Power Supply Board Assembly

Wall of Sound.ca DIY all tube phono preamp project

Tools required:

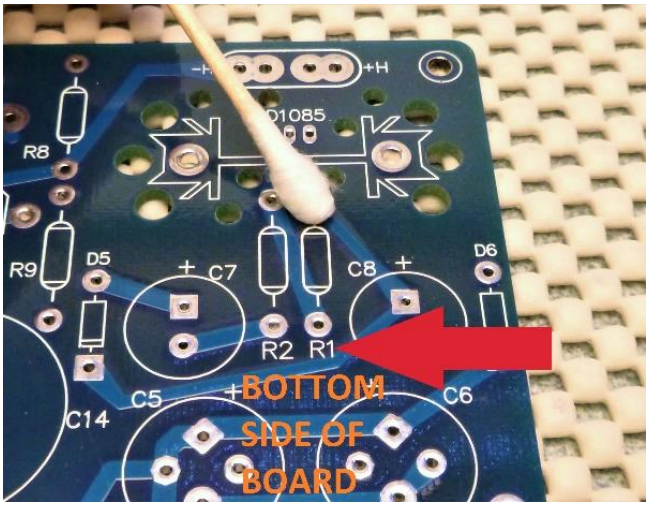
Same as previous board assemblies

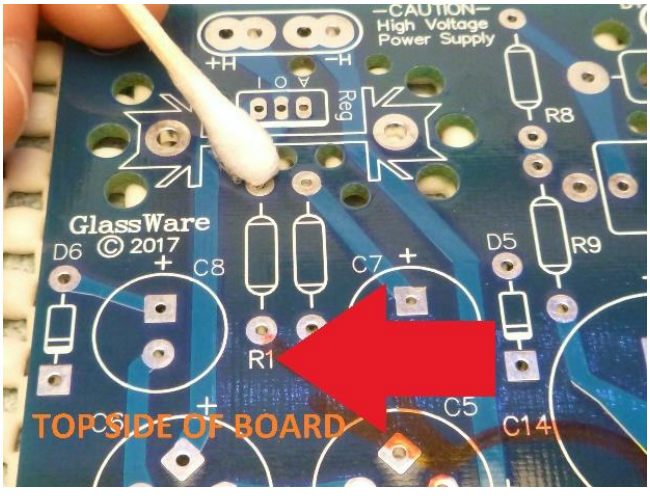
A 100 watt soldering iron, though not essential, does make soldering the heatsink to the board easier.

Power supply board assembly:

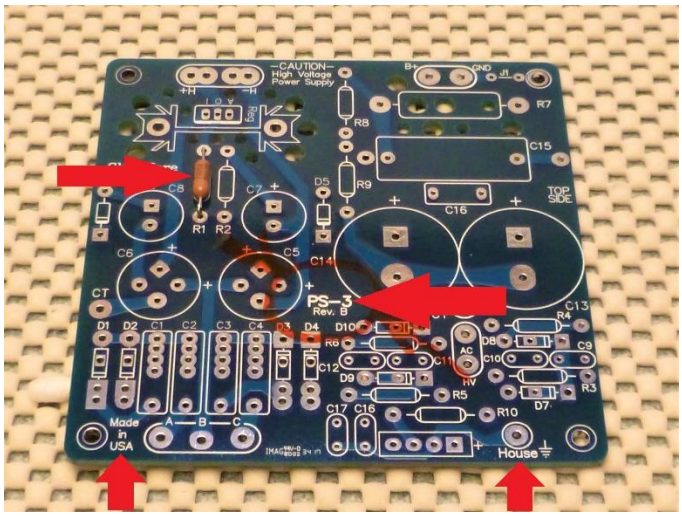
All parts go on the top side of the board. We'll put one part on very carefully to ensure we start off right.

Wipe the **R1** pads on both sides of the board with an alcohol moistedend Q-Tip as shown below.





Place the board on your bench as shown below. The circled **PS-3** should still be there from the chassis layout performed earlier. The **Made in USA** should be on the lower left and **House** on the right. Assemble R1 to the board, solder both sides and trim the leads.



A few clarifications with regards to the manual:

- On page 14 just below the schematic is the text, *"**Chassis Ground** Use jumper J1 to ground the chassis to the PCB ground."* We will **not** be using jumper J1. The newer version of the PS-3 board has a "House Ground" circuit. We will be using this circuit to connect to the chassis ground.

