Reference Series
310a
311a
1 CHANNEL POWER AMPLIFIER

SERVICE MANUAL

Infinity Systems, Inc.
250 Crossways Park Dr.
Woodbury, New York 11797

Rev2 10/2005

- CONTENTS -

Reference 310a/311a Specifications

Output Power:	116W RMS x 1 channels @ 4 ohms; ≤1% THD + N
(14.4V supply)	312W RMS x 1 channels @ 4 ohms; ≤1% THD + N
Signal-to-noise ratio:	81dBA (reference 1W into 4 ohms)
Dynamic power:	347W @ 2 ohms
Effective damping factor:	6.398 @ 4 ohms
Frequency response:	17Hz – 302Hz (–3dB)
Maximum input signal:	6.0V
Maximum sensitivity:	Reference 310a - 250mV
	Reference 311a - 75mV
DC Offset	<50mV (-50%)
Output regulation:	.05dB @ 4 ohms
Idle Current	800mA
Input Impedance	22kΩ
Max Current Draw	24A @ 4 ohms
	40A @ 2 ohms
Dimensions:	12 x 11 7/16 x 2 11/16” (L x W x D)
	(305mm x 290mm x 68mm)
Fuse:	30A

Infinity continually strives to update and improve existing products, as well as create new ones. The specifications and details in this and related publications are therefore subject to change without notice.

Features

- 1-Channel Operation
- Advanced MOSFET Oversized Floating Rail Power Supply
- Floating Ground Factory - Head - Unit Speaker - Level input
- Variable Input Sensitivity (250mV - 6V)
- Fully Complementary Output Stage with Class-AB Voltage Amplification
- Gold-plated Power, Input and Output Connectors
- 2-Ohm Stable (MONO)

Test Conditions and Notes

- All tests to be done, unless otherwise specified, from 10Hz to 320Hz at 14.4V DC into 2 ohm loads and adjust the units gain so that with a .250 volt input signal the unit is at its maximum rated output. All measurements will be done using an Audio precision system one and the supply voltage.

- An A+ line voltage of 14.4V DC shall be applied to the unit under test for all measurements unless otherwise specified. The voltage applied to the unit shall be measured at the power connection on the Amplifier.

- Signal Source
  Unless otherwise specified, all tests shall be conducted with the Audio Signal Generator output configured to be balanced, less than or equal to 50 ohm source impedance, and floating. The signal source "GND" shall be connected to the Amplifier PWR GND at the Amplifier.

- Output Load
  Unless otherwise specified, all tests shall be conducted with 2 ohm resistive loads having less than 10% reactive components at any frequency below 320Hz. Each resistor shall have a value that remains within 1% while dissipating the rated output of the unit under test.

- Power Indicator LED steadily illuminates for normal operation. LED blinks when protection circuitry is engaged, and during power up.

Power Connections

The Reference amplifiers are capable of delivering high power levels, and require a reliable connection to the vehicle's electrical system in order to perform optimally. See Figure 1 for connection location. Please adhere to the following instructions carefully.

GROUND CONNECTION

Connect the amplifier's Ground (GND) terminal to a solid point on the vehicle's metal chassis, as close to the amplifier as possible. Refer to the chart below to determine minimum wire-gauge size. Sand away any paint from this location; use a star-type-lock washer to secure the connection.

POWER CONNECTION

Connect a wire (see chart at right for appropriate gauge) directly to the vehicle's positive battery terminal, and install an appropriate fuse holder within 18" of the battery terminal. Do not install the fuse at this time. Route the wire to the amplifier's location, and connect it to the amplifier's positive (+12V) terminal. Be sure to use appropriate grommets whenever routing wires through the firewall or other sheet metal. Failure to adequately protect the positive wire from potential damage may result in a vehicle fire. When you are done routing and connecting this wire to the battery and to the amplifier, you may install the fuse at the battery. The fuse value should be selected based on total amplifier-current draw; see chart at right.

REMOTE CONNECTION

Connect the amplifier's Remote (REMOTE) terminal to the source unit's Remote Turn-On lead using a minimum of 18-gauge wire. If your source unit does not have a remote turn-on connection, connect the amplifier's (REMOTE) terminal to the vehicle's accessory circuit.

WIRE-GAUGE CHART

Amplifier Model	Maximum Current Draw	Minimum Wire Gauge
310a/311a	40A	#8 AWG

These recommendations assume 7' – 10' wire runs. If your installation differs markedly, you will need to adjust the wire gauge accordingly.

SPEAKER CONNECTIONS

Refer to the application guides on the pages that follow. Speaker connections should be made using a minimum of 16-gauge wire.

NOTE: When using the low-level or high-level inputs, the AUX outputs can be used to pass a full-range line-level signal to another amplifier.

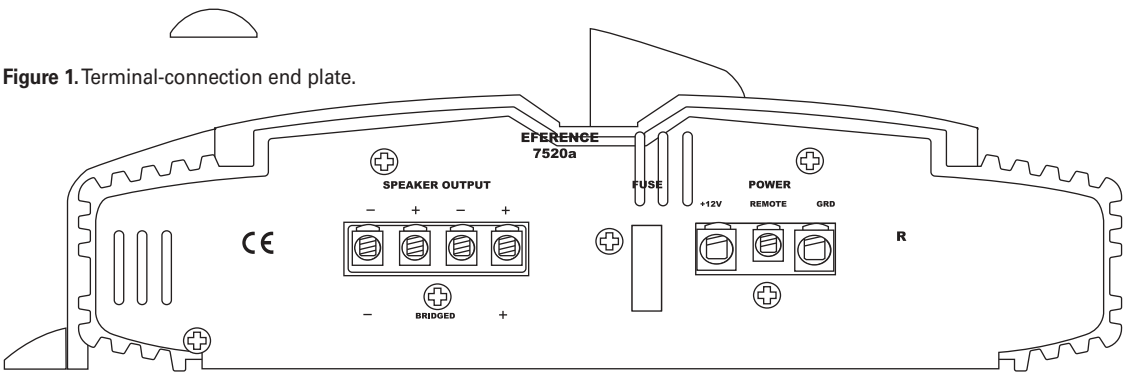


Figure 1. Terminal-connection end plate.

Applications – 310a/311a

The Reference subwoofer amplifiers are single-channel amplifiers. There are two sets of terminals to make it easy to connect multiple woofers. Either set of (+/–) terminals may be used when connecting woofers.

To the right are two application diagrams to help plan your subwoofer system installation. Figures 3 and 4 show how to configure the Reference subwoofer amplifiers

NOTE: For simplicity, Figures 3 and 4 do not show power, remote and input connections.

NOTE: Minimum speaker load is 2 ohms.

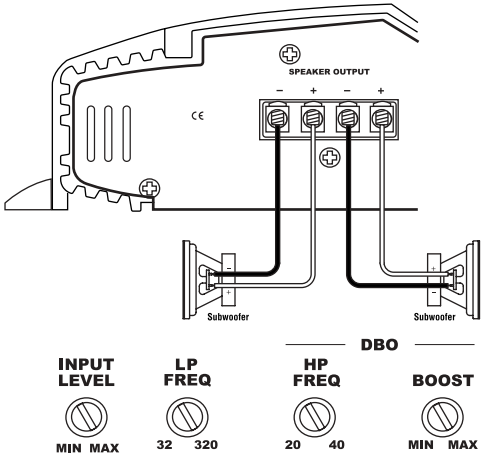


Figure 3. Reference subwoofer amplifier with two woofer connections.

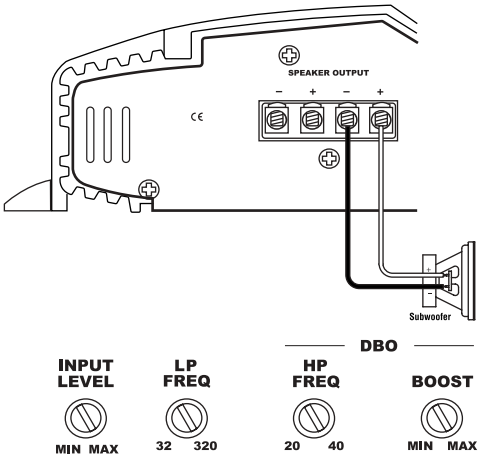


Figure 4. Reference subwoofer amplifier with one woofer connection.

Installation and Setup

SETTING INPUT SENSITIVITY

1. Initially turn the INPUT LEVEL control(s) to minimum (counterclockwise).
2. Reconnect the (–) negative lead to the vehicle's battery. Apply power to the audio system and play a dynamic music track.
3. On the source unit, increase the volume control to 3/4 volume. Slowly increase the INPUT LEVEL control(s) toward three o'clock until you hear slight distortion in the music. Then reduce the INPUT LEVEL slightly until distortion is no longer heard.

NOTE: After the source unit is on, blue LEDs (on the top panel) will light, indicating the amplifier is on. If not, check the wiring, especially the remote connection from the source unit. Also refer to "Troubleshooting" on the page 7.

REMOTE LEVEL CONTROL (OPTIONAL)

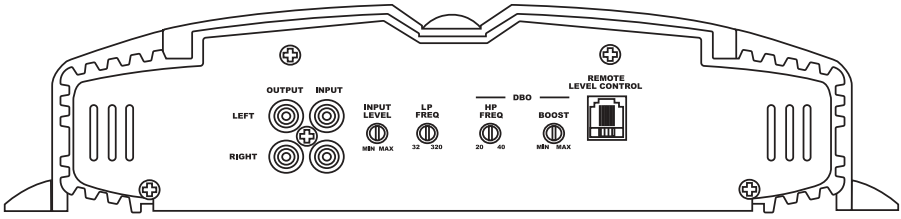
All three Reference subwoofer amplifiers and the 5760a amplifier have inputs for an optional remote level control (100rc). This will allow the subwoofer level to be adjusted from the listening position. Connect the optional remote level control using the RJ-11 jack on the side of the amplifier. Install the control module in the front of the vehicle within easy reach of the driver. Both the underside of the dash and the center console are suitable locations. Refer to the mounting instructions accompanying the 100rc.

AUX OUTPUT

Reference amplifiers are equipped with full-range outputs that can be used to connect additional amplifiers.

NOTE: When using the low- or high-level inputs, the AUX outputs can be used to pass a full-range line-level signal to another amplifier.

Figure 13. Control end panel.



Installation and Setup (cont.)

SETTING DBO™

The Dynamic Bass Optimizer (DBO) is used to enhance low-frequency reproduction in a vehicle. Conventional bass-boost circuits only increase bass at a fixed frequency, and cause the amplifier to consume considerable power. The DBO allows you to adjust the frequency (20Hz – 80Hz) as well as the boost level (up to 12dB; see Figure 14), allowing you to fine-tune the bass in your system to optimize performance.

For sealed enclosures, the DBO can be used to enhance the lower bass region of sealed enclosures.

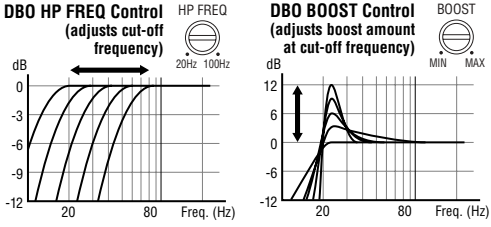
For bigger/fuller bass, adjust the HP FREQ between 35Hz and 45Hz; adjust the BOOST control according to your preference.

For tighter-sounding bass, adjust the HP FREQ between 45Hz and 55Hz; adjust the BOOST control according to your preference.

For vented enclosures, the DBO should be used as a subsonic filter to reduce overexcursion of the woofers. Set the HP FREQ control 10Hz below the tuning frequency of the enclosure (e.g., 25Hz for a box tuning of 35Hz); adjust the BOOST control to taste. This will conserve amplifier power typically wasted on frequencies below the tuned frequency of the enclosure.

