



ZOMBIE REC.

Pro Audio Equipment

μCOMP Diode Compressor (r1.1) Assembly Guide

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Disclaimer

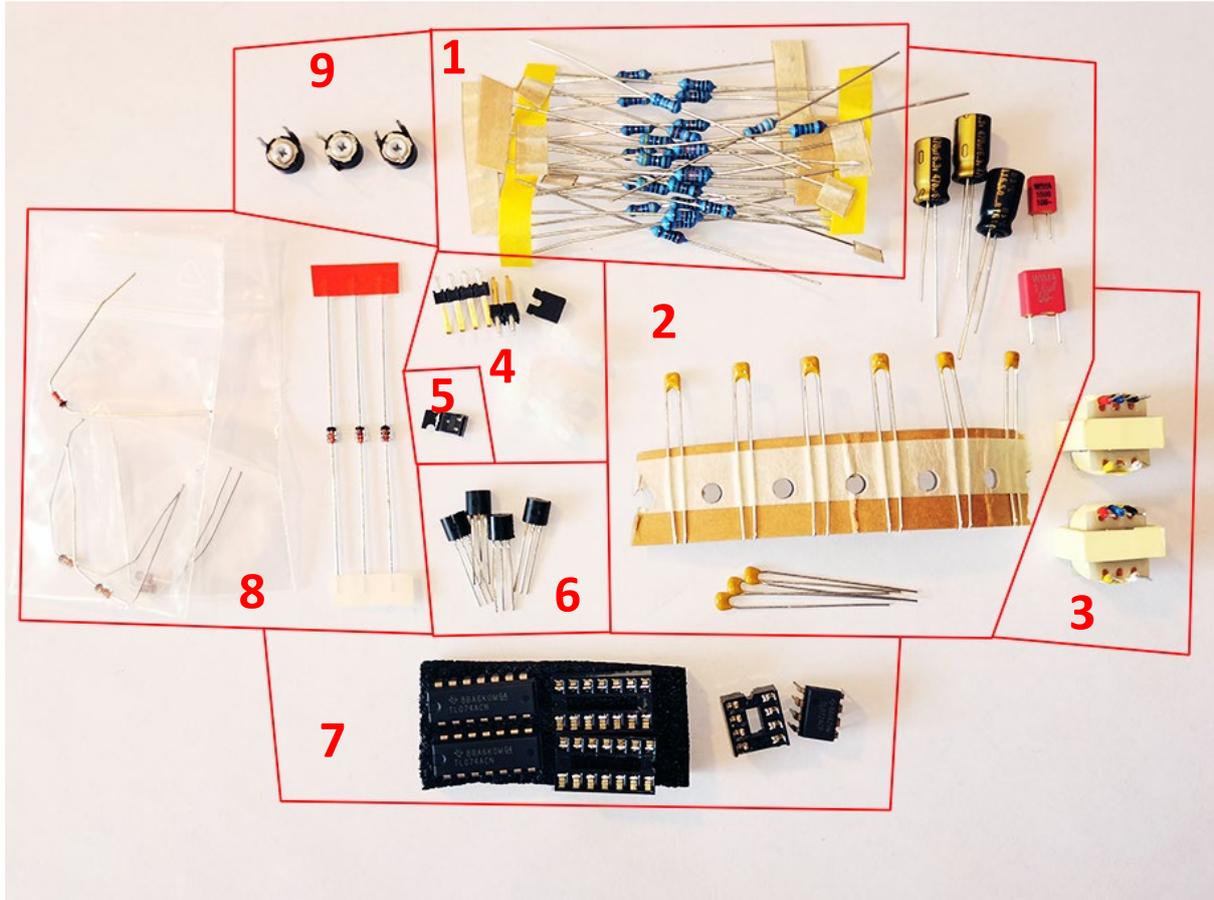
Zombie REC. is not liable for any damage, harm or loss of any kind resulting from the assembly and/or use of this kit. Improper soldering and handling of electricity can cause serious injury and damage to your property. Also, keep all contents away from children. Follow the guide, build carefully and pay attention when using the necessary tools.

If something is missing or damaged, contact us on info@zombierec.com. If the part shows signs of use beyond what was necessary to determine that it was damaged, Zombie REC. reserves the right not to replace the part. Make sure to interact with the parts only on a properly earthed working place, including the builder, in order to prevent damage to transistors and/or other parts.

Tools

You will require:

- A good solder iron, with adjustable temperature recommended
- A clean solder tip with a large enough tip (2mm (ca. 0.78in) width)
- Solder, preferably less than 1mm (0.4in) in diameter
- Good wire cutters to clip the excess leads
- A pair of tweezers
- Kapton tape or clear office tape
- Scissors to cut the tape
- Optional but recommended: Means to ground yourself, like a properly connected ESD wristband



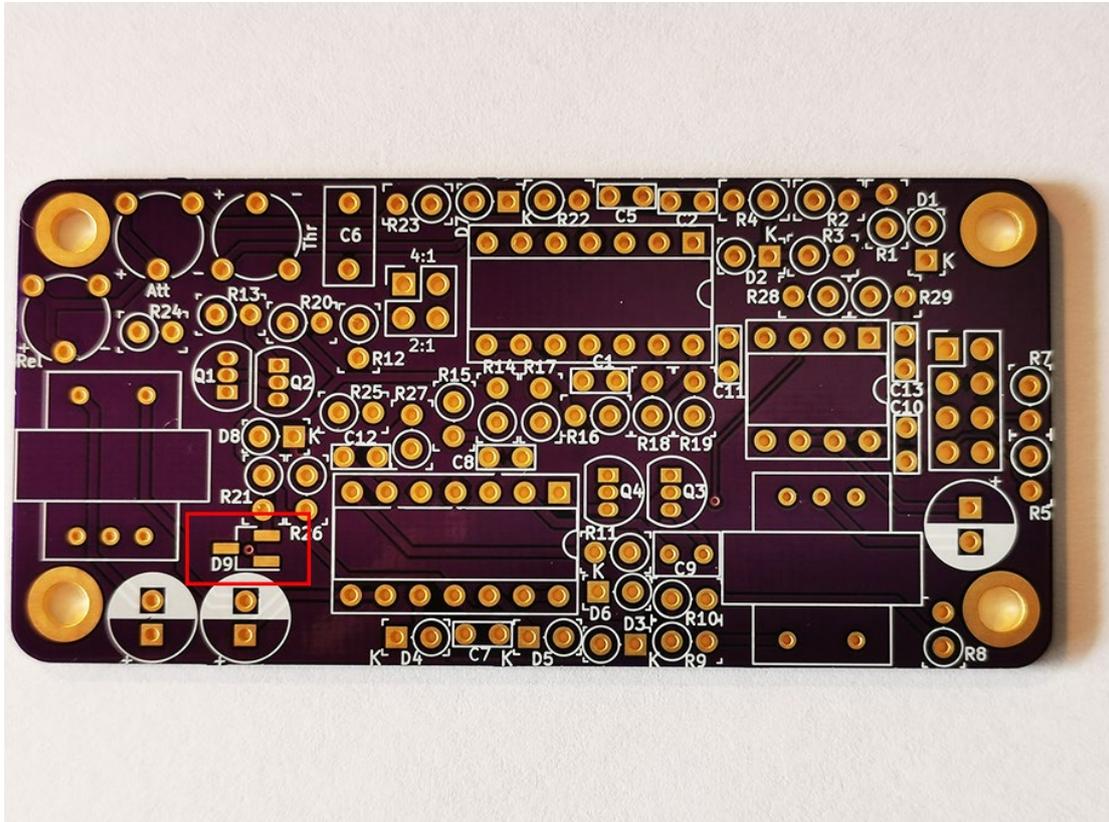
Kit Contents

1. 28x Resistor:
6x 47k / 9x 10k / 1x 4.99k / 1x 220k / 1x 61.9k / 1x 2k / 3x 470R / 1x 100R / 1x 6.65k / 2x 13.3k / 1x 1k / 1x 510R
2. 14x Capacitor:
3x 470uF / 1x 1500pF / 1x 1uF / 6x 100nF / 3x 47pF
3. 2x Transformer
4. 7x Hardware:
1x 8pin header / 1x 4pin header / 4x Standoff / 1x Jumper
5. 1x SMD SOT-23
6. 4x Transistors:
2x 2N3906 PNP / 2x BC550 NPN
7. 6x IC Components:
2x TL074 / 1x TL072 / 2x 14Pin DIP Socket / 1x 8Pin DIP Socket
8. 8x Diodes
3x 1N4148 / 5x 1N750A
9. 3x Trimpot:
1x 50k / 1x 100k / 1x 220k
10. 1x PCB (not shown in picture)

This build is a bit more complex and you should plan enough time to build it.

Step 1 – SMD Part

We'll start with the most difficult part first, the SOT-23 surface mount device. It's D9 on the PCB:

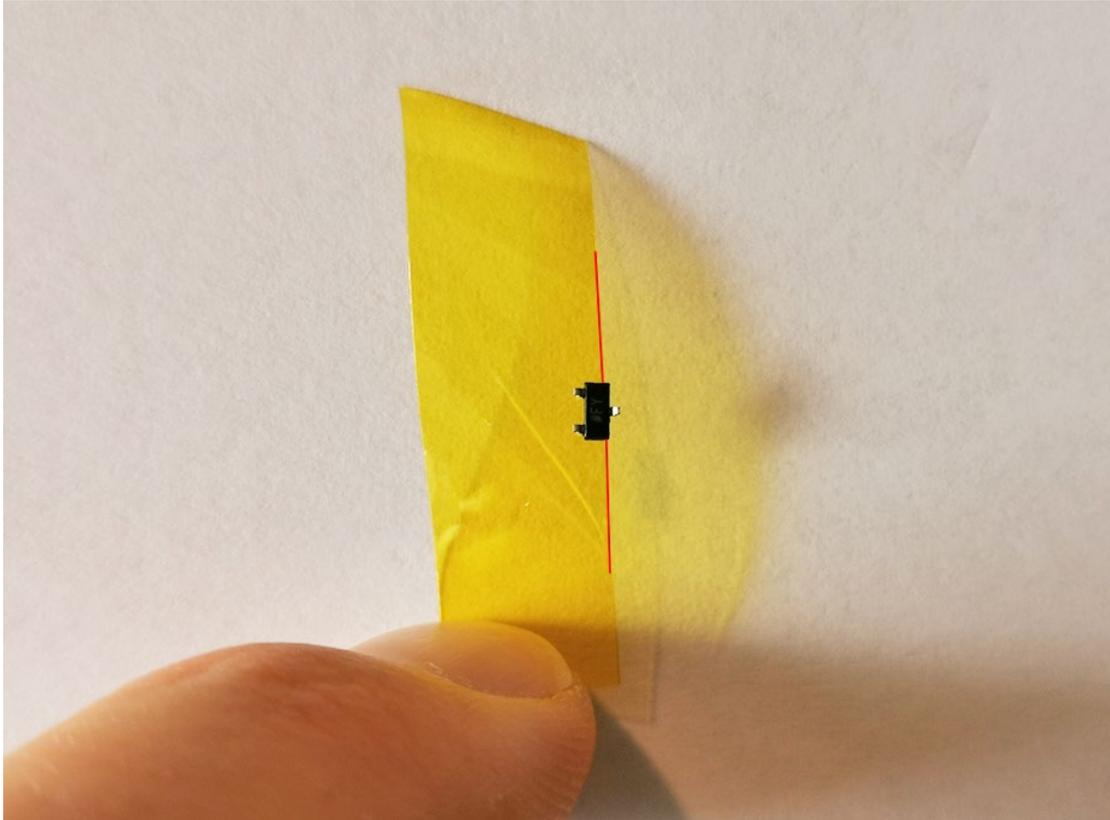


Fetch the part and also prepare the tape, scissors and tweezers. Use the tweezers to get the part out of the packaging:

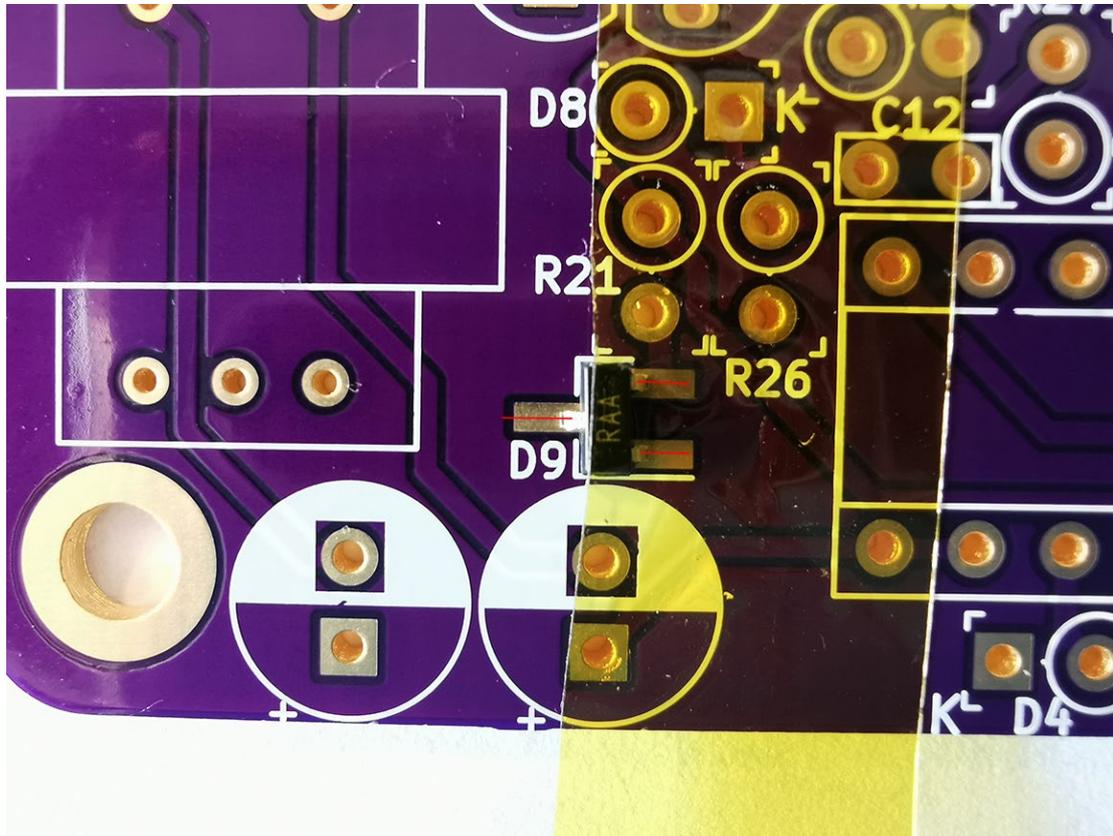


Cut some tape as shown below, it should be long enough to be applied by using both of your hands. Use the scissor to cut it to prevent it from sticking to your finger prematurely. Carefully hold the

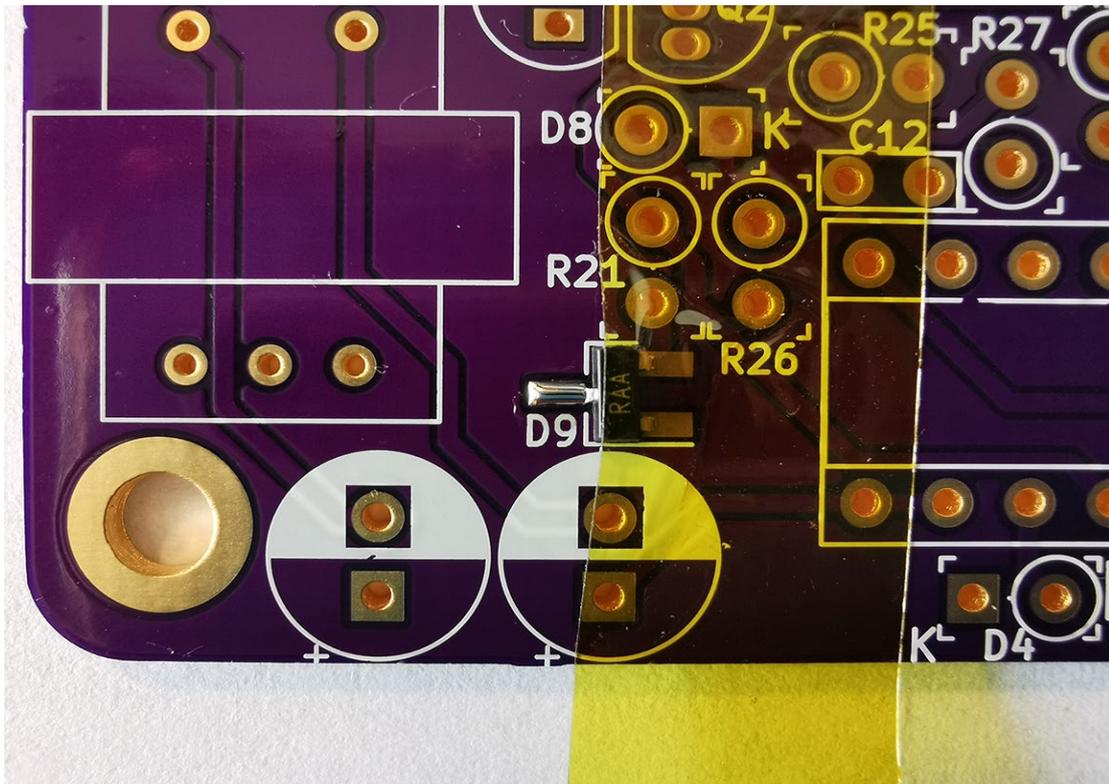
sticky side up with your finger and stick the SMD part with the tweezers bottom up on the tape so that it's single foot hangs outside (the bottom is where the legs are flush):



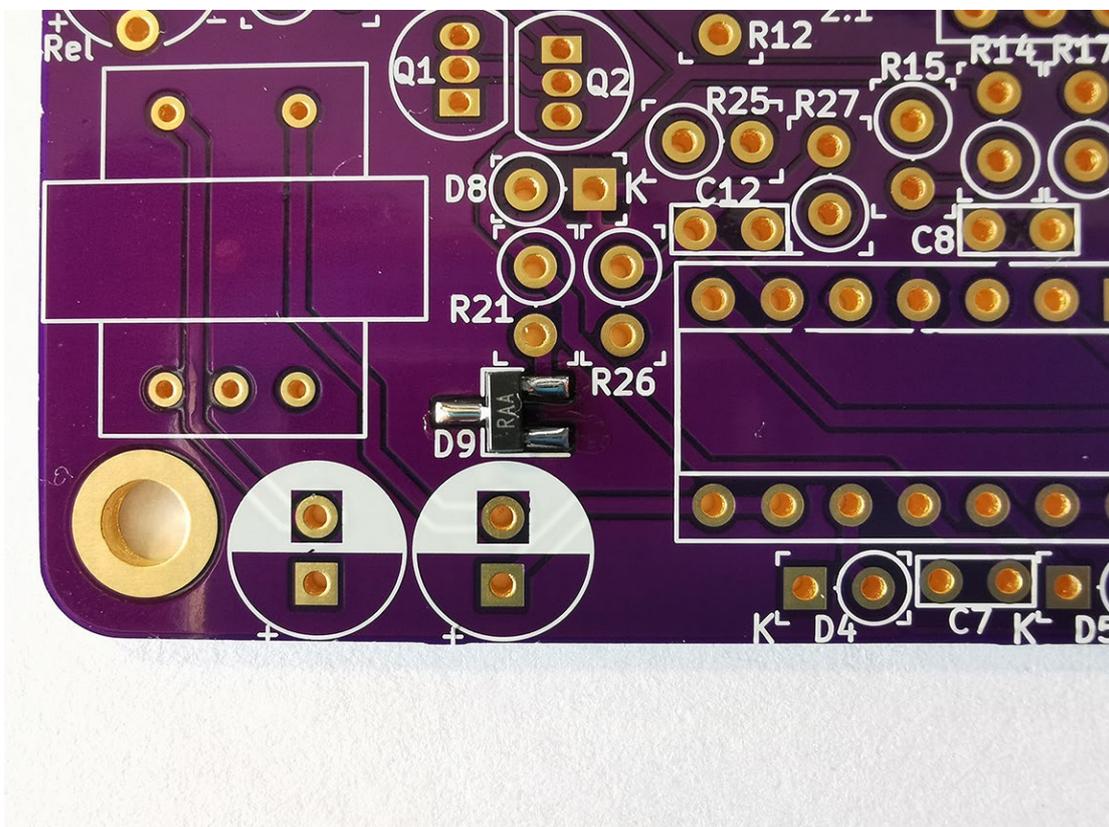
Now flip the tape with the SMD part on it and apply it like you would with a band-aid: Use both index finger and thumb on both hands to gently align the legs of the part and simply push down on the tape once you have it aligned. Make sure that the legs are vertically facing the PCB surface and not away from it:



