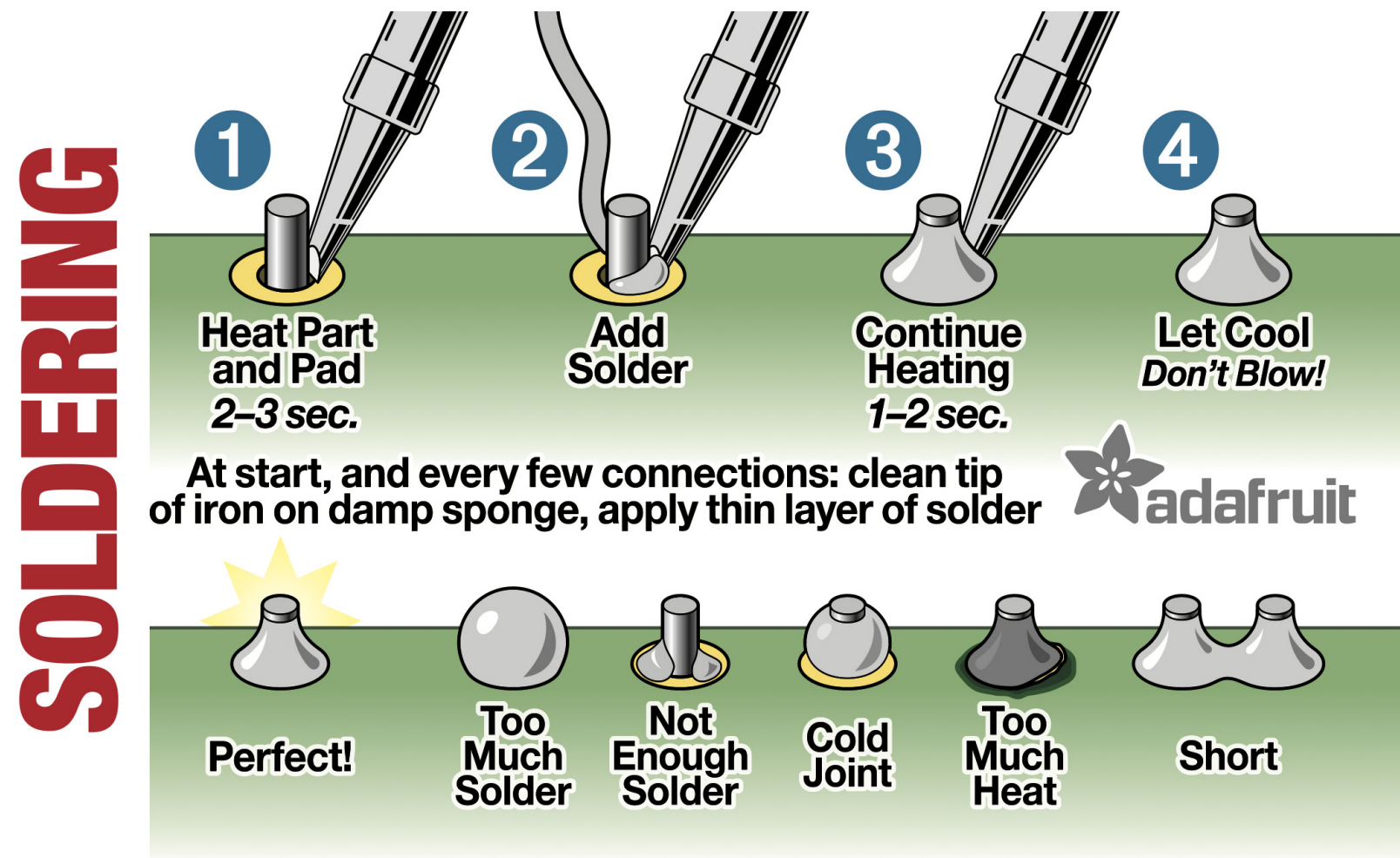


Soldering 101

- Insert components into the holes, mind the orientation of the components (LED, Arduino, jacks).
- Bend the legs so the components don't fall out, grab a piece of soldering tin.
- Touch/heat the leg of the component with your soldering iron and add a LITTLE bit of soldering tin until the hole is covered
- Remove soldering iron.
- Cut the excess legs short.



- Start with the smallest (lowest profile) components and work your way up.
- Clean tip often!
- Soldering tin moves to the hottest point, remind that when applying solder and placing the tip!
- Wash your hands before eating or drinking after soldering! Don't eat/drink/smoke during soldering!
- Soldering iron is HOT, it will burn your skin severely. If you happen to burn, rinse in cool(ish) water for at least 10 mins. Put your hurt limb in a cup of water and or apply fatty cream, like after sun for example (repeat when necessary).

Components

4x Heat shrink tube



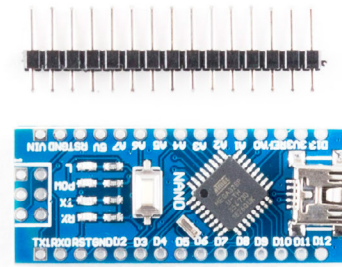
4x LDR
(LDR 1-4)



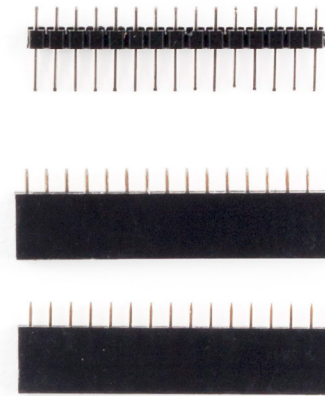
4x LED
(LED 1-4)



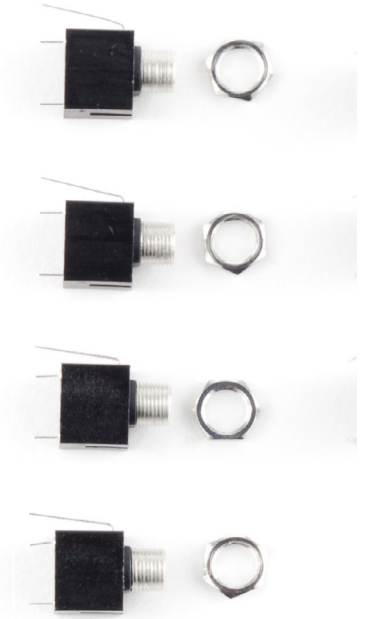
Arduino Nano +
Male Headers
(NANO)



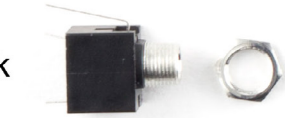
Female Header



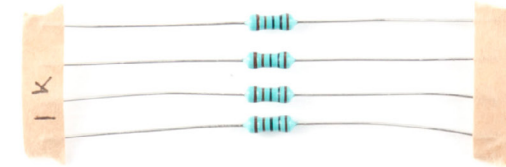
4x Mono Jack Inputs
(J1-4, J3TRIG)



Mono Jack
Output
(J4 OUT)



4x Resistor: 1K Ohm
(R3, R4, R5, R7)



2x Resistor: 10K Ohm
(R6, R8)



Resistor: 150 Ohm
(R9)



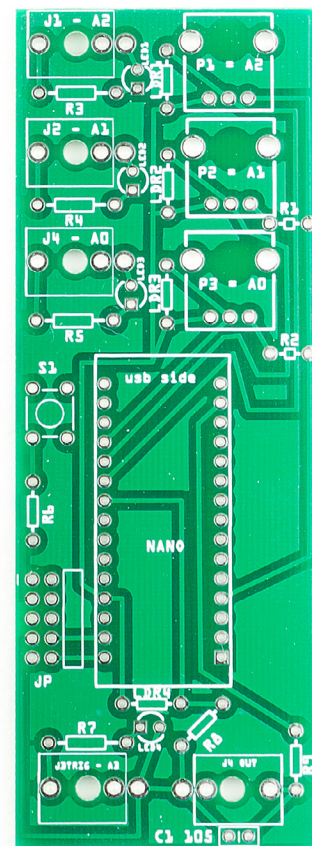
Ceramic Capacitor
104: 100nF (C1)



Resistor: 0 Ohm
(R1, R2)



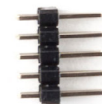
PCB



Push Button (S1)



2x5 Male Header (JP)



Potentiometer 10K Ohm (P1)



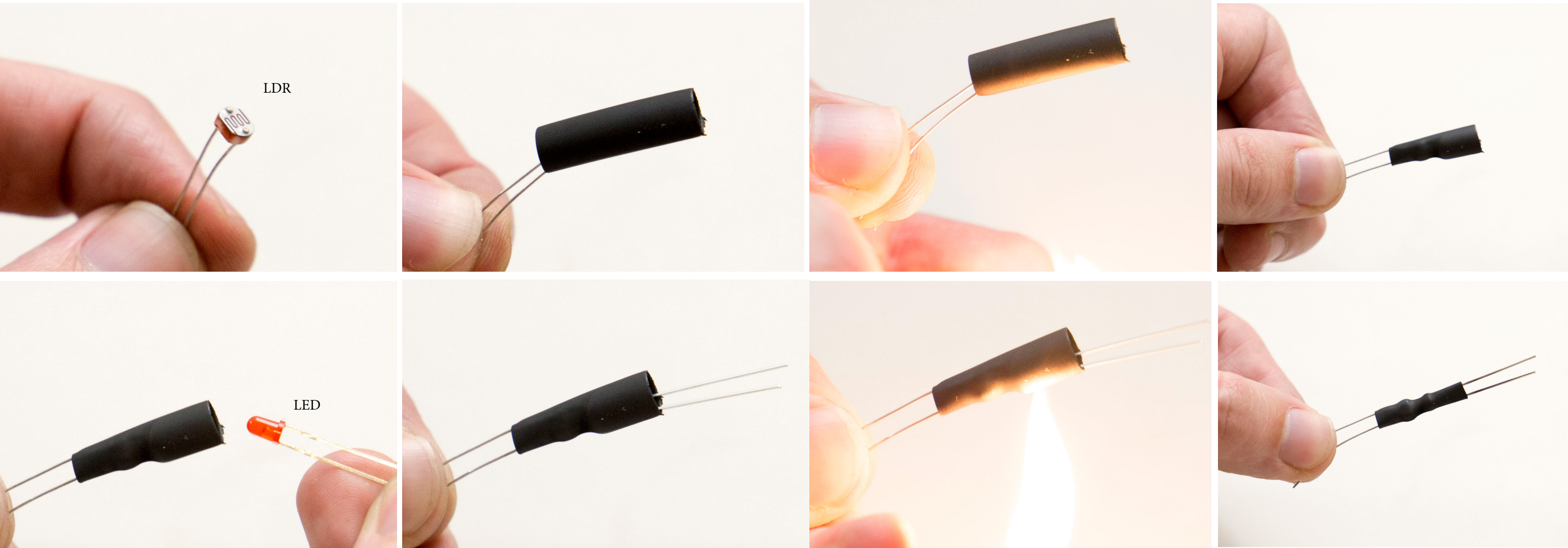
Potentiometer 10K Ohm (P2)



Potentiometer 10K Ohm (P3)



