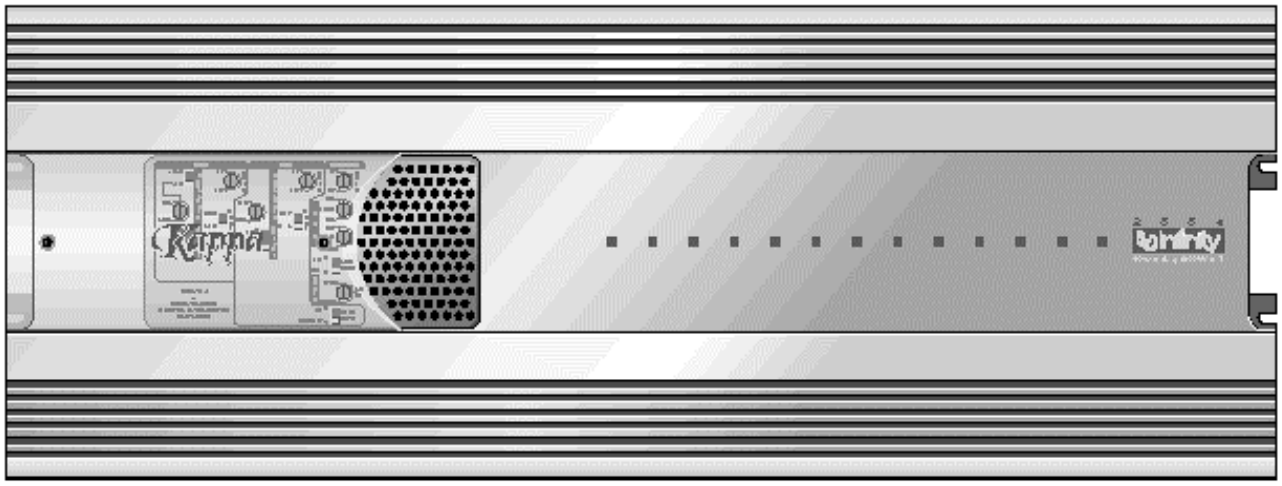
Kappa 255a
Automotive Amplifier

SERVICE MANUAL



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

Rev1 9/2001

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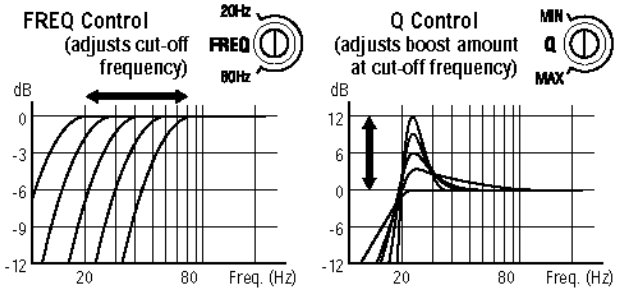
KAPPA 255A SPECIFICATIONS

POWER		
4 OHM		4 x 50 and 1 x 200 watts
2 OHM		4 x 75 and 1 x 300 watts
BRIDGE 4 OHM		2 x 150 and 1 x 200 watts
1 OHM STABLE		PROTECTION
FREQUENCY RESPONSE		20-20KHz (+0 -3dB)
EQUALIZATION		SEE CHART BELOW
FIXED AT 40Hz Q=1 +11dB		
CROSSOVER		
FLAT/LOW/HIGH PASS SWITCH		2
DECADE SWITCH		(40-320 & 250-2KHz)
VAR. CONTROL		2
SLOPE		12
INPUT SENSITIVITY		250 mV ~ 9 V
FULL DIFFERENTIAL INPUT		>100K IMP
POWER FUSE		40A X 2 (ATC)
THD + NOISE		
4 ohm		0.05%
2 ohm		0.10%
bridge 4 ohm		0.10%
SIGNAL TO NOISE		>95dB (A Weighted Referenced to Full Power)
CHANNEL SEPARATION		>50dB (100 TO 20KHz)
DAMPING FACTOR		>204
TURN ON TIME		3 SEC
DC OFFSET		<50 mv
OPERATING VOLTAGE		10 -16vdc
REMOTE ON CURRENT		<2ma
QUIESCENT CURRENT		<2.5 AMP
MAX CURRENT		80
PROTECTION auto reset		
spkr short		Yes
spkr to ground		Yes
thermal		Yes
over voltage		18vdc
under voltage		8vdc
DIMENSIONS		23 x 2 3 /16 x 8 1 /2 in. (W x H x L)
		584.2 x 55.6 x 215.9 mm
All tests to be done from 20 to 20KHz at 14.4 VDC into 4 ohm loads, unless otherwise specified.		



Frequency response curves show range of Kappa 255a controls.

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

FEATURES

The Kappa 255a is a 5-channel power amplifier that offers full-range stereo and bridged-mono operation on four analog channels and band-limited mono operation on a class-D channel for subwoofer applications. The front/rear amplifiers are rated at 50 watts (rms) per channel into a 4-ohm load, while the subwoofer channel is rated at 200 watts (rms) into a 4-ohm load. In bridged-mono configurations, front and rear amplifiers can deliver up to 150 watts (rms) for the same load.

- 2-ohm operation, rated at 75 watts (rms) per channel for front and rear channels and 300 watts (rms) for the subwoofer channel
- Bridge/stereo switches for fast system setup
- Built-in 12 dB-per-octave electronic crossovers, variable from 32 to 320 Hz, with an “x15” front-channel switch (to increase the frequency range from 480 Hz to 4.8 kHz)
- Dynamic Bass Optimizer™ (DBO) 12 dB-per-octave subsonic filter with variable frequency (20 to 80 Hz) and Q for enhancing subwoofer low frequencies while conserving amplifier power
- Front and rear channels, individually selectable as highpass, low-pass, or through-pass
- External switch for subwoofer inputs allows direct connection to source units with subwoofer outputs
- Amplifier input sensitivity controls to match a wide range of input signal levels from 250 mV to 9 V
- Five protection levels guard against over-voltage, undervoltage, over-power, over-temperature, and over-current situations
- 2-color LED array indicates green when power is on and orange when protection is activated
- Industrial-grade, gold-plated, “pre-wire and plug-in” connectors for an easy-to-install high-quality interface
- Transparent control cover to deter tampering yet provide a clear view of installation settings
- Built-in automotive type fuses to protect the amplifier
- Unibloc™ chassis provides improved heat-sink capacity and exceptional RFI shielding characteristics

APPLICATIONS

Enclosed are several diagrams to help you plan your own system installation. Figures 1 through 3 (on pages 4 and 5) show how to configure the Kappa 255a to drive front and rear speakers and a subwoofer, tweeters and midrange speakers and a pair of subwoofers, and a tweeter/midrange component set, midbass speakers, and a subwoofer.

Figure 1. This wiring diagram shows a Kappa 255a amplifier driving front and rear pairs of full-range speakers and a single subwoofer.

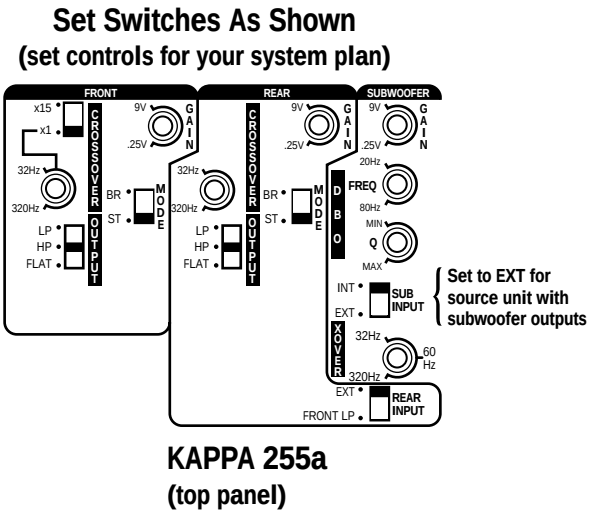
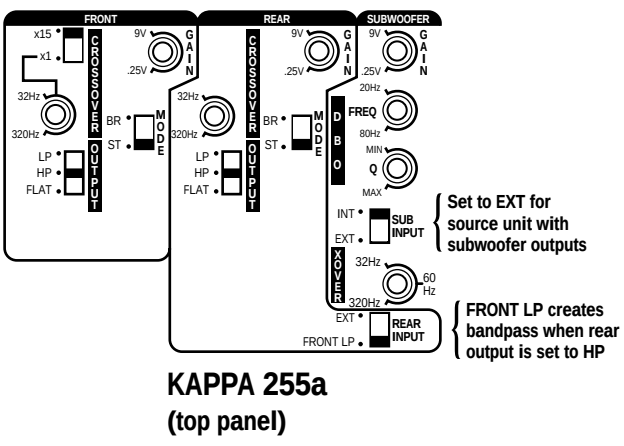
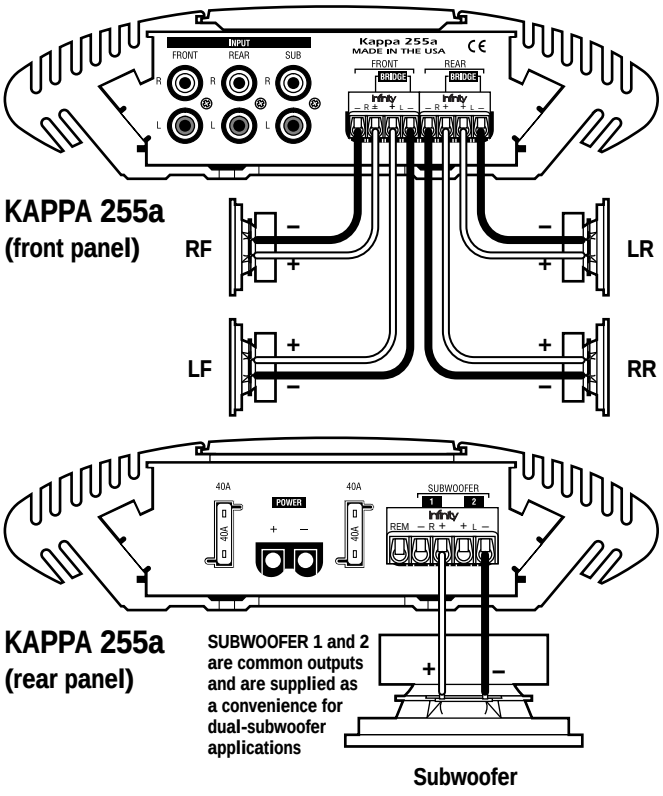


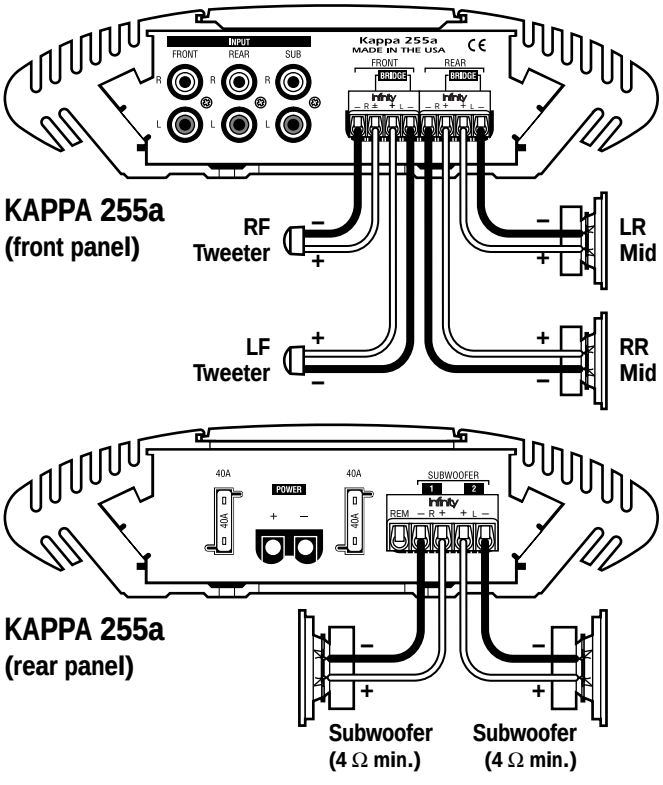
Figure 2. This wiring diagram shows a Kappa 255a amplifier driving a pair of tweeters, a pair of midrange speakers, and a pair of subwoofers (4 Ω minimum).



For system expansion, see Figure 4 on the next page.

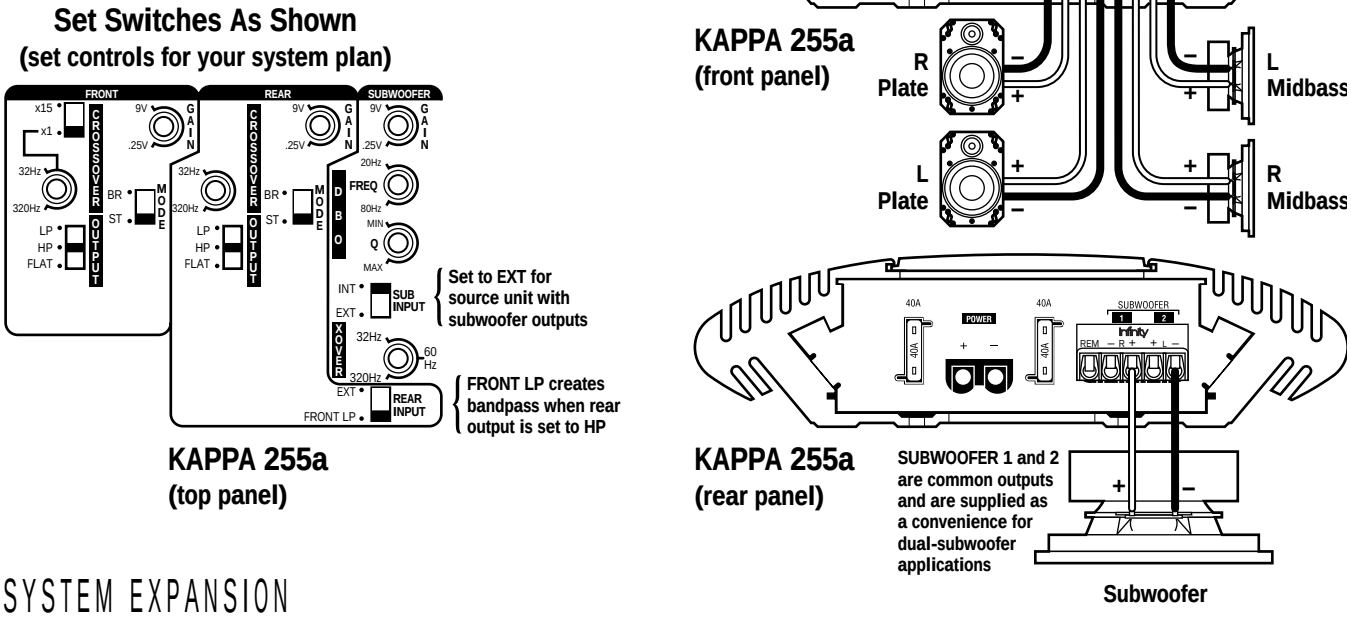
NOTE: For simplicity, Figures 1 through 4 do not show power, remote, and input connections.





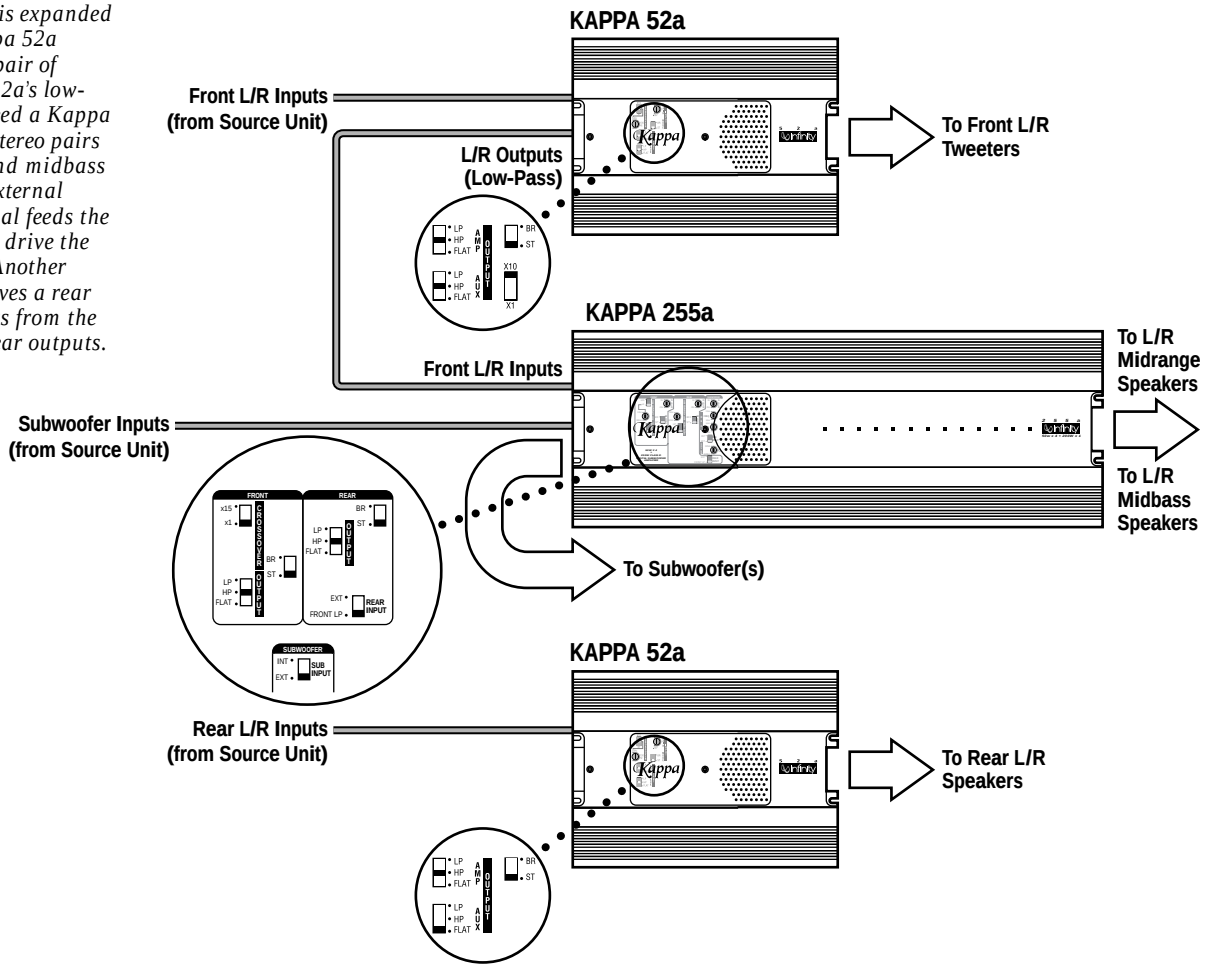
APPLICATIONS (continued)

Figure 3. This wiring diagram shows a Kappa 255a amplifier driving a front set of tweeter/midrange components, a rear pair of midbass speakers, and a single subwoofer.



SYSTEM EXPANSION

Figure 4. In this expanded system, a Kappa 52a drives a front pair of tweeters. The 52a's low-pass outputs feed a Kappa 255a to drive stereo pairs of midrange and midbass speakers. An external subwoofer signal feeds the Kappa 255a to drive the subwoofer(s). Another Kappa 52a drives a rear pair of speakers from the source unit's rear outputs.



PRECAUTIONS AND NOTES

- The Kappa 255a has five levels of circuit protection that monitor the amplifier and will shut it down if the electrical system voltage drops below 10 Vdc or exceeds 15.5 Vdc, temperatures are above 194° F (90° C), short circuits occur, or current draw exceeds product specifications. For best performance, check the intended mounting site to make sure the operating environment does not create conditions that will trigger circuit protection.
- Prior to installation, turn off all audio systems and other electrical devices. Also disconnect the (–) negative lead from the vehicle's battery.
- At the installation site, locate and make a note of all fuel lines, hydraulic brake lines, and electrical wiring. Use extreme caution when cutting or drilling in and around these areas.
- Use the amplifier as a mounting template to mark locations for the mounting holes.
- Check clearances on both sides of a planned mounting surface before drilling any holes or installing any screws. Remember that mounting screws can extend up to an inch behind the surface.
- Always wear protective eyewear when using tools.
- The Kappa 255a uses gold-plated, industrial-grade Weco® plug-in connectors for power and speaker wiring. Because of precision tolerances, do not insert the connectors into the amplifier without pre-wiring them first. Once the wires are fastened in each shell, they provide additional gripping area for easy connector removal.
- When routing cables, keep input signal cables away from power cables and output speaker wires, as shown in Figure 5 (below).
- When making connections, make sure that each connection is clean and properly secured. Observe the polarity markings on the front and rear panels. Refer to the application drawings (Figures 1 through 3 on pages 4 and 5) to set up the amplifier for operation of various configurations.
- If the amplifier's fuses need replacement, use only the same rating and type as replacements. Do not substitute another kind.

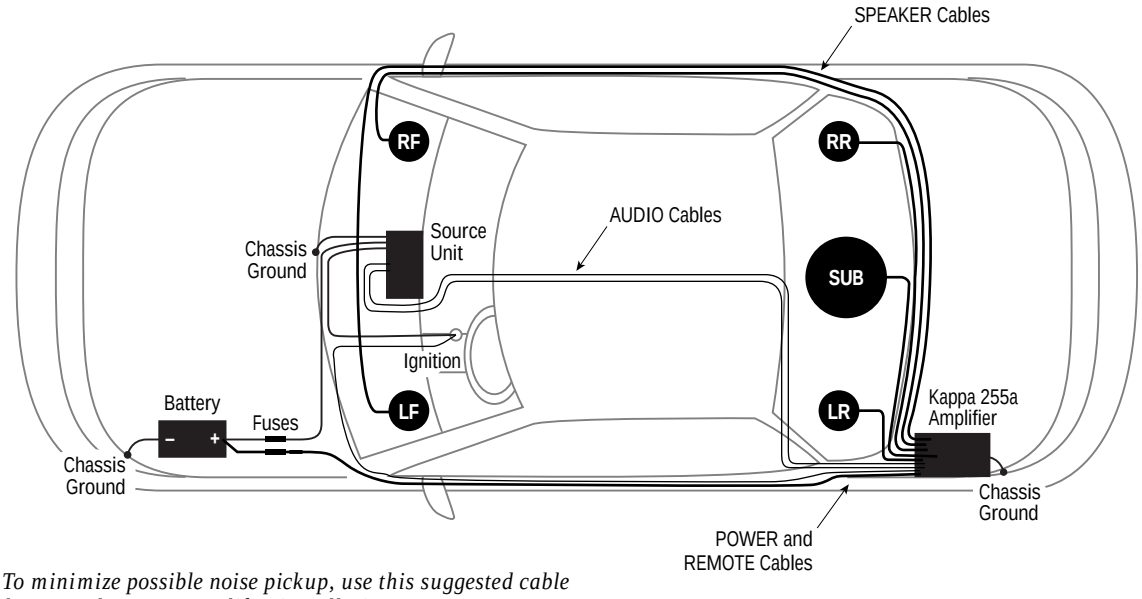


Figure 5. To minimize possible noise pickup, use this suggested cable routing scheme to plan your amplifier installation.

INSTALLATION

The Kappa 255a is easy to install. For optimum performance, we recommend using high-quality, twisted-pair shielded RCA audio cables and 14-gauge or larger speaker wire. Also, you'll need a minimum of 10-gauge stranded copper wire (e.g., red and black jackets) for the power connections. Use 18-gauge (e.g., blue jacket) wire for remote turn-on.

Depending on your total system plan, allow for adequate time and the possibility of overnight storage of your vehicle, since it may take more than one day to complete the installation.

PARTS LIST...

Examine and verify that the package includes the following items:

- (1) Kappa 255a Power Amplifier
- (2) Spare ATC fast-blow fuses (40 A)
- (1) Control cover with (2) machine screws
- (1) Weco 5-pin audio connector
- (2) Weco 4-pin audio connectors
- (1) Weco 2-pin power connector
- (4) #8 mounting screws

MOUNTING THE AMPLIFIER...

