

# MyRef Rev. C – Ultimate BOM

## *A simple tutorial on building it*

### Introductory Notes

Start printing both this tutorial and the associated BOM so that you can check each component while you mount it. For every single component check the BOM, read and/or measure the value.

Pay attention that some values indicated on the PCB were changed. The BOM is the reference resource.

Build a pair of amps simultaneously. Solder a single connection on one amp, then set that aside to solder the identical connection on the other amp. Alternating like this allows each component to cool slightly between soldering heats.

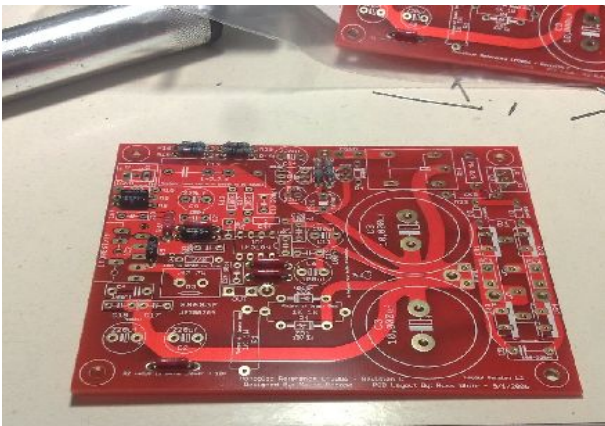
Alternatively you can put in place a group of passives, solder a single connection on each component and begin again soldering the other.

All components, with the exception of those explicitly indicated, should be soldered only on the bottom side of the PCB.

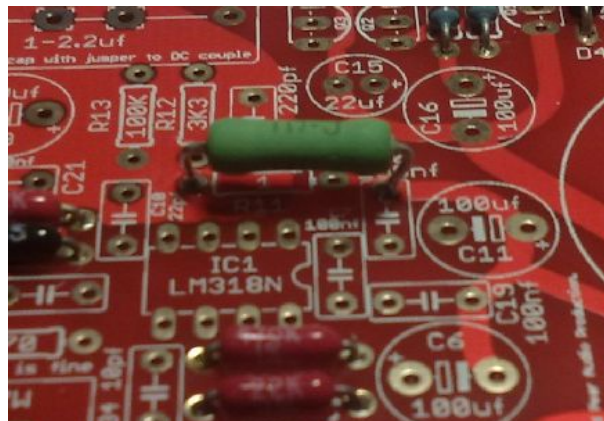
### Populating the PCB

As always start with lowest profile components and then proceed with higher profile ones.

Usually I put in place a group of nearby resistors, turn the PCB, maintain it horizontal with the help of the other PCB or something else and I solder a single connection on each component; after that I begin again soldering the other connections in sequence.

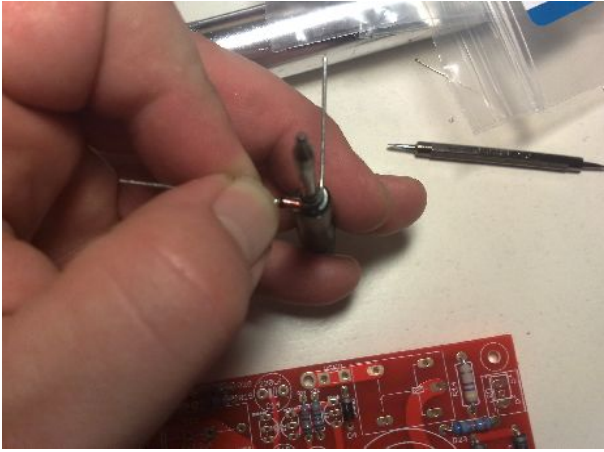


So we'll start with 1/4W resistors and we proceed then with 1N4001 and SBYV27 diodes and R14, R23