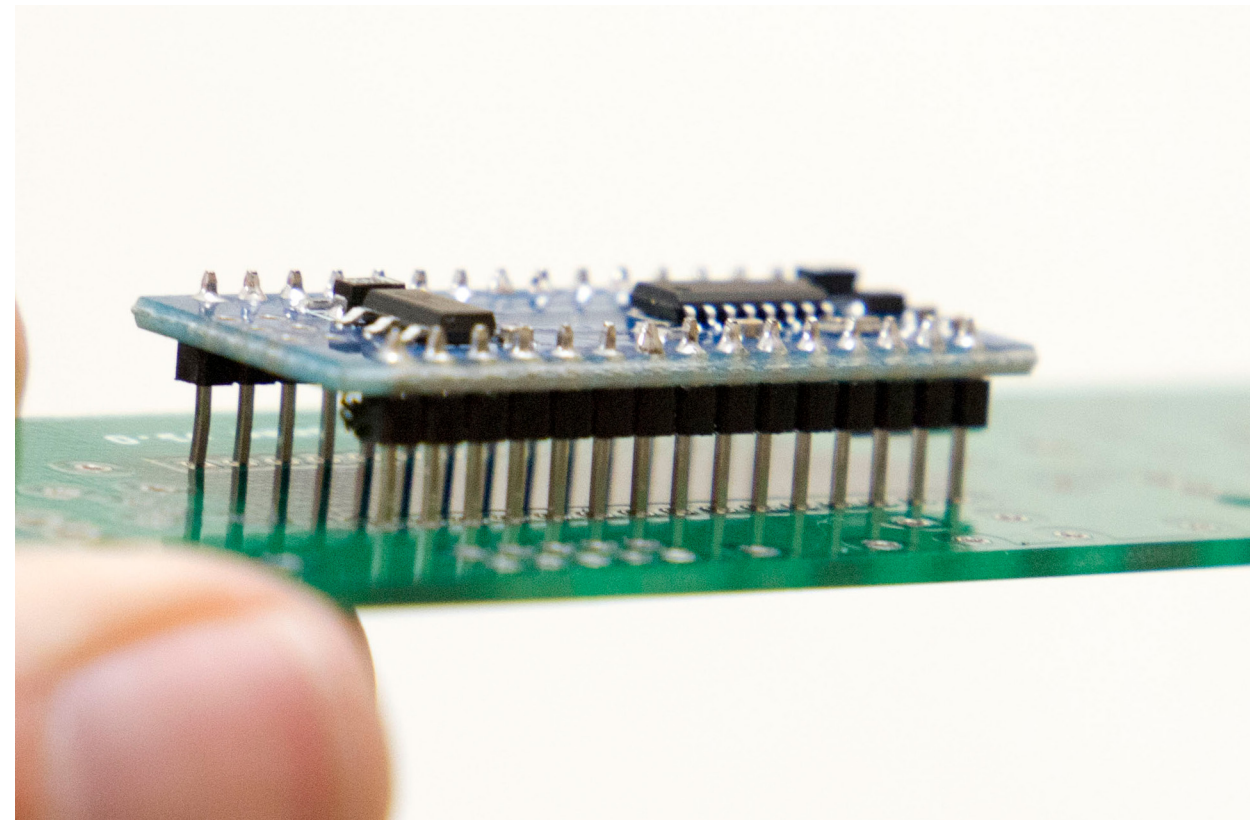
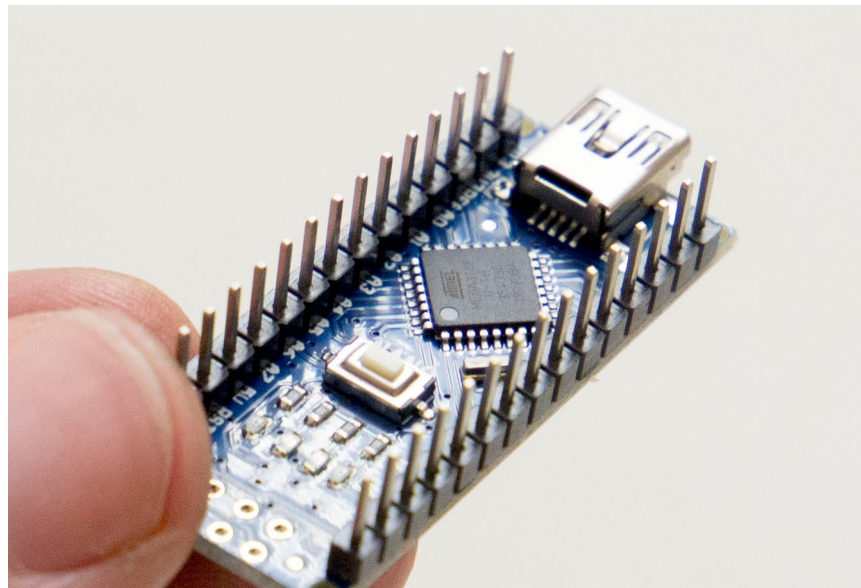
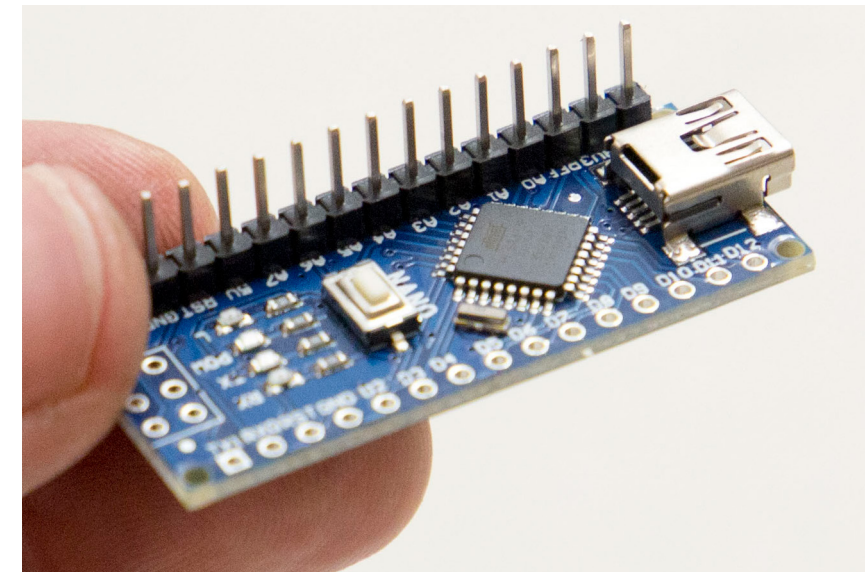
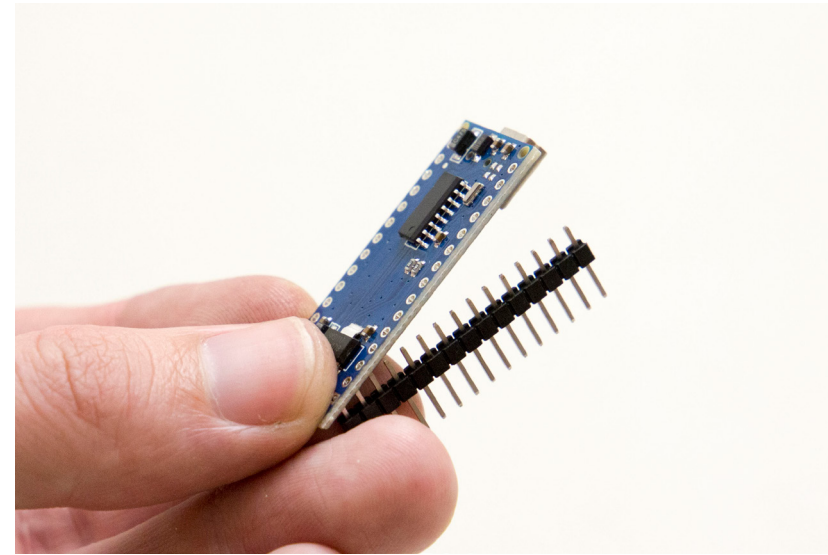
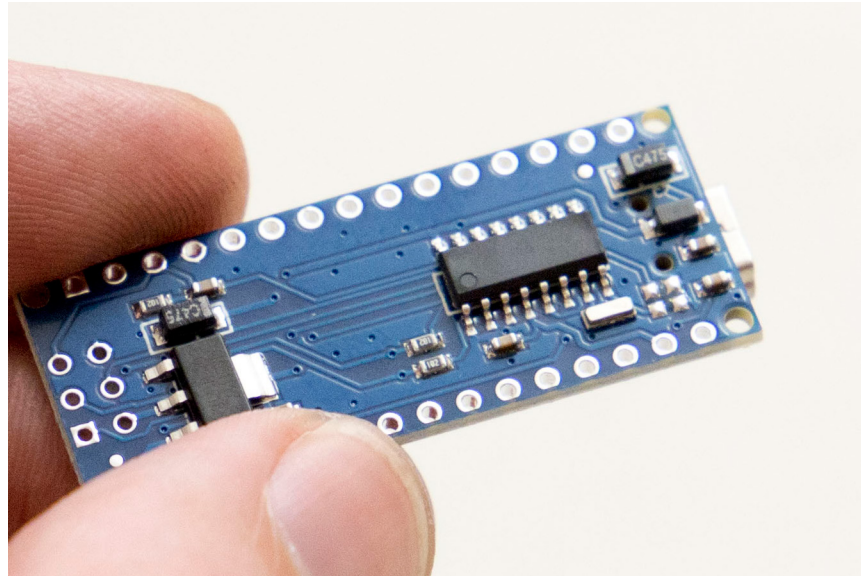
1 Vactrols - Vactrols turn voltage into resistance. The 'hotter' the signal, the lower the resistance. These are used at the inputs of the module as a voltage divider so the Arduino can 'measure' the incoming signal (compare the known value of the onboard 5v with that of the voltage divider) and convert it to handy integers (0-1023). They also isolate any dangerous voltages/currents from entering the Arduino. Vactrols can be bought off the shelf (expensive!) or constructed yourself.