Now solder the pin by gently pushing the tip of the solder iron on the PCB and the pin and apply some solder:

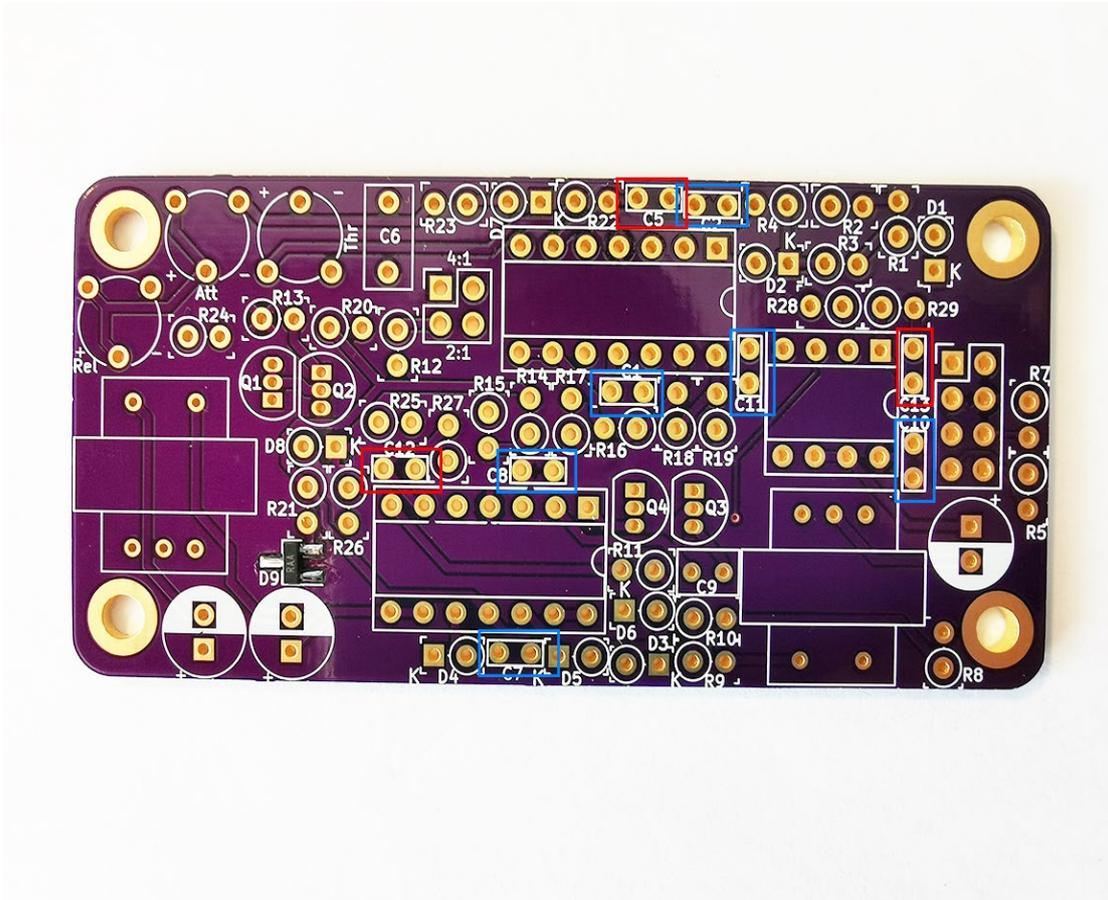


Remove the tape and solder the remaining two pins the same way:



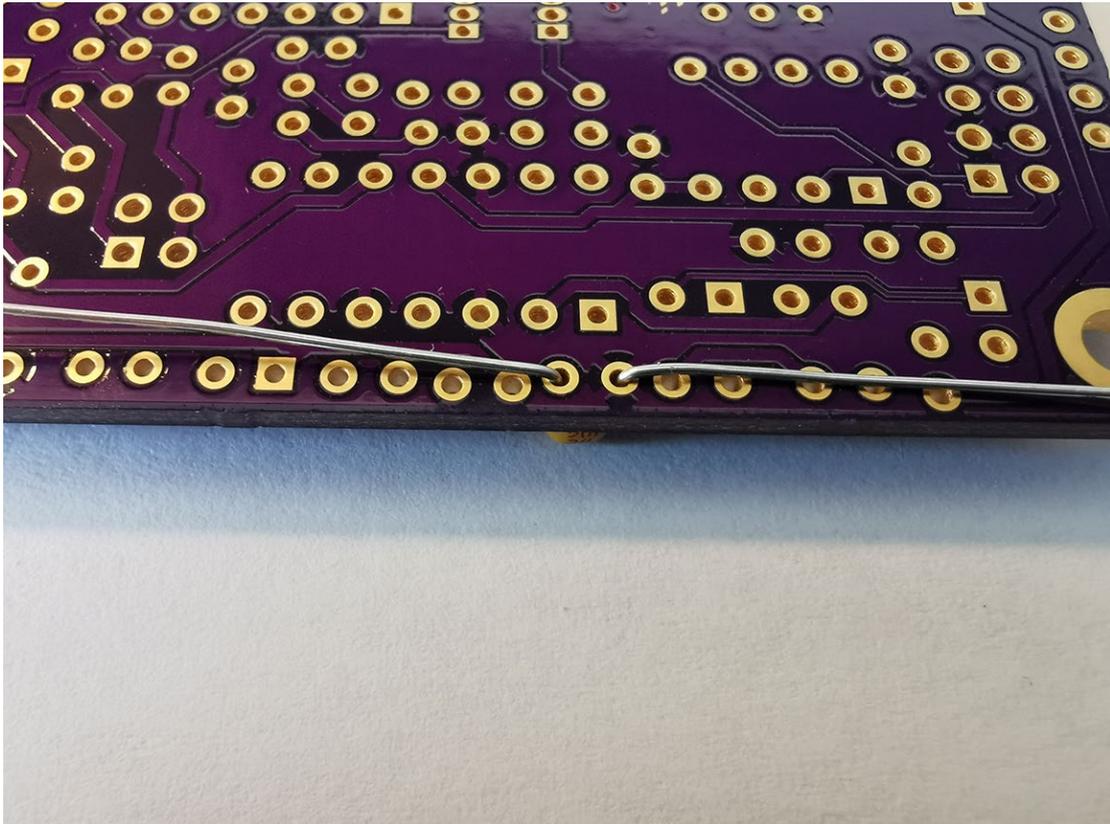
Step 2 – Small Ceramic Capacitors

There are 3x 47pF caps to solder: C5, C12, C13 (red) and 6x 100nF: C1, C2, C7, C8, C10, C11 (blue):

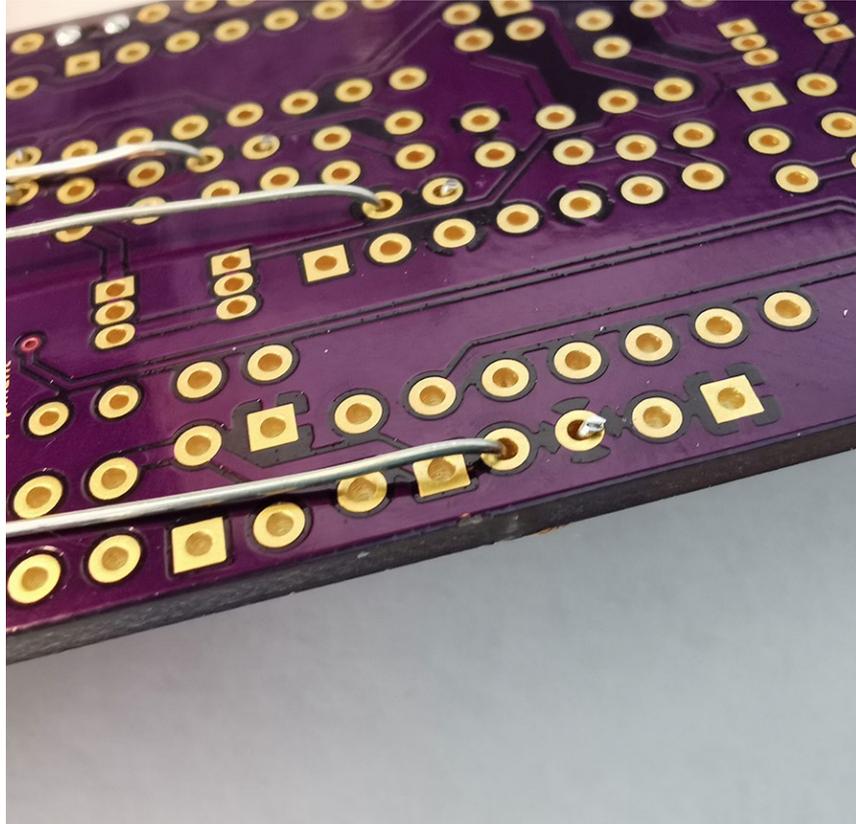


We'll take a closer look now how to properly solder these.

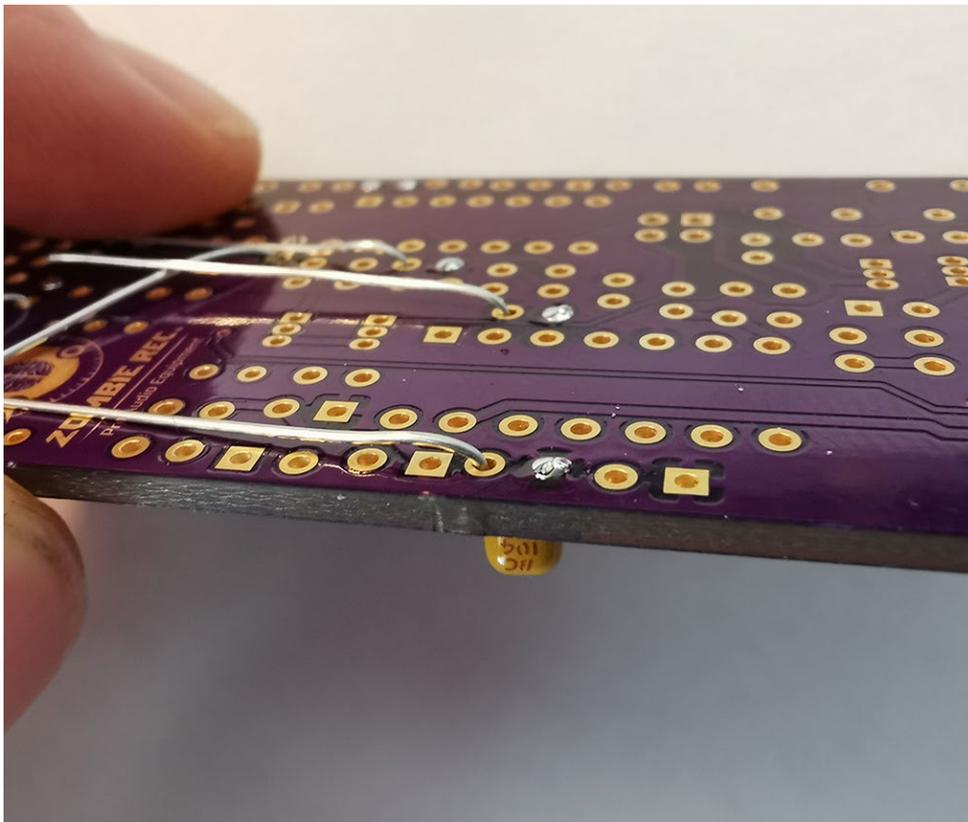
When you insert them, make sure to firmly push down between their legs to bend them as close and tight to the PCB as possible:



Then clip off the first lead while holding the wire cutters parallel to the surface in a way that the remaining lead «overhangs» the hole onto the PCB and locks the part in place that way:



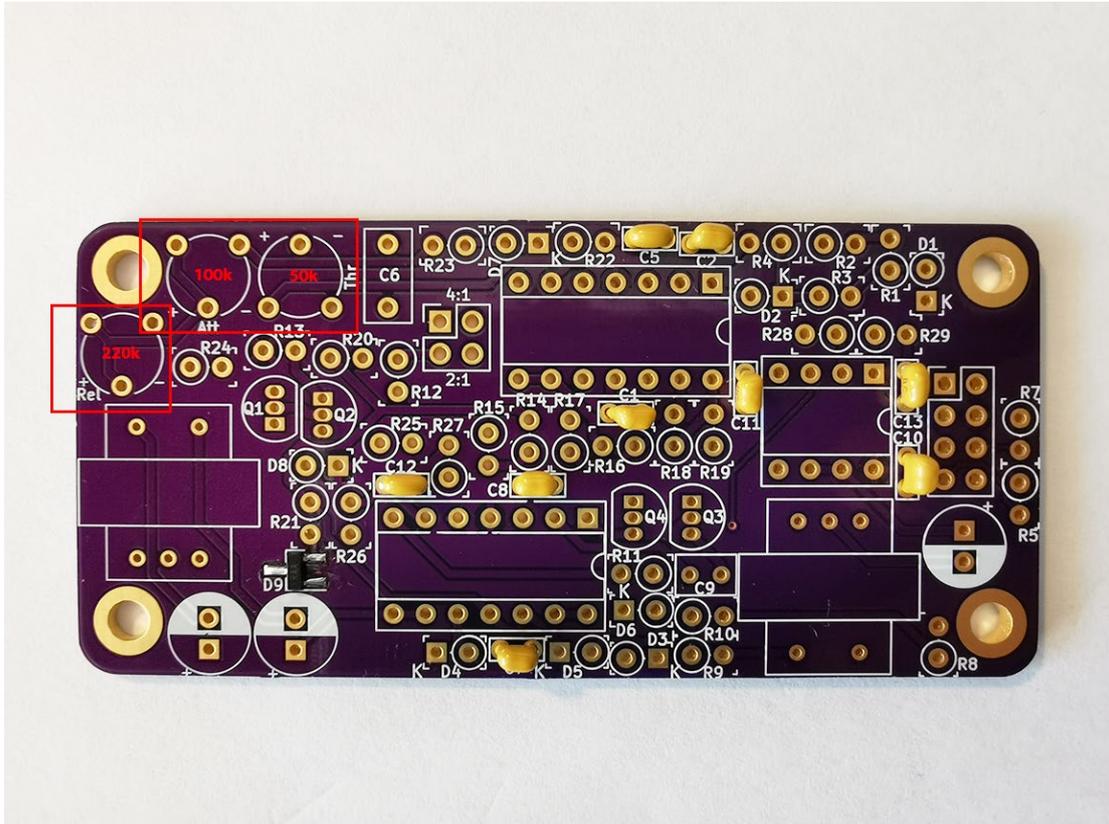
Then solder the first lead and repeat the process for all the second leads:



Step 3 – Trimpots

There are 3 trimpots to solder: 1x 50k, 1x 100k and 1x 220k.

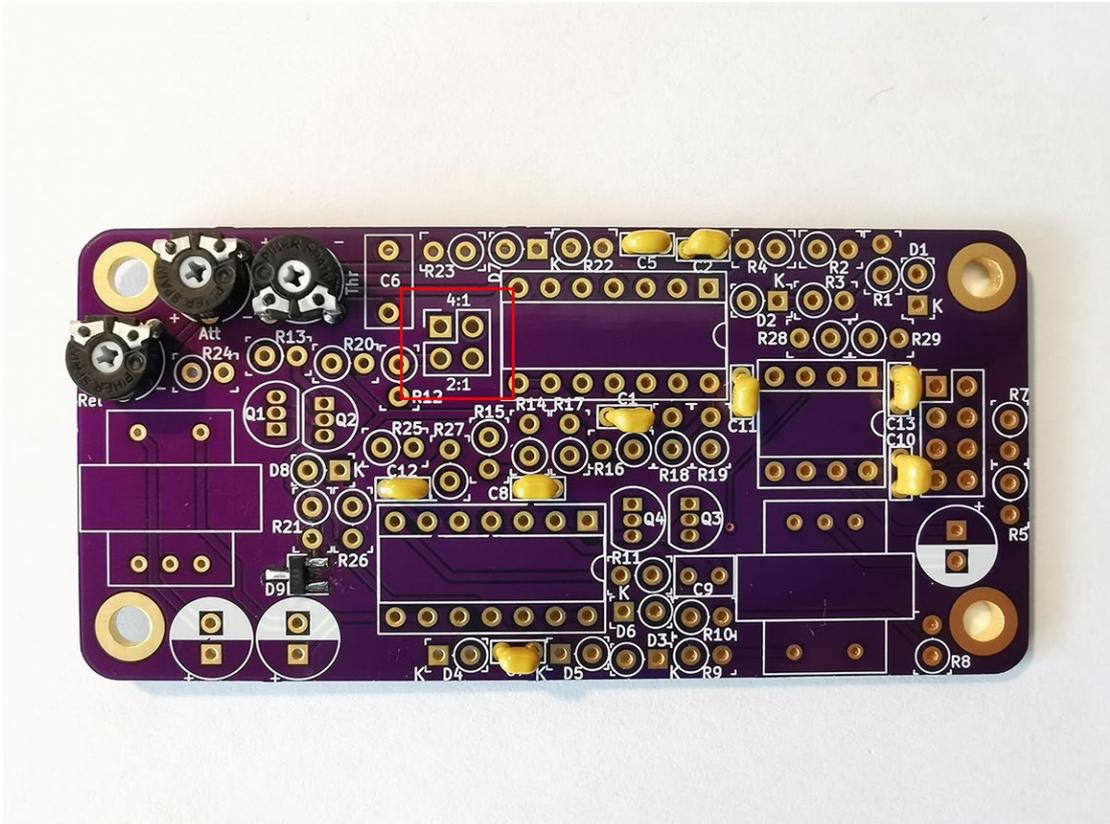
The values are marked on the side of the pots. Insert the 50k where it says «Thr», that is the Threshold control. Insert the 100k where it says «Att», that is the Attack control. And finally insert the 220k where it says «Rel», that is the Release control.



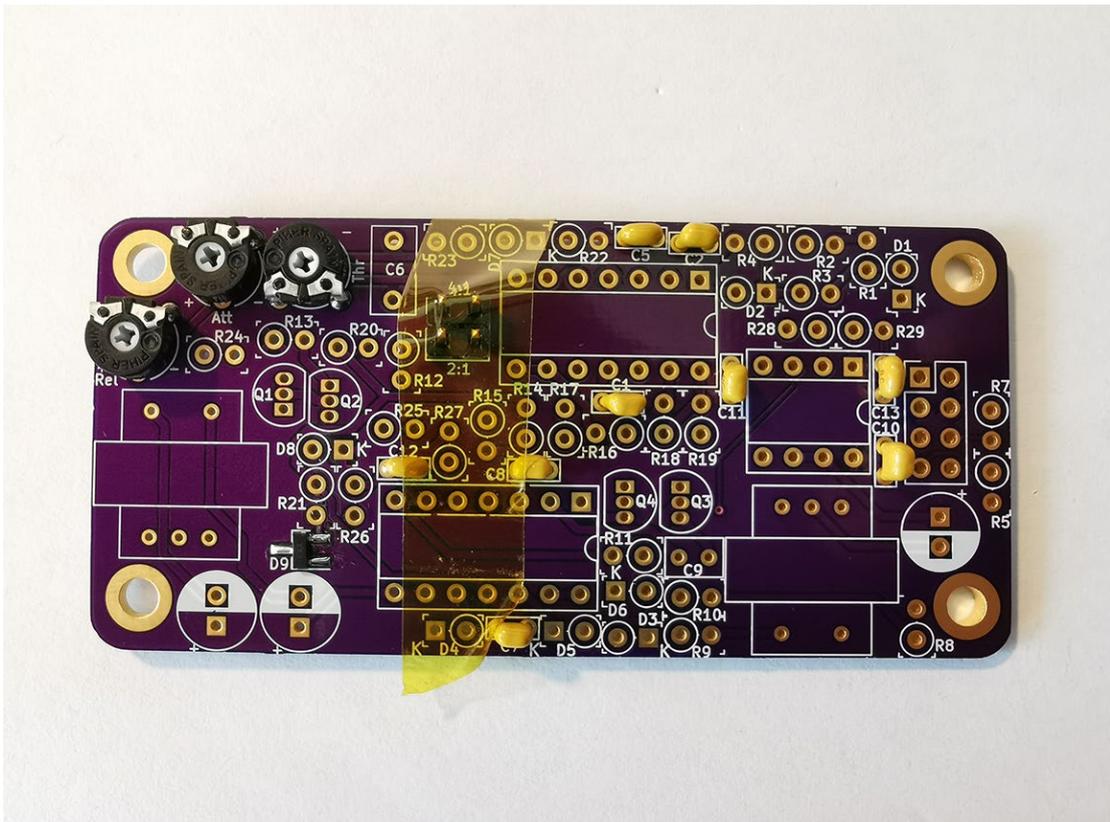
The pots are conveniently held in place by their leads, but in case its a bit loose, just hold them in place with some tape. Now solder them. Since the stand-offs are long enough, its not necessary to trim their excess leads.