- Both the filament and high voltage supplies will employ Full-Wave Bridge rectification. All four rectifier diodes on each supply, 8 total, will need to be assembled to the board. See schematics at the top of page 14 and the middle of page 15.

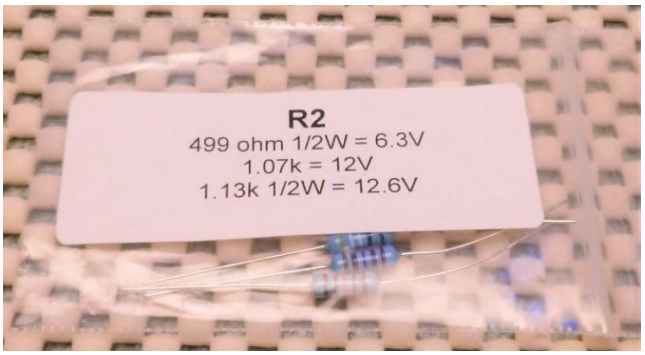
- The board itself has three a few mislabellings. On the top side there are two C16 and on the bottom three C16. The diagram on page 20 of the manual shows the correct labelling. In any event, we'll deal with these as we assemble the parts to the board.

Wipe both sides of the board with an alcohol dampened paper towel.

When I did an inventory of the parts received versus the parts list in the manual I found that R10, a 10 ohm 1 watt, resistor was missing. I had others to hand but it goes to show that before ordering the parts from Mouser, you should check the kits.

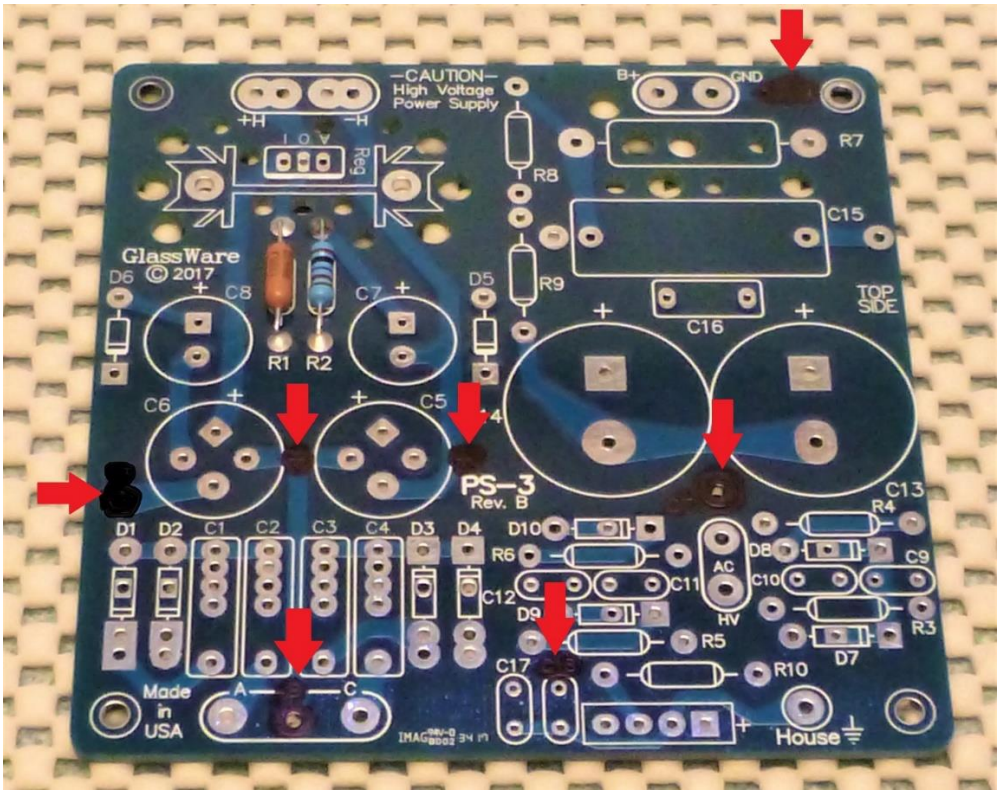
The board has some parts packed in fairly tightly. Follow the order given below for the easiest soldering.

The selection of R2 will set the filament voltage. By slightly under-running the voltage, at 12, volts instead of the rated 12.6, the tubes will still perform well but last longer. Select the 1.07K resistor from the R2 bag. Assemble to the board, solder and trim.

