

SERVICE MANUAL

550A/650A

Power output:	550A	60 watts (into 8Ω)
	650A	75 watts (into 8Ω)
THD (unweighted):		<0.002% @ 1kHz, 80% of rated power
	550A	<0.05% 20Hz - 20kHz, 80% of rated power
		<0.02% 20Hz - 20kHz @ 10W
	650A	<0.002% @ 1kHz, 80% of rated power
Frequency response (-1dB)		<0.03% 20Hz - 20kHz, 80% of rated power
		<0.02% 20Hz - 20kHz @ 10W
		5Hz - 50kHz
S/N ratio (ref 1W)		>92dB (unweighted)
Input impedances		47kohms
Power Amp damping factor		>100
Max. power consumption:	550A	500W
	650A	600W
Standby power consumption		<1W @ rated mains
Bass/Treble controls		Shelving, ultimate boost/cut +/- 7.5dB @ 20Hz and 20kHz
Dimensions		120 x 430 x 350mm (4.7 x 16.9 x 13.8")
Weight:	550A	8.0kg (17.6lbs)
	650A	8.4kg (18.5lbs)

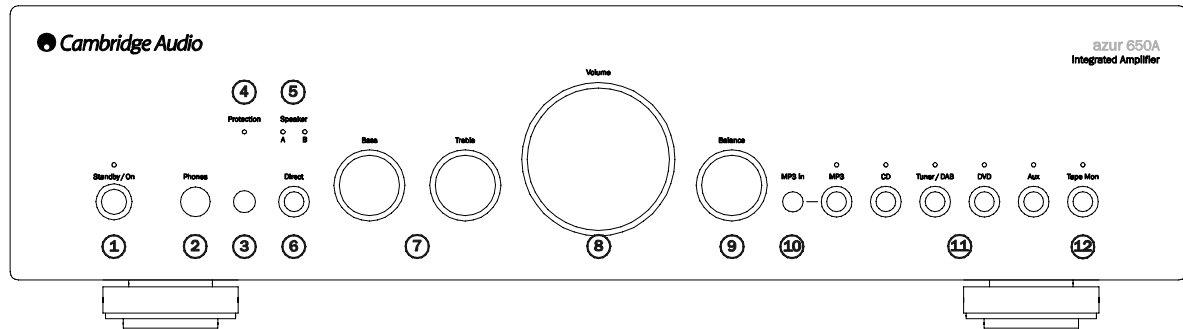
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Front panel connections



1. Standby/On

Switches the unit between Standby mode (indicated by dim power LED) and On (indicated by bright power LED). Standby is an eco power mode where the power consumption is less than one watt. The unit is designed so that it can be left safely in Standby mode when not in use.

2. Phones

Allows for the connection of headphones with a ¼" jack plug connector. Headphones with an impedance of between 32 and 600ohms are recommended. When the headphones are connected, the loudspeaker relay is released switching off the output to the loudspeakers (speakers A and B).

3. Infrared sensor

Receives IR commands from the supplied Azur remote control. A clear, unobstructed line of sight between the remote control and the sensor is required.

4. Protection

LED flashes to indicate activation of CAP5 protection system. Refer to the CAP5 section of this manual for more information.

5. Speaker LEDs

Indicator shows the speaker terminals that are selected. The speaker terminals selected are changed with the remote control.

6. Direct

This control gives the audio signal a more direct path to the power amplifier stage of your amplifier, bypassing the bass and treble control circuits for the purest possible sound quality.

7. Bass and Treble

These controls allow subtle adjustments to the tonal balance of the sound. In the central position these controls have no effect. They only modify the sound through your loudspeakers and the Pre-Out sockets, and do not affect the signals sent through the Tape Out connections.

With a well-produced CD and a good system, the tone controls are unnecessary and can be switched out by the 'Direct' switch. If the musical recording is of poor quality or other factors are affecting the sound quality, it may be necessary to adjust the tone controls to compensate.

8. Volume

Use to increase or decrease the level of the sound from the outputs of the amplifier. This control affects the level of the loudspeaker output, the pre-amp output and the headphone output. It does not

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affect the Tape Out connections. It is advisable to turn the Volume control fully anti-clockwise before switching the amplifier on.

9. Balance

This control allows you to adjust the relative output levels of the left and right channels. In the central position the output from each channel is equal. This control only modifies the sound through your loudspeakers and the Pre-Out sockets – it does not affect the signals sent through the Tape Out connections.

10. MP3 Input

This source input allows you to connect a portable audio device such as an MP3 player, plugged into either the rear panel Phono/RCA input pair (labelled 'MP3') or the front panel 3.5mm stereo-jack input (labelled 'MP3 In').

Press the MP3 button on the front panel to select the input, or insert a device into the front panel socket which automatically selects the input and overrides the rear Phono/RCA sockets.

Note: Whilst plugging a device into the front panel automatically selects the MP3 input, any other input can still be selected once this has been done. As a result you may, if desired, leave a device permanently plugged into the front panel.

11. CD, Tuner/DAB, DVD, Aux

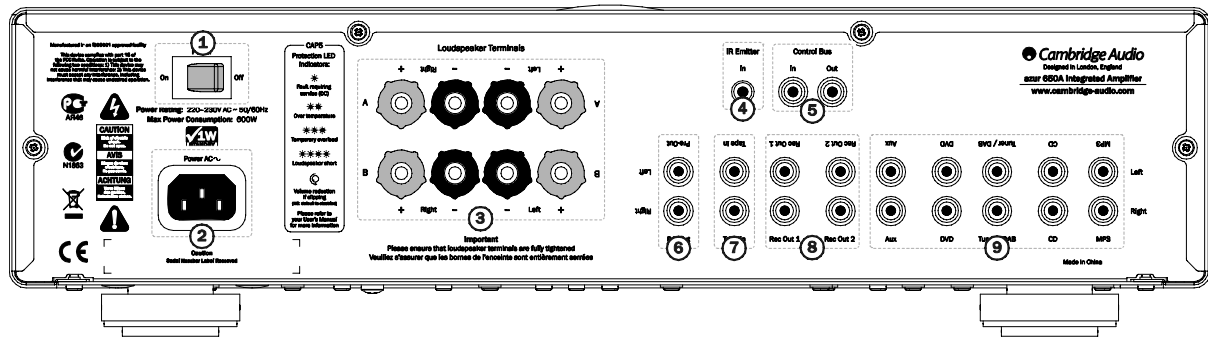
Push the appropriate input selection button to select the source component that you wish to listen to. The signal selected is also fed to the Tape Out sockets so that it may be recorded. The input should not be changed whilst recording (but the recorded signal can be checked using the tape input Tape Monitor).

12. Tape Monitor

This control lets you listen to the output signal from a tape recorder or signal processor connected to the amplifier's Tape In/Rec Out sockets. When Tape Monitor is selected, the source component chosen by the input selection buttons continues to be routed to the Rec Out sockets for recording or processing.

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Rear panel connections



1. Power On/Off

Switches the unit on and off. This switch is a master on/off control that, when switched off, overrides the Standby/On button on the front of the unit and that on the remote control.

2. AC power socket

Once you have completed all connections to the amplifier, plug the AC power cable into an appropriate mains socket and turn the unit on. Your amplifier is now ready for use.

3. Loudspeaker terminals

Two sets of loudspeaker terminals are available, A (main loudspeaker terminals, top row) and B (secondary switchable loudspeaker terminals, bottom row). Connect the wires from your left channel loudspeaker to the LEFT positive and negative terminals, and the wires from the right channel loudspeaker to the RIGHT positive and negative terminals.

In each case, the red terminal is the positive output and the black terminal is the negative output. Care should be taken to ensure no stray strands of wire are shorting speaker outputs together. Please ensure that the loudspeaker terminals have been tightened adequately to provide a good electrical connection. It is possible for the sound quality to be affected if the screw terminals are loose.

The use of A and B speakers affords you an easy and inexpensive way to create a simple multi-room system.

Note: When using two pairs of speakers, use speakers with a nominal impedance of 8ohms.

4. IR (Infrared) Emitter In

Allows modulated IR commands from multi-room systems or IR repeater systems to be received by the amplifier. Commands received here are not looped out of the Control Bus. Refer to the 'Custom Installation' section for more information.

5. Control Bus

In Allows un-modulated commands from multi-room systems or other components to be received by the unit.

Out Loop out for control bus commands to another unit.

6. Pre-Out

Connect these sockets to the inputs on an external power amplifier(s), such as Cambridge Audio's 840W model, or an active subwoofer, etc.

7. Tape In

Connect to a tape deck or to the analogue output sockets on a MiniDisc, portable digital music player

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or CD recorder using an interconnect cable from the recorder's Line Out sockets to the amplifier's Tape In sockets.

The Tape Input circuit of the 550A/650A is a 'monitor' type, different from the other five inputs. For the five normal inputs, the source selected for listening to will also be sent out of the Rec 1/Rec 2 outputs for recording. The source currently being listened to and (optionally) recorded is then shown on the front panel by a corresponding blue LED.

However, when the Tape Mon Input is selected the Tape Mon LED will also illuminate, indicating that the Tape Monitor Input is now being listened to with a different source being sent out of the Rec1/Rec2 outputs for recording. The recording source is shown by the first LED and can be changed by pressing the other source buttons. To switch Tape Monitor off, simply press the Tape Mon button again, toggling this function off.

This feature is most useful when using three-head analogue cassette decks which allow the signal being recorded to be played back live off tape (via a third head) whilst it is simultaneously recorded. It is then possible, by toggling the Tape Monitor input on and off, to compare directly in real time the original and recorded signal so that adjustments to the recording parameters of the tape machine can be made. (Consult the manual of your three-head analogue cassette deck for full details.)

8. Record Out 1/2

These two identical output sockets can be connected to a tape deck or to the analogue Record In sockets on a MiniDisc or CD recorder.

9. Aux, DVD, Tuner/DAB, CD, MP3

These inputs are suitable for any 'line level' source equipment such as DVD players, DAB or FM/AM tuners, CD players, MP3 players, etc.

Note: These inputs are for analogue audio signals only. They should not be connected to the digital output of a CD player or any other digital device.

Connecting a turntable

If it is desired to connect a turntable without a built-in phono stage, an external phono stage such as our 540P or 640P models should be used. Contact your Cambridge Audio dealer for more details.

Note: A very few turntables have built-in phono stages, in which case it is not necessary to use a separate phono stage amplifier. If you're unsure, please consult your turntable user manual.

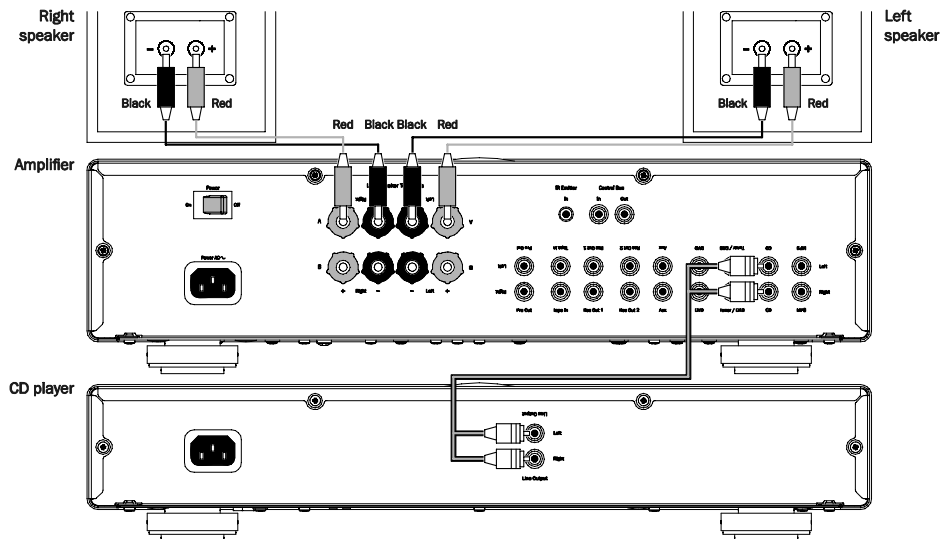
Connections

When designing our amplifiers we include features that allow you to connect your system in various ways. The inclusion of features such as Pre-Out and Speaker B connections mean that you can flexibly configure your system depending on your requirements.

Basic connection

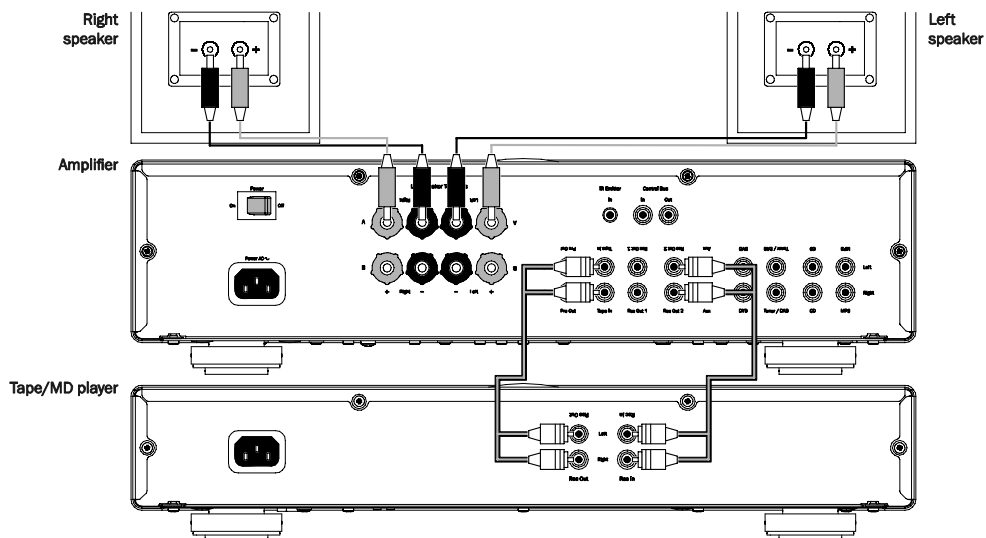
The diagram below shows the basic connection of your amplifier to a CD player and a pair of loudspeakers.

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Tape connection

The diagram below shows how to connect the amplifier to a tape recorder or other source with a record and monitor connection. Please note that either of the tape loop outputs can be used (as they are both the same signal in parallel).



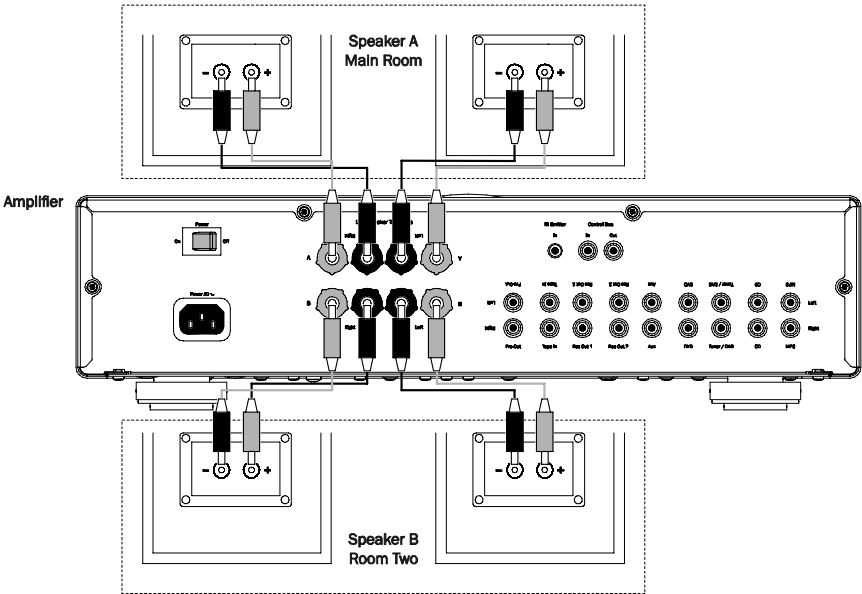
Speaker B connections

The Speaker B connections on the back of the amplifier allow for a second set of speakers to be used (i.e. speakers located in another room). The Speaker A/B button on the remote control allows the two sets of speakers to be toggled on and off. Refer to the Remote Control section of this manual for more information on the Speaker A/B operation.

Set either A or B, or both A and B may be selected for use.

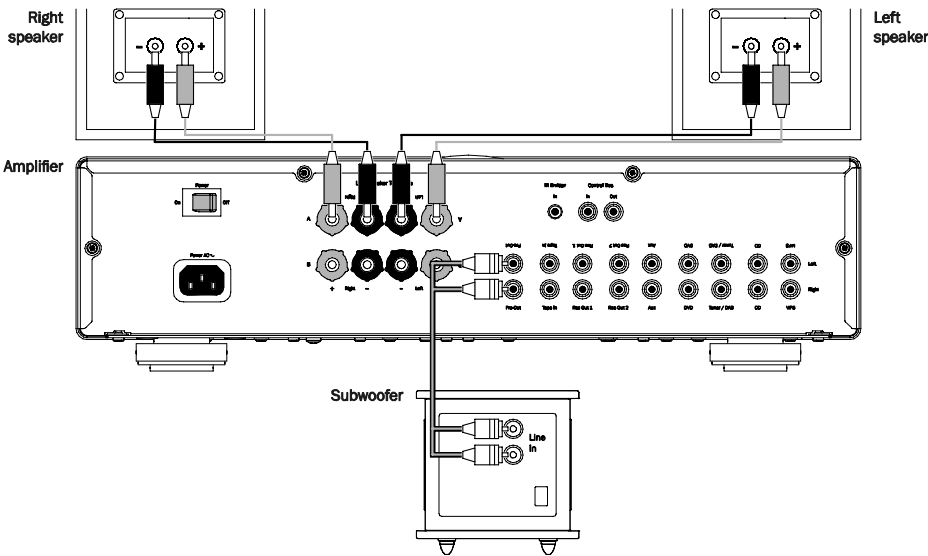
Note: When using two pairs of speakers, use speakers with a nominal impedance of 8 ohms each.

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Pre-Out connections

The Pre-Out sockets are for connecting to the input sockets of a power amplifier, such as Cambridge Audio's 840W model, or active subwoofer. The diagram below shows how to connect the amplifier to an active subwoofer via the Line In inputs on the subwoofer.



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Important safety instructions

For your own safety please read the following important safety instructions carefully before attempting to connect this unit to the mains power supply. They will also enable you to get the best performance from and prolong the life of the unit:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use with only the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as the power-supply adaptor having been damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



WARNING – To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture.

The unit is of Class 1 construction and must be connected to a mains socket outlet with a protective earthing connection.

The unit must be installed in a manner that makes disconnection of the mains plug from the mains socket outlet (or appliance connector from the rear of the unit) possible. Where the mains plug is used as the disconnect device, the disconnect device shall remain readily operable. Only use the mains cord supplied with this unit.

Please ensure there is ample ventilation. We recommend that you do not place the unit in an enclosed space; if you wish to place the unit on a shelf, use the top shelf to allow maximum ventilation. Do not put any objects on top of this unit. Do not situate it on a rug or other soft surface and do not obstruct any air inlets or outlet grilles. Do not cover the ventilation grilles with items such as newspapers, tablecloths, curtains, etc.

This unit must not be used near water or exposed to dripping or splashing water or other liquids. No objects filled with liquid, such as vases, shall be placed on the unit.



The lightning flash with the arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of un-insulated 'dangerous voltage' within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the service literature relevant to this appliance.



WEEE symbol

The crossed-out wheeled bin is the European Union symbol for indicating separate collection for electrical and electronic equipment. This product contains electrical and electronic equipment which should be reused, recycled or recovered and should not be disposed of with unsorted regular waste.

Please return the unit or contact the authorised dealer from whom you purchased this product for more information.



CE mark

This product complies with European Low Voltage (2006/95/EC) and Electromagnetic Compatibility (89/336/EEC) Directives when used and installed according to this instruction manual. For continued compliance only Cambridge Audio accessories should be used with this product and servicing must be referred to qualified service personnel.



C-Tick mark

This product meets the Australian Communications Authority's Radio communications and EMC requirements.



Ross Test Stamp

This product meets Russian electronic safety approvals.

FCC regulations

NOTE: THE MANUFACTURER IS NOT RESPONSIBLE FOR ANY RADIO OR TV INTERFERENCE CAUSED BY UNAUTHORIZED MODIFICATIONS TO THIS EQUIPMENT. SUCH MODIFICATIONS COULD VOID THE USER AUTHORITY TO OPERATE THE EQUIPMENT.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Ventilation

IMPORTANT – The unit will become hot when in use. Do not place anything on top of the unit. Do not place in an enclosed area such as a bookcase or in a cabinet without sufficient ventilation.

Ensure that small objects do not fall through any ventilation grille. If this happens, switch off immediately, disconnect from the mains supply and contact your dealer for advice.

Positioning

Choose the installation location carefully. Avoid placing it in direct sunlight or close to a source of heat. No naked flame sources, such as lighted candles, should be placed on the unit. Also avoid locations subject to vibration and excessive dust, cold or moisture. The unit can be used in a moderate climate.

This unit must be installed on a sturdy, level surface. Do not place in a sealed area such as a bookcase or in a cabinet. Do not place the unit on an unstable surface or shelf. The unit may fall, causing serious injury to a child or adult as well as serious damage to the product. Do not place other equipment on top of the unit.

Due to stray magnetic fields, turntables or CRT TVs should not be located nearby due to possible interference.

Safety Instructions

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Electronic audio components have a running in period of around a week (if used several hours per day). This will allow the new components to settle down and the sonic properties will improve over this time.

Power sources

The unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power-supply to your home, consult your product dealer or local power company.

This unit can be left in Standby mode when not in use and will draw <1W in this state. To turn the unit off, switch off at the rear panel. If you do not intend to use this unit for a long period of time, unplug it from the mains socket.

Overloading

Do not overload wall outlets or extension cords as this can result in a risk of fire or electric shock. Overloaded AC outlets, extension cords, frayed power cords, damaged or cracked wire insulation and broken plugs are dangerous. They may result in a shock or fire hazard.

Be sure to insert each power cord securely. To prevent hum and noise, do not bundle the interconnect leads with the power cord or speaker leads.

Cleaning

To clean the unit, wipe its case with a dry, lint-free cloth. Do not use any cleaning fluids containing alcohol, ammonia or abrasives. Do not spray an aerosol at or near the unit.

Battery disposal

Please dispose of any discharged batteries according to local environmental/electronic waste disposal guidelines.