Step 4 – 4 pin Header

We'll solder the 4 pin header next, as it is most convenient to do it now:

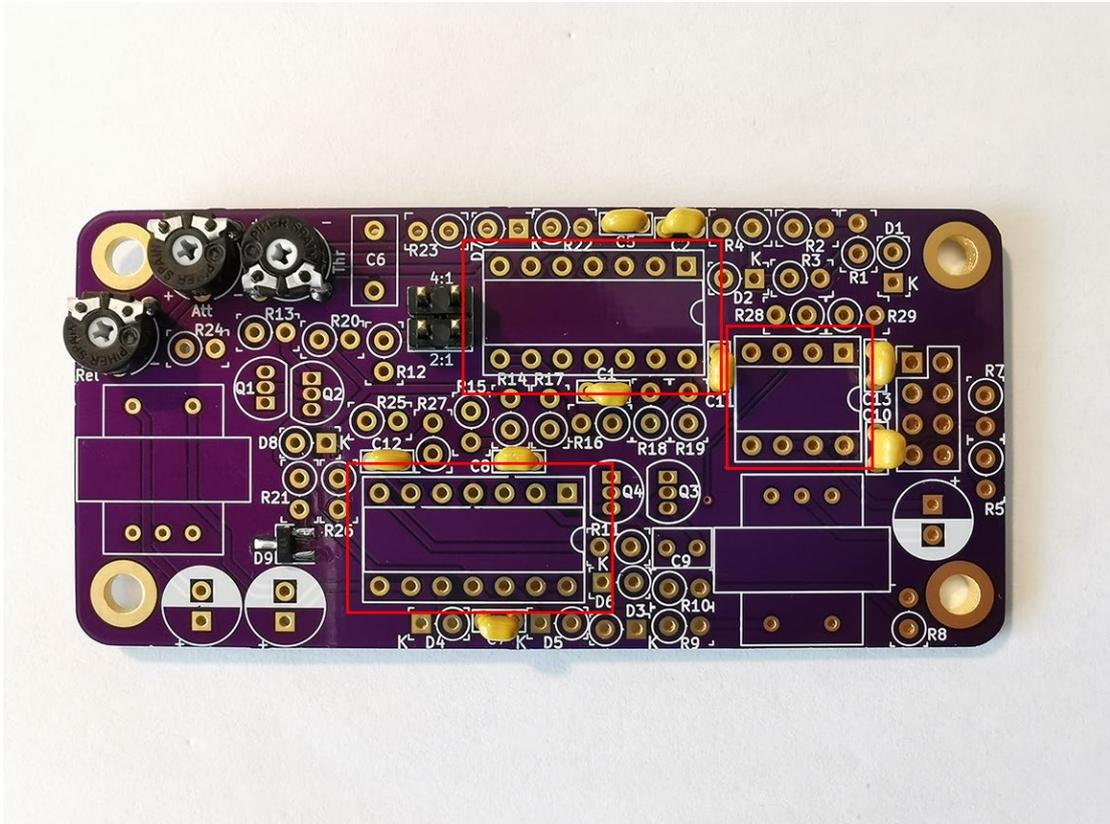


For this, use the tape again to hold it into place for soldering:

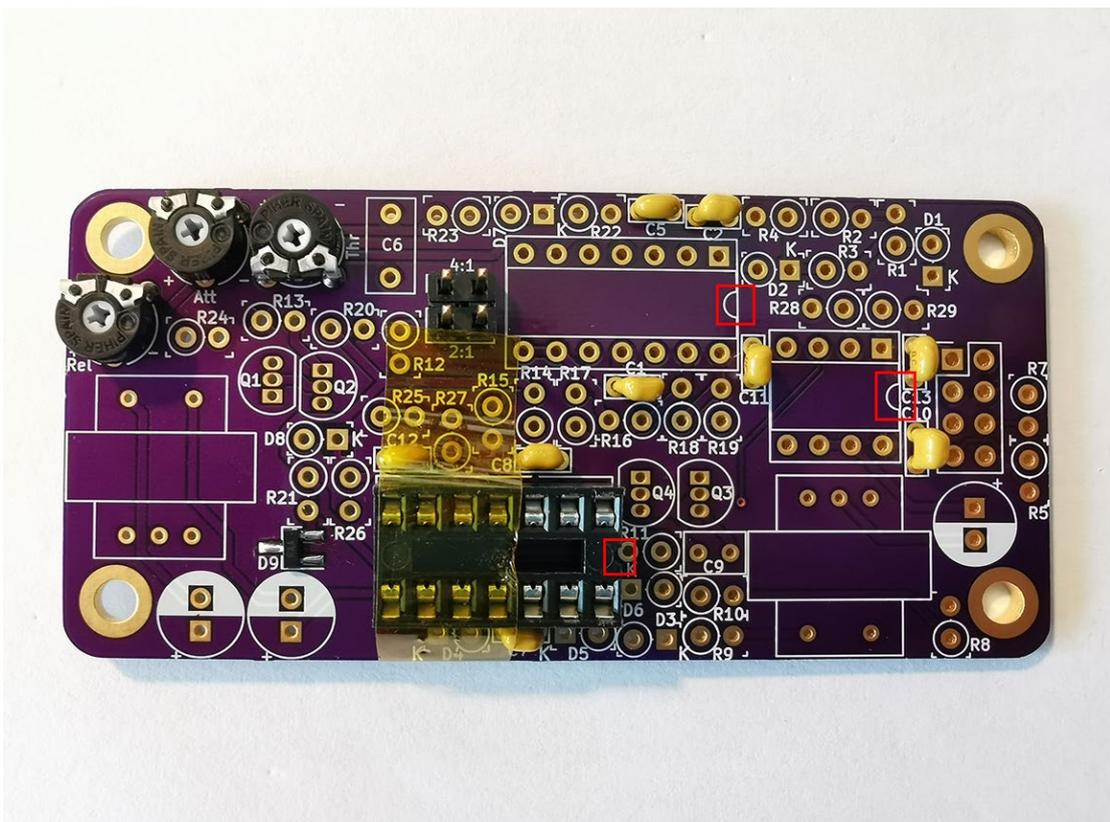


Step 5 – IC Sockets

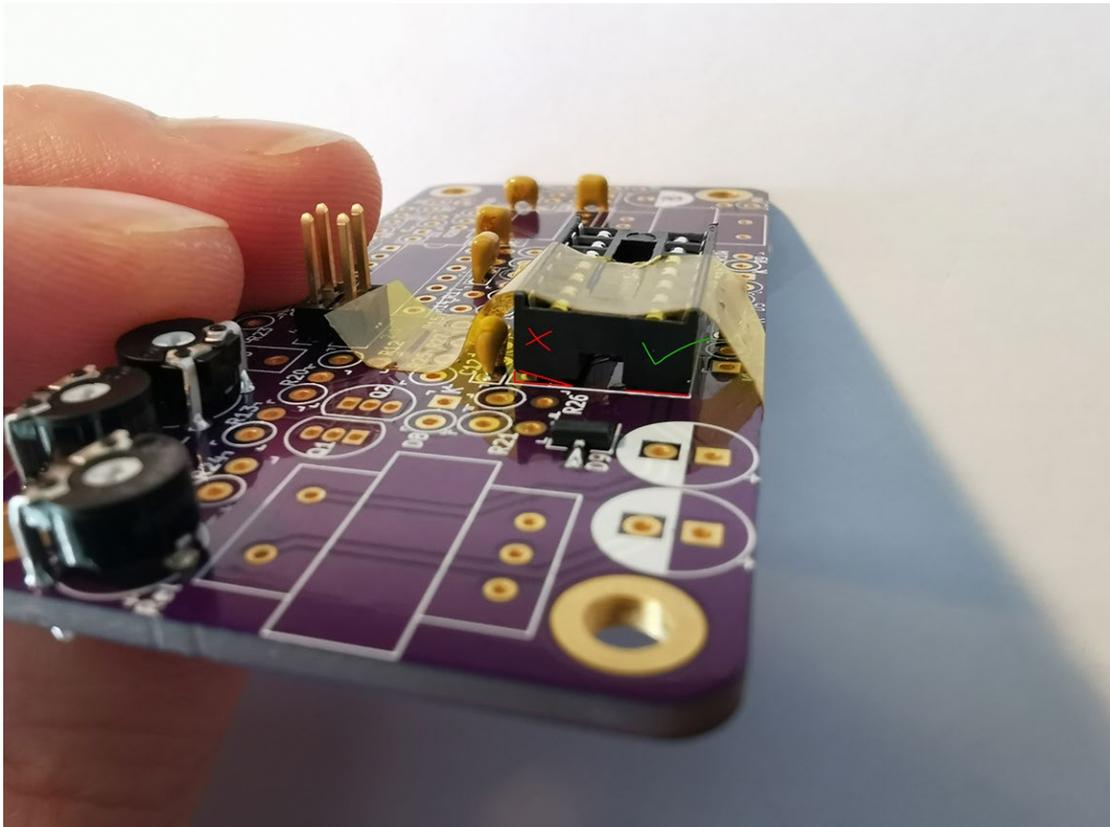
We also do the sockets right away because it's most convenient to do it now:



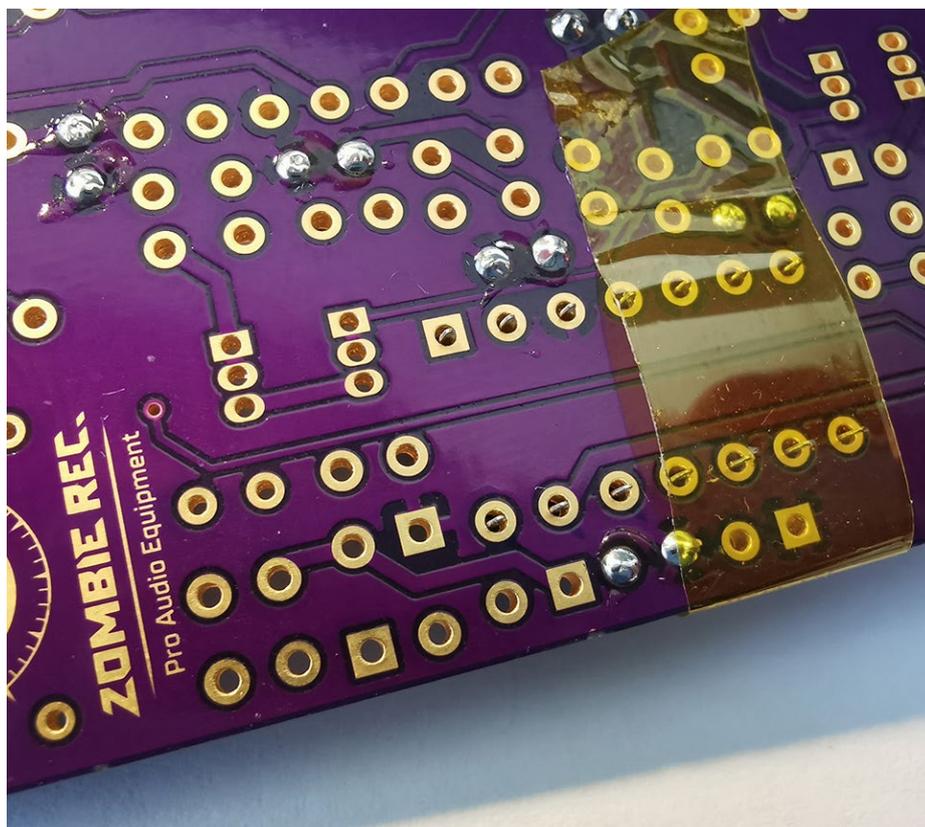
Start with the 14 pin socket at the bottom.



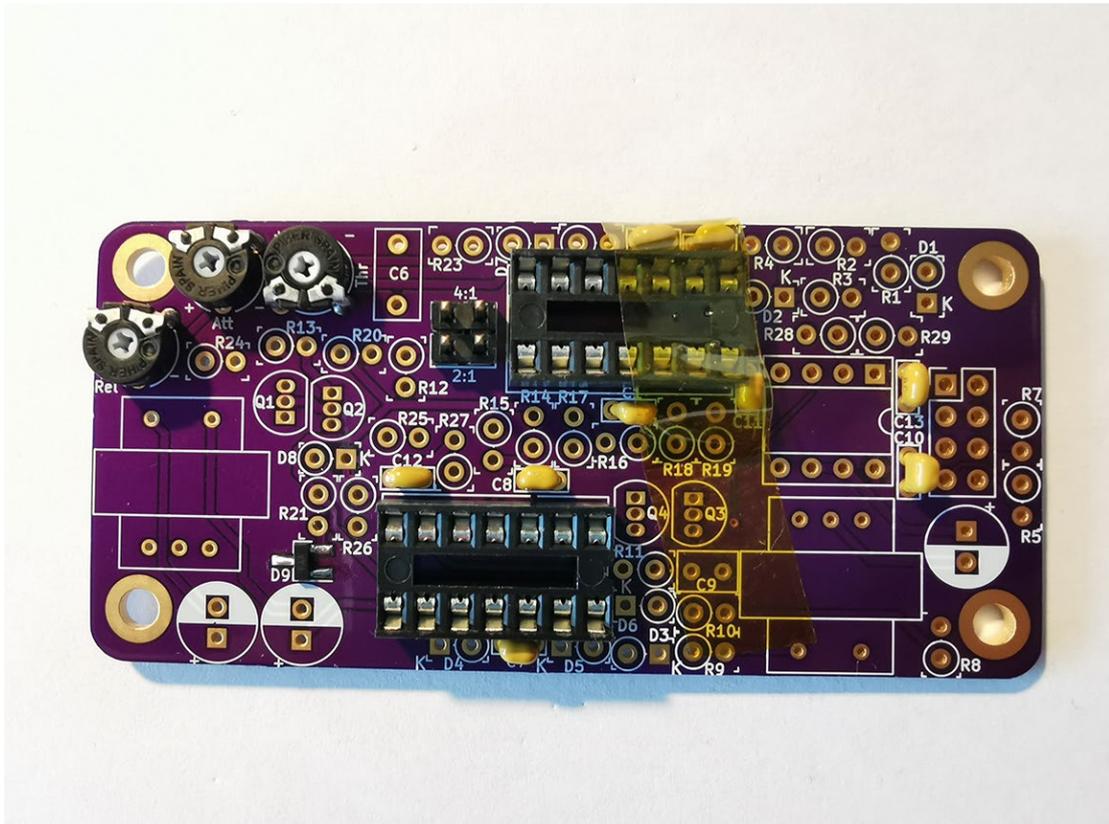
Make sure to insert the socket so that the notch and the marking on the PCB are aligned. Use tape again to fix the socket in place. While doing so, make also sure that the socket is flush on the PCB:



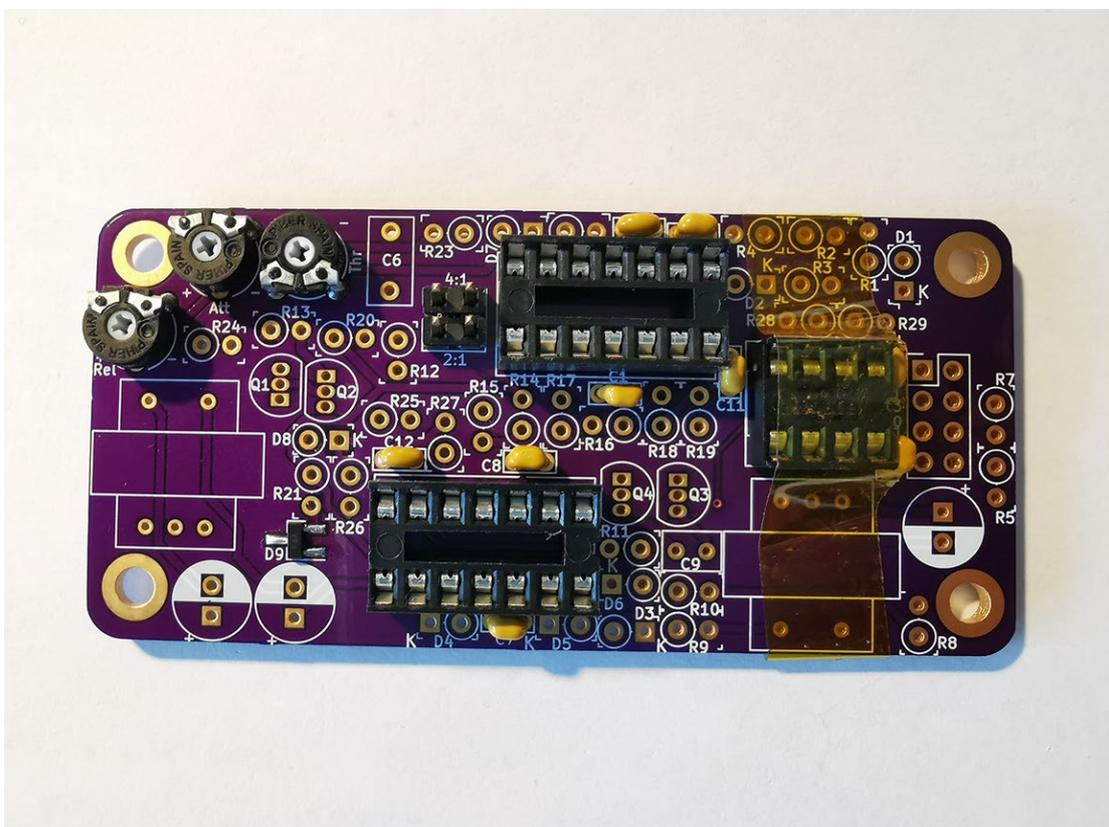
Then flip it over and start soldering. You can remove the tape after soldering at least 4 pins, then finish the rest.