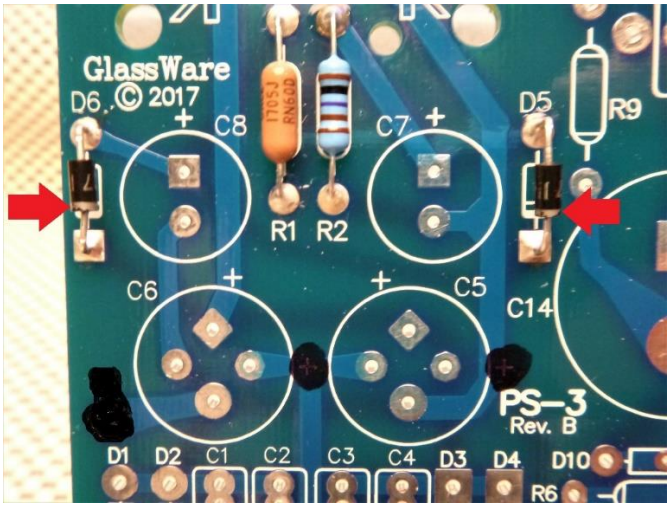


The optional board configurations may cause some confusion. You may if you wish black out some of the text on the board to help. See picture below.

- Jumper J1 at the top right corner of the board
- CT between and just below caps C14 and C13
- C16 near the bottom centre
- B near the bottom left corner
- The two + signs, one each to the right of C6 and C5
- The CT on the left side

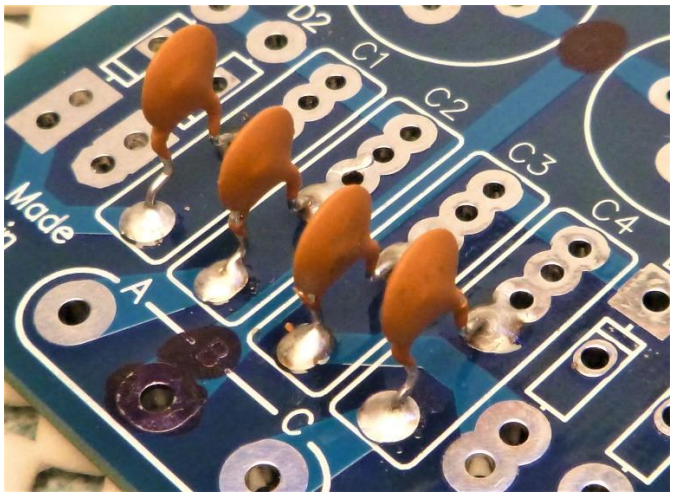


Assemble D5 and D6 to the board with the banded ends in the orientation shown below. Keep them about 2 to 3mm above the board to lessen their heating when soldering.

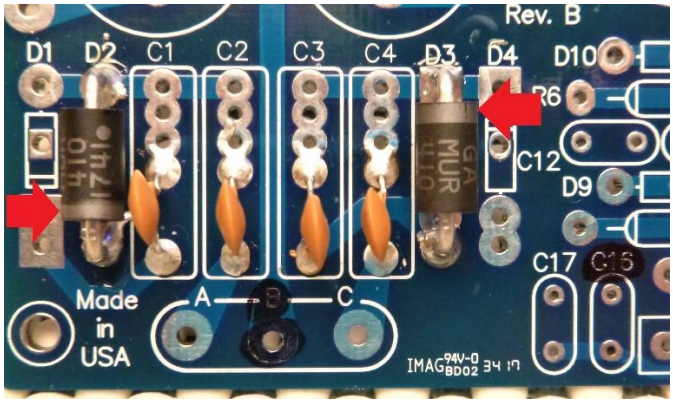


Assemble R8 and R9 to the board, solder and trim the leads.

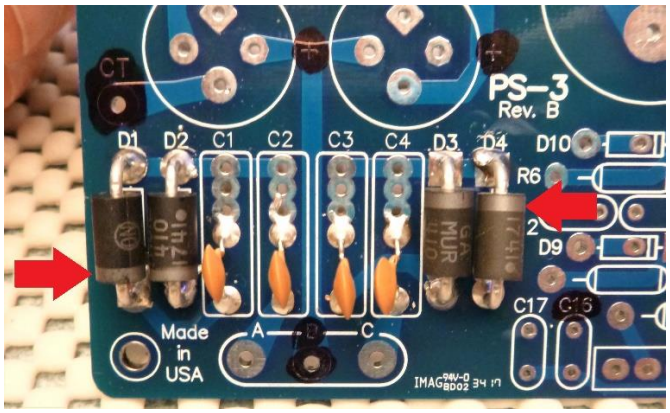
Assemble caps C1, 2, 3 & 4 to the board in the positions shown below. Solder and trim.