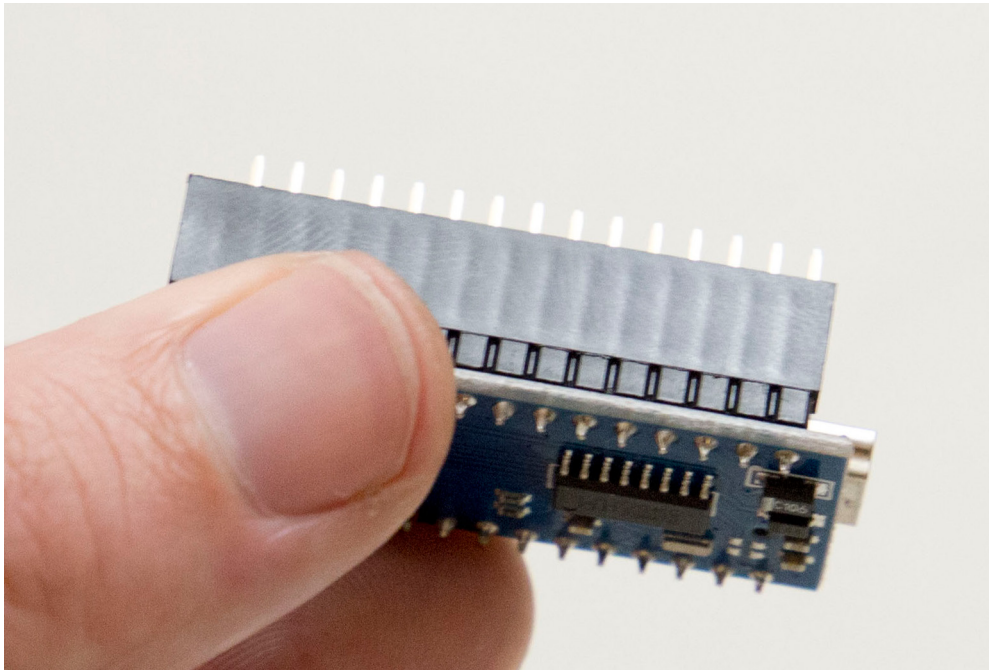
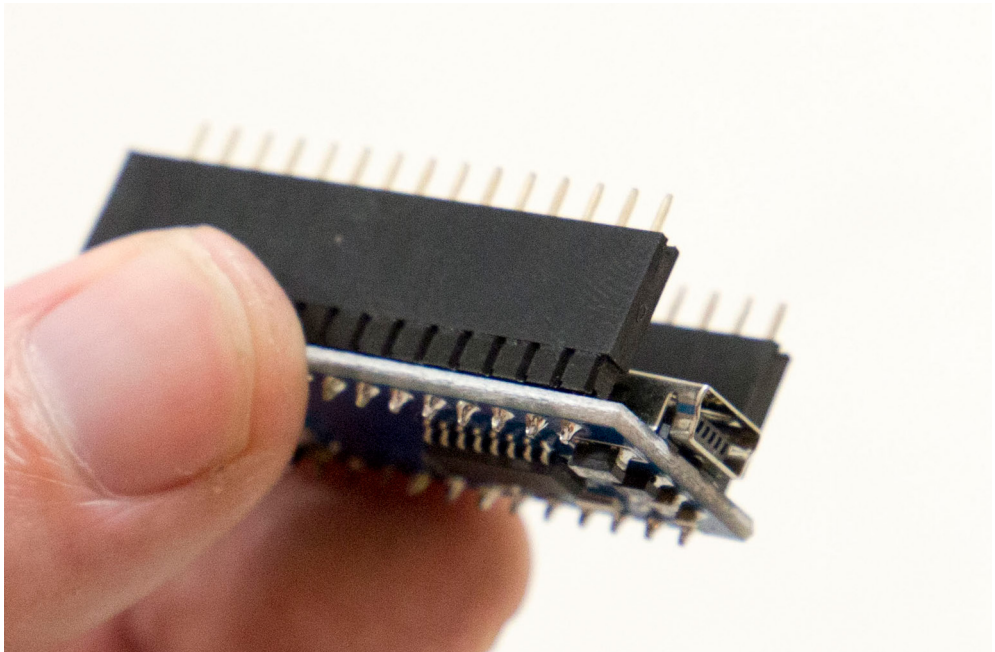
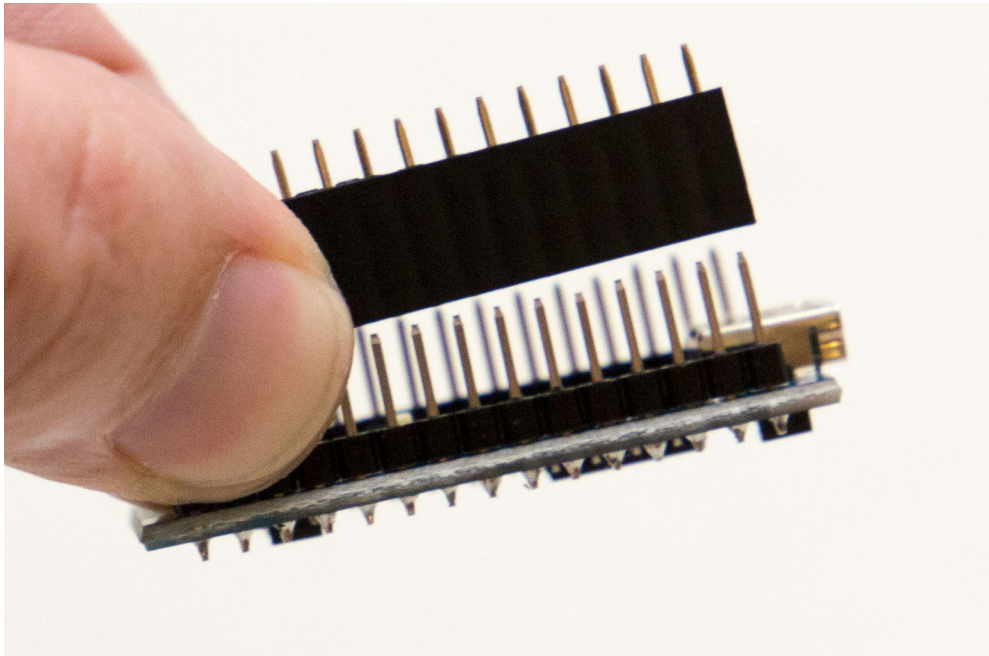
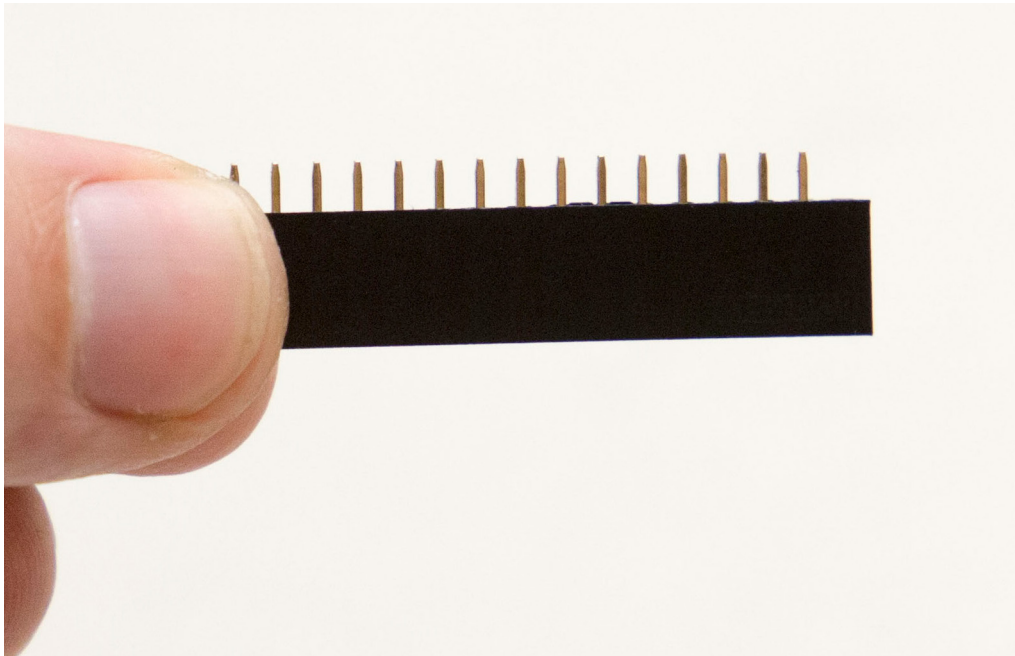
Instructions (build 4x): 1x LED light, 1x LDR (Light dependent resistor), 1x heat shrink tube.

Place the Heat shrink over the LDR, just covering the head. SLIGHTLY heat the heat shrink until the tube won't move around anymore. Make sure the tube is still wide enough to fit the LED! Insert LED on the other, still open end of the tube. Heat until both components are fixated by the tube. Done! The LDR does not have polarity (it does not matter which leg goes where). The LED however has polarity, a positive (anode) and negative (cathode) leg. The longest leg is the positive one, keep this in mind when bending and placing the legs into the PCB.

2 Solder the male headers (1x16) to the Arduino, UPSIDEDOWN (bug..) these need to be perpendicular to the Arduino, it is handy to insert the headers into the Arduino and then altogether in the pcb or a breadboard (DON'T solder the to the pcb though) to guide them.