Loudspeakers

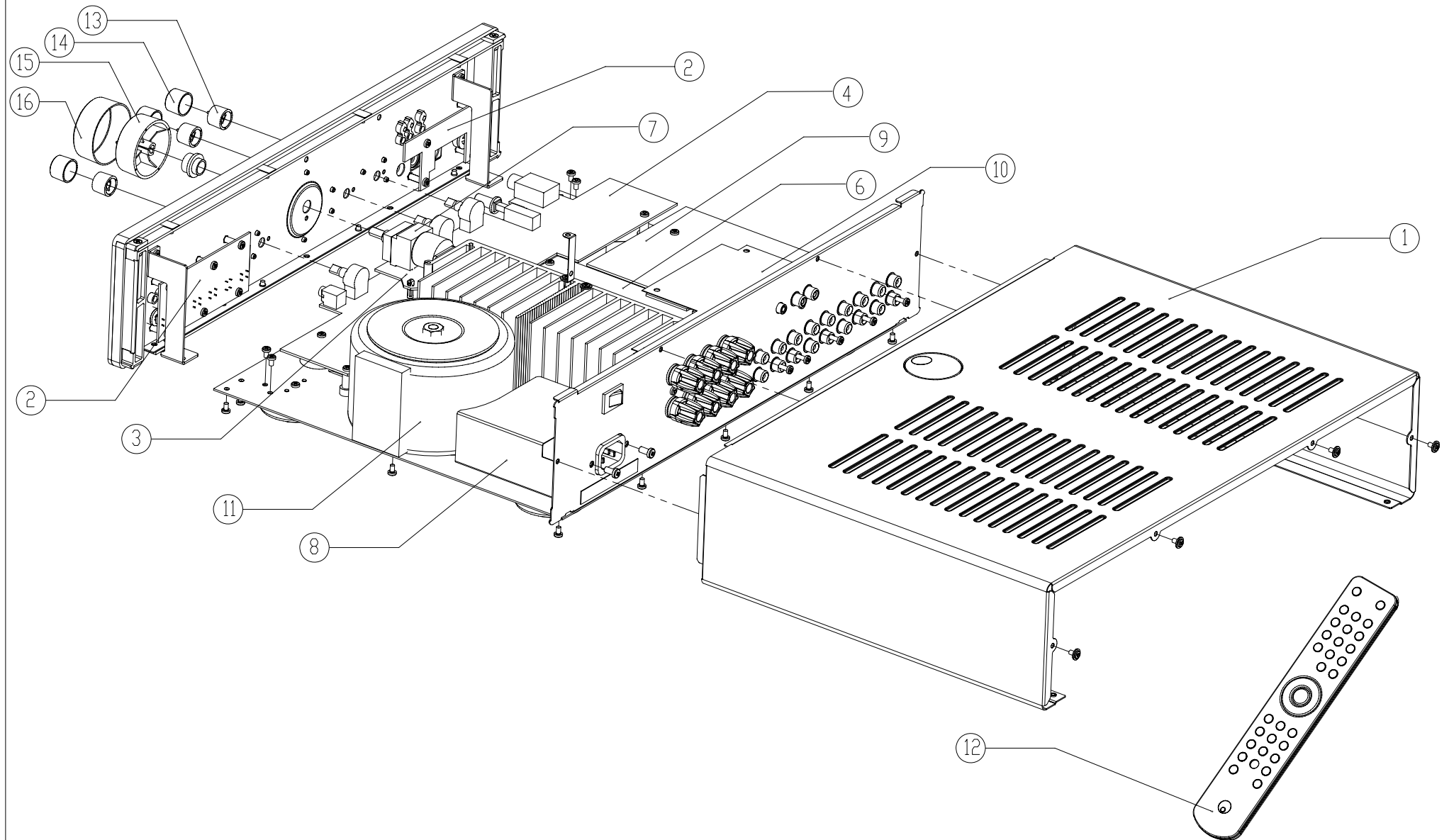
Before making any connections to loudspeakers, make sure all power is turned off and only use suitable interconnects.

Servicing

These units are not user serviceable. Never attempt to repair, disassemble or reconstruct the unit if there seems to be a problem.

A serious electric shock could result if this precautionary measure is ignored. In the event of a problem or failure, please contact your dealer.

550A/650A Exploded Diagram

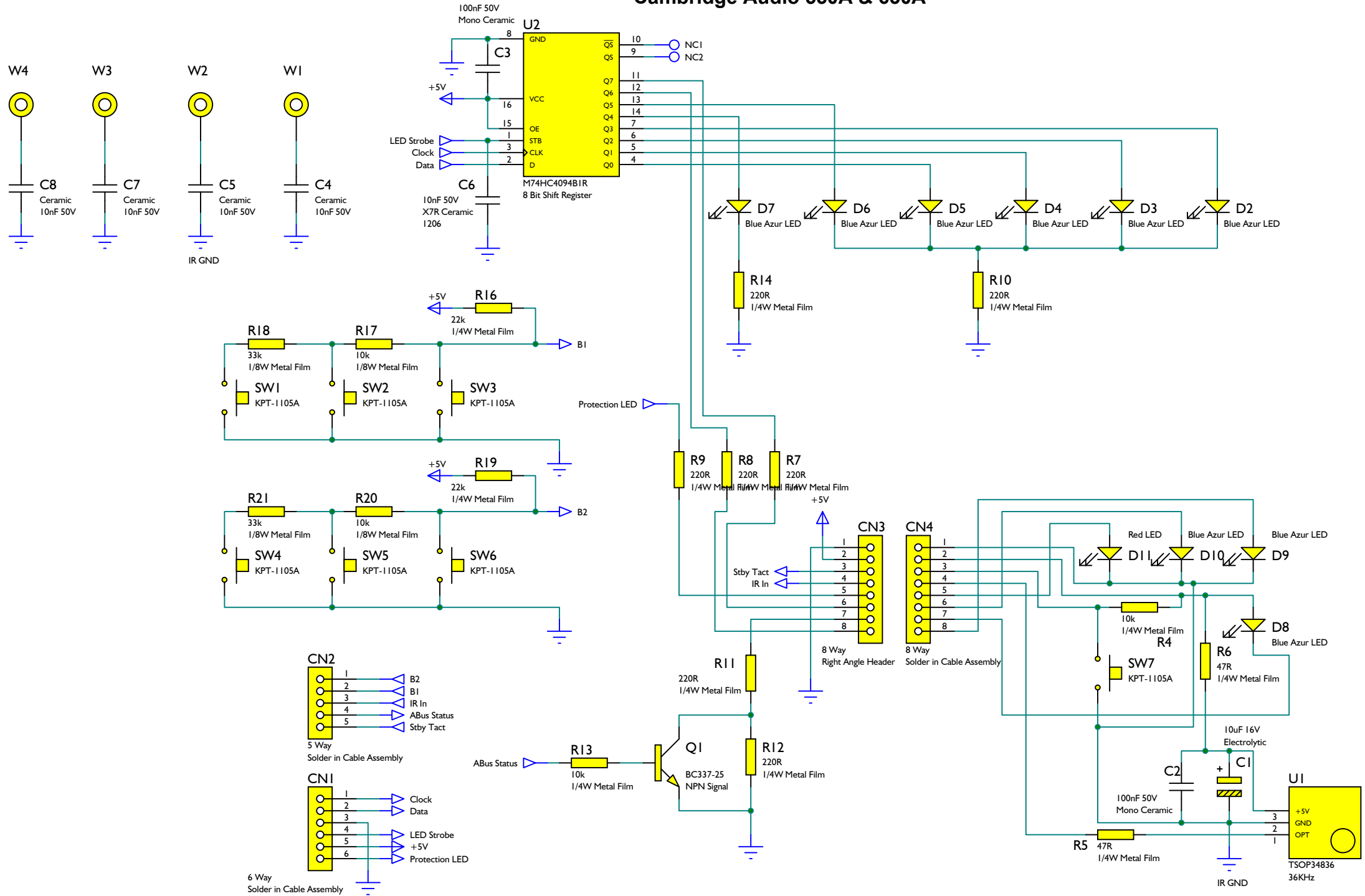


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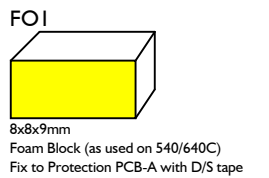
Drawing ref	AP part number	Factory part number	Description
1	PY1626	8565-015060E301	AZUR 550A/650A WRAPOVER LID SILVER ASSY REV.A
1	PY1627	8565-015050E301	AZUR 550A/650A WRAPOVER LID BLACK ASSY REV.A
8	PY1590	9465-015000E071	Azur 550A/650A(230V) POWER INPUT BOARD ASSY REV
9	PY1591	9465-015000E341	Azur 550A/650A INPUT BOARD ASSY REV A
10	PY1592	9465-015001E541	Azur 550A/650A SPEAKER BOARD ASSY REV A
not shown	PY1593	8555-015020E300	Azur 550A 230V TRANSFORMER ASSY (standby)
11	PY1479	3200-073326E000	TOROID TR. 230VAC@50Hz TI-073326 NORATEL FOR 550
not shown	PY1594	8555-015040E301	Azur 550A 115V TRANSFORMER ASSY (standby)
11	PY1480	3200-073328E000	TOROID TR. 115VAC@60Hz TI-073328 NORATEL FOR 550
not shown	PY1595	8565-015020E300	Azur 650A 230V TRANSFORMER ASSY (standby)
11	PY1481	3200-073322E000	TOROID TR. 230VAC@50Hz TI-073322 NORATEL FOR 650
not shown	PY1596	8565-015030E301	Azur 650A 115V TRANSFORMER ASSY (standby)
11	PY1482	3200-073324E000	TOROID TR. 115VAC@60Hz TI-073324 NORATEL FOR 650
2	PY1597	9465-015000E041	Azur 550A/650A F/P CONTROL BOARD ASSY (TWO BOARDS)
4	PY1598	9465-015000E231	Azur 550A/650A Preamp+MCU BOARD ASSY REV A
3	PY1599	9465-015000E311	Azur 550A/650A VOLUME BOARD ASSY REV A
6	PY1600	9455-015000E091	Azur 550A AMP BOARD ASSY REV A
6	PY1601	9465-015000E091	Azur 650A AMP BOARD ASSY REV A
not shown	PY1602	9465-015000E001	Azur 650A/550A PROTECT PCBA REV A
7	PY1603	1065-003500E113	VR W/MOTOR 50KAX2 +/-20% (L=20) RK16812MG082 ALPS
12	PY1539	9805-650000E001	Azur 650AC/550AC REMOTE CONTROL ASSY REV A
14	PZ160		Azur 650A Tone Knob (Silver) AP21541B
14	PZ161		Azur 650A Tone Knob (Black) AP21541B
16	PZ162		Azur 650A Volume Knob (Silver) AP21538C
16	PZ163		Azur 650A Volume Knob (Black) AP21538C
not shown	PZ164		Azur 650A Volume Pot Skirt (Silver) AP21554A
not shown	PZ165		Azur 650A Volume Pot Skirt (Black) AP21554A
not shown	PZ166		Azur 650A Tone Pot Skirt (Silver) AP21555A
not shown	PZ167		Azur 650A Tone Pot Skirt (Black) AP21555A

Parts Table


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Front Panel PCB Schematic



FOI



8x8x9mm

Foam Block (as used on 540/640C)

Fix to Protection PCB-A with D/S tape

550A/650A Front Panel PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackagelInfo	Factory Part Number	AP Part Number
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RESISTORS

1	47R	1/4W Metal Film	2	R5, R6		1%	10mm Pitch		
2	220R	1/4W Metal Film	7	R7-R12, R14		1%	10mm Pitch		
3	10k	1/4W Metal Film	2	R4, R13		1%	10mm Pitch		
4	10k	1/8W Metal Film	2	R17, R20		1%	7.5mm Pitch		
5	22k	1/4W Metal Film	2	R16, R19		1%	10mm Pitch		
6	33k	1/8W Metal Film	2	R18, R21		1%	7.5mm Pitch		

CAPACITORS

7	10nF 50V	Ceramic	4	C4, C5, C7, C8		10%	2.5mm Pitch	1100-103043-000	
8	10nF 50V	X7R Ceramic	1	C6		10%	1206		
9	100nF 50V	Mono Ceramic	2	C2, C3		10%	5mm Pitch	1100-104043-000	
10	10uF 16V	Electrolytic	1	C1		20%	5.2mm Diameter	1102-100014-000	Lay Flat

DIODES

15	Blue Azur LED	3mm	9	D2-D10	HFB963M-130			3100-000030-003	
16	Red LED	3mm	1	D11					

INTEGRATED CIRCUITS

17	36KHz	IR Receiver	1	U1	TSOP34836		Through Hole	3001-348360-000	PY755
18	M74HC4094B	8 Bit Shift Register	1	U2	M74HC4094B1R		DIL16	4174-409052-600	PY524

SWITCHES

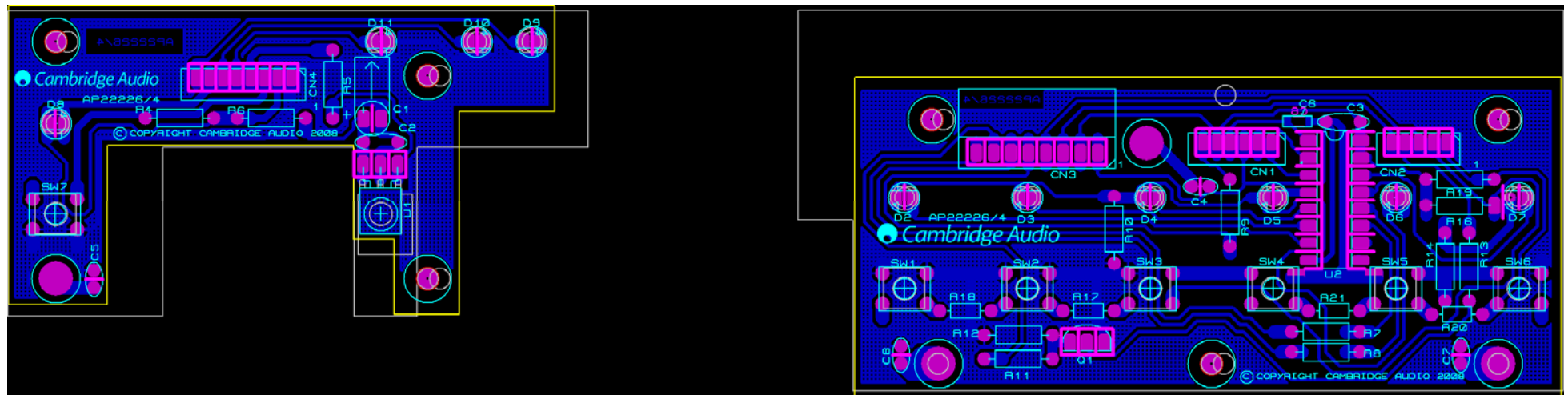
19		Tactile	7	SW1-SW7	KPT-1105A		Through Hole	2400-020200-000	PY043
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TRANSISTORS

20	45V 300mA	NPN Signal	1	Q1	BC337-25		TO92	1300-337000-100	
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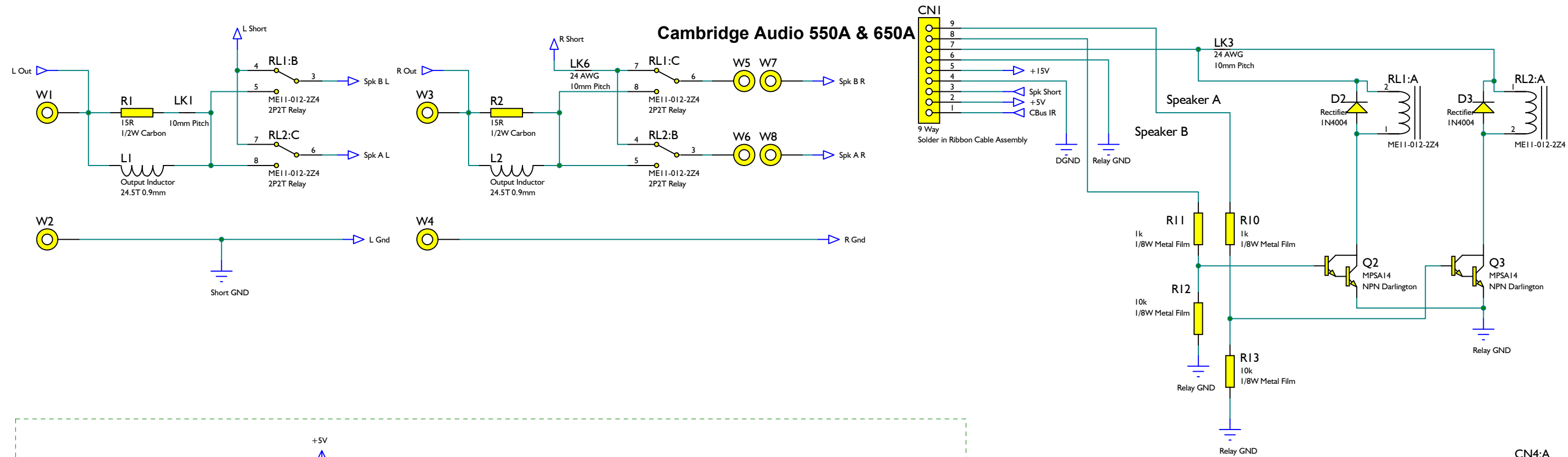
Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

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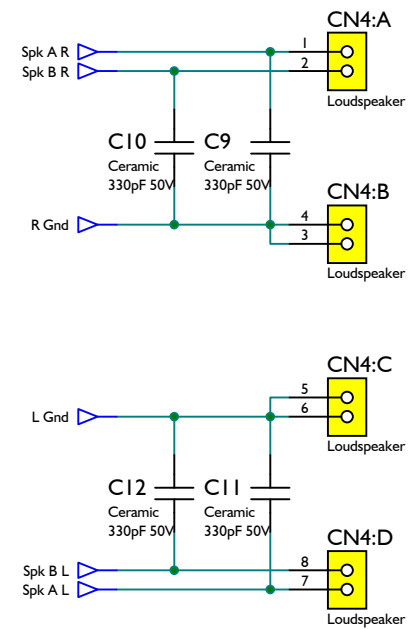
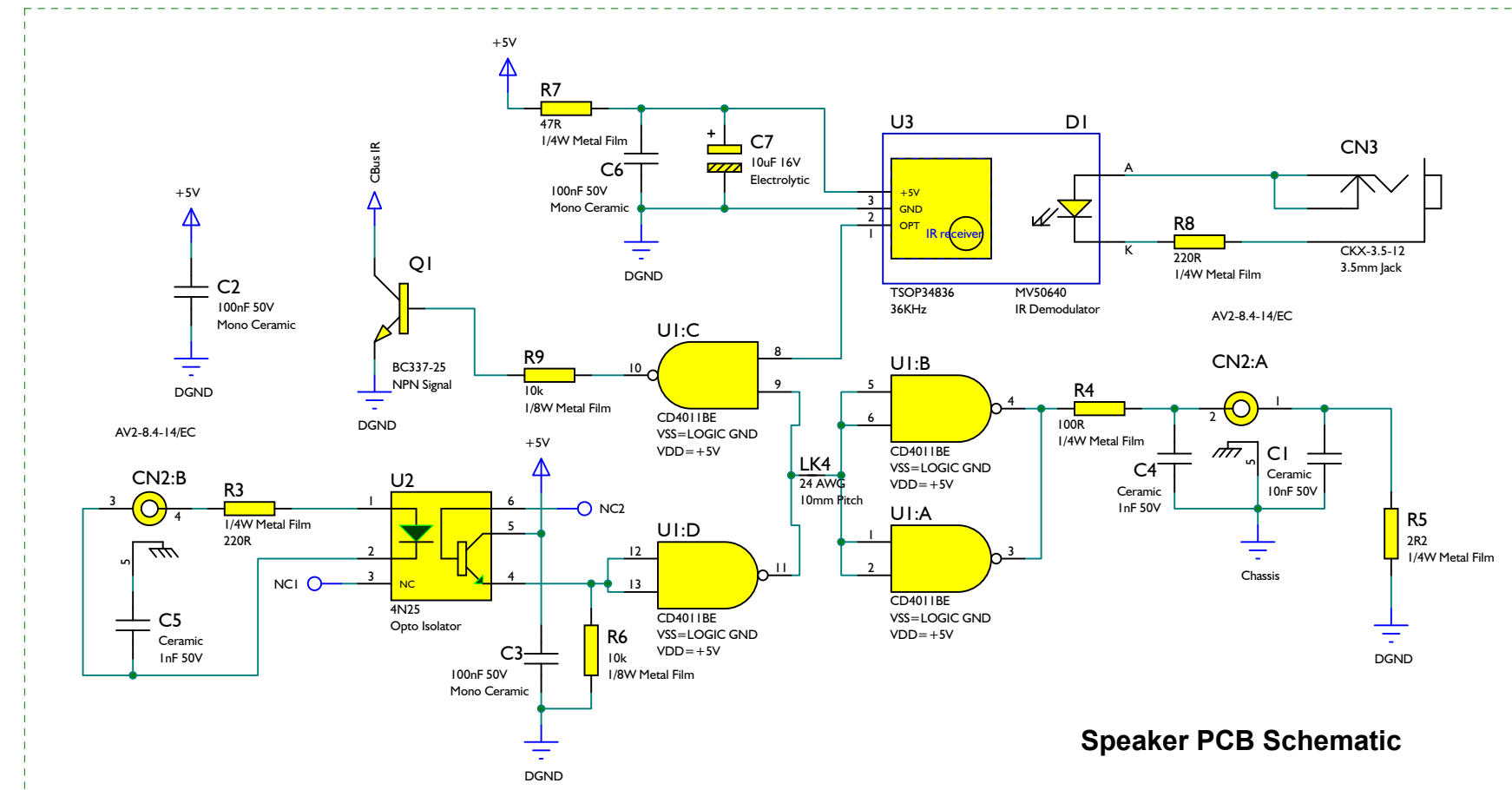