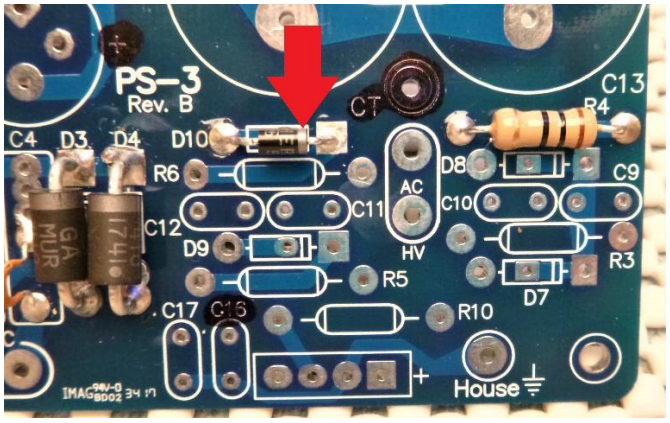
Assemble D2 & D3 to the board with the bands in the orientation shown. Keep them 2 to 3mm above the board. Solder and trim.



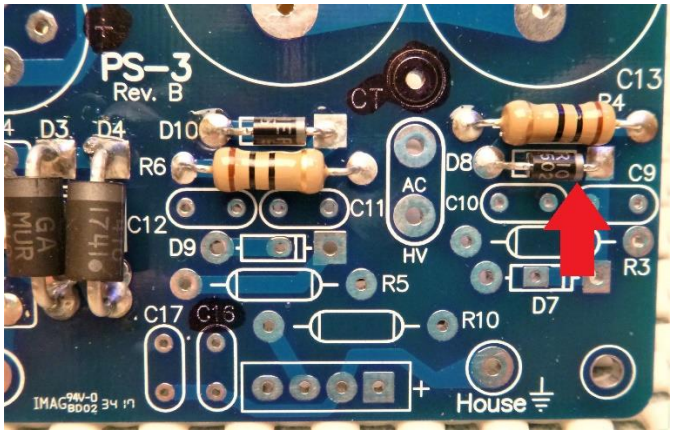
Assemble D1 & D4 to the board with the bands in the orientation shown. Keep them 2 to 3mm above the board. Solder and trim.



Assemble D10 to the board with the band in the orientation shown. Keep it 2 to 3mm above the board. Assemble R4 to the board. Solder both and trim.

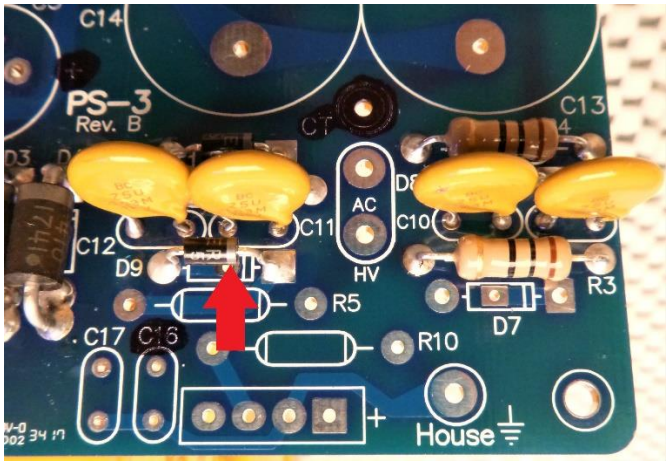


Assemble D8 to the board with the band in the orientation shown. Keep it 2 to 3mm above the board. Assemble R6 to the board. Solder both and trim.