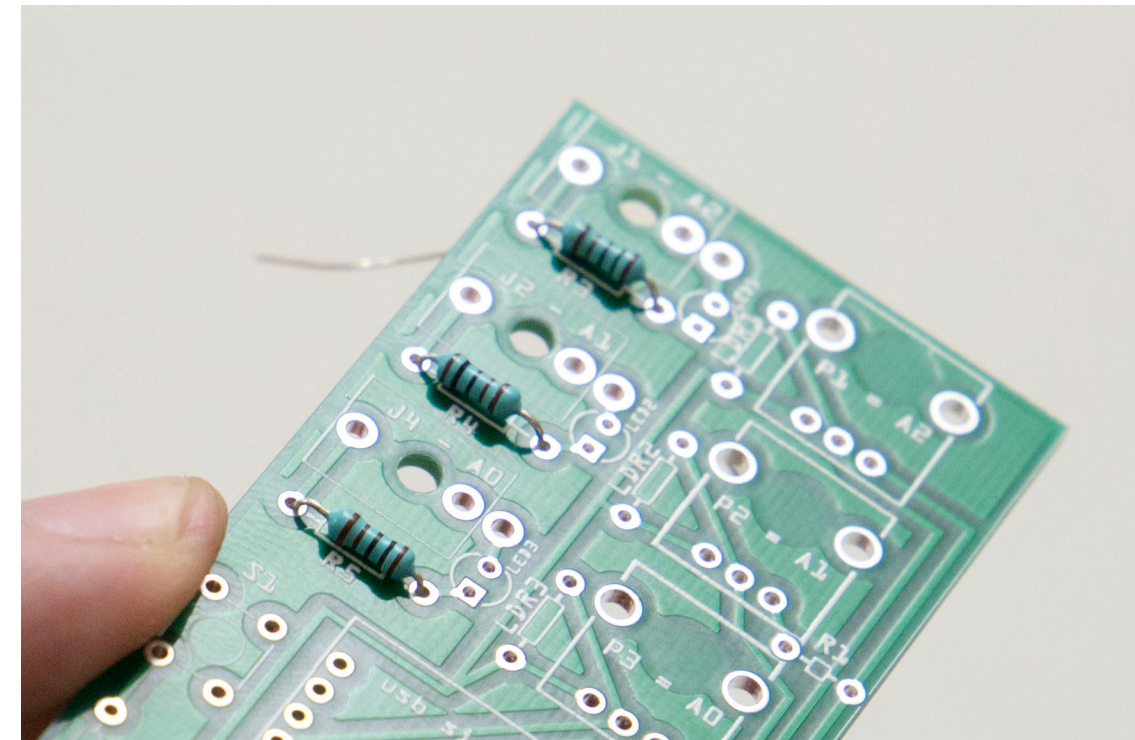
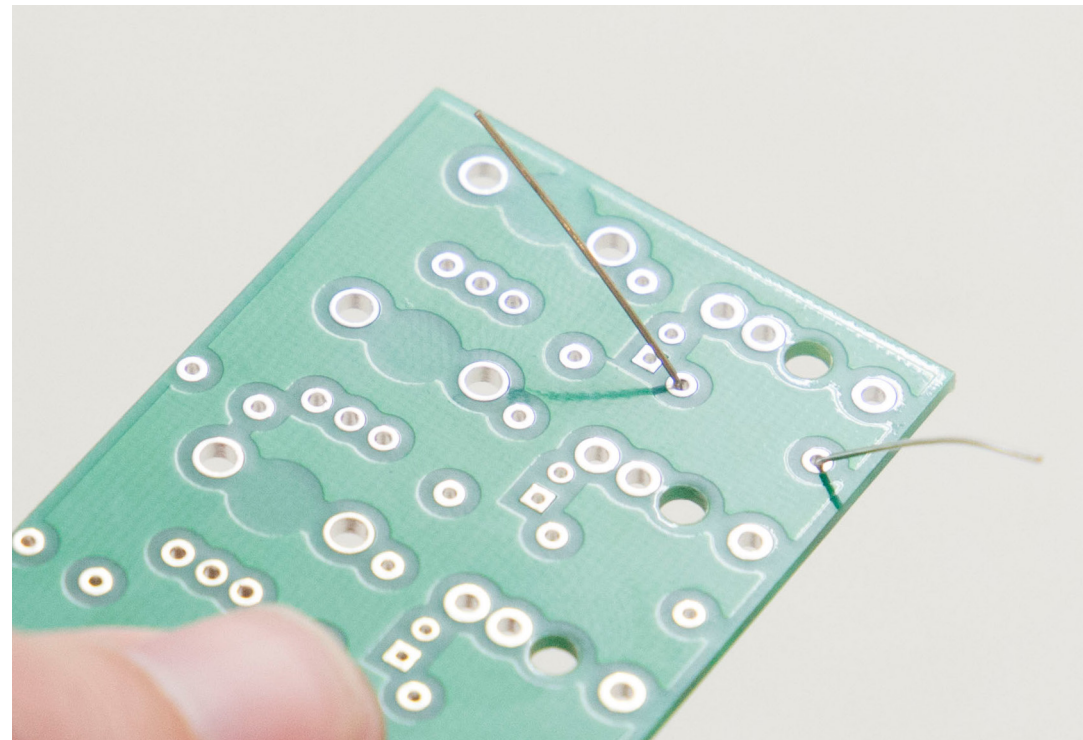
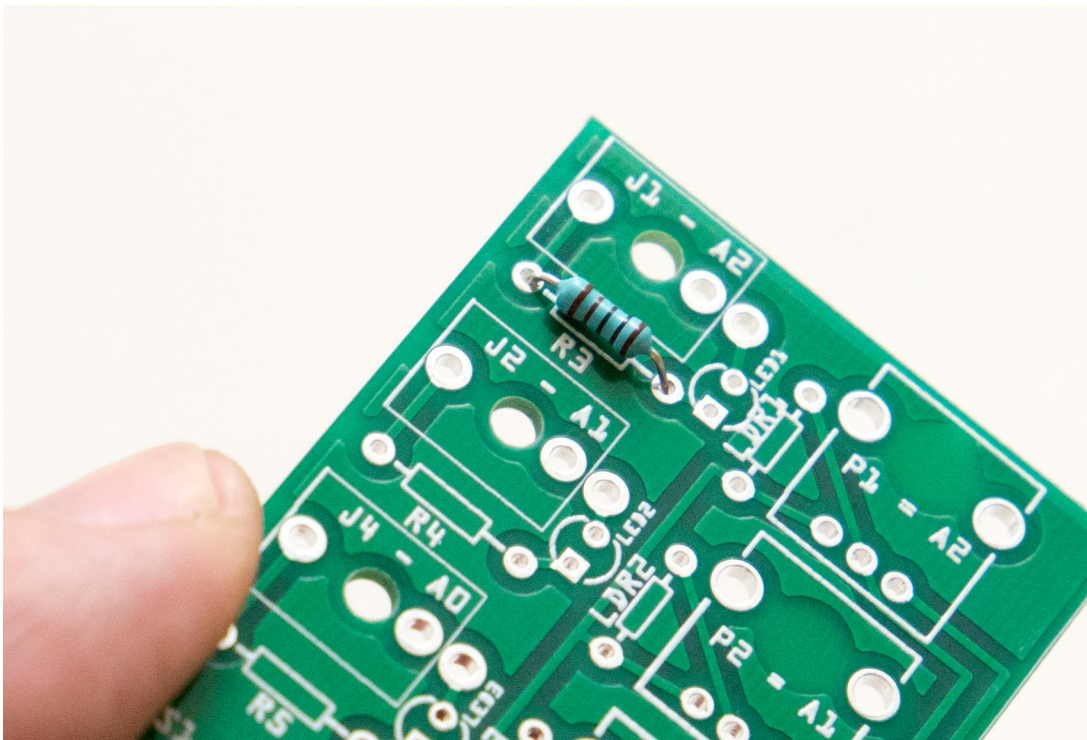
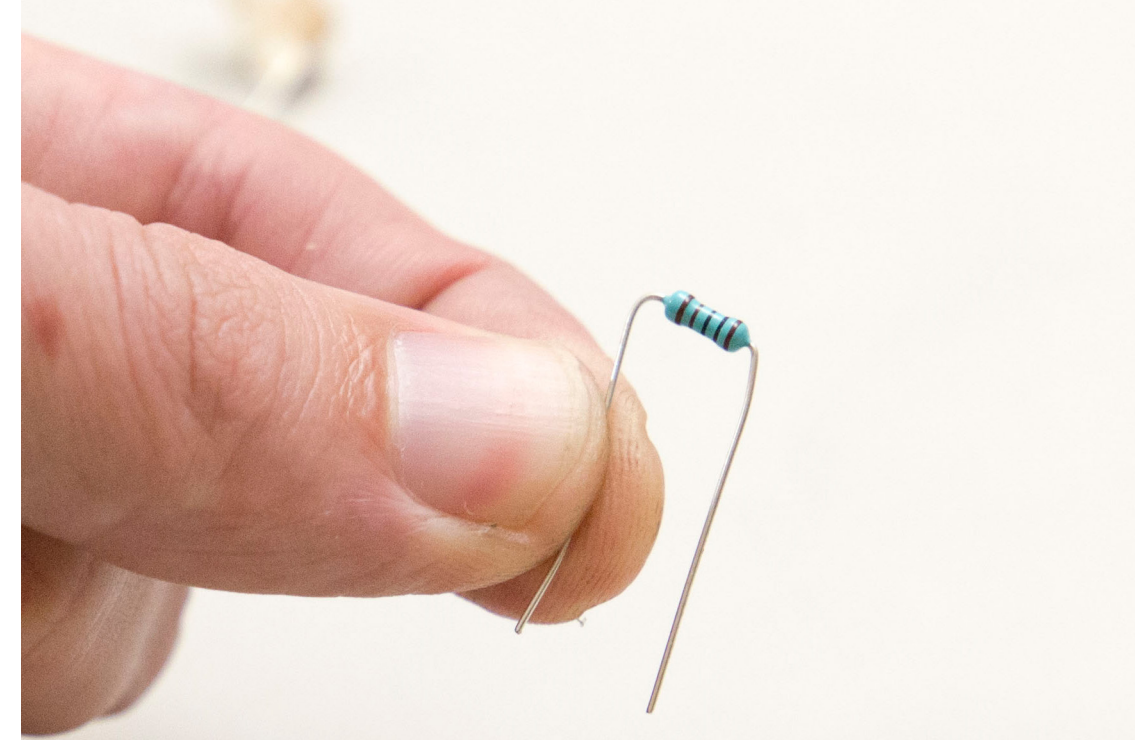
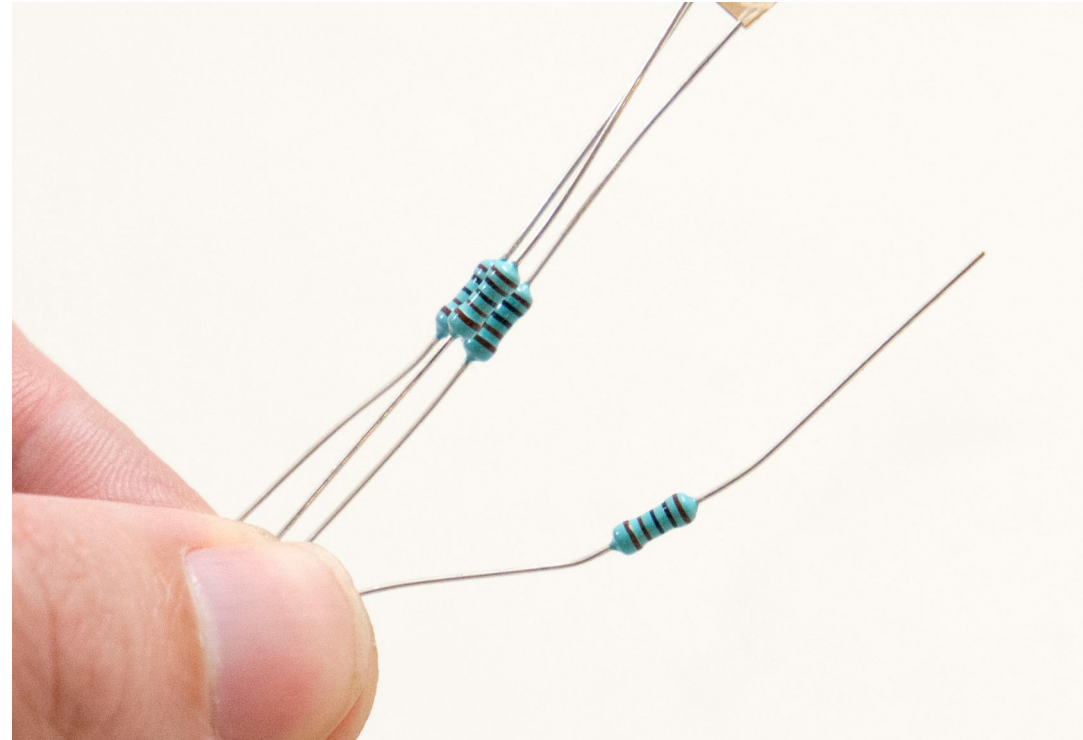
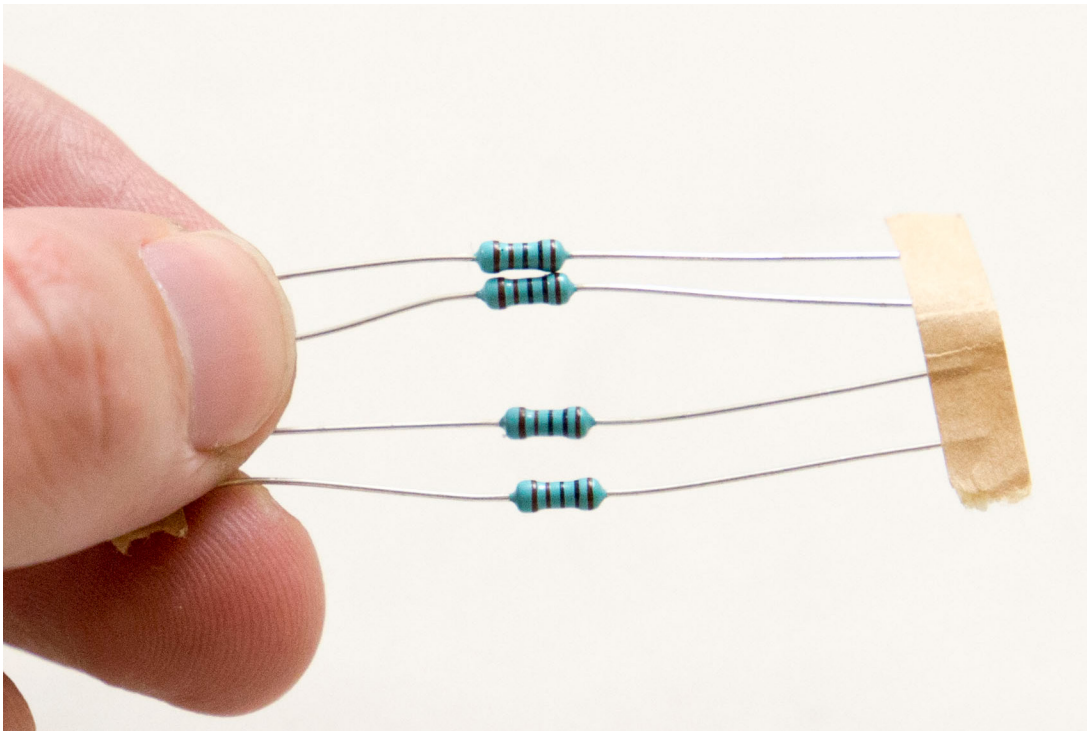


3 Insert the the female headers onto the Arduino (with headers). The female headers have one extra hole, ignore that one please.