For infinite-baffle applications, set the HP FREQ to the speaker's Fs value (reducing overexcursion of the woofer); adjust the Boost control to taste.

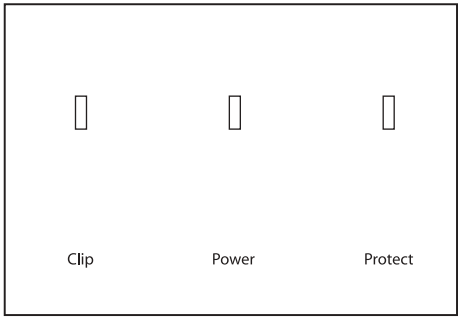
Figure 14. Frequency-response curves show typical DBO control ranges.



STATUS LEDs

Clip: Indicates the amplifier is being overdriven, and your speakers may be in danger. This should blink only on musical peaks, and not be on constantly.
Power: Indicates the amplifier is on.
Protection: Refer to "Troubleshooting" for specific indications.

Figure 15. LED status.



TROUBLESHOOTING

- **PROBLEM:**
  No audio (POWER LED is off).

  CAUSE and SOLUTION:
  No voltage at BATT+ and/or REM terminals, or bad or no ground connection. Check voltages at amplifier terminals with VOM.

- **PROBLEM:**
  No audio (PROTECT LED flashes every 4 seconds).

  CAUSE and SOLUTION:
  DC voltage on amplifier output. Amplifier may need service; see enclosed warranty card for service information.

- **PROBLEM:**
  No audio (PROTECT LED is on).

  CAUSE and SOLUTION:
  Amplifier is overheated. Make sure amplifier cooling is not blocked at mounting location; verify that speaker-system impedance is within specified limits.

- **PROBLEM:**
  No audio (PROTECT and POWER LEDs flash).

  CAUSE and SOLUTION:
  Voltage less than 9V on BATT+ connection. Check vehicle charging system.

- **PROBLEM:**
  No audio (PROTECT LED is on).

  CAUSE and SOLUTION:
  Voltage greater than 16V or less than 8.5V on BATT+ connection. Check vehicle charging system.

- **PROBLEM:**
  Distorted audio.

  CAUSE and SOLUTION:
  Input sensitivity is not set properly, or amplifier or source unit is defective. Check INPUT LEVEL setting, or check speaker wires for shorts or grounds.

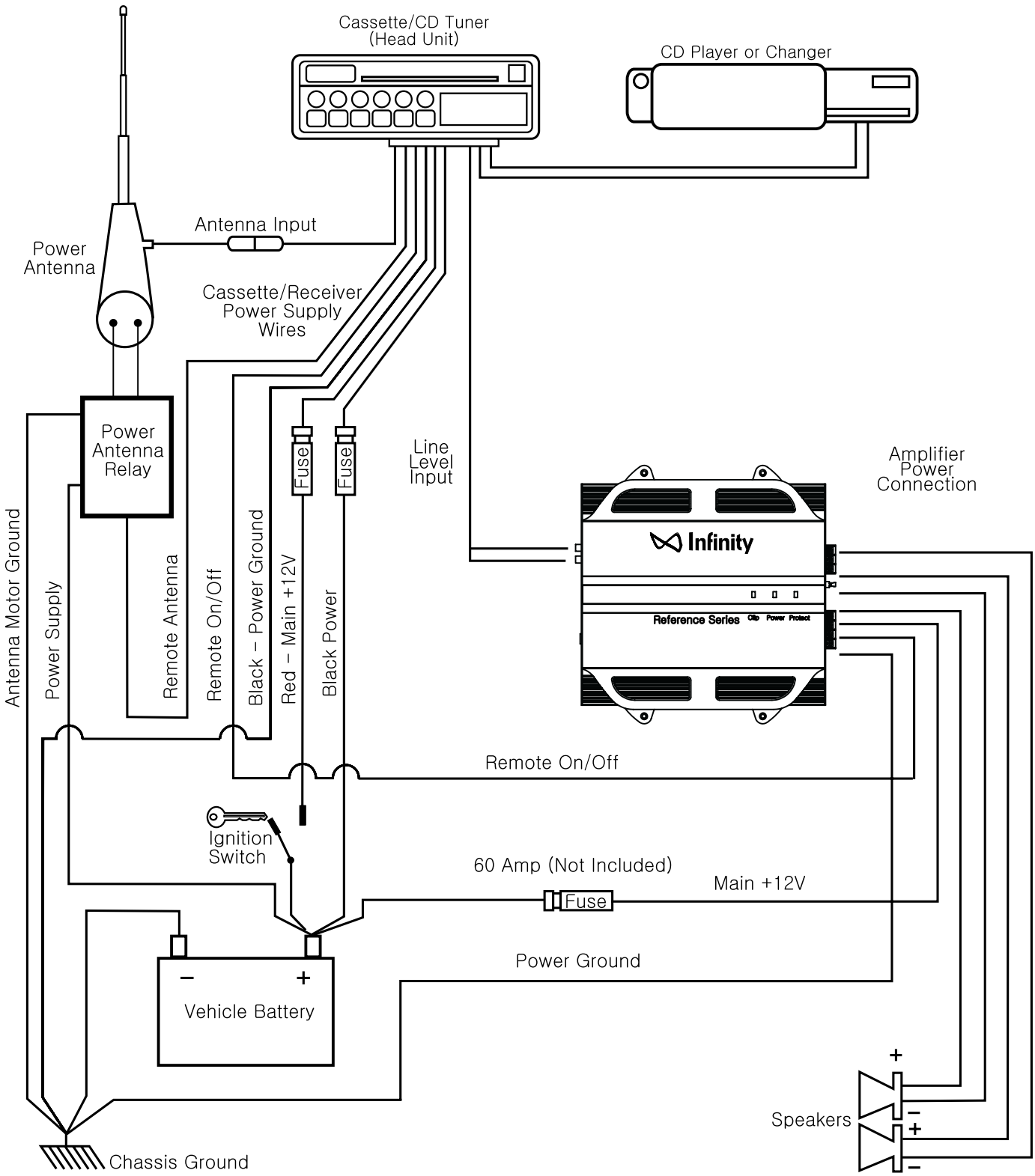
- **PROBLEM:**
  Distorted audio (PROTECT LED flashes).

  CAUSE and SOLUTION:
  Short circuit in speaker or wire. Remove speaker leads one at a time to locate shorted speaker or wire, then repair.

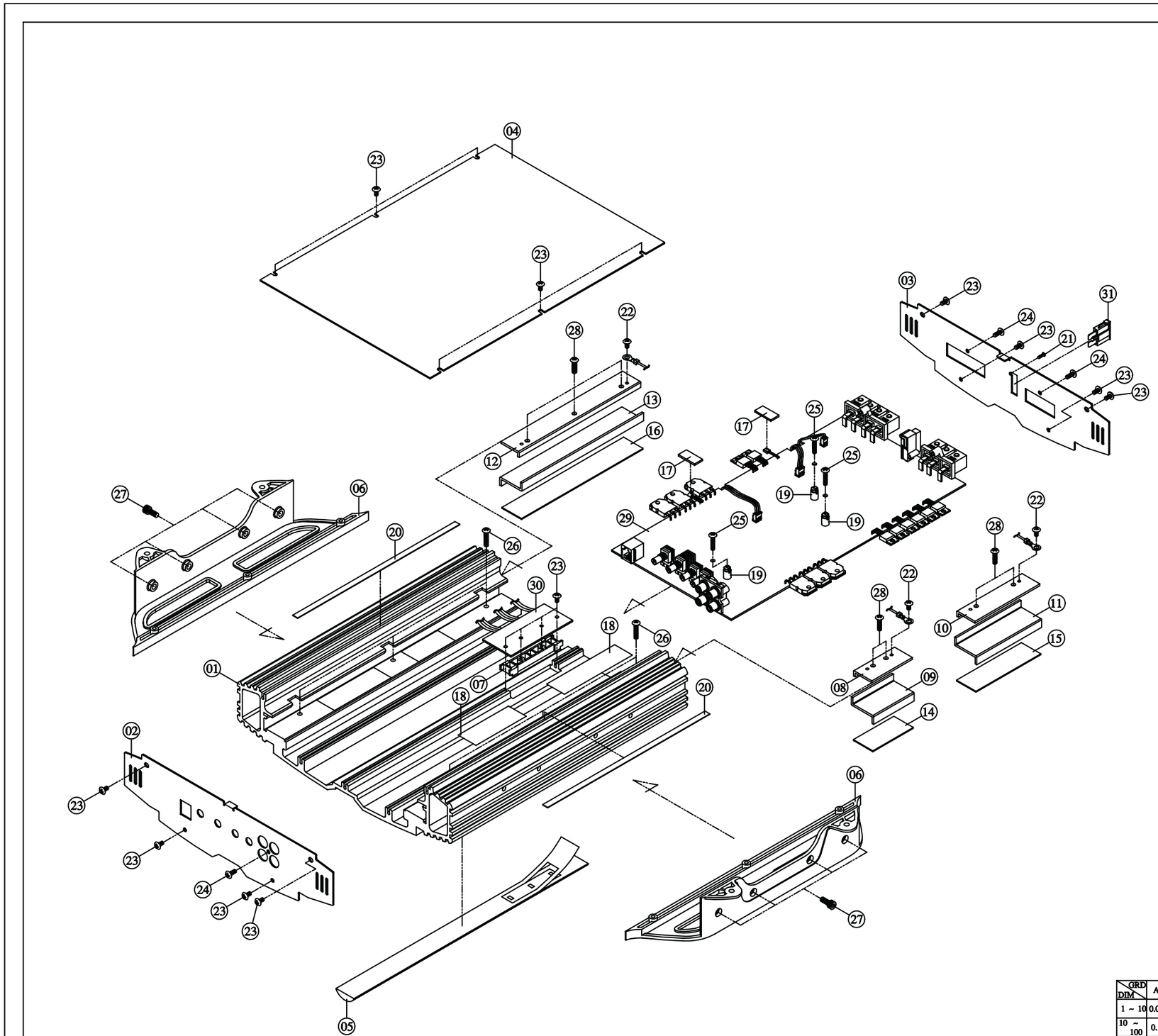
- **PROBLEM:**
  Music lacks “punch.”

  CAUSE and SOLUTION:
  Speakers are not connected properly. Check speaker connections for proper polarity.

