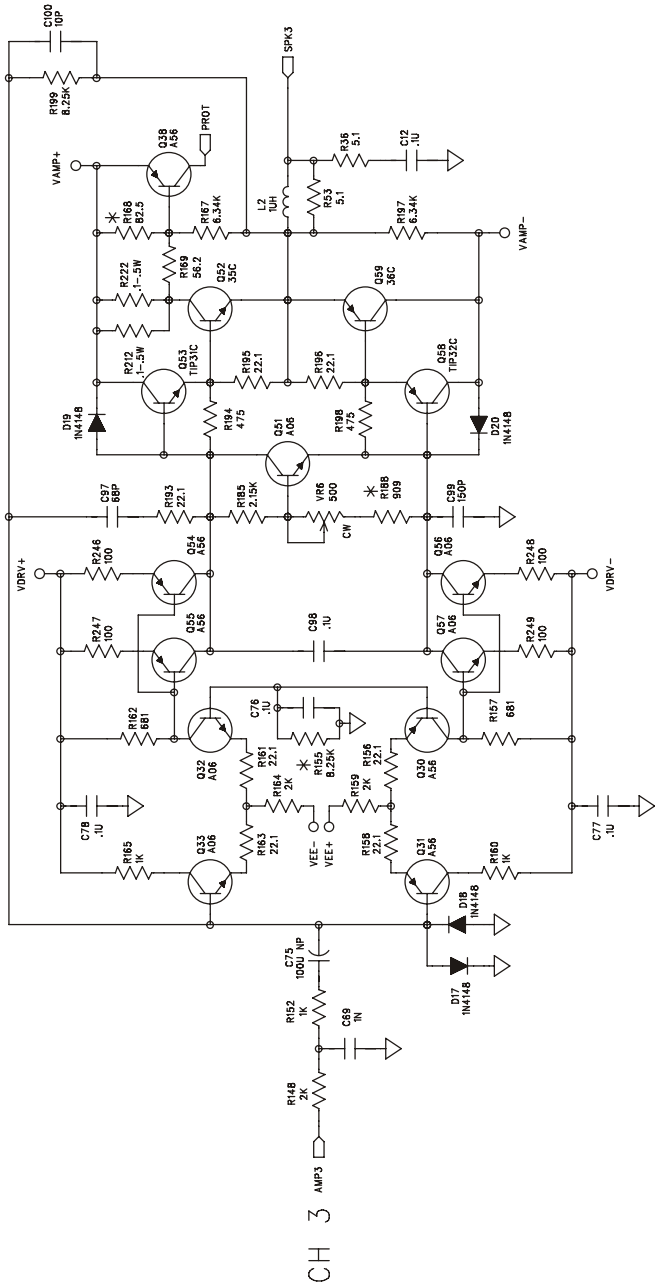


Screw Mount Holes
 L-O PAD#6
 L-O PAD#6
 L-O PAD#6



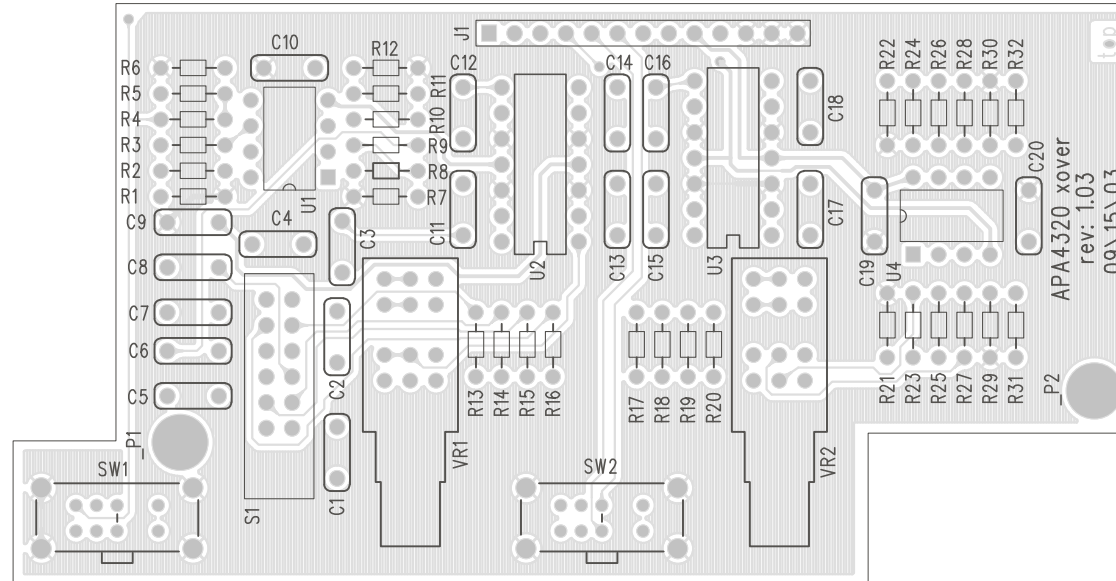
Screw Mount Holes
 L-O PAD#6
 L-O PAD#6
 L-O PAD#6