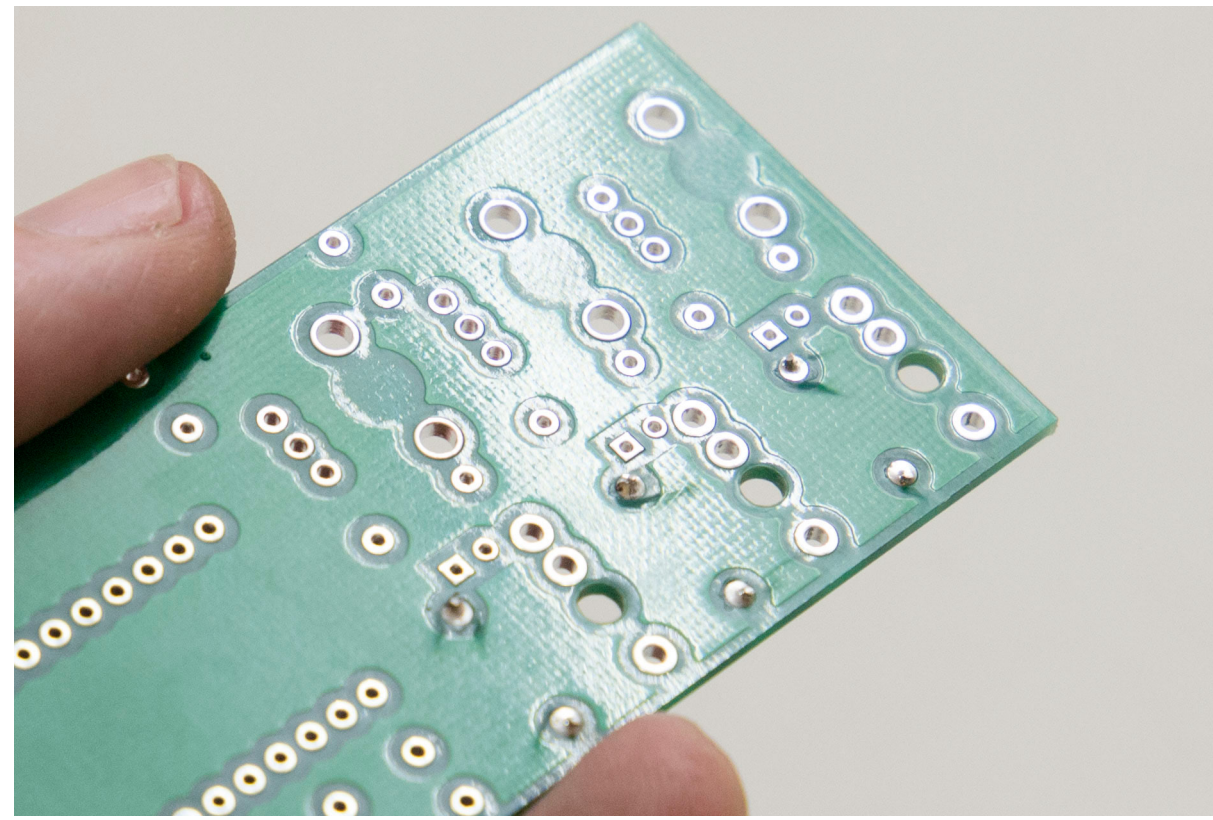
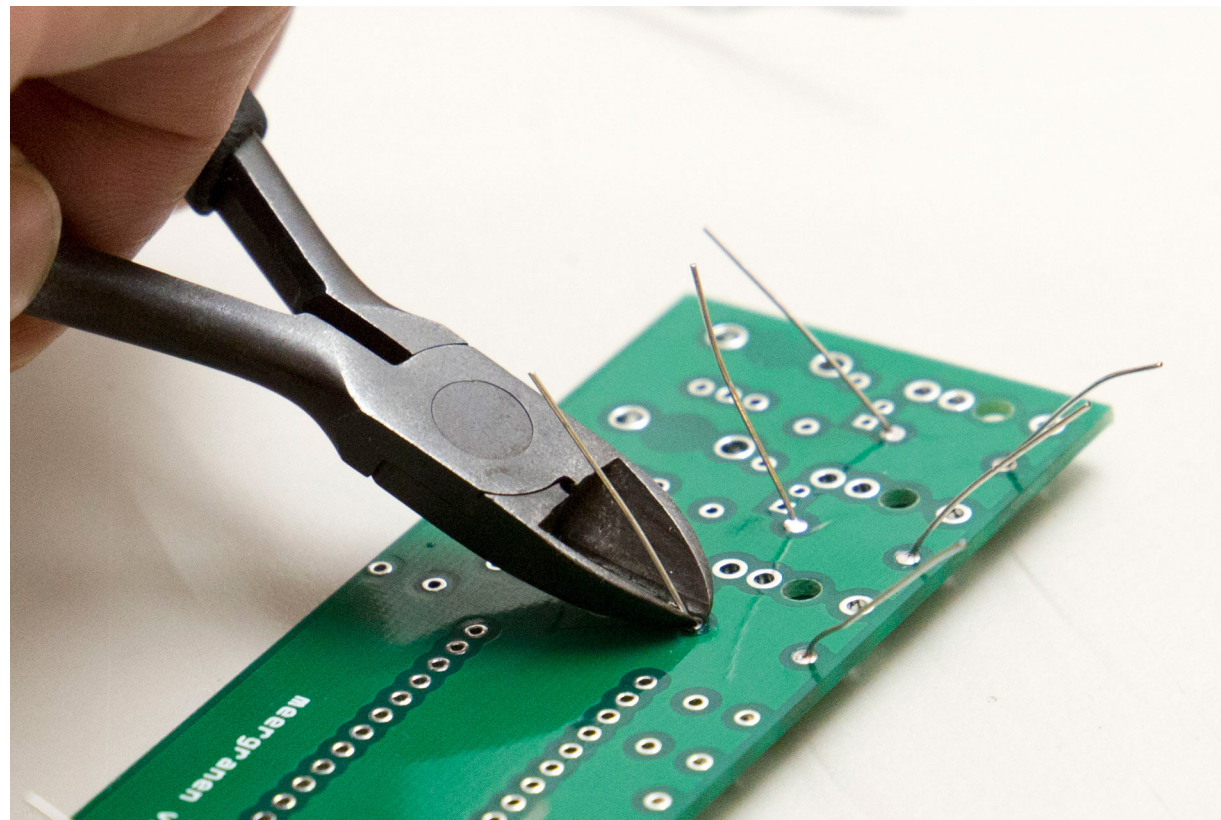
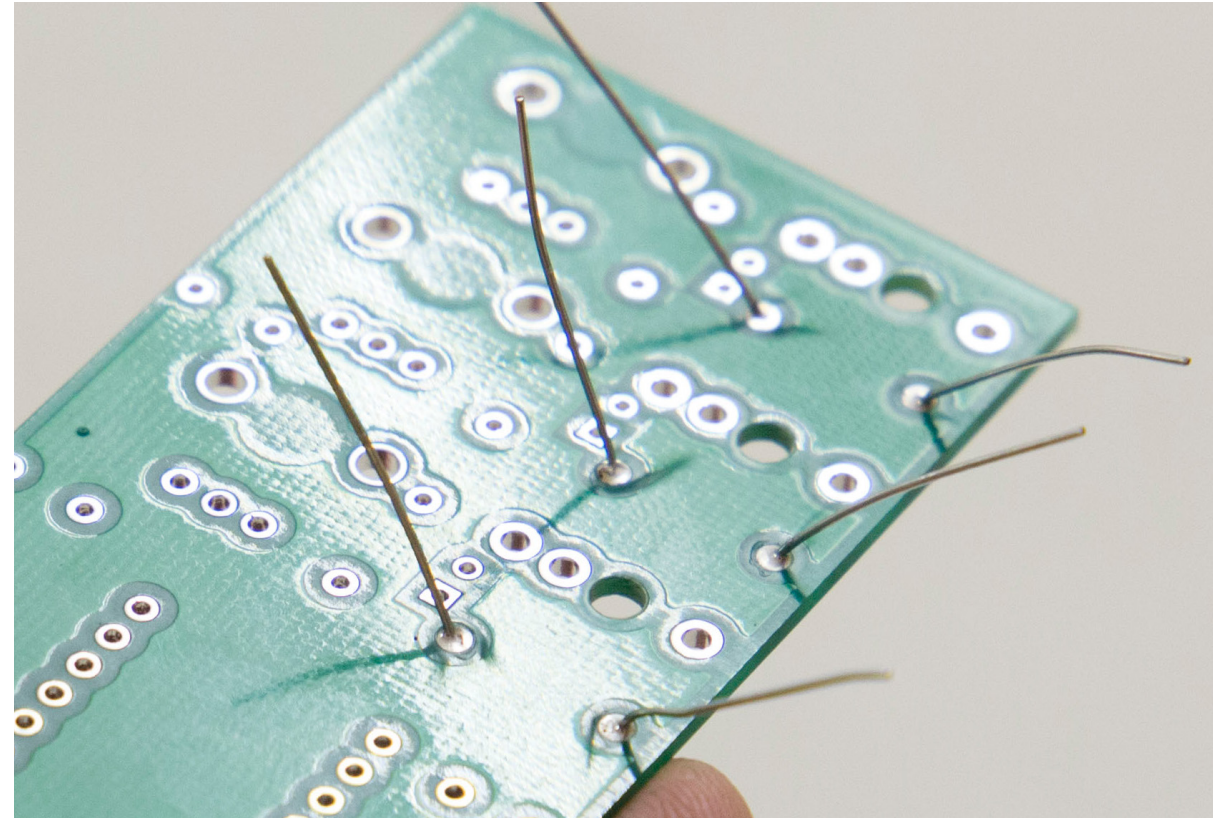
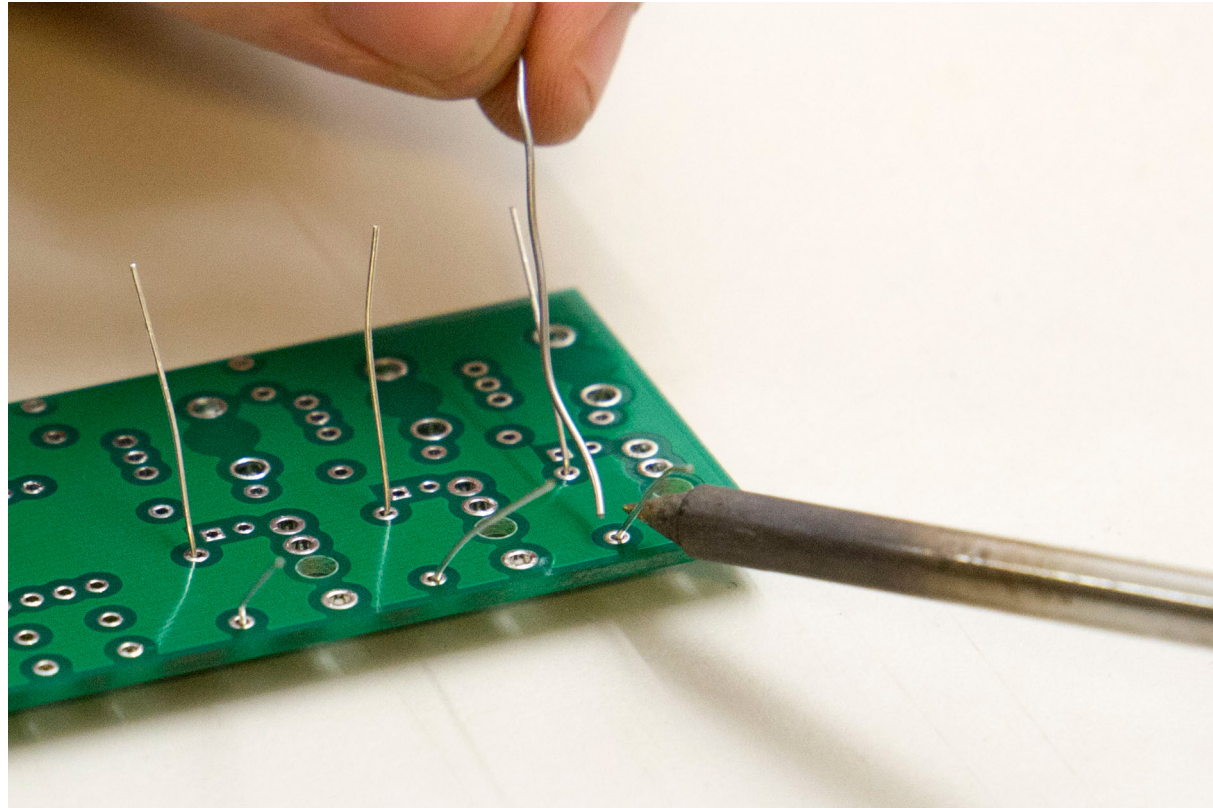