Typical System Configuration



Mechanical Exploded View



NO	PART NAME	MIFR PARTS	DESCRIPTION	Q'TY
01	HEAT SINK-MAIN	HEA-01-182AB	AL/EXTRUSION(L=290.0mm)	1EA
02	PANEL-FRONT	PAN-06-279AA	EGI, 1.2t	1EA
03	Ref 310a PANEL-REAR	PAN-06-274AB	EGI, 1.2t	1EA
	Ref 311a PANEL-REAR	PAN-06-298AB	EGI, 1.2t	1EA
04	COVER-BOTTOM	COV-06-108AA	EGI, 1.2t	1EA
05	COVER-LENS	COV-22-551AA	ACRYLIC, L=290.0mm	1EA
06	FOOT-MOUNTING	FOO-21-014AA	ABS(XR-401), L=290.0mm	2EA
07	ILLUMINATOR	ILL-23-503A0	PC/MILKY	1EA
08	BRACKET-TR(A)	BKT-11-009A0	SBHG, 50.0× 22.5× 2.0t	1EA
09	BRACKET-TR(B)	BKT-11-010A0	SBHG, 50.0× 25.5× 2.0t	1EA
10	BRACKET-TR(C)	BKT-11-003A0	SBHG, 80.0× 22.5× 2.0t	1EA
11	BRACKET-TR(D)	BKT-11-004A0	SBHG, 80.0× 25.5× 2.0t	1EA
12	BRACKET-TR(E)	BKT-11-013A0	SBHG, 150.0× 22.5× 2.0t	1EA
13	BRACKET-TR(F)	BKT-11-014A0	SBHG, 150.0× 25.5× 2.0t	1EA
14	CUSHION-TR BRACKET (A)	SUB-28-084A0	FIBER, 50.0× 22.0× 1.0t	1EA
15	CUSHION-TR BRACKET (B)	SUB-28-007A0	FIBER, 80.0× 22.0× 1.0t	1EA
16	CUSHION-TR BRACKET (C)	SUB-28-047A0	FIBER, 150.0× 22.0× 1.0t	1EA
17	CUSHION-RUBBER	SUB-33-001A0	RUBBER, 10.0× 20.0× 1.6t	2EA
18	SILICON PAD	SIL-34-001A0	SP1000, 22.0× 0.3t	350mm
19	SUPPORT-PCB	SS-5	NYLON, L=7.9mm	3EA
20	PAPER SPACER(A)	SUB-28-002A0	FIBER, 200.0× 6.0× 0.5t	2EA
21	SCREW	SC4-BP-20060	STT1 PH 2× 6 BK	1EA
22	SCREW	SC5-NB-30050	STT2 BH 3× 5 NI-P	3EA
23	SCREW	SC5-BB-30060	STT2 BH 3× 6 BK	18EA
24	SCREW	SC5-BB-30080	STT2 BH 3× 8 BK	3EA
25	SCREW	SC5-NB-30150	STT2 BH 3× 15 NI-P	3EA
26	SCREW	SC5-NP-35160	STT2 PH 3.5× 16 NI-P	6EA
27	SCREW	SC1-NL-40100	SML 4× 10 NI-P	8EA
28	SCREW	SC1-NP-40140	SMP 4× 14 NI-P	7EA
29	MAIN PCB	PAM662-01	148.0× 289.0mm	1EA
30	LED PCB	PAS328-01	44.0× 76.0mm, BLACK	1EA
31	AUTO FUSE	FUS-AT-00006	30A	1EA

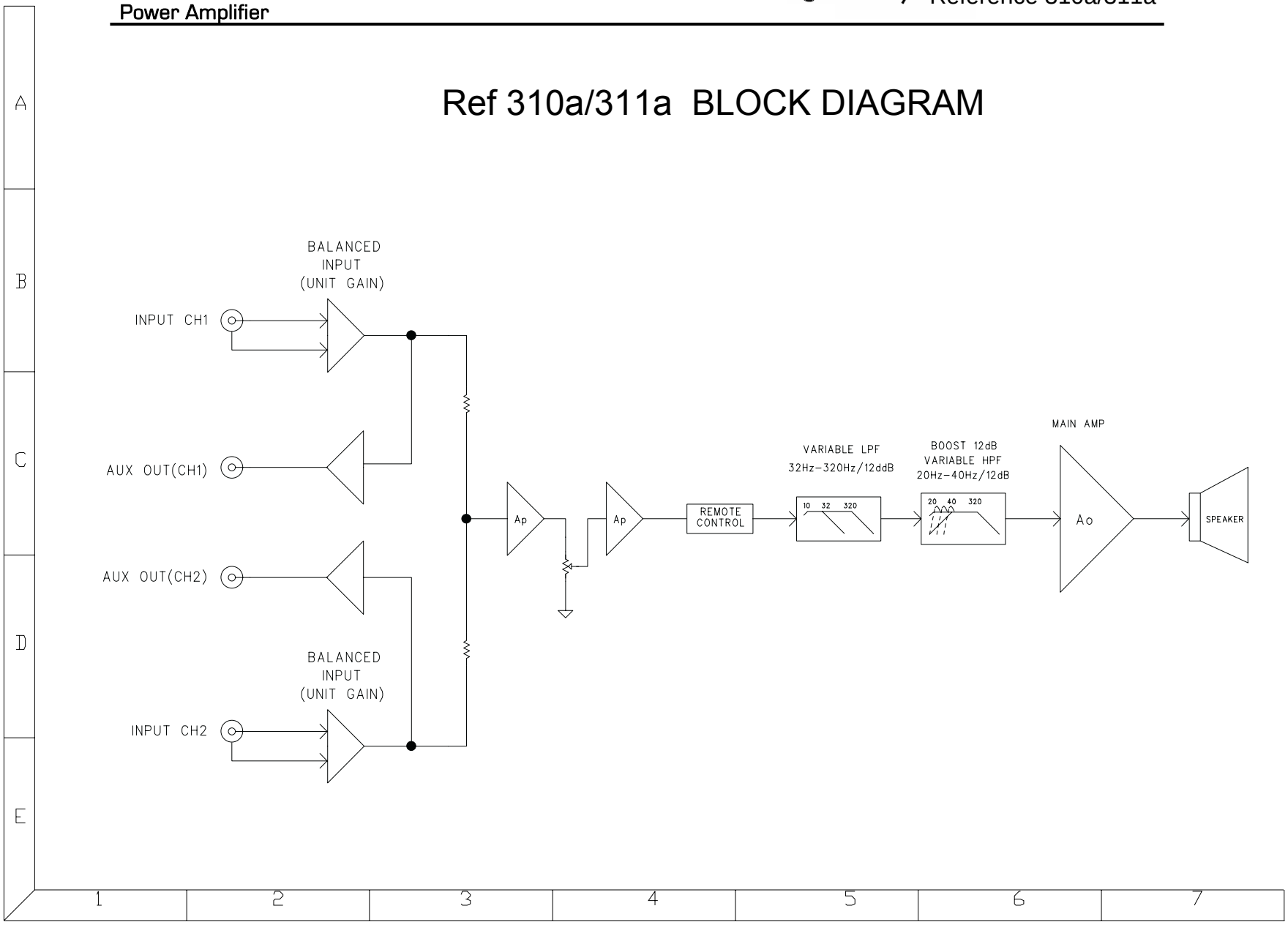
GRD DIM	A	B	C
1 ~ 10	0.05	0.1	0.2
10 ~ 100	0.1	0.2	0.3
100 ~ 500	0.2	0.3	0.5
500 ~ 1000	0.3	0.5	1.5

THIRD ANGLE	UNIT	SCALE	DATE	MODEL	REF310a
	MM	1 : 1	2004.04.10	DRAW NO	
DRAW	CHECK		APPRO	NAME	
H.Y.AN			D.W.SEO	EXPLODED VIEW	
				CODE NO.	ISSUE Φ