Then continue with the upper 14 pin socket:



And finish with the 8 pin socket:



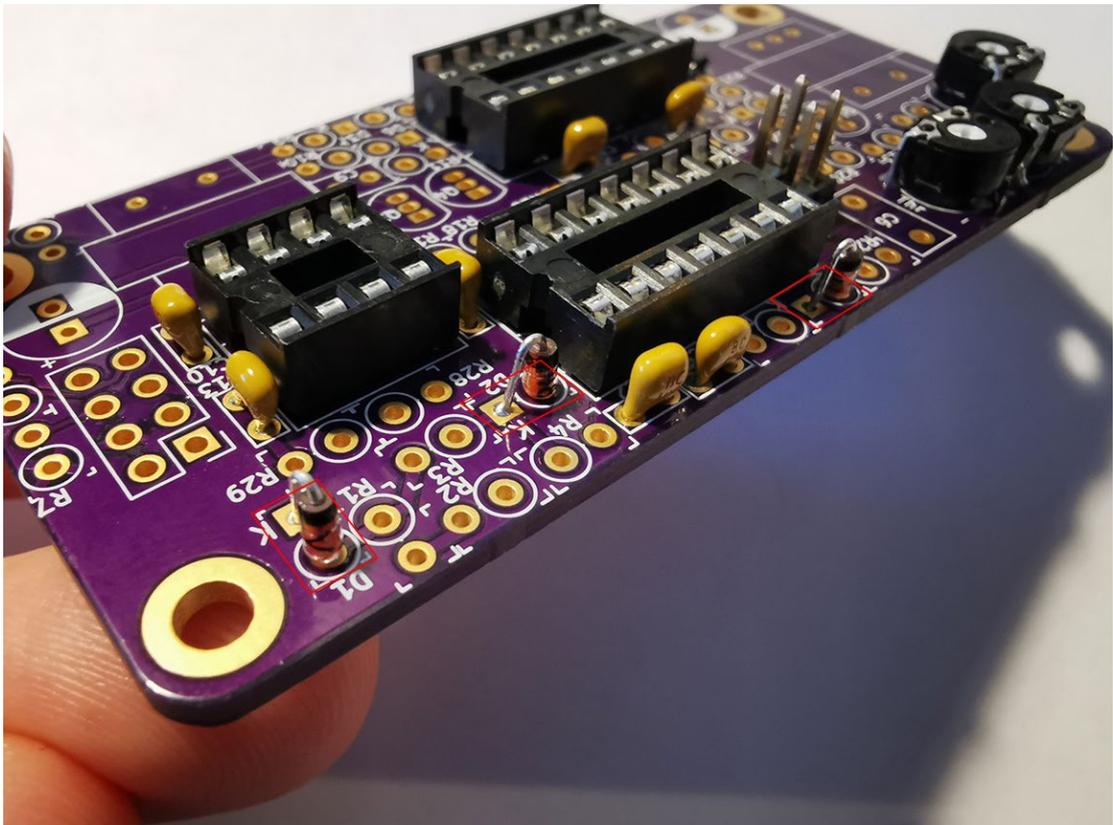
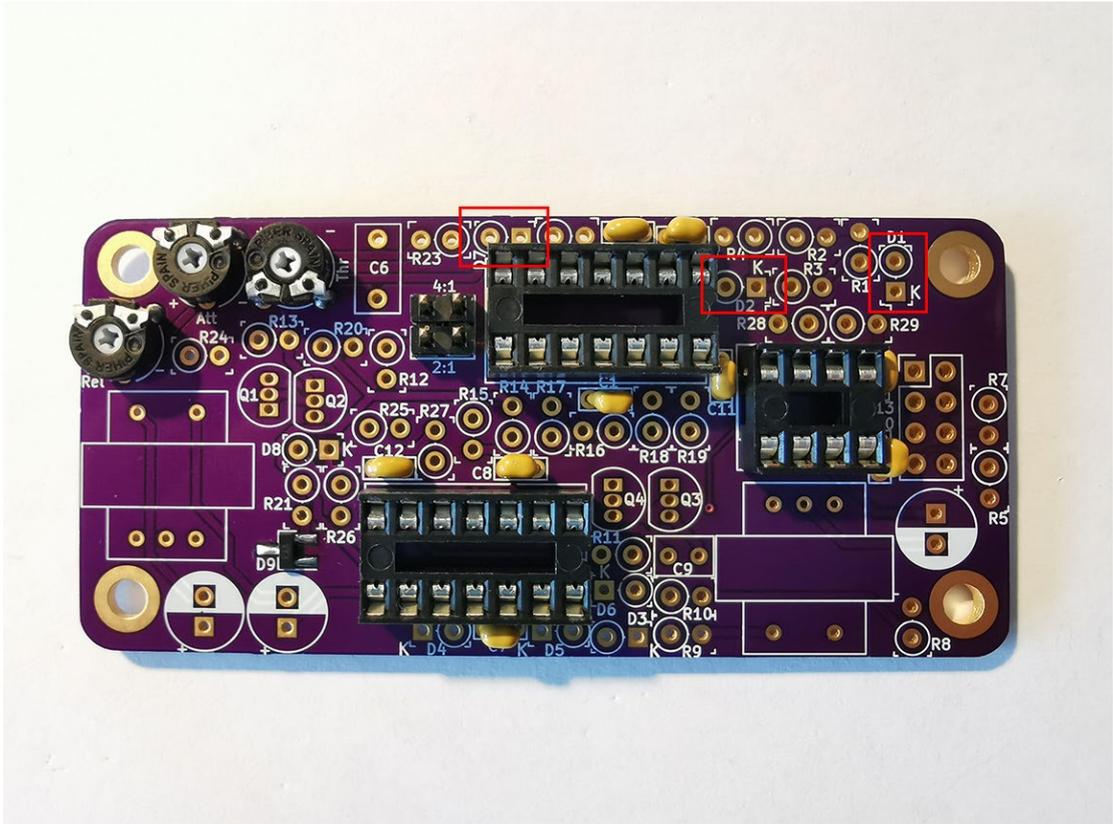
Step 6 – Diodes

There are 8x diodes in total. Start with the 3x 1N4148 diodes. Bend the leads at the tip of the diode with the black band (cathode) like so (do this for all diodes):

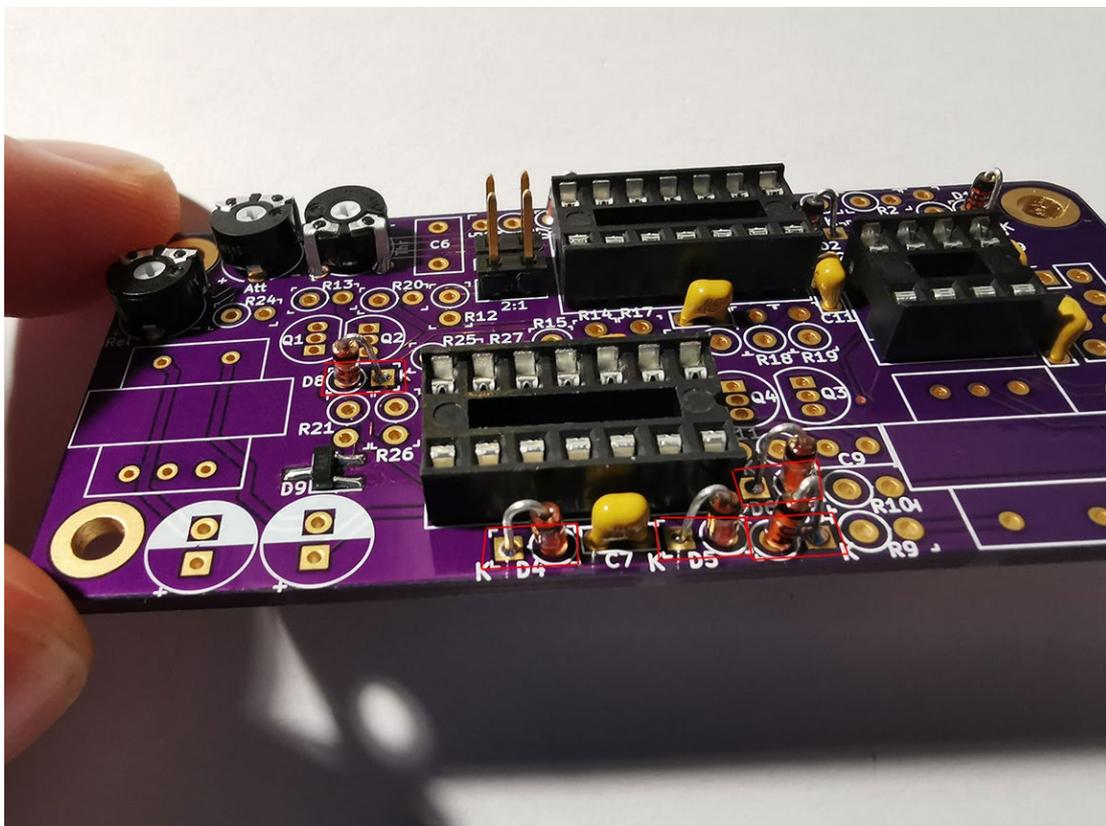
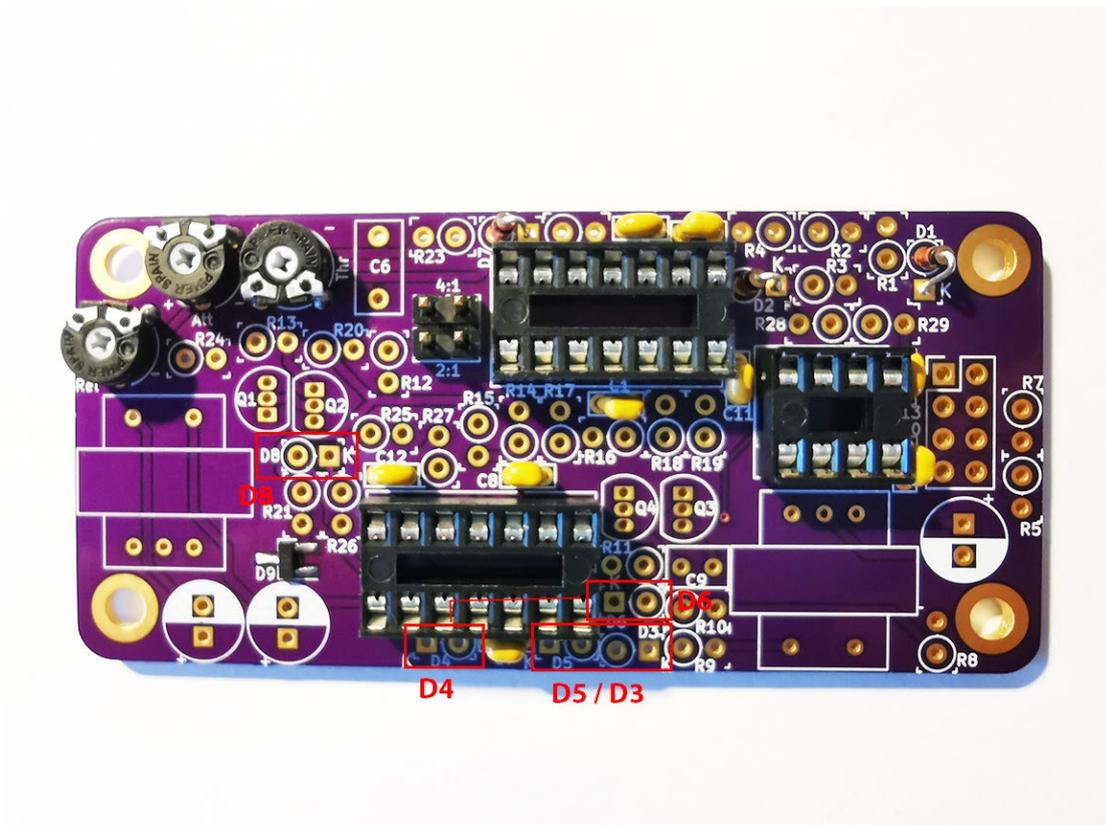


Insert them into D1, D2 and D7. Insert the long lead side without the black band (anode) where the white ring is on the PCB. The black band side should go into a hole marked with «K». Each diode should be inside a single «box» that is made up of white corner markings on the PCB (see image below).

After inserting them. Proceed to secure and solder them the same way we did it with the ceramic capacitors before. Go back and check out step 2 again if necessary.



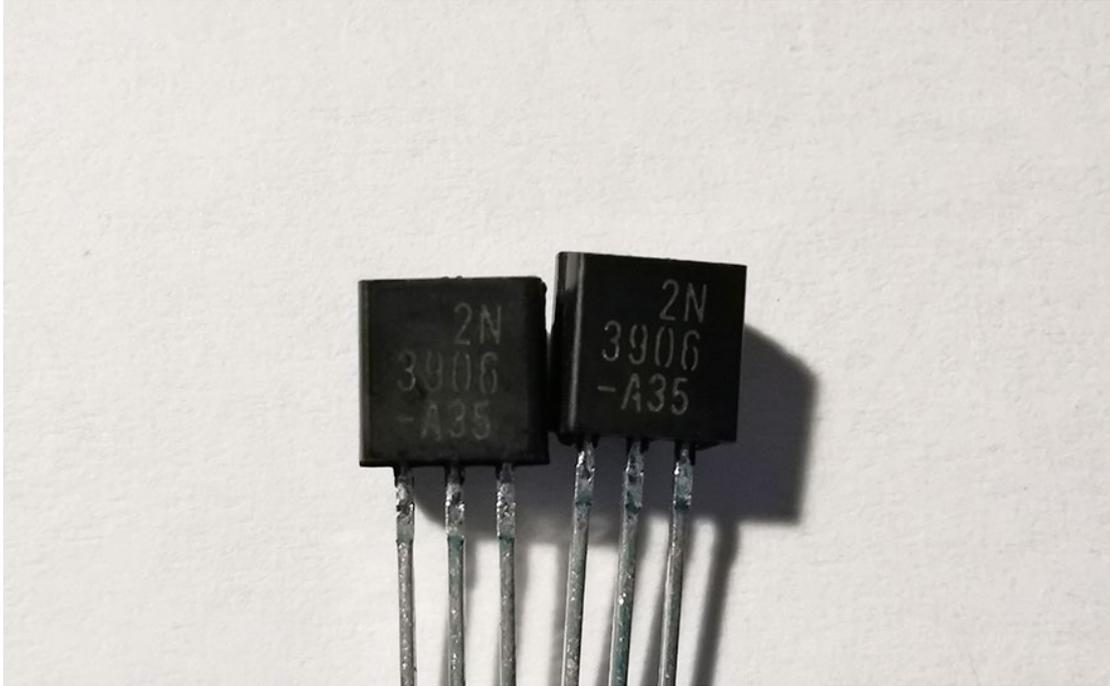
Continue with the remaining 5 diodes. Insert the first diode into D8, and follow up with D3/D5 and D4/D6. Solder them again as shown previously.



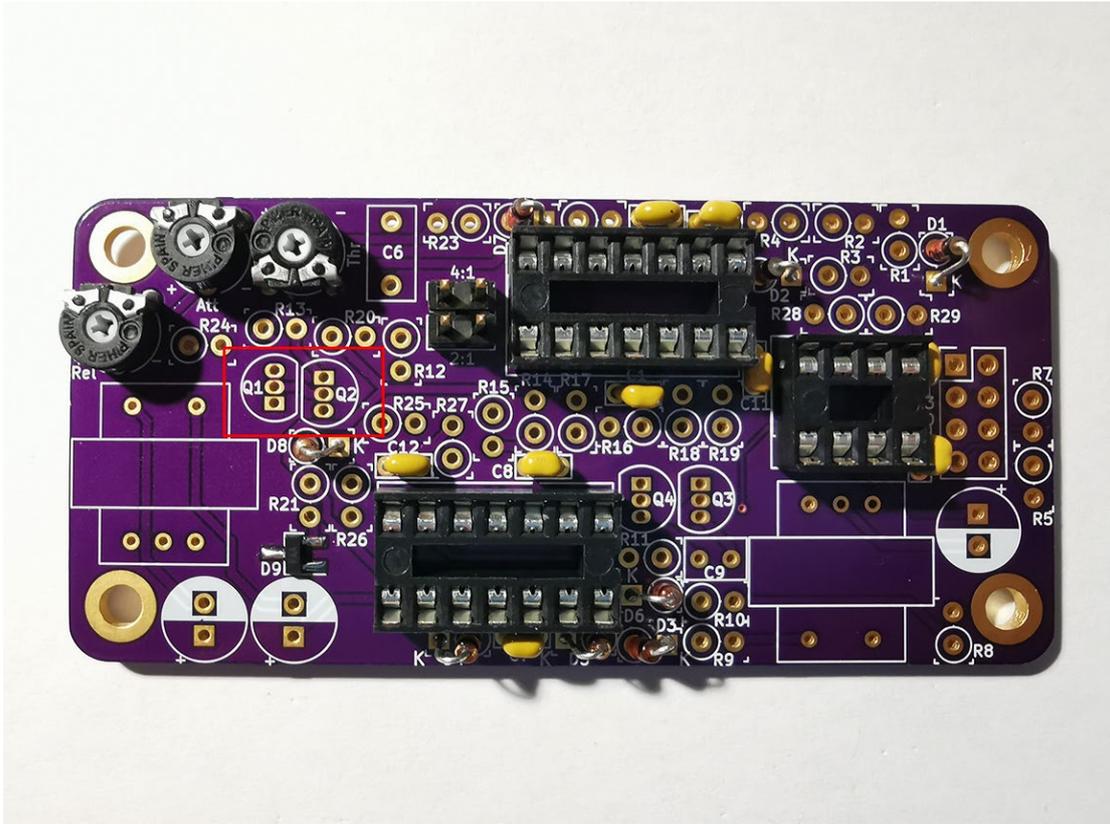
Step 7 – Transistors

There are two pairs of NPN and PNP transistors each. Make double sure to pick the correct ones by checking their marking and insert them in the correct spot and its orientation. And as a reminder, don't forget to be properly grounded when handling them.

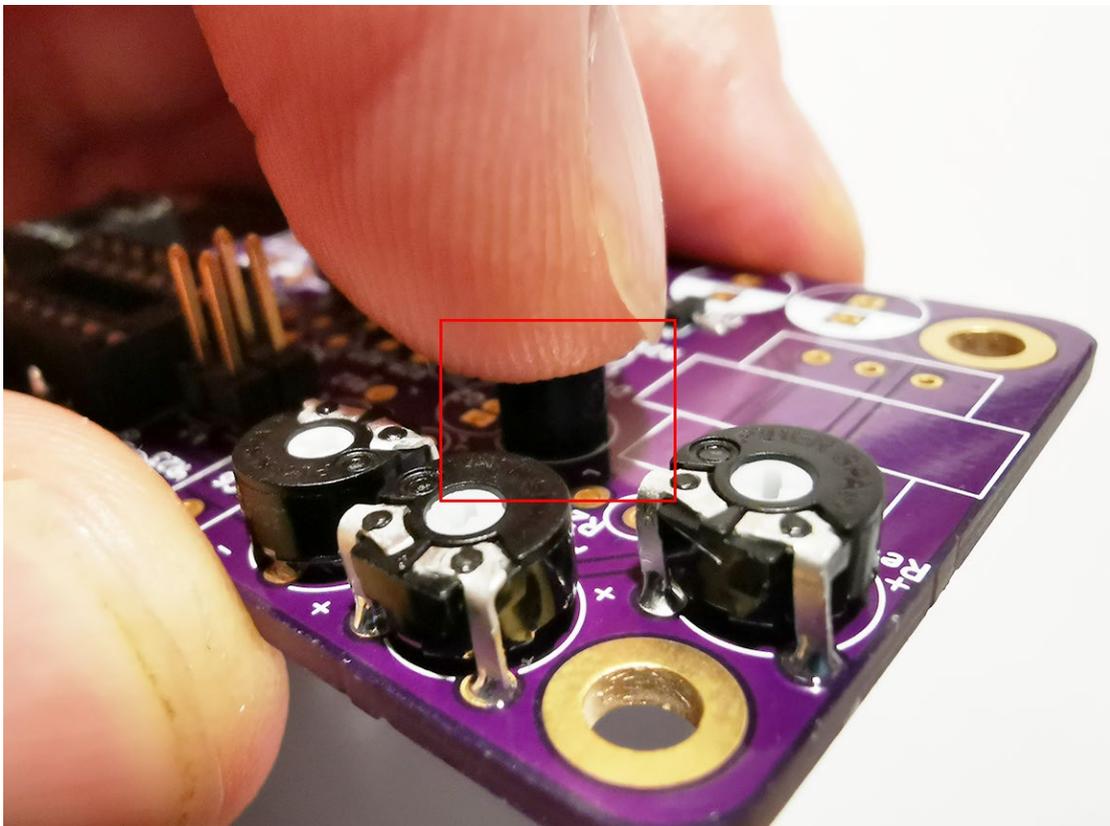
We'll start with the PNP pair. They are marked with 2N3906:



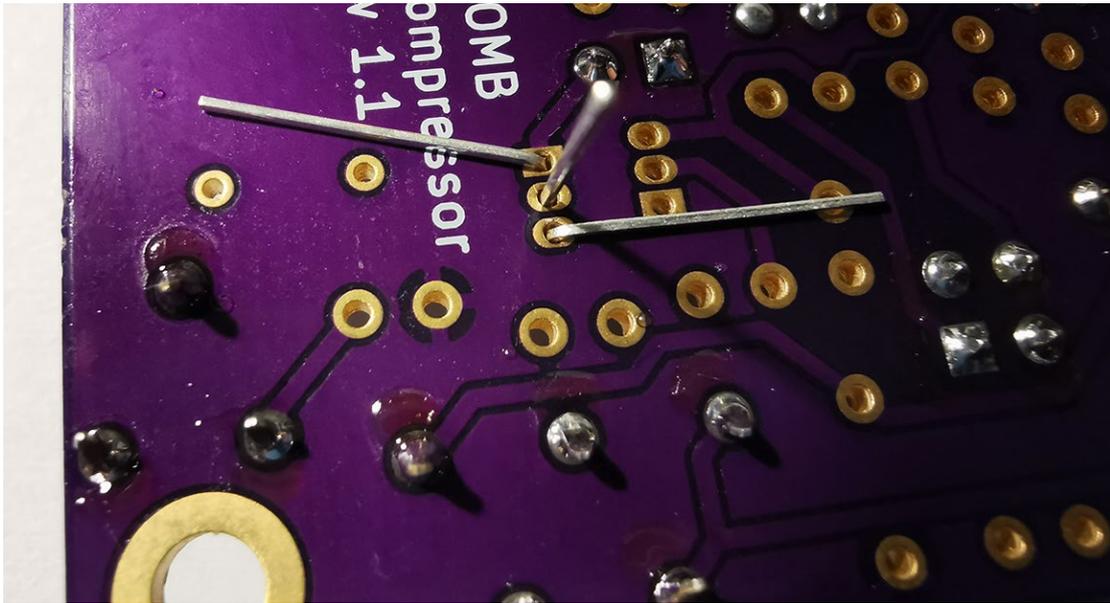
They are placed into Q1 and Q2 on the left. Only populate Q1 for now:



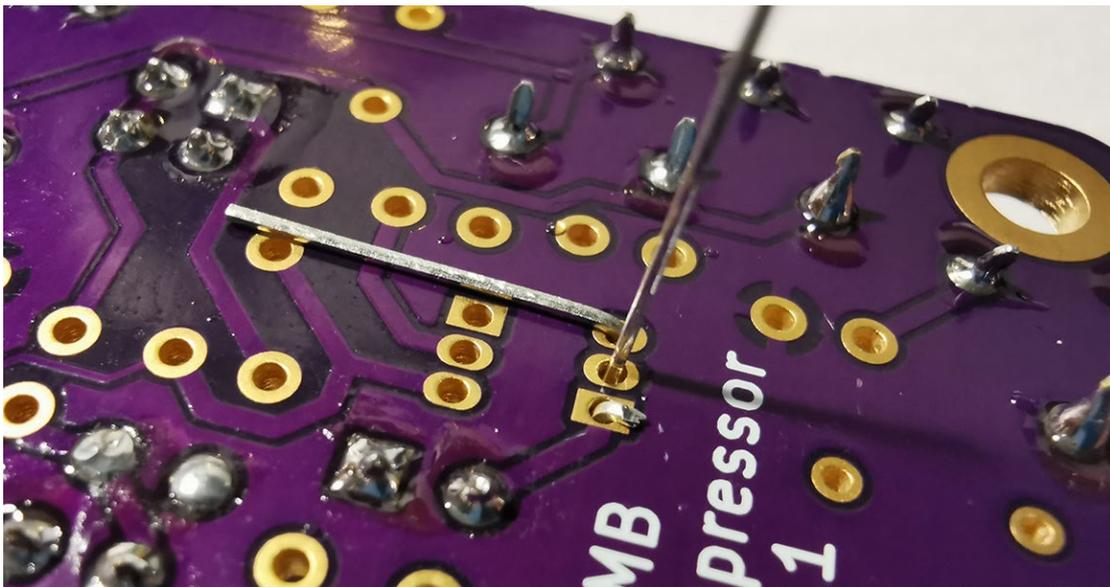
Insert the transistor into Q1 (check orientation), hold it with your index finger and flip the board around.



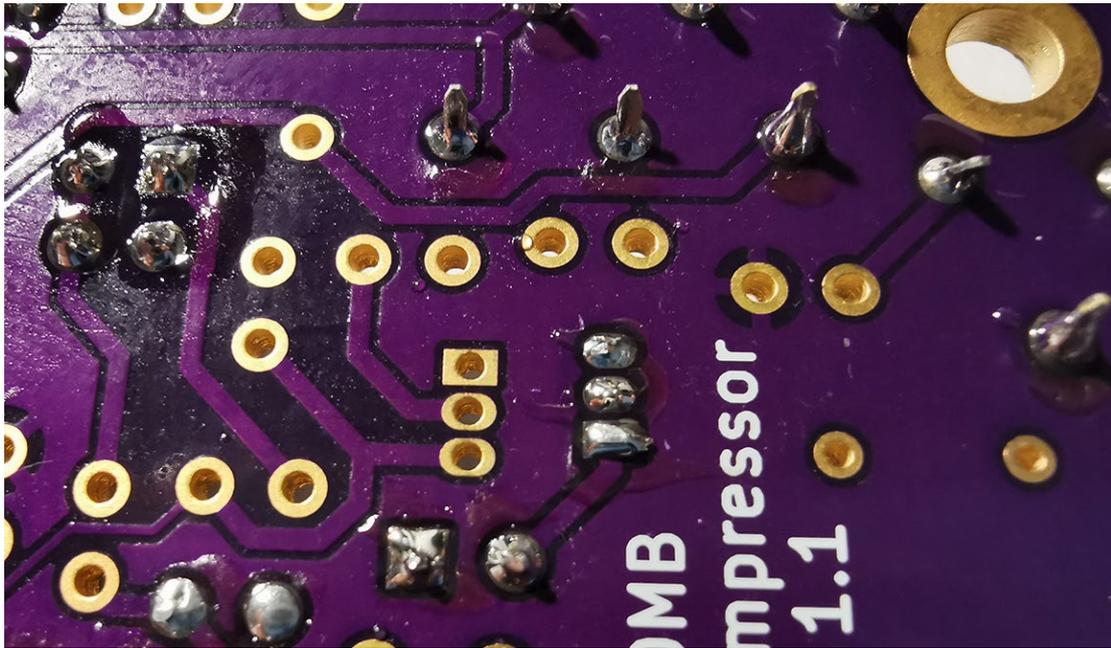
Now bend each lead on the outside in reversed directions from each other, away from the center.
Then let your index finger go:



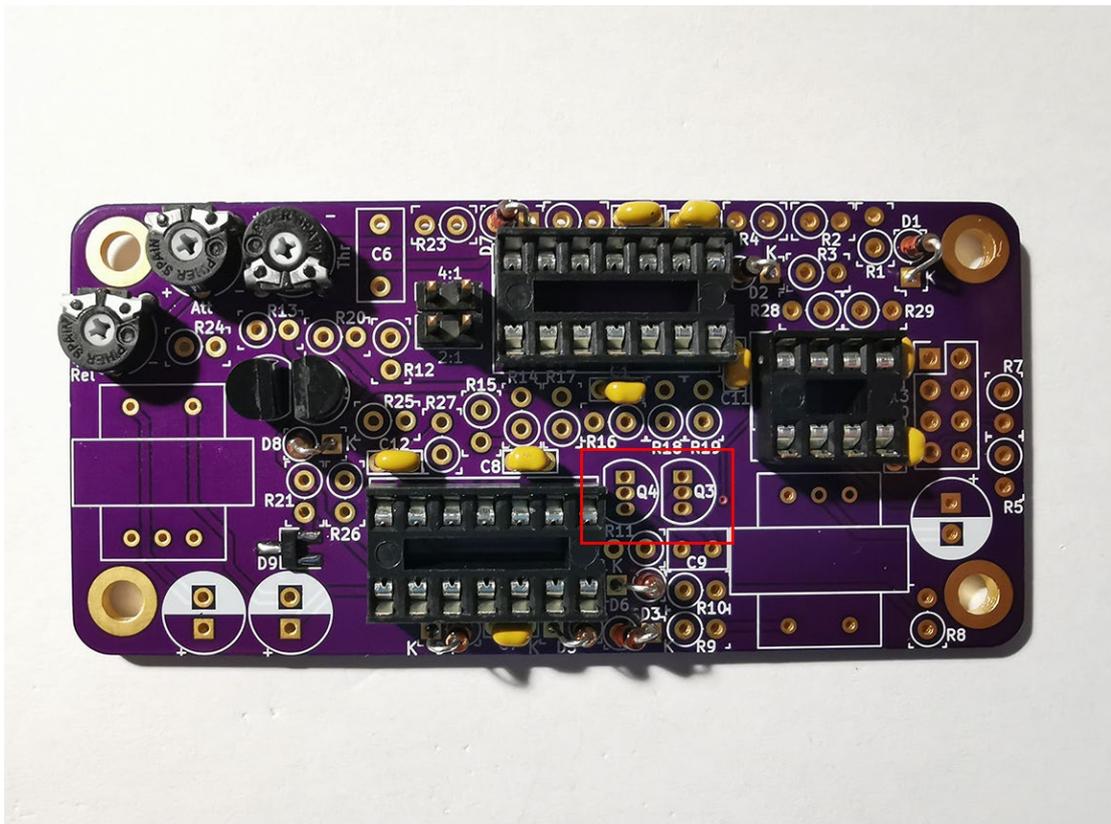
Cut off the lead in the same way you did all the leads up to now:



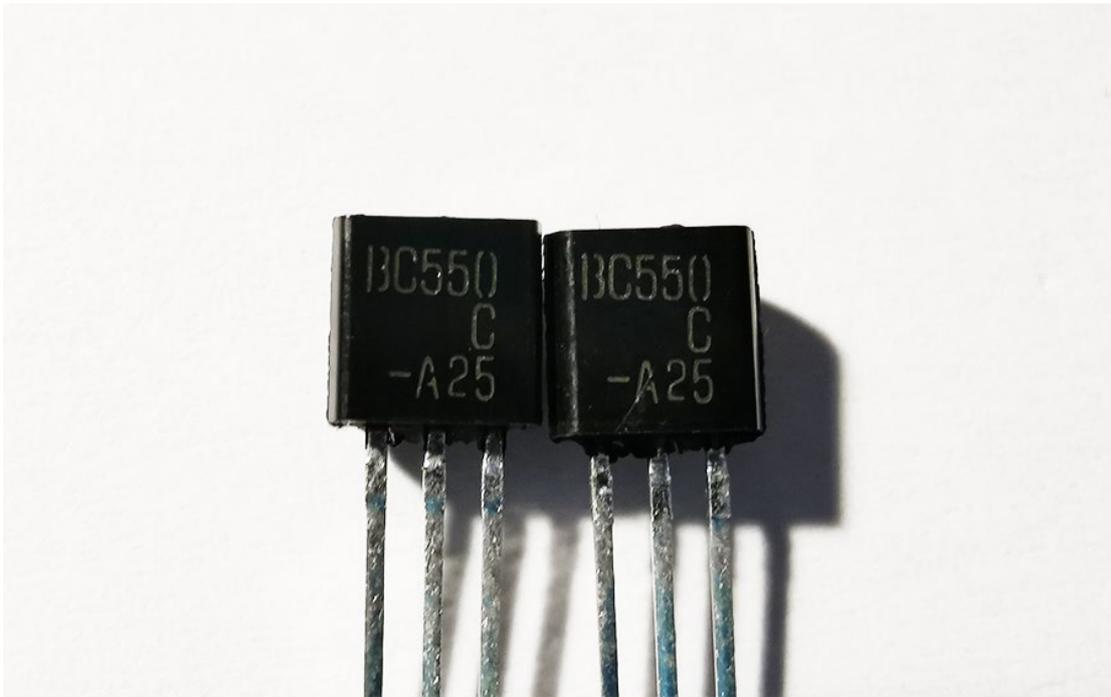
Solder it and continue with the other side. Finally cut off the center lead and solder it as well. Make sure that no solder bridge between the pins is created:



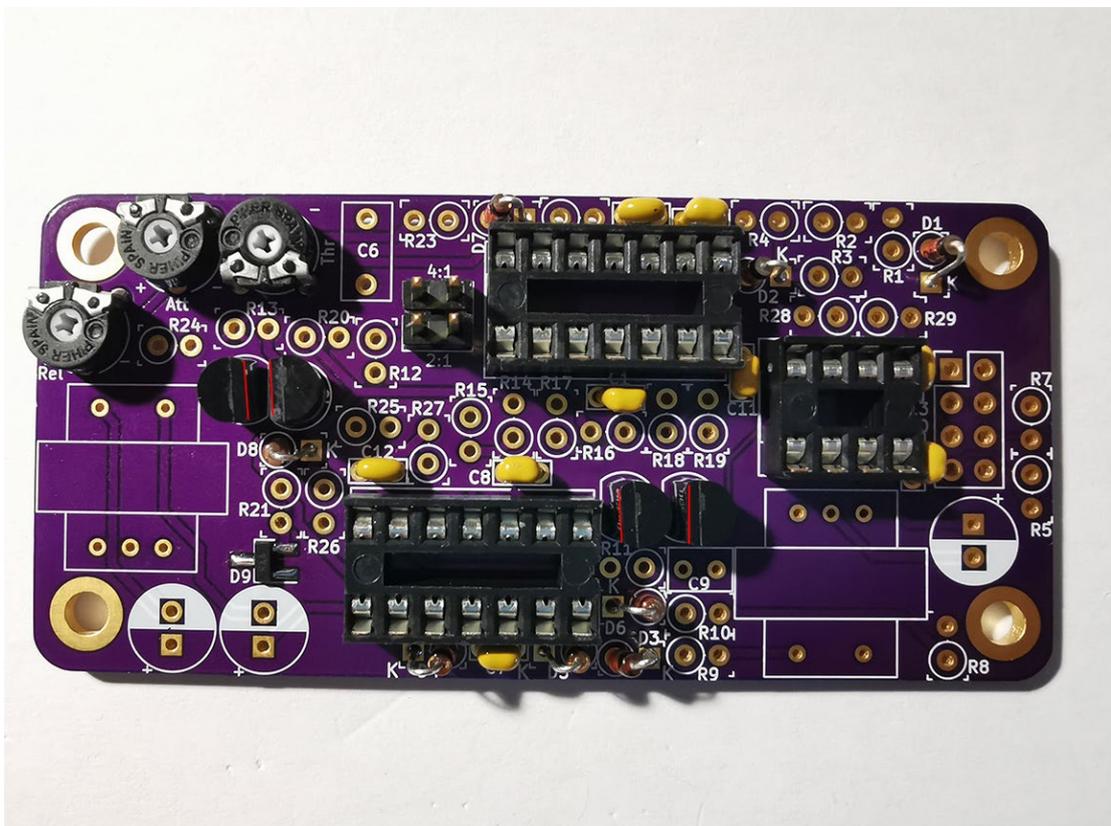
Continue with Q3 and Q4. We'll use the remaining two NPN here. They are marked with BC550:



Well use the remaining two NPN here. They are marked with BC550:

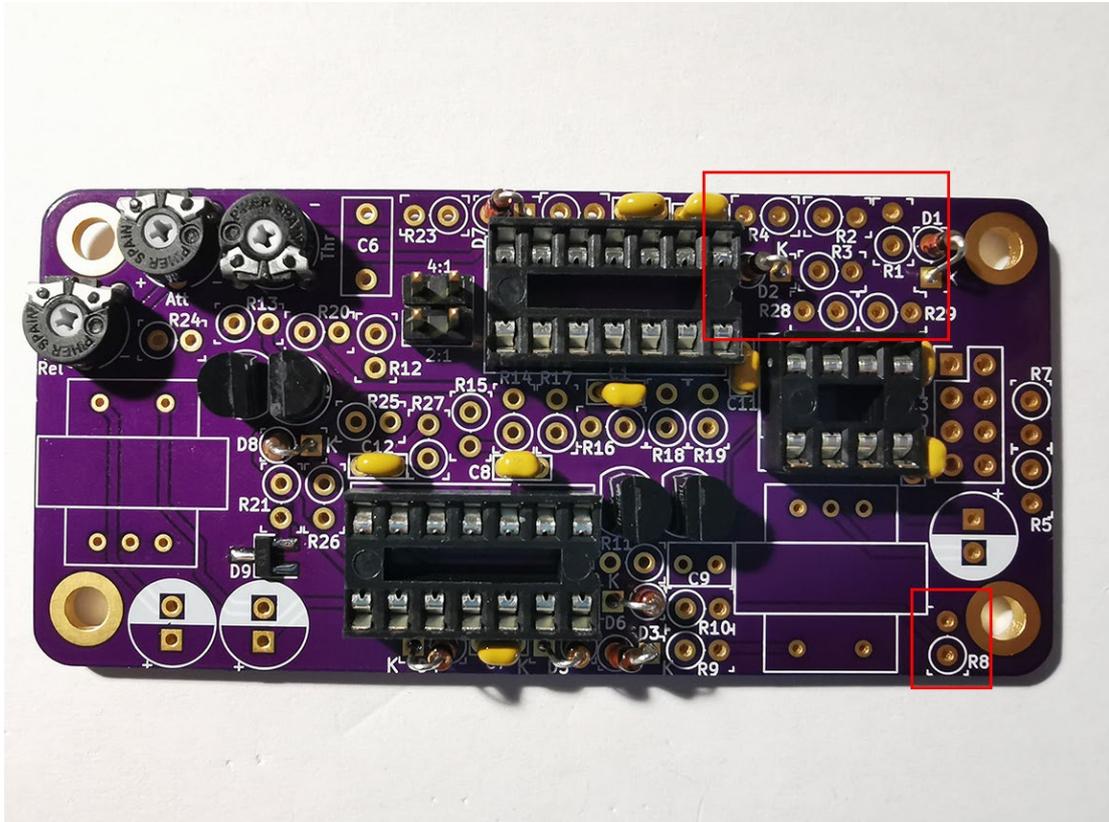


Solder them the same way as previously shown. Double check the orientations again. The flat surface should correspond with the marking on the PCB.