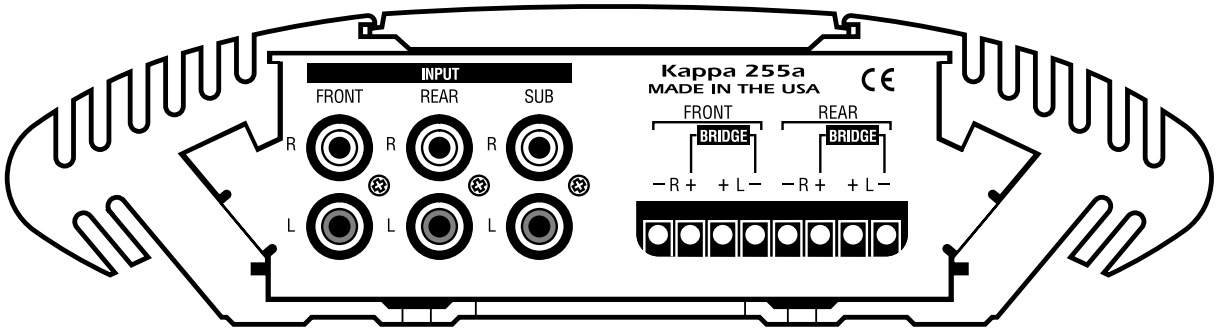
The Kappa 255a can be mounted in virtually any location ***inside*** the vehicle. However, make sure to keep the amplifier away from heater vents or ducts.

1. At the chosen site, use the amplifier as a mounting template and mark locations of the four mounting holes.
2. Drill a small pilot hole at each marked location.
3. Mount the amplifier and securely tighten the mounting screws.

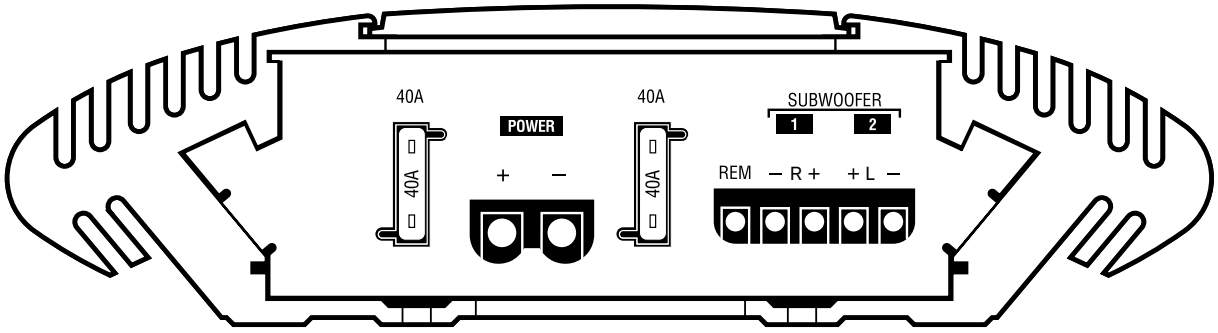
WIRING THE AMPLIFIER...

Refer to Figure 6 (below) for details of the Kappa 255a's front and rear panel connections.

1. For power, remote, and speaker wires, strip ¼" off one end of each jacket to reveal bare wire for insertion into the Weco connectors.
2. Using the Weco 2-pin power connector, connect a black wire from the nearest bare-metal chassis component to the (–) terminal. Then, connect a red wire from the vehicle's +12-volt battery terminal to the (+) terminal.
3. Make sure the wires are firmly seated in the Weco 2-pin connector and that each screw is completely tightened. Insert the wired connector into the POWER socket (on the amplifier's rear panel). Press it in until it stops.



KAPPA 255a WIRING CONNECTIONS
(front panel)



KAPPA 255a WIRING CONNECTIONS
(rear panel)

Figure 6. Wiring connections for the Kappa 255a amplifier.

4. Using the Weco 5-pin connector, connect a blue wire from the source unit's remote connection to the REM terminal. Depending on polarity requirements (see Figures 1 through 3 on pages 4 and 5), connect speaker wires from the subwoofer(s) to the L and R (+ and –) terminals, as required by your system plan.

5. Make sure the wires are firmly seated in the Weco 5-pin connector and that each screw is completely tightened. Insert the wired Weco 5-pin connector into the SUBWOOFER socket (on the amplifier's rear panel). Press it in until it stops.

6. Using Weco 4-pin connectors, connect speaker wires from the front and rear speakers to the amplifier. Depending on your system plan (see Figures 1 through 3 on pages 4 and 5), match the polarities on the L and R (+ and –) terminals.

   NOTE: In 3-way applications, the rear amplifier provides bandpass channels to drive midrange or midbass speakers.

7. Make sure the wires are firmly seated in each Weco 4-pin connector and that each screw is completely tightened. Insert the wired Weco 4-pin connectors into the FRONT and REAR sockets (on the amplifier's front panel). Press each one in until it stops.

8. Connect RCA cables from a source unit to the L/R, FRONT/REAR INPUT jacks. If the source unit has subwoofer outputs, also connect a pair of RCA cables from those jacks to the SUB INPUT jacks and set the SUB INPUT switch to EXT (see Figure 7).

SETTING THE CROSSOVERS...

1. To use the Kappa 255a in a front/rear system, set the CROSSOVER controls to frequencies recommended by the speaker manufacturer (see Figure 7). If the value is unknown, set the control midway.

2. For a 3-way system, set the OUTPUT and REAR INPUT switches to create the appropriate bandpass filters (see Figures 2 and 3 on pages 4 and 5).

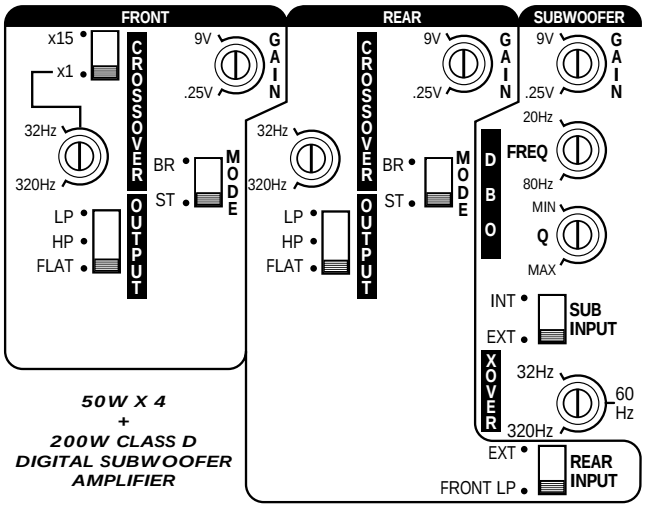


Figure 7. Kappa 255a controls for crossover, input, output, and DBO (Dynamic Bass Optimizer).

SETTING INPUT SENSITIVITY...

Initially, turn the front and rear input sensitivity GAIN controls to their minimum (counter-clockwise) positions (refer to Figure 7).

1. Reconnect the (–) negative lead to your vehicle's battery. Apply power to the audio system and play a favorite music track from CD or tape.

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

2. On the source unit, increase the volume control to maximum position. Slowly increase the Front and Rear GAIN controls (clockwise) towards three o' clock and, at the same time, listen to the quality of the reproduced sound. At some point, you'll hear distortion on the music peaks. Stop the adjustment and turn it back slightly.

SETTING DBO...

Dynamic Bass Optimizer (DBO) is a new approach to enhancing low-frequency reproduction in a vehicle. Conventional bass boost controls add bass at a fixed frequency and cause the amplifier to consume considerable power. DBO conserves valuable power at the lowest frequencies and allows you to adjust the level and "character" of the bass sound, instead of just the amount of boom.

Since a subwoofer in a tuned box is given to overexcursion below the tuned frequency, set the FREQ control below the box's resonant (tuned) frequency (see Figure 8 on page 2). Power typically wasted in this region will now be conserved and instead be available for frequencies the enclosure will reproduce. Use the Q control to boost the bass at the set frequency by as much as 12 dB (at MAX position – see Figure 8 on Page 2).

For sealed enclosures, use DBO to enhance the output so it sounds more like a tuned box. This is a result of 12 dB of rolloff being added to the enclosure's rolloff and a flattening of frequency response (at the curve's knee) when Q is boosted.

For infinite baffles, set the FREQ control to the speaker's F_s value (to keep the subwoofer from trying to create bass below the resonant frequency) and adjust the Q control according to personal taste.

INSTALLING THE CONTROL COVER...

After wiring and testing the Kappa 255a amplifier, install the control cover using the enclosed machine screws to deter tampering and help seal out dust.

NOTE: Do not over-tighten the machine screws. Doing so may crack the cover.

TROUBLESHOOTING

Use the following guide to identify symptoms and solve problems. Make sure the vehicle's electrical system is working properly and power is reaching the Kappa 255a (i.e., green LEDs on the top panel are on).

SYMPTOM	LIKELY CAUSE	SOLUTION
No audio	Low/No Remote Turn-On Voltage	Check connections; test turn-on voltage
	Speakers are not connected or are blown	Check wiring; use VOM/DVM to measure speaker coil impedance
Distorted audio	Input sensitivity is not set properly	See *Setting Input Sensitivity* on previous page
Audio lacks "punch"	Speakers are wired with wrong polarity	Check polarity of connections; refer to *Applications*
Audio cycles off and on; Amber protection LEDs (on top panel) are on	A protection circuit is turning the amplifier off and on	Verify the following– electrical system is between 10 ~ 15.5 Vdc; temperature is not over 194°F (90°C); no short circuits; speaker loads are not less than 1 ohm (2 ohms in mono)
Audio cycles off and on; Amber protection LEDs (on top panel) are on	GAIN is set too high	Set Input Sensitivity correctly (see previous page)
Fuse blows	Incorrect wiring or short circuit	Check connections; refer to *Applications*

Service Bulletin

Service bulletin INF9701 Rev1 - August 2001

This is considered a Major repair

To: All Infinity Service Centers

Models: Kappa 255a

Subject: Damaged Output Transistors

When the voltage from an automotive battery powering the Kappa 255a dips repeatedly dips below 8 volts, the class D regulator can become unstable. As result, excessive current flow can damage output transistors Q10,11,12,13 in the subwoofer section.

In the event you receive a Kappa 255a for any servicing reason, perform the modification as shown below. Affected units will have an "HC" in the prefix in a white serial # label (bottom of the unit).

Note: Many components in this product, including two due for replacement, are **S**urface **M**ount **D**evices.

Procedure:

1) Remove the (24) 9/64" allen screws from both lower sides of the chassis.
2) Remove the (2) #10 Torx screws from the bottom chassis underneath the tamper-proof labels.
3) Turn amplifier vertically and strike on a hard surface, dislodging the main PCB; slide entire assembly out of the chassis.
4) Remove and replace any defective IRFS250 output transistors. (Q10-13 are Infinity part# TR1238)
5) Change R3 on the Digital Predriver Module (PC1207) from 22kΩ to 2.2kΩ (Infinity part# RS1703). PC1207 is the small upright board located near the main PCB filter capacitors. R3 is on the component side of the board facing the outside of the amplifier. See Figure 1.
6) Change R15 on PWM Module (PC1149) from 1kΩ to 2.2kΩ Ω (Infinity part# RS1703). PC1149 is the small upright board located near the main power supply transformers. R15 is on the component side of the board facing the inside of the amplifier. See Figure 2.
7) Reinsert main PCB into chassis; confirm that all (20) insulators are still in place, attached with heat sink compound to each output device.
8) Insert and tighten all (24) chassis screws, including the (2) Torx screws on the bottom of the unit. Note: the (4) shorter, 5/8" screws are inserted at the *ends* of the amp chassis.
9) Attach all power, speaker and signal cables to amplifier and test.

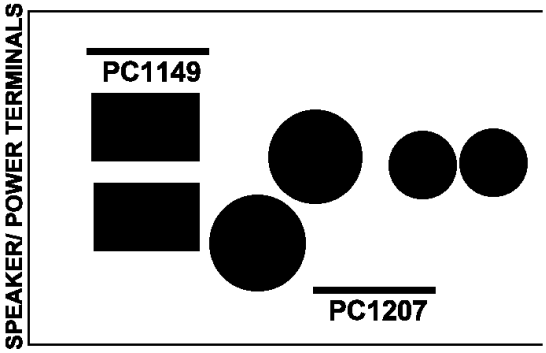


FIGURE 1 PC1207

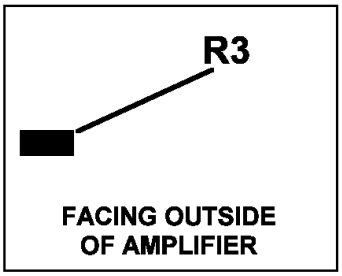
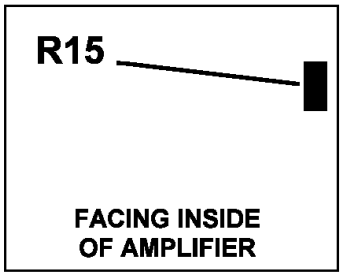


FIGURE 2 PC1149



Model	Serial number	Status	Action
KAPPA 255a	"HC" in the prefix below -01701	Damaged Q10,11,12 or 13	Change R3 & R15 to 2.2kΩ
KAPPA 255a	"HC" in the prefix -01701and above	Modified by factory	NONE REQUIRED

Infinity®

Service Bulletin

Service Bulletin INF2001-02 - September 2001 | Warranty labor rate: MAJOR repair

To: All Infinity Service Centers

Model: Kappa 255a

Subject: No Sound from Subwoofer Output

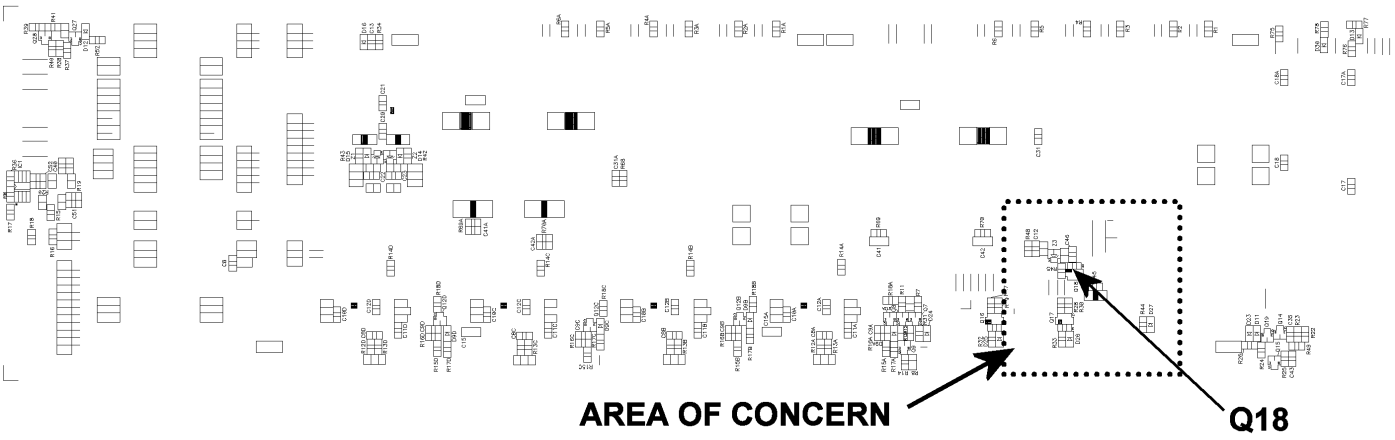
In the event you receive a Kappa 255a with the complaint: "No sound from the subwoofer output", replace transistor Q18 SMD (Surface Mount Device) with a TO-220 package, TIP31C transistor. For details, see instructions as described below. ***All KAPPA 255A amplifiers with serial numbers starting with letters "CL" should be modified. The serial number is printed on a white label, located on the bottom of the Kappa 255A enclosure.***

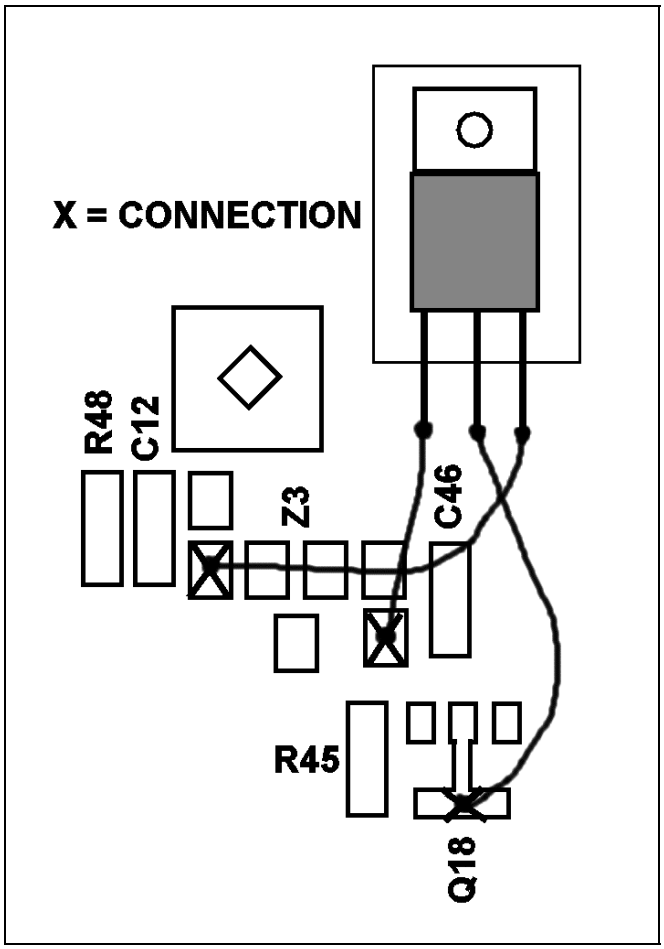
Note: Many components in this product, including the one due for replacement, are **S**urface **M**ount **D**evices.

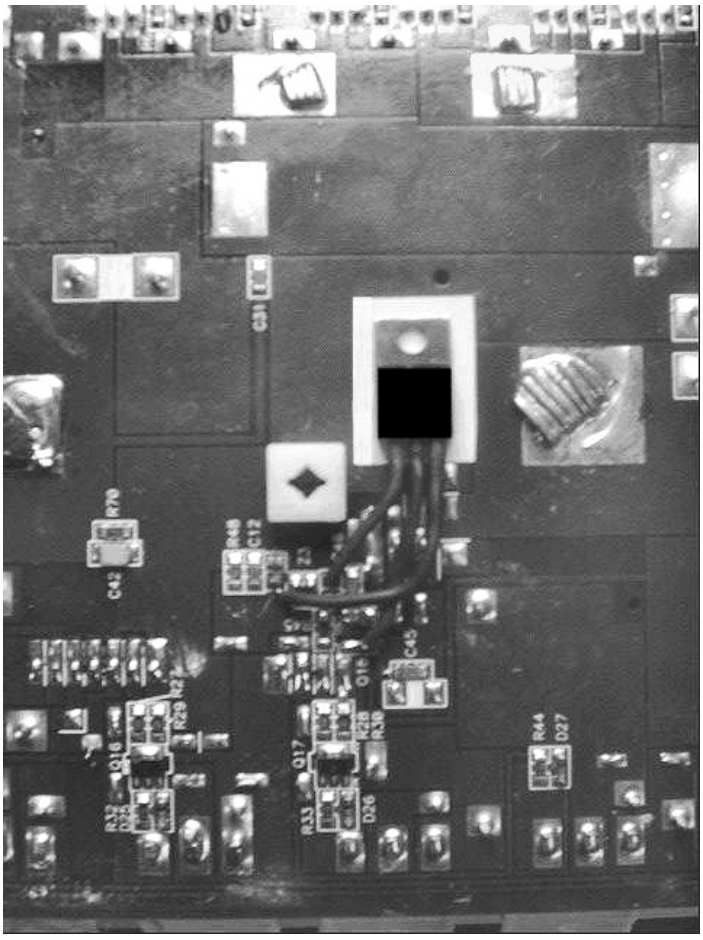
Procedure:

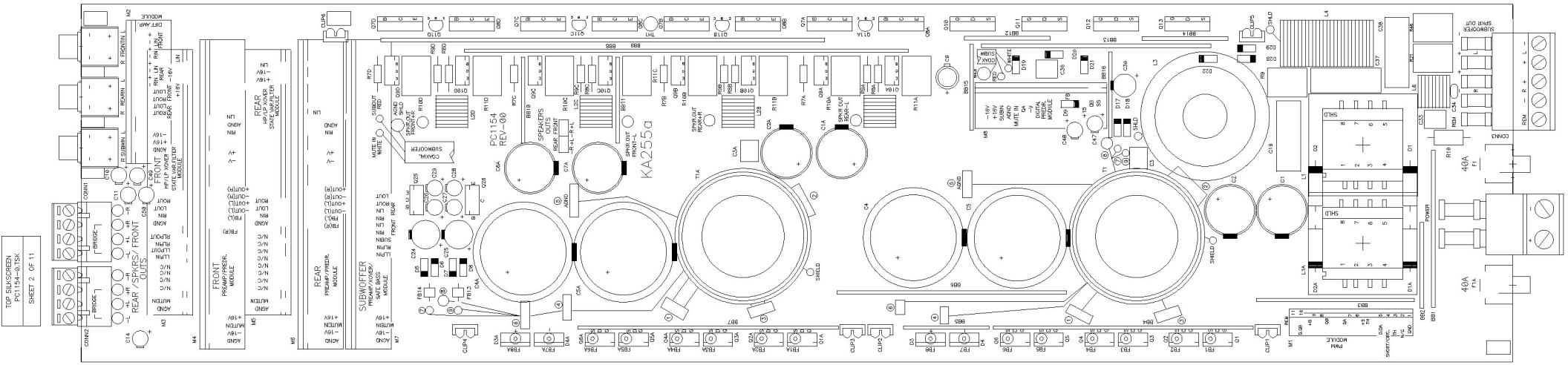
1) Remove the (24) 9/64" Allen screws from both lower sides of the chassis.
2) Remove the (2) #10 Torx screws from the bottom chassis underneath the tamper-proof labels.
3) Turn amplifier vertically and strike on a hard surface, dislodging the main PCB; slide entire assembly out of the heatsink.
4) Locate, identify, and remove Q18 SMD transistor on the bottom of the main PCB. See illustrations on page 2.
5) Prepare the nearby area on the PCB by applying a white .5" x .75" BONDPLY insulator, (Infinity part# TO-220 BONDPLY-100) in the area where a new TIP31C transistor will be mounted.
6) Apply a transistor TIP31C (Infinity part# TR1183) on top of the insulator; press firmly to set. Transistor should be flat on the PCB.
7) Extend the three leads of the transistor by soldering a length of 22 gauge buss wire to each lead, the length determined by the connection points. Solder each wire piece to each lead (longer is better as it can always be cut) and then trim to the correct length. You will NOT be re-connecting the three leads to the tiny solder pads for the original SMD device; study the illustrations to locate the three final connection points.
8) Cut three pieces of 1/16" vinyl or shrink tubing to insulate the three exposed leads, leaving enough wire exposed at the end to make the final soldered connections.
9) Solder the three leads in the areas shown in the illustration. Transistor Q18 and new connecting wires MUST NOT be higher than the square plastic standoff next to it.
10) Add a dab of RTV (silicon seal or similar non-conductive compound) to the area of the three leads.
11) Test the unit, still out of the heatsink, by applying power, with signal and subwoofer connections WITH NO LOUDSPEAKER LOAD other than a DMM or an oscilloscope on the output terminals.
12) Reinsert main PCB into chassis; confirm that all (20) insulators on the output devices are still in place, attached with heat sink compound on each one.
13) Insert and tighten all (24) chassis screws, including the (2) Torx screws on the bottom of the unit. Note: the (4) shorter, 5/8" screws are inserted at the *ends* of the amp chassis.
14) Attach all power, speaker and signal cables to amplifier and test with loudspeaker load.