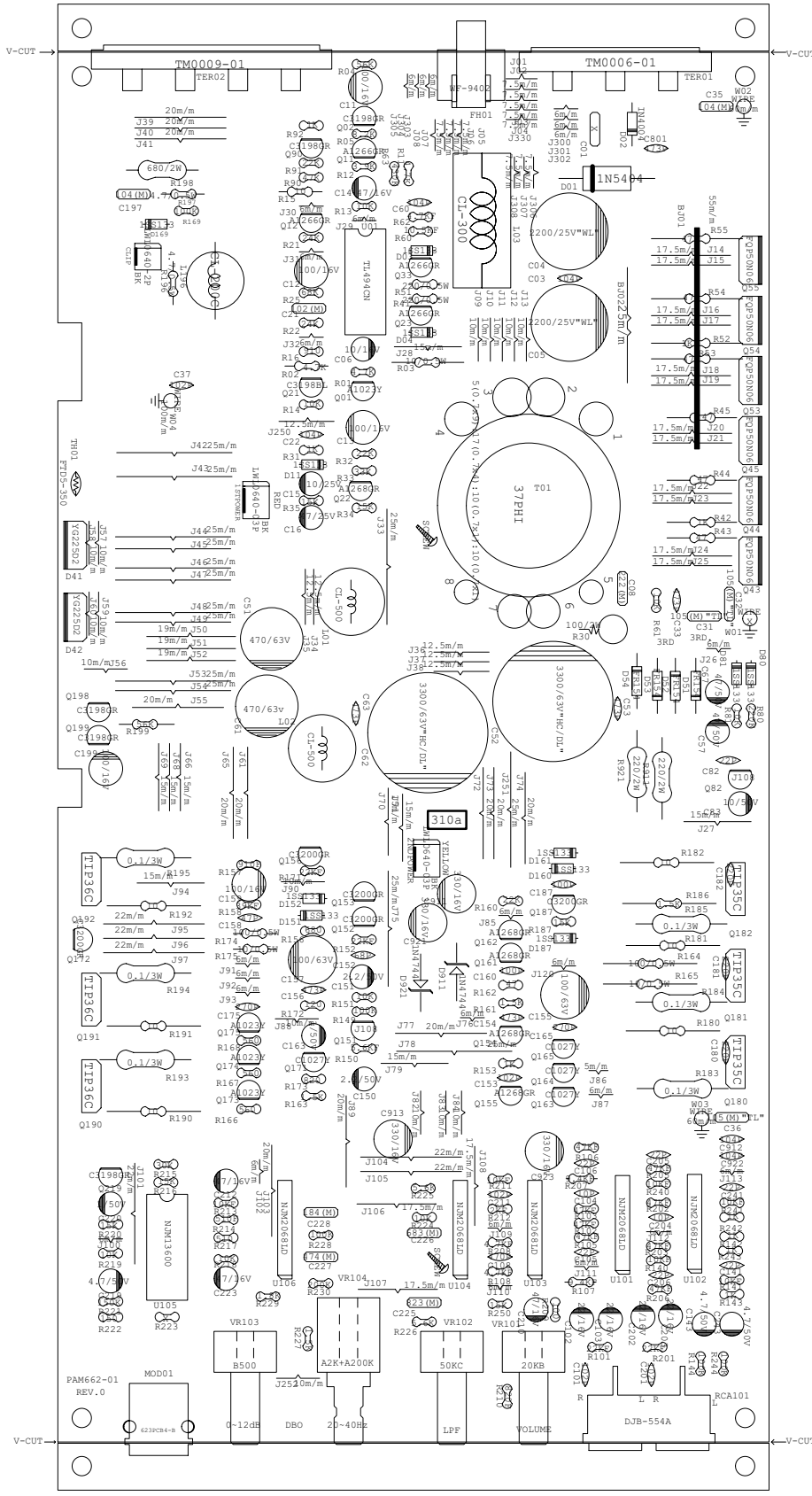
Mechanical Parts List

PART NO.	NOMENCATURE	DESCRIPTION		Q'TY
PART NO.	NOMENCATURE	DESCRIPTION		Q'TY
HEA-01-182AB	HEAT SINK-MAIN	AL/EXTRUSION(L=290.0mm)	side:P432C sandton spray,top:silver spray/1 silk screen	1
PAN-06-279AA	PANEL-FRONT	EGI, 1.2t	P432C Painting & silk screen	1
PAN-06-274AB	REF 310a PANEL-REAR	EGI, 1.2t	P432C Painting & silk screen	1
PAN-06-298AB	REF 311a PANEL-REAR	EGI, 1.2t	P432C Painting & silk screen	1
COV-06-108AA	COVER-BOTTOM	EGI, 1.2t	P432C Painting	1
COV-22-551AA	COVER-LENS	ACRYLIC,(L=290mm)	SILKSCREEN,DUAL TAPE	1
FOO-21-014AA	FOOT-MOUNTING	ABS(XR-401),L=290mm	SILVER SPRAY	2
ILL-23-503A0	ILLUMINATOR	PC/MILKY		1
BKT-11-009A0	BRACKET-TR(A)	SBHG, 50.0x22.5x2.0t		1
BKT-11-010A0	BRACKET-TR(B)	SBHG, 50.0x25.5x2.0t		1
BKT-11-003A0	BRACKET-TR(C)	SBHG, 80.0x22.5x2.0t		1
BKT-11-004A0	BRACKET-TR(D)	SBHG, 80.0x25.5x2.0t		1
BKT-11-013A0	BRACKET-TR(E)	SBHG, 150.0x22.5x2.0t		1
BKT-11-014A0	BRACKET-TR(F)	SBHG, 150.0x25.5x2.0t		1
SUB-28-084A0	CUSHION-TR BRACKET(A)	FIBER, 50.0x22.0x1.0t		1
SUB-28-007A0	CUSHION-TR BRACKET(B)	FIBER, 80.0x22.0x1.0t		1
SUB-28-047A0	CUSHION-TR BRACKET(C)	FIBER, 150.0x22.0x1.0t		1
SUB-33-001A0	CUSHION-RUBBER	RUBBER, 10.0x20.0x1.6t		2
SIL-34-001A0	SILICON PAD	SP1000, 22.0x0.3t		350mm
SS-5	SUPPORT-PCB	NYLON, L=7.9mm		3
SUB-28-002A0	PAPER SPACER(A)	FIBER, 200.0x6.0x0.5t	COVER-BOTTOM	2
SUB-28-519A0	PAPER SPACER(B)	FIBER, 200.0x8.0x0.5t	TR	1
SUB-28-503A0	PAPER SPACER(C)	FIBER, 200.0x10.0x0.5t	FE	1
SC4-BP-20060	SCREW	STT1 PH 2x6 BK	FUSE HOLDER	1
SC5-NB-30050	SCREW	STT2 BH 3x5 NI-P	GROUND WIRE	1
SC5-BB-30060	SCREW	STT2 BH 3x6 BK	PANEL/S+H/S(8),SUB/P+ILLUMINATOR(2),SUB/P+H/S(2),C/B+H	18
SC5-BB-30080	SCREW	STT2 BH 3x8 BK	RCA(1), TERMINAL(2)	3
SC5-NB-30150	SCREW	STT2 BH 3x15 NI-P	PCB + HEAT SINK	3
SC5-NP-35140	SCREW	STT2 PH 3.5x16 NI-P	FOOT/M+ H/SINK	6
SC1-NL-40100	SCREW	SML 4x10 NI-P	FOOT/M + H/SINK	8
SC1-NP-40140	SCREW	SMP 4x14 NI-P	BRACKET TR	7
SC4-NO-40250	SCREW	STT1 OH 4x25 NI-P	ACCESSORY	4

Ref 310a/311a BLOCK DIAGRAM



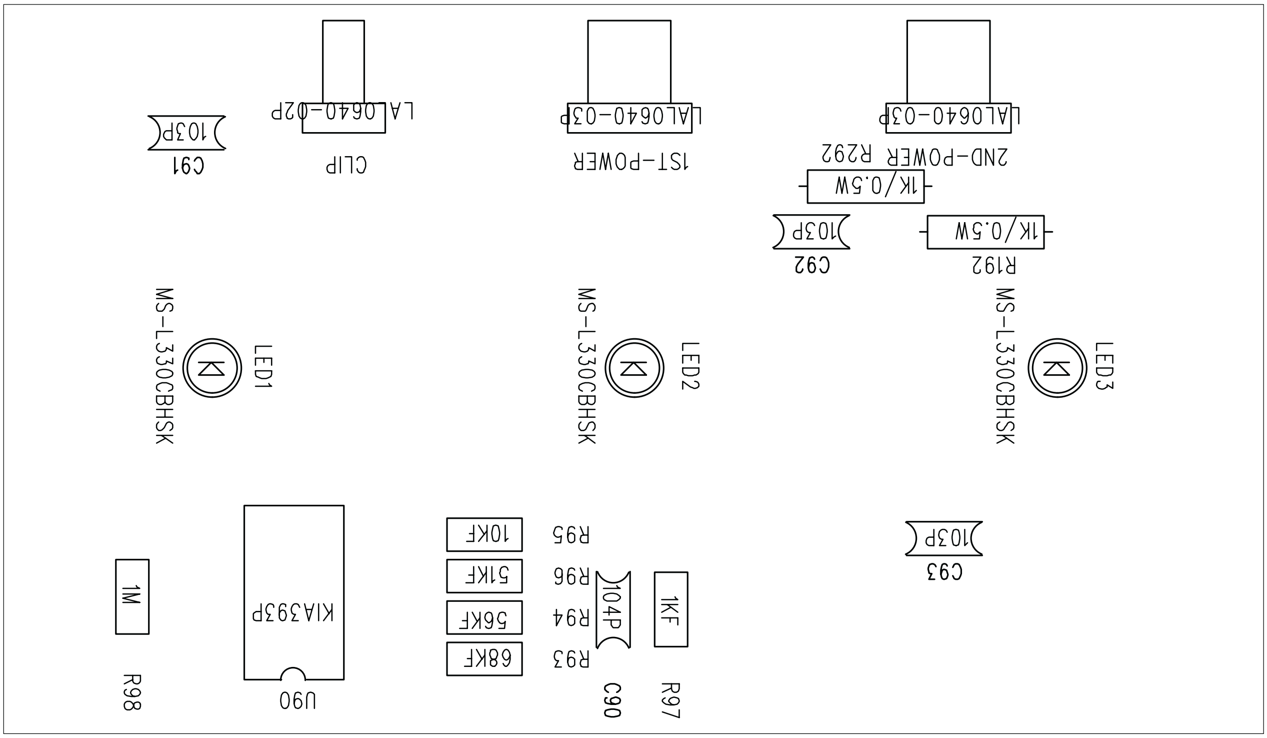
Printed Circuit Board (Top View)

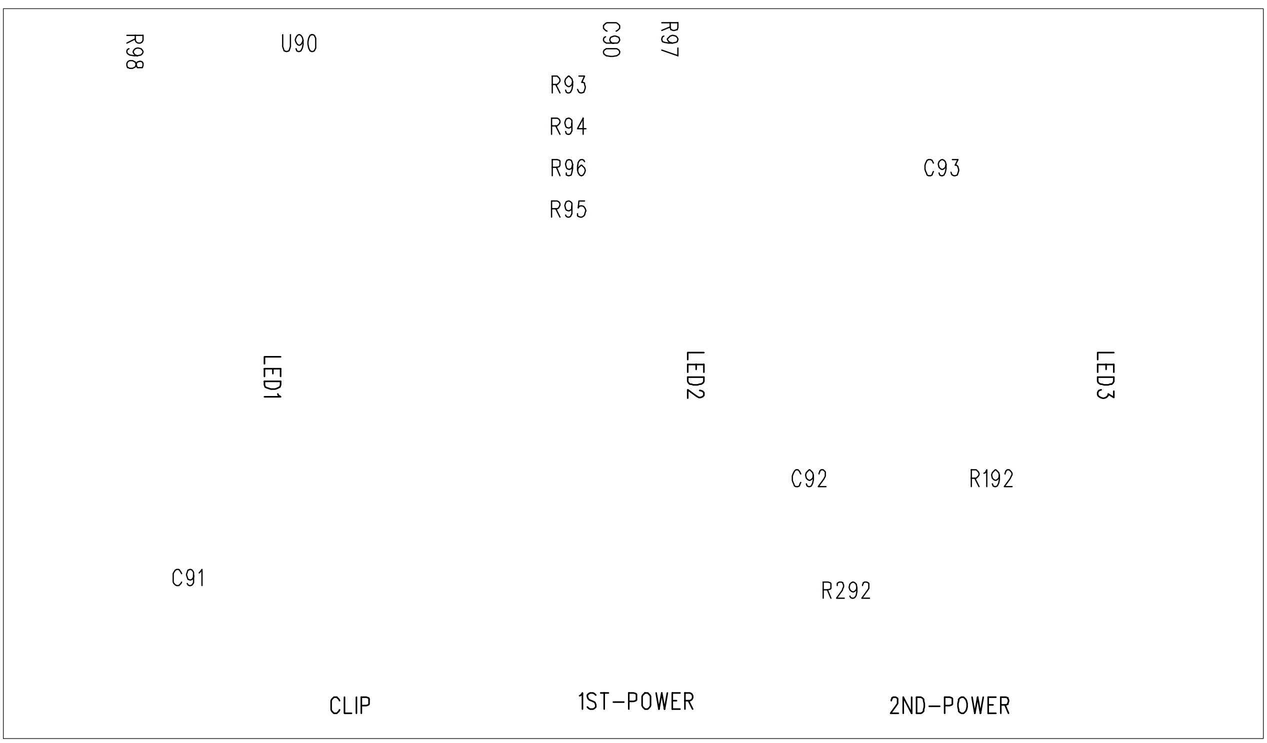


Printed Circuit Board (BOTTOM View)

Printed Circuit Board (TOP/BOTTOM View)

PAS328-01





Electrical Parts List

PART NO.	NOMENCATURE	DESCRIPTION	MFR PARTS	REF. NO	Q'TY
FET-00-00045	F.E.T	MUTTING J-FET	J108	Q82,151	2
TRS-00-00087		SMALL SIGNAL PNP	KTA1023Y	Q01,173,174,175	4
TRS-00-00088		SMALL SIGNAL NPN	KTC1027Y	Q163,164,165,171	4
TRS-00-00091		SMALL SIGNAL PNP	KTA1268GR	Q22,154,155,161,162	5
TRS-00-00111		SMALL SIGNAL NPN	KTC3200GR	Q152,153,156,187	4
TRS-00-00090		SMALL SIGNAL PNP	KTA1266GR	Q11,12,23,33	4
TRS-00-00110		SMALL SIGNAL NPN	KTC3198GR	Q02,90,198,199,219	5
TRS-00-00109		SMALL SIGNAL NPN	KTC3198BL	Q21	1
DIO-00-00108		FAST RECOVERY	FR154	D51,52,53,54	4
DIO-00-00003		RECTIFIER	IN4004	D02	1
DIO-00-00006		SWITCHING SIGNAL	1SS133 /1N4148	D03,04,11,80,81,151,152,160,161,169 D187	11
RES-00-00549		METAL FILM 1/5WF	510 OHM	R214	1
RES-00-00586		METAL FILM 1/5WF	820 OHM	R210	1
RES-00-00590		METAL FILM 1/5WF	910 OHM	R157	1
RES-00-00482		METAL FILM 1/5WF	2K OHM	R212	1
RES-00-00523		METAL FILM 1/5WF	4.7K OHM	R62,108,208	3
RES-00-00545		METAL FILM 1/5WF	5.6K OHM	R150	1
RES-00-00589		METAL FILM 1/5WF	9.4K OHM	R107,207	2
RES-00-00402		METAL FILM 1/5WF	10K OHM	R140,141,211,213,240,241	6
RES-00-00399		METAL FILM 1/5WF	10.5K OHM	R60	1
RES-00-00467		METAL FILM 1/5WF	22K OHM	R101,152,171,201	4
RES-00-00517		METAL FILM 1/5WF	39K OHM	R158	1
RES-00-00537		METAL FILM 1/5WF	47K OHM	R102,103,105,106,202,203,205,206	8
RES-00-00610		CARBON FILM 1/5WJ	10 OHM	R15,180,181,182,190,191,192	7
RES-00-00716		CARBON FILM 1/5WJ	47 OHM	R43,44,45,53,54,55,162	7
RES-00-00606		CARBON FILM 1/5WJ	100 OHM	R209	1
RES-00-00615		CARBON FILM 1/5WJ	120 OHM	R172	1
RES-00-00622		CARBON FILM 1/5WJ	150 OHM	R222	1
RES-00-00723		CARBON FILM 1/5WJ	510 OHM	R217	1
RES-00-00728		CARBON FILM 1/5WJ	560 OHM	R166,167,168	3
RES-00-00741		CARBON FILM 1/5WJ	680 OHM	R156	1
RES-00-00756		CARBON FILM 1/5WJ	820 OHM	R173	1
RES-00-00761		CARBON FILM 1/5WJ	910 OHM	R16	1
RES-00-00633		CARBON FILM 1/5WJ	1K OHM	R31,42,52,92,142,143,153,242,243	9
RES-00-00598		CARBON FILM 1/5WJ	1.5K OHM	R161,163,186,227	4
RES-00-00602		CARBON FILM 1/5WJ	1.8K OHM	R229	1
RES-00-00676		CARBON FILM 1/5WJ	3.9K OHM	R12	1
RES-00-00702		CARBON FILM 1/5WJ	4.7K OHM	R01,02,11	3
RES-00-00720		CARBON FILM 1/5WJ	5.6K OHM	R225,226	2
RES-00-00751		CARBON FILM 1/5WJ	8.2K OHM	R05	1
RES-00-00608		CARBON FILM 1/5WJ	10K OHM	R13,14,61,81,151,218,219,224	8
RES-00-00623		CARBON FILM 1/5WJ	15K OHM	R34,35,187,216,220,250	6
RES-00-00658		CARBON FILM 1/5WJ	22K OHM	R32,91,160	3
RES-00-00663		CARBON FILM 1/5WJ	24K OHM	R21,22	2
RES-00-00680		CARBON FILM 1/5WJ	30K OHM	R215	1
RES-00-00687		CARBON FILM 1/5WJ	33K OHM	R33	1
RES-00-00714		CARBON FILM 1/5WJ	47K OHM	R90	1
RES-00-00730		CARBON FILM 1/5WJ	56K OHM	R04,199	2
RES-00-00742		CARBON FILM 1/5WJ	68K OHM	R25	1
RES-00-00604		CARBON FILM 1/5WJ	100K OHM	R144,149,169,228,244	5
RES-00-00620		CARBON FILM 1/5WJ	150K OHM	R221	1
RES-00-00647		CARBON FILM 1/5WJ	200K OHM	R230	1
RES-00-00654		CARBON FILM 1/5WJ	220K OHM	R80	1
RES-00-00706		CARBON FILM 1/5WJ	430K OHM	R63	1
RES-00-00053		METAL FILM 1/2WJ	4.7 OHM	R196,197	2
RES-00-00018		METAL FILM 1/2WJ	10 OHM	R03,165,175	3
RES-00-00016		METAL FILM 1/2WJ	100 OHM	R164,174	2
RES-00-00038		METAL FILM 1/2WJ	220 OHM	R41,51	2