4 Place the resistors (R3,R4,R5,R7): 4x 1k Ohm

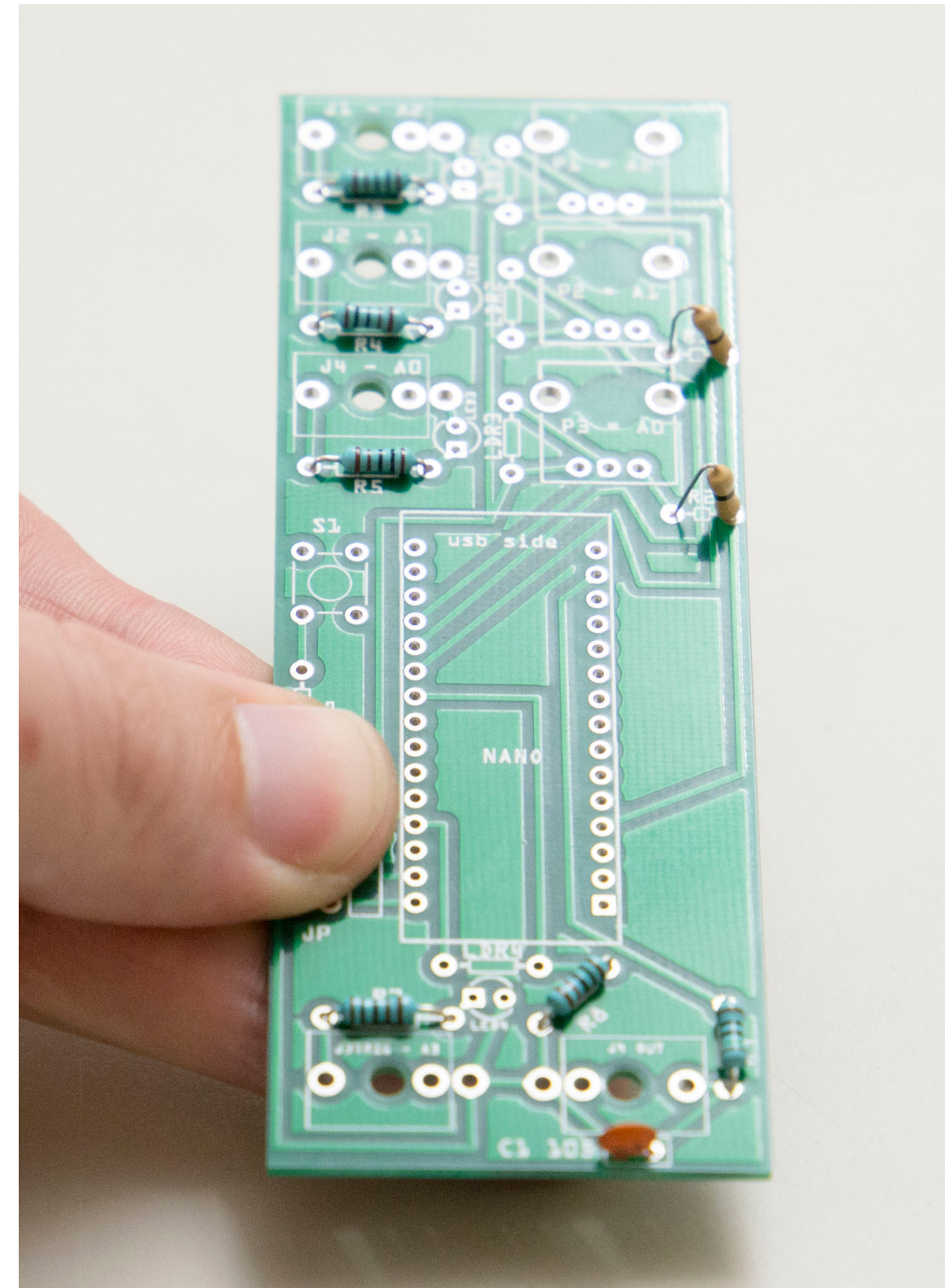
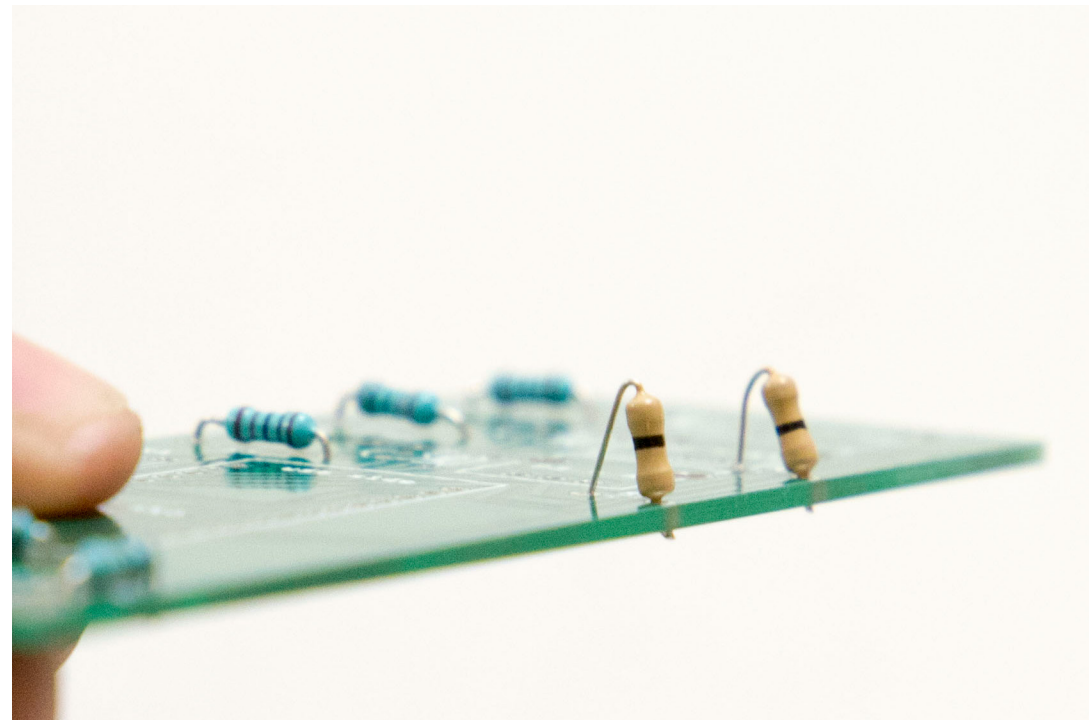
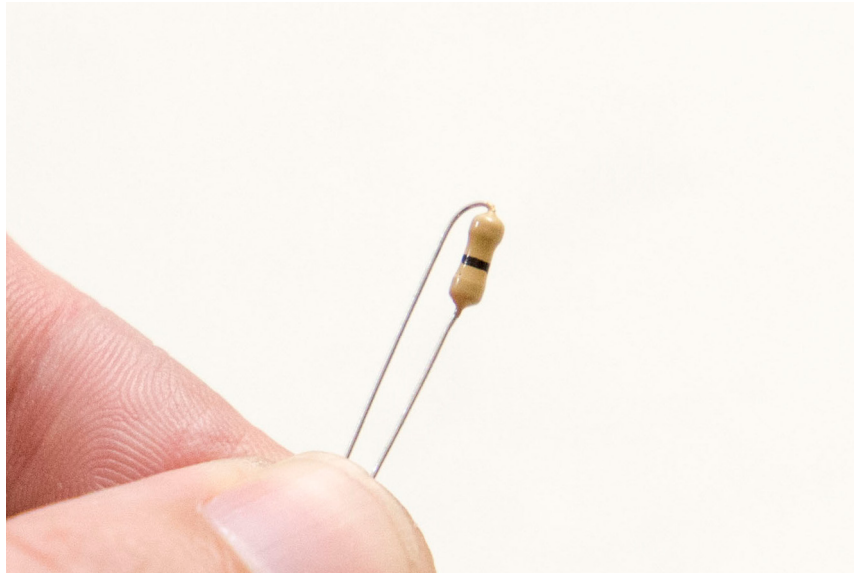
Bend the legs 90 degrees, insert into PCB, on the other side, bend the legs outward so the resistors don't fall out!



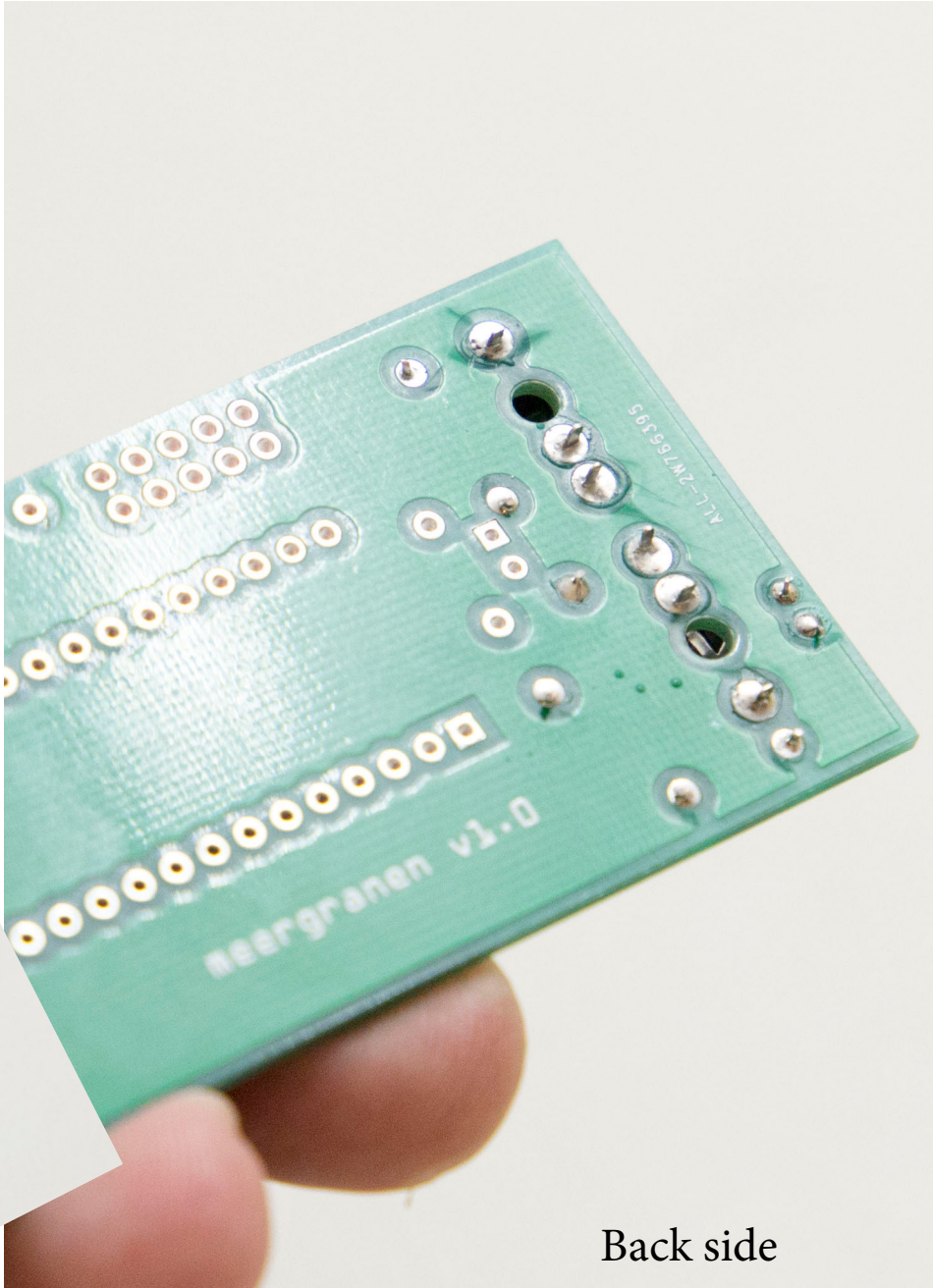
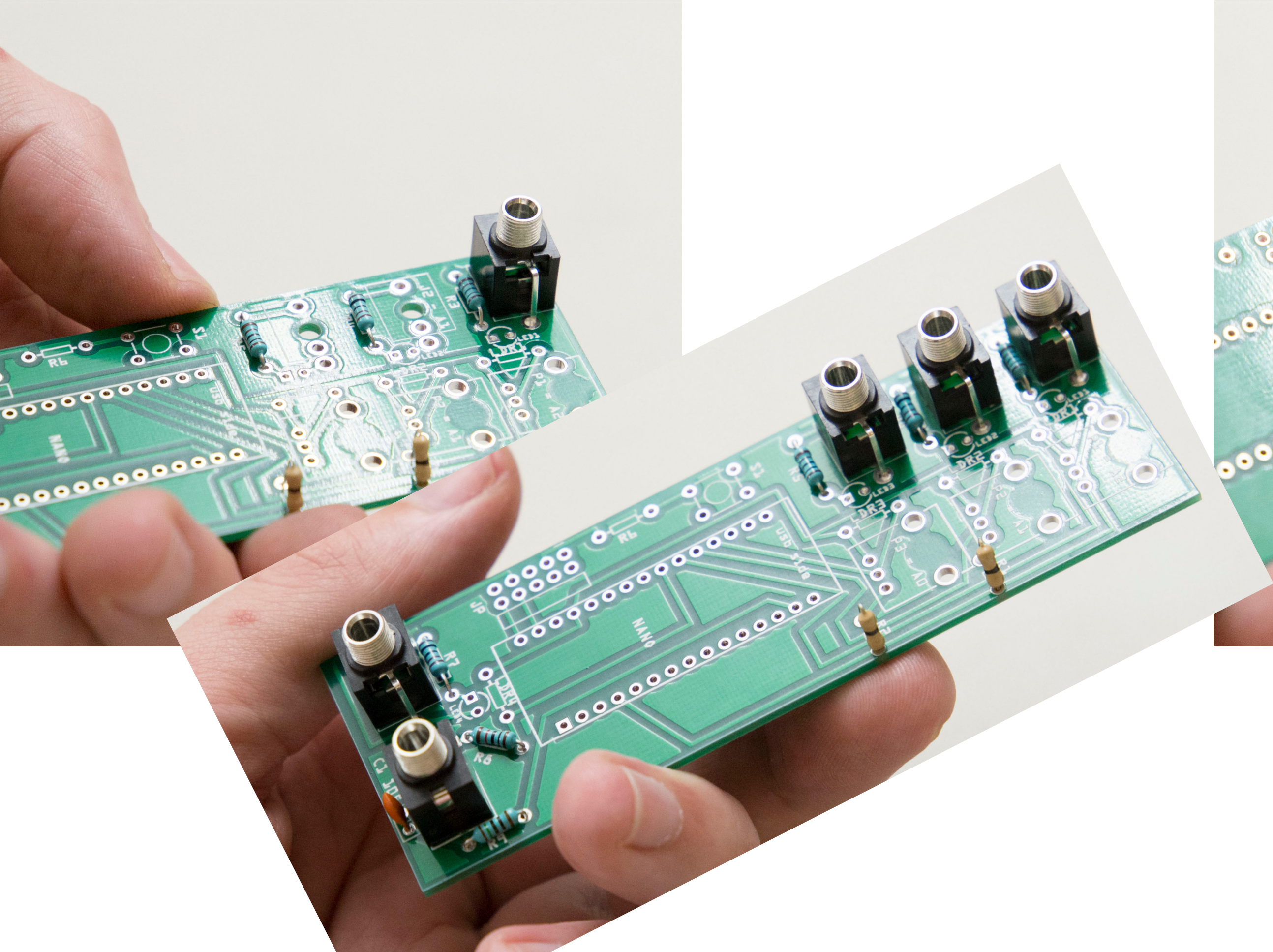
5 Heat the legs (on the back) with the soldering iron and add a bit of soldering tin, not too much! not too little! It will flow neatly around the silver holes (pads) when its hot enough. Remove soldering iron and tin, trim the excess component leads