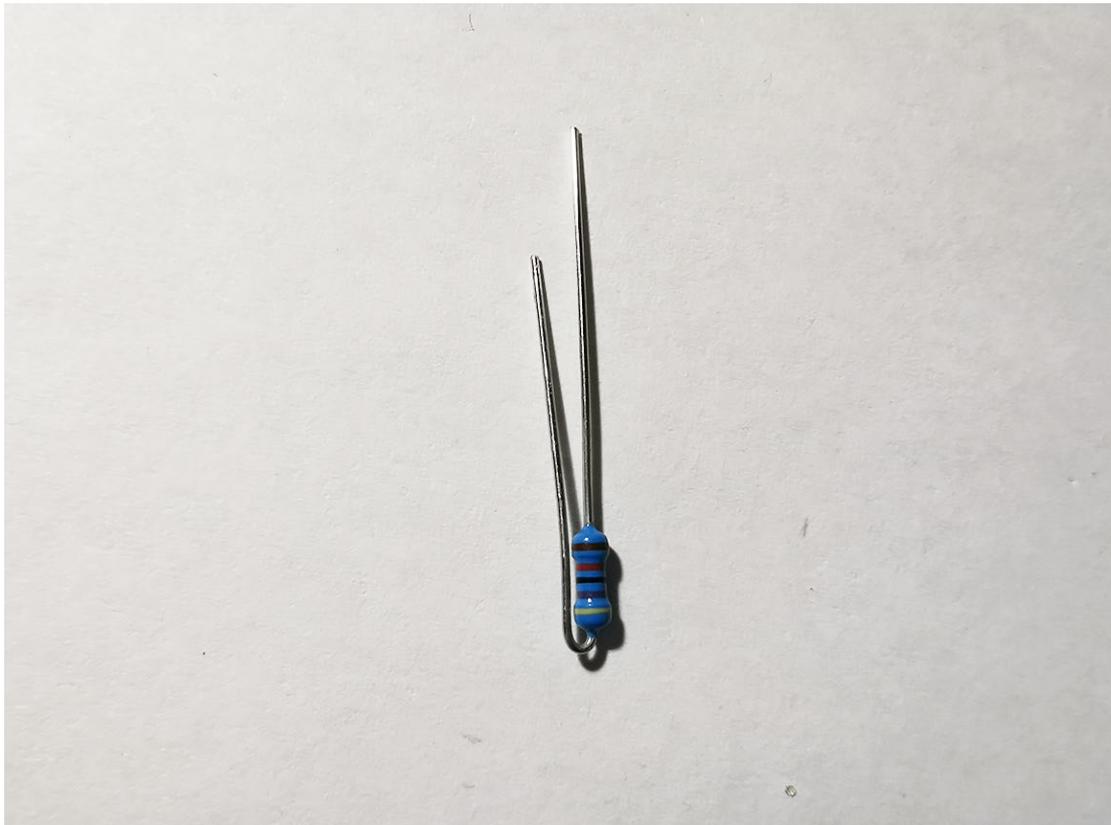


Step 8 – Resistors

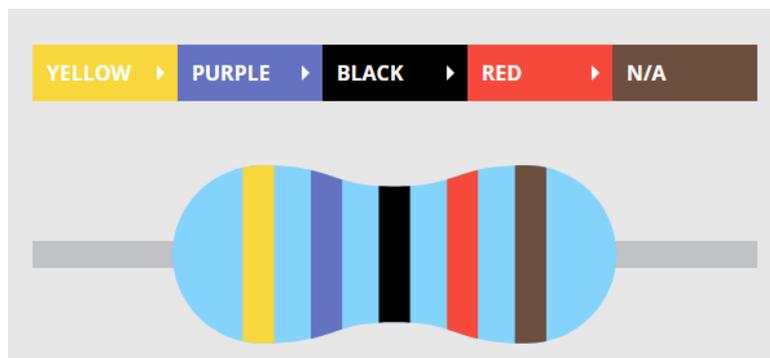
Finally we get to the resistors. We'll start from right to left as follows (skip R5 and R7 for now):



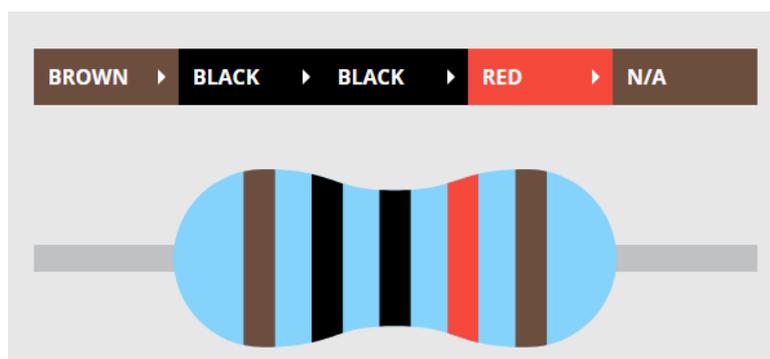
Like we did with the diodes before, bend the lead at one side of the resistor and solder them using the exact same technique as before:



R8 (bottom): 47k



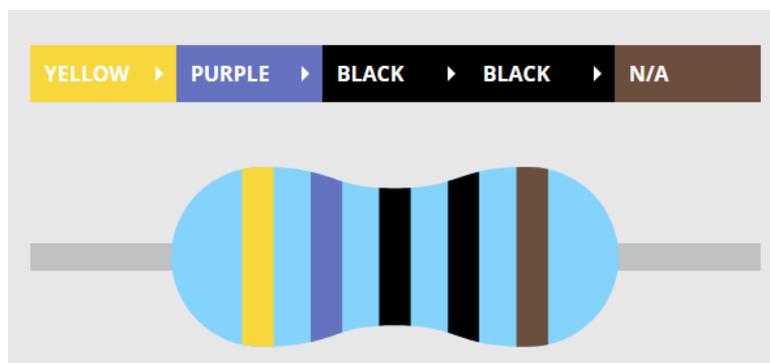
R1, R2, R3 (top): 10k



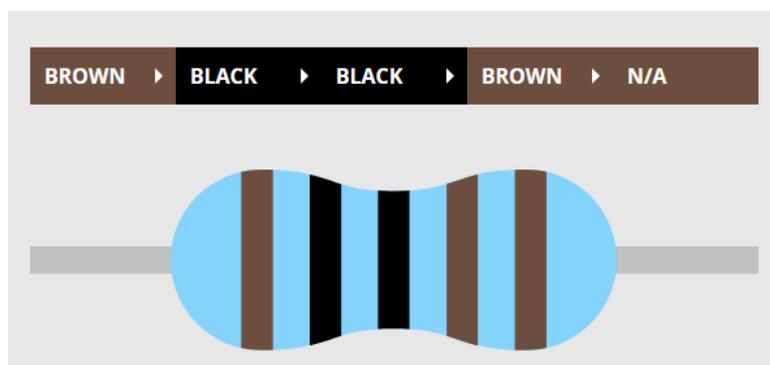
R4: 4.99k



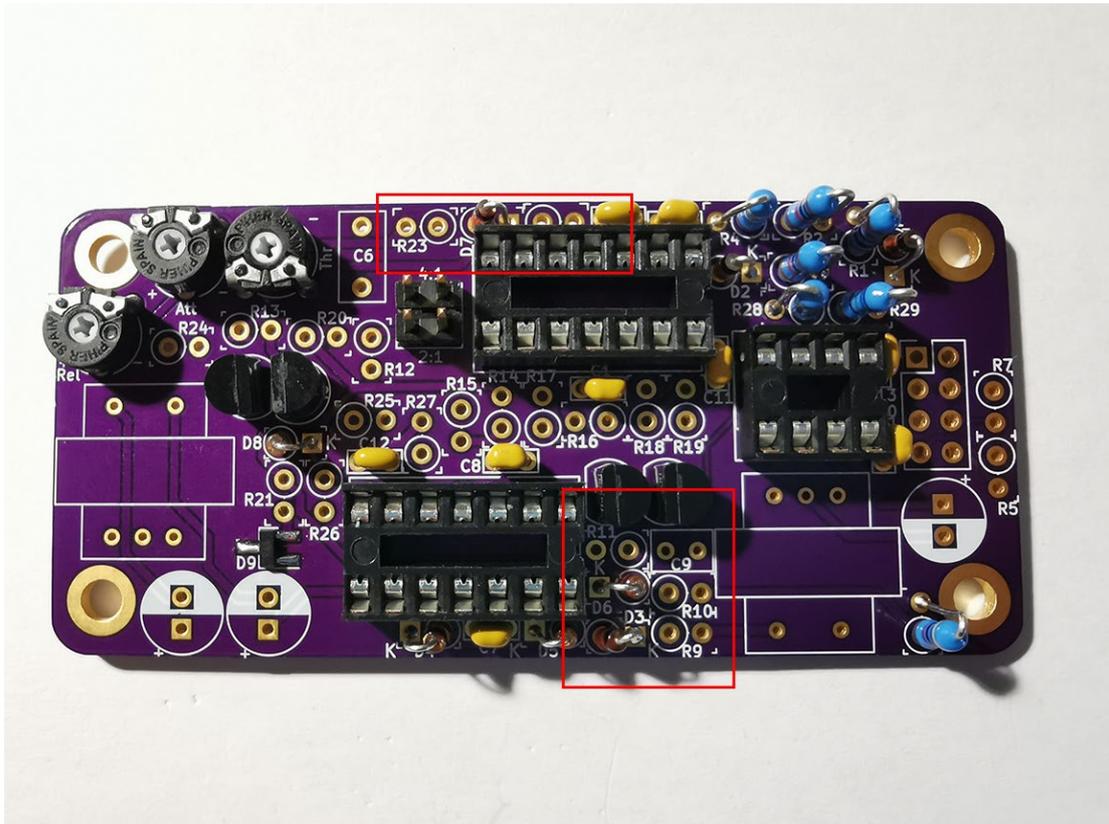
R28: 470R



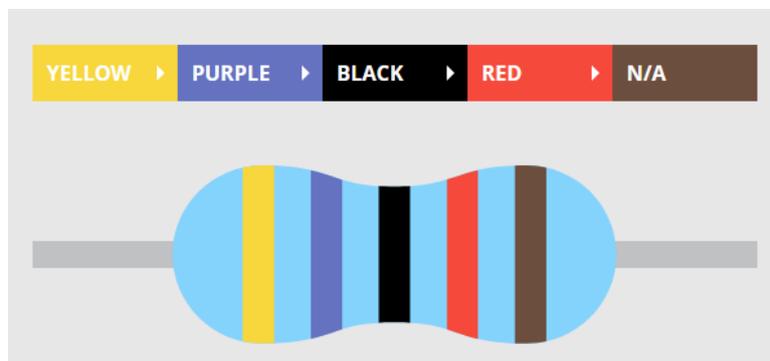
R29: 1k



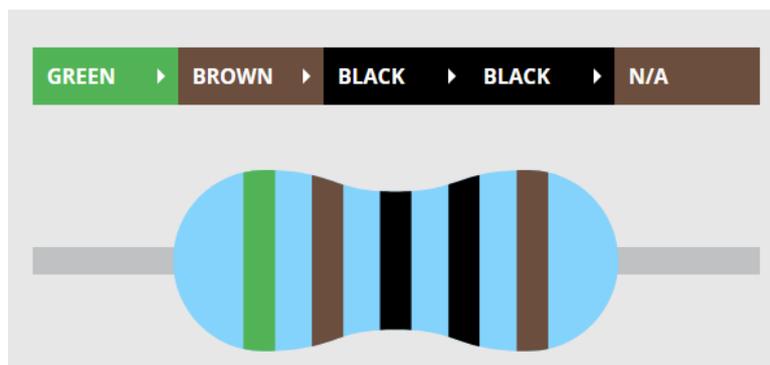
Next up:



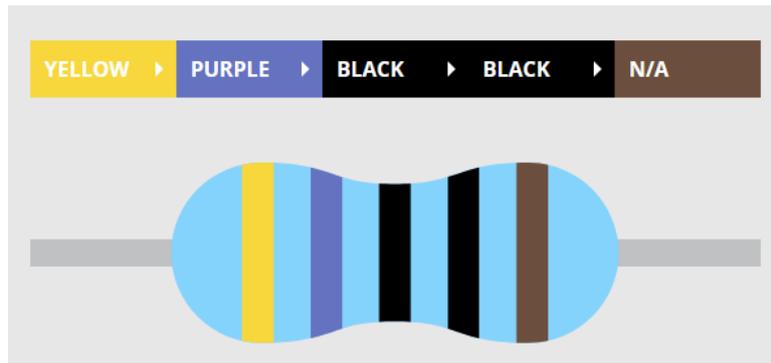
R9, R10 (bottom): 47k



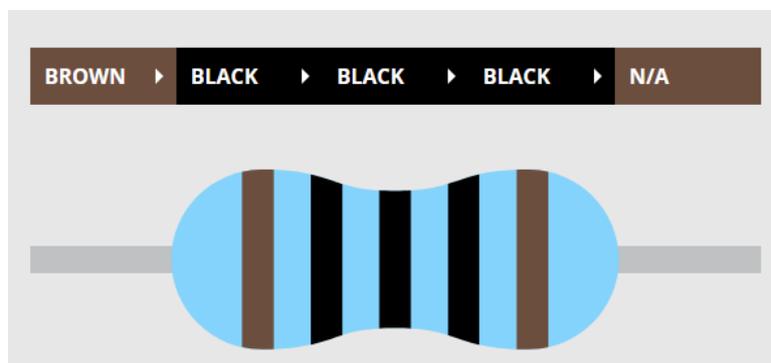
R11: 510R



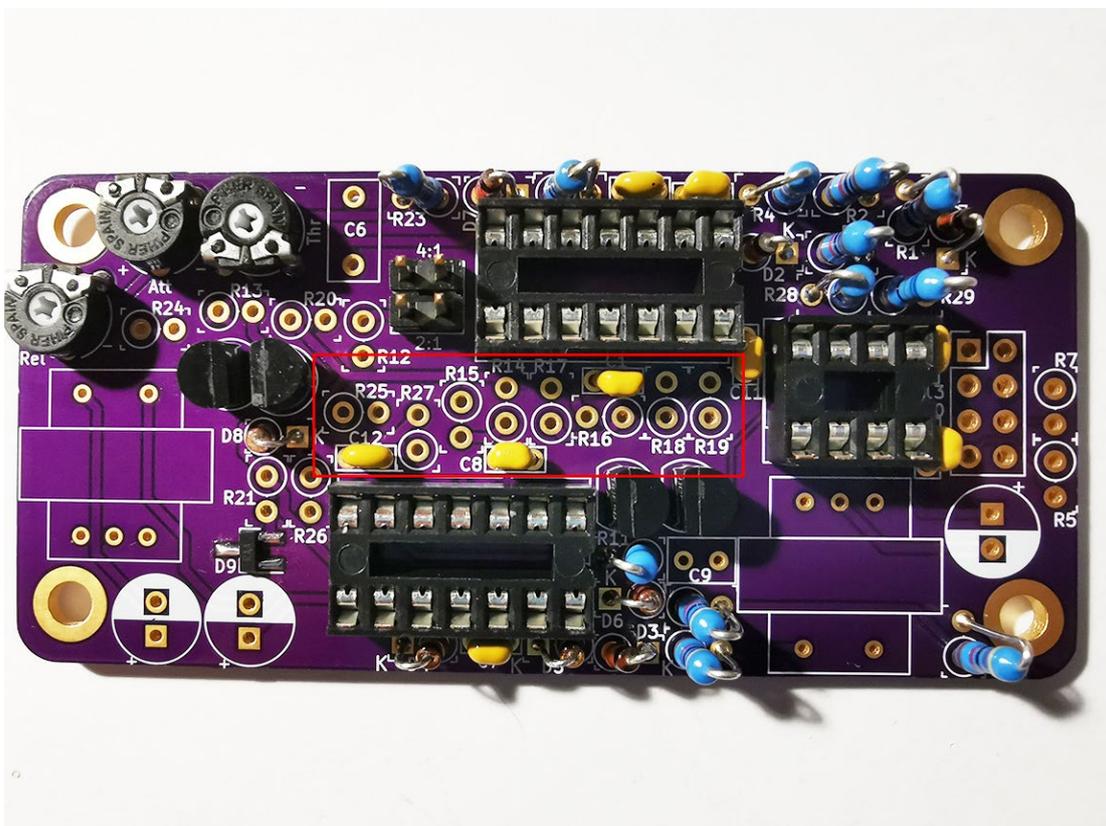
R22 (top): 470R



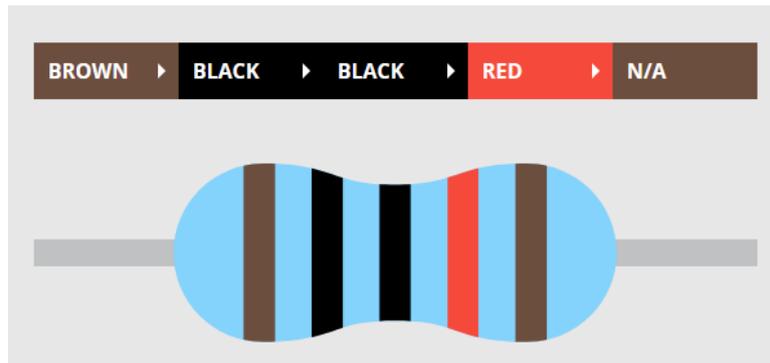
R23: 100R



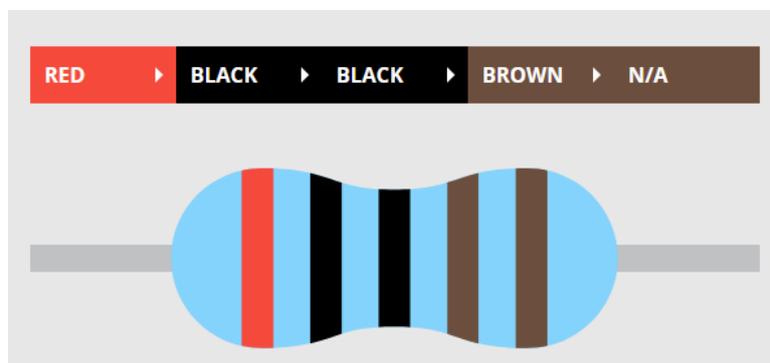
Now the center section:



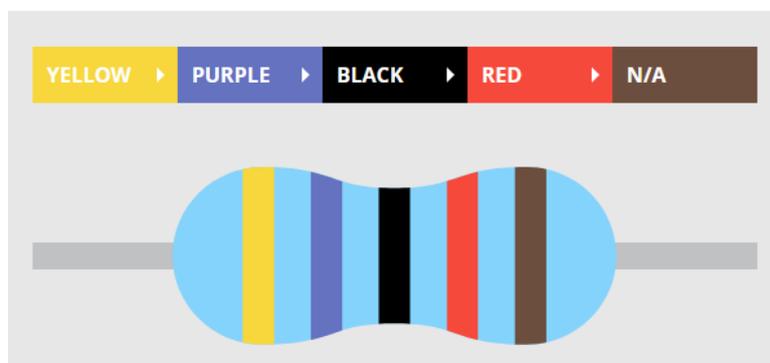
R16, R17, R18: 10k



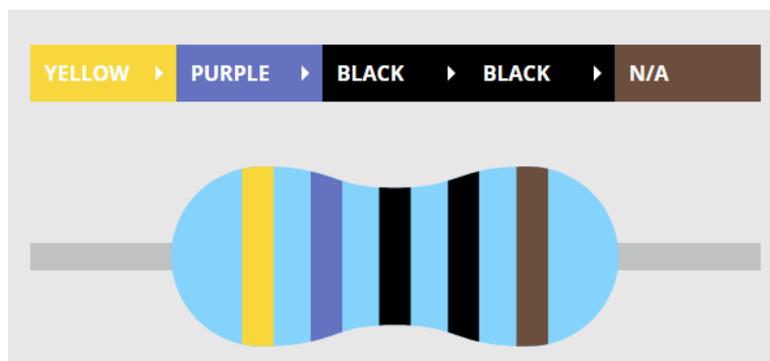
R19: 2k



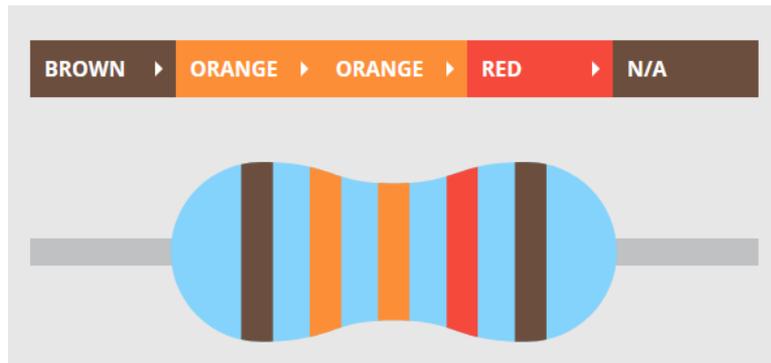
R14: 47k



R15: 470R



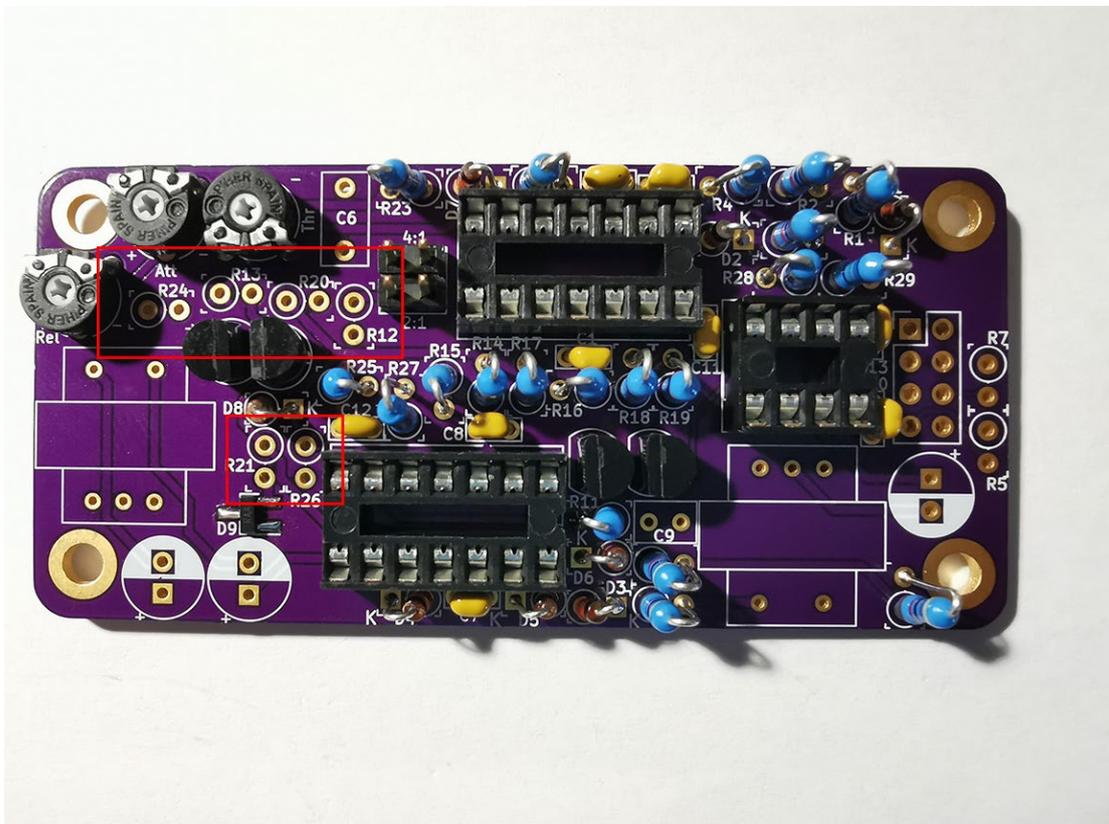
R27: 13.3k



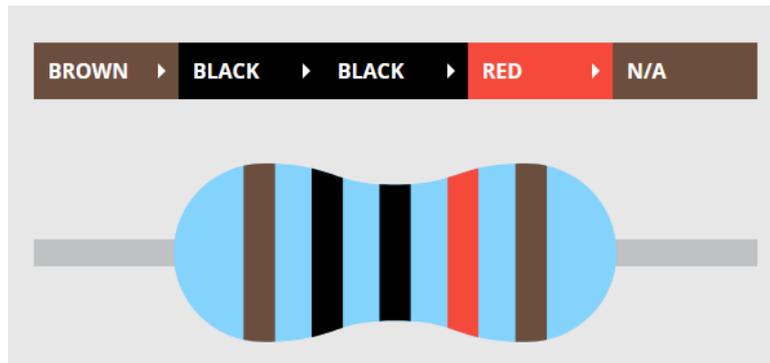
R25: 6.65k



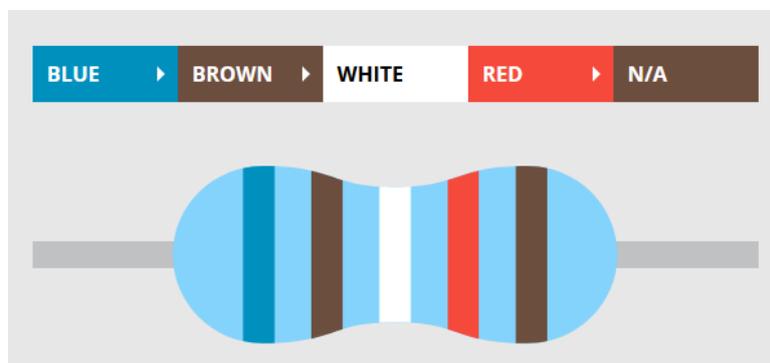
And finally:



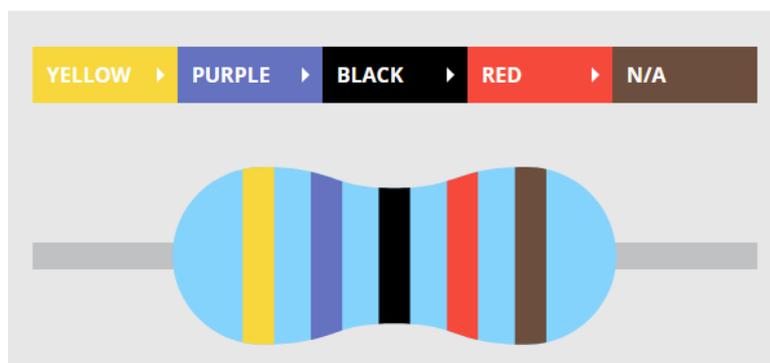
R12, R20, R24: 10k



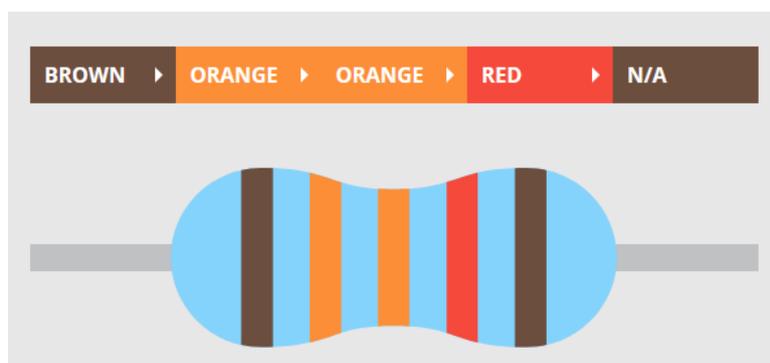
R13: 61.9k



R21: 47k



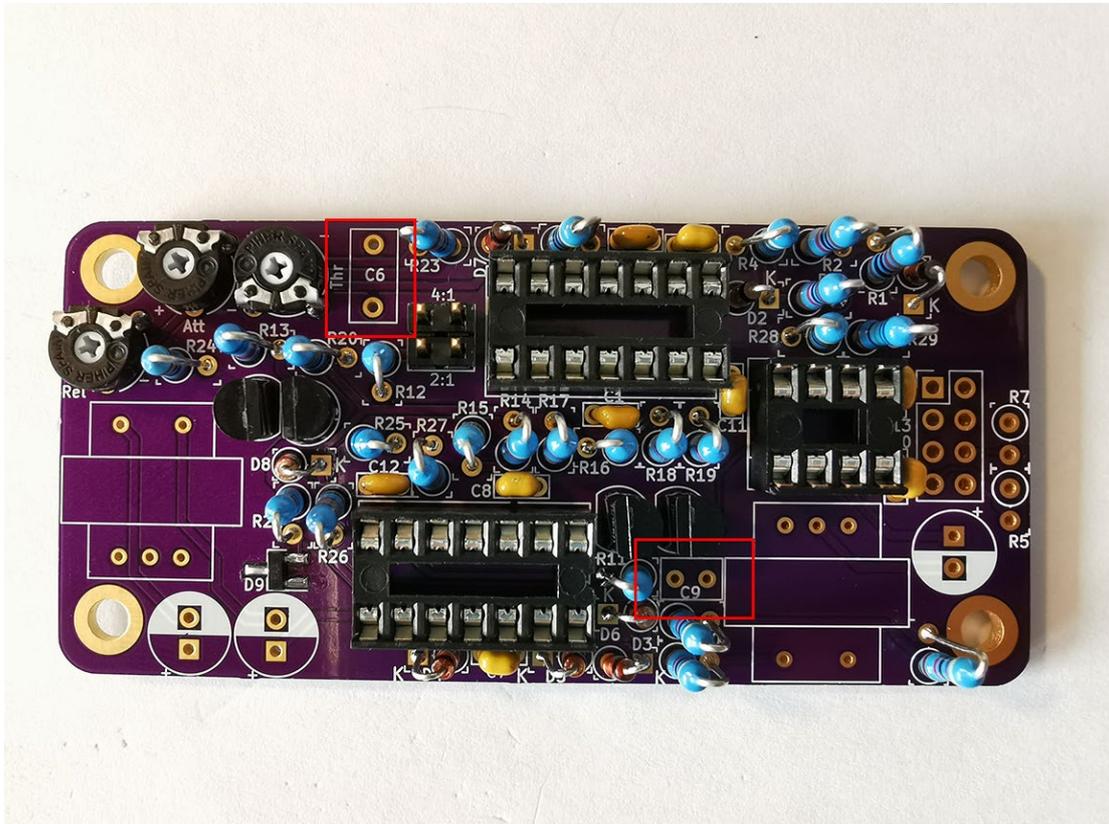
R26: 13.3k



Step 9 – Film Capacitors

Solder these the same way we did with all other leaded components up to this point.

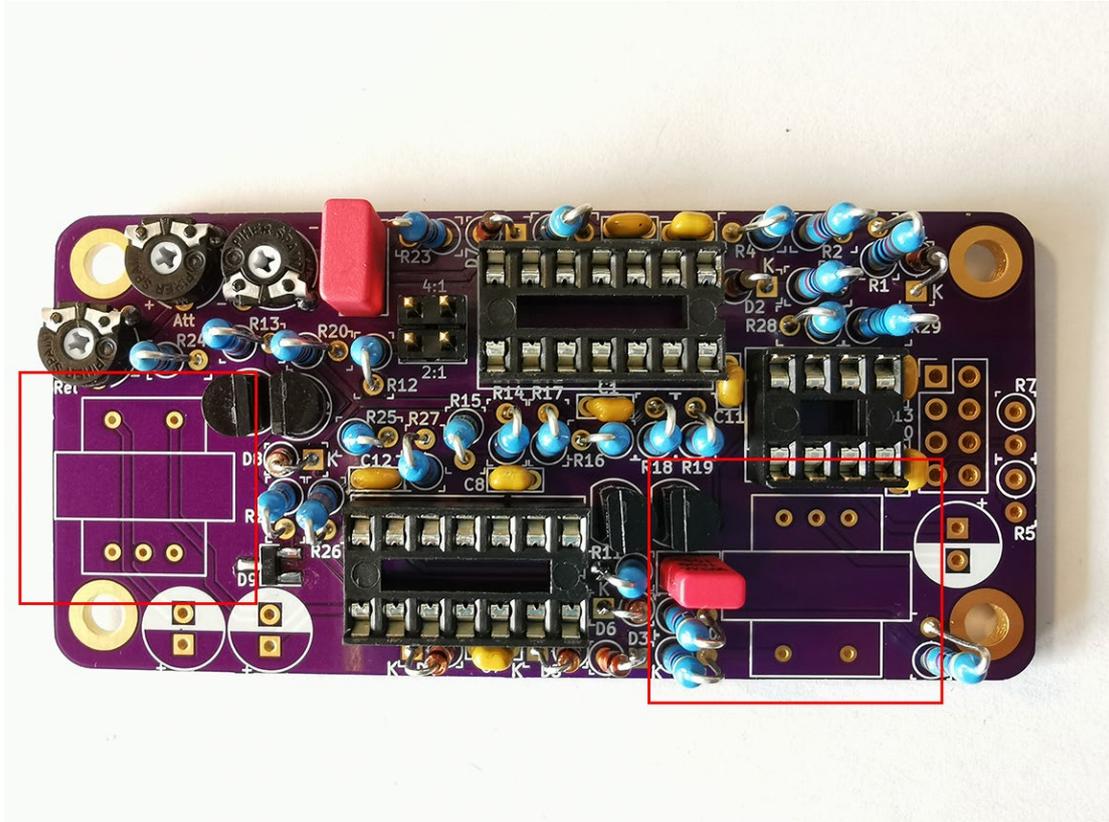
Populate C6 (top) with the larger 1uF cap and C9 (bottom) with the smaller 1500pF cap:



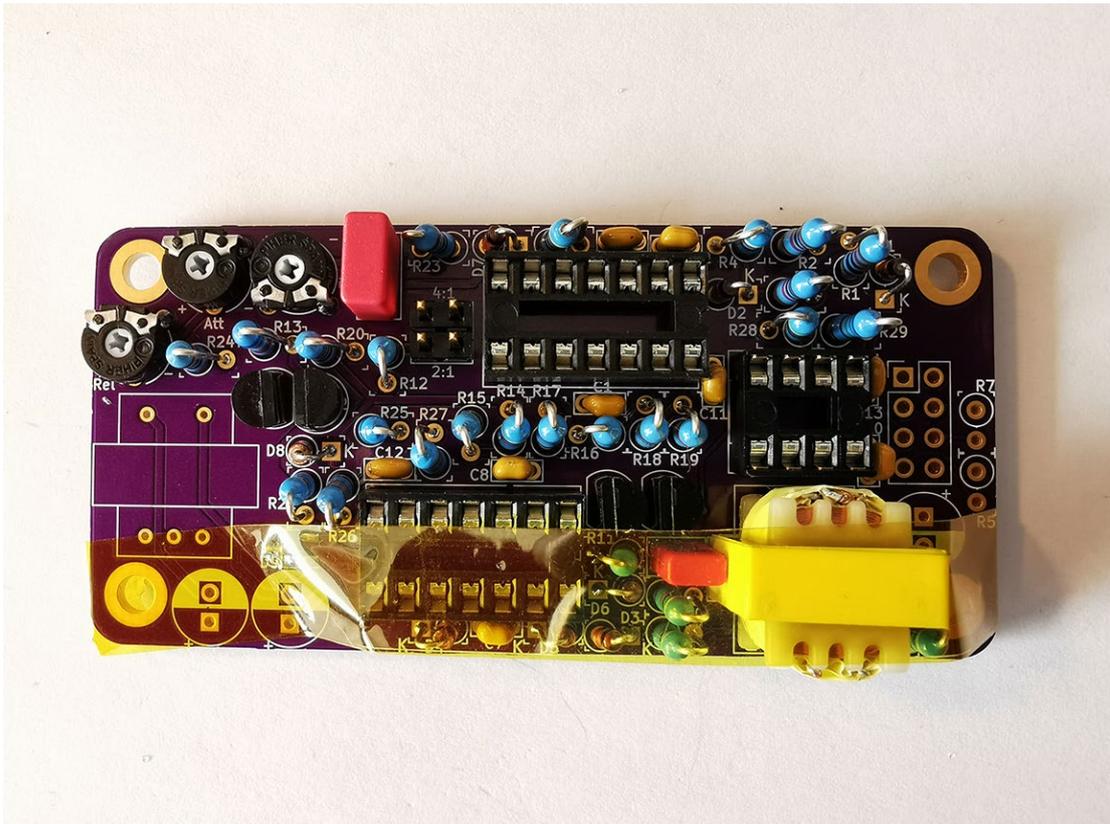
Step 10 – Transformers

While the two transformers are not exactly through hole components, they still can be soldered to keep them in a rock solid position. When done correctly, there will be no wobble at all.

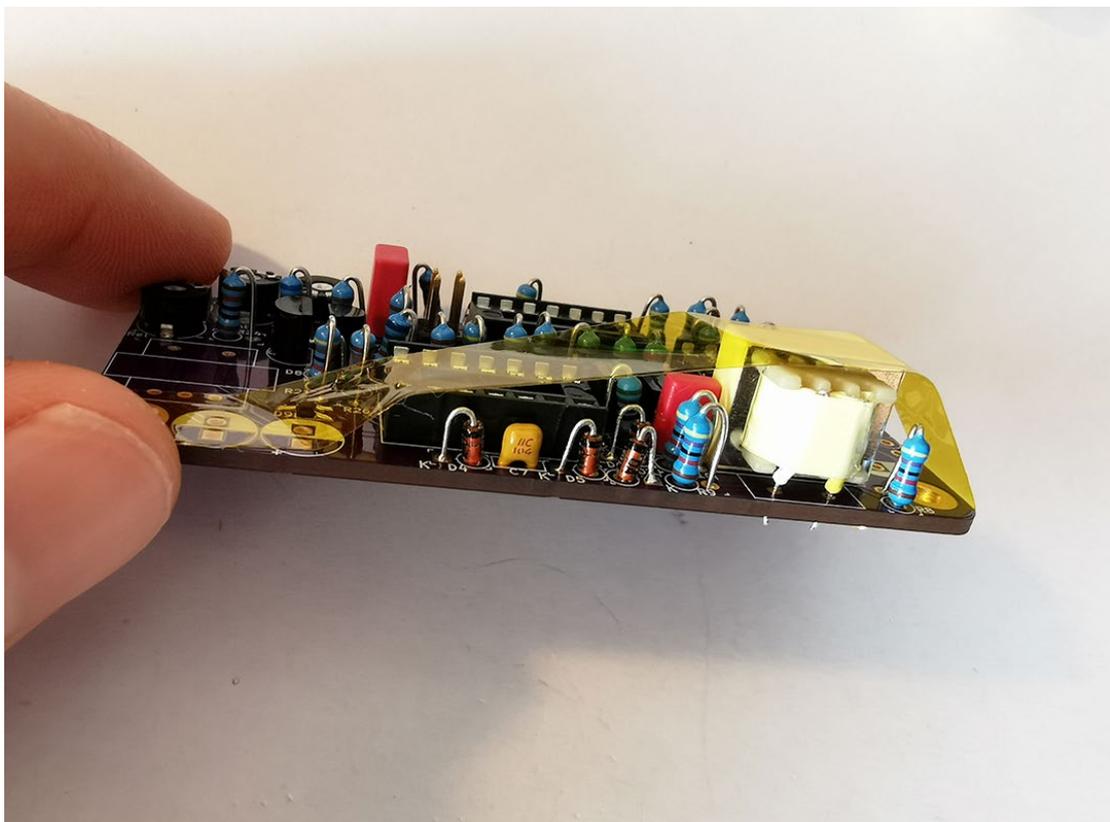
Start off with the one in the bottom right:



Use tape again to fix the transformer in place:



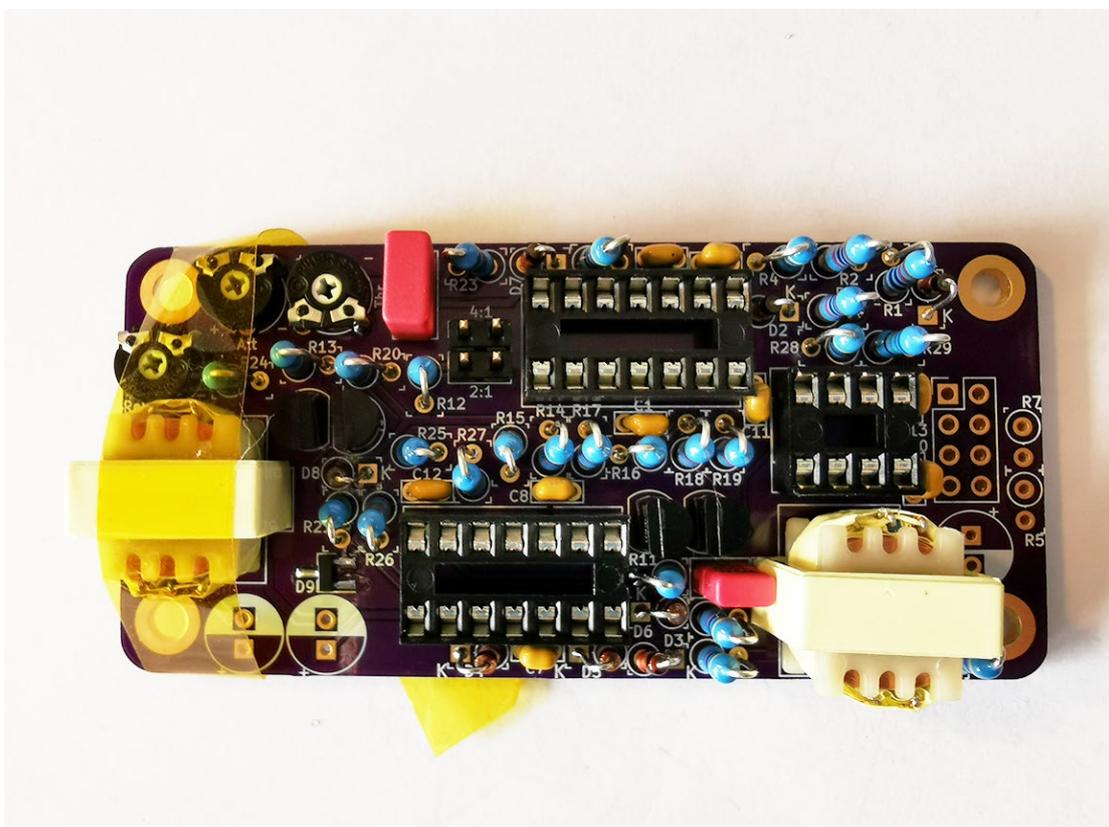
Be careful when inserting the wires. Use tweezers to help move the wires into the holes. Make sure the transformer is flush with the PCB and that it does not move when you work on it:



Prior to soldering, trim excess wires to the same length of the other components.