Electrical Parts List cont'd

PART NO.	NOMENCATURE	DESCRIPTION	MFR PARTS	REF. NO	Q'TY
ELC-00-00218		ELECTROLYTIC "SMS"	1/50V	C163,220	2
ELC-00-00223		ELECTROLYTIC "SMS"	2.2/50V	C150,151	2
ELC-00-00229		ELECTROLYTIC "SMS"	4.7/50V	C143,219,243	3
ELC-00-00195		ELECTROLYTIC "SMS"	10/16V	C06	1
ELC-00-00203		ELECTROLYTIC "SMS"	10/25V	C15	1
ELC-00-00220		ELECTROLYTIC "SMS"	10/50V	C83	1
ELC-00-00197		ELECTROLYTIC "SMS"	22/16V	C102,103,202,203	4
ELC-00-00198		ELECTROLYTIC "SMS"	47/16V	C14,210,212,223	4
ELC-00-00205		ELECTROLYTIC "SMS"	47/25V	C16	1
ELC-00-00227		ELECTROLYTIC "SMS"	47/50V	C57,67	2
ELC-00-00199		ELECTROLYTIC "SMS"	100/16V	C11,12,13,159,199	5
ELC-00-00201		ELECTROLYTIC "SMS"	330/16V	C911,913,921,923	4
MYC-00-00020		MYLAR 5% 100V	102(M)J	C21	1
MYC-00-00031		MYLAR 5% 100V	222(M)J	C08	1
MYC-00-00044		MYLAR 5% 100V	683(M)J	C226	1
MYC-00-00045		MYLAR 5% 100V	823(M)J	C225	1
MYC-00-00094		MYLAR 5% 100V	104(M)J	C35,197	2
MYC-00-00156		MYLAR 5% 63V "TL"	184(M)J	C228	1
MYC-00-00066		MYLAR 5% 63V "TL"	474(M)J	C227	1
MYC-00-00085		MYLAR 5% 63V "TL"	105(M)J	C31,32,36	3
CEC-00-00077		CERAMIC DISK 50V "NPO"	10P F	C104,204	2
CEC-00-00090		CERAMIC DISK 50V "NPO"	22P F	C82,105,106,141,205,206,241	7
CEC-00-00103		CERAMIC DISK 50V "NPO"	47P F	C158	1
CEC-00-00108		CERAMIC DISK 50V "NPO"	68P F	C152	1
CEC-00-00073		CERAMIC DISK 50V "NPO"	100P F	C160,187	2
CEC-00-00086		CERAMIC DISK 50V	220P F	C180,181,182	3
CEC-00-00092		CERAMIC DISK 50V	270P F	C165,175	2
CEC-00-00101		CERAMIC DISK 50V	470P F	C108	1
CEC-00-00074		CERAMIC DISK 50V	102P F	C37,101,153,201,211	5
CEC-00-00102		CERAMIC DISK 50V	473P F	C33,53,63,154,156,801	6
CEC-00-00076		CERAMIC DISK 50V	104P F	C03,22,60,912,922	5
		0OHM JUMPER	5m/m	J86	1
		0OHM JUMPER	6m/m	J26,29,30,31,32,76,85,87,91,92 J93,100,102,109,110,111,112,113,120,300 J301,302,303,304,305	25
		0OHM JUMPER	7.5m/m	J01,02,03,04,05,06,07,08,306,307 J308,330	12
		0OHM JUMPER	10m/m	J09,10,11,12,13,56,57,58,59,60 J82,83,84,88,90,252	16
		0OHM JUMPER	12.5m/m	J34,35,36,37,38,250	6
		0OHM JUMPER	15m/m	J27,28,66,68,69,70,71,79,94	9
		0OHM JUMPER	17.5m/m	J14,15,16,17,18,19,20,21,22,23 J24,25,106,107,108	15
		0OHM JUMPER	19m/m	J50,51,52	3
		0OHM JUMPER	20m/m	J39,40,41,55,61,65,72,73,74,77 J89,103	12
		0OHM JUMPER	22m/m	J95,96,97,101,104,105	6
		0OHM JUMPER	25m/m	J33,42,43,44,45,46,47,48,49,53 J54,75,78,251	14
ICO-00-00022		PWM I.C	TL494CN	U01	1
ICO-00-00170		ELECTRIC VOLUME I.C	NJM13600D	U105	1
ICO-00-00112		DUAL OP AMP (SIP-08P)	NJM2068LD	U101,102,103,104,106	5
FET-00-00023		N-CHMOSFET	FQP50N06	Q43,44,45,53,54,55	6
TRS-00-00188		AUDIO POWER NPN	TIP35C	Q180,181,182	3
TRS-00-00207		AUDIO POWER PNP	TIP36C	Q190,191,192	3
TRS-00-00111		SMALL SIGNAL NPN	KTC3200GR	Q172	1

Electrical Parts List cont'd

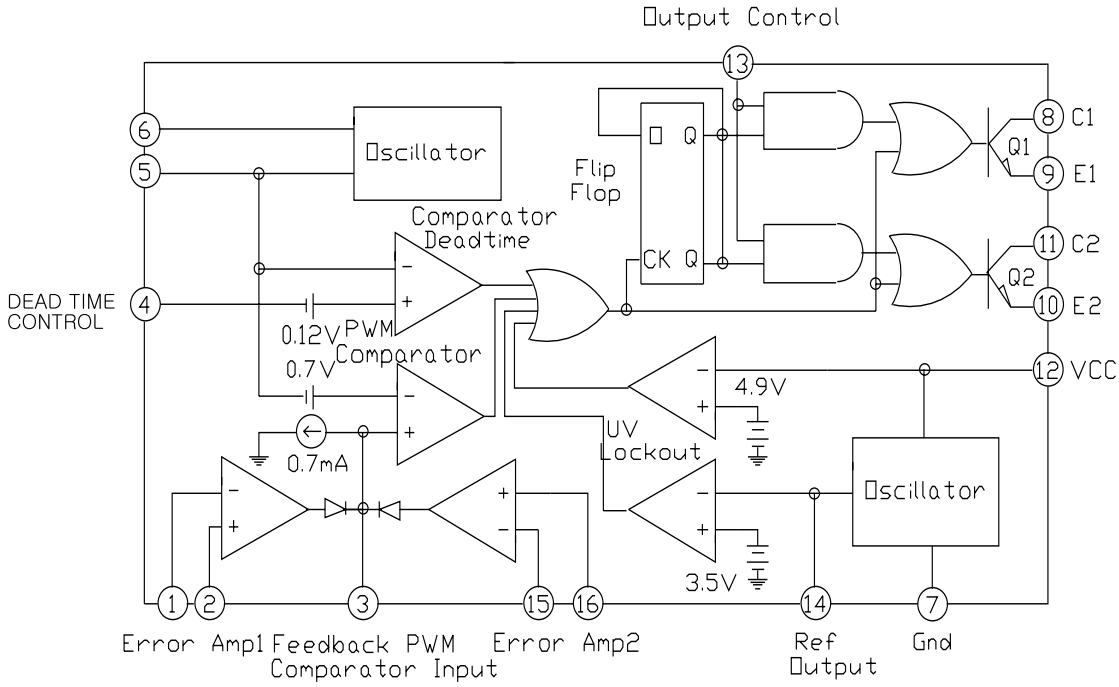
PART NO.	NOMENCATURE	DESCRIPTION	MFR PARTS	REF. NO	Q'TY
DIO-00-00152		FAST RECOVERY	YG225D2	D41,42	2
DIO-00-00048		RECTIFIER	1N5404	D01	1
DIO-00-00206		ZENER 1W 15V	1N4744A	D911,921	2
RES-00-01223		MOR/S 2WJ	100 OHM	R30	1
RES-00-01270		MOR/S 2WJ	220 OHM	R911,921	2
RES-00-01041		MOR/S 2WJ	680 OHM	R198	1
RES-00-00895		WIRE WOUND 3WJ	0.1 OHM	R183,184,185,193,194,195	6
ELC-00-00235		ELECTROLYTIC "SMS"	100/63V	C155,157	2
ELC-00-00276		ELECTROLYTIC "SMS"	470/63V	C51,61	2
ELC-00-00727		ELECTROLYTIC "WL"	2200/25V	C04,05	2
ELC-00-00618		ELECTROLYTIC "HC/DL"	3300/63V	C52,62	2
THS-00-00013		50K NTC RESISTOR	FTD5-350	TH01	1
VOL-00-00352		V12L5(9x5)G(PH2D)N15S	3B500B x 2	VR103	1
VOL-00-00335		V12L5(9x5)G(PH2D)N15S	3B20KB x 2	VR101	1
VOL-00-00336		V12L5(9x5)G(PH2D)N15S	15C50KC x 2	VR102	1
VOL-00-00353		V12L5(9x5)G(4R)(PH2D)N15S	A2K x 2+A200K x 2	VR104	1
COR-TF-00403		5T(0.7x9):17T(0.7x4):10T(0.7x1):10T(0.7x1)	87PHI ISU	T01	1
COI-00-00034		DRUM COIL	CL-500	L01,02	2
COI-00-00023		BAR COIL	CL-300	L03	1
COI-00-00019		AIR COIL	CL-200C	L196	1
JAC-00-00043			DJB-554A	RCA101	1
CON-00-00002			LWL0640-2P	CLIP	1
CON-00-00033			LWL0640-3P	1ST POWER,2ND POWER	2
JAC-00-00050			623PCB4-B	MOD01	1
TER-00-00030		GOLD PLATED	TM0006-01(3P)	TER01	1
TER-00-00034		GOLD PLATED	TM0009-01(4P)	TER02	1
		METAL JUMPER	55m/m	BJ01	1
		METAL JUMPER	25m/m	BJ02	1
WIR-00-00015		AWG #22 BLACK 3.2PHI RING RUG	60m/m	W02,03	2
WIR-00-00017		AWG #22 BLACK 3.2PHI RING RUG	100m/m	W04	1
HOD-00-00009			WF-9402	FH01	1
		0.7PHI	10m/m	Q172, TH01	3
FUS-AT-00006			30A	SET1+ASS'Y1	2
ICO-00-00095		COMPARATOR DIP-8P	KIA393P	U90	1
RES-00-00437		METAL FILM 1/5WF	1K OHM	R97	1
RES-00-00402		METAL FILM 1/5WF	10K OHM	R95	1
RES-00-00550		METAL FILM 1/5WF	51K OHM	R96	1
RES-00-00556		METAL FILM 1/5WF	56K OHM	R94	1
RES-00-00573		METAL FILM 1/5WF	68K OHM	R93	1
RES-00-00635		CARBON FILM 1/5WJ	1M OHM	R98	1
RES-00-00029		METAL FILM 1/2WJ	1K OHM	R192,292	2
CEC-00-00005		CERAMIC TUBULAR 50V	103P	C91,92,93	3
CEC-00-00006		CERAMIC TUBULAR 50V	104P	C90	1
DIO-00-00321		BLUE 3PHI	MS-L330CBHSK	LED1,2,3	3
CON-00-00139			LAL0640-2P	CLIP	1