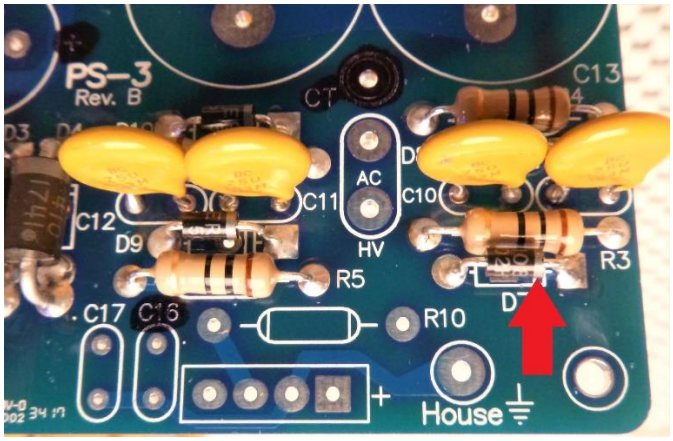


Assemble caps C9, 10, 11 & 12 to the board in the positions shown below. Solder and trim.

Assemble D9 to the board with the band in the orientation shown. Keep it 2 to 3mm above the board. Assemble R3 to the board. Solder both and trim.

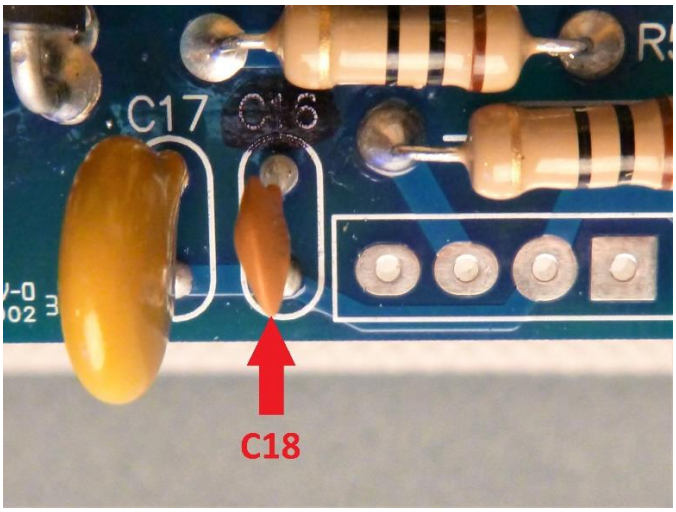


Assemble D7 to the board with the band in the orientation shown. Keep it 2 to 3mm above the board. Assemble R5 to the board. Solder both and trim.

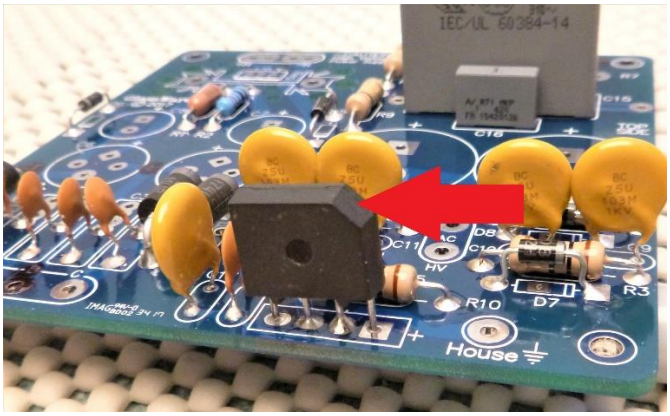


Assemble R10 and C17 to the board, solder and trim.

Assemble C18 to the board in the position shown below. Solder and trim.



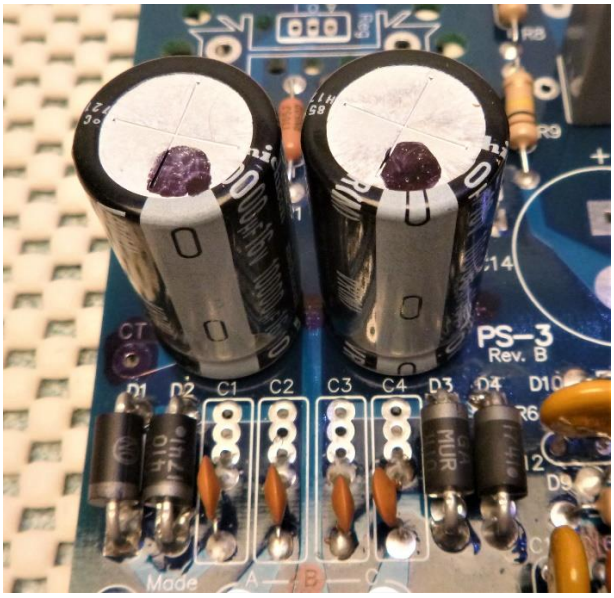
Assemble the Bridge Rectifier to the board with the angled corner as shown below. Space it about 3 to 5mm above the board. Solder and trim.