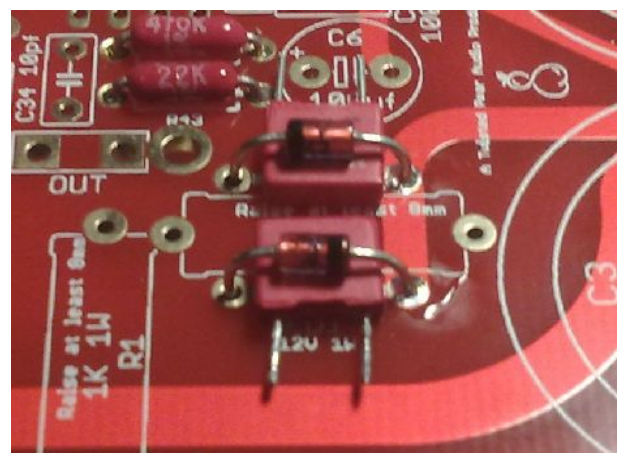
The recommended R11 is bigger than the ones originally provided (this doesn't apply to kits)

Luckily C18 and C19 are unused so we can take advantage of it and use the ground pin of C20.



Now we're going to prepare Zeners for mounting.

With help of a little screwdriver bend leads so that we have the diode like in the figure.



Then take two film caps like the ones in the figure and use them as helpers for maintaining Zeners height.

With those helpers caps in place solder the right lead as in figure.

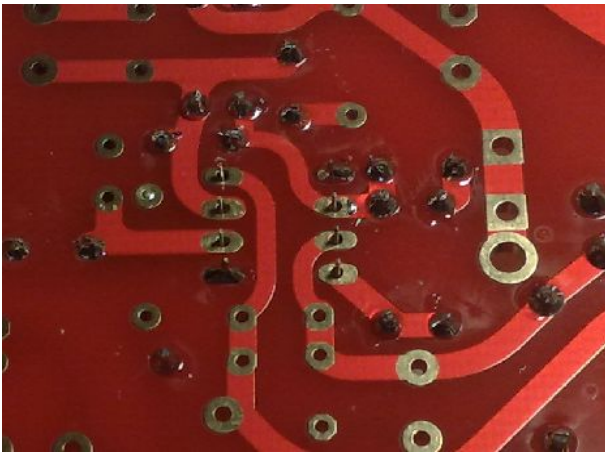
Now you can turn the PCB and solder Zeners. Start from the unsoldered connection. Remove helpers.



Now bend R1 and R4 leads, place them leaving circa 8 mm – 1 cm from the PCB.

They will stay in place, so like zeners solder one of the leads of each resistor. Turn the board and solder them starting from the unsoldered one.



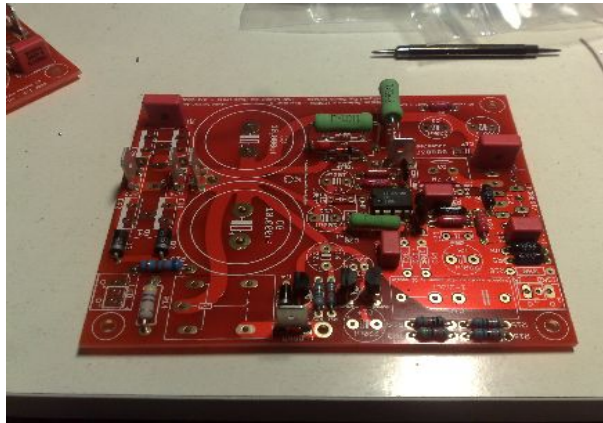


Hold the LM318 in place with a finger (pay attention to the right orientation!) and solder two of the pins, like in figure.

Now you can solder all other pins without worrying of the LM318 going around...