MODEL	SERIAL NUMBER	STATUS	ACTION
KAPPA 255a	"CL" in the serial # prefix All units affected	Q18 Overheating	Replace Q18 with TIP31C transistor


AREA OF CONCERN
Q18
Towards fuses


X = CONNECTION
R48
C12
Z3
C46
R45
Q18




TOP SILKSCREEN
PC1154-0.TSK
SHEET 2 OF 11
PC1154
REV-00
KA255a
FRONT
PREAMP/PREDR.
MODULE
REAR
PREAMP/PREDR.
MODULE
SUBWOOFER
PREAMP/XOVER
BASS MODULE
SPEAKERS OUTS
REAR/SPEAKERS/FRONT OUTS
SUBWOOFER
SPKR OUT
FRONT-L
SPKR OUT
FRONT-R
SPKR OUT
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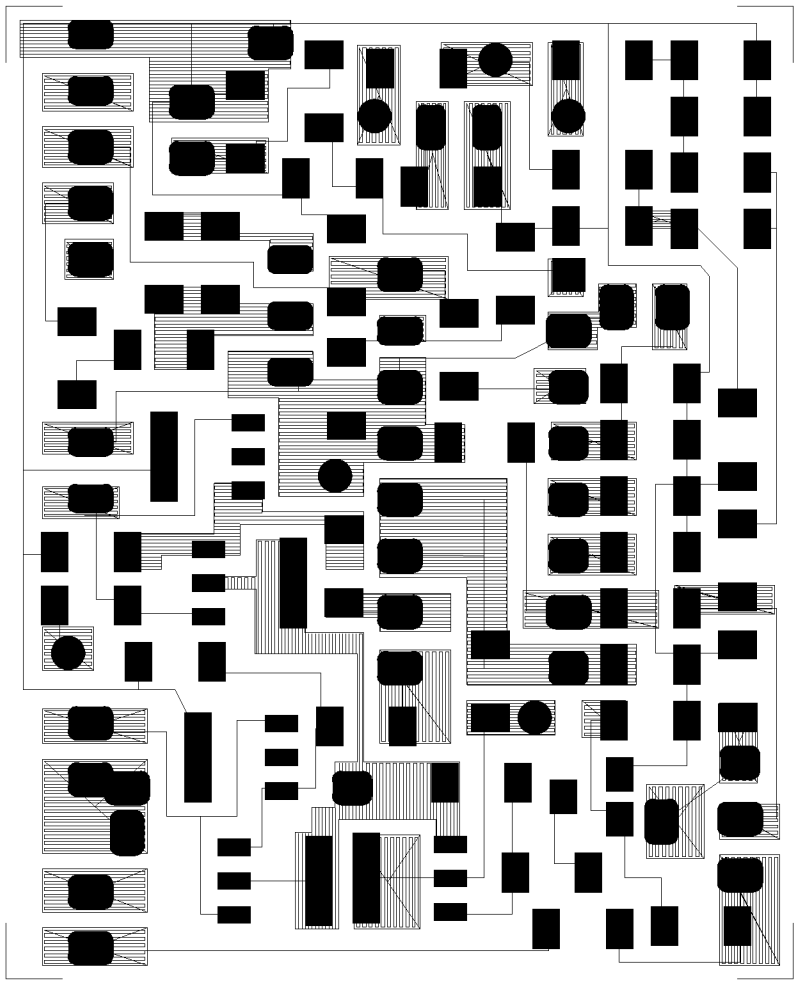
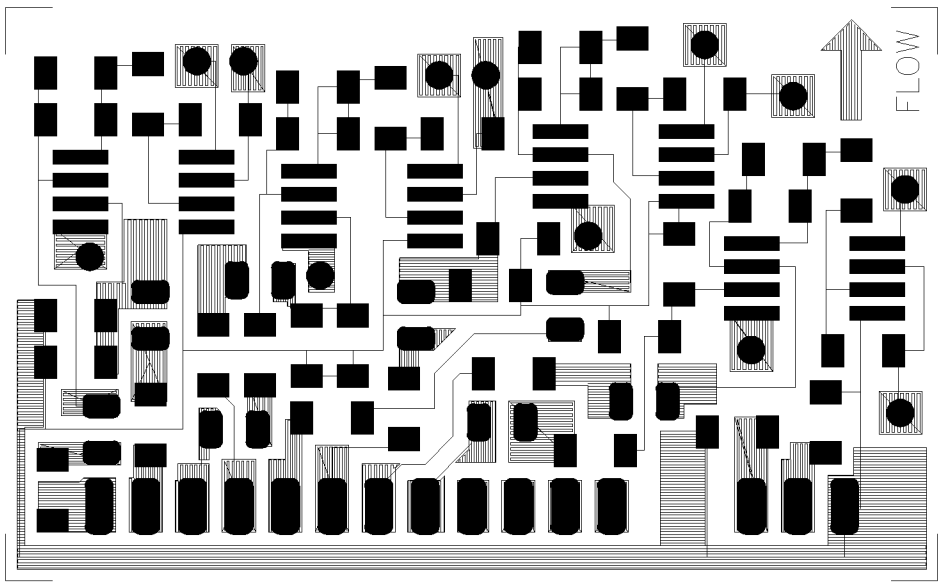
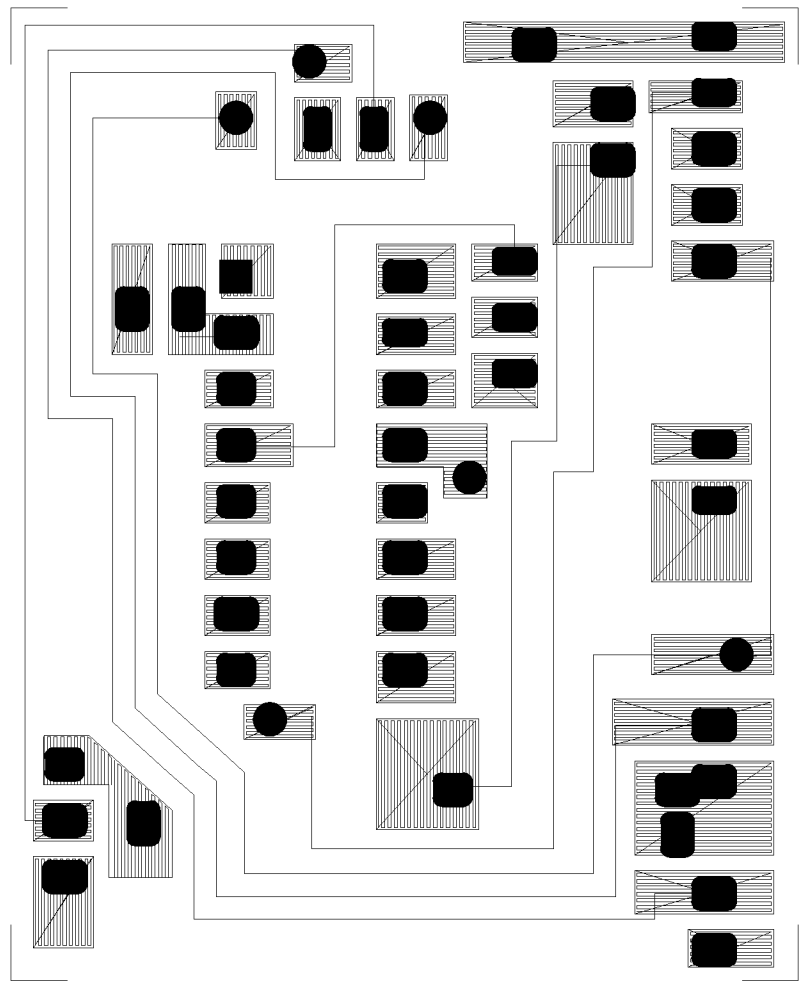
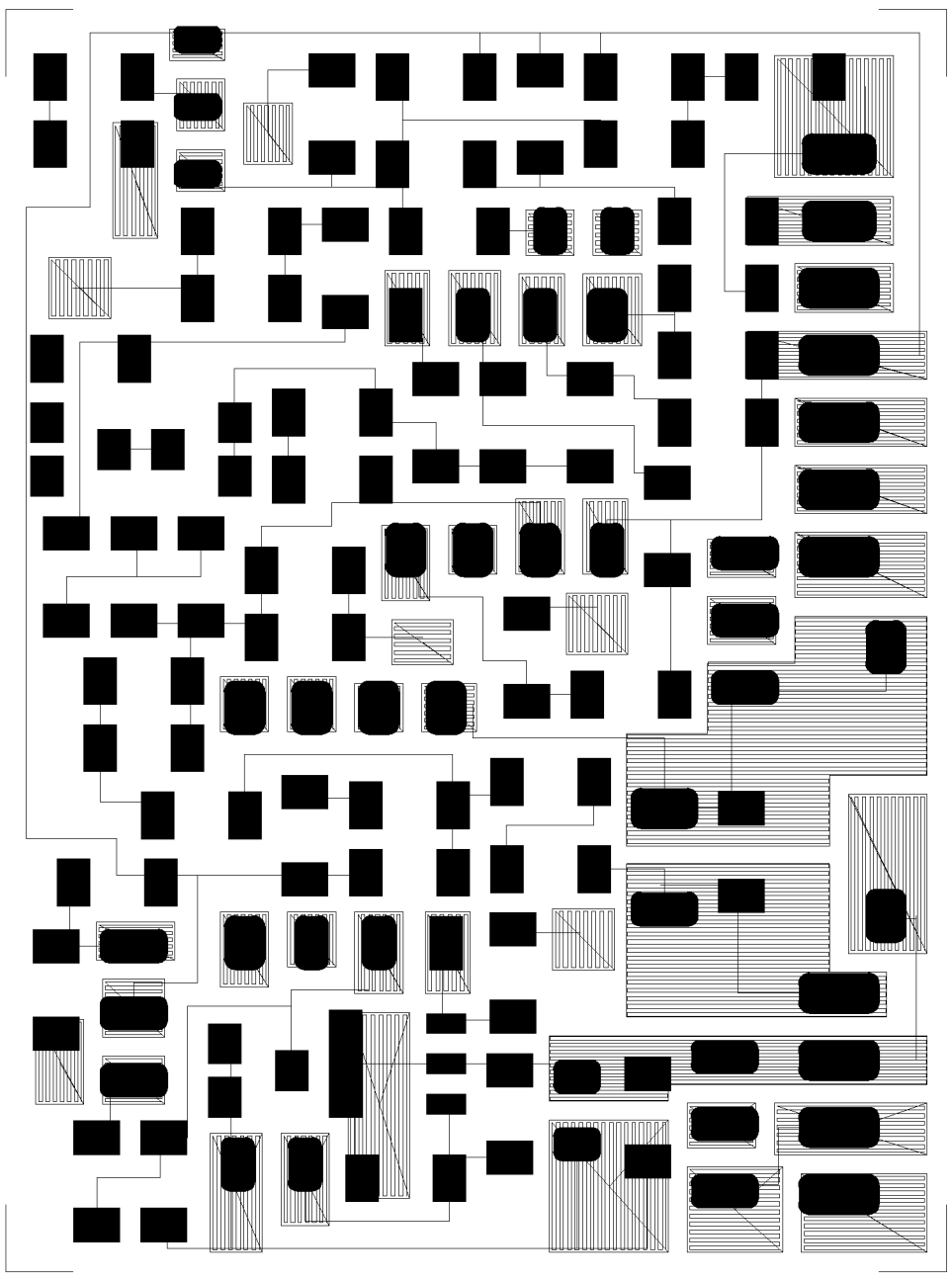
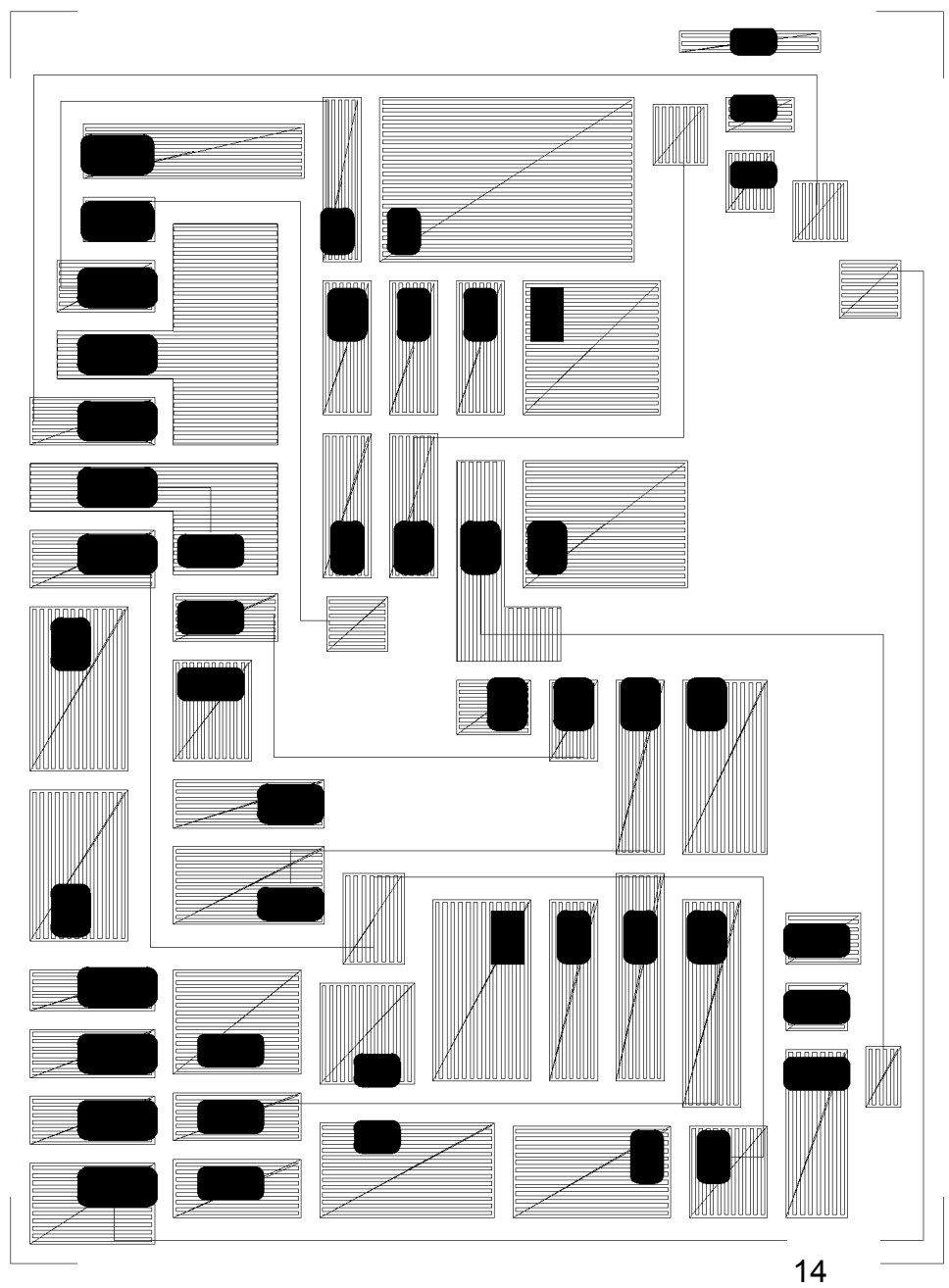
SPKR OUT
REAR-R
SHIELD
AGND
POWER

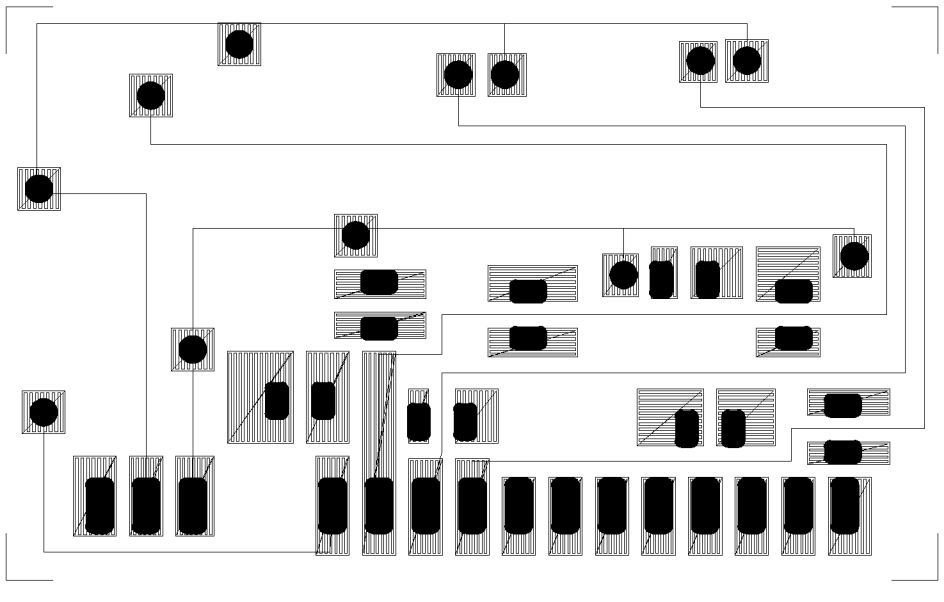


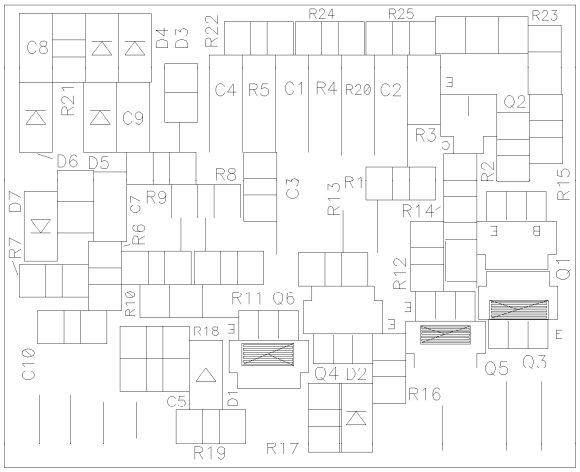

FLOW

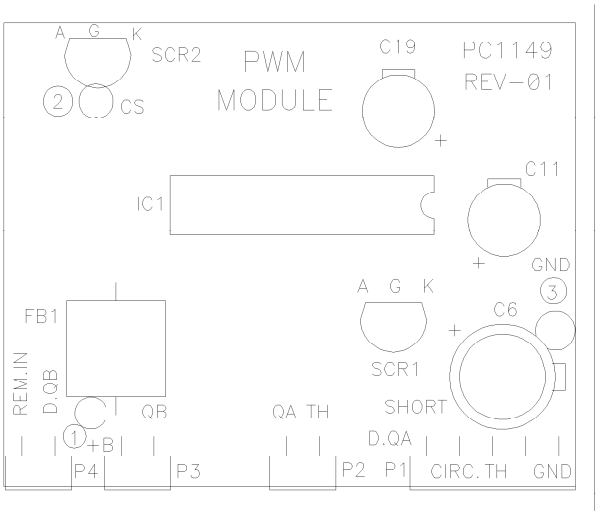


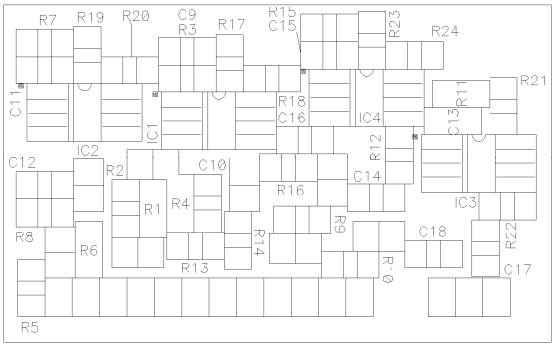


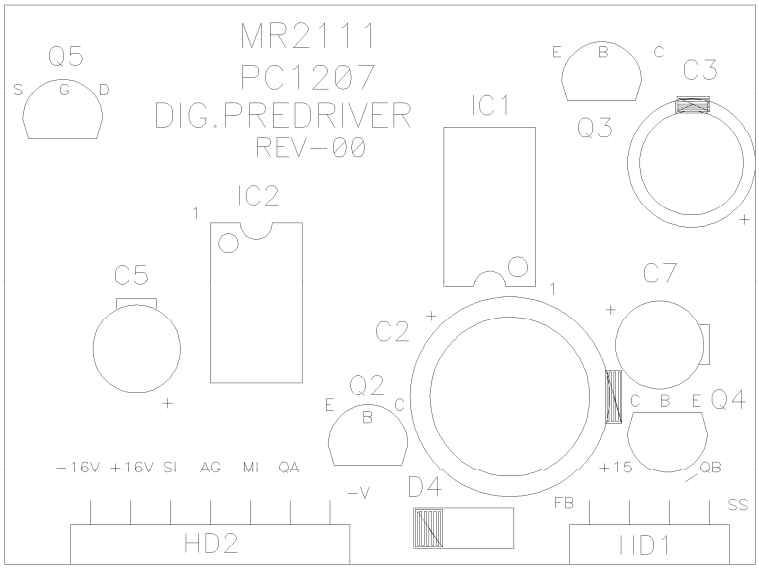


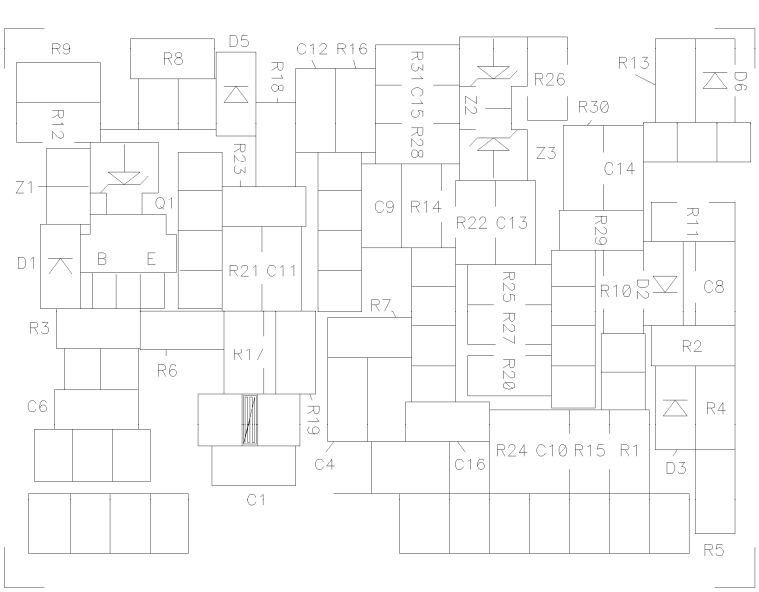


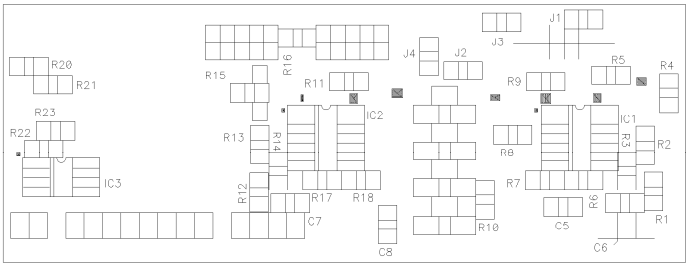

C8
D4
D3
R22
R24
R25
R23
C4
R5
C1
R4
R20
C2
Q2
R3
R21
C9
D6
D5
R8
C3
R1
R2
R15
D7
C7
R9
R13
R14
R7
R6
R12
Q1
R10
R11
Q6
R18
Q4
D2
Q5
Q3
C10
C5
D1
R16
R19
R17

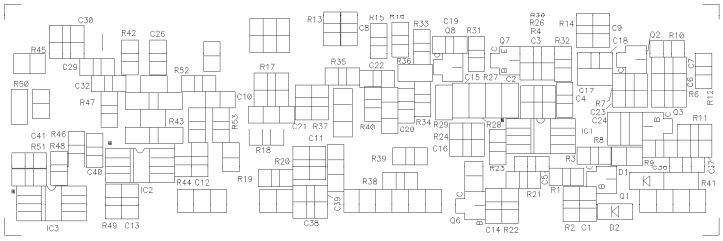

A G K
SCR2
PWM
MODULE
C19
PC1149
REV-01
2
CS
IC1
C11
GND
3
A G K
FB1
C6
REM.IN
D.QB
SCR1
QB
QA TH
SHORT
1
+B
D.QA
P4
P3
P2 P1
CIRC.TH
GND