Now repeat with the other transformer:

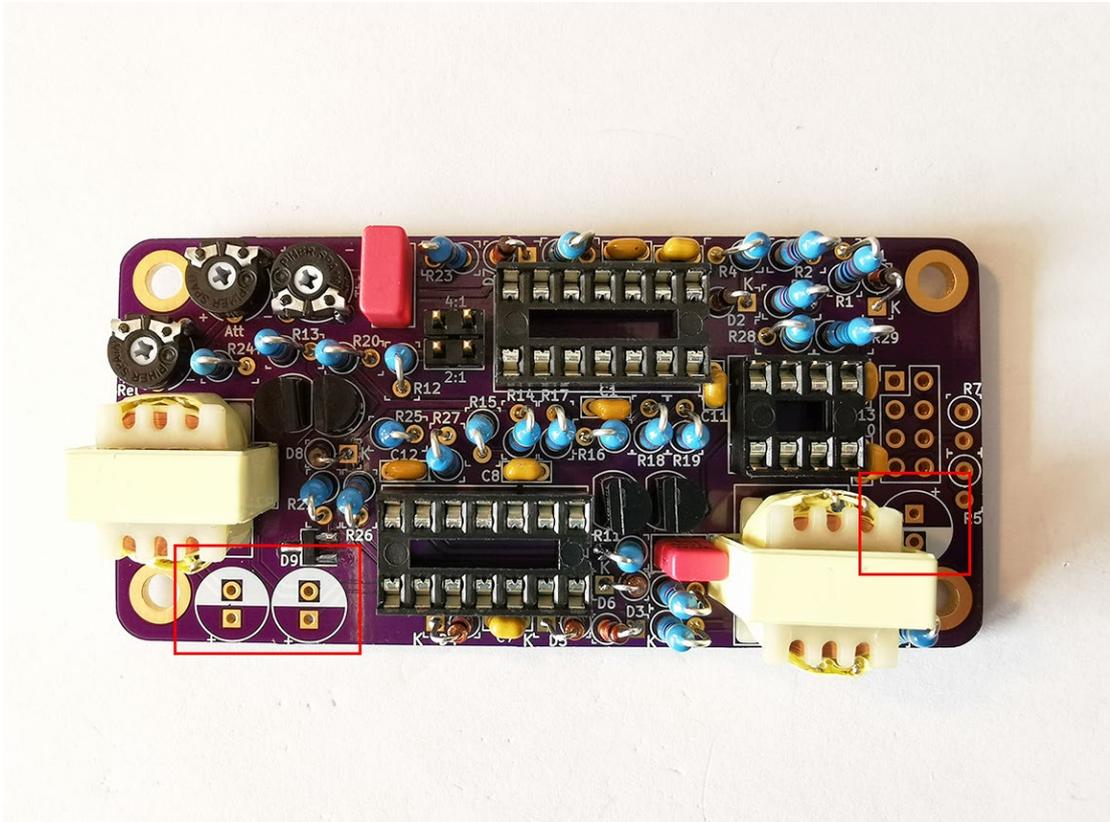


Again trim the wires to a suitable length before soldering (shown below are the wires before trimming).

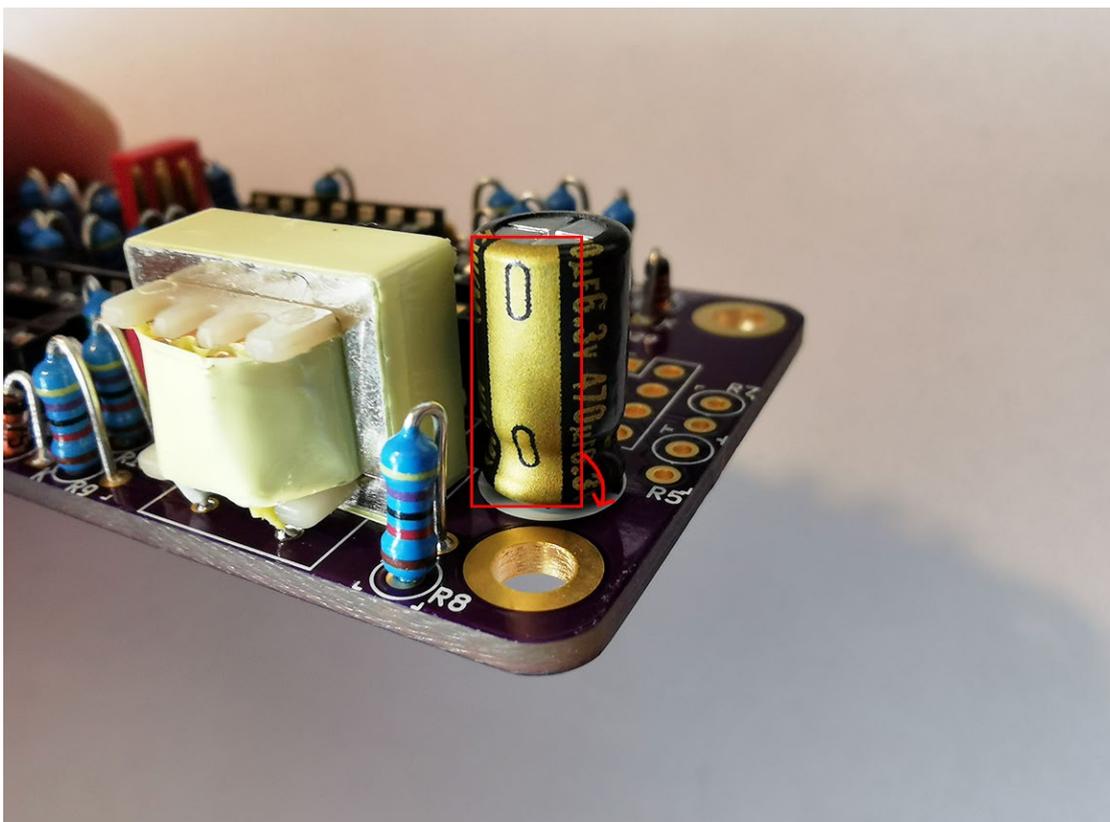


Step 11 – Electrolytic Capacitors

Time to solder the special audio grade elcos. Repeat the same lead soldering technique as before:

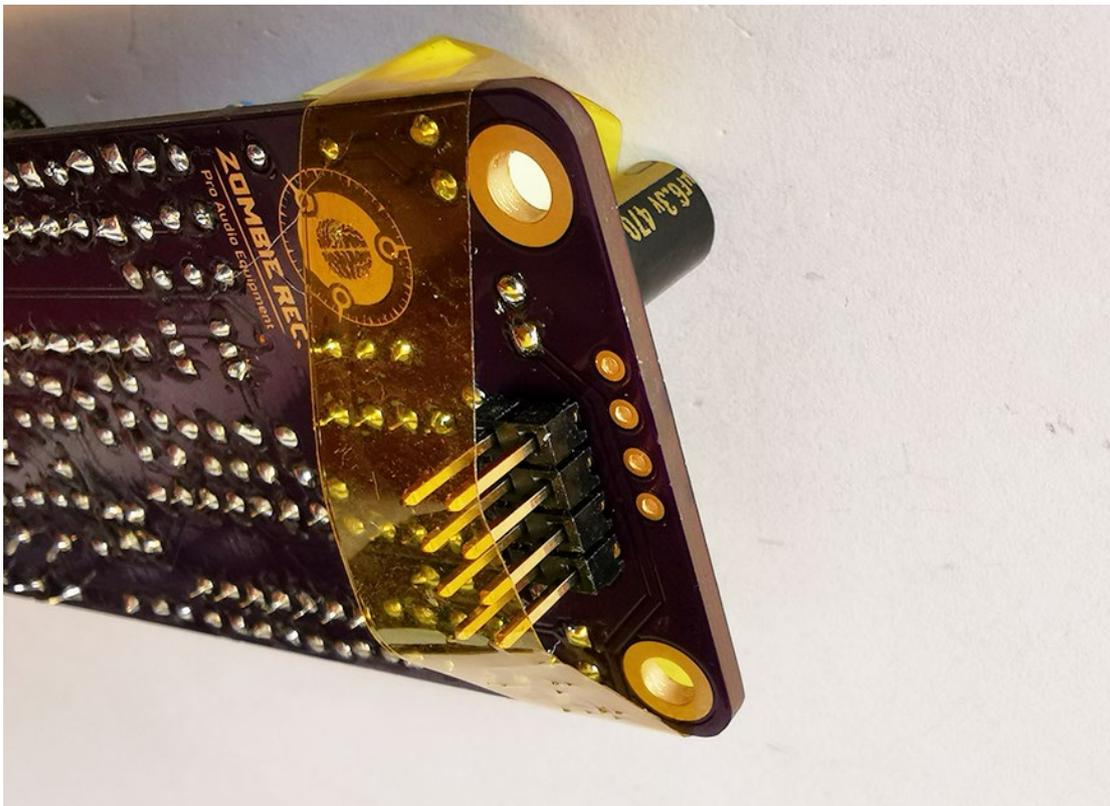
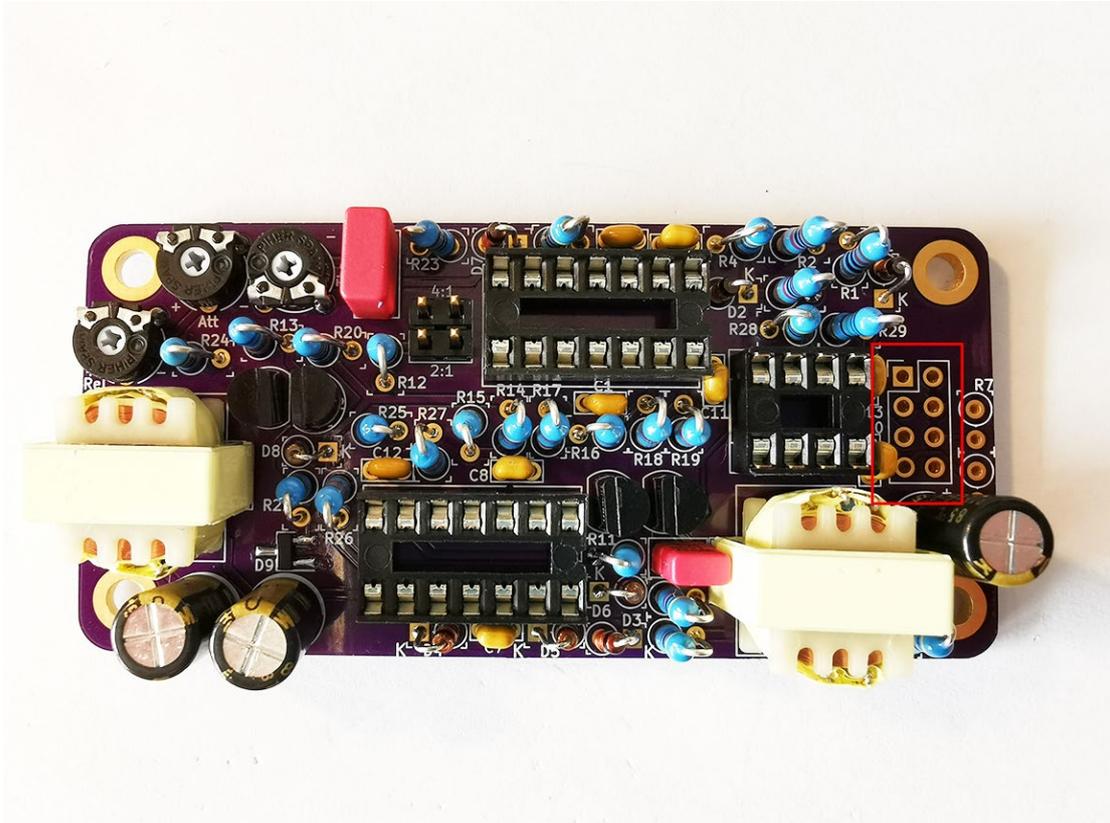


These capacitors are polarized, align the gold marking on the cap with the white marking on the PCB:



Step 12 – Pin header and remaining resistors

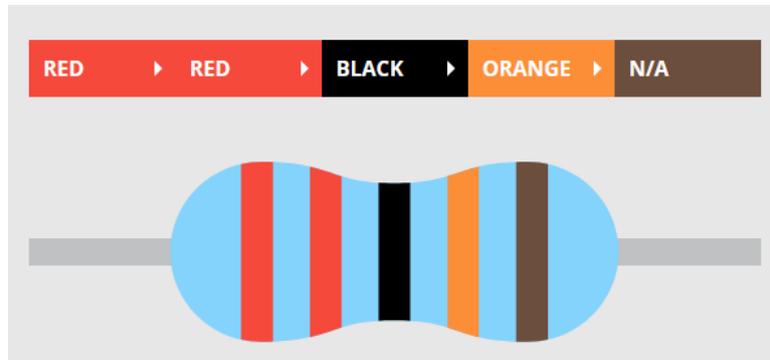
Time to wrap up the build. Lets finish it off by soldering the pin header first. Make sure that the long side of the header is pointing down:



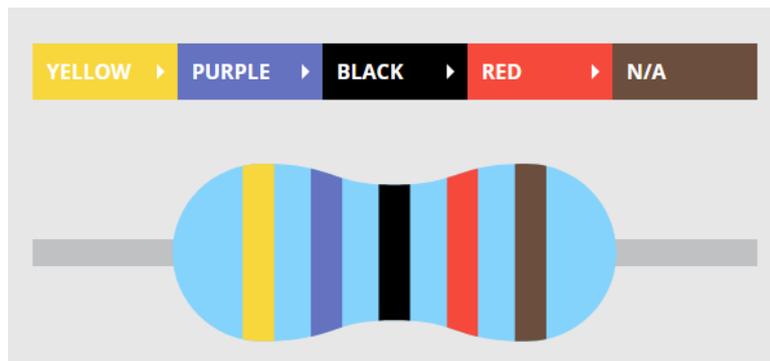
Again use tape to hold the header firmly in place. After soldering one pin, you should be able to remove the tape and solder the rest.

Now solder the last two remaining resistors R5 and R7:

Start with R7, 220k:

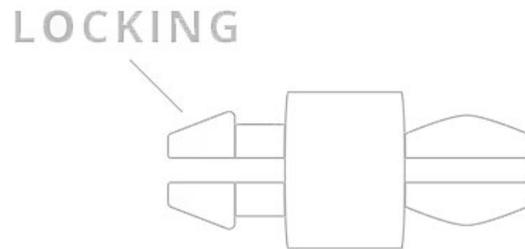


and finally R5, 47k:

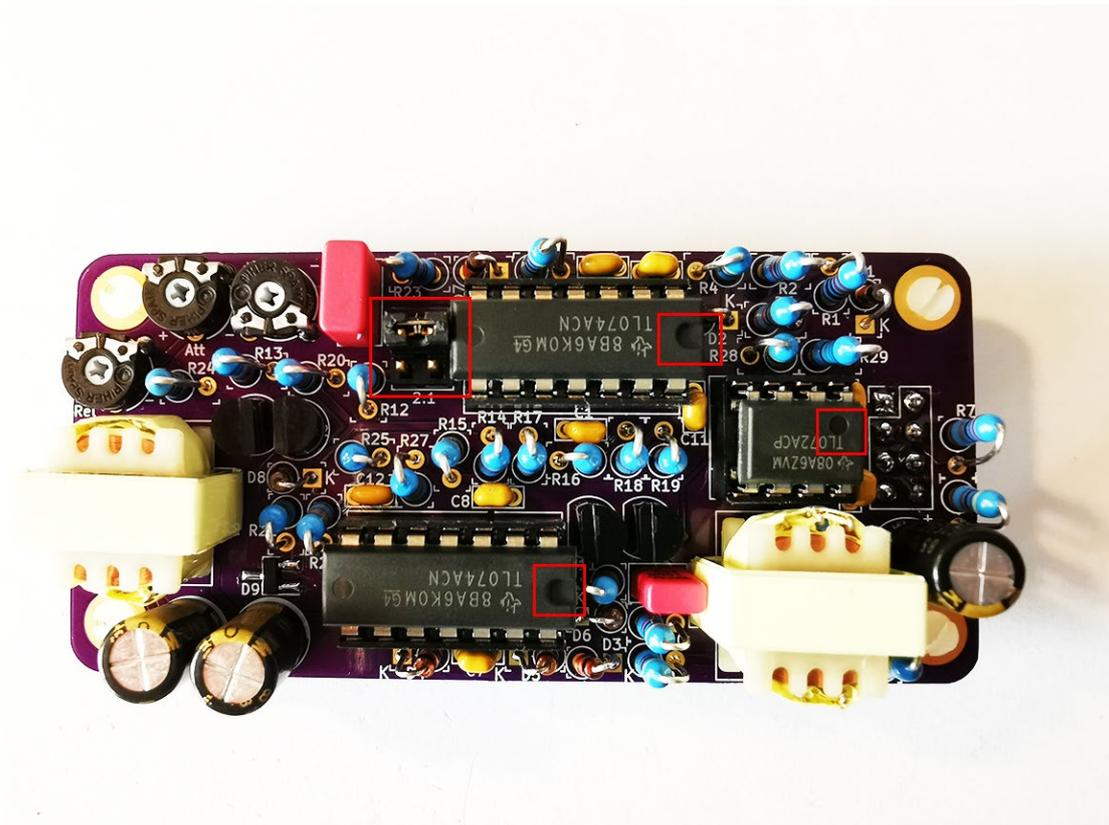


Step 13 – Hardware and ICs

Now all that is left is inserting the standoffs and the ICs. The standoffs have a locking side and a non-locking side. The locking side has tabs with a right angle, insert the locking side into the PCB:



When mounting the ICs, make sure to align their groove/markings with the marking on the socket (and PCB). Also insert the jumper on the left into the desired ratio position (2:1 or 4:1). Alternatively you can bypass the GR circuit with leaving the jumper out, but more on that in a bit:



Step 14 – Final check

Most attention needs to be paid on the orientation of the components, are they soldered in correctly?

Are the transistors types at the right place?

Are the resistor and capacitor values placed correctly on the board?

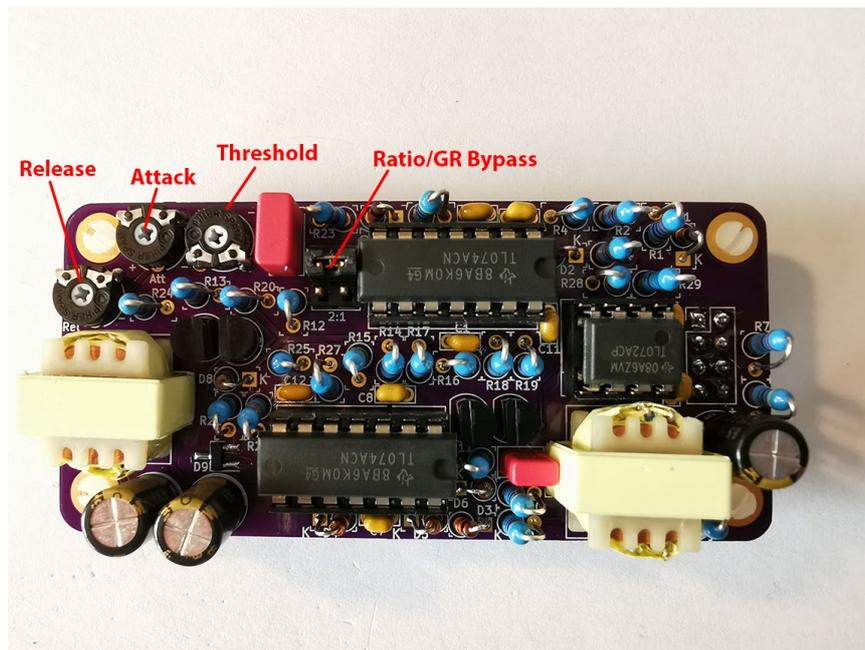
Are the solder joints well soldered? Is there any excess of solder? Are there any solder bridges?

Step 15 – Cleaning

After everything is done, give the back of the board a good scrub with isopropyl alcohol and a brush (or toothbrush).

Usage

The usage is pretty straight forward. There are three trimpots and a jumper setting:



Threshold: Turning CCW for higher levels or less GR and CW for lower levels or more GR

Release: Turning CCW is faster and CW is slower

Attack: Turning CCW is faster and CW is slower

Attack and Release settings also have a combined influence on GR level.

Jumper: You can select between 2:1 (bottom) and 4:1 (top) ratio. If you remove the jumper, the sidechain will be bypassed and you can use the compressor as a pass-through saturation device. Note that there will still occur some constant gain reduction in this setting, depending on the amplitude of the signal.

Please note: The module takes about 5-10 minutes to reach thermal equilibrium.

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Thanks and have fun!

If you have any questions, don't hesitate to contact us on info@zombierec.com!