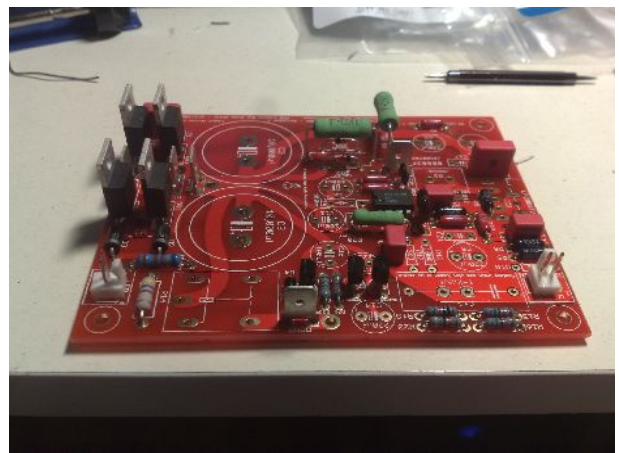
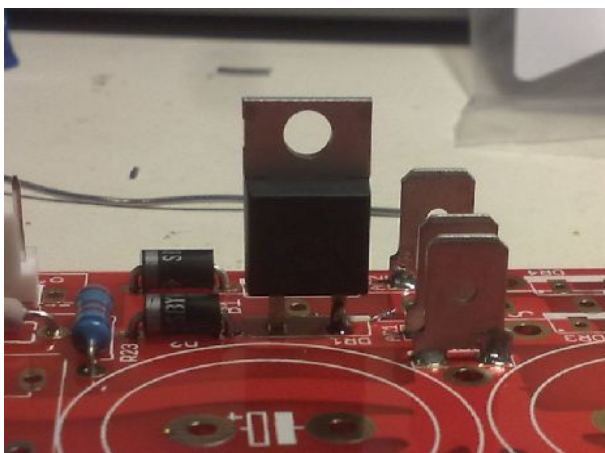
To avoid overheating I suggest to solder one pin per side at a time.

Place all transistor in their positions and push them a little so that they stay firm. Now turn the PCB and solder one pin for each transistor, repeat for each pin, one transistor at a time, in sequence.



Put in place faston tabs and solder them both sides so they're stronger. Start placing them and soldering the top side.

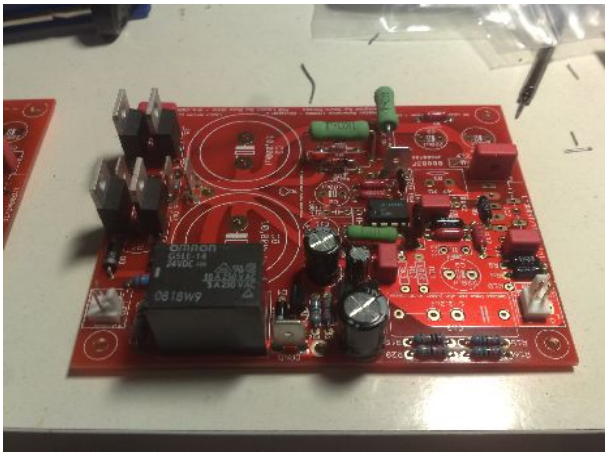
Solder also all film and mica caps.



It's the rectifiers turn. Put one at time in place and, while the diode is straight, solder one leg on the top side, like in figure. When you've done it for all four diodes turn the PCB and solder the diodes.

Start with the unsoldered leg, skip the top soldered one and pass to the next diode. When finished solder others legs.

Now solder the molex headers, the tin plated one is for the LED, the gold plated one for the input signal.