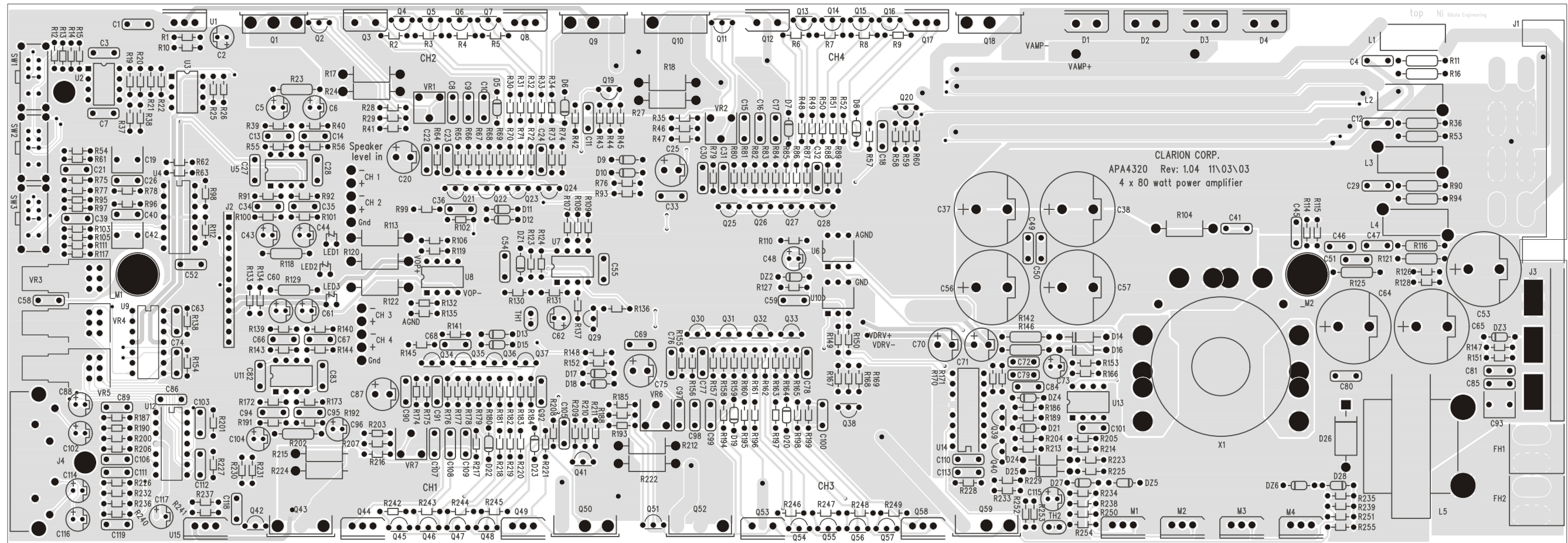


PRINTED WIRING BOARD
MAIN PWB/CROSS-OVER PWB Section
PARTS SIDE VIEW

CROSS-OVER PWB



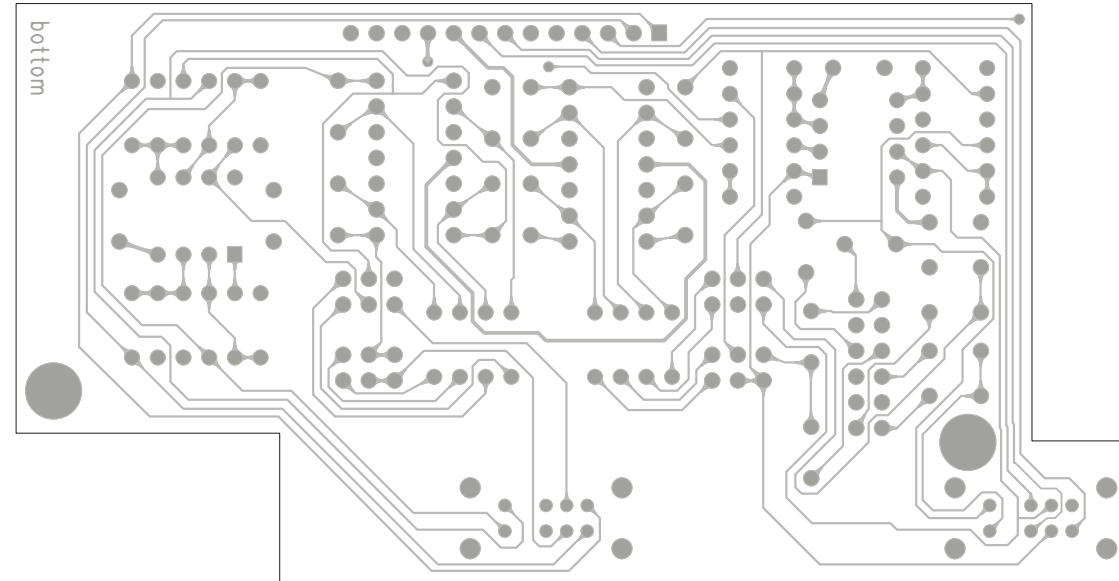
MAIN PWB



U2	U12 u4	U3 U1 U15	U11 U5		U8	U7		U6 U10	U13	IC										
	Q1 Q42	Q2 Q43	Q3 Q44	Q4 Q45	Q5 Q34 Q46	Q6 Q21 Q35 Q47	Q7 Q22 Q36 Q48	Q8 Q23 Q37 Q49	Q24 Q19 Q29 Q41 Q50	Q10 Q51	Q30 Q52	Q11 Q25 Q31	Q12 Q26 Q32 Q53	Q13 Q27 Q33 Q54	Q14 Q28 Q34 Q55	Q15 Q38 Q56	Q16 Q20 Q57	Q17 Q58	Q18 Q39 Q40 Q59	Q

**PRINTED WIRING BOARD
MAIN PWB/CROSS-OVER PWB Section
SOLDER SIDE VIEW**

CROSS-OVER PWB



MAIN PWB