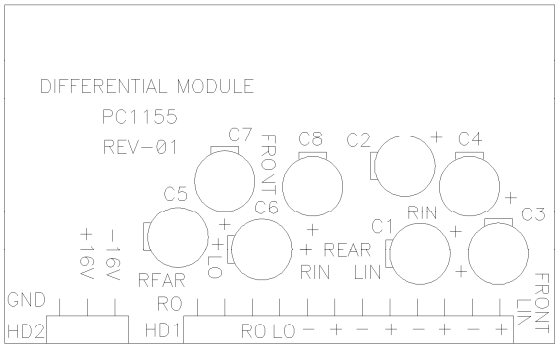

R7
R19
R20
C9
R3
R17
R15
C15
R23
R24
C11
R18
C16
IC4
R11
R21
C13
IC1
R12
C12
IC2
R2
C10
C14
IC3
R1
R4
R16
R8
R6
R14
R9
C18
R22
R13
R10
C17
R5

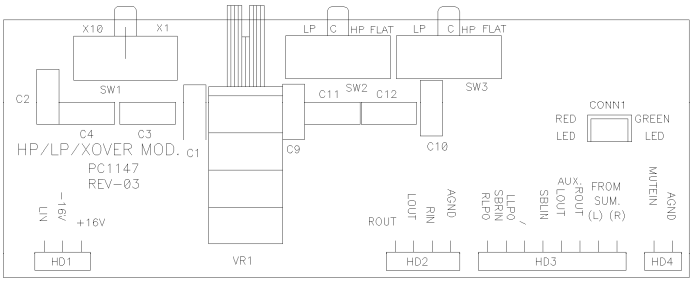

MR2111
PC1207
DIG.PREDRIVER
REV-00
Q5
S G D
IC1
E B C
C3
Q3
IC2
1
C5
C7
C2
Q2
E B C
C B E Q4
−16V +16V SI AC MI QA
−V
D4
+15
QB
FB
SS
HD2
IID1

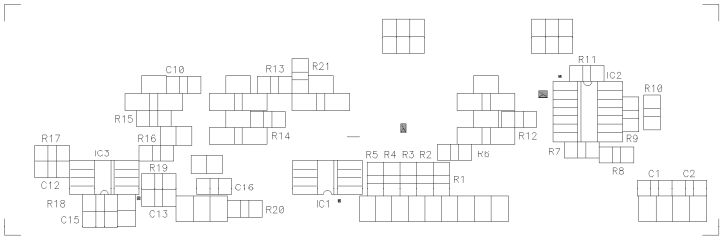

R9
R8
D5
C12 R16
R31 C15 R28
ZZ
R26
R13
D6
R12
R18
R30
R23
Z3
C14
Z1
Q1
C9
R14
R22 C13
R29
R11
D1
B E
R21 C11
R10
D2
C8
R7
R25 R27 R20
R3
R17
R2
R6
R19
R4
C6
C4
C16
R24 C10 R15 R1
D3
C1
R5

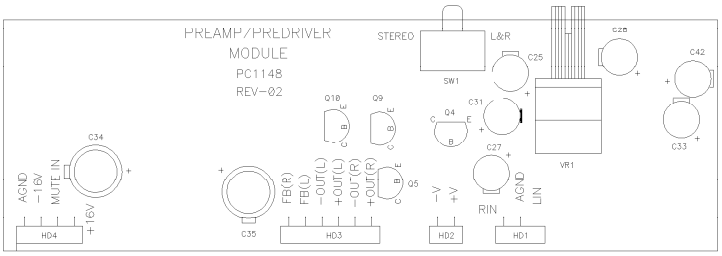

J1
J3
J4
J2
R5
R4
R20
R21
R15
R6
R11
R9
R23
R22
IC2
IC1
R13
R14
R3
R2
R8
R12
R17
R18
R7
R9
C7
R10
C5
R1
C8
C6

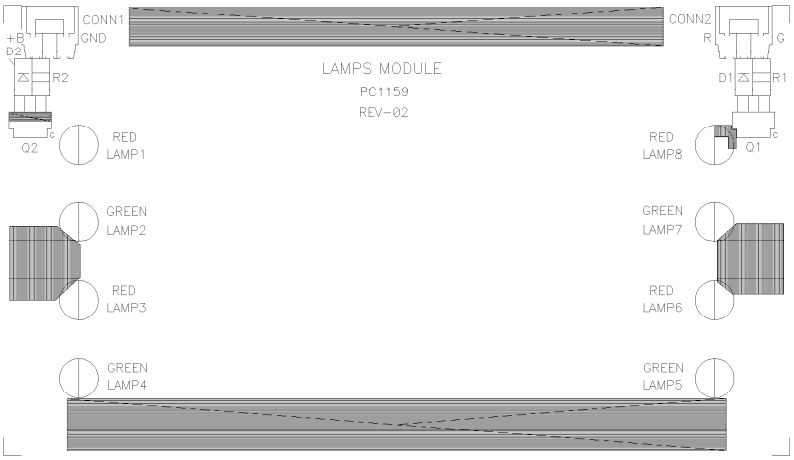


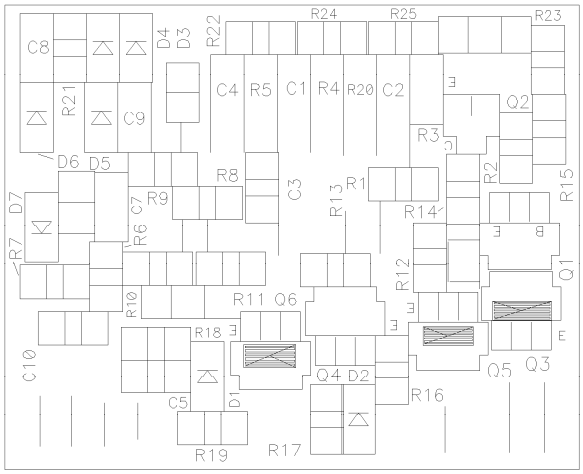

DIFFERENTIAL MODULE
PC1155
REV-01
C7
C8
C2
C4
FRONT
C5
C6
RIN
C3
C1
+16V
-16V
LO
REAR
RIN
LIN
RFAR
GND
RO
FRONT
LIN
HD2
HD1
RO LO

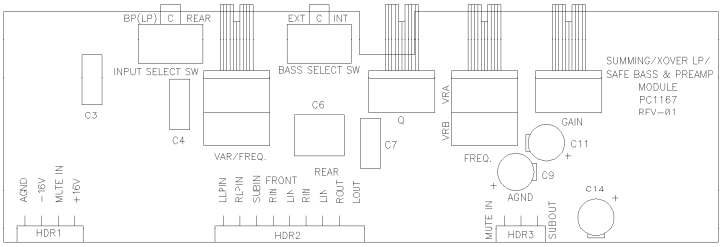

X10
X1
LP
C
HP FLAT
LP
C
HP FLAT
SW1
SW2
SW3
C2
C11
C12
C4
C3
C1
C9
C10
CONN1
RED LED
GREEN LED
HP/LP/XOVER MOD.
PC1147
REV-03
-16V
+16V
ROUT
LOUT
RIN
AGND
SBRIN
LLPO
SBIN
AUX. FROUT
FROM SUM. (L) (R)
MUTEIN
AGND
HD1
VR1
HD2
HD3
HD4

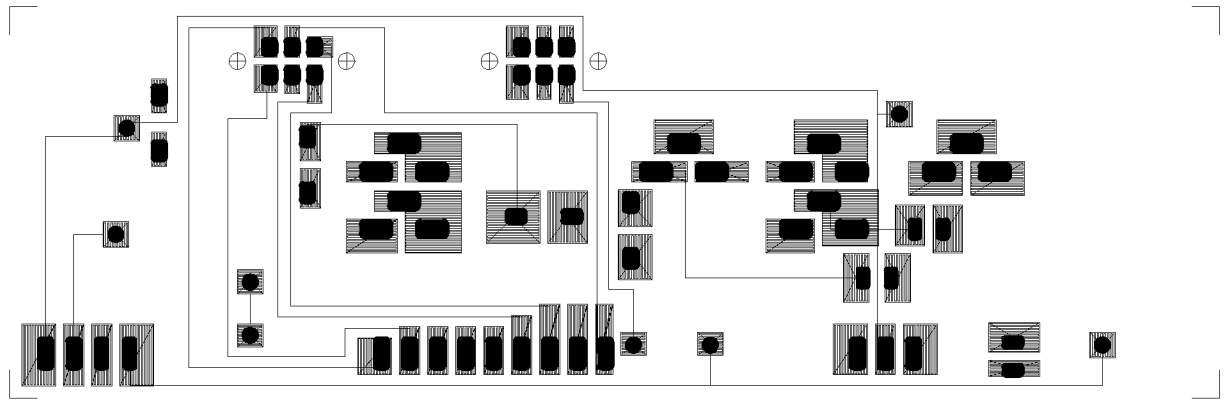


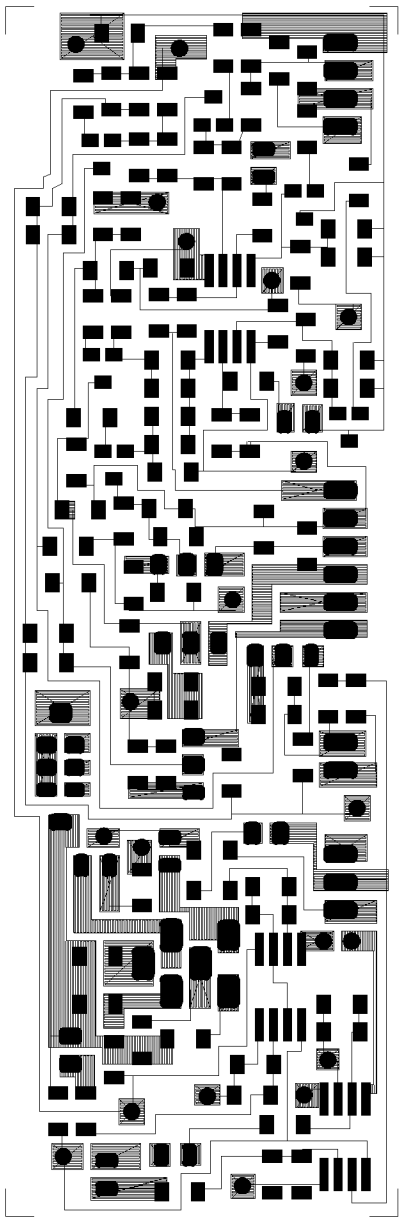

PREAMP/PREDRIVER
MODULE
PC1148
REV-02
STEREO
L&R
SW1
C25
C26
C42
C31
C27
VR1
C33
C34
AGND
-16V
MUTE IN
+16V
C35
FB(R)
FB(L)
-OUT(L)
+OUT(L)
-OUT(R)
+OUT(R)
-V
+V
AGND
RIN
LIN
HD4
HD3
HD2
HD1

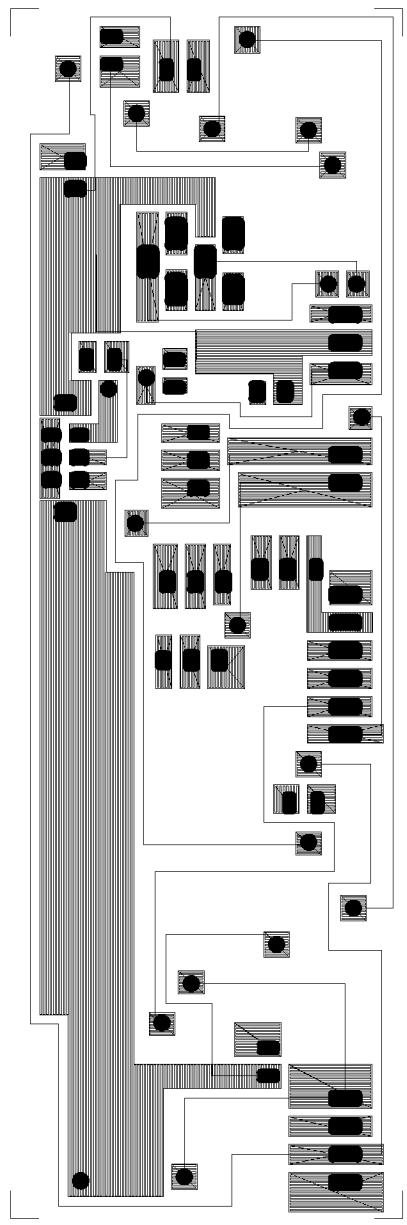

CONN1
GND
+B
D2
R2
Q2
RED LAMP1
GREEN LAMP2
RED LAMP3
GREEN LAMP4
LAMPS MODULE
PC1159
REV-02
CONN2
R
G
D1
R1
Q1
RED LAMP8
GREEN LAMP7
RED LAMP6
GREEN LAMP5

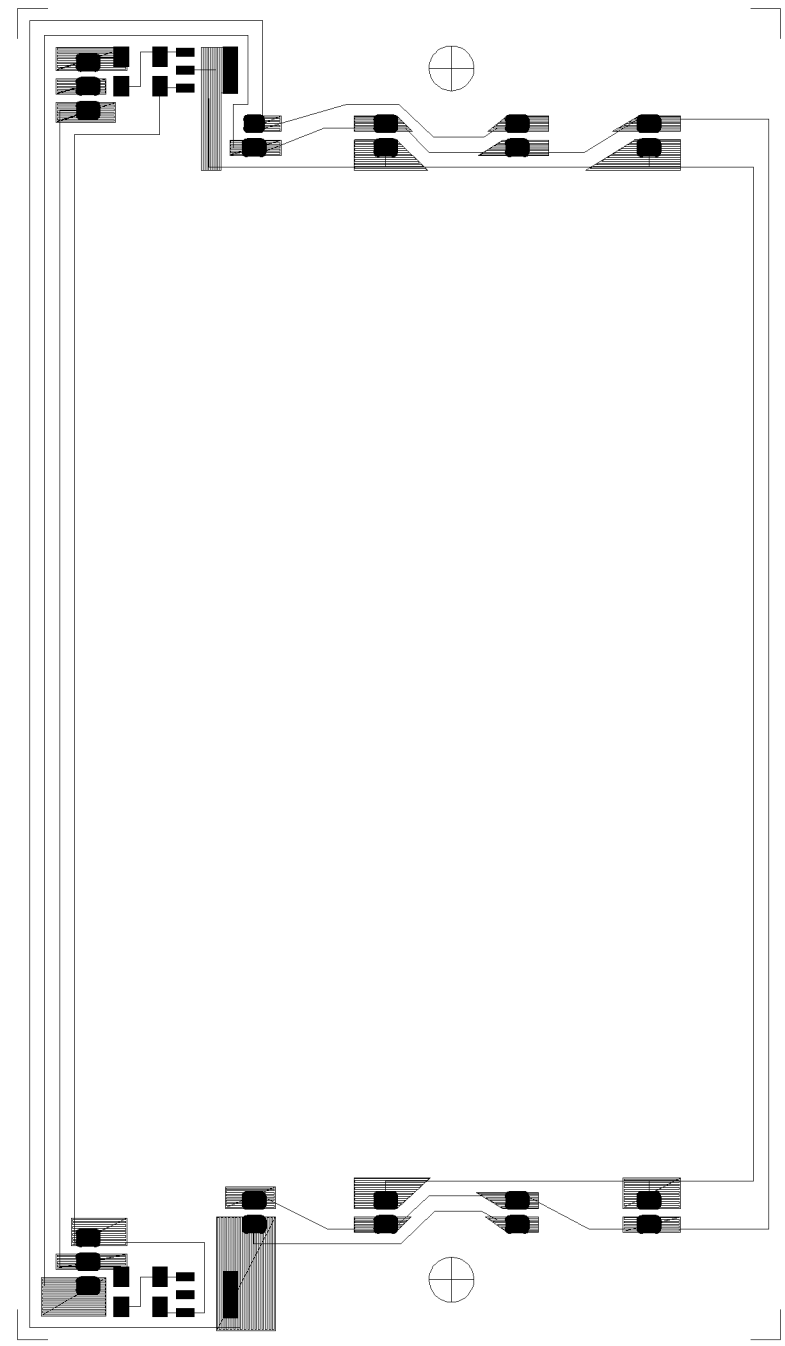

R24
R25
R23
C8
D4
D3
R22
C4
R5
C1
R4
R20
C2
Q2
R21
C9
R3
D6
D5
R8
R2
R15
D7
C7
R9
C3
R13
R1
R14
R6
R7
R12
Q1
R10
R11
Q6
R18
C10
Q4
D2
Q5
Q3
C5
D1
R16
R19
R17

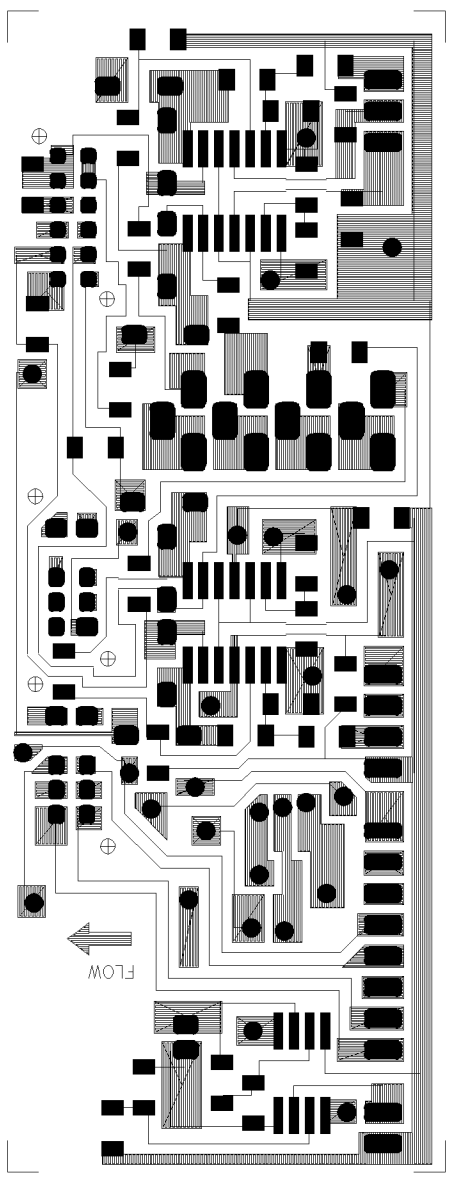

BP(LP)
C
REAR
EXT
C
INT
INPUT SELECT SW
BASS SELECT SW
SUMMING/XOVER LP/
SAFE BASS & PREAMP
MODULE
PC1167
REV-01
C3
C4
C6
C7
Q
VRA
VRB
GAIN
C11
C9
VAR/FREQ.
REAR
FREQ.
AGND
-16V
MUTE IN
+16V
LLPIN
R-IN
SUBIN
FRONT
LIN
RIN
LIR
ROUT
LOUT
AGND
C14
MUTE IN
SUBOUT
HDR1
HDR2
HDR3