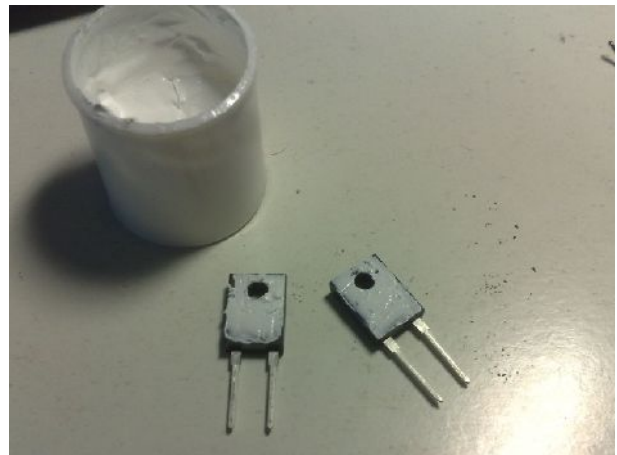
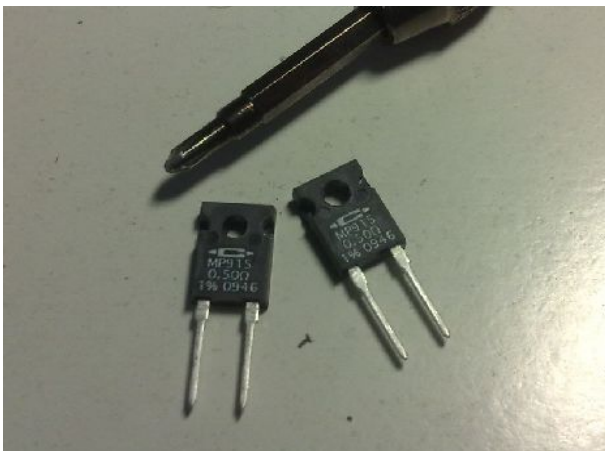
Hold the relay in place with a finger and solder two opposite pins. Turn the board and solder all remaining pins.

Solder also all those little electrolytics caps (pay attention to orientation, the side marked with white or gold fascia is the negative side). Put in place the big snap-ins, turn the PCB and solder them with lot of solder.



Apply (don't solder it, just put in place leaving 1-2mm from bending of pins and PCB) first LM3886 to the PCB. Use it to sign the hole position on heatsink, drill it and then mount the LM3886 to it.

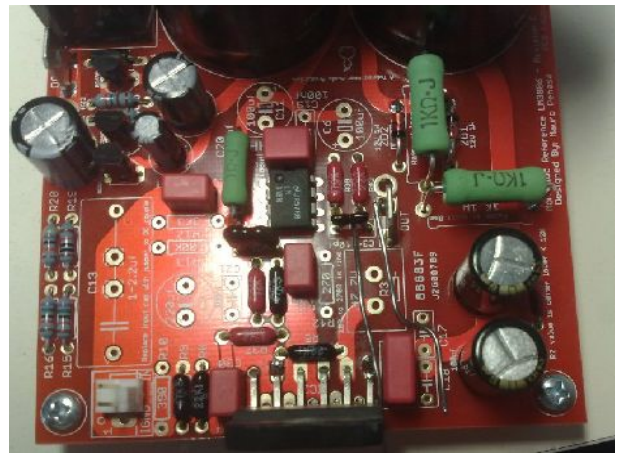
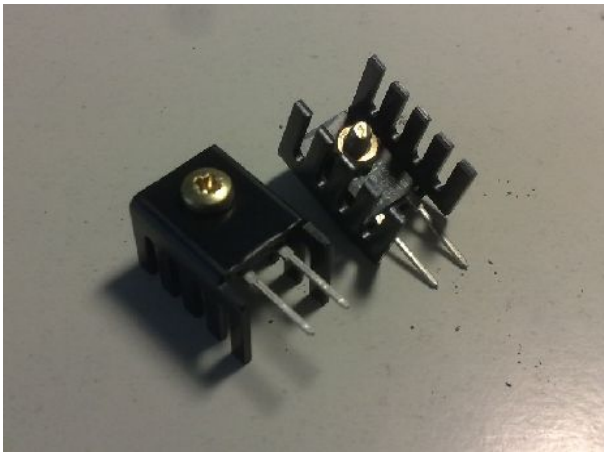
Now insert the LM3886 with heatsink to the PCB, solder two pins on the top. Remove heatsink, turn the board and solder all LM3886's pins. As for all chips alternate pins to avoid overheating. Use the same heatsink for the other monoblock too, so they're identical and you can use any of them to sign hole's position to the other heatsink.



Now we're going to prepare R3s, If yours screw are bigger than resistor's hole you can enlarge it with a screwdriver.

Apply a thin layer of thermal compound and mount them on heatsinks. In figure is the tiny one (with mine 89 dB speakers it just works fine) but for general use could be better to use the recommended bigger one.