Reference 311a Electrical Parts List Addendum

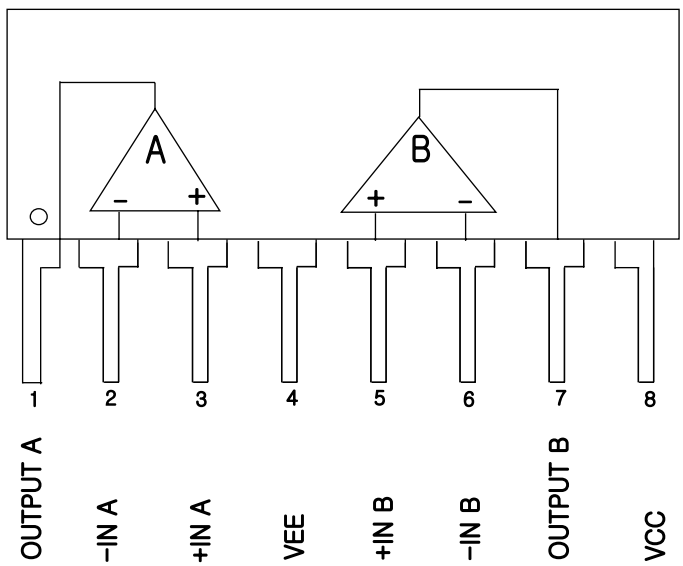
The following chart below represents the only electrical parts differences in 310a and 311a models:

	MODEL	PART NAME	PART NAME	SPEC	DESIGNATOR
1	REF 310a	RESISTOR	RES-00-00586	1/5WF 820 OHM	R210
	REF 311a	**RESISTOR**	**RES-00-00474**	**1/5WF 240 OHM**	**R210**
2	REF 310a	RESISTOR	RES-00-00482	1/5WF 2K OHM	R212
	REF 311a	**RESISTOR**	**RES-00-00554**	**1/5WF 560 OHM**	**R212**
3	REF 310a	POWER TERMINAL	TER-00-00030	(3P) TM0006-01	TER01
	REF 311a	POWER TERMINAL	**TER-00-00278**	**(3P) DK-03B04-AG-5-UP**	**TER01**
4	REF 310a	SPEAKER TERMINAL	TER-00-00040	(4P) TM0009-01	TER02
	REF 311a	SPEAKER TERMINAL	**TER-00-00276**	**(4P) DK-04A04-AG-5-UP**	**TER02**

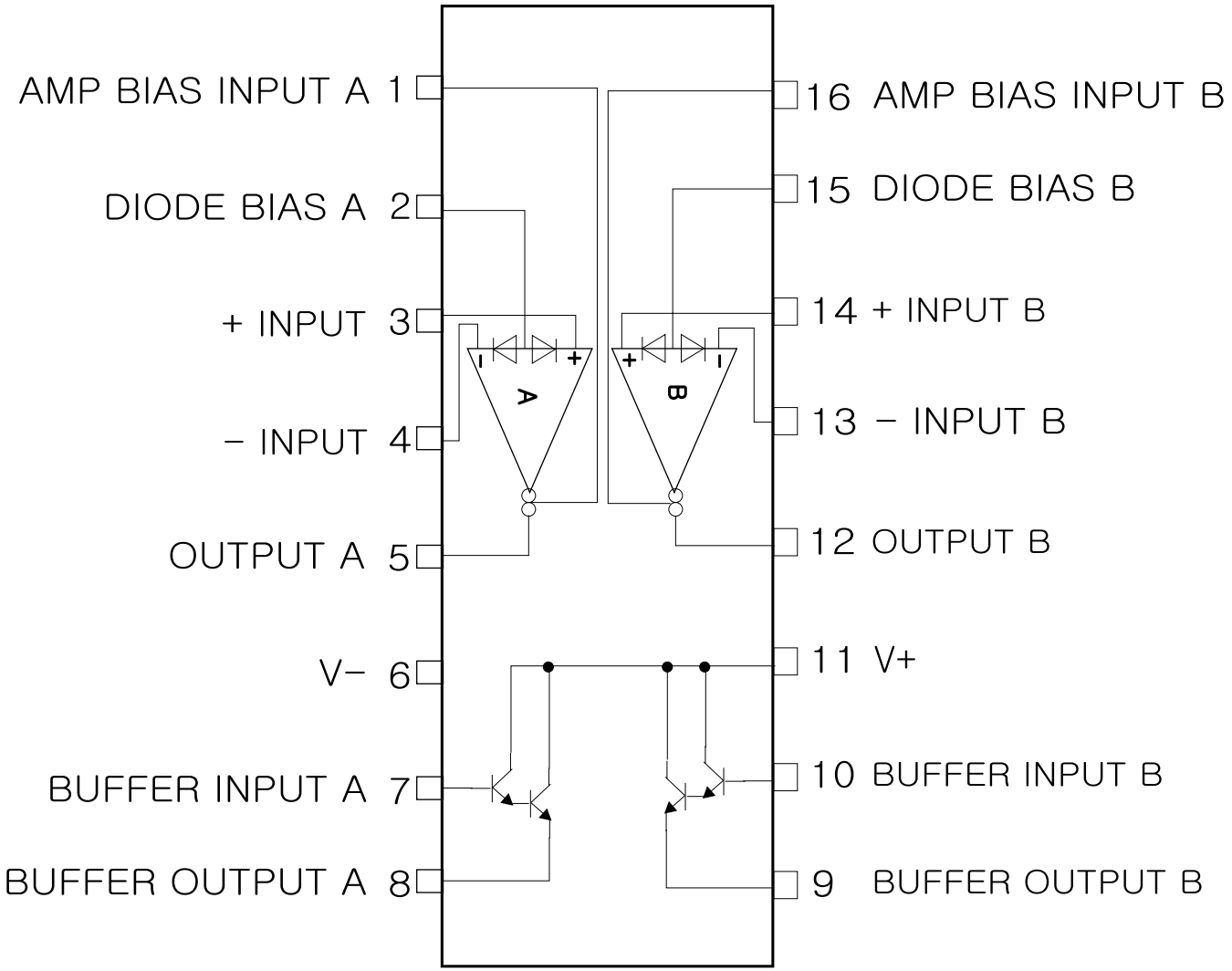
U01 (TL494CN) P.W.M IC



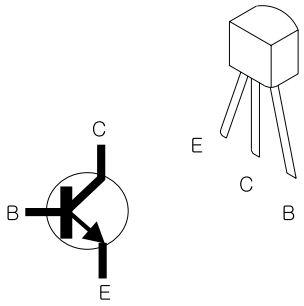
U101,102,103,104,106 (NJM2068LD) DUAL OP AMP



U105 (NJM13600D)