Front Panel PCB Layout

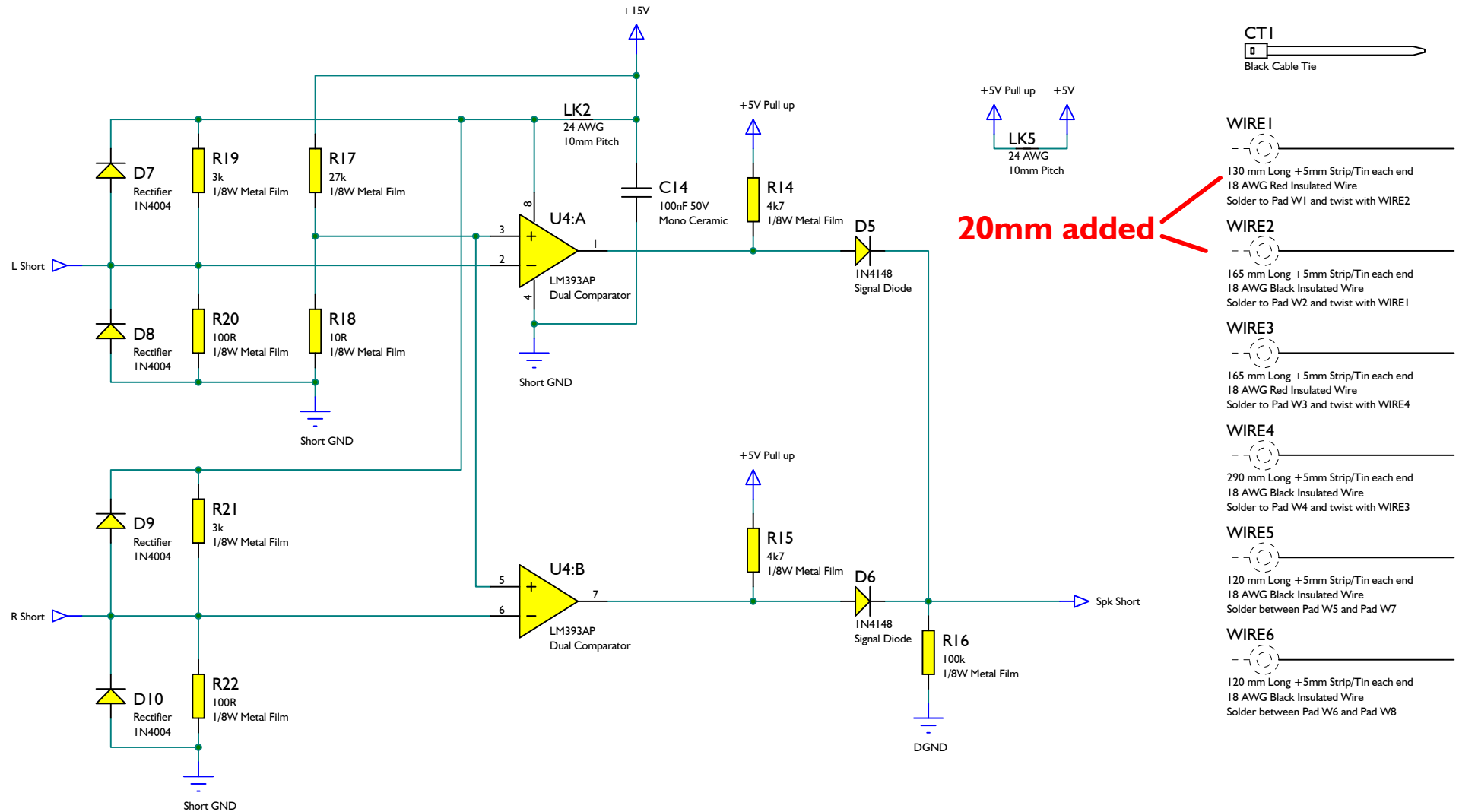
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Speaker PCB Schematic



Cambridge Audio 550A & 650A



Speaker PCB Schematic

550A 650A Speaker PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackageInfo	Factory Part Number	AP Part Number
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RESISTORS

1	2R2	1/4W Metal Film	1	R5		1%	10mm Pitch		
2	10R	1/8W Metal Film	1	R18		1%	7.5mm Pitch		
3	15R	1/2W Carbon	2	R1, R2		10%	12mm Pitch		
4	47R	1/4W Metal Film	1	R7		1%	10mm Pitch		
5	100R	1/4W Metal Film	1	R4		1%	10mm Pitch		
6	100R	1/8W Metal Film	2	R20, R22		1%	7.5mm Pitch		
7	220R	1/4W Metal Film	2	R3, R8		1%	10mm Pitch		
8	1k	1/8W Metal Film	2	R10, R11		1%	7.5mm Pitch		
9	3k	1/8W Metal Film	2	R19, R21		1%	7.5mm Pitch		
10	4k7	1/8W Metal Film	2	R14, R15		1%	7.5mm Pitch		
11	10k	1/8W Metal Film	4	R6, R9, R12, R13		1%	7.5mm Pitch		
12	27k	1/8W Metal Film	1	R17		1%	7.5mm Pitch		
13	100k	1/8W Metal Film	1	R16		1%	7.5mm Pitch		

CAPACITORS

14	330pF 50V	Ceramic	4	C9-C12		5%	2.5mm Pitch	1100-331042-000	
15	1nF 50V	Ceramic	2	C4, C5		10%	2.5mm Pitch	1100-102043-000	
16	10nF 50V	Ceramic	1	C1		10%	2.5mm Pitch	1100-103043-000	
17	100nF 50V	Mono Ceramic	4	C2, C3, C6, C14		10%	5mm Pitch	1100-104043-000	
18	10uF 16V	Electrolytic	1	C7		20%	5.2mm Diameter	1102-100014-000	

DIODES

23	3mm Red LED	IR Demodulator	1	D1	MV50640				IR Housing (AP17339/3)
24	400V 1A	Rectifier	6	D2, D3, D7-D10	1N4004		DO41	1401-140040-000	
25	75V 150mA	Signal Diode	2	D5, D6	1N4148		D035	1401-141480-000	

INDUCTORS

26	24.5T 0.9mm	Output Inductor	2	L1, L2	CS79-874967		Through Hole	3203-874801-000	AP13772/1
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INTEGRATED CIRCUITS

27	Quad 2 Input	NAND Gate	1	U1	CD4011BE		DIL14	4140-110052E900	
28	Opto IC	Opto Isolator	1	U2	4N25		DIL06	4142-500050-001	PY1144
29	36KHz	IR Receiver	1	U3	TSOP34836		Through Hole	3001-348360-000	PY755
30	Low Offset	Dual Comparator	1	U4	LM393AP		DIL08	4139-300052E900	PY1152

RELAY

31	12V 8A	2P2T Relay	2	RL1, RL2	ME11-012-2Z4		Through Hole	4050-110122-001	PY594
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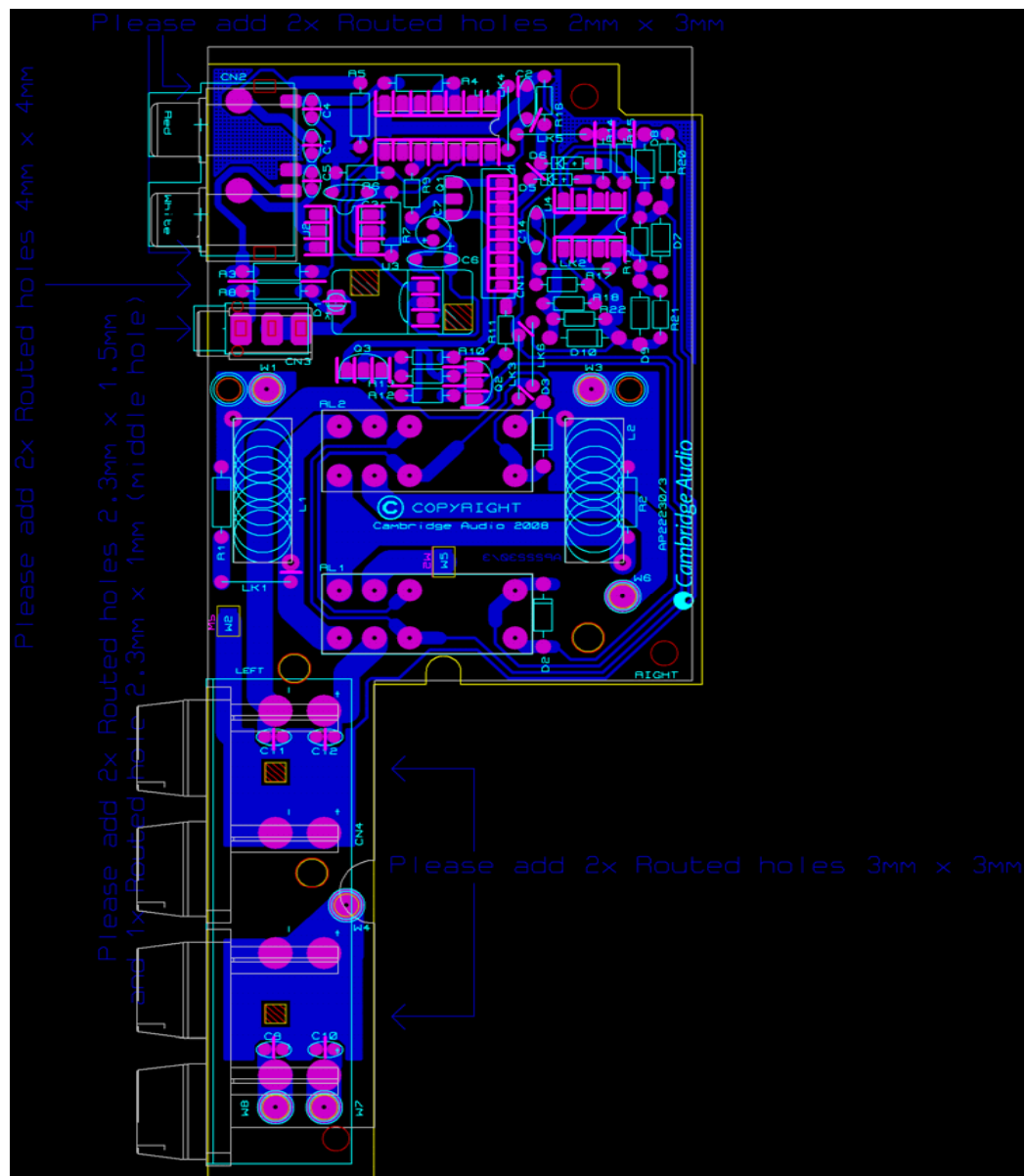
TRANSISTORS

32	45V 300mA	NPN Signal	1	Q1	BC337-25		TO92	1300-337000-100	PY214
33	30V 500mA	NPN Darlington	2	Q2, Q3	MPSA14		TO92	1300-140000-100	PY1211

WIRE TERMINALS

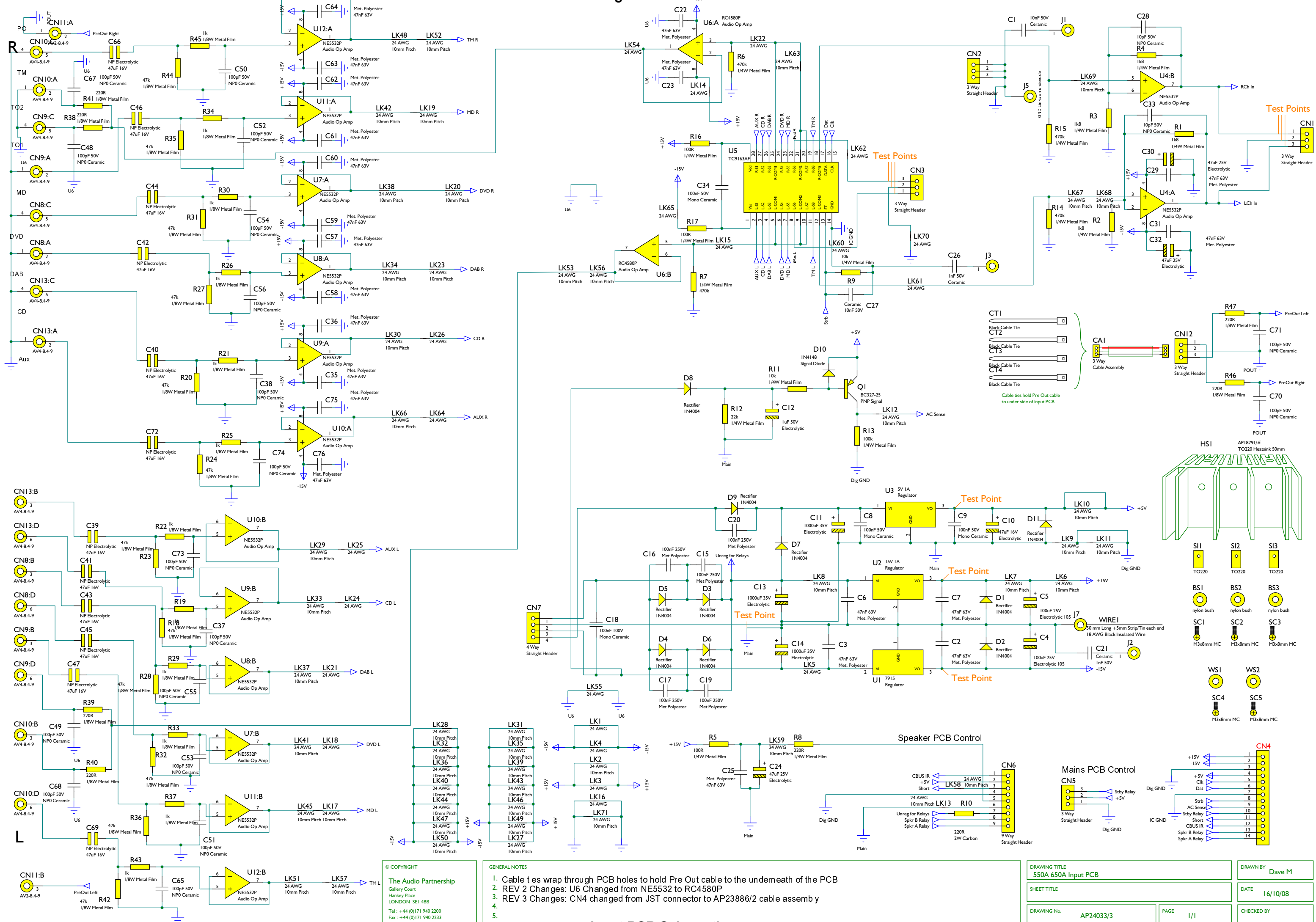
Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

Cambridge Audio 550A & 650A



Speaker PCB Layout

Cambridge Audio 550A & 650A



550A 650A Input PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackageInfo	Factory Part Number	AP Part Number
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RESISTORS

1	100R	1/4W Metal Film	3	R5, R16, R17		1%	10mm Pitch		
2	220R	1/4W Metal Film	1	R8		1%	10mm Pitch		
3	220R	2W Carbon	1	R10		10%	20mm Pitch		Raise off PCB
4	220R	1/8W Metal Film	6	R38-R41, R46, R47		1%	7.5mm Pitch		
5	1k	1/8W Metal Film	12	R19, R21, R22, R25, R26, R29, R30, R33, R34, R37, R43, R45		1%	7.5mm Pitch		
6	1k8	1/4W Metal Film	4	R1-R4		1%	10mm Pitch		
7	10k	1/4W Metal Film	2	R9, R11		1%	10mm Pitch		
8	22k	1/4W Metal Film	1	R12		1%	10mm Pitch		
9	47k	1/8W Metal Film	12	R18, R20, R23, R24, R27, R28, R31, R32, R35, R36, R42, R44		1%	7.5mm Pitch		
10	100k	1/4W Metal Film	1	R13		1%	10mm Pitch		
11	470k	1/4W Metal Film	4	R6, R7, R14, R15		1%	10mm Pitch		

CAPACITORS

12	10pF 50V	NP0 Ceramic	2	C28, C33		5%	2.5mm Pitch	1181-100042-000	
13	100pF 50V	NP0 Ceramic	18	C37, C38, C48-C56, C65, C67, C68, C70, C71, C73, C74		5%	2.5mm Pitch	1181-101042-000	
14	1nF 50V	Ceramic	2	C21, C26		10%	2.5mm Pitch	1100-102043-000	
15	10nF 50V	Ceramic	2	C1, C27		10%	2.5mm Pitch	1100-103043-000	
16	47nF 63V	Met. Polyester	21	C2, C3, C6, C7, C22, C23, C25, C29, C31, C35, C36, C57-C64, C75, C76		10%	5mm Pitch Box	1117-473053E000	
17	100nF 50V	Mono Ceramic	3	C8, C9, C34		10%	5mm Pitch	1100-104043-000	
18	100nF 250V	Met Polyester	5	C15-C17, C19, C20	CMEB104M250Rxxxx	20%	5mm Pitch Box		
19	100nF 100V	Mono Ceramic	1	C18		10%	5mm Pitch		
20	1uF 50V	Electrolytic	1	C12		20%	5mm Dia	1102-107044-000	
21	47uF 16V	Electrolytic	1	C10		20%	5mm Dia	1102-470014-000	
22	47uF 25V	Electrolytic	3	C24, C30, C32		20%	5mm Dia	1102-470024-000	
23	47uF 16V	NP Electrolytic	12	C39-C47, C66, C69, C72		20%	6mm Dia	1105-470014-000	
24	100uF 25V	Electrolytic 105	2	C4, C5		20%	6mm Dia	1102-101024E002	
25	1000uF 35V	Electrolytic	3	C11, C13, C14		20%	13mm Dia	1102-102034-000	

CONNECTORS

26	3 Way	Straight Header	2	CN1, CN12	B3B-PH-KS		2mm Pitch	2300-003000-001	
27	3 Way	Straight Header	1	CN2	B3P-VH		3.96mm Pitch	2300-003400-001	
28	3 Way	Straight Header	2	CN3, CN5	B3B-XH-A		2.5mm Pitch	2300-003100-004	
29	14 Way	Solder in Cable Assembly	1	CN4	AP23886/2		2mm Pitch		Solder Cable assembly into CN4 footprint
30	9 Way	Straight Header	1	CN6	B9B-PH-KS		2mm Pitch	2300-009000-000	

Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

31	4 Way	Straight Header	1	CN7	B4P-VH		3.96mm Pitch		
32	4 Way	Gold Plated Phono	4	CN8-CN10, CN13	AV4-8.4-9		Red-Bottom, White-Top	2330-006900E001	
33	2 Way	Gold Plated Phono	1	CN11	AV2-8.4-9		Red-Bottom, White-Top	2330-003911E034	

DIODES

34	400V 1A	Rectifier	10	D1-D9, D11	1N4004		DO41	1401-140040-000	
35	75V 150mA	Signal Diode	1	D10	1N4148		D035	1401-141480-000	

INTEGRATED CIRCUITS

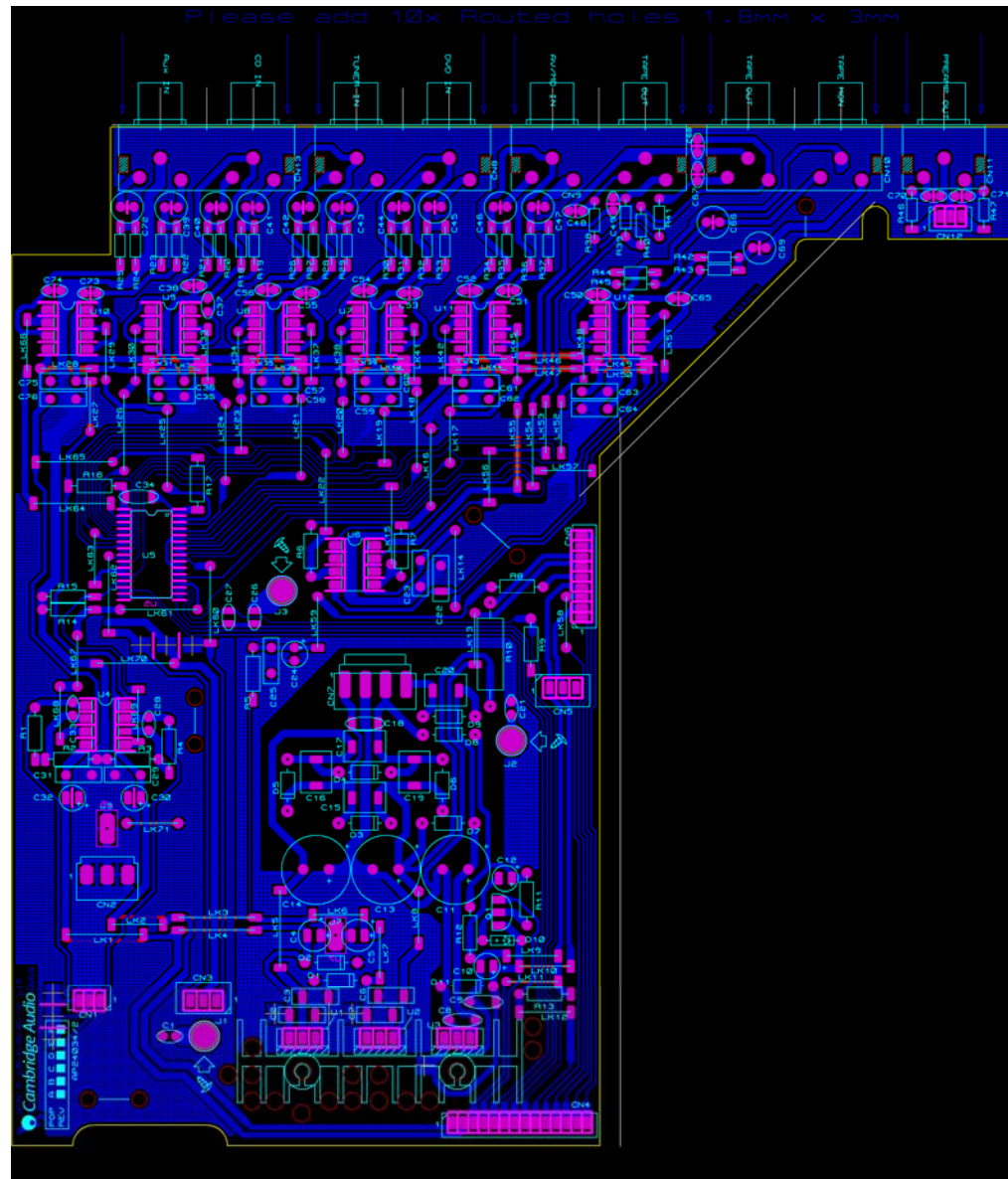
36	-15V 1A	Regulator	1	U1	7915		Through Hole	4179-150302-600	
37	15V 1A	Regulator	1	U2	7815		Through Hole	4178-150302E600	
38	5V 1A	Regulator	1	U3	7805		Through Hole	4178-050334-700	
39	Dual	Audio Op Amp	7	U4, U7-U12	NE5532P		DIL08	4155-320052-900	PY108
40	16 Way	Input Switch	1	U5	TC9163AF		SOP28	4191-630103E001	PY470
41	Dual	Audio Op Amp	1	U6	RC4580P		DIL08		

TRANSISTORS

42	-45V 500mA	PNP Signal	1	Q1	BC327-25		TO92	1301-327000-100	PY219
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Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