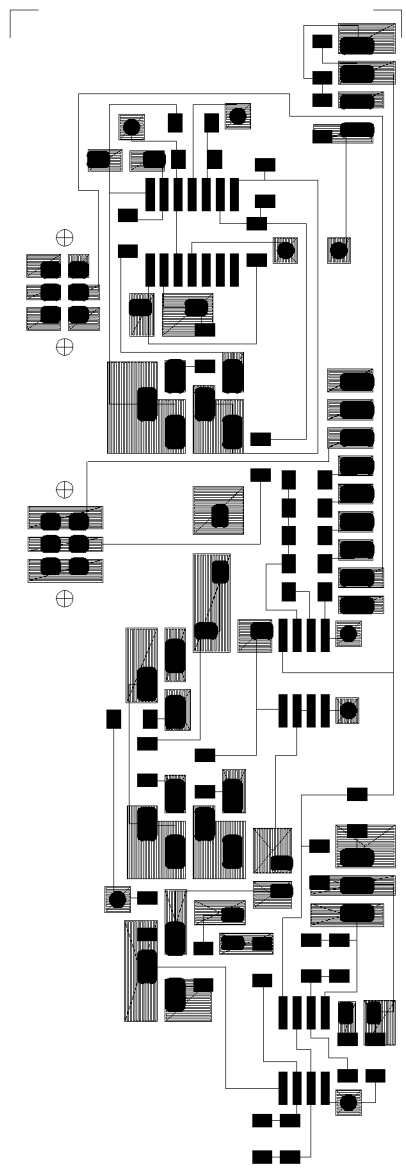


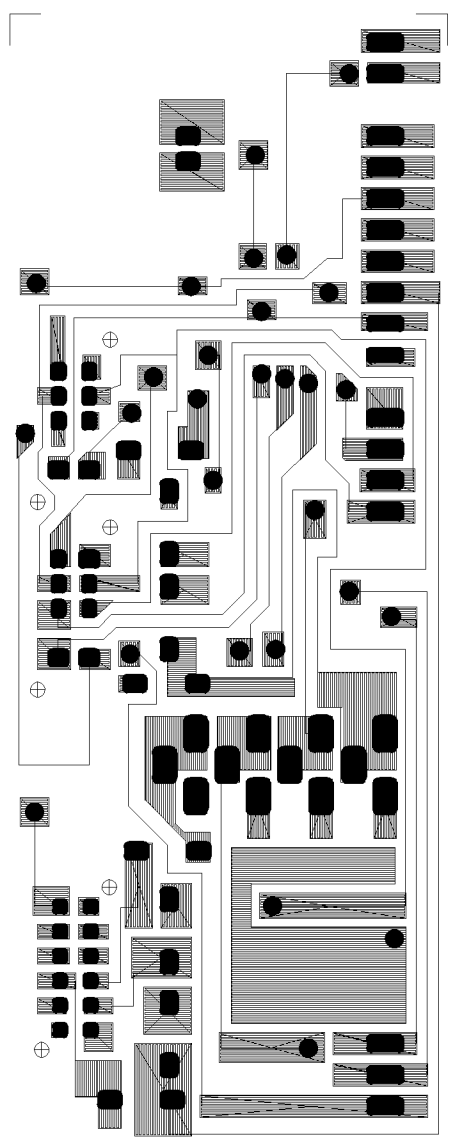


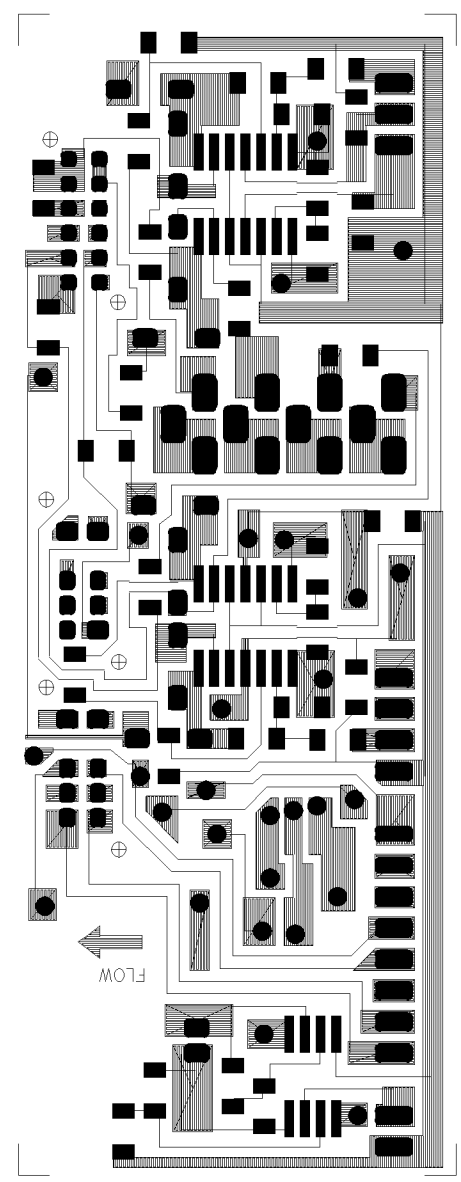


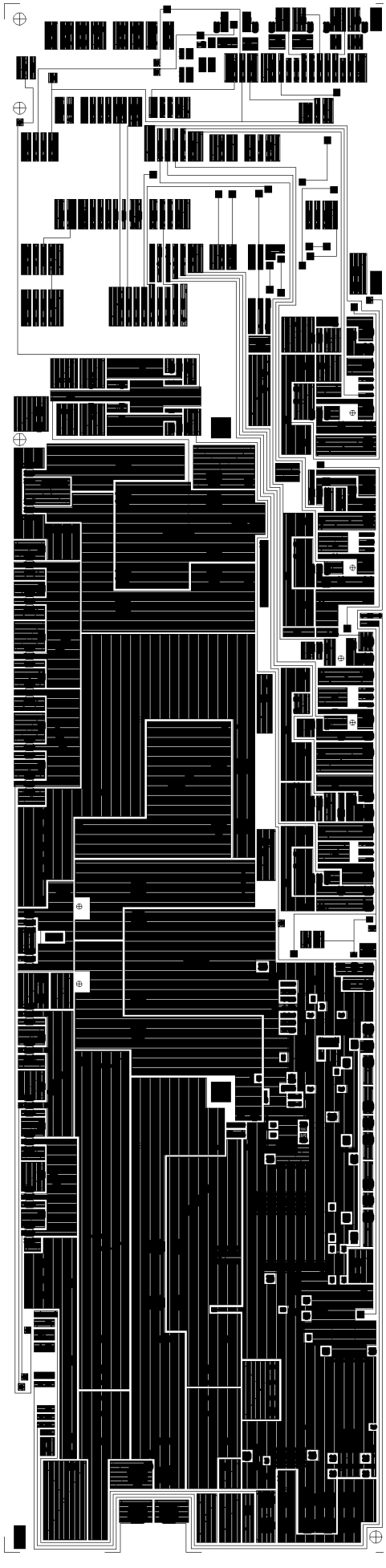


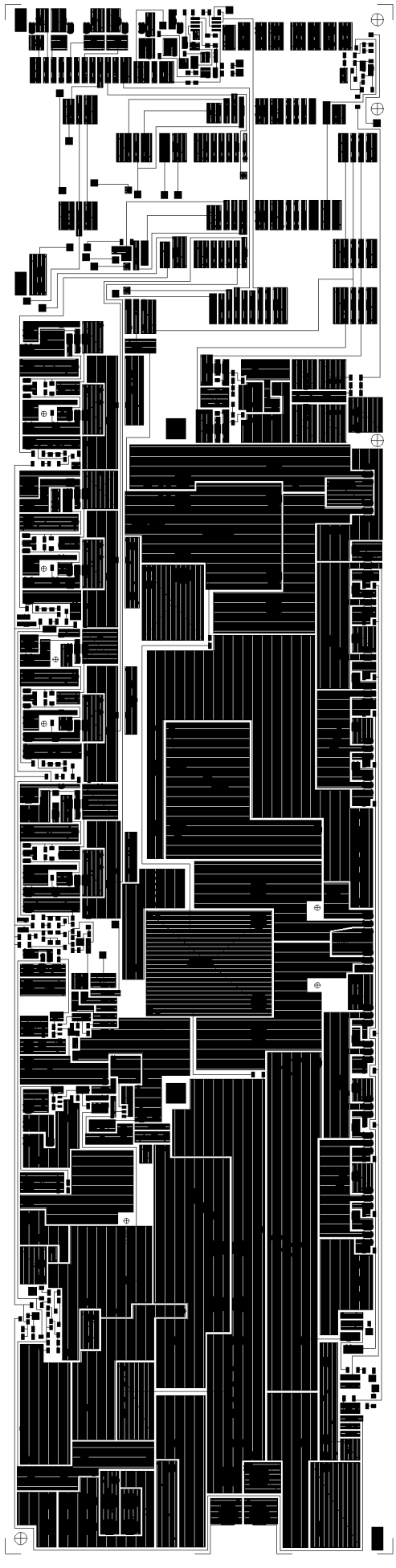

FLOW

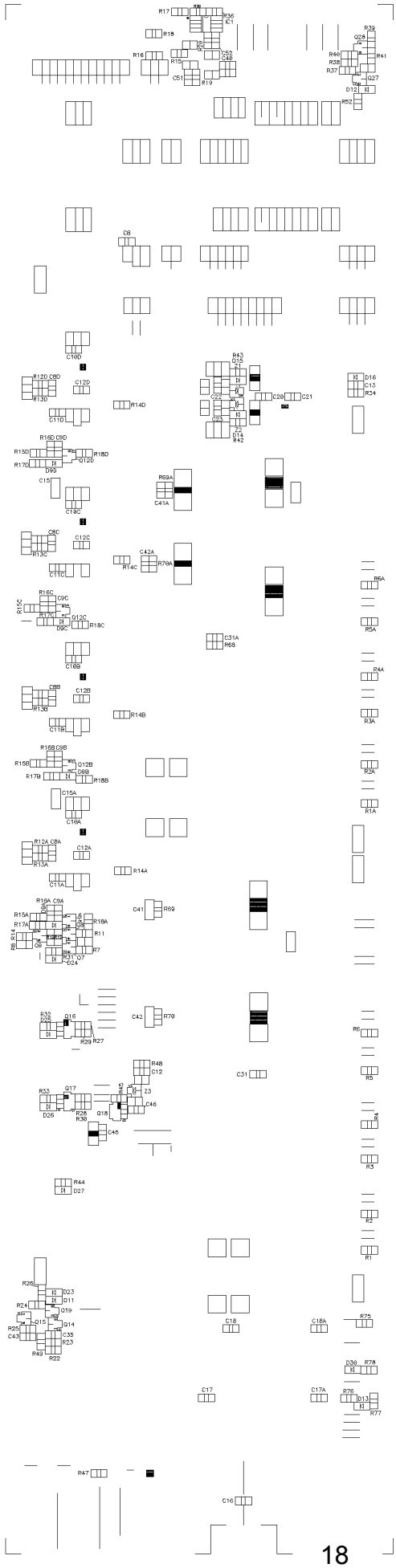


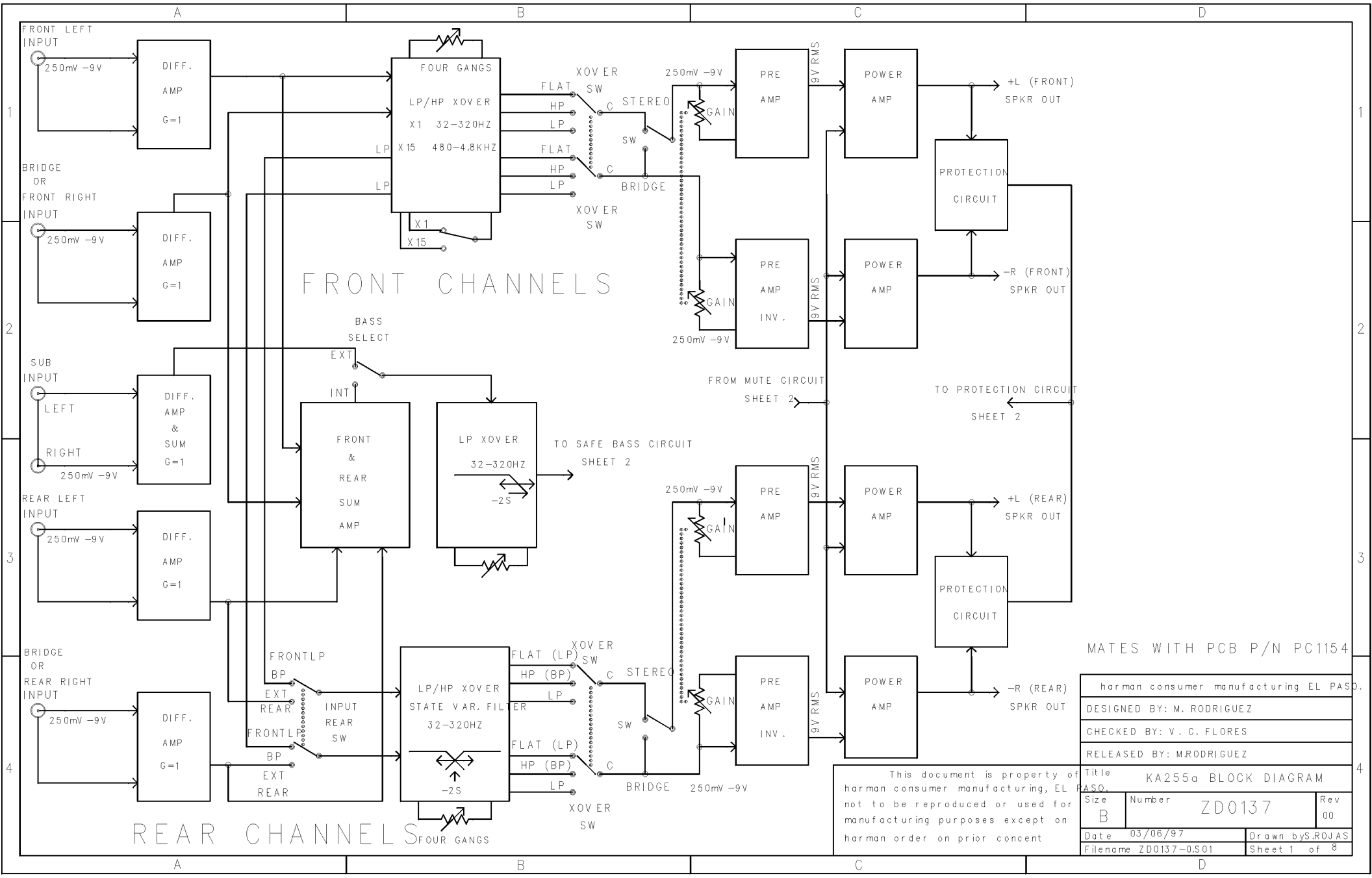



FLOW








FRONT LEFT INPUT
250mV -9V
DIFF. AMP G=1
BRIDGE OR FRONT RIGHT INPUT
250mV -9V
DIFF. AMP G=1
FOUR GANGS
LP/HP XOVER
X1 32-320HZ
X15 480-4.8KHZ
LP
LP
X1
X15
XOVER SW
FLAT
HP
LP
FLAT
HP
LP
C
STEREO
SW
BRIDGE
250mV -9V
GAIN
PRE AMP
9V RMS
POWER AMP
+L (FRONT) SPKR OUT
PROTECTION CIRCUIT
-R (FRONT) SPKR OUT
PRE AMP INV.
FRONT CHANNELS
BASS SELECT
EXT
INT
SUB INPUT
LEFT
RIGHT
250mV -9V
DIFF. AMP & SUM G=1
FRONT & REAR SUM AMP
LP XOVER
32-320HZ
-2S
TO SAFE BASS CIRCUIT
SHEET 2
FROM MUTE CIRCUIT
SHEET 2
TO PROTECTION CIRCUIT
SHEET 2
REAR LEFT INPUT
250mV -9V
DIFF. AMP G=1
+L (REAR) SPKR OUT
-R (REAR) SPKR OUT
BRIDGE OR REAR RIGHT INPUT
250mV -9V
DIFF. AMP G=1
FRONTLP
BP
EXT REAR
INPUT REAR SW
LP/HP XOVER STATE VAR. FILTER 32-320HZ
-2S
FLAT (LP)
HP (BP)
LP
XOVER SW
REAR CHANNELS
FOUR GANGS
MATES WITH PCB P/N PC1154
harman consumer manufacturing EL PASO.
DESIGNED BY: M. RODRIGUEZ
CHECKED BY: V. C. FLORES
RELEASED BY: M.RODRIGUEZ
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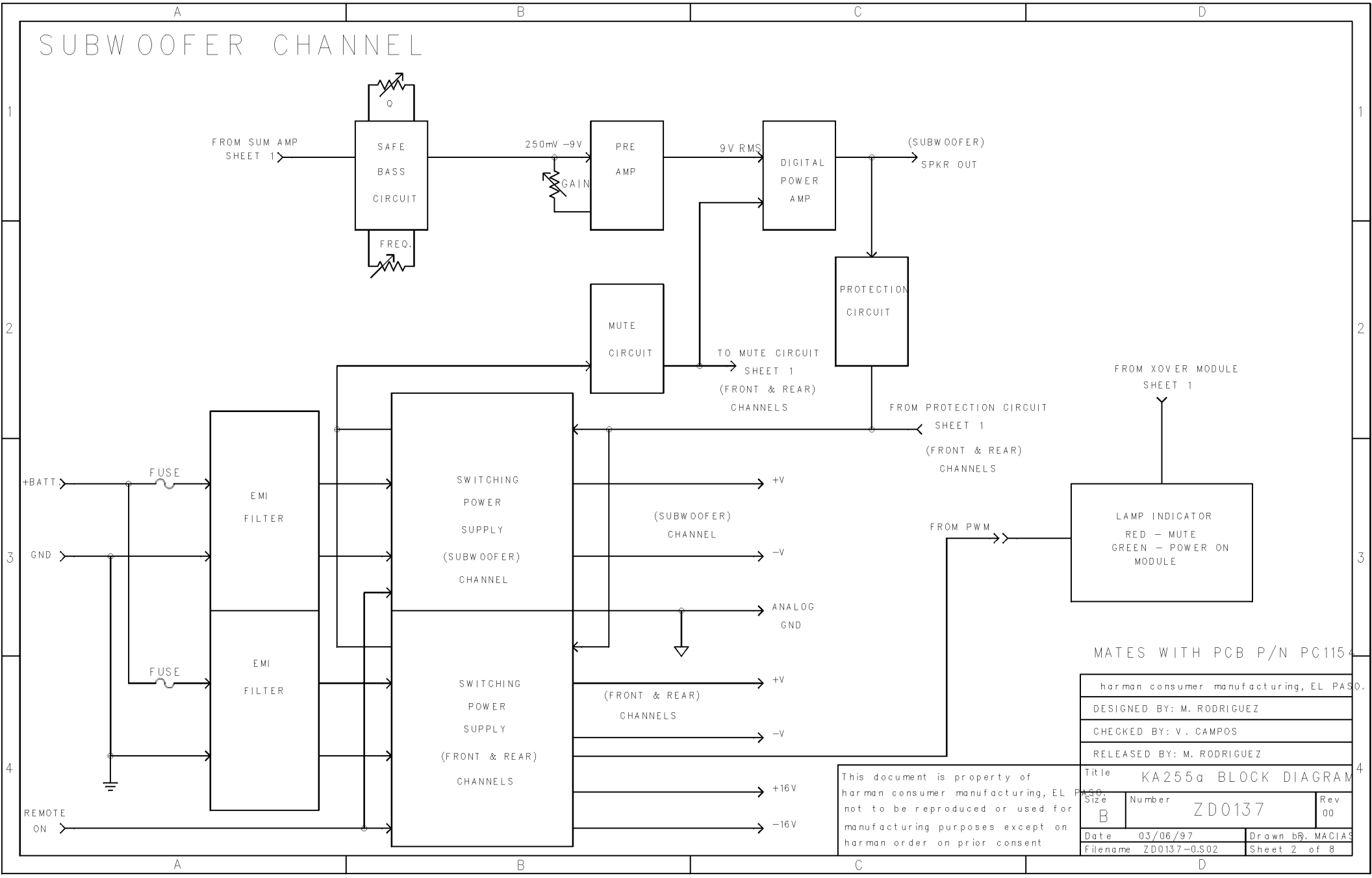
Title KA255a BLOCK DIAGRAM
Size B
Number ZD0137
Rev 00
Date 03/06/97
Drawn by S.ROJAS
Filename ZD0137-0.S01
Sheet 1 of 8


SUBWOOFER CHANNEL
Q
FROM SUM AMP SHEET 1
SAFE BASS CIRCUIT
FREQ.
250mV -9V
GAIN
PRE AMP
9V RMS
DIGITAL POWER AMP
(SUBWOOFER) SPKR OUT
PROTECTION CIRCUIT
MUTE CIRCUIT
TO MUTE CIRCUIT SHEET 1 (FRONT & REAR) CHANNELS
FROM XOVER MODULE SHEET 1
FROM PROTECTION CIRCUIT SHEET 1 (FRONT & REAR) CHANNELS
+BATT
FUSE
GND
EMI FILTER
FUSE
EMI FILTER
SWITCHING POWER SUPPLY (SUBWOOFER) CHANNEL
SWITCHING POWER SUPPLY (FRONT & REAR) CHANNELS
+V
-V
ANALOG GND
(SUBWOOFER) CHANNEL
+V
-V
(FRONT & REAR) CHANNELS
+16V
-16V
REMOTE ON
FROM PWM
LAMP INDICATOR
RED - MUTE
GREEN - POWER ON
MODULE
MATES WITH PCB P/N PC1154
harman consumer manufacturing, EL PASO.
DESIGNED BY: M. RODRIGUEZ
CHECKED BY: V. CAMPOS
RELEASED BY: M. RODRIGUEZ
This document is property of harman consumer manufacturing, EL PASO. not to be reproduced or used for manufacturing purposes except on harman order on prior consent
Title KA255a BLOCK DIAGRAM
Size B
Number ZD0137
Rev 00
Date 03/06/97
Drawn by R. MACIAS
Filename ZD0137-0.S02
Sheet 2 of 8

KAPPA 255A Electrical Parts List

Part #	Description	Reference Designator	Qty
	MAIN PCB		
CAPACITORS			
CP1126	CAP POLY FILM 1uF 10% 50V	C3,3A	2
CP1355	CAP,AE,2200uF 20% 2	C1,1A,2,2A	4
CP1412	CAP,AE,47uF 20% 16v	C14	1
CP1415	CAP,AE,2.2uF 20% 50	C10,11,49,50	4
CP1417	CAP,AE,22uF 20% 16	C26-29,47,48	6
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C8A-8D,9A-9D,12,13,13A-13D,16,17,17A,18,18A,20,21-23,31,31A,35,40,41A,42A,43-46	33
CP1475	CAP,SMD,33pF,5%,50v NPO 1	C51,52	2
CP1496	CAP,SMD,100pF 10% 50V X7R	C10A-10D,11A-11D	8
CP1520	CAP,SMD,.01uF 10% 50V T/	C8	1
CP1545	CAP,AE,4700uF 20%	C4A,5A	2
CP1547	CAP,AE,100uF 20% 35	C30	1
CP1552	CAP,SMD,.1uF 20% 100v Z5U	C15,15A,32,32A,41,42	6
CP1562	CAP,AE,330uF 20% 16	C9	1
CP1584	CAP,AE,6800uF,20%,63V	C4,5	2
CP1587	CAP,CER DISC 0.001uF 10%	C34	1
CP1609	CAP,MF,1uF,5%,100	C33,36	2
CP1614	CAP,Mylar 6.8uF,5%,100V	C19,37,38	3
CP1624	CAP,AE,2200uF,20%	C6A,7A	2
CP1631	CAP,AE,220uF 20% 35	C24,25	2
SEMICONDUCTORS			
DI1005	DIODE,Rect,3A/200V 1N5401	D1,1A,2,2A	4
DI1010	DIODE,Rect,FAST,1A/100v UF1002	D5,6,7,8,9,17,18,19,D20,21,22,28,29	13
DI1053	DIODE,Rect Dual Comm Cathd 16A	D3,3A	2
DI1054	DIODE,Rect Dual Comm Anode 16A	D4,4A	2
DI1132	DIODE,SMD,Swch LL-34 Pkg	D9A-9D,11,12,14,15,16,23-27	14
DI1167	DIODE,SMD,ZENER,16V,5%,CP T/R	Z1-3	3
IC1041	IC,SMD,DUAL,J-FET-TL072	IC1	1
TR1063	XSTR,NPN,40v/600mA MPS2222A	Q11A-11D	4
TR1108	XSTR,NPN,SMD,50V/150mA 2SC4936	Q9,27	2
TR1125	XSTR,NPN,SMD,50V/150mA 2SA1781	Q8,15,28	3
TR1131	XSTR,NPN,SMD,50v/100mA 2SC3859	Q7	1
TR1134	XSTR,NPN,40V/600mA SOT-89 PXT2222A	Q18	1
TR1135	XSTR,NPN,60V/600MA SOT-89 PXT2907A	Q16,17	2
TR1157	Fet Pwr 60v/35A/28mohm IRFZ44	Q1,1A,2,2A,3,3A,4,4A,5,5A,6,6A	12
TR1183	XSTR,NPN,3A/100v/40W TIP31C	Q9A-9D,26	5
TR1184	XSTR,NPN,3A/100v/40W TIP32C	Q10A-10D,25	5
TR1208	XSTR,NPN,SMD,120V/50mA 2SA1514K	Q19	1
TR1209	XSTR,NPN,SMD,80v/50mA 2SC3906K	Q12A-12D,14	5
TR1238	Fet powr 200V/30A/190W IRFP250	Q10-13	4
TR1255	XSTR,NPN,25A/100V TIP35C	Q7A-7D	4
TR1256	XSTR,NPN,25A/100V TIP36C	Q8A-8D	4
TH1006	THERMISTOR,NTC,10Kohm @ 25degC	TH1	1

Part #	Description	Reference Designator	Qty
INDUCTORS			
MI1100	INDCTR,Air Core 0.38uH	L2A-2D,6	5
MI1150	INDCTR,Pwr Out 70uH KA2	L3	1
MI1179	INDCTR,Pwr,30uH +/-10	L4	1
MI1095	INDCTR,Common Mode GT's	L1,1A	2
MI1149	XFMR,Auxiliar KA25	T1	1
MI1148	XFMR,Pwr,KA255a	T1A	1
RESISTORS			
RS1260	RES,MO,FP,3.3Kohm 5% 1W	R10	1
RS1385	RES,CF,68 ohm 5% 1/4W	R9A-9D	4
RS1700	RES,SMD,1Kohm 5% 1/8W	R40,42,43,48	4
RS1701	RES,SMD,10Kohm 5% 1/8W	R8,11-13,17A-17D,24-26,39,41,68	14
RS1702	RES,SMD,100Kohm 5% 1/8W	R7	1
RS1703	RES,SMD,2.2Kohm 5% 1/8W	R34,52	2
RS1704	RES,SMD,22Kohm 5% 1/8W	R14	1
RS1705	RES,SMD,4.7Kohm 5% 1/8W	R16A-16D,23,37	6
RS1706	RES,SMD,47Kohm 5% 1/8W	R18A-18D,38,49	6
RS1710	RES,SMD,3.3Kohm 5% 1/8W	R22	1
RS1717	RES,SMD,100 ohm 5% 1/8W	R1,1A,2,2A,3,3A,4,4A,5,5A,6,6A,29,30	14
RS1722	RES,SMD,470 ohm 5% 1/8W	R45	1
RS1725	RES,SMD,15Kohm 5% 1/8W	R69,69A,70,70A,15A-15D	8
RS1826	RES,SMD,27 ohm 5% 1/8W	R31-33,44	4
RS1831	RES,SMD,7.5Kohm 5% 1/8W	R12A-12D	4
RS1868	RES,CF,0.1 ohm 5% 5W	R9,10A-10D,11A-11D	9
RS1871	RES,SMD,5.1Kohm 5% 1/8W	R13A-13D	4
RS1878	RES,SMD,10 ohm 5% 1/8W	R14A-14D,47	5
RS1898	RES,SMD,10Kohm 1% 1/8W	R36	1
RS1916	RES,CF,5.1 ohm 5% 1/4W	R7A-7D,8A-8D	8
RS1946	RES,SMD,49.9Kohm 1% 1/8W	R15-18	4
RS1957	RES,SMD,4.99Kohm 1% 1/8W	R35	1
RS2159	RES,SMD,2.2 OHM 5% 1/8W	R27,28	2
RS2160	RES,SMD,11Kohm 1% 1/8W	R19,20	2
RS2273	RES,WW,0.05 ohm 5% 5W L	R21,46	2
MISC.			
BR1344	BusBar,Copper,3-Term	BB1,3	2
BR1369	BusBar,Copper,7 Term,63	BB4,7	2
BR1372	BusBar,Copper,2 Term,1000	BB2,5,12,14,15,16BB10,11	8
BR1391	BusBar,Copper,7 Term,1	BB8,9	2
CC1028	Ferrite Bead	FB1,1A,2,2A,3,3A,4FB4A,5,5A,6,6A,7,7A, FB8,8A,FB13,14	18
CO1315	CONN,Power,Pin Gold	POWER CONN	2
CO1316	CONN,Speaker,Pin Gol	CONN 3	5
CO1318	CONN,RCA Jack Dual Separate Gn	FRONTIN, REARIN, SUBWIN	3
CO1321	CONN,Header 4-Pos. R	CONN1,2	2
FH1001	HOLDER,Fuse,Right Angle	F1,1A	2
HA1036	HARNESS, SHIELDED WIRE, 10"	COAX SUBWFR	1
TE1110	Terminal Pocket	FRONT(+L,-L,+R,-R) REAR(+L,-L,+R,-R)	16
TE1178	CONN,Faston Female 0.032" x 0.	CLIP1-6	6