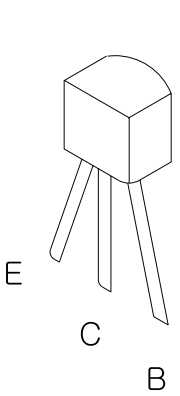
Transistor Diagrams

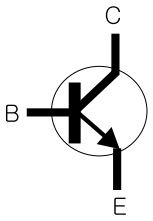


* KTC3198GR *
Q02,90,198,199,219

* KTA1266GR *
Q11,12,23,33

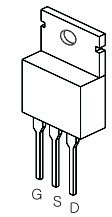
* KTA1268GR *
Q22,154,155,161
Q162

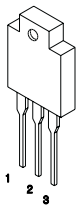


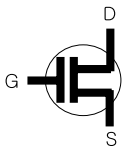


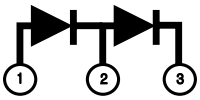
* KTC3200GR *
Q152,153,156,187
Q172

* KTC3198BL *
Q21



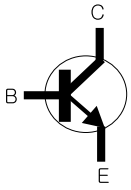


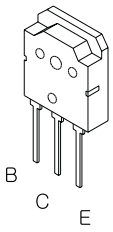


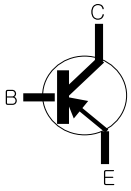


* FQP50N06
Q43,44,45,53,54,55

* YG225D2 *
D41,42

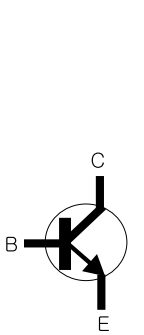


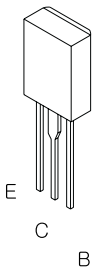


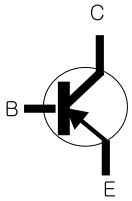


* TIP35C *
Q180,181,182

* TIP36C *
Q190,191,192

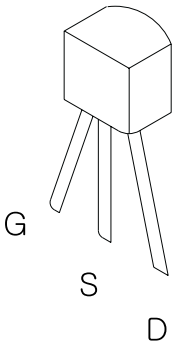


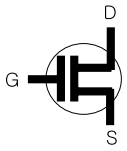




* KTC1027Y *
Q163,164,165,171

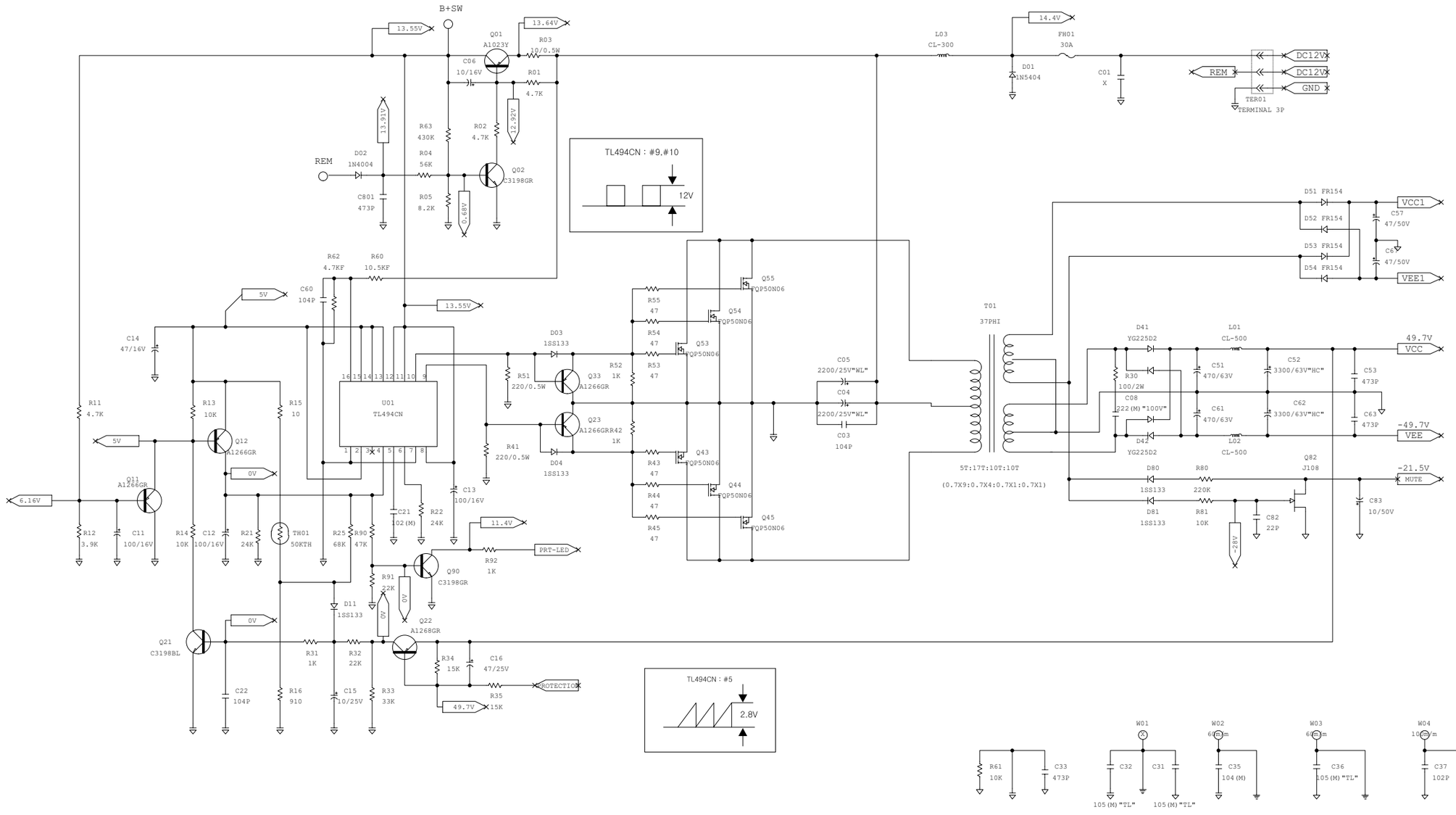
* KTA1023Y *
Q01,173,174,175



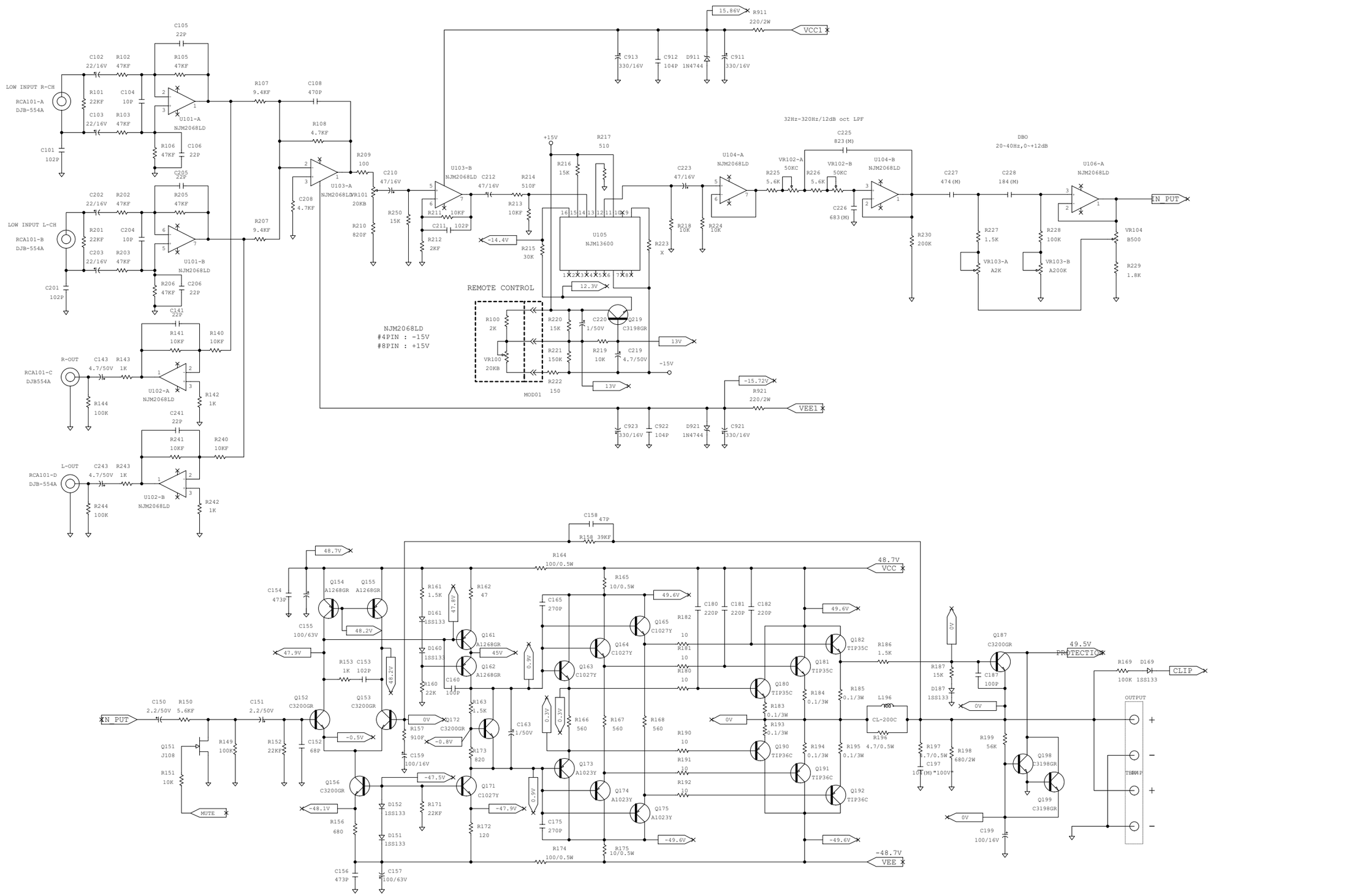


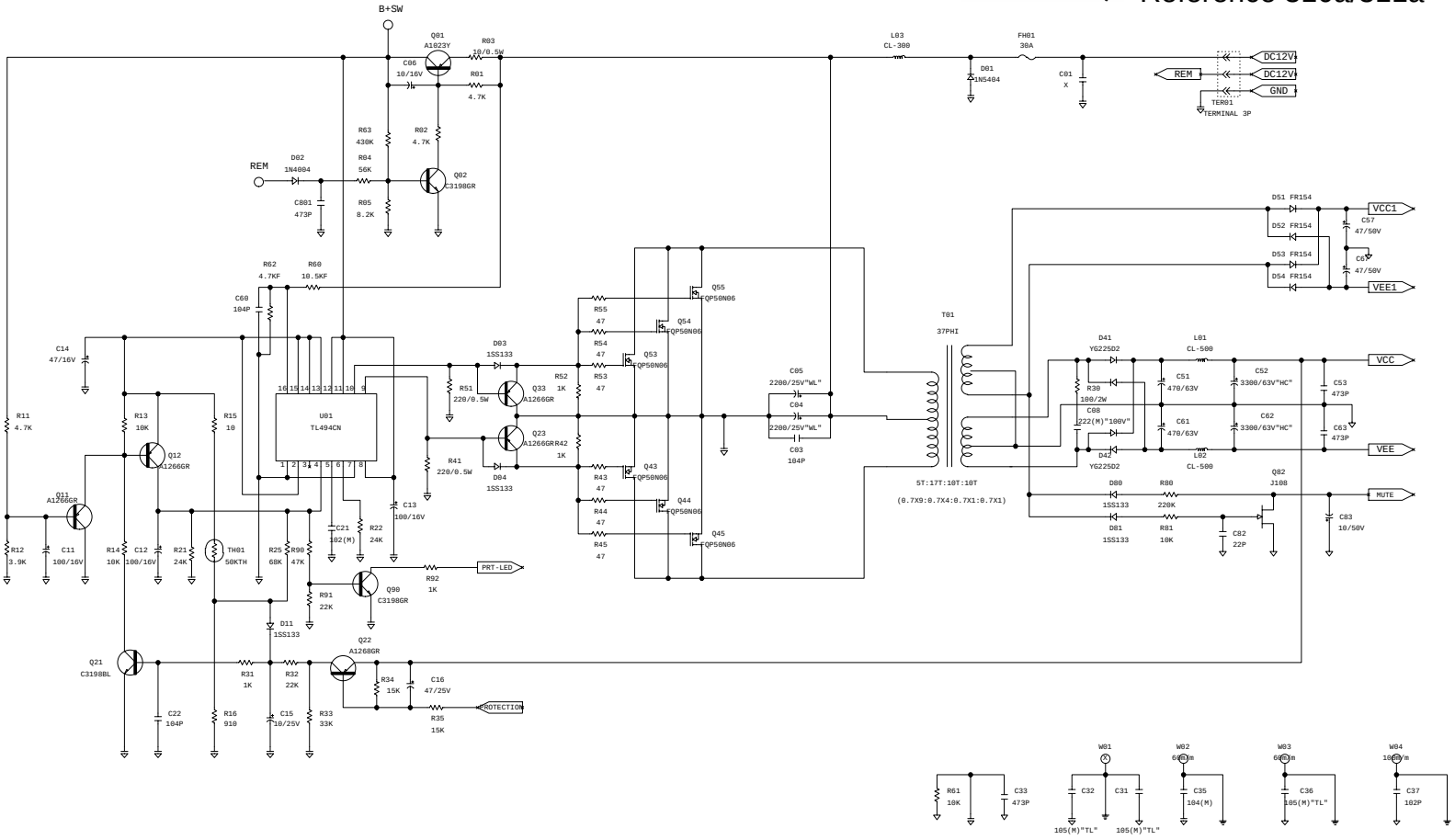
* J108 *
Q82,151

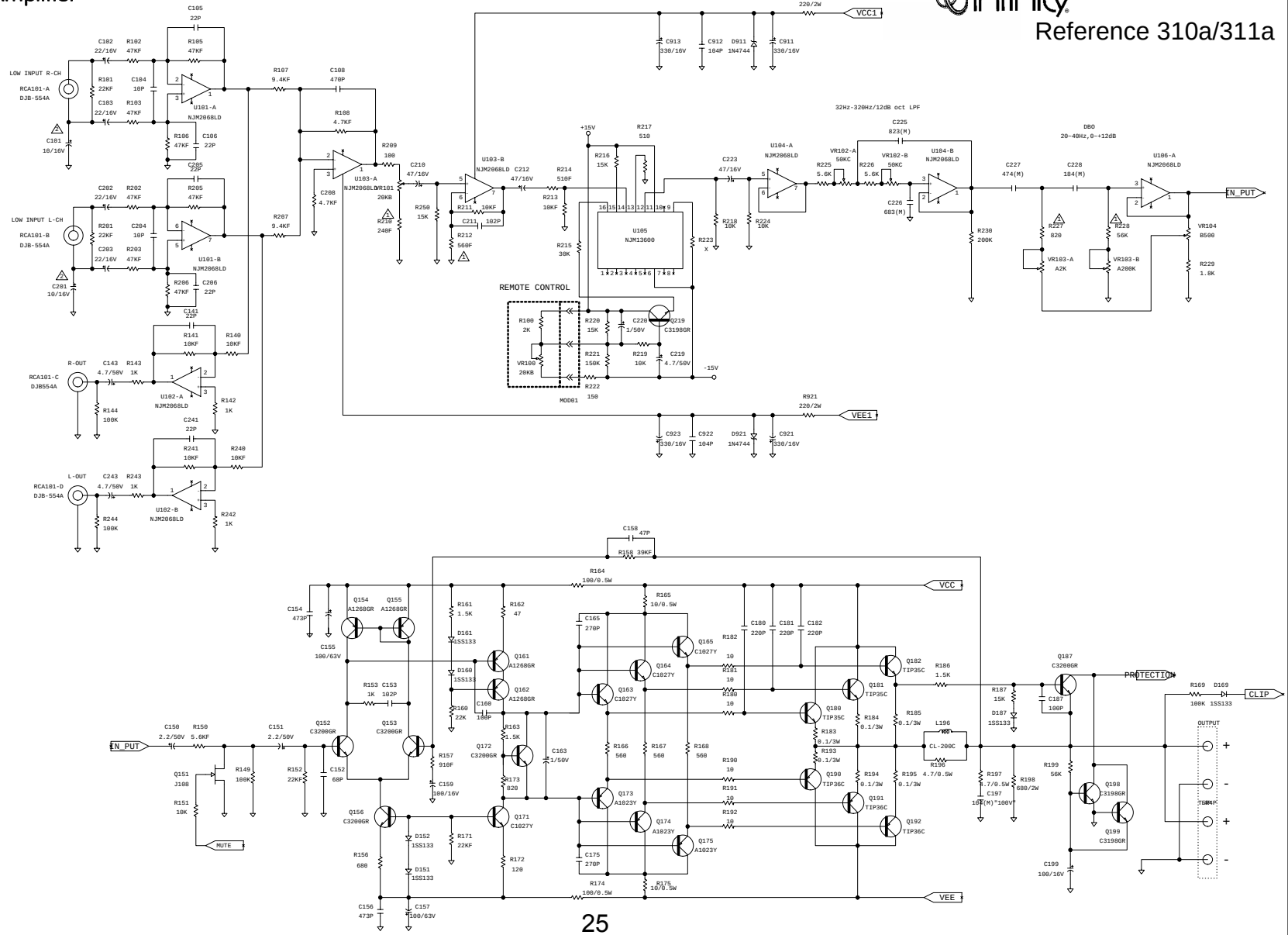
REF 310a Schematic Page 1



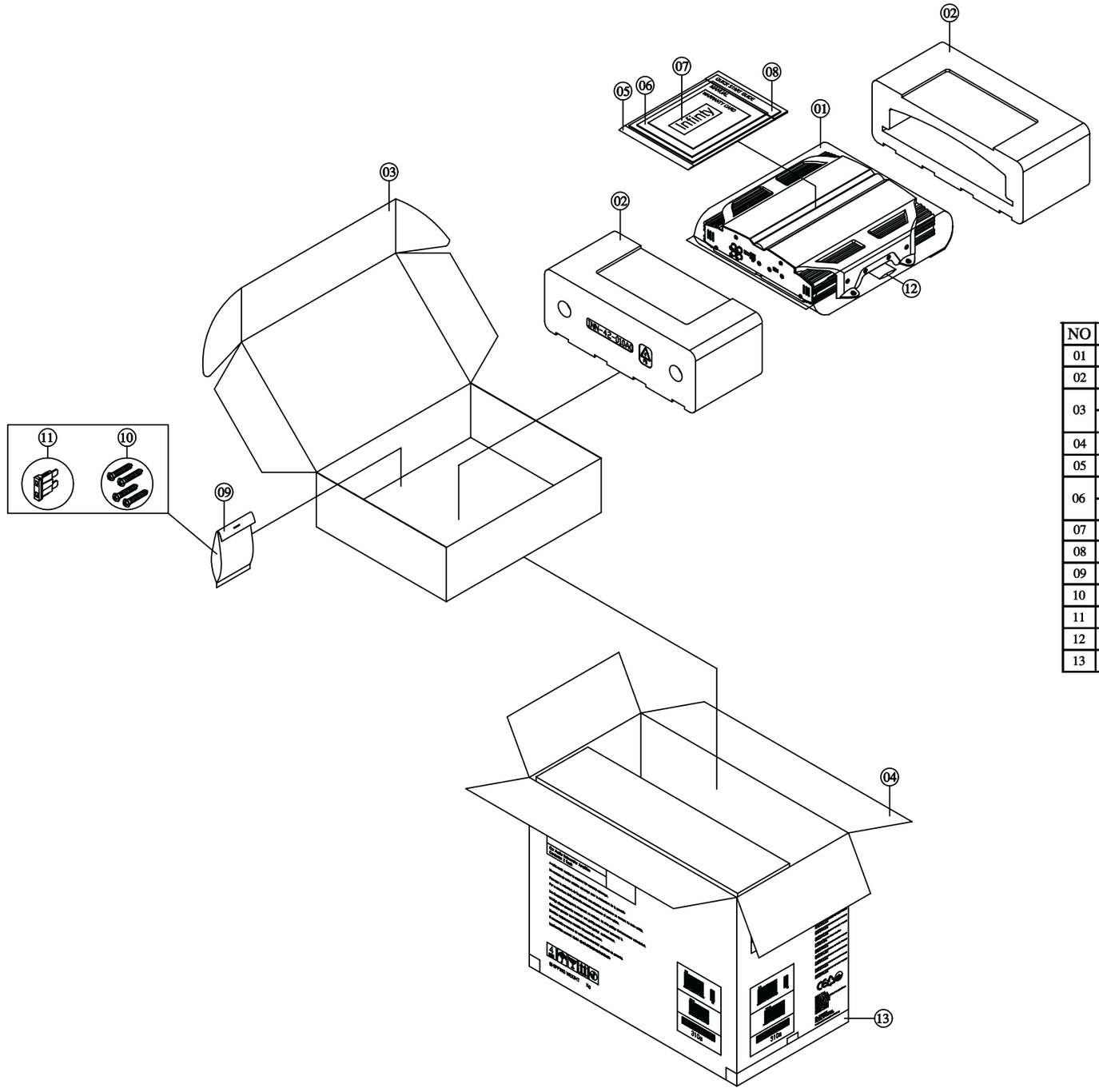
REF 310a Schematic Page 2




B+SW
Q01 A1023Y
R03 10/0.5W
C06 10/16V
R01 4.7K
L03 CL-300
FH01 30A
D01 1N5404
C01 X
REM
DC12V
DC12V
GND
TER01 TERMINAL 3P
D02 1N4004
C801 473P
R63 430K
R04 56K
R05 8.2K
R02 4.7K
Q02 C3198GR
R62 4.7KF
R60 10.5KF
C60 104P
C14 47/16V
U01 TL494CN
R11 4.7K
R13 10K
R15 10
Q12 A1266GR
Q11 A1266GR
R12 3.9K
C11 100/16V
R14 10K
C12 100/16V
R21 24K
TH01 50KTH
R25 68K
R90 47K
C21 102(M)
R22 24K
C13 100/16V
R92 1K
PRT-LED
Q90 C3198GR
R91 22K
D11 1SS133
Q21 C3198BL
R31 1K
R32 22K
Q22 A1268GR
R34 15K
C16 47/25V
R35 15K
PROTECTION
C22 104P
R16 910
C15 10/25V
R33 33K
D03 1SS133
R51 220/0.5W
Q33 A1266GR
R52 1K
R53 47
Q23 A1266GR
R42 1K
R41 220/0.5W
D04 1SS133
R55 47
R54 47
Q55 FQP50N06