Cambridge Audio 550A & 650A

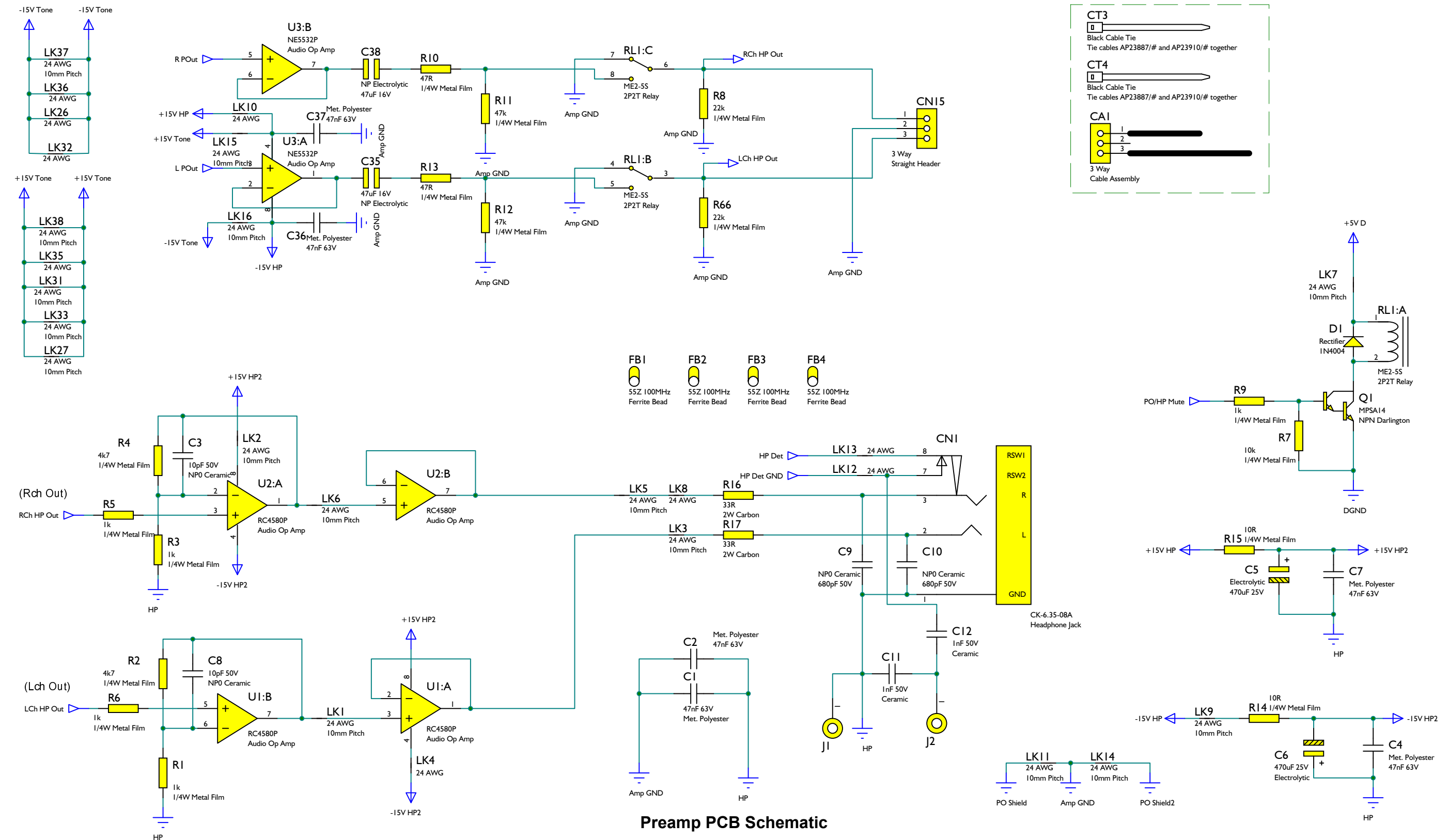


Input PCB Layout

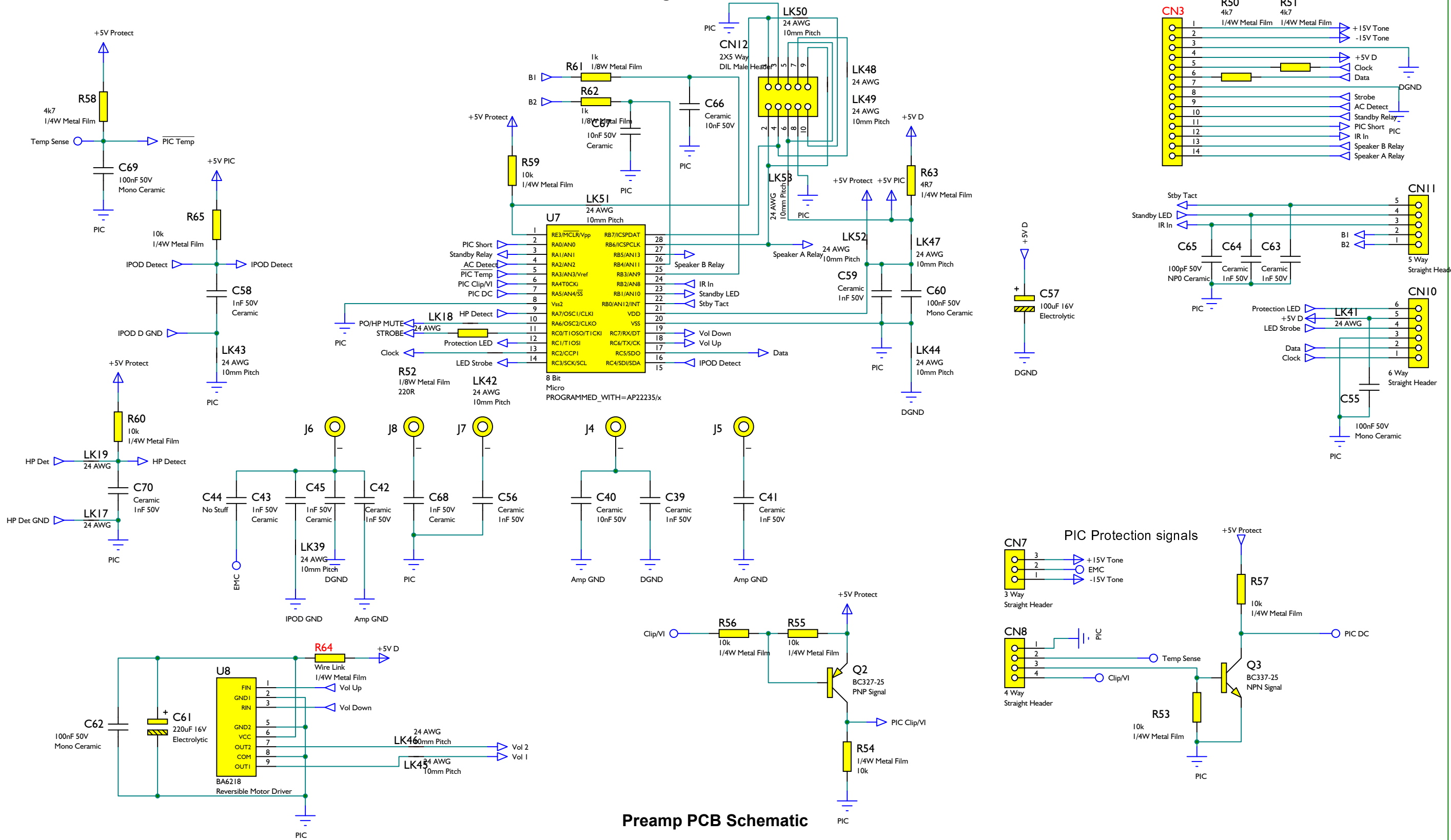
SW1:B Pushbutton Switch



Cambridge Audio 550A & 650A



Cambridge Audio 550A & 650A



550A 650A Preamp PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackageInfo	Factory Part Number	AP Part Number
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RESISTORS

1	4R7	1/4W Metal Film	1	R63		1%	10mm Pitch		
2	10R	1/4W Metal Film	2	R14, R15		1%	10mm Pitch		
3	10R	1/8W Metal Film	2	R38, R49		1%	7.5mm Pitch		
4	22R	1/4W Metal Film	2	R36, R37		1%	10mm Pitch		
5	33R	2W Carbon	2	R16, R17		10%	20mm Pitch		Add ferrite beads FB1-4 to resistor legs for EMC
6	47R	1/4W Metal Film	2	R10, R13		1%	10mm Pitch		
7	220R	1/8W Metal Film	1	R52		1%	7.5mm Pitch		
8	Wire Link	1/4W Metal Film	1	R64		1%	10mm Pitch		Use 24AWG wire link
9	1k	1/4W Metal Film	5	R1, R3, R5, R6, R9		1%	10mm Pitch		
10	1k	1/8W Metal Film	2	R61, R62		1%	7.5mm Pitch		
11	1k1	1/4W Metal Film	4	R28-R31		1%	10mm Pitch		
12	1k5	1/8W Metal Film	2	R41, R43		1%	7.5mm Pitch		
13	2k2	1/4W Metal Film	8	R22, R23, R25, R27, R32-R35		1%	10mm Pitch		
14	4k7	1/4W Metal Film	7	R2, R4, R24, R26, R50, R51, R58		1%	10mm Pitch		
15	4k7	1/8W Metal Film	2	R40, R44		1%	7.5mm Pitch		
16	10k	1/4W Metal Film	9	R7, R53-R57, R59, R60, R65		1%	10mm Pitch		
17	10k	1/8W Metal Film	2	R39, R48		1%	7.5mm Pitch		
18	22k	1/4W Metal Film	2	R8, R66		1%	10mm Pitch		
19	47k	1/4W Metal Film	2	R11, R12		1%	10mm Pitch		
20	100k	1/8W Metal Film	4	R42, R45-R47		1%	7.5mm Pitch		
21	150k	1/4W Metal Film	4	R18-R21		1%	10mm Pitch		

RESISTORS VARIABLE

22	B5k	Balance Pot	2	VR1, VR2	VR162G1-B5K-L15F		Dual	1065-002518E130	PY1240
23	MN20k	Balance Pot	1	VR3	VR162G1-MN20K-L15F		Dual	1062-003518E160	

CAPACITORS

24	No Stuff	Ceramic	1	C44			2.5mm Pitch		No Stuff
25	10pF 50V	NP0 Ceramic	8	C3, C8, C18, C23, C28, C33, C48, C52		5%	2.5mm Pitch	1181-100042-000	
26	100pF 50V	NP0 Ceramic	3	C50, C65, C71		5%	2.5mm Pitch	1181-101042-000	
27	680pF 50V	NP0 Ceramic	2	C9, C10		5%	2.5mm Pitch	1181-681042-000	
28	1nF 50V	Ceramic	1	C11		10%	5mm Pitch		
29	1nF 50V	Ceramic	13	C12, C39, C41-C43, C45, C56, C58, C59, C63, C64, C68, C70		10%	2.5mm Pitch	1100-102043-000	
30	1.5nF 63V	Polypropylene	2	C29, C30		5%	5mm Pitch Box	1114-152052E000	
31	10nF 63V	Polypropylene	2	C22, C34		5%	5mm Pitch Box		
32	10nF 50V	Ceramic	3	C40, C66, C67		10%	2.5mm Pitch	1100-103043-000	

Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

33	47nF 63V	Met. Polyester	12	C1, C2, C4, C7, C19, C20, C24, C26, C36, C37, C47, C53		10%	5mm Pitch Box	1117-473053E000	
34	100nF 100V	Polypropylene	2	C14, C16	CMPA104K100RB075	10%	7.5mm Pitch Box	1114-104063E000	
35	100nF 50V	Mono Ceramic	4	C55, C60, C62, C69		10%	5mm Pitch	1100-104043-000	
36	680nF 63V	Met. Polyester	2	C31, C32		10%	5mm Pitch Box	1117-684053E000	
37	47uF 16V	NP Electrolytic	8	C13, C15, C17, C21, C35, C38, C49, C51		20%	6mm Dia	1105-470014-000	
38	47uF 25V	Electrolytic	2	C46, C54		20%	5mm Dia	1102-470024-000	
39	100uF 25V	Electrolytic	2	C25, C27		20%	6mm Dia	1102-101024-000	
40	100uF 16V	Electrolytic	1	C57		20%	5.2mm Dia	1102-101014-000	
41	220uF 16V	Electrolytic	1	C61		20%	6mm Dia		
42	470uF 25V	Electrolytic	2	C5, C6		20%	10mm Dia		

DIODES									
57	400V 1A	Rectifier	1	D1	1N4004		DO41	1401-140040-000	

INDUCTORS									
58	55Z 100MHz	Ferrite Bead	4	FB1-FB4	742 70010		FERRITE BEAD		

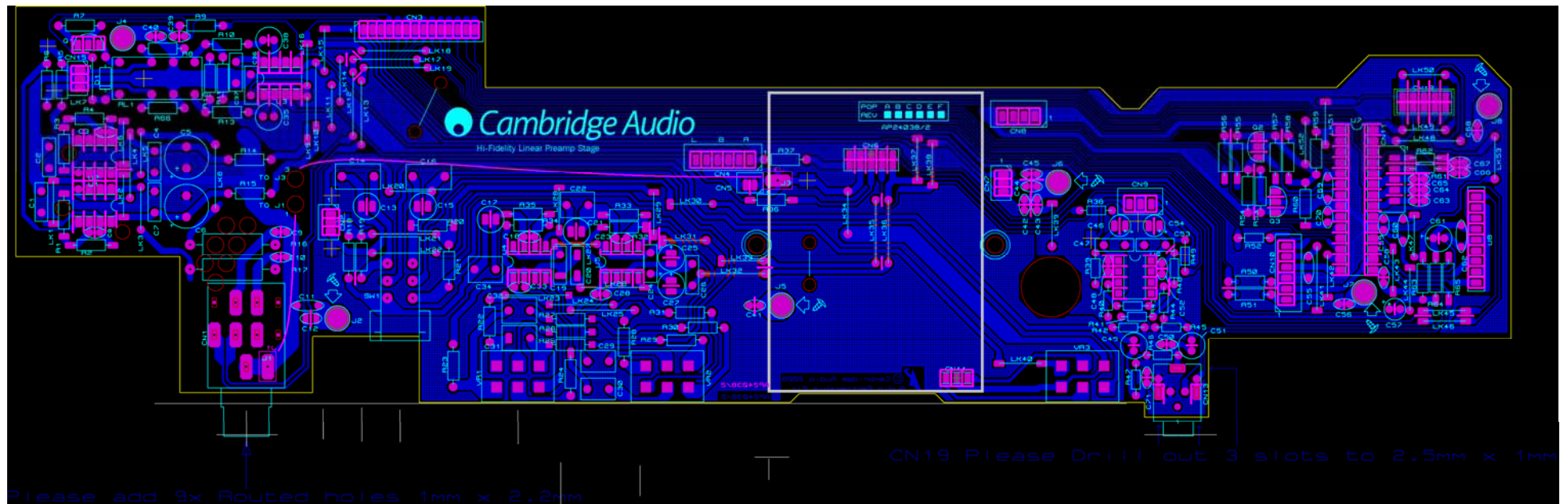
INTEGRATED CIRCUITS									
59	Dual	Audio Op Amp	2	U1, U2	RC4580P		DIL08		PY1604
60	Dual	Audio Op Amp	4	U3-U6	NE5532P		DIL08	4155-320052-900	PY108
61	8 Bit	Micro	1	U7	PIC16F882		28 Pin DIL		Program with software: AP22235/# Please add version label!
62	Driver	Reversible Motor Driver	1	U8	BA6218		Through Hole	4162-180002-300	PY260

RELAY									
63	5V 2A	2P2T Relay	1	RL1	ME2-5S		Through Hole	4050-000005-002	PY584

SWITCHES									
64	2P2T	Pushbutton Switch	1	SW1	PBS-22H01-T18-SL		Through Hole	2402-020200-010	PY645

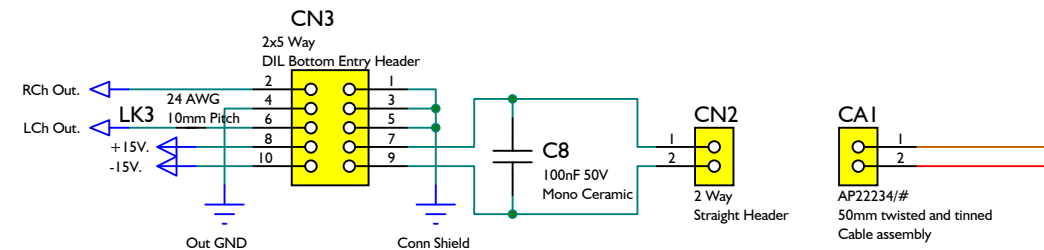
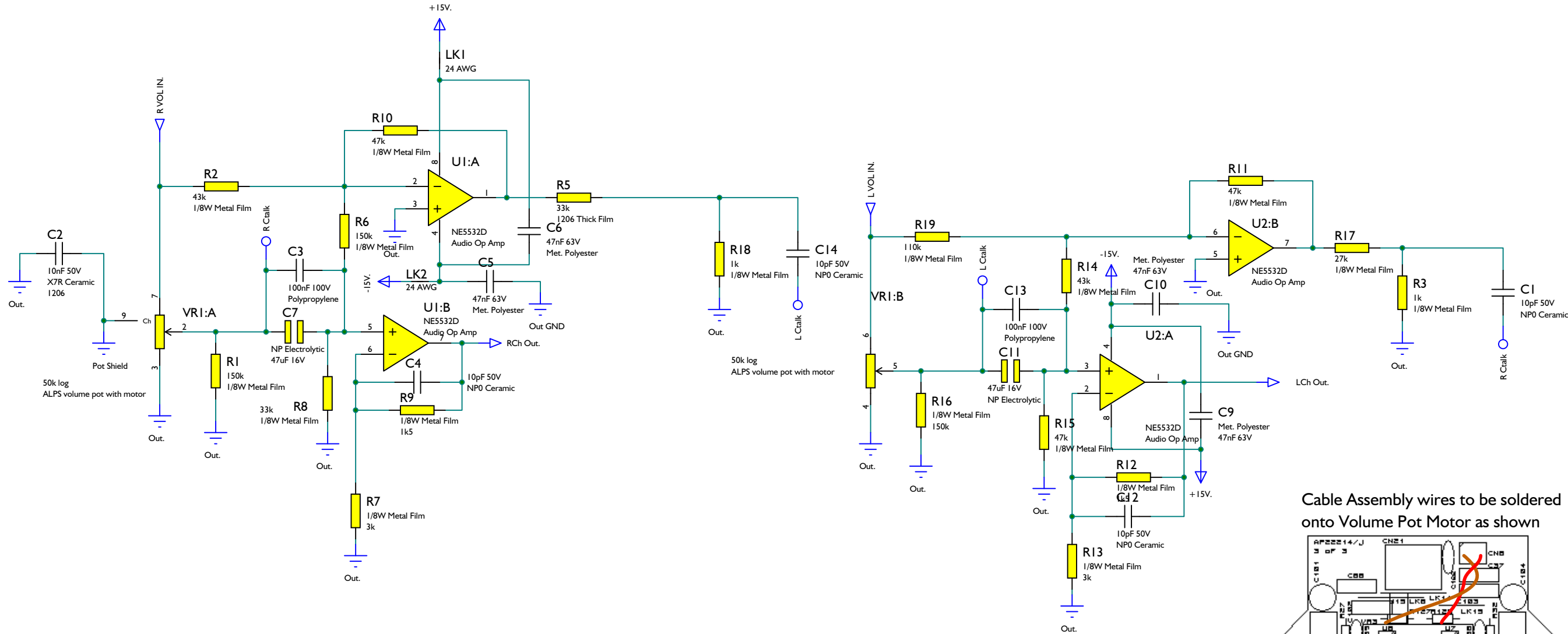
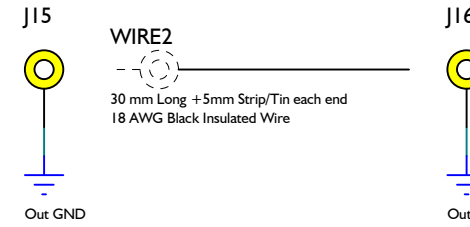
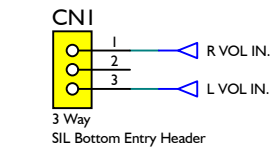
TRANSISTORS									
65	30V 500mA	NPN Darlington	1	Q1	MPSA14		TO92	1300-140000-100	PY1211
66	-45V 500mA	PNP Signal	1	Q2	BC327-25		TO92	1301-327000-100	PY219
67	45V 300mA	NPN Signal	1	Q3	BC337-25		TO92	1300-337000-100	PY214

Cambridge Audio 550A & 650A



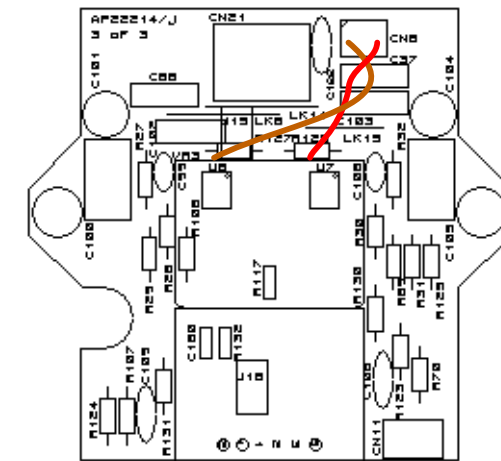
Preamp PCB Layout

Cambridge Audio 550A & 650A



Volume PCB Schematic

Cable Assembly wires to be soldered onto Volume Pot Motor as shown



550A 650A Volume PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackagelInfo	Factory Part Number	AP Part Number
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RESISTORS

1	1k	1/8W Metal Film	2	R3, R18		1%	7.5mm Pitch		
2	1k5	1/8W Metal Film	2	R9, R12		1%	7.5mm Pitch		
3	3k	1/8W Metal Film	2	R7, R13		1%	7.5mm Pitch		
4	27k	1/8W Metal Film	1	R17		1%	7.5mm Pitch		
5	33k	1206 Thick Film	1	R5		1%	1206		
6	33k	1/8W Metal Film	1	R8		1%	7.5mm Pitch		
7	43k	1/8W Metal Film	2	R2, R14		1%	7.5mm Pitch		
8	47k	1/8W Metal Film	3	R10, R11, R15		1%	7.5mm Pitch		
9	110k	1/8W Metal Film	1	R19		1%	7.5mm Pitch		
10	150k	1/8W Metal Film	3	R1, R6, R16		1%	7.5mm Pitch		

RESISTORS VARIABLE

11	50k log	ALPS volume pot with motor	1	VR1	RK16812MG082		16mm		PY1603
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CAPACITORS

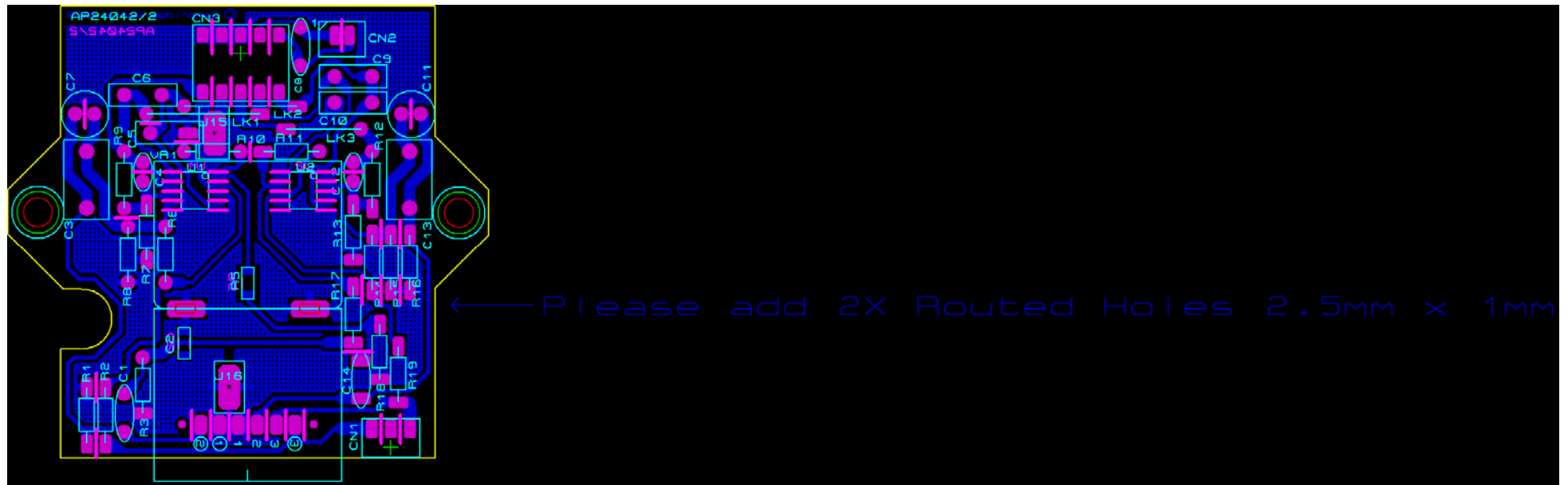
12	10pF 50V	NP0 Ceramic	2	C1, C14		5%	5mm Pitch		5mm Pitch
13	10pF 50V	NP0 Ceramic	2	C4, C12		5%	2.5mm Pitch	1181-100042-000	
14	10nF 50V	X7R Ceramic	1	C2		10%	1206		
15	47nF 63V	Met. Polyester	4	C5, C6, C9, C10		10%	5mm Pitch Box	1117-473053E000	
16	100nF 100V	Polypropylene	2	C3, C13	CMPA104K100RB075	10%	7.5mm Pitch Box	1114-104063E000	
17	100nF 50V	Mono Ceramic	1	C8		10%	5mm Pitch	1100-104043-000	
18	47uF 16V	NP Electrolytic	2	C7, C11		20%	6mm Dia	1105-470014-000	