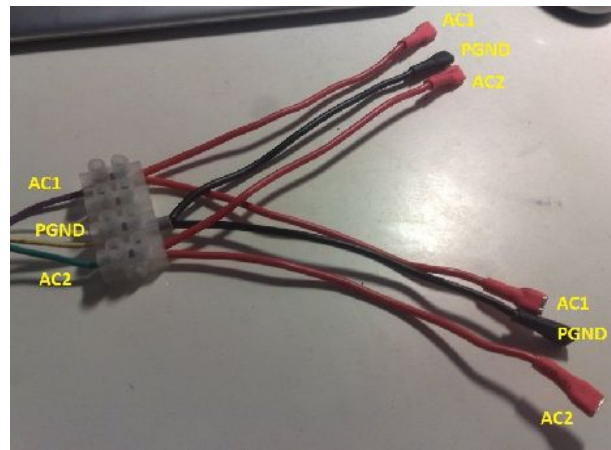
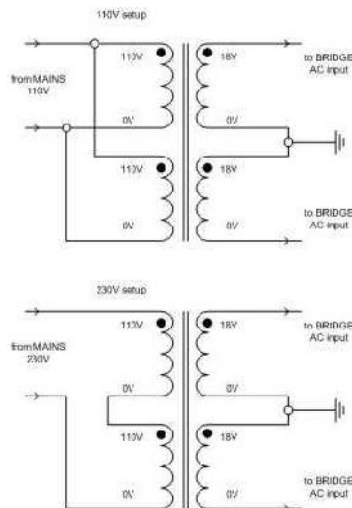




Since the heatsink could touch C17 hot point it's better to raise it a little, two pieces of solder could help.

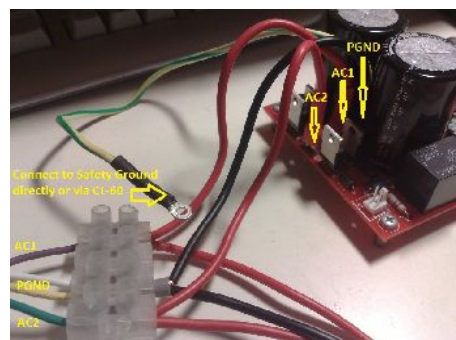
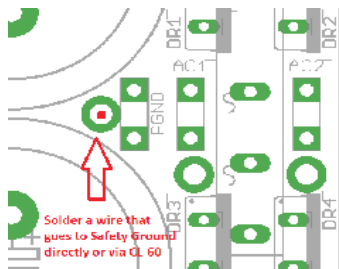
## Wiring the transformer and simple grounding

For the MyRef we need one (two for dual mono) center tapped transformer (for example 25-0-25) or a dual secondary (for example 0-25, 0-25) wired as a center tapped one:



(the drawing is from Decibel Dungeon website)

In the figure Violet is AC1, White/Yellow is PGND and Green is AC2



In case of a single transformer we must use a Y connection like the one in figure, in a dual mono configuration (two transformers) the connection is direct from each transformer.

Case must be connected to safety ground.

The simplest grounding scheme is to connect directly also PGND to safety ground.

There are better methods like connecting PGND to safety ground via a CL-60 thermistor or using a ground breaker (see ESP website <http://sound.westhost.com/earthing.htm>)

## Final Notes

- If you're using the insulated LM3886 remember to apply on it a thin layer of thermal compound before mounting it to the heatsink.
- If you're using the uninsulated LM3886 remember to use the insulator before mounting it to the heatsink.
  - Some insulators, such the ones in kits don't require thermal compound, but it don't hurt (much) either.
  - With Mica and ceramic insulators it's better to apply thermal compound to each sides.
- Remember to connect chassis to safety ground
- Someone feel safer using a 'Dim-bulb Radio Tester' for the first power on, you can read about it here:  
<http://www.antiqueradio.org/dimbulb.htm>

## Disclaimer

This tiny tutorial is incomplete and some resistors and caps aren't illustrated.

Take it as an example build.