Q54 FQP50N06
Q53 FQP50N06
Q43 FQP50N06
R43 47
R44 47
Q44 FQP50N06
R45 47
Q45 FQP50N06
C05 2200/25V"WL"
C04 2200/25V"WL"
C03 104P
T01 37PHI
5T:17T:10T:10T
(0.7X9:0.7X4:0.7X1:0.7X1)
D51 FR154
D52 FR154
D53 FR154
D54 FR154
C57 47/50V
C67 47/50V
VCC1
VEE1
D41 YG225D2
D42 YG225D2
L01 CL-500
L02 CL-500
R30 100/2W
C08 222(M)"100V"
C51 470/63V
C61 470/63V
C52 3300/63V"HC"
C62 3300/63V"HC"
C53 473P
C63 473P
VCC
VEE
D80 1SS133
D81 1SS133
R80 220K
R81 10K
Q82 J108
C82 22P
C83 10/50V
MUTE
R61 10K
C33 473P
W01
C32 105(M)"TL"
C31 105(M)"TL"
W02 60cm
C35 104(M)
W03 60cm
C36 105(M)"TL"
W04 100cm
C37 102P


LOW INPUT R-CH
LOW INPUT L-CH
RCA101-A
RCA101-B
RCA101-C
RCA101-D
DJB-554A
U101-A
U101-B
U102-A
U102-B
U103-A
U103-B
NJM2068LD
U104-A
U104-B
U105
NJM13600
U106-A
R-OUT
L-OUT
+15V
-15V
VCC1
VEE1
VCC
VEE
REMOTE CONTROL
MOD01
32Hz-320Hz/12dB oct LPF
DBO
20-40Hz,0-+12dB
EN_PUT
PROTECTION
CLIP
OUTPUT
MUTE
CL-208C

PACKING EXPLODED VIEW



NO	PART NAME	PART #	DESCRIPTION	Q'TY
01	POLY BAG(A)		VINYL, 450.0x400.0x0.1t	1EA
02	SNOW PAD	INN-42-010A0	EPS, 363.0x160.0x128.0	2EA
03	REF 310a CARTON	BOX-36-150AB	SW#1(B), 440.0x368.0x133.0	1EA
	REF 311a CARTON	BOX-36-150AY	DW#2, 455.0x286.0X393.0	1/2EA
04	BOX-CARTON		DW#2, 455.0x286.0X393.0	1/2EA
05	POLY BAG(B)		VINYL, 260.0x350.0x0.03t	1EA
06	REF 310a OWNER'S MANUAL	MAN-01-0197A	ART PAPER	1EA
	REF 311a OWNER'S MANUAL	MAN-01-0197Z	ART PAPER	1EA
07	WINDOW STICKER	LAB-00-0427A	"INFINITY" LOGO	1EA
08	QUICK START GUIDE	CAR-00-0061A	ART PAPER	1EA
09	POLY BAG(C)		VINYL, 80.0x100.0x0.03t	1EA
10	SCREW	SC4-NO-40250	STT1 OH 4x25 NI-P	4EA
11	AUTO FUSE	FUS-AT-00006	30A	1EA
12	SILICA GEL		3g	1EA
13	OPP TAPE		TRANSPARENCY	2.8m

GRD / DIM	A	B	C
1 ~ 10	0.05	0.1	0.2
10 ~ 100	0.1	0.2	0.3
100 ~ 500	0.2	0.3	0.5
500 ~ 1000	0.3	0.5	1.5

THIRD ANGLE	UNIT	SCALE	DATE	MODEL	REF310a
	MM	1 : 1	2004.04.10	DRAW NO	
DRAW	CHECK	APPRO	NAME		
H.Y.AN		D.W.SEO	EXPLODED VIEW		
CODE NO.				ISSUE	Φ