6 Repeat for R8 (10k ohm), R9 (150 Ohm), ceramic capacitor C1 (104, 100nF BUG: it says 105 on the PCB). Bend only one leg of R1 and R2 (0Ohm) so they 'stand up'. Insert and solder, trim. If you are unsure about the value, read the color bands or measure with multimeter.



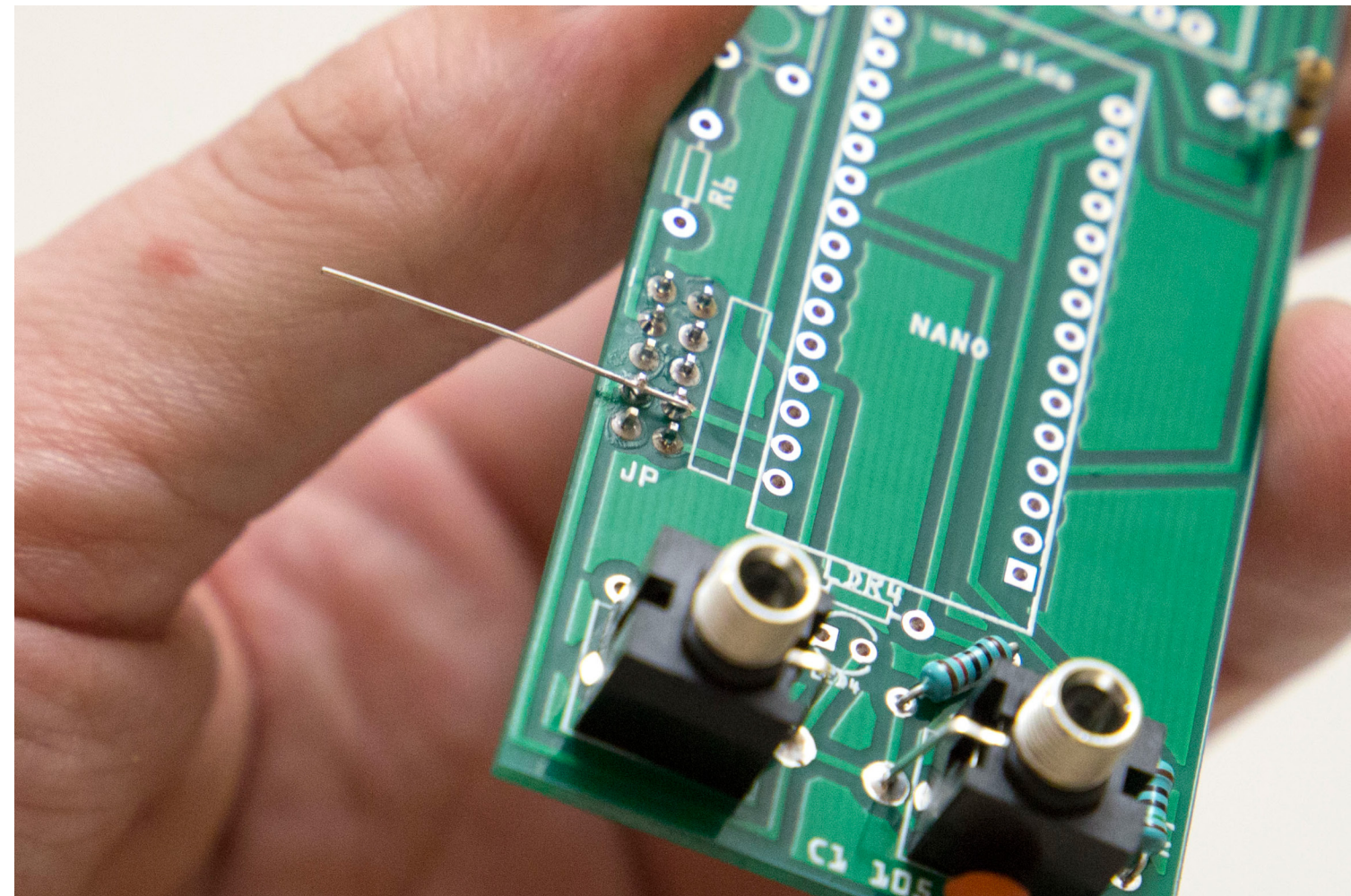
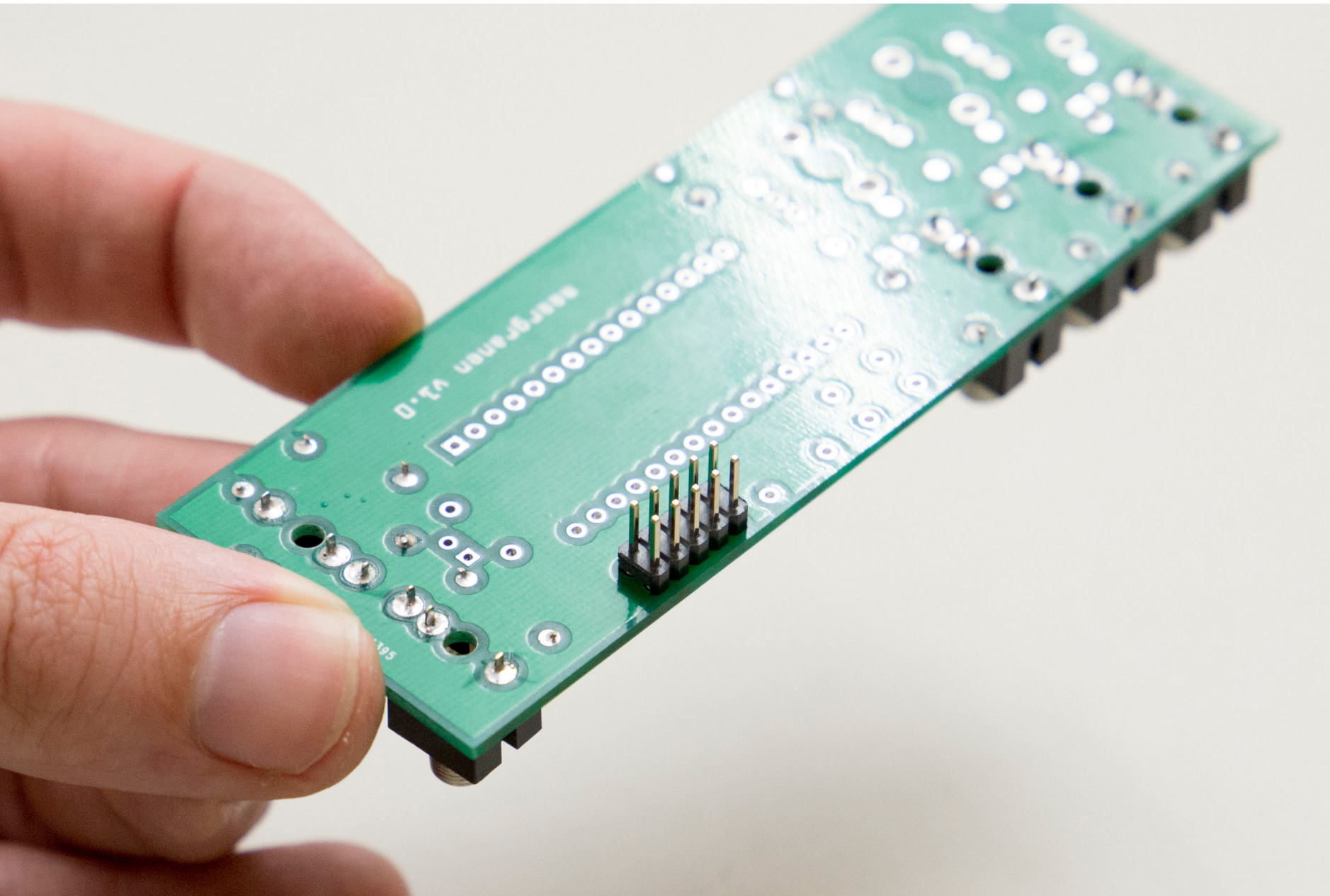
7 Insert the jacks J1 to J4. Solder. Make sure their flush against the PCB.