Part #	Description	Reference Designator	Qty
	PWM MODULE PCB		
CAPACITORS			
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C2-5,10	5
CP1434	CAP,SMD,2.7NF,10%,100v	C1	1
CP1562	CAP,AE,330uF 20% 16	C6	1
CP1565	CAP,AE,22uF 20% 10V	C19	1
SEMICONDUCTORS			
DI1132	DIODE,SMD,Swch LL-34 Pkg	D1	1
TR1108	XSTR,NPN,SMD,50V/150mA 2SC4936	Q2	1
TR1134	XSTR,NPN,40V/600mA SOT-89 PXT2222A	Q3,4	2
TR1135	XSTR,NPN,60V/600MA SOT-89 PXT2907A	Q1,5,6	3
MD0322011	PCB PWM MODULE		1
IC1002	PWM IC TL494CN	IC1	1
TY1000	SCR MCR22-2	SCR1	1
RESISTORS			
RS1700	RES,SMD,1Kohm 5% 1/8W	R2,15,18	3
RS1701	RES,SMD,10Kohm 5% 1/8W	R9,11	2
RS1702	RES,SMD,100Kohm 5% 1/8W	R5	1
RS1703	RES,SMD,2.2Kohm 5% 1/8W	R8	1
RS1705	RES,SMD,4.7Kohm 5% 1/8W	R6,19	2
RS1709	RES,SMD,680ohm 5% 1/8W	R10	1
RS1710	RES,SMD,3.3Kohm 5% 1/8W	R23	1
RS1711	RES,SMD,220ohm 5% 1/8W	R14	1
RS1717	RES,SMD,100 ohm 5% 1/8W	R16,17	2
RS1724	RES,SMD,6.8K ohm 5% 1/8W	R4	1
RS1733	RES,SMD,510 ohm 5% 1/8W	R3	1
RS1783	RES,SMD,12Kohm 5% 1/8W	R7	1
RS1826	RES,SMD,27 ohm 5% 1/8W	R12,13	2
RS1878	RES,SMD,10 ohm 5% 1/8W	R1	1
MISC.			
CO1249	CONN,Header 4-Pos. Right Angle	P1	1
CO1267	CONN,Header 2-Pos. Right Angle	P2,3,4	3
MD0314011	**PRE-AMP DRIVER MODULE PCB**		**1**
CAPACITORS			
CP1411	CAP,AE,100uF 20% 20V	C34,35	2
CP1412	CAP,AE,47uF 20% 16v	C27,28,33,42	4
CP1417	CAP,AE,22uF 20% 16	C25,31	2
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C4,5,10,11,21,22,29,30,36,37,38,39	12
CP1475	CAP,SMD,33pF,5%,50v NPO 1	C3,6,12,13,16,17,26,32,40,41	10
CP1496	CAP,SMD,100pF 10% 50V X7R	C7,18	2
CP1520	CAP,SMD,.01uF 10% 50V T/	C2,15,23,24	4
CP1557	CAP,SMD, 56pf, 5%,50v	C8,9,19,20	4
CP1563	CAP,SMD,150pF,5%,50v NPO 1	C1,14	2

Part #	Description	Reference Designator	Qty
SEMICONDUCTORS			
DI1132	DIODE,SMD,Swch LL-34 Pkg	D1,2	2
IC1175	HI-PERF. DUAL OP-AMP NJM5532M	IC1,2,3	3
TR1108	XSTR,NPN,SMD,50V/150mA 2SC4936	Q2,7	2
TR1125	XSTR,NPN,SMD,50V/150mA 2SA1781	Q3,8	2
TR1131	XSTR,NPN,SMD,50v/100mA 2SC3859	Q1,6	2
TR1166	XSTR,PNP, 150V/600mA 2N5401	Q4,9	2
TR1167	XSTR,NPN, 160V/600mA 2N5551	Q5,10	2
RESISTORS			
RS1700	RES,SMD,1Kohm 5% 1/8W	R2,3,12,22,23,32	6
RS1701	RES,SMD,10Kohm 5% 1/8W	R4,18,19,24,38,39,44,46,49	9
RS1702	RES,SMD,100Kohm 5% 1/8W	R13,14,33,34	4
RS1703	RES,SMD,2.2Kohm 5% 1/8W	R10,11,30,31,52,53	6
RS1706	RES,SMD,47Kohm 5% 1/8W	R14	1
RS1717	RES,SMD,100 ohm 5% 1/8W	R17,20,37,40	4
RS1721	RES,SMD, 2.Kohm 5% 1/8W	R43,45,48,50	4
RS1722	RES,SMD,470 ohm 5% 1/8W	R15,16,35,36	4
RS1725	RES,SMD,15Kohm 5% 1/8W	R6,9,26,29	4
RS1783	RES,SMD,12Kohm 5% 1/8W	R51	1
RS1831	RES,SMD,7.5Kohm 5% 1/8W	R7,8,27,28	4
RS1871	RES,SMD,5.1Kohm 5% 1/8W	R1,21	2
RS1983	RES,SMD,560 ohm 5% 1/8W	R42,47	2
RS2090	20K OHM POT. 20% LINEAR	VR1	2
MISC.			
SW1072	Slide Switch 2P2T Horizontal	SW1	1
XX1264	Shaft, 4 gang, Anodized	VR1	1
CO1279	CONN,Header 3-Pos. Right Angle	HD1	1
CO1248	CONN,Header 6-Pos. Right Angle	HD3	1
CO1267	CONN,Header 2-Pos. Right Angle	HD1	1
CO1280	CONN,Header 4-Pos. Right Angle	HD4	1
MD0315011	**LP/HP CROSSOVER PCB**		
CAPACITORS			
CP1177	CAP POLY FILM 0.22uF 5% 63V	C1,2,9,10	4
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C5,6,7,8	4
SEMICONDUCTORS			
IC1041	IC,SMD,DUAL,J-FET-TL072	IC3	1
IC1162	IC,SMD,QUAD,J-FET-TL074	IC1,2	2
RESISTORS			
RS1701	RES,SMD,10Kohm 5% 1/8W	R1-7, 12-18, 22,23	16
RS1702	RES,SMD,100Kohm 5% 1/8W	R20,21	2
RS1703	RES,SMD,2.2Kohm 5% 1/8W	R8-11	4
RS1779	SMD 0 OHM JUMPER	J1-4	4
RS2084	20K OHM POT. 20% LINEAR	VR	2

Part #	Description	Reference Designator	Qty
MISC.			
CO1247	CONN,Header 8-Pos. R	HD3	1
CO1267	CONN,Header 2-Pos. Right Angle	HD4	1
CO1279	CONN,Header 3-Pos. Right Angle	HD1	1
CO1280	CONN,Header 4-Pos. Right Angle	HD2	1
XX1264	Shaft, 4 gang, Anodized	VR	1
SW1073	Slide Switch 2P3T Horizontal	SW2	1
MD0316011	**DIFFERENTIAL MODULE PCB**		
CAPACITORS			
CP1415	CAP,AE,2.2uF 20% 50	C1-8	8
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C17,18	2
CP1475	CAP,SMD,33pF,5%,50v NPO 1	C9-16	8
SEMICONDUCTORS			
IC1041	IC,SMD,DUAL,J-FET-TL072	IC1,2,3,4	4
RESISTORS			
RS1898	RES,SMD,10Kohm 1% 1/8W	R18,20,22,24	4
RS1946	RES,SMD,49.9Kohm 1% 1/8W	R1,2,5,6,9,10,13,14	8
RS1957	RES,SMD,4.99Kohm 1% 1/8W	R17,19,21,23	4
RS2113	RES,SMD, 24.9Kohm 1% 1/8W	R3,4,7,8,11,12,15,16	8
MISC.			
CO1279	CONN,Header 3-Pos. Right Angle	HD2	1
CO1330	CONN,Header 12-Pos. Single row+B214	HD1	1
	MODULATOR/SUM/CROSSOVER PCB		
CAPACITORS			
CP1177	CAP POLY FILM 0.22uF 5% 63V	C3,3A	2
CP1412	CAP,AE,47uF 20% 16v	C11,14	2
CP1417	CAP,AE,22uF 20% 16	C9	1
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C1,2,15,16	4
CP1428	CAP,SMD,1000pF,10%,100v NPO 1	C10,12,13	3
CP1625	CAP POLY FILM 0.47uF 5% 63V	C6	1
SEMICONDUCTORS			
IC1041	IC,SMD,DUAL,J-FET-TL072 OP-AMP	IC1	1
IC1162	IC,SMD,QUAD,J-FET-TL074 OP-AMP	IC2	1
IC1175	HI-PERF. B351 NJM5532M DUAL OP-AMP	IC3	1
RESISTORS			
RS1701	RES,SMD,10Kohm 5% 1/8W	R1-4, 6-10, 17,19	11
RS1702	RES,SMD,100Kohm 5% 1/8W	R20	1
RS1703	RES,SMD,2.2Kohm 5% 1/8W	R5,11,12	3

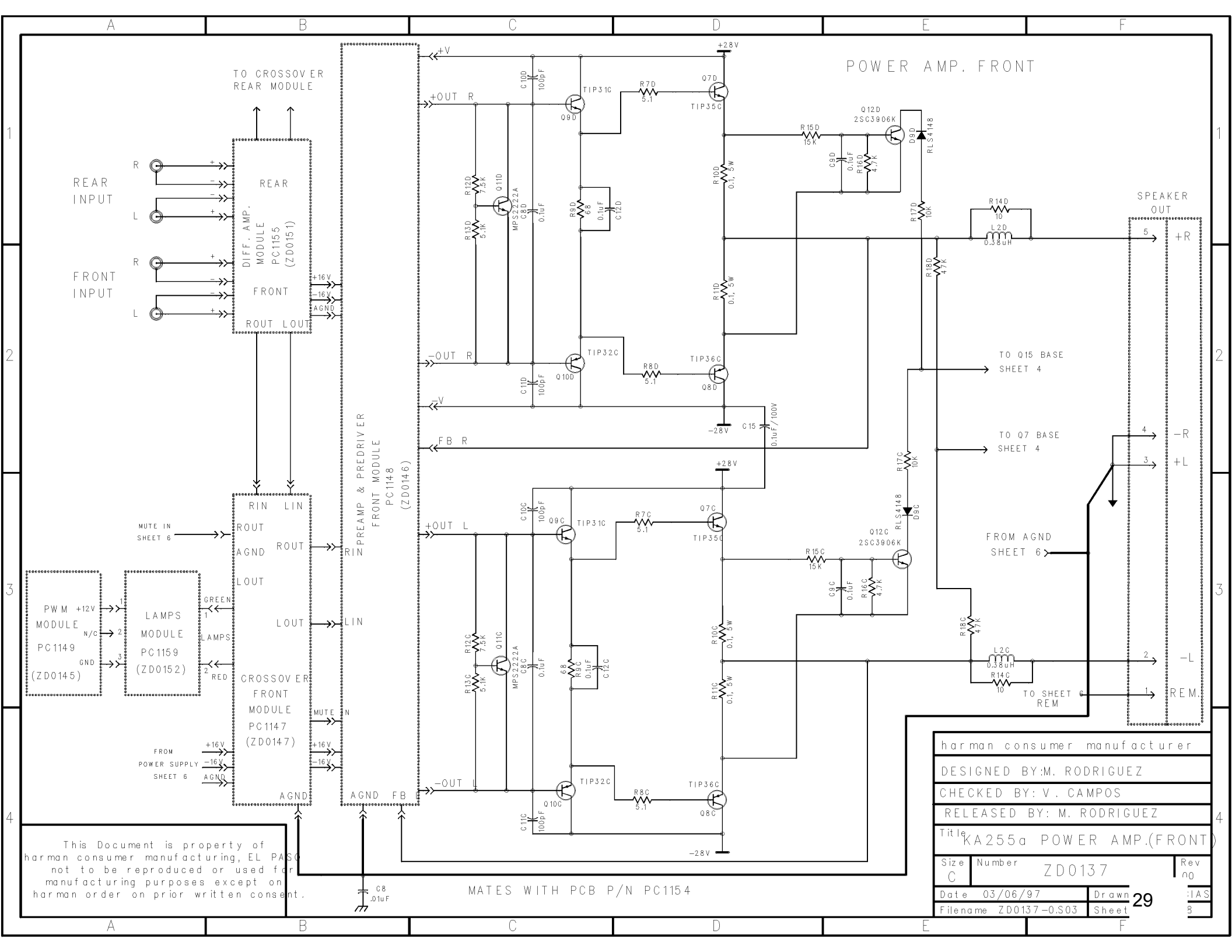
Part #	Description	Reference Designator	Qty
RS1721	RES,SMD, 2.Kohm 5% 1/8W	R16,18	2
RS1790	RES, F/CHIP, 2.7K ohm 5% 1/4W	R21	1
RS1962	RES,SMD, 62Kohm 5% 1/8W	R14	1
RS1983	RES,SMD,560 ohm 5% 1/8W	R15	1
RS2083	2K OHM POT. 20% LINEAR	VRA	1
RS2085	200K OHM POT. 20% LINEAR	FREQ-VRB	1
RS2090	20K OHM POT. 20% LINEAR	VAR-FREQ-GAIN	3
RS2286	500 OHM POT. 20% LINEAR	Q	1
RS2308	RES,SMD,620 ohm 5% 1/8W	R13	1
MISC.			
SW1072	Slide Switch 2P2T Horizontal	BASS/SELECT/INPUT	2
CO1279	CONN,Header 3-Pos. Right Angle	HDR3	1
CO1280	CONN,Header 4-Pos. Right Angle	HDR1	1
CO1257	CONN,Header 9 PIN Right Angle	HDR2	1
XX1264	Shaft, 4 gang, Anodized	VRA,FREQ-VRB,VRA/FREQ,GAIN,Q	4
MD0323011	**FRONT CHANNEL CROSSOVER PCB**		
CAPACITORS			
CP1177	CAP POLY FILM 0.22uF 5% 63V	C1,2,9,10	4
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C5-8	4
CP1534	CAP POLY FILM 15NF 5% 63V	C3,4,11,12	4
SEMICONDUCTORS			
IC1041	IC,SMD,DUAL,J-FET-TL072 OP-AMP	IC3	1
IC1162	IC,SMD,QUAD,J-FET-TL074 OP-AMP	IC1	1
RESISTORS			
RS1701	RES,SMD,10Kohm 5% 1/8W	R1-7,12-18,22,23	16
RS1702	RES,SMD,100Kohm 5% 1/8W	R20,21	2
RS1703	RES,SMD,2.2Kohm 5% 1/8W	R8-11	4
RS2084	20K OHM POT. 20% LINEAR	VR	4
MISC.			
SW1071	Slide Switch 4P2T Horizontal	SW1	1
SW1073	Slide Switch 2P3T Horizontal	SW2	1
XX1264	Shaft, 4 gang, Anodized	VR	1
CO1279	CONN,Header 3-Pos. Right Angle	HD1	1
CO1280	CONN,Header 4-Pos. Right Angle	HD2	1
CO1247	CONN,Header 8-Pos. R	HD3	1
CO1267	CONN,Header 2-Pos. Right Angle	HD4	1
CO1304	CONN,Header 2-Pos. Single row	CONN1	1
MD0326011	**MODULATOR MODULE PCB**		
CAPACITORS			
CP1411	CAP,AE,100uF 20% 20V	C3	1
CP1417	CAP,AE,22uF 20% 16	C5,7	2

Part #	Description	Reference Designator	Qty
CP1426	CAP,SMD,0.1uF 20% 50V Z5U	C1,4,6,10,13	5
CP1440	CAP,SMD,560pF,5%,100v NPO 1	C16	1
CP1445	CAP,AE,47NF 10% 100v	C8,11,14	3
CP1557	CAP,SMD, 56pf, 5%,50v	C9,12,15	3
CP1622	CAP,AE,1000uF,20%,16V	C2	1
SEMICONDUCTORS			
DI1010	DIODE,Rect,FAST,1A/100v UF1002	D4	1
DI1127	DIODE,SMD,ZENER,5.6V,5%,CP T/R	Z2,3	2
DI1132	DIODE,SMD,Swch LL-34 Pkg	D1-6	6
IC1214	LM6218N DUAL OP-AMP	IC2	1
IC1217	IR2111 HALF-BRIDGE DRIVER	IC1	1
TR1063	XSTR,NPN,40v/600mA MPS2222A	Q4	1
TR1134	XSTR,NPN,40V/600mA SOT-89 PXT2222A	Q1	1
TR1166	XSTR,PNP, 150V/600mA 2N5401	Q3	1
TR1167	XSTR,NPN, 160V/600mA 2N5551	Q2	1
RESISTORS			
RS1700	RES,SMD,1Kohm 5% 1/8W	R1,5,8,18,26,31	6
RS1701	RES,SMD,10Kohm 5% 1/8W	R9,17,19,20,27,29	6
RS1702	RES,SMD,100Kohm 5% 1/8W	R13	1
RS1704	RES,SMD,22Kohm 5% 1/8W	R3	1
RS1705	RES,SMD,4.7Kohm 5% 1/8W	R12	1
RS1711	RES,SMD,220ohm 5% 1/8W	R23	1
RS1715	RES,SMD,5.6Kohm 5% 1/8W	R28	1
RS1722	RES,SMD,470 ohm 5% 1/8W	R2,4,6,25	4
RS1724	RES,SMD,6.8K ohm 5% 1/8W	R21	1
RS1790	RES, F/CHIPF, 2.7K ohm 5% 1/4W	R24	1
RS1791	RES,SMD, 39K ohm 5% 1/8W	R22	1
RS1796	RES,SMD, 6.2K ohm 5% 1/8W	R10	1
RS1821	RES, F/CHIP, 10 ohm 5% 1/4W	R7,15	2
RS1912	RES,SMD,11Kohm 1% 1/8W	R30	1
RS1968	RES,SMD,2.2 Meg ohm 5% 1/8W	R14	1
RS1984	RES,SMD,3.9Kohm 5% 1/8W	R11,16	2
MISC.			
CO1250	CONN,Header 7-Pos. Right Angle	HD2	1
CO1280	CONN,Header 4-Pos. Right Angle	HD1	1
	LAMP HARNESS		
HA1015	PWM-Lamp Harness		
TE1173	Crimp Terminal 22-30 AWG		
TE1110	Terminal Pocket		
HA1036	Harness- Shielded wire		
CO1331	CONN,Header 3-Pos. Right Angle	CONN 1,2	2
LA1028	Pilot Lamp 3mm 14v	LAMP 1,2,3,4,5,6,7,8	8
XX1140	Green Filter	LAMP 2,4,5,7	4
XX1268	Red/Amber Filter	LAMP 1,3,6,8	4
DI1132	DIODE,SMD,Swch LL-34 Pkg	D1,2	2
RS1705	RES,SMD,4.7Kohm 5% 1/8W	R1,2	2
TR1134	XSTR,NPN,40V/600mA SOT-89 PXT2222A	Q1,2	2

Part #	Description	Reference Designator	Qty

MISC. MECHANICAL/EXTERNAL/PACKAGING

MI1095	COMMON MODE INDUCTOR	1
MI1100	AIR CORE INDUCTOR 0.38uH	1
MI1150	INDUCTOR POWER OUT 70uH	1
CC1028	FERRITE BEAD	1
BR1365	TRANSISTOR BAR TO-220	2
BR1380	TRANSISTOR BAR TO-218	1
BR1382	REAR BRACKET	1
SC1189	M3 X 1.25 X 10	3
SC1220	M2X 2. 0 X 0.79 HL THREAD	2
SC1224	6-20 X 3/8" TORX PAN	2
SC1257	6-20 X 1" SOCKET HEAD	25
SC1258	6-20 X 5/8" SOCKET HEAD	4
SP1073	SILICON PAD TO-3P 1" X 0.75"	20
SP1082	1/4" SPONGE	
SA0308131	ACCESSORY BAG	1
SH1105	OWNER'S MANUAL	1
XX1262	ACRYLIC COVER	1
CO1312	5 PIN SPEAKER PLUG	1
CO1313	2 PIN POWER CONNECTOR	1
CO1325	4 PIN SPEAKER PLUG	2
FS1061	AUTO FUSE 40A/32V	2
SC1208	#8 X 7/8 THREAD	4
SC1254	6-32 X 1/4" Phil - Nick Plated	1
SC1255	6-32 X 3/8" Phil Nick Plated	1