INTEGRATED CIRCUITS

22	Dual	Audio Op Amp	2	U1, U2	NE5532D		SOIC08		PY1162
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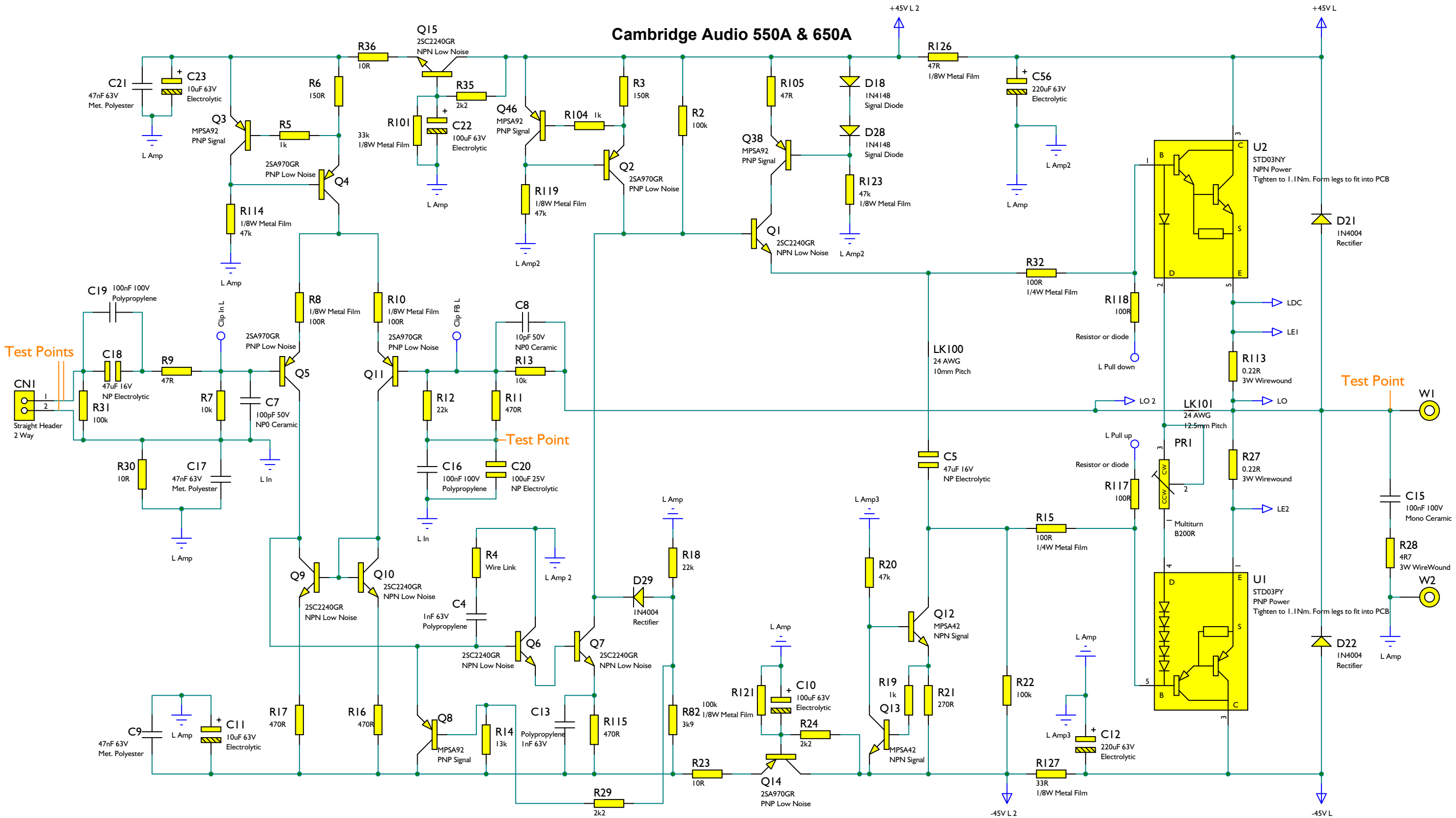
Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

Cambridge Audio 550A & 650A



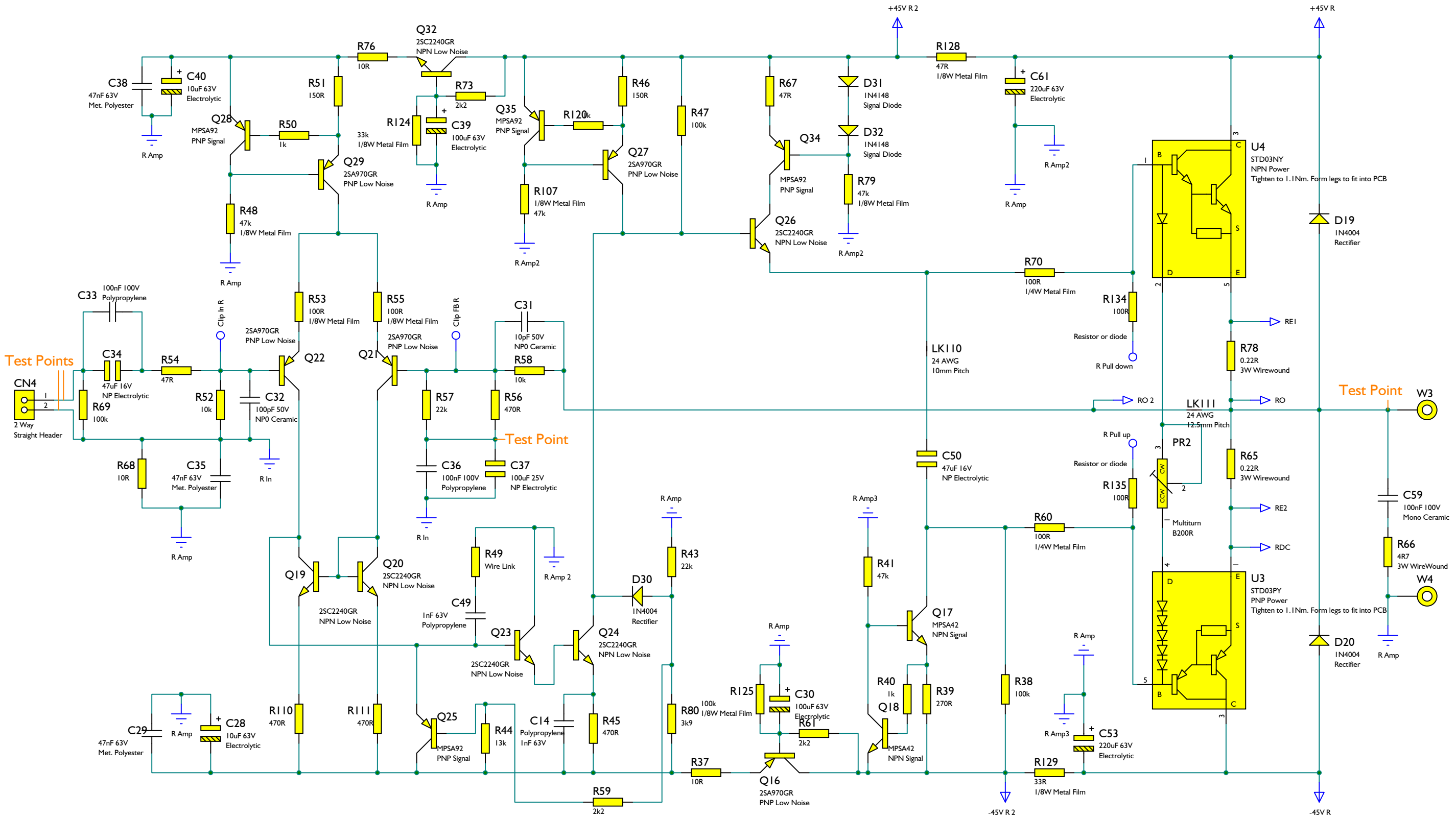
Volume PCB Layout

Cambridge Audio 550A & 650A

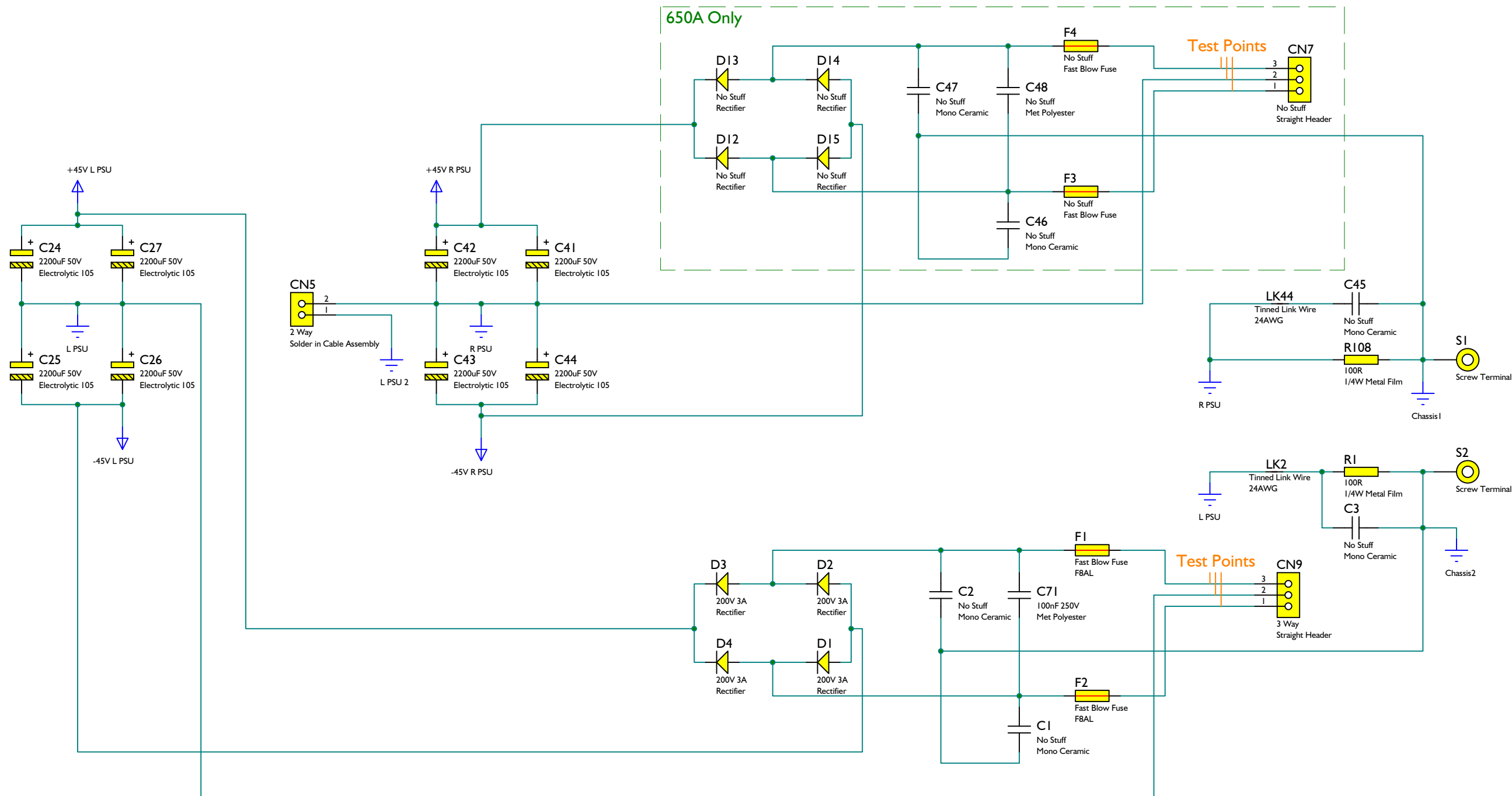


Power Amp PCB Schematic

Cambridge Audio 550A & 650A

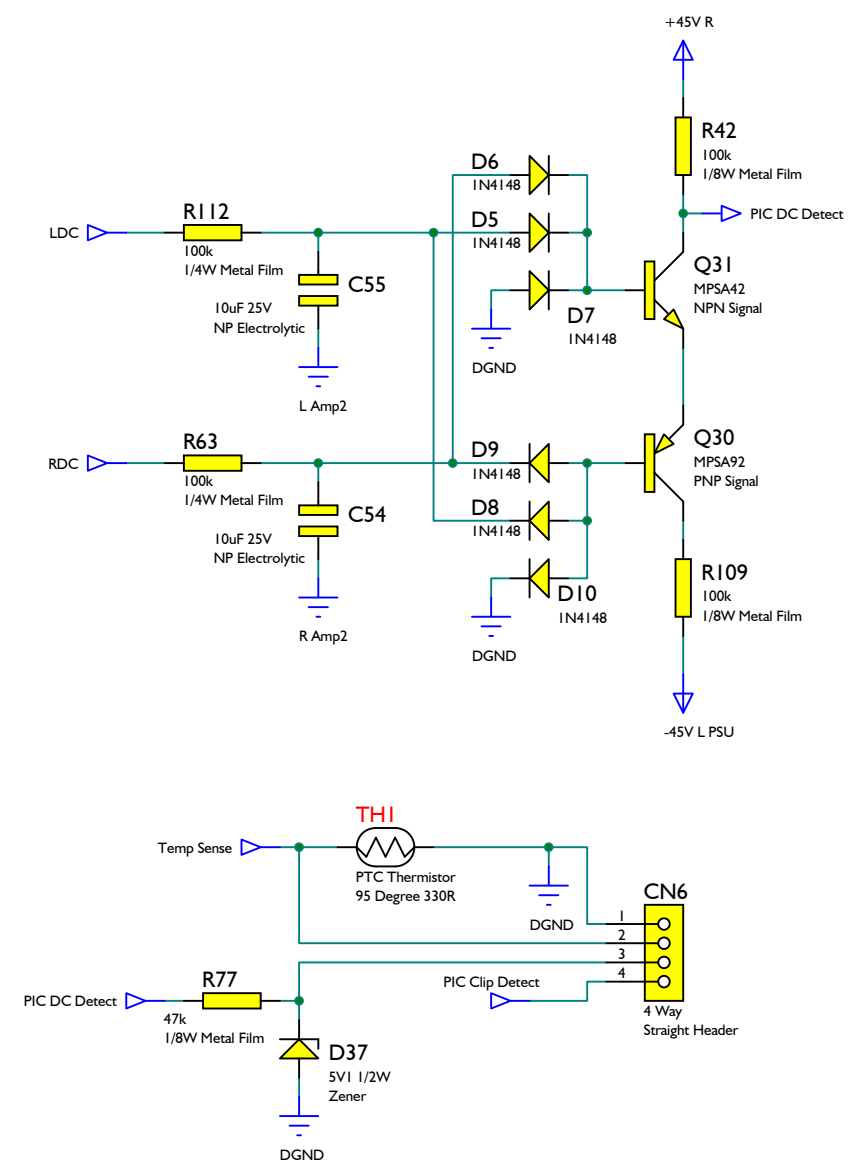
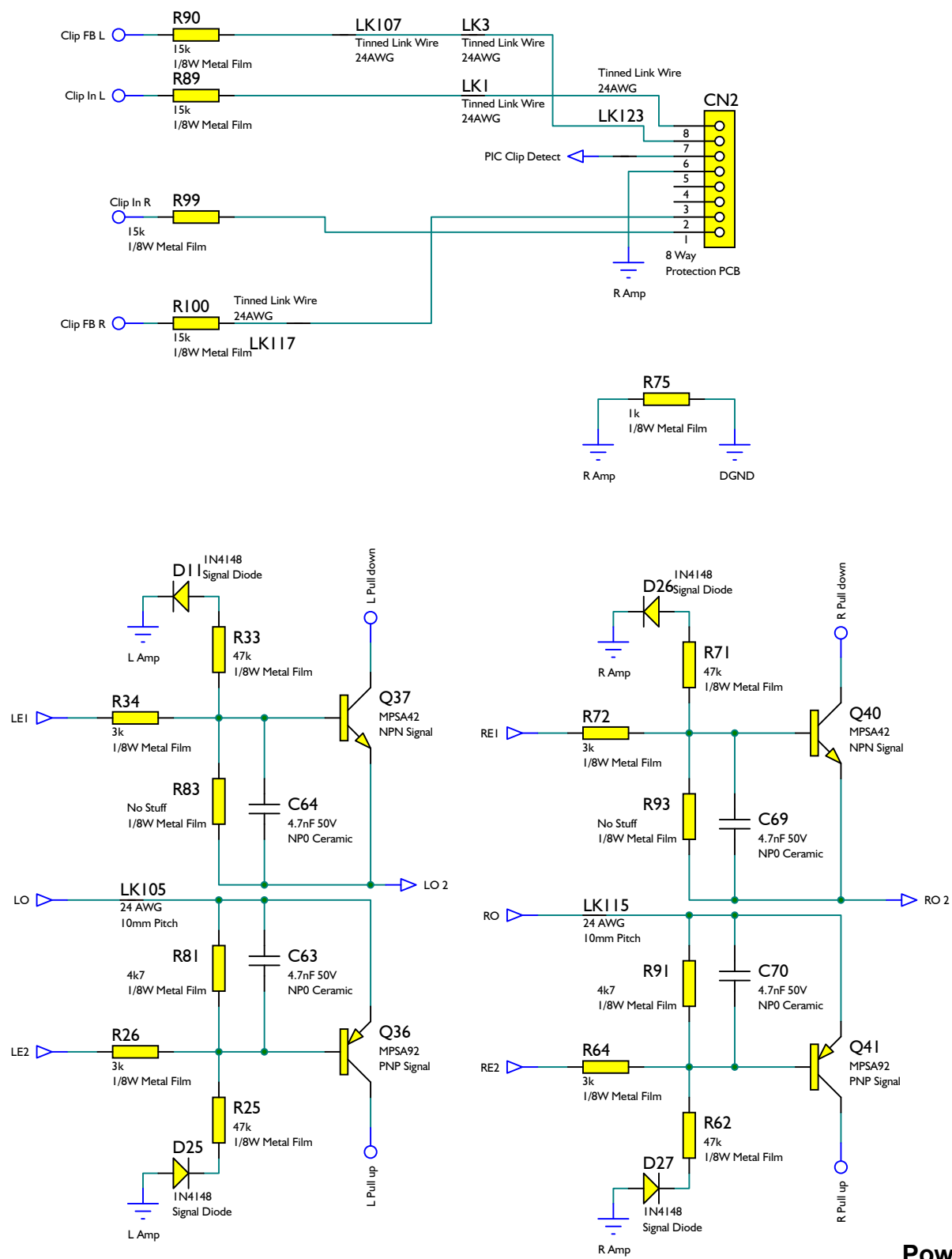