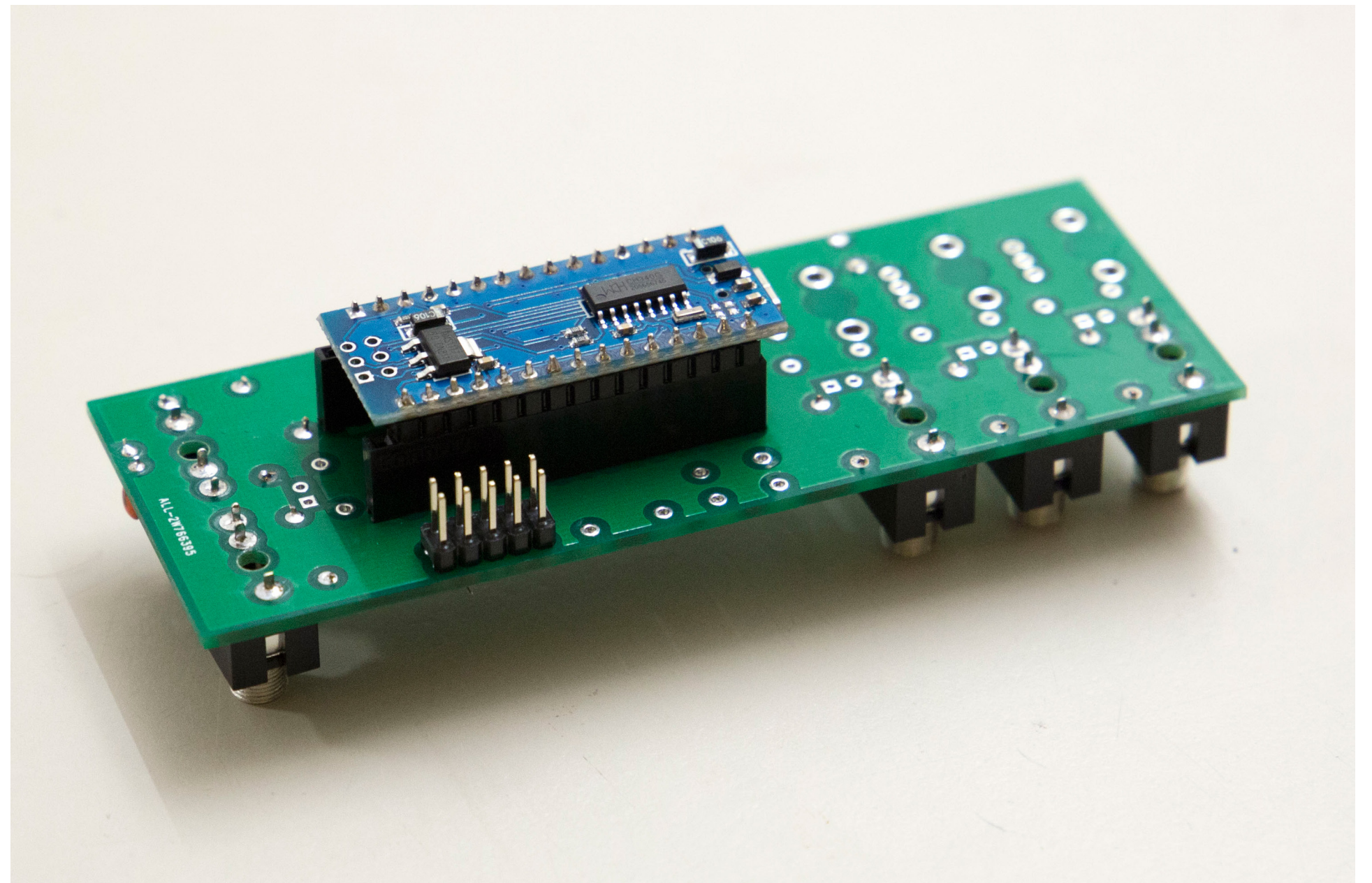
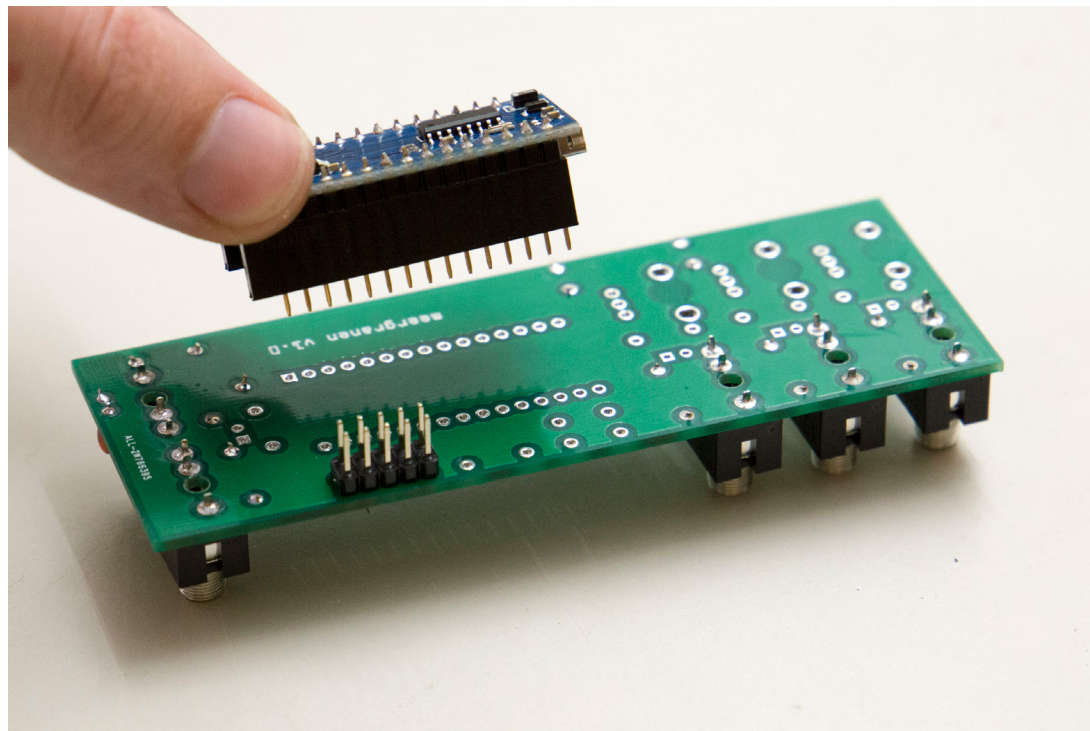
Back side

8 Solder header JP to the BACK of the pcb, make sure its flush with the PCB! (Pro tip: solder one pin first and then while applying heat, push into place, don't burn your hands!). Avoid making solder bridges, the pins here are quite close together..limit your amount of tin!

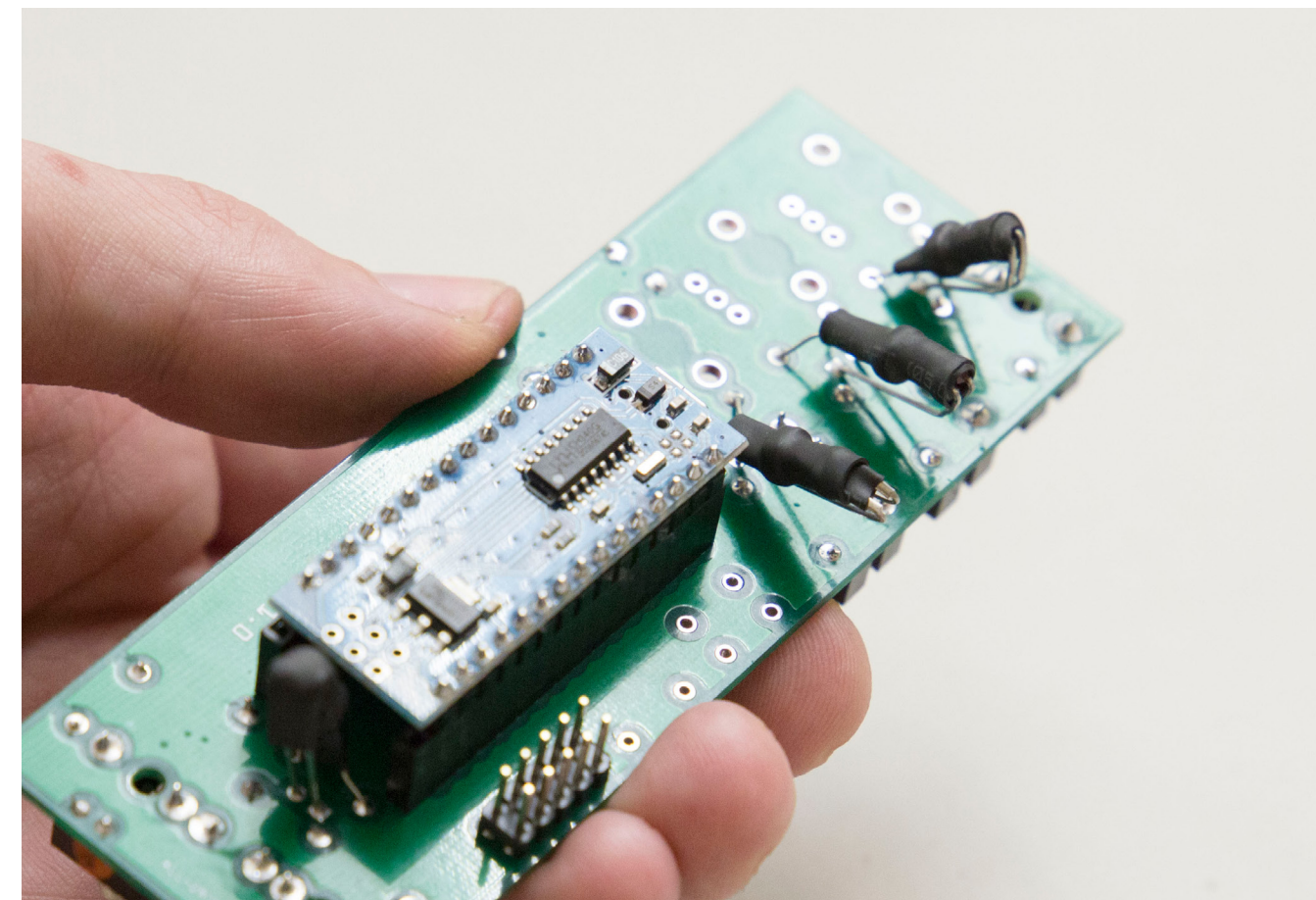
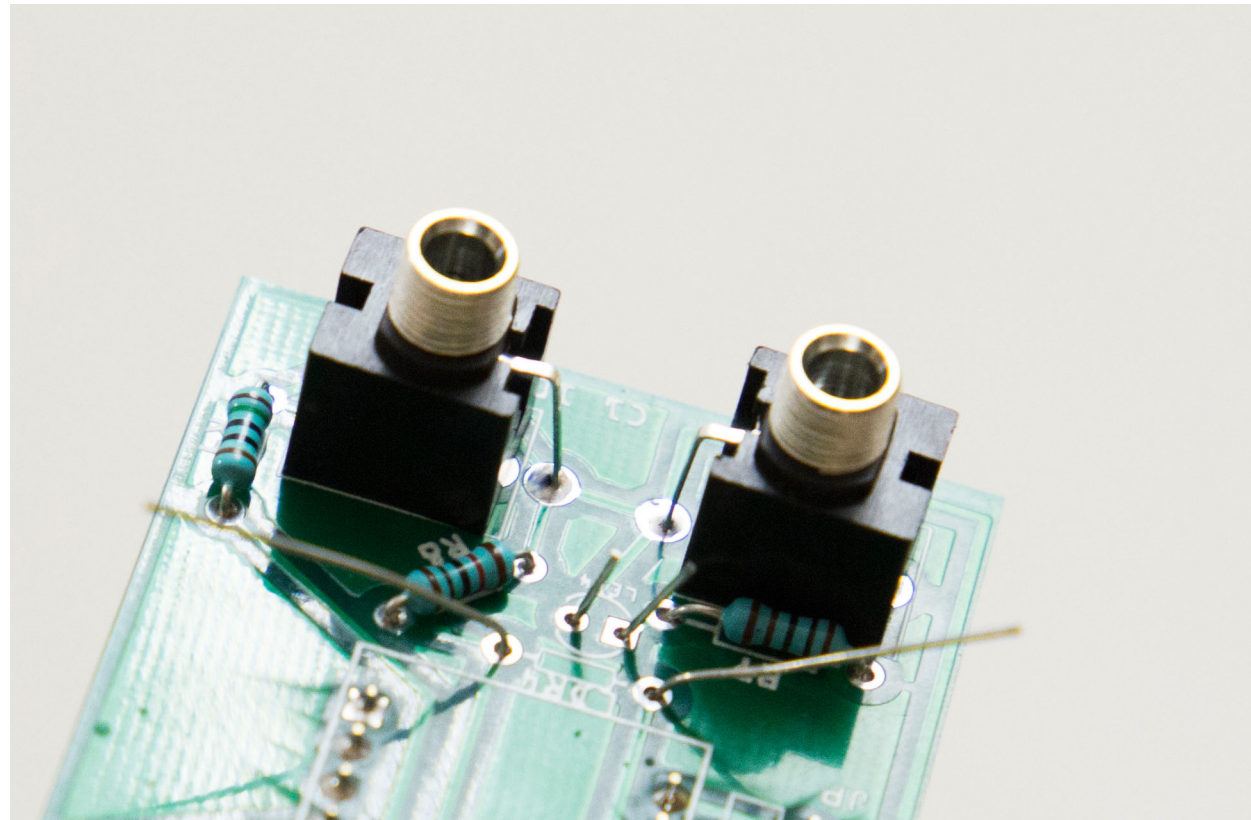