POWER AMP. FRONT
TO CROSSOVER REAR MODULE
REAR INPUT
FRONT INPUT
DIFF. AMP. MODULE PC1155 (ZD0151)
REAR
FRONT
ROUT LOUT
RIN LIN
PREAMP & PREDRIVER FRONT MODULE PC1148 (ZD0146)
+V
-V
+OUT R
-OUT R
+OUT L
-OUT L
FB R
FB L
+28V
-28V
TIP31C
TIP32C
TIP35C
TIP36C
MPS2222A
2SC3906K
RLS4148
SPEAKER OUT
+R
-R
+L
-L
REM.
TO Q15 BASE SHEET 4
TO Q7 BASE SHEET 4
FROM AGND SHEET 6
TO SHEET 6 REM
MUTE IN SHEET 6
PWM MODULE PC1149 (ZD0145)
LAMPS MODULE PC1159 (ZD0152)
CROSSOVER FRONT MODULE PC1147 (ZD0147)
FROM POWER SUPPLY SHEET 6
+16V
-16V
AGND
MUTE
GREEN
LAMPS
RED
MATES WITH PCB P/N PC1154
C8 .01uF
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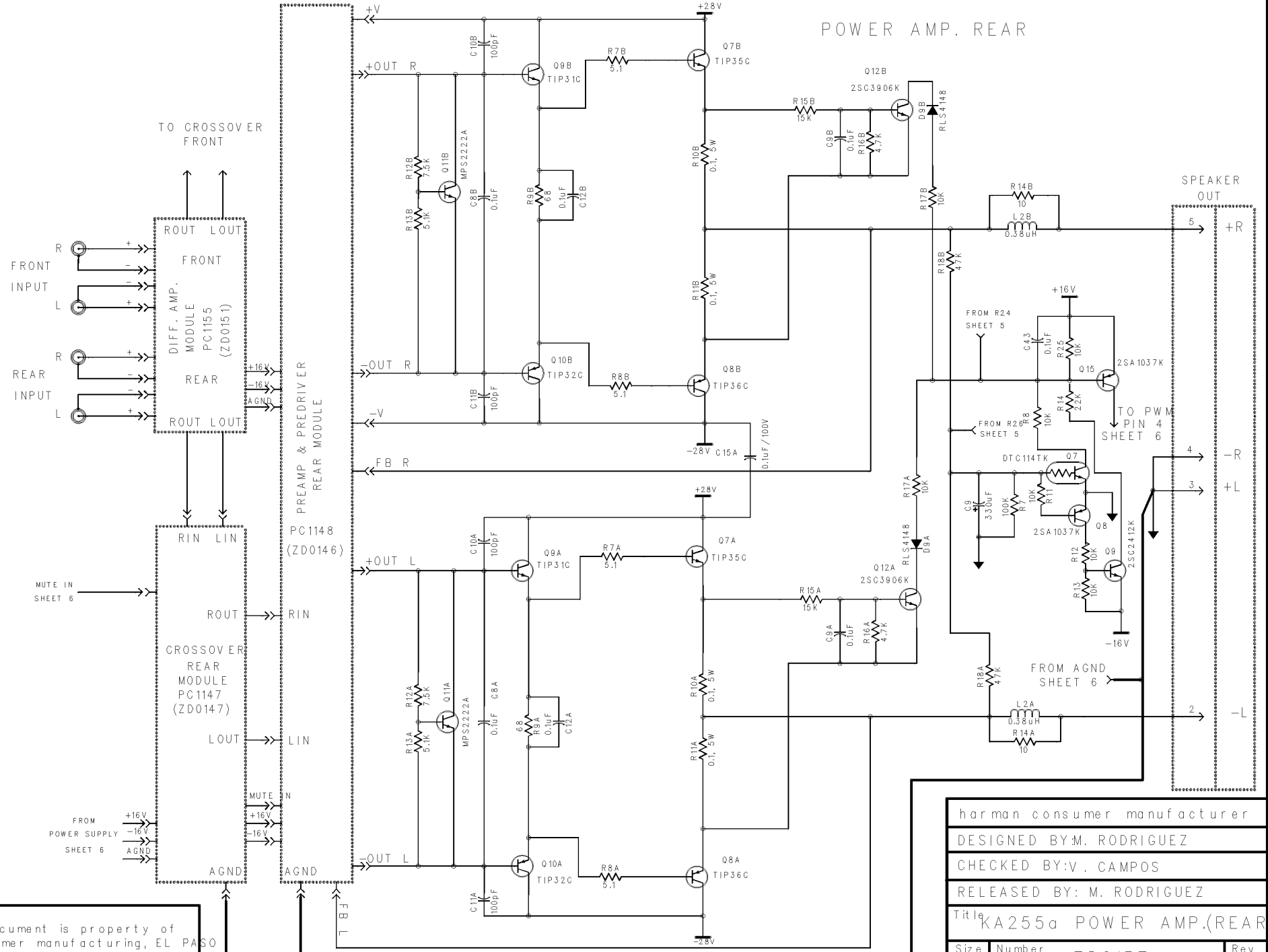
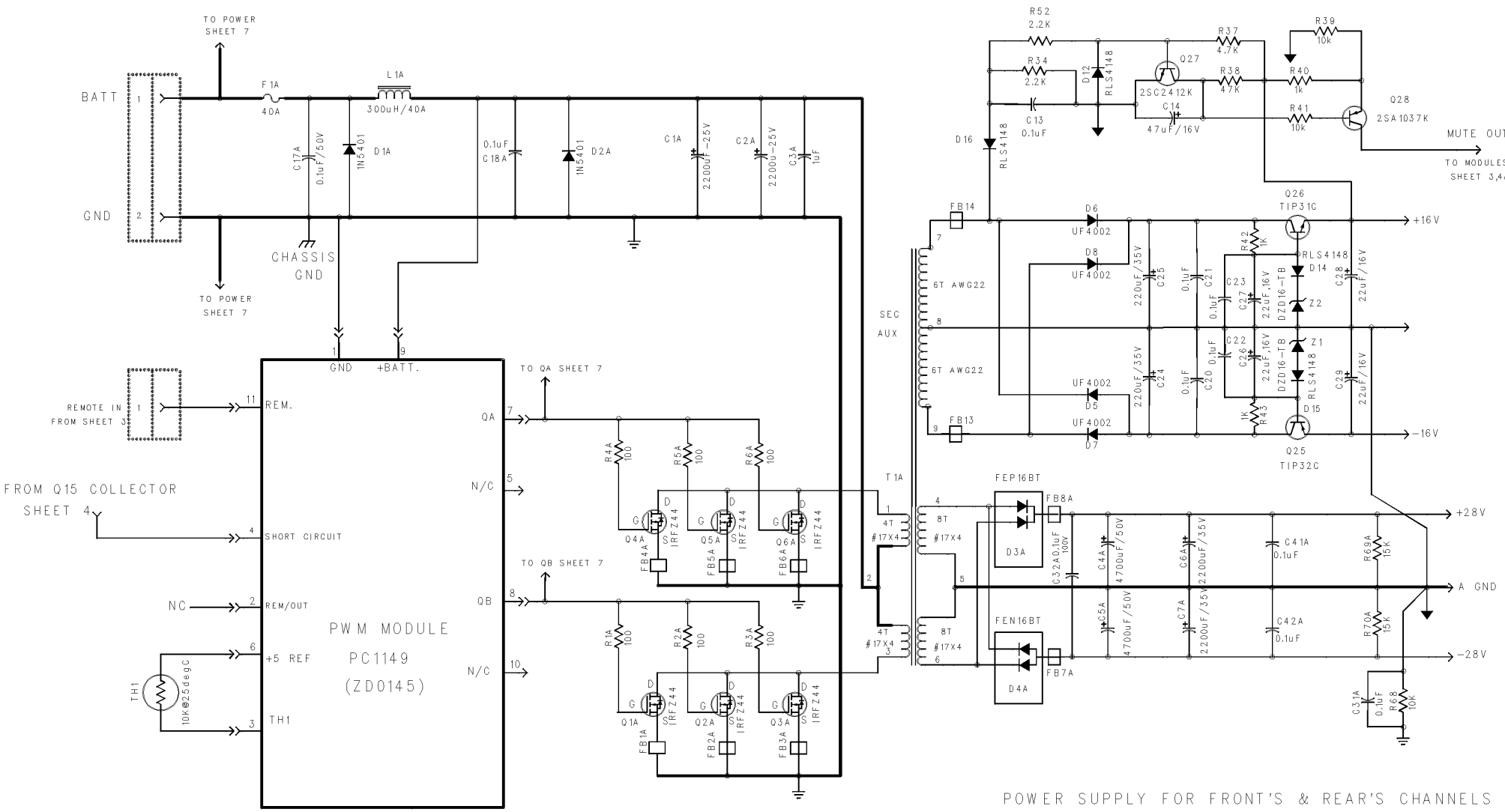
harman consumer manufacturer
DESIGNED BY:M. RODRIGUEZ
CHECKED BY: V. CAMPOS
RELEASED BY: M. RODRIGUEZ
Title KA255a POWER AMP.(FRONT)
Size C
Number ZD0137
Rev 00
Date 03/06/97
Drawn
Filename ZD0137-0.S03
Sheet 8
29



harman consumer manufacturer	
DESIGNED BY:M. RODRIGUEZ	
CHECKED BY:V. CAMPOS	
RELEASED BY: M. RODRIGUEZ	
Title: KA255a POWER AMP.(REAR)	
Size: C	Number: ZD0137 — Rev: 00
Date: 03/06/97	Dra — CIAS
Filename: ZD0137-0.S04	She 30 — 8



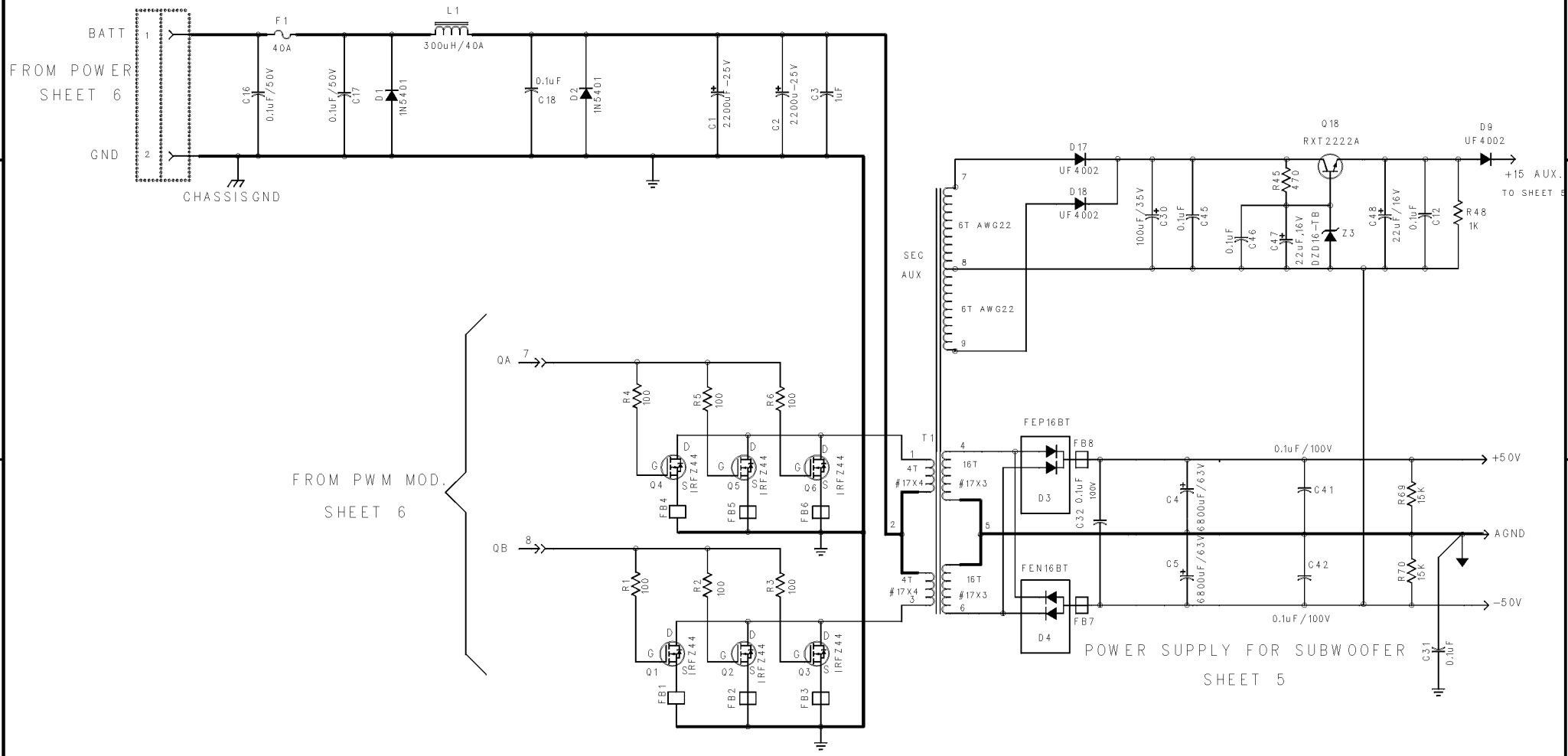
POWER SUPPLY FOR FRONT'S & REAR'S CHANNELS
SHEET 3 & 4

MATES WITH PCB P/N PC1154

harman consumer manufacturing

DESIGNED BY: M. RODRIGUEZ
CHECKED BY: V. CAMPOS
RELEASED BY: M. RODRIGUEZ

Title: KA255a POWER SUPPLY
Size: C | Number: ZD0137 | Rev: 00
Date: 03/06/97 | Dra
Filename: ZD0137-0.S06 | She
ACIAS 8



MATES WITH PCB P/N PC1154

harman consumer manufacture

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

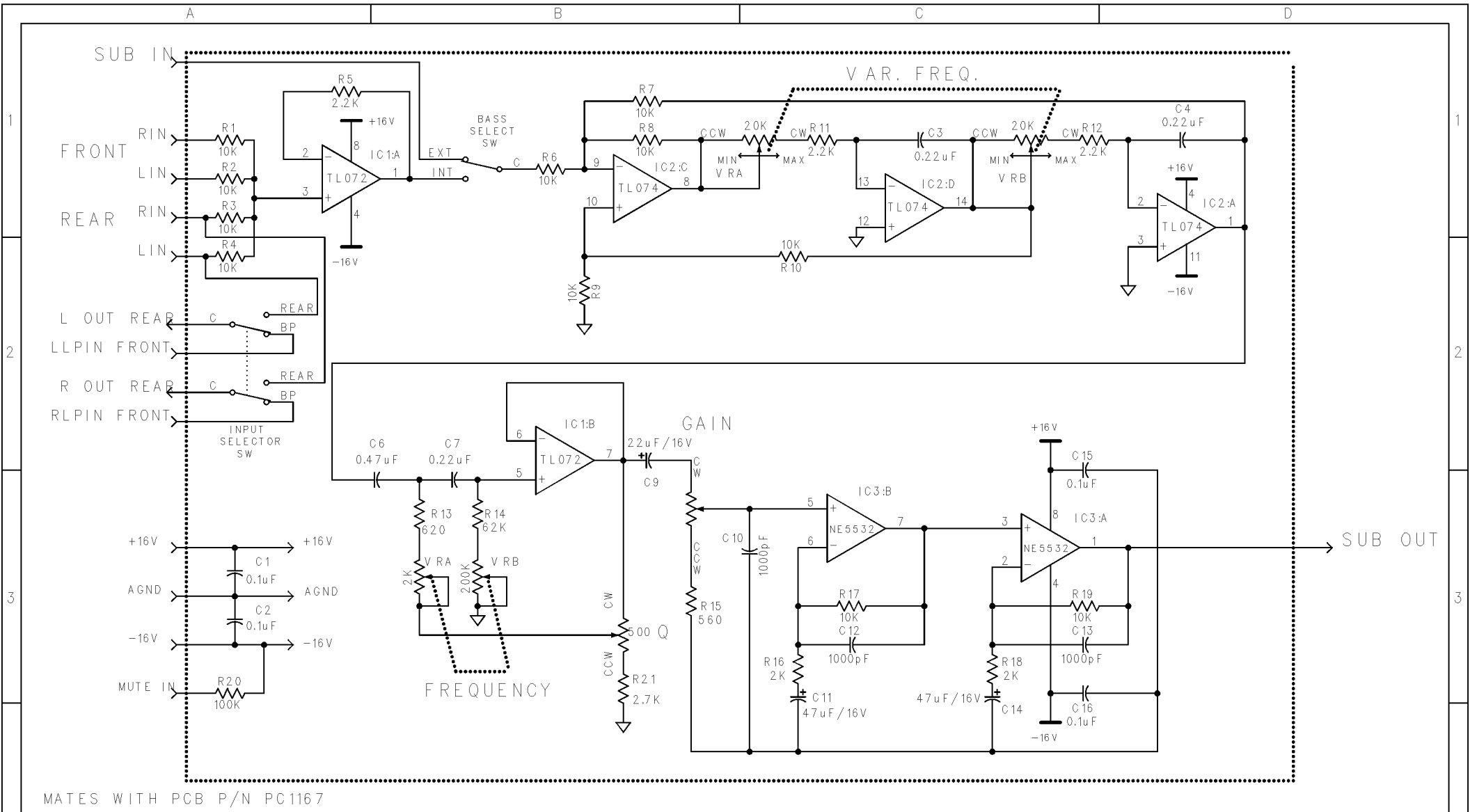
RELEASED BY: M. RODRIGUEZ

Title: KA255a POWER SUPPLY

Size	Number	Rev
C	ZD0137	00

Date	Dr	Sh
03/06/97	ACIA	8

Filename ZD0137-0.S07

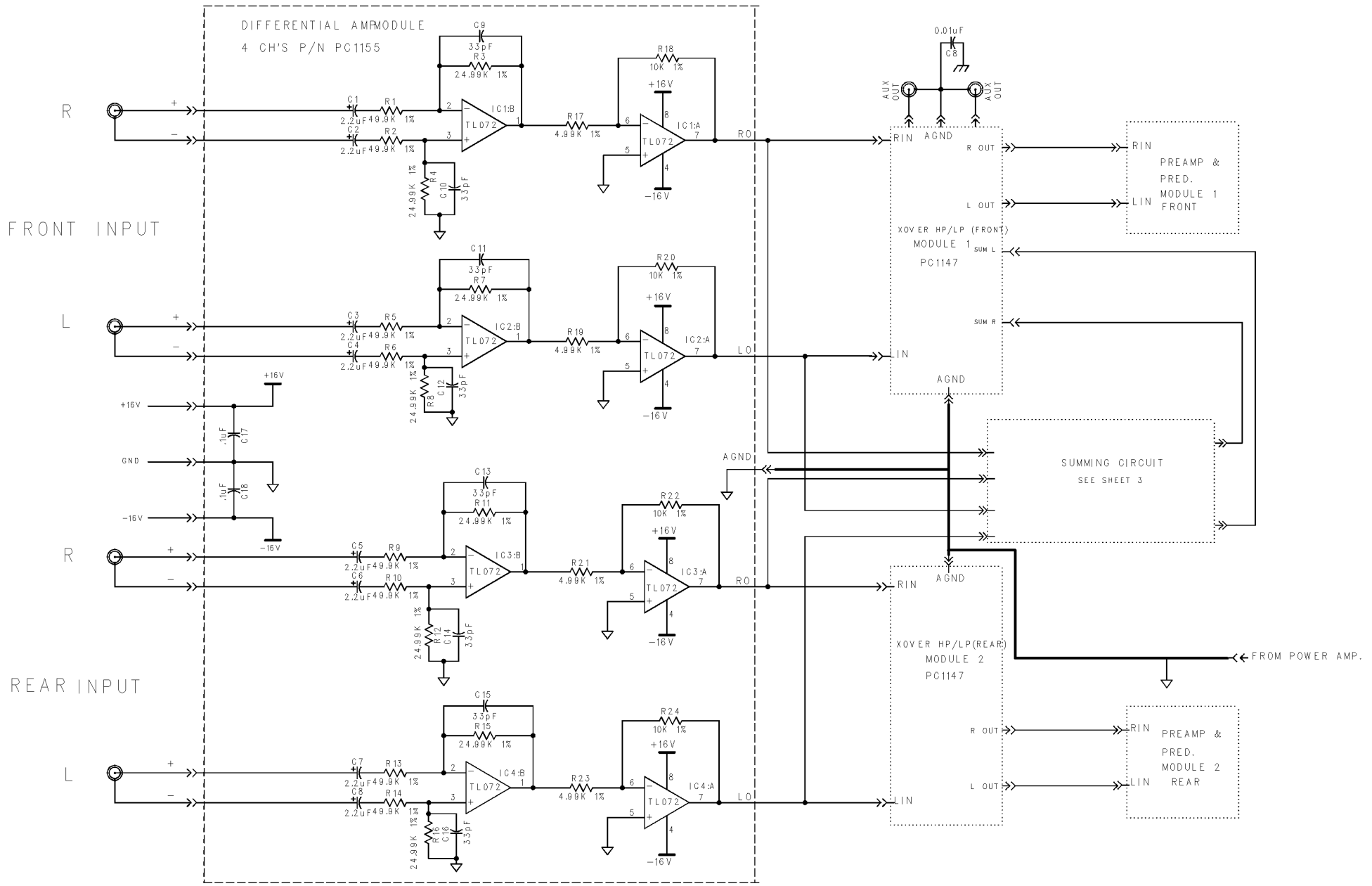


MATES WITH PCB P/N PC1167

harman consumer manufacturing, El Paso.

DESIGNED BY: MANUEL RODRIGUEZ
CHECKED BY: V. CAMPOS
RELEASED BY: MANUEL RODRIGUEZ

Title: SUMMING/XOVERLP/SAFE BASS & PREAMP MOD.
Size: B | Number: ZD0142 | Rev: 00
Date: 03/06/97 | Drawn by: S.ROJAS
Filename: ZD0142-0.S01 | Sheet 1 of 2



harman consumer manufacturing, EL PASO.