Assemble caps C15 and C16 to the board. Solder and trim.

Mark caps C5, C6, C7, C8, C14 & C14 with a black spot on the top of the can adjacent to the negative indication. The caps are polarity sensitive and marking them will provide a foolproof method of placing them correctly on the board. See below.

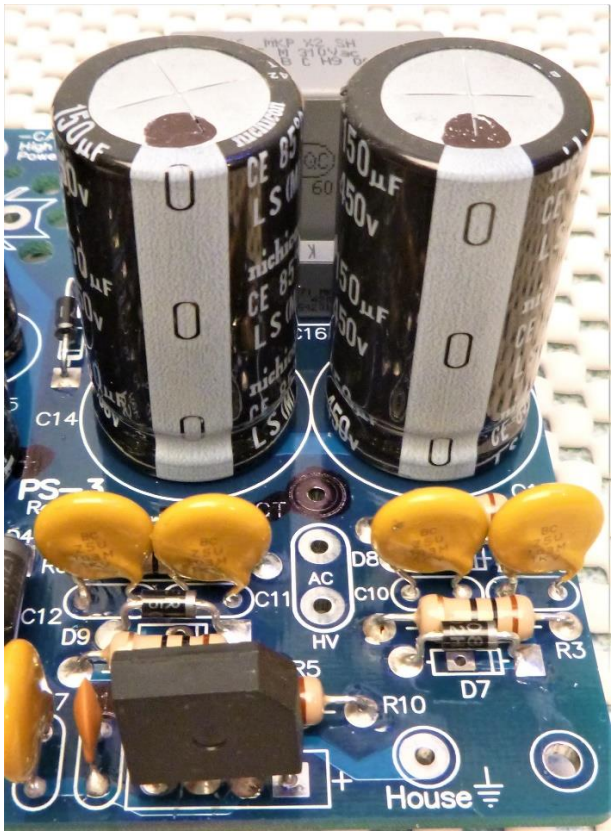
Assemble C5 & C6 to the board with the negative sides facing the C1 – C4 caps as shown below. Solder and trim the leads.



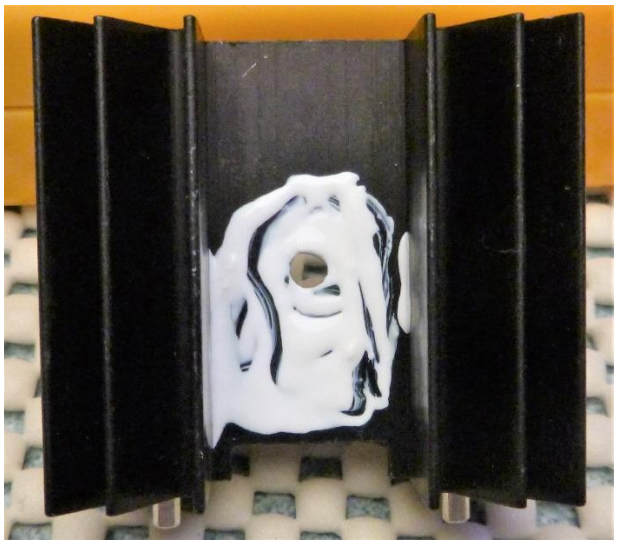
Assemble C7 & C8 to the board with the negative sides facing C5 & C6 as shown below. Solder and trim the leads.

As received the pins on C13 and C14 are bent. Straighten them to allow easier board insertion.

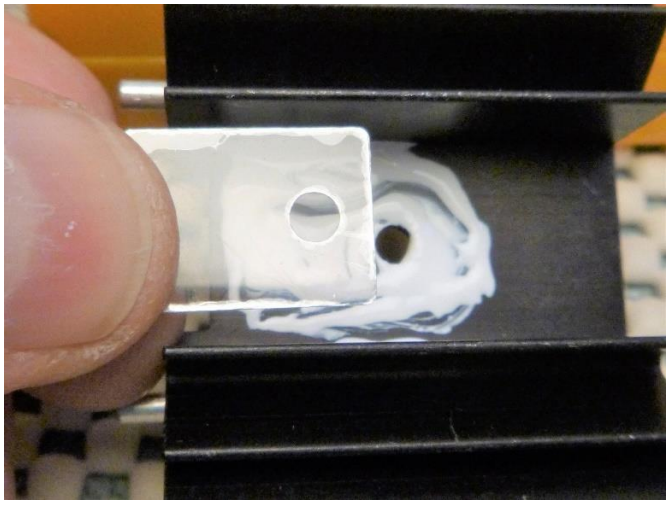
Assemble C13 & C14 to the board with the negative sides facing C9 – C12 as shown below. Solder to the board.