Cambridge Audio 550A & 650A



Power Amp PCB Schematic

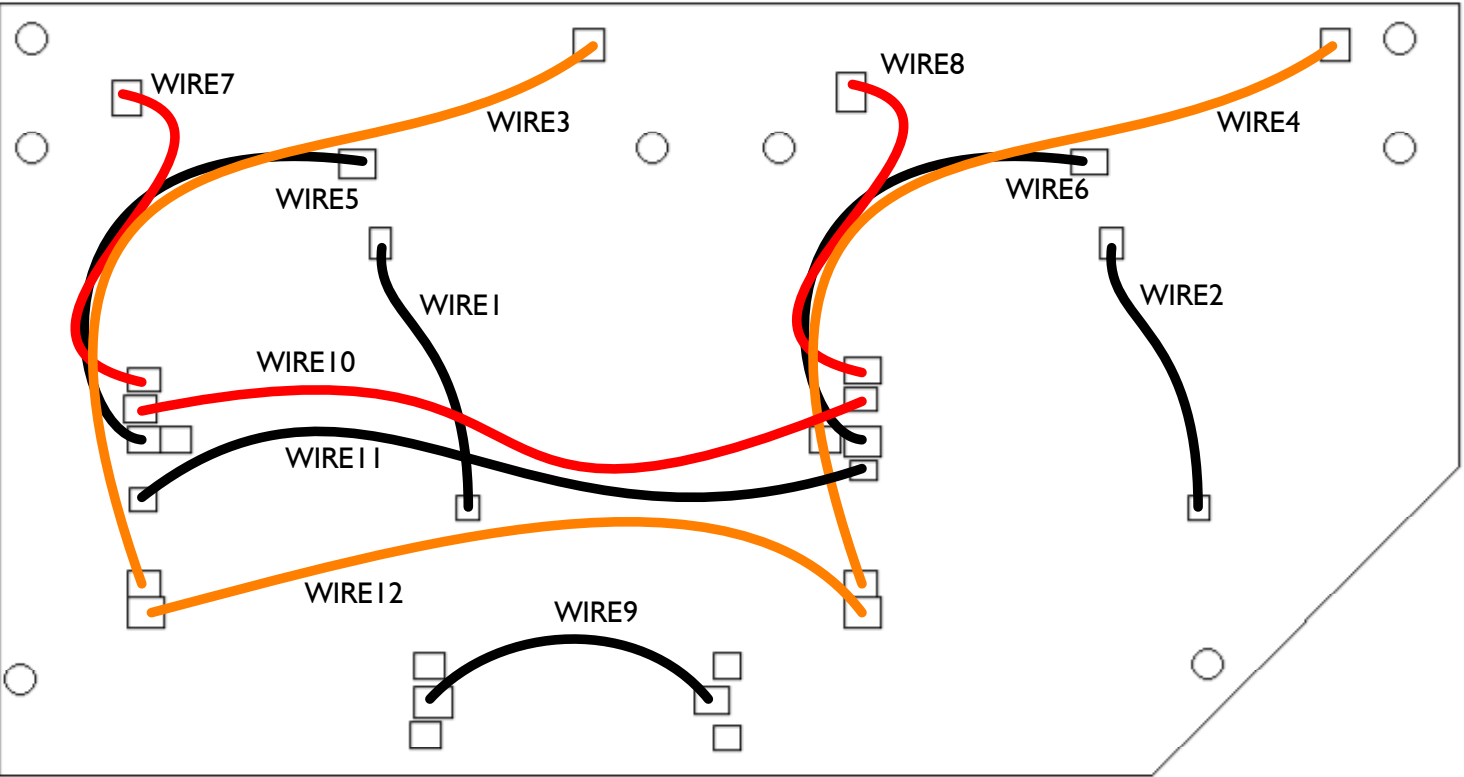
Cambridge Audio 550A & 650A



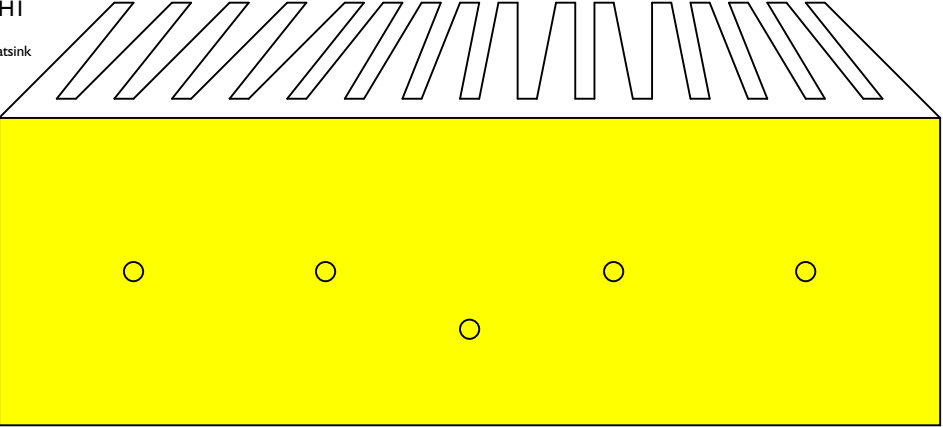
Power Amp PCB Schematic

550A Veiw from underneath

Cambridge Audio 550A & 650A



AP23069/#
550A Extruded Heatsink



BRK1
AP17507/#

BRK2
AP17507/#

BRK3
AP17507/#

BRK4
650A Power Amp PCB Spacer
AP23476/#
To be placed near CN6

INS1
Insulating strip as used on 640A V2

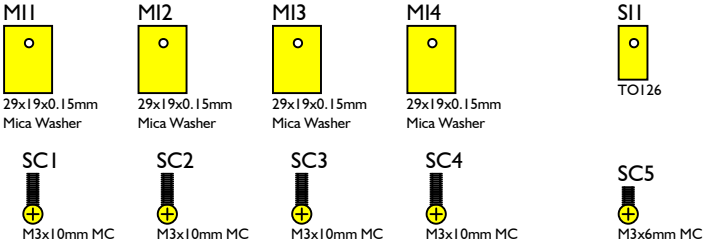
CT1 Black Cable Tie
CT2 Black Cable Tie
CT3 Black Cable Tie

CT4 Black Cable Tie
CT5 Black Cable Tie
CT6 Black Cable Tie

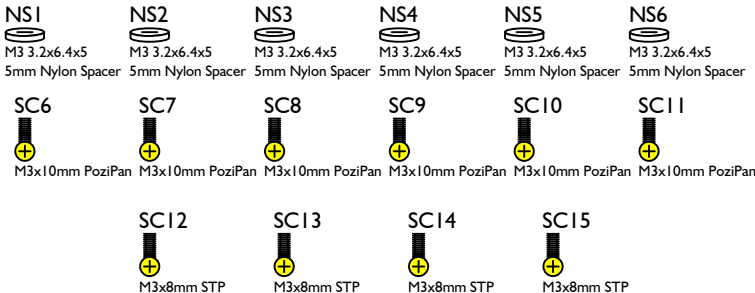
CT7 2.5mm x 100mm
Black Cable Tie

- WIRE1 30 mm Long +5mm Strip/Tin each end
18 AWG Black Insulated Wire
- WIRE2 30 mm Long +5mm Strip/Tin each end
18 AWG Black Insulated Wire
- WIRE3 120 mm Long +5mm Strip/Tin each end
18 AWG Orange Insulated Wire
- WIRE4 120 mm Long +5mm Strip/Tin each end
18 AWG Orange Insulated Wire
- WIRE5 70 mm Long +5mm Strip/Tin each end
18 AWG Black Insulated Wire
- WIRE6 70 mm Long +5mm Strip/Tin each end
18 AWG Black Insulated Wire
- WIRE7 40 mm Long +5mm Strip/Tin each end
18 AWG Red Insulated Wire
- WIRE8 40 mm Long +5mm Strip/Tin each end
18 AWG Red Insulated Wire
- WIRE9 30 mm Long +5mm Strip/Tin each end
18 AWG Black Insulated Wire
- WIRE10 95 mm Long +5mm Strip/Tin each end
18 AWG Red Insulated Wire
- WIRE11 95 mm Long +5mm Strip/Tin each end
18 AWG Black Insulated Wire
- WIRE12 100 mm Long +5mm Strip/Tin each end
18 AWG Orange Insulated Wire

Transistor pads and screws



Screws for mounting brackets



550A Power Amp PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackageInfo	Factory Part Number	AP Part Number
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RESISTORS

1	0.22R	3W Wirewound	4	R27, R65, R78, R113		5%	20mm Pitch	1072-208330E000	Raise off PCB
2	4R7	3W WireWound	2	R28, R66		5%	20mm Pitch	1074-707330E000	Raise off PCB
3	10R	1/8W Metal Film	6	R23, R30, R36, R37, R68, R76		1%	7.5mm Pitch		
4	47R	1/8W Metal Film	6	R9, R54, R67, R105, R126, R128		1%	7.5mm Pitch		
5	100R	1/4W Metal Film	6	R1, R15, R32, R60, R70, R108		1%	10mm Pitch		
6	100R	1/8W Metal Film	8	R8, R10, R53, R55, R117, R118, R134, R135		1%	7.5mm Pitch		
7	150R	1/8W Metal Film	4	R3, R6, R46, R51		1%	7.5mm Pitch		
8	270R	1/8W Metal Film	2	R21, R39		1%	7.5mm Pitch		
9	470R	1/8W Metal Film	8	R11, R16, R17, R45, R56, R110, R111, R115		1%	7.5mm Pitch		
10	Wire Link	1/8W Metal Film	2	R4, R49		1%	7.5mm Pitch		Use 24AWG wire link
11	No Stuff	1/8W Metal Film	2	R83, R93		1%	7.5mm Pitch		No Stuff
12	33R	1/8W Metal Film	2	R127, R129		1%	7.5mm Pitch		
13	1k	1/8W Metal Film	7	R5, R19, R40, R50, R75, R104, R120		1%	7.5mm Pitch		
14	2k2	1/8W Metal Film	6	R24, R29, R35, R59, R61, R73		1%	7.5mm Pitch		
15	3k	1/8W Metal Film	4	R26, R34, R64, R72		1%	7.5mm Pitch		
16	3k9	1/8W Metal Film	2	R80, R82		1%	7.5mm Pitch		
17	4k7	1/8W Metal Film	2	R81, R91		1%	7.5mm Pitch		
18	10k	1/8W Metal Film	2	R7, R52		1%	7.5mm Pitch		
19	10k	1/4W Metal Film	2	R13, R58		1%	10mm Pitch		
20	13k	1/8W Metal Film	2	R14, R44		1%	7.5mm Pitch		
21	15k	1/8W Metal Film	4	R89, R90, R99, R100		1%	7.5mm Pitch		
22	22k	1/8W Metal Film	2	R12, R57		1%	7.5mm Pitch		
23	22k	1/4W Metal Film	2	R18, R43		1%	10mm Pitch		
24	33k	1/8W Metal Film	2	R101, R124		1%	7.5mm Pitch		
25	47k	1/8W Metal Film	13	R20, R25, R33, R41, R48, R62, R71, R77, R79, R107, R114, R119, R123		1%	7.5mm Pitch		
26	100k	1/8W Metal Film	10	R2, R22, R31, R38, R42, R47, R69, R109, R121, R125		1%	7.5mm Pitch		
27	100k	1/4W Metal Film	2	R63, R112		1%	10mm Pitch		

RESISTORS VARIABLE

28	B200R	Multiturn	2	PR1, PR2	WI3296NOX0X-WA2-019	10%	Top Adjust	1062-001412E000	
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CAPACITORS

29	No Stuff	Mono Ceramic	6	C1-C3, C45-C47		10%	5mm Pitch	1106-104064-001	No Stuff
30	No Stuff	Met Polyester	1	C48	CMEB104M250Rxxxx	20%	5mm Pitch Box		No Stuff

Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

31	10pF 50V	NP0 Ceramic	2	C8, C31		5%	2.5mm Pitch	1181-100042-000	
32	100pF 50V	NP0 Ceramic	2	C7, C32		5%	2.5mm Pitch	1181-101042-000	
33	1nF 63V	Polypropylene	4	C4, C13, C14, C49		5%	5mm Pitch Box	1114-102052E000	
34	4.7nF 50V	NP0 Ceramic	4	C63, C64, C69, C70		10%	2.5mm Pitch		
35	47nF 63V	Met. Polyester	6	C9, C17, C21, C29, C35, C38		10%	5mm Pitch Box	1117-473053E000	
36	100nF 100V	Mono Ceramic	2	C15, C59		10%	5mm Pitch	1106-104064-001	
37	100nF 100V	Polypropylene	4	C16, C19, C33, C36	CMPA104K100RB075	10%	7.5mm Pitch Box	1114-104063E000	
38	100nF 250V	Met Polyester	1	C71	CMEB104M250Rxxxx	20%	5mm Pitch Box		
39	10uF 63V	Electrolytic	4	C11, C23, C28, C40		20%	5mm Dia	1102-100054-000	Rated to 105 degrees
40	10uF 25V	NP Electrolytic	2	C54, C55		20%	5mm Dia	1105-100024-000	Rated to 105 degrees
41	47uF 16V	NP Electrolytic	4	C5, C18, C34, C50		20%	6mm Dia	1105-470014-000	Rated to 105 degrees
42	100uF 63V	Electrolytic	4	C10, C22, C30, C39		20%	8mm Dia	1102-101054-000	Rated to 105 degrees
43	100uF 25V	NP Electrolytic	2	C20, C37		20%	8mm Dia	1105-101024-000	Rated to 105 degrees
44	220uF 63V	Electrolytic	4	C12, C53, C56, C61		20%	10mm Dia		Rated to 105 degrees
45	2200uF 50V	Electrolytic 105	8	C24-C27, C41-C44		20%	16m Dia		Screened for CA

DIODES									
52	200V 3A	Rectifier	4	D1-D4	1N5402		DO27	1401-154020-000	Raise off PCB
53	75V 150mA	Signal Diode	14	D5-D11, D18, D25-D28, D31, D32	1N4148		D035	1401-141480-000	
54	No Stuff	Rectifier	4	D12-D15	1N5402		DO27		No Stuff
55	400V 1A	Rectifier	6	D19-D22, D29, D30	1N4004		DO41	1401-140040-000	
56	5V1 1/2W	Zener	1	D37	BZX55C5V1		DO35	1402-511201E200	

FUSES									
57	F8AL	Fast Blow Fuse	2	F1, F2			20mm		
58		Fuse Holder Base	2	F1, F2	PTF78 (or equivalent)	20mm Pitch	4031-780000E000		
59		Fuse Holder Cover	2	F1, F2	PTF78 (or equivalent)	20mm Pitch	4034-780000E000		
60	No Stuff	Fast Blow Fuse	2	F3, F4			20mm		No Stuff
61		Fuse Holder Base	2	F3, F4	PTF78 (or equivalent)	20mm Pitch	4031-780000E000		
62		Fuse Holder Cover	2	F3, F4	PTF78 (or equivalent)	20mm Pitch	4034-780000E000		

INTEGRATED CIRCUITS									
63	-160V 15A	PNP Power	2	U1, U3	STD03PY		STD03P		PY1606
64	160V 15A	NPN Power	2	U2, U4	STD03NY		STD03N		PY1605

TRANSISTORS									
65	120V 100mA	NPN Low Noise	8	Q1, Q6, Q7, Q15, Q23, Q24, Q26, Q32	2SC2240GR		TO92	1300-224000E100	PY910
66	-120V -100mA	PNP Low Noise	6	Q2, Q4, Q14, Q16, Q27, Q29	2SA970GR		TO92	1301-970000-100	PF147
67	-300V -500mA	PNP Signal	11	Q3, Q8, Q25, Q28, Q30, Q34-Q36, Q38, Q41, Q46	MPSA92		TO92	1301-920000-100	PY220
68	-120V -100mA	PNP Low Noise	4	Q5, Q11, Q21, Q22	2SA970GR		TO92	1301-970000-100	PF147
69	120V 100mA	NPN Low Noise	4	Q9, Q10, Q19, Q20	2SC2240GR		TO92	1300-224000E100	PY910
70	300V 500mA	NPN Signal	7	Q12, Q13, Q17, Q18, Q31, Q37, Q40	MPSA42		TO92	1300-420000-100	PY537

Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

650A Power Amp PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackageInfo	Yanion P/N	NOTES
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RESISTORS

1	0.22R	3W Wirewound	4	R27, R65, R78, R113		5%	20mm Pitch	1072-208330E000	Raise off PCB
2	4R7	3W WireWound	2	R28, R66		5%	20mm Pitch	1074-707330E000	Raise off PCB
3	10R	1/8W Metal Film	4	R23, R36, R37, R76		1%	7.5mm Pitch		
4	47R	1/8W Metal Film	6	R9, R54, R67, R105, R126, R128		1%	7.5mm Pitch		
5	100R	1/4W Metal Film	6	R1, R15, R32, R60, R70, R108		1%	10mm Pitch		
6	100R	1/8W Metal Film	8	R8, R10, R53, R55, R117, R118, R134, R135		1%	7.5mm Pitch		
7	150R	1/8W Metal Film	4	R3, R6, R46, R51		1%	7.5mm Pitch		
8	270R	1/8W Metal Film	2	R21, R39		1%	7.5mm Pitch		
9	470R	1/8W Metal Film	8	R11, R16, R17, R45, R56, R110, R111, R115		1%	7.5mm Pitch		
10	Wire Link	1/8W Metal Film	4	R4, R30, R49, R68		1%	7.5mm Pitch		Use 24AWG wire link
11	No Stuff	1/8W Metal Film	2	R83, R93		1%	7.5mm Pitch		No Stuff
12	33R	1/8W Metal Film	2	R127, R129		1%	7.5mm Pitch		
13	1k	1/8W Metal Film	7	R5, R19, R40, R50, R75, R104, R120		1%	7.5mm Pitch		
14	2k2	1/8W Metal Film	6	R24, R29, R35, R59, R61, R73		1%	7.5mm Pitch		
15	3k	1/8W Metal Film	4	R26, R34, R64, R72		1%	7.5mm Pitch		
16	3k9	1/8W Metal Film	2	R80, R82		1%	7.5mm Pitch		
17	4k7	1/8W Metal Film	2	R81, R91		1%	7.5mm Pitch		
18	10k	1/8W Metal Film	2	R7, R52		1%	7.5mm Pitch		
19	10k	1/4W Metal Film	2	R13, R58		1%	10mm Pitch		
20	13k	1/8W Metal Film	2	R14, R44		1%	7.5mm Pitch		
21	15k	1/8W Metal Film	4	R89, R90, R99, R100		1%	7.5mm Pitch		
22	22k	1/8W Metal Film	2	R12, R57		1%	7.5mm Pitch		
23	22k	1/4W Metal Film	2	R18, R43		1%	10mm Pitch		
24	33k	1/8W Metal Film	2	R101, R124		1%	7.5mm Pitch		
25	47k	1/8W Metal Film	13	R20, R25, R33, R41, R48, R62, R71, R77, R79, R107, R114, R119, R123		1%	7.5mm Pitch		
26	100k	1/8W Metal Film	10	R2, R22, R31, R38, R42, R47, R69, R109, R121, R125		1%	7.5mm Pitch		
27	100k	1/4W Metal Film	2	R63, R112		1%	10mm Pitch		

RESISTORS VARIABLE

28	B200R	Multiturn	2	PR1, PR2	WI3296NOX0X-WA2-019	10%	Top Adjust	1062-001412E000	Bourns Equivalent
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CAPACITORS

29	No Stuff	Mono Ceramic	6	C1-C3, C45-C47		10%	5mm Pitch	1106-104064-001	No Stuff
30	No Stuff	Met. Polyester	2	C17, C35		10%	5mm Pitch Box		No Stuff
31	10pF 50V	NP0 Ceramic	2	C8, C31		5%	2.5mm Pitch	1181-100042-000	

Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

650A Power Amp PCB BOM

32	100pF 50V	NP0 Ceramic	2	C7, C32		5%	2.5mm Pitch	1181-101042-000	
33	1nF 63V	Polypropylene	4	C4, C13, C14, C49		5%	5mm Pitch Box	1114-102052E000	
34	4.7nF 50V	NP0 Ceramic	4	C63, C64, C69, C70		10%	2.5mm Pitch		
35	47nF 63V	Met. Polyester	4	C9, C21, C29, C38		10%	5mm Pitch Box	1117-473053E000	
36	100nF 100V	Mono Ceramic	2	C15, C59		10%	5mm Pitch	1106-104064-001	
37	100nF 100V	Polypropylene	4	C16, C19, C33, C36	CMPA104K100RB075	10%	7.5mm Pitch Box	1114-104063E000	
38	100nF 250V	Met Polyester	2	C48, C71	CMEB104M250Rxxxx	20%	5mm Pitch Box		
39	10uF 63V	Electrolytic	4	C11, C23, C28, C40		20%	5mm Dia	1102-100054-000	Rated to 105 degrees
40	10uF 25V	NP Electrolytic	2	C54, C55		20%	5mm Dia	1105-100024-000	Rated to 105 degrees
41	47uF 16V	NP Electrolytic	4	C5, C18, C34, C50		20%	6mm Dia	1105-470014-000	Rated to 105 degrees
42	100uF 63V	Electrolytic	4	C10, C22, C30, C39		20%	8mm Dia	1102-101054-000	Rated to 105 degrees
43	100uF 25V	NP Electrolytic	2	C20, C37		20%	8mm Dia	1105-101024-000	Rated to 105 degrees
44	220uF 63V	Electrolytic	4	C12, C53, C56, C61		20%	10mm Dia		Rated to 105 degrees
45	2200uF 63V	Electrolytic 105	8	C24-C27, C41-C44		20%	16m Dia		Screened for CA.

CONNECTORS

46	2 Way	Straight Header	2	CN1, CN4	B2B-XH-A		2.5mm Pitch	2300-002100-003	
47	8 Way	Protection PCB	1	CN2					
48	No Stuff	Solder in Cable Assembly	1	CN5	N/A		2mm Pitch		No Stuff
49	4 Way	Straight Header	1	CN6	B4B-XH-A		2.5mm Pitch	2300-004100-004	
50	3 Way *	Straight Header	1	CN7	B3P-VH		3.96mm Pitch	2300-003400-001	650A Only
51	3 Way	Straight Header	1	CN9	B3P-VH		3.96mm Pitch	2300-003400-001	

DIODES

52	200V 3A	Rectifier	8	D1-D4, D12-D15	1N5402		DO27	1401-154020-000	Raise off PCB
53	75V 150mA	Signal Diode	14	D5-D11, D18, D25-D28, D31, D32	1N4148		D035	1401-141480-000	
54	400V 1A	Rectifier	6	D19-D22, D29, D30	1N4004		DO41	1401-140040-000	
55	5V1 1/2W	Zener	1	D37	BZX55C5V1		DO35	1402-511201E200	

FUSES

56	F8AL	Fast Blow Fuse	4	F1-F4			20mm		
57		Fuse Holder Base	4	F1-F4	PTF78 (or equivalent)	20mm Pitch	4031-780000E000	(alt. Camden YN:4031-140000E000)	
58		Fuse Holder Cover	4	F1-F4	PTF78 (or equivalent)	20mm Pitch	4034-780000E000	(alt. Camden YN:4034-140000E000)	

INTEGRATED CIRCUITS

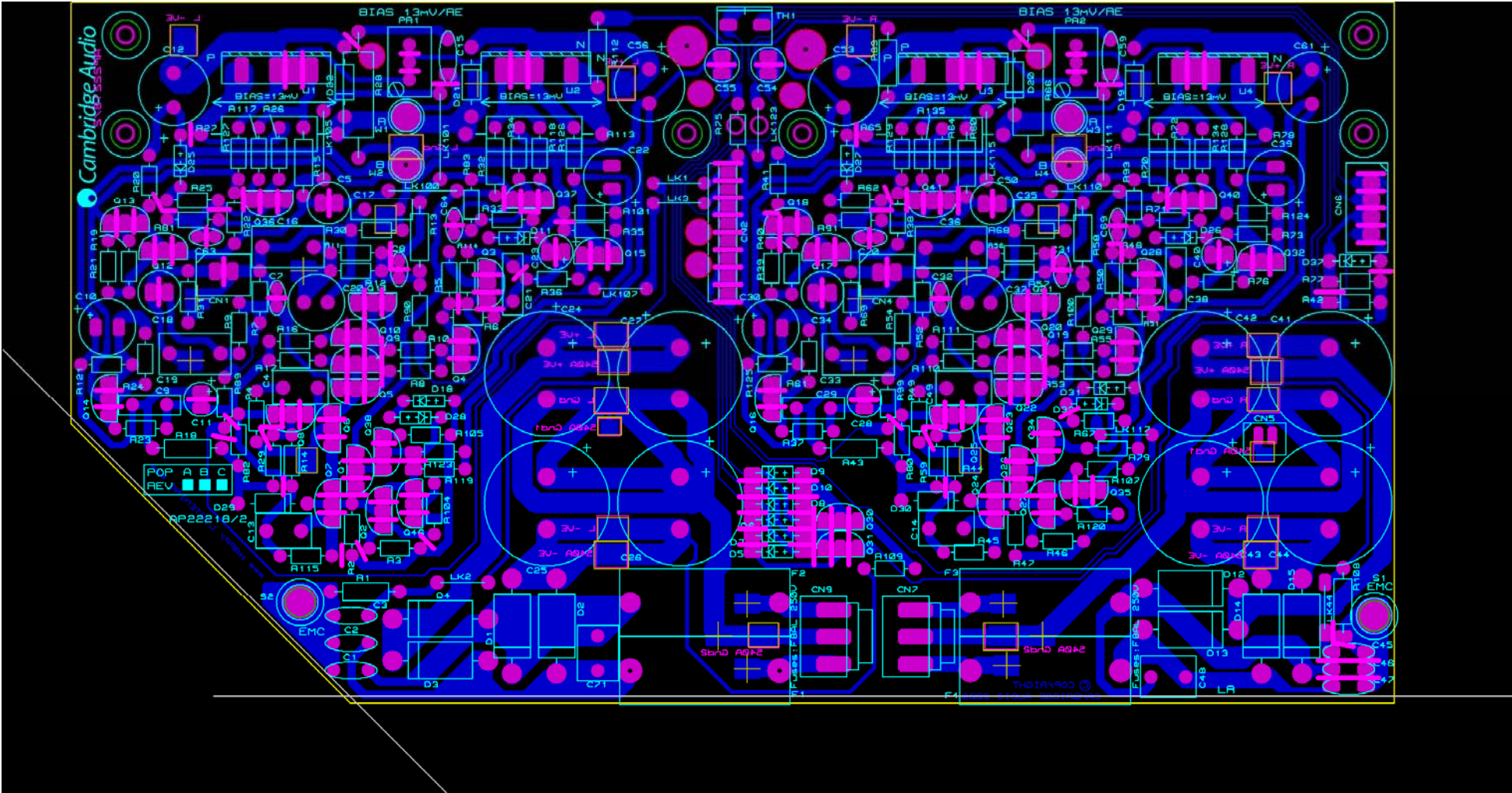
59	-160V 15A	PNP Power	2	U1, U3	STD03PY		STD03P		Tighten to 1.1Nm. Form legs to fit into PCB
60	160V 15A	NPN Power	2	U2, U4	STD03NY		STD03N		Tighten to 1.1Nm. Form legs to fit into PCB