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

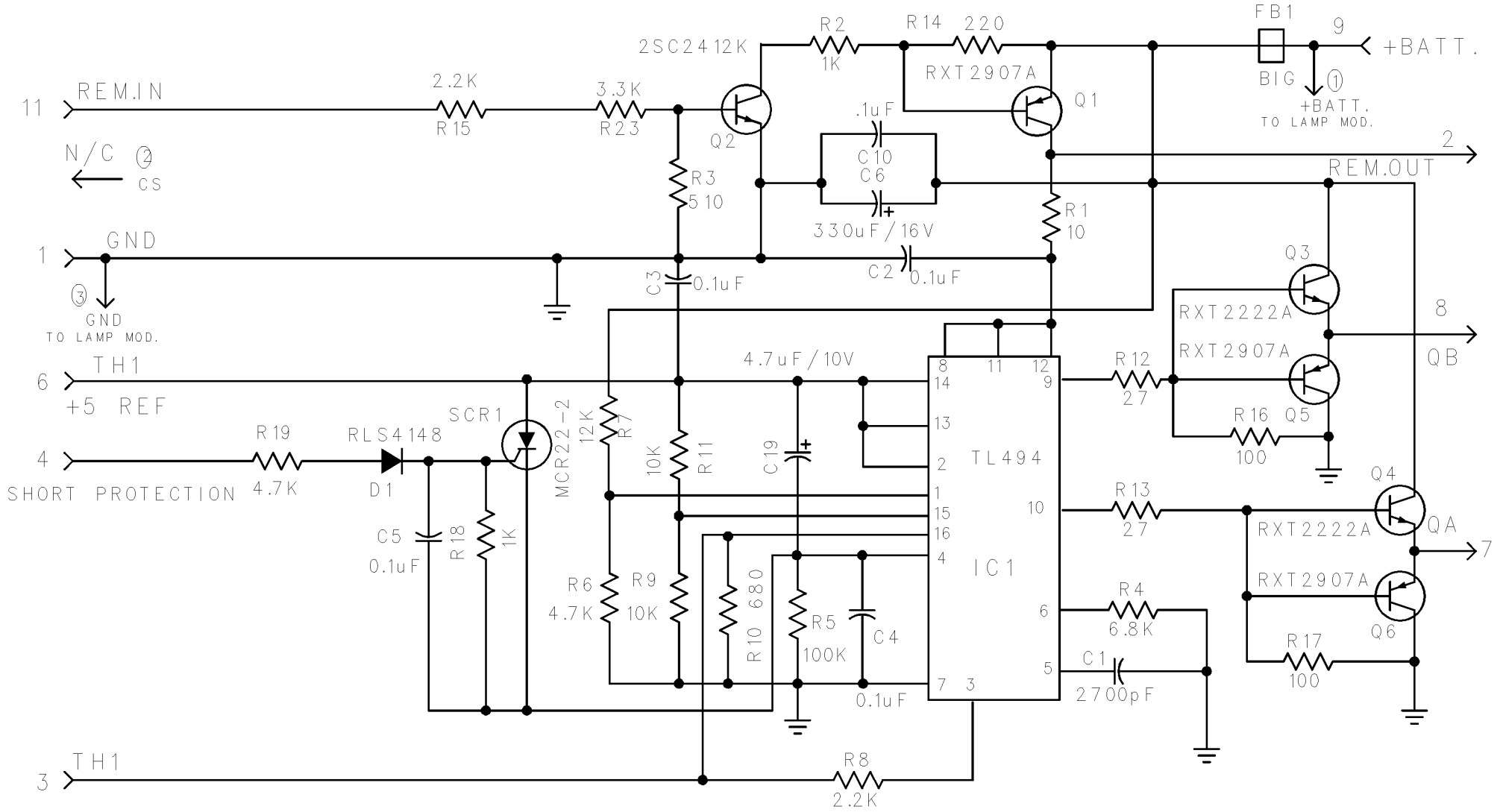
RELEASED BY: M. RODRIGUEZ

Title: DIFFERENTIAL AMP. MODULE

Size: C | Number: ZD0151 | Rev: 00

Date: 08/19/96 | Dra: MACIAS

Filename: ZD0151-0.S01 | She: 2



harman consumer manufacturing

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: A. MARTINEZ

RELEASED BY: M. RODRIGUEZ

DOCUMENT CONTROL: FRED COOLEY

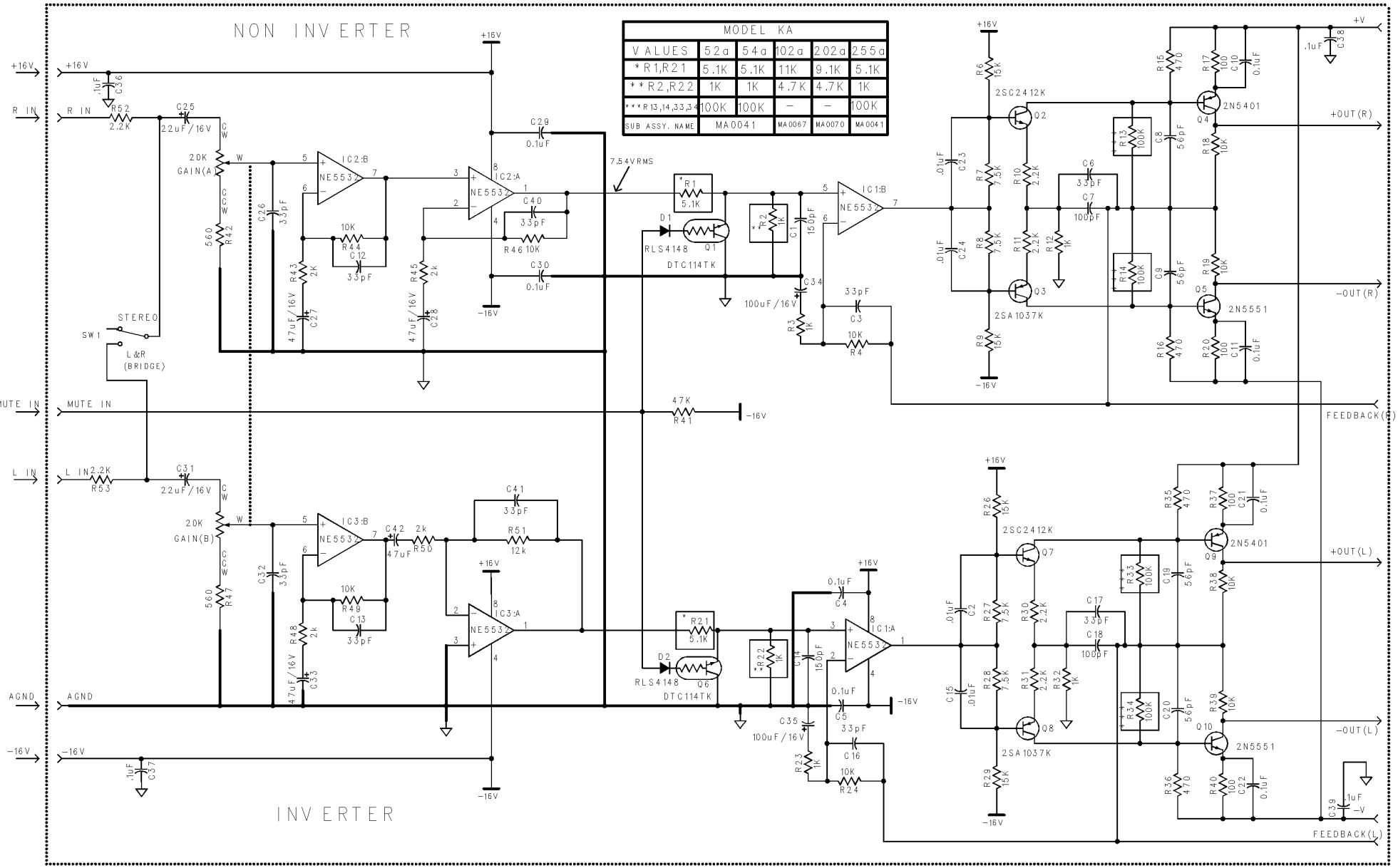
Title: PWM MODULE

Size	Number	Rev
A	ZD0145	02

Date 08/15/97

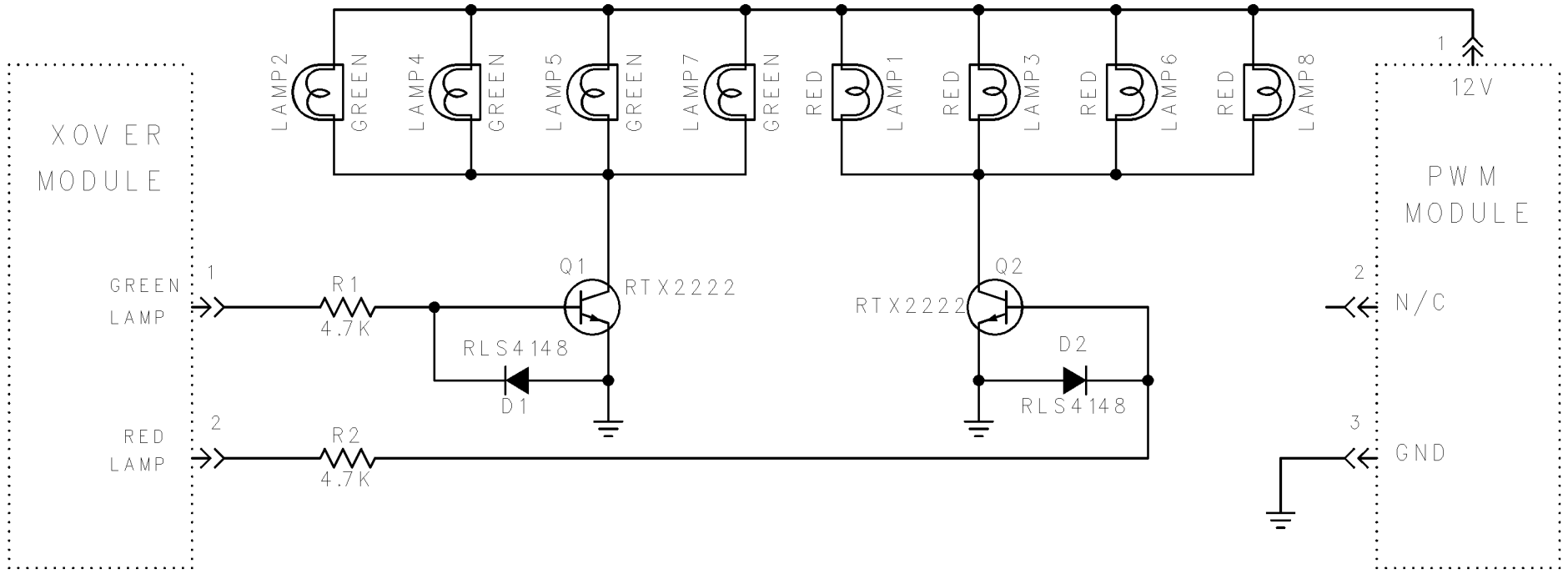
Filename ZD0145-2.S01

R. MACIAS



DESIGNED BY:M.RODRIGUEZ
CHECKED BY: V. CAMPOS
RELEASED BY: M. RODRIGUEZ

Title: PREAMP PREDRIVER. MODULE
Size: C
Number: ZD0146
Rev: 00
Date: 08/20/96
Filename: ZD0146-0.S01
Sheet: 2



MATES WITH PCB P/N PC1159

harman consumer manufacturing

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title: LAMPS MODULE

Size	Number	Rev
A	ZD0152	01

Date 03/06/97 | Dra | IACIAS

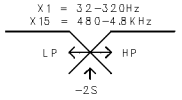
Filename ZD0152-1.S01 | She 2

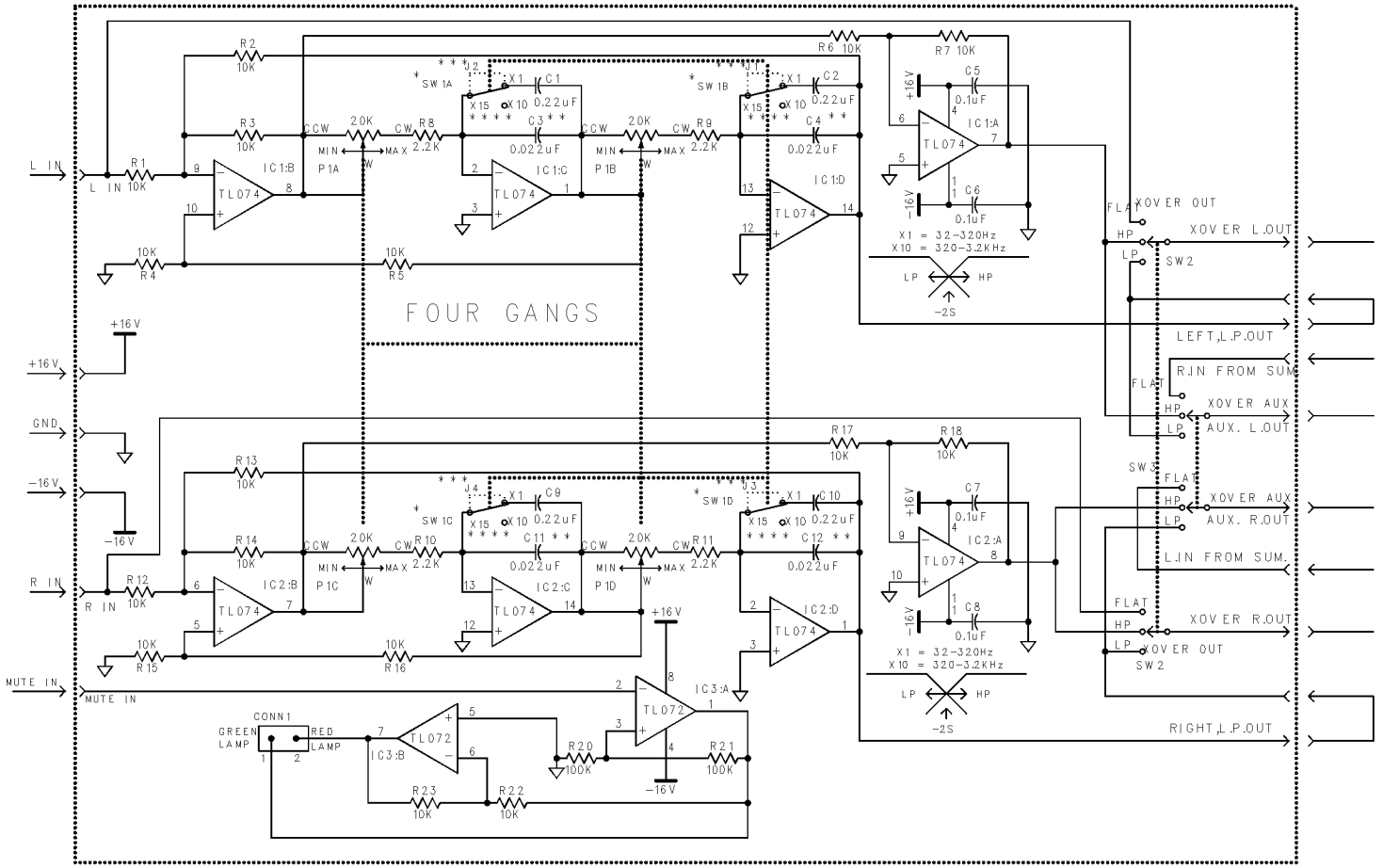
KA'S MODEL						
	*SW1	**C3,4,11,12	***J1,2,3,4	SW3	CONN1	NOTES
KA52a	YES	YES	NOT	YES	YES	MA0043
KA102a	NOT	NOT	YES	YES	YES	MA0054
KA202a	NOT	NOT	YES	YES	YES	MA0054
KA54a	NOT	NOT	YES	YES	YES	MA0054 FRONT
KA54a	NOT	NOT	YES	NOT	NOT	MA0066 REAR
KA255a	YES	YES	NOT	NOT	YES	MA0077 FRONT
KA255a	NOT	NOT	YES	NOT	NOT	MA0066 FRONT

KAPPA MODEL KA52a ONLY	
C1,C2,C9,C10	C3,C4,C11,C12
0.15uF	0.015uF

****X15

KAPPA MODEL KA255a ONLY
C3,C4,C11,C12
0.015uF

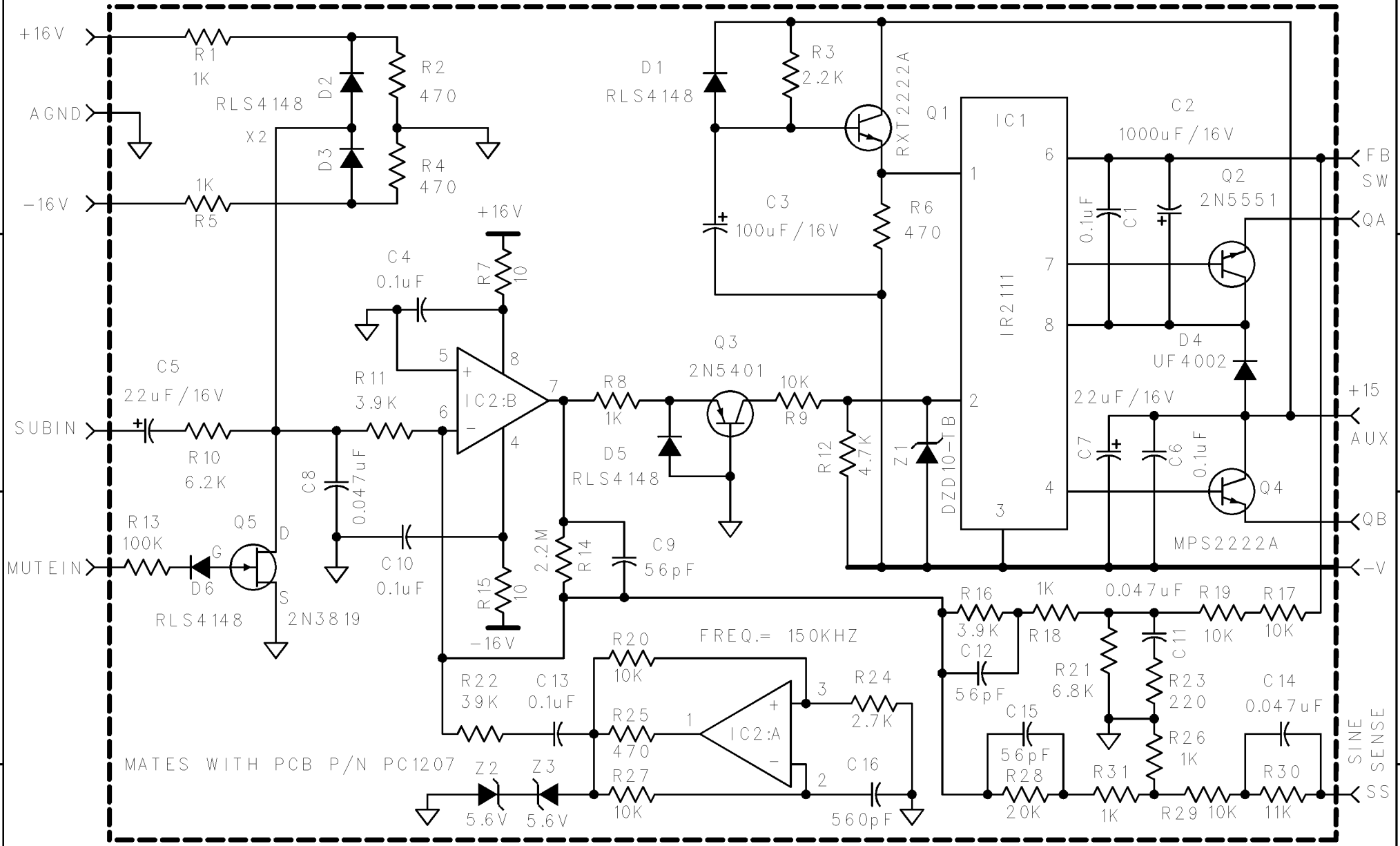




harman consumer manufacturing, El Paso.

DESIGNED BY: MANUEL RODRIGUEZ
CHECKED BY: V. CAMPOS
RELEASED BY: MANUEL RODRIGUEZ

Title: XOVER HP/LP STATE VARIABLE FILTER
Size: C
Number: ZD0147
Rev: 03
Date: 01/19/97
Dr: ACIAS
Filename: ZD0147-3.S01
Sh: 2



harman consumer manufacturer EL PASO.

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: A. MARTINEZ

RELEASED BY: M. RODRIGUEZ

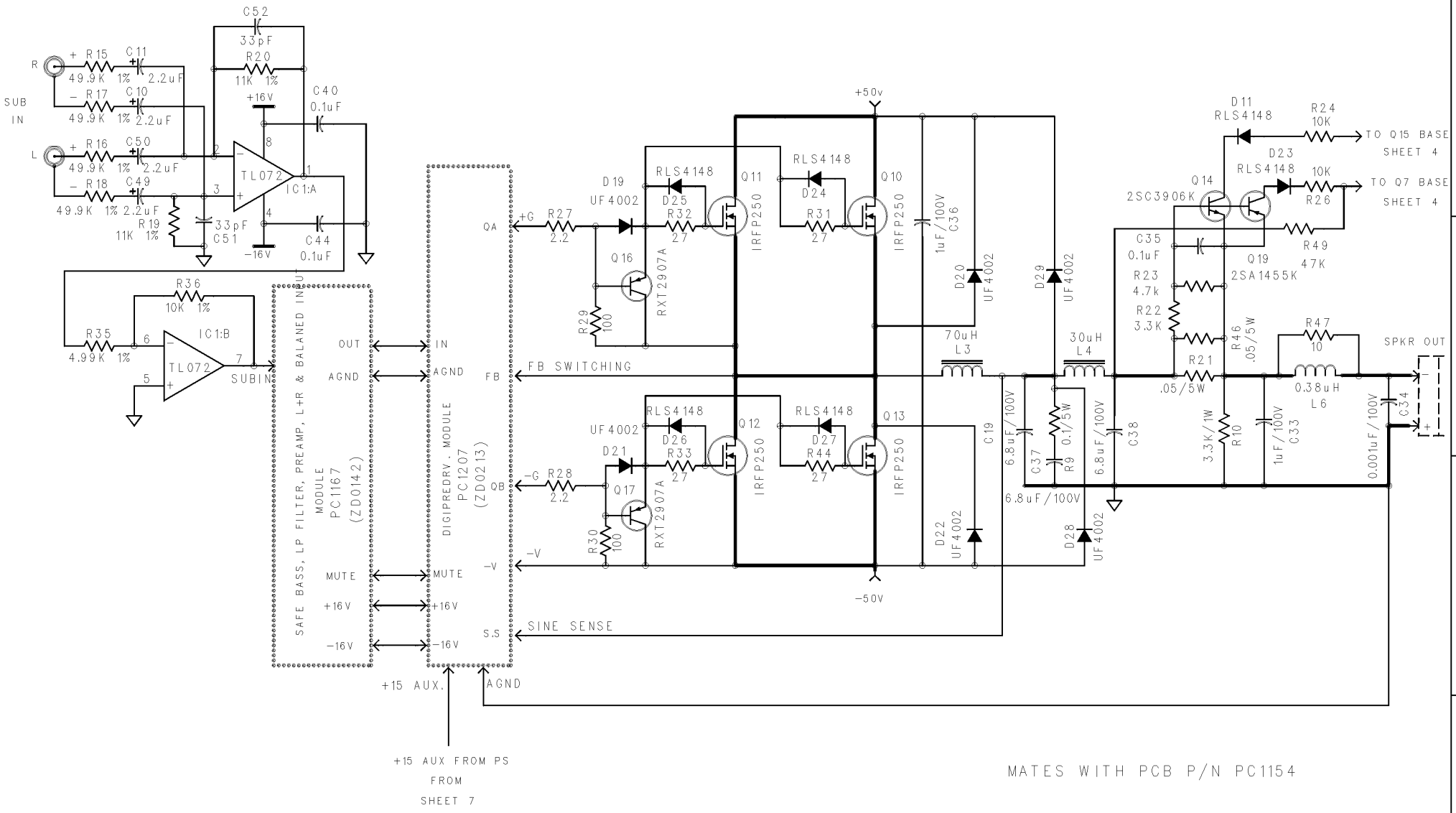
DOCUMENT CONTROL: FRED COOLEY

Title: MR2111 DIGITAL PREDRIVER MODULE

Size	Number	Rev
A	ZD0213	01

Date 08/15/97 Dr OJAS

Filename ZD0213-1.S01 Sh f 2



harman consumer manufacturing, EL PASO, TX

Title: KA255a DIGITAL POWER AMP

DESIGNED BY: M. RODRIGUEZ	Size: B	Number: ZD0137
CHECKED BY: V. CAMPOS		Rev: 00
RELEASED BY: M. RODRIGUEZ	Date: 03/06/97	Drawn by: R. MACIAS
	Filename: ZD0137-0.S05	Sheet 5 of 8

DATE	REVISION	CHANGE DESCRIPTION	REASON OF CHANGE	CHANGED:	ECN#
11/14/96	C	A).– CHANGE R31,32,33,44 FROM 5.1 TO 27. B).– CHANGE R9 FROM 10/5W TO 0.1/5W. C).– CHANGED F1 FROM 30A TO 40A.			
12/18/96	E	A) CHANGED R15A–D FROM 8.2K TO 15K (SHEETS 3,4) B) CHANGED R22 FROM 10K TO 3.3K (SHEET 5) C) CHANGED R21,46 FROM 0.1–5W TO .05–5W (SHEET 5) D) CHANGED R45 FROM 1K TO 470 (SHEET 7)	PREMATURE SHUTDOWN	S.ROJAS	E–MAIL 12/11/96
01/19/97	F	A) CHANGED Z3 FROM DZD15–TB TO ZDZ16–TB (SHEET 7) B) ADD R48–1K,D9–UF4002. (SHEET 7) C) ADD R49–47K (SHEET 5) F) CHANGED FRONT CHANNEL FROM X10 TO X15 (SHEET 1)	POP & CLICK ON/OFF FREQUENCY	S.ROJAS AARON BUTTERS	01/19/97
02/20/97	G	A) CHANGE PHASE SUBWOFFER AMP (SHEET 5).	BETTER THD	S.ROJAS M.RODRIGUEZ	02/20/97
02/27/97	H	A) CHANGED L3 FROM 37uH TO 30uH. (SHEET 5). B) CHANGED DIG.PREDRIVER MODULE P/N FROM PC1157,ZD143 TO PC1207,ZD213.(SHEET5)	IMPROVED BETTER THD & POP–CLICK ON/OFF.	S.ROJAS M.RODRIGUEZ	02/27/97
03/06/97	00		RELEASED	S.ROJAS	03/06/97

MATES WITH PCB P/N PC1154

harman consumer manufacturing, EL PASO.

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title: KA255a DOCUMENT CONTROL

Size: C | Number: ZD0137 | Rev: 00

Date: 03/06/97 | Dr: MACIAS

Filename: ZD0137–0.S08 | Sh: 41 of 8

DATE	REVISION	CHANGE DESCRIPTION	REASON OF CHANGE	CHANGED:	ECN#
03/06/96	01	DELETE D3	FALSED TRIGGERING ON SHORT CIRCUIT PROTECTION	R. MACIAS	

MATES WITH PCB P/N PC1159

harman consumer manufacturing, EL PASO.

DESIGNED BY:M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title: LAMPS MODULE DOCUMENT CONTROL

Size: C | Number: ZD0152 | Rev: 01

Date: 03/06/96 | Dra | ACIAS

Filename: ZD0152-1.S02 | She | 2

DATE	REVISION	CHANGE DESCRIPTION	REASON OF CHANGE	CHANGED:	ECN#
12/03/96	01	DELETE D2 TO D7,C7,C8,C9,C11,R20,R21,R22,R24,R25,SCR2	FALSED TRIGGERING ON SHORT CIRCUIT PROTECTION	R. MACIAS	
08/15/97	02	CHANGED R15 FROM 1K TO 2.2K	DECREASE SENSITIVITY REMOTE ON/OFF 8V INSTEAD 6.5V.	S.ROJAS	10216

harman consumer manufacturing, EL PASO.

Title PWM DOCUMENT CONTROL

Size C | Number ZD0145 | Rev 02

Date 08/15/97 | Dra | CIAS

Filename ZD0145-2.S02 | She 2

DATE	REVISION	CHANGE DESCRIPTION	REASON OF CHANGE	CHANGED:	ECN#
03/06/97	00		RELEASED	S.ROJAS	
08/15/97	01	CHANGED R3 FROM 22K TO 2.2K	INCREASED VOLTAGE IR2111 FROM 11V TO 13V	S.ROJAS	10216

MATES WITH PCB P/N PC1207

harman consumer manufacturing, EL PASO.

Title: MR2111 DIGITAL PREDRIVER DOCUMENT CONTRO

Size	Number	Rev
C	ZD0213	01

Date	08/15/97	Dr	AS
Filename	ZD0213-1.SO2	Sh	2

DATE	REVISION	CHANGE DESCRIPTION	REASON OF CHANGE	CHANGED:	ECN#
01/08/97	02	A) CHANGED C1,C2,C9,C10 FROM 0.22uF TO 0.15uF ONLY ON KA52a B) CHANGED C3,C4,C11,C12 FROM 0.022uF TO 0.015uF ONLY KA52a	FREQUENCY CHANGE	AARON BUTTER	
01/19/97	03	A) CHANGED FREQ. FROM X10 (320-3.2KHZ) TO X15 (480-4.8KHZ) KAPPA MODEL KA255a ONLY	FREQUENCY CHANGE	AARON BUTTERS	7D272

harman consumer manufacturing, EL PASO.

DESIGNED BY: M. RODRIGUEZ

CHECKED BY: V. CAMPOS

RELEASED BY: M. RODRIGUEZ

Title: XOVER HP/LP DOCUMENT CONTROL

Size: C | Number: ZD0147 | Rev: 03

Date: 01/19/97 | Dra | AS

Filename: ZD0147-3.S02 | She