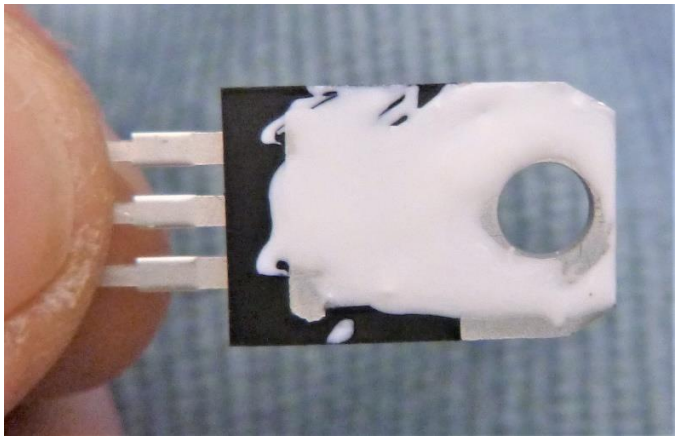
Spread a bit of heatsink compound on the heatsink as shown below.



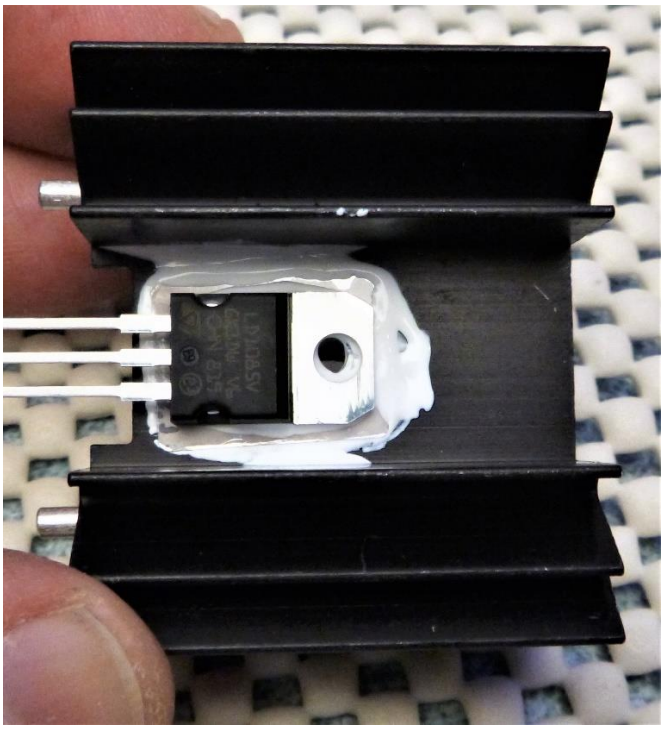
Put the insulator, shown below, on to the heatsink so that the hole in each aligns with the other.



Spread a bit of heatsink compound on the back of the LD1085 regulator.

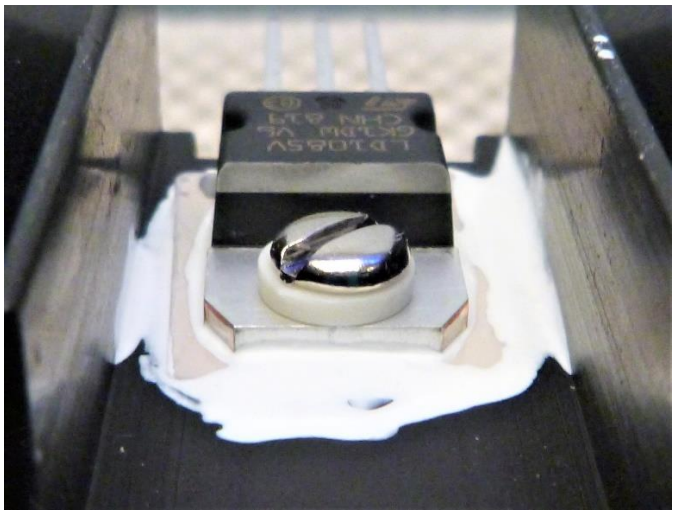


Assemble the LD1085 reg to the heatsink so the holes align.