TRANSISTORS

61	120V 100mA	NPN Low Noise	8	Q1, Q6, Q7, Q15, Q23, Q24, Q26, Q32	2SC2240GR		TO92	1300-224000E100	
62	-120V -100mA	PNP Low Noise	6	Q2, Q4, Q14, Q16, Q27, Q29	2SA970GR		TO92	1301-970000-100	
63	-300V -500mA	PNP Signal	11	Q3, Q8, Q25, Q28, Q30, Q34-Q36, Q38, Q41, Q46	MPSA92		TO92	1301-920000-100	
64	-120V -100mA	PNP Low Noise	4	Q5, Q11, Q21, Q22	2SA970GR		TO92	1301-970000-100	Match HFE to within 5% for Q5 & Q11, Q21 & Q22

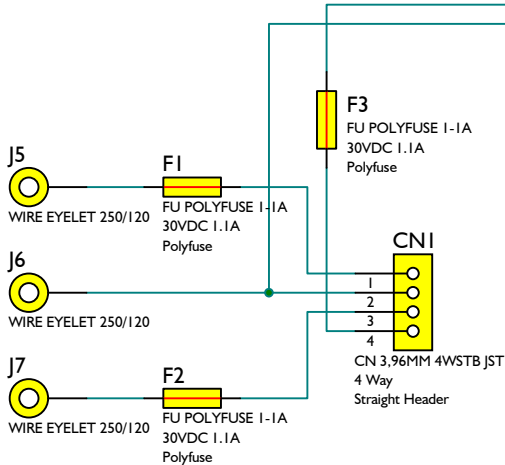
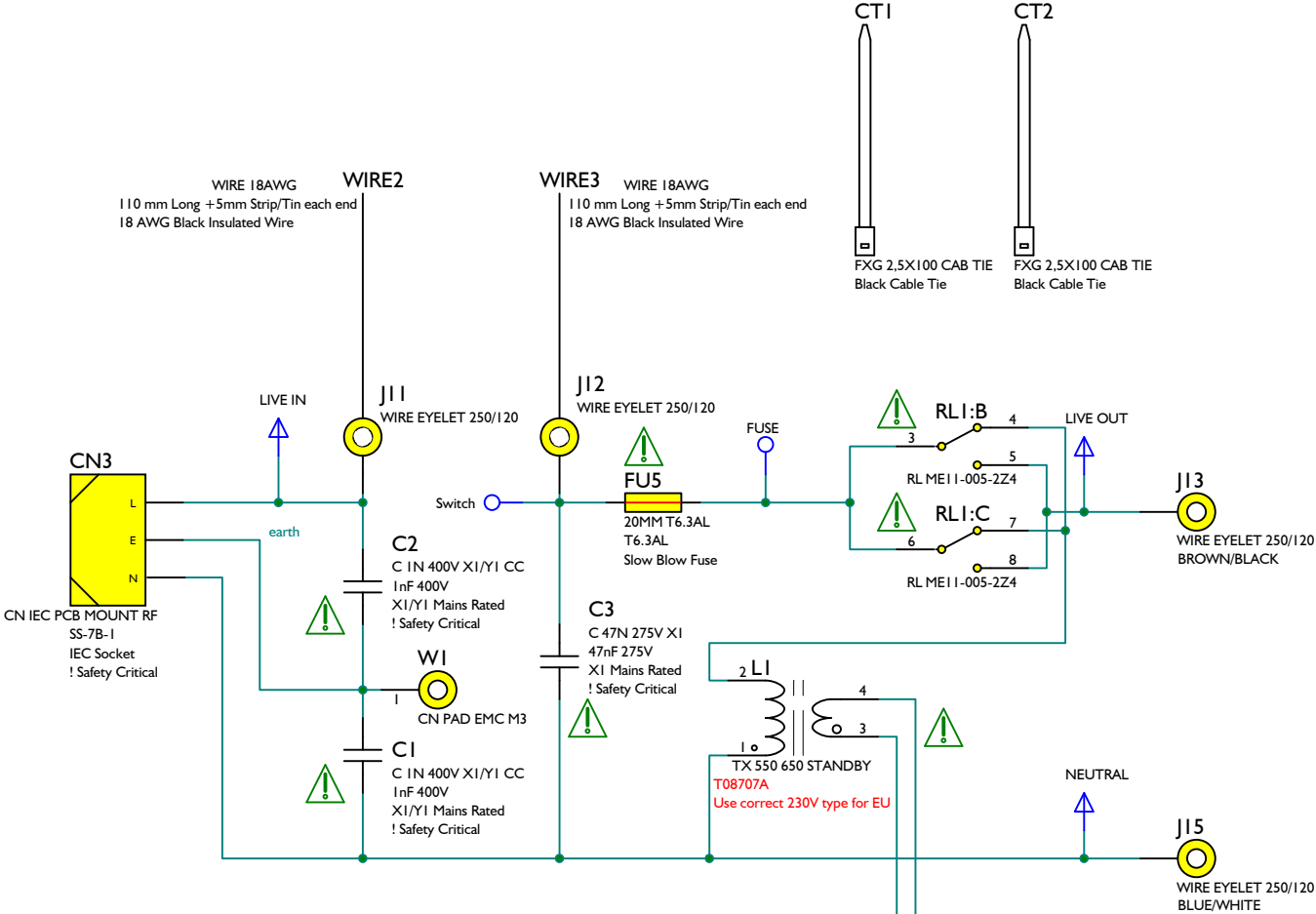
Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

Cambridge Audio 550A & 650A

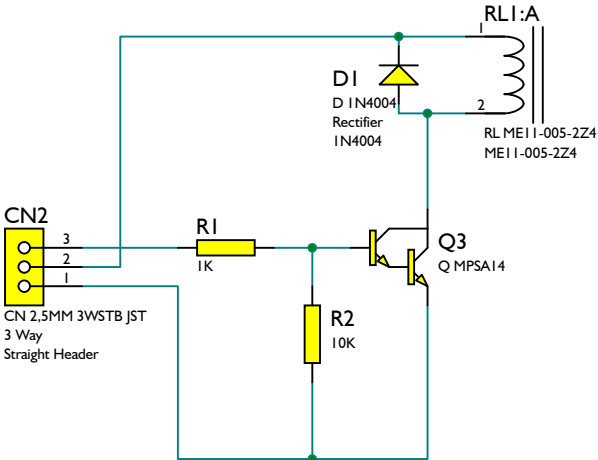


AMP Layout

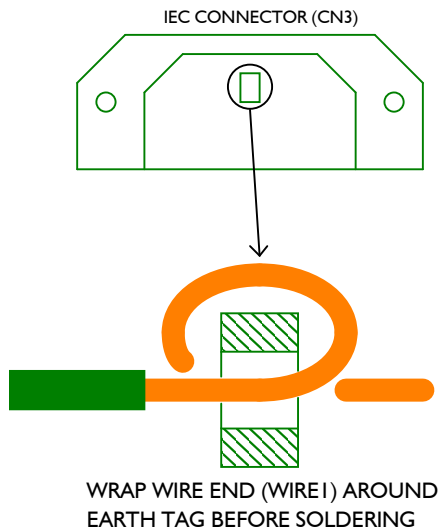
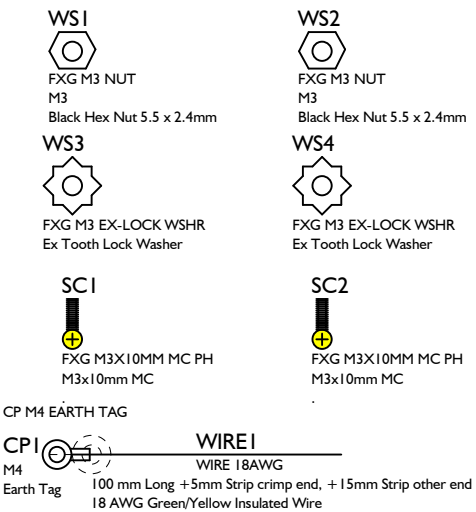
Cambridge Audio 550A & 650A



EU 230V Mains PCB Schematic



Fixings for IEC Connector (CN3)



550A 650A EU 230V Mains PCB BOM

Value	Description/Type	Qty	Component Ident	ManPN	Tolerance	PackagelInfo	Factory Part Numer	AP Part Number
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RESISTORS

1	1K	1/8W Metal Film	1	R1		1%	7.5mm Pitch		
2	10K	1/8W Metal Film	1	R2		1%	7.5mm Pitch		

CAPACITORS

3	1nF 400V	X1/Y1 Mains Rated	2	C1, C2	CCDE102MBV09	20%	9.5mm Pitch	1119-102104-000	
4	47nF 275V	X2 Mains Rated	1	C3		20%	15mm Pitch		

CONNECTORS

5	4 Way	Straight Header	1	CN1	B4P-VH		3.96mm Pitch		
6	3 Way	Straight Header	1	CN2	B3B-XH-A		2.5mm Pitch	2300-003100-004	
7	3 Pin	IEC Socket	1	CN3	SS-7B-1		PCB Mount	2336-003910-002	

DIODES

8	400V 1A	Rectifier	1	D1	1N4004		DO41	1401-140040-000	
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FUSES

9	30VDC 1.1A	Polyfuse	3	F1-F3			5mm Pitch	4030-301100-001	
10	T6.3AL	Slow Blow Fuse	1	FU5			20mm	4030-632500-000	
11		Fuse Holder Base	1	FU5	PTF78 (or equivalent)	20mm Pitch	4031-780000E000	(alt. Camden YN:4031-140000E000)	
12		Fuse Holder Cover	1	FU5	PTF78 (or equivalent)	20mm Pitch	4034-780000E000	(alt. Camden YN:4034-140000E000)	

INDUCTORS

13	Standby Transformer	Standby Transformer	1	L1	T08707A		PCB Mount		Use correct 230V type for EU
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RELAY

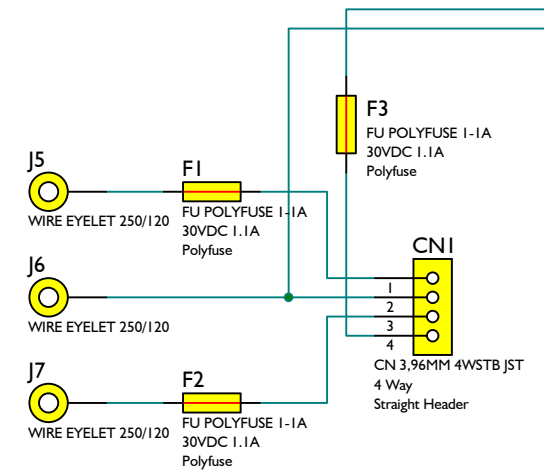
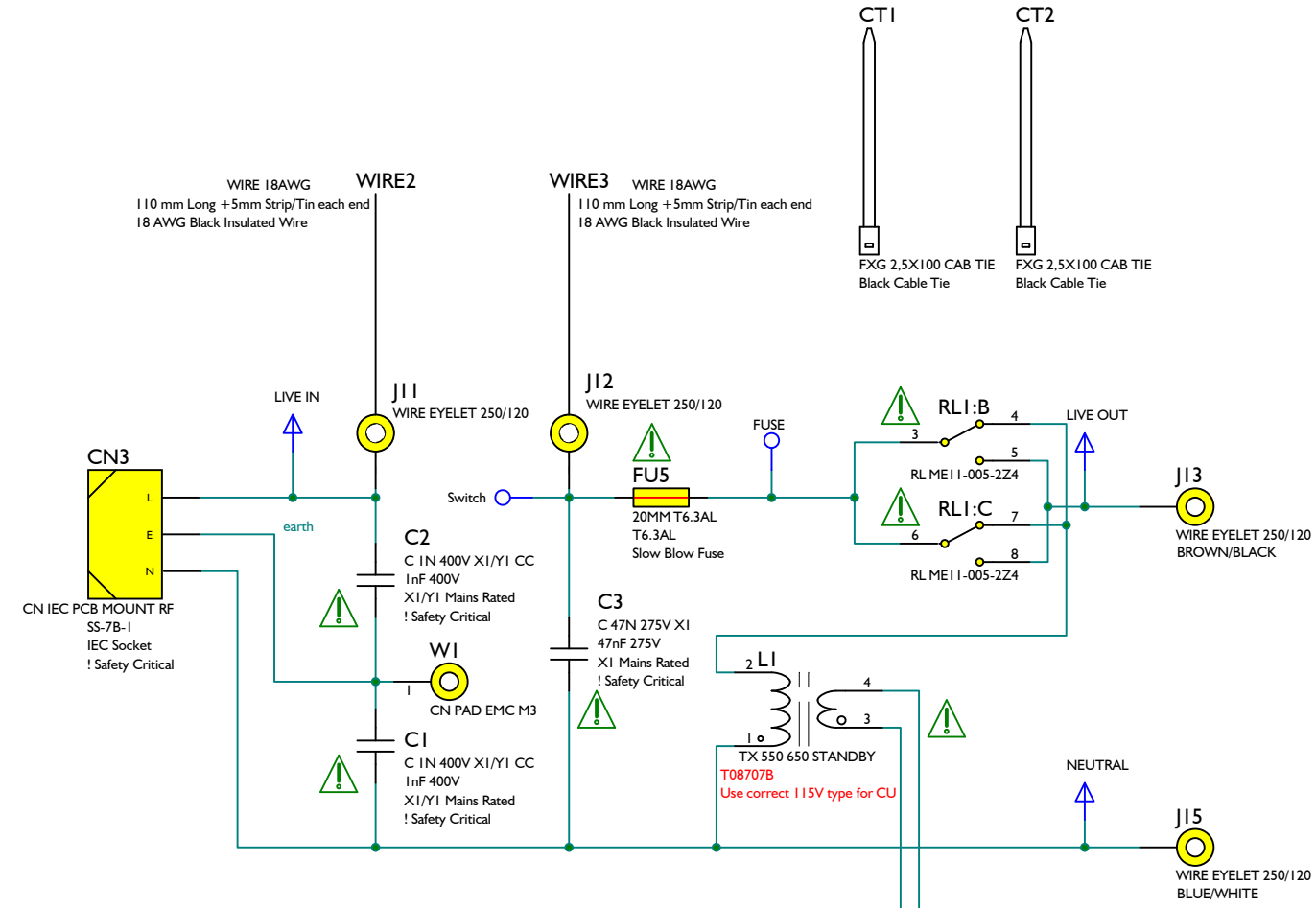
14	5V 8A	2P2T Relay	1	RL1	ME11-005-2Z4		Through Hole		PY1607
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TRANSISTORS

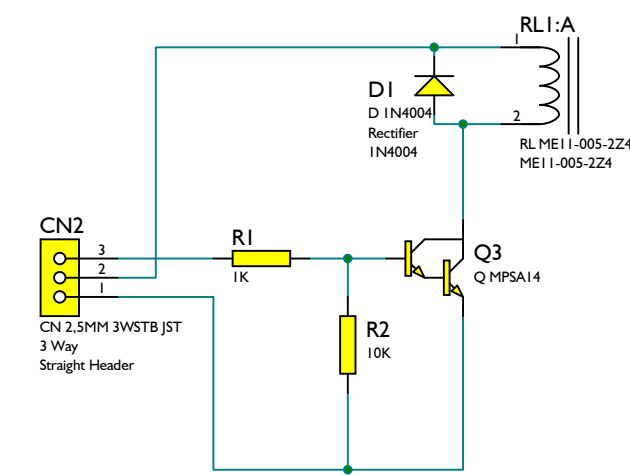
15	30V 500mA	NPN Darlington	1	Q3	MPSA14		TO92	1300-140000-100	PY1211
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Note: resistors, capacitors and other 'generic' components are not usually stocked by the manufacturer. Please obtain these locally.

Cambridge Audio 550A & 650A



115V Mains PCB Schematic



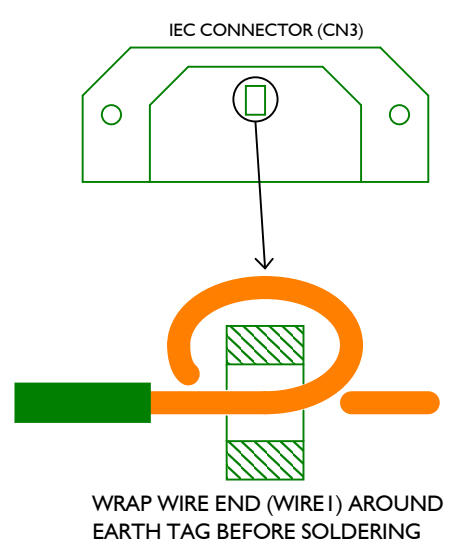
Fixings for IEC Connector (CN3)

WS1 FXG M3 NUT M3 Black Hex Nut 5.5 x 2.4mm	WS2 FXG M3 NUT M3 Black Hex Nut 5.5 x 2.4mm
WS3 FXG M3 EX-LOCK WSHR Ex Tooth Lock Washer	WS4 FXG M3 EX-LOCK WSHR Ex Tooth Lock Washer
SC1 FXG M3X10MM MC PH M3x10mm MC	SC2 FXG M3X10MM MC PH M3x10mm MC

CP M4 EARTH TAG

CP1
M4
Earth Tag

WIRE1
WIRE 18AWG
100 mm Long +5mm Strip crimp end, +15mm Strip other end
18 AWG Green/Yellow Insulated Wire



550A 650A Mains CU 115V PCB BOM

Value	Description/Type	Qty	Component Ident	Manufacturer	ManPN	Tolerance	PackageInfo	Yanion P/N	NOTES
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RESISTORS

1	1K	1/8W Metal Film	1	R1			1%	7.5mm Pitch		
2	10K	1/8W Metal Film	1	R2			1%	7.5mm Pitch		

CAPACITORS

3	1nF 400V	X1/Y1 Mains Rated	2	C1, C2	C & C Capacitors	CCDE102MBV09	20%	9.5mm Pitch	1119-102104-000	
4	47nF 275V	X2 Mains Rated	1	C3	Captop Elec Ltd		20%	15mm Pitch		

CONNECTORS

5	4 Way	Straight Header	1	CN1	JST	B4P-VH		3.96mm Pitch		
6	3 Way	Straight Header	1	CN2	JST	B3B-XH-A		2.5mm Pitch	2300-003100-004	
7	3 Pin	IEC Socket	1	CN3	Rong Feng	SS-7B-1		PCB Mount	2336-003910-002	

DIODES

8	400V 1A	Rectifier	1	D1		1N4004		DO41	1401-140040-000	
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FUSES

9	30VDC 1.1A	Polyfuse	3	F1-F3				5mm Pitch	4030-301100-001	
10	T6.3AL	Slow Blow Fuse	1	FU5				20mm	4030-632500-000	
11		Fuse Holder Base	1	FU5	Pioneer Tech	PTF78 (or equivalent)	20mm Pitch	4031-780000E000	(alt. Camden YN:4031-140000E000)	
12		Fuse Holder Cover	1	FU5	Pioneer Tech	PTF78 (or equivalent)	20mm Pitch	4034-780000E000	(alt. Camden YN:4034-140000E000)	

INDUCTORS

13	Standby Transformer	Standby Transformer	1	L1	Wah Hing	T08707B		PCB Mount		Use correct 115V type for CU
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RELAY

14	5V 8A	2P2T Relay	1	RL1	Massuse	ME11-005-2Z4		Through Hole		
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TRANSISTORS

15	30V 500mA	NPN Darlington	1	Q3	On Semi	MPSA14		TO92	1300-140000-100	
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WIRE TERMINALS

16		Pressed Eyelet	7	J5-J7, J11-J13, J15					
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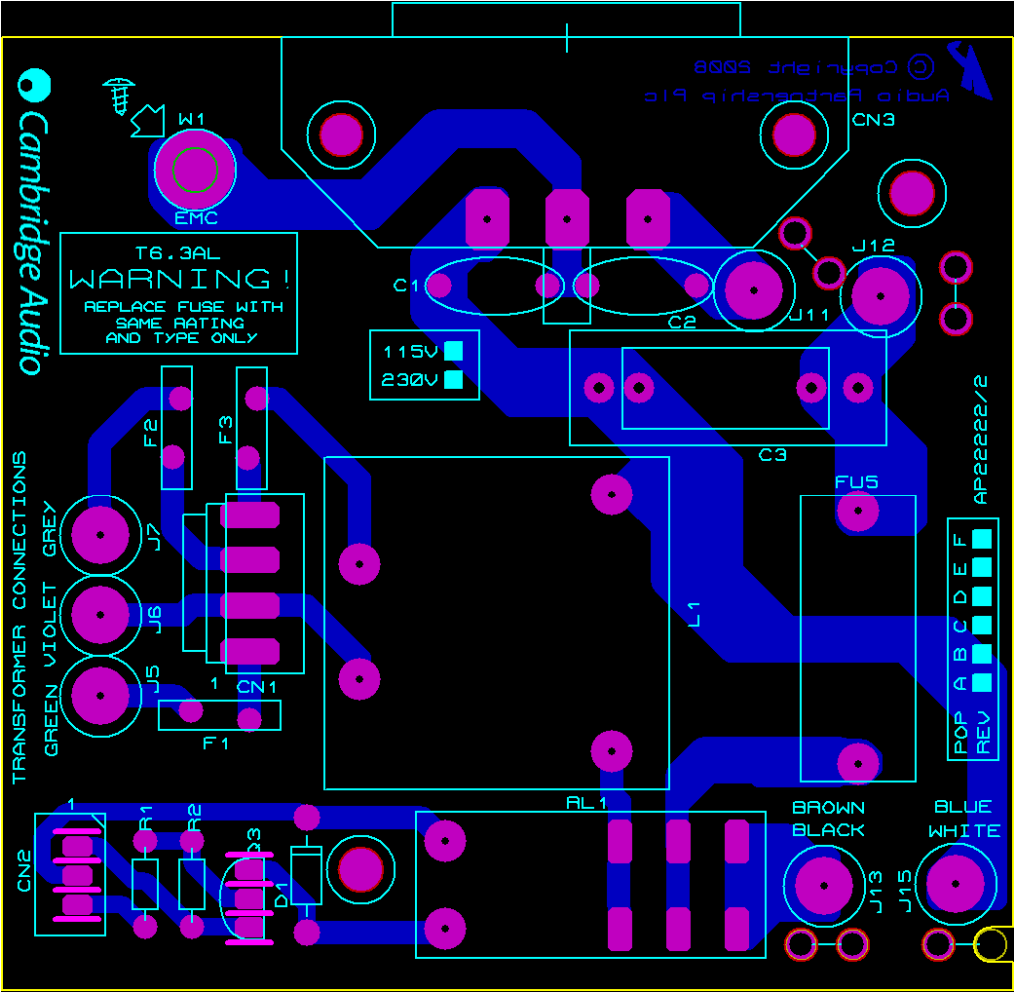
MISCELLANEOUS