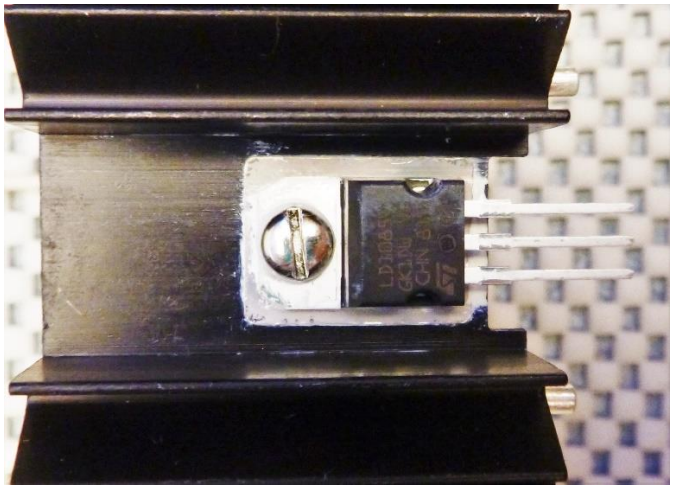


Assemble the shoulder washer to the screw as shown.

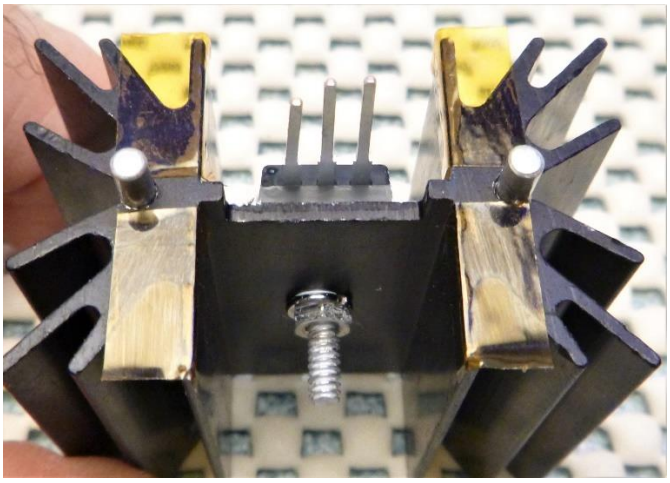
Assemble the screw and washer to the reg and heatsink as shown.



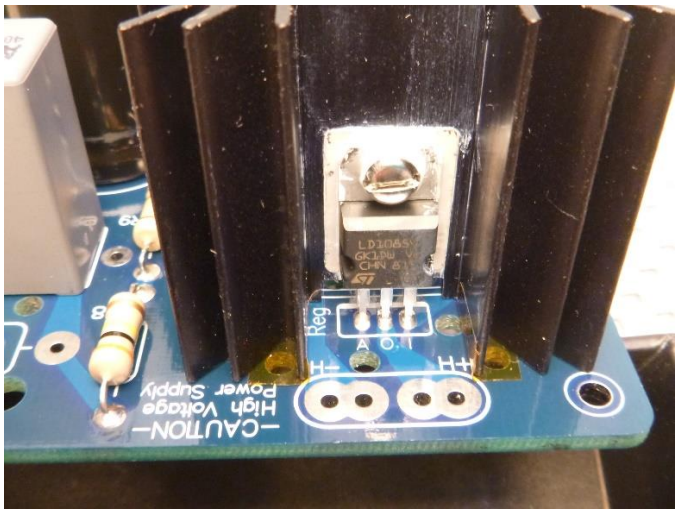
Assemble the lock washer and nut to the screw. Tighten and keep the reg parallel to the heatsink walls as shown.



Optional: Even though the solder mask on the board insulates the traces and the anodizing on the heat sink is an insulator I like to go one step farther. I like to put a few thin strips of kapton tape near the pins on the heatsink, see below. Cellophane tape would work as well.



Assemble the heatsink/regulator combination to the board. Guide the regulator pins into the board first then the heatsink pins.



Solder the pins of the heatsink and the regulator to the board.

Leave R7 off of the board for now. It will be added at board – chassis integration.

This completes the Power Supply Board assembly. Next is the board - chassis integration and wiring.