17	M4	Earth Tag	1	CP1						To be crimped to the Earth Wire
18	2.5mm x 100mm	Black Cable Tie	2	CT1, CT2					9114-000000-002	
19	M3x10mm MC	P/H Black Screw	2	SC1, SC2						
20	100 mm Long +5mm Strip crimp end, +15mm Strip other end	18 AWG Green/Yellow Insulated Wire	1	WIRE1			+/-1mm			Loop 15mm wire round IEC socket tab before soldering
21	110 mm Long +5mm Strip/Tin each end	18 AWG Black Insulated Wire	1	WIRE2			+/-1mm			Solder into J11 and cable tie to PCB
22	110 mm Long +5mm Strip/Tin each end	18 AWG Black Insulated Wire	1	WIRE3			+/-1mm			Solder into J12 and cable tie to PCB
23	M3	Black Hex Nut 5.5 x 2.4mm	2	WS1, WS2					6600-120030E001	
24	M3	Ex Tooth Lock Washer	2	WS3, WS4					7103-206504-082	

PCE

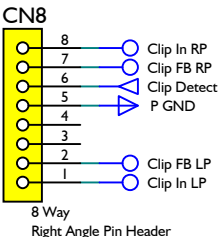
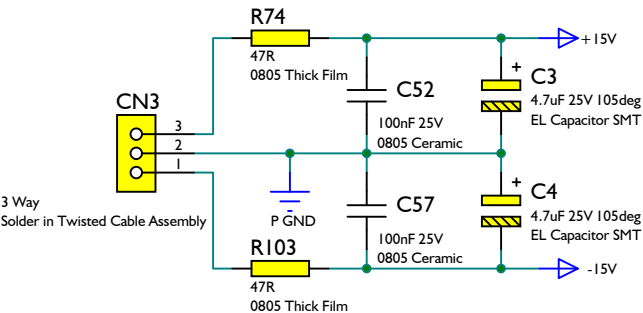
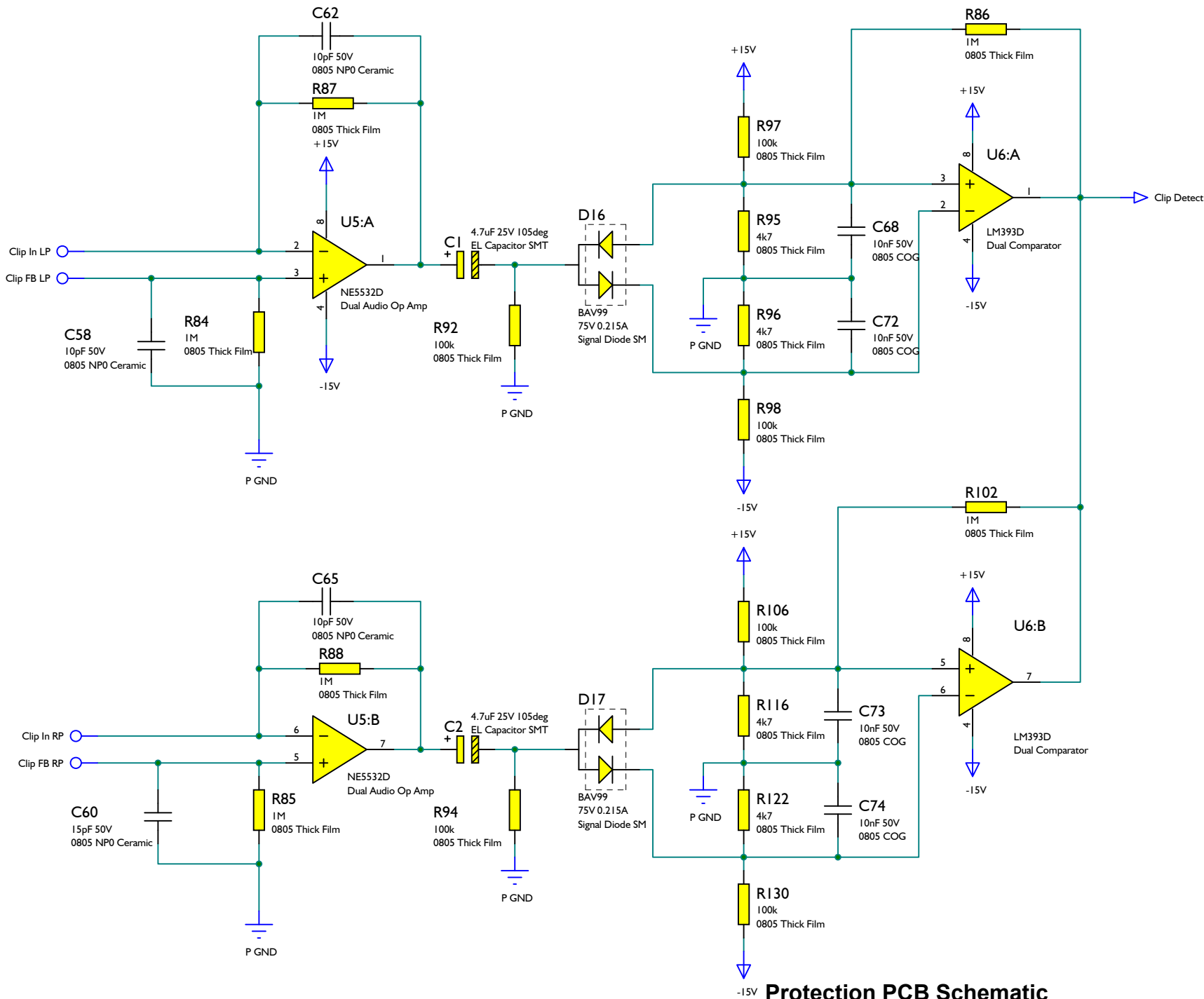
25			<u>AP Numbers</u> Schematic is AP24107/2 Gerber is AP22222/2 Construction details AP22223/2 Test Procedure N/A
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Cambridge Audio 550A & 650A



Mains PCB Layout

Cambridge Audio 550A & 650A



Protection PCB Schematic

550A/650A Protection PCB BOM

Value	Description/Type	Qty	Component Ident	Manufacturer	ManPN	Tolerance	PackageInfo	Yanion P/N	NOTES
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RESISTORS

1	47R	0805 Thick Film	2	R74, R103			1%	805		
2	4k7	0805 Thick Film	4	R95, R96, R116, R122			1%	805		
3	100k	0805 Thick Film	6	R92, R94, R97, R98, R106, R130			1%	805		
4	1M	0805 Thick Film	6	R84-R88, R102			1%	805		

CAPACITORS

5	10pF 50V	0805 NP0 Ceramic	3	C58, C62, C65			5%	805		
6	15pF 50V	0805 NP0 Ceramic	1	C60			5%	805		
7	10nF 50V	0805 COG	4	C68, C72-C74			5%	805		
8	100nF 25V	0805 Ceramic	2	C52, C57			10%	805		
9	4.7uF 25V 105deg	EL Capacitor SMT	4	C1-C4			10%	SMT 4mm dia (Case B)		Must be 105deg and 4mm dia

CONNECTORS

10	3 Way	Solder in Twisted Cable Assembly	1	CN3		AP23892/2		2mm Pitch		Solder Cable assembly into CN3 footprint
11	8 Way	Right Angle Pin Header	1	CN8	NS Tech	201R-1*8P(F)			2370-008110E000	Solder to CN8 on Protection PCB

DIODES

12	75V 0.215A	Signal Diode SM	2	D16, D17		BAV99		SOT23		
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INTEGRATED CIRCUITS

13	Dual	Dual Audio Op Amp	1	U5	TI	NE5532D		SOIC08		Solder on copper side of Protection PCB
14	Low Offset	Dual Comparator	1	U6	ST	LM393D		SO8		Solder on copper side of Protection PCB

PCB

15			AP Numbers Schematic is AP24573/3 Gerber is AP24574/1 Construction details AP24575/1 Test Procedure AP24095/#							
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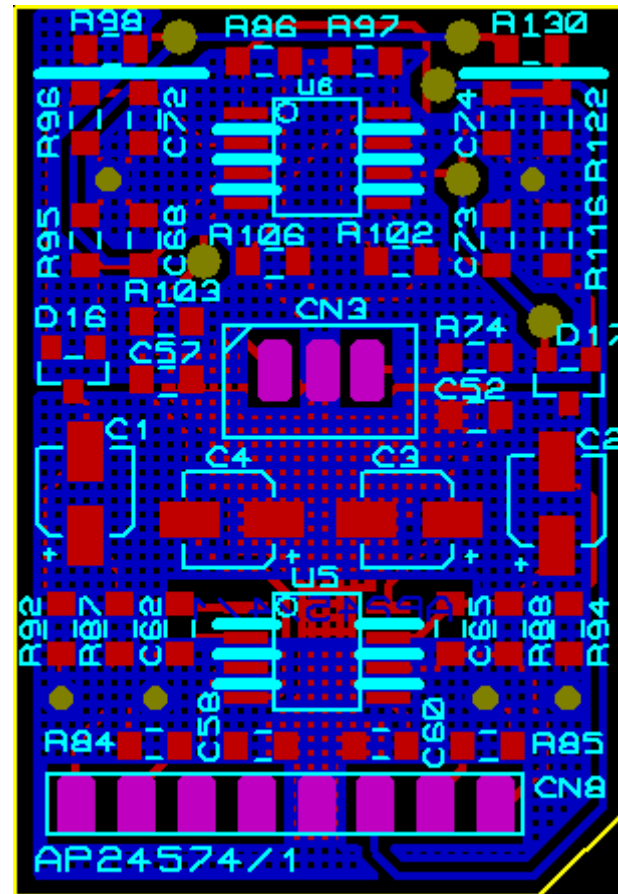
NOTES:

Note1: Please ensure all components are ROHS compliant!

REVISION HISTORY:

04.08.2008	Issue 1	First Issue
19.08.2008	Issue 2	C1-4 changed to 4.7uF, 25V, 105deg, 4mm pitch C60 changed from 10pF to 15pF 0805 ceramic
23.09.2008	Issue 3	CN3 JST changed to cable assembly

Cambridge Audio 550A & 650A



Protection PCB Layout

Cambridge Audio 550A & 650A

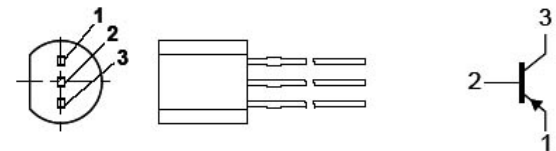
Set-up Procedure

When replacing the STD03NY and STD03PY (U1 – U4) output devices, adjust PR1/PR2 to achieve 13mV (+/- 1mV) DC with no signal applied, measured across each of the 0.22R emitter resistors.

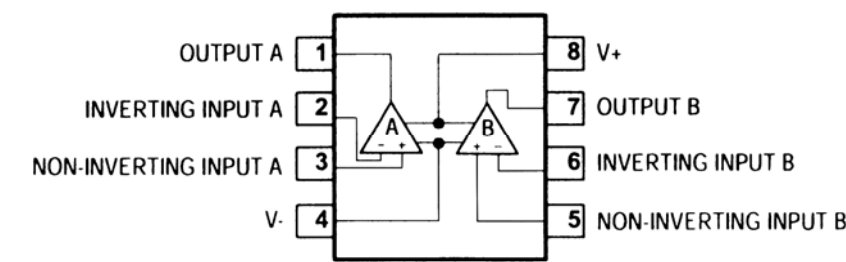
IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

Input PCB

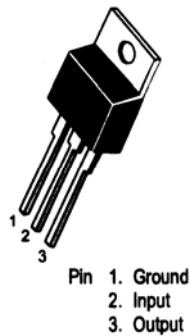
BC327 (Q1)



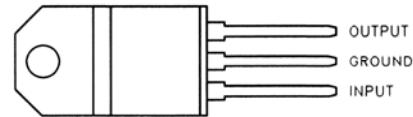
NE5532 (U4, U7, U8, U9, U10, U11 & U12)



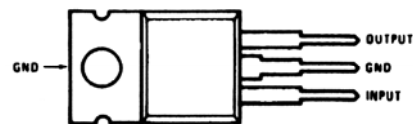
7915 (U1)



7805 (U3)

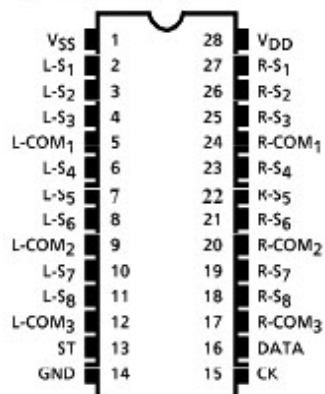


7815 (U2)

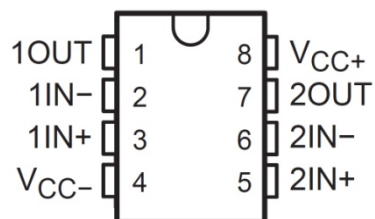


IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

TC9163AF (U5)

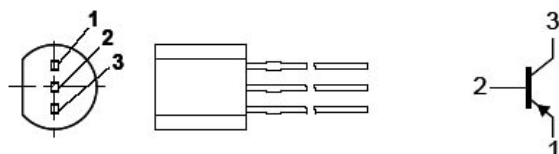


RC4580P (U6)

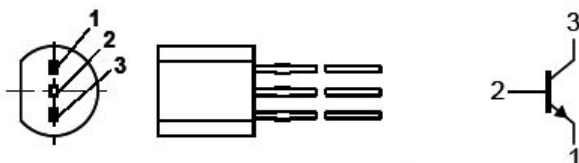


Preamp PCB

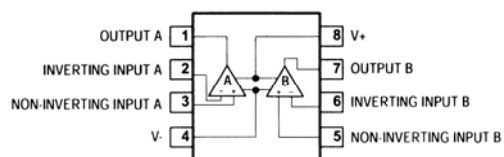
BC327 (Q2)



BC337 (Q3)

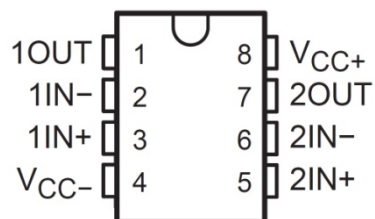


NE5532 (U3, U4, U5 & U6)

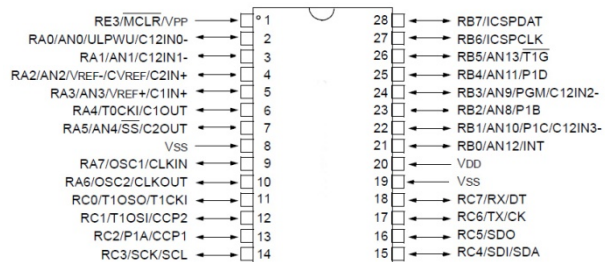


IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

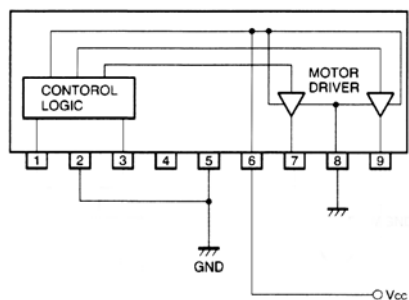
RC4580P (U1 & U2)



PIC16F882 (U7)

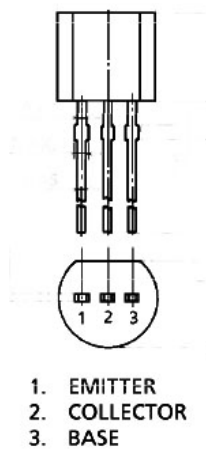


BA6218 (U8)



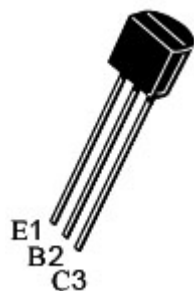
Power Amp PCB

2SC2240GR (Q1, Q6, Q7, Q9, Q10, Q15, Q19, Q20, Q23, Q24, Q26 & Q32)

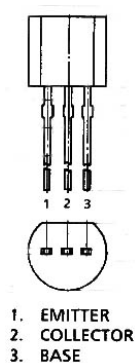


IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

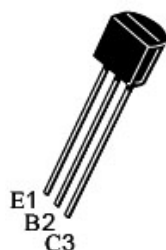
MPSA92 (Q3, Q8, Q25, Q28, Q29 (650A ONLY) Q30, Q34, Q35, Q36, Q38, Q41 & Q46)



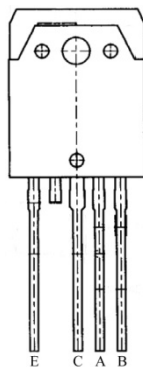
2SA970GR (Q2, Q4, Q5, Q11, Q14, Q16, Q21, Q22, Q27 & Q29)



MPSA42 (Q12, Q13, Q17, Q18, Q31, Q37 & Q40)

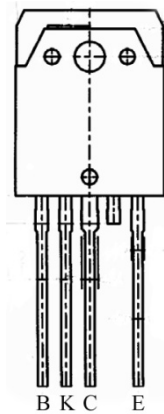


STD03PY (U1 & U3)



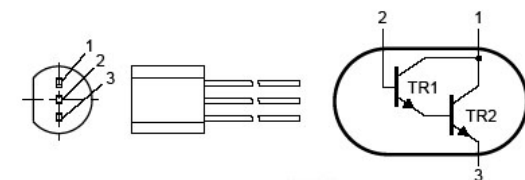
IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

STD03NY (U2 & U4)



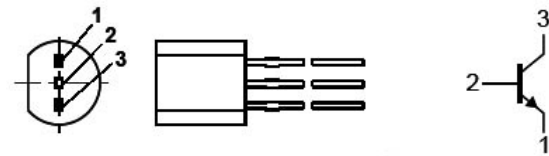
Mains PCB

MPSA14 (Q3)

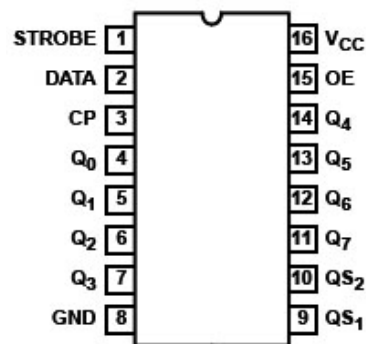


Front Panel PCB

BC337 (Q1)

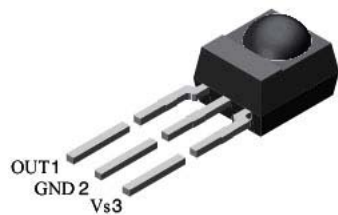


M74HC4094B1R (U2)



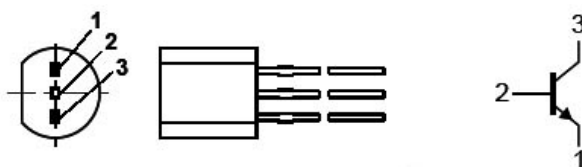
IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

TSOP34836 (U1)

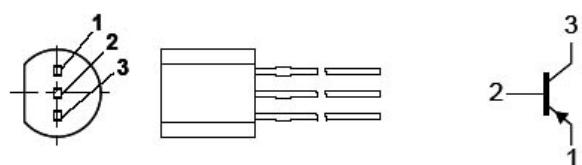


Speaker PCB

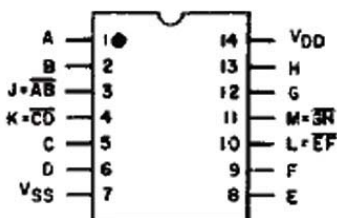
BC337 (Q1)



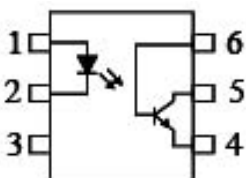
BC327 (Q4)



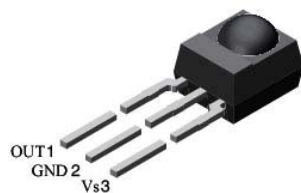
CD4011BE (U1)



OP4N25 (U2)

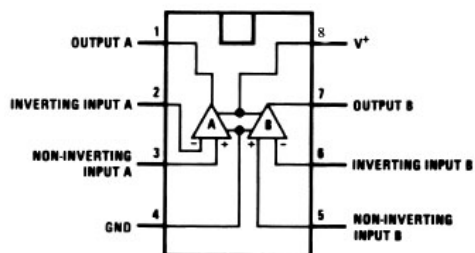


TSOP34836 (U3)

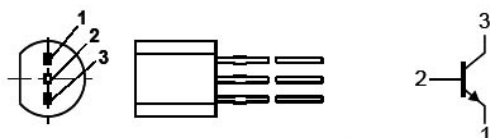


IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

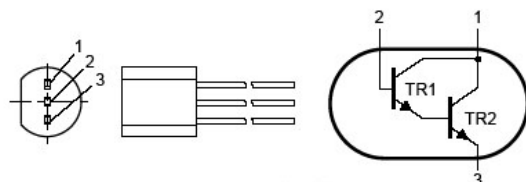
LM393AP (U4)



BC337 (Q1)

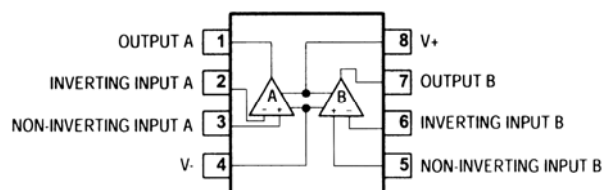


MPSA14 (Q2 & Q3)



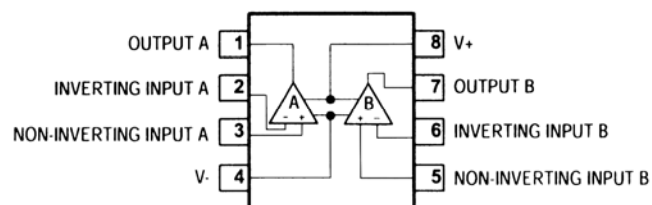
Volume PCB

NE5532D (U1 & U2)



Protection PCB

NE5532D (U5)



IC Pin Layouts for the Cambridge Audio Azur 550A/650A Amplifier

LM393D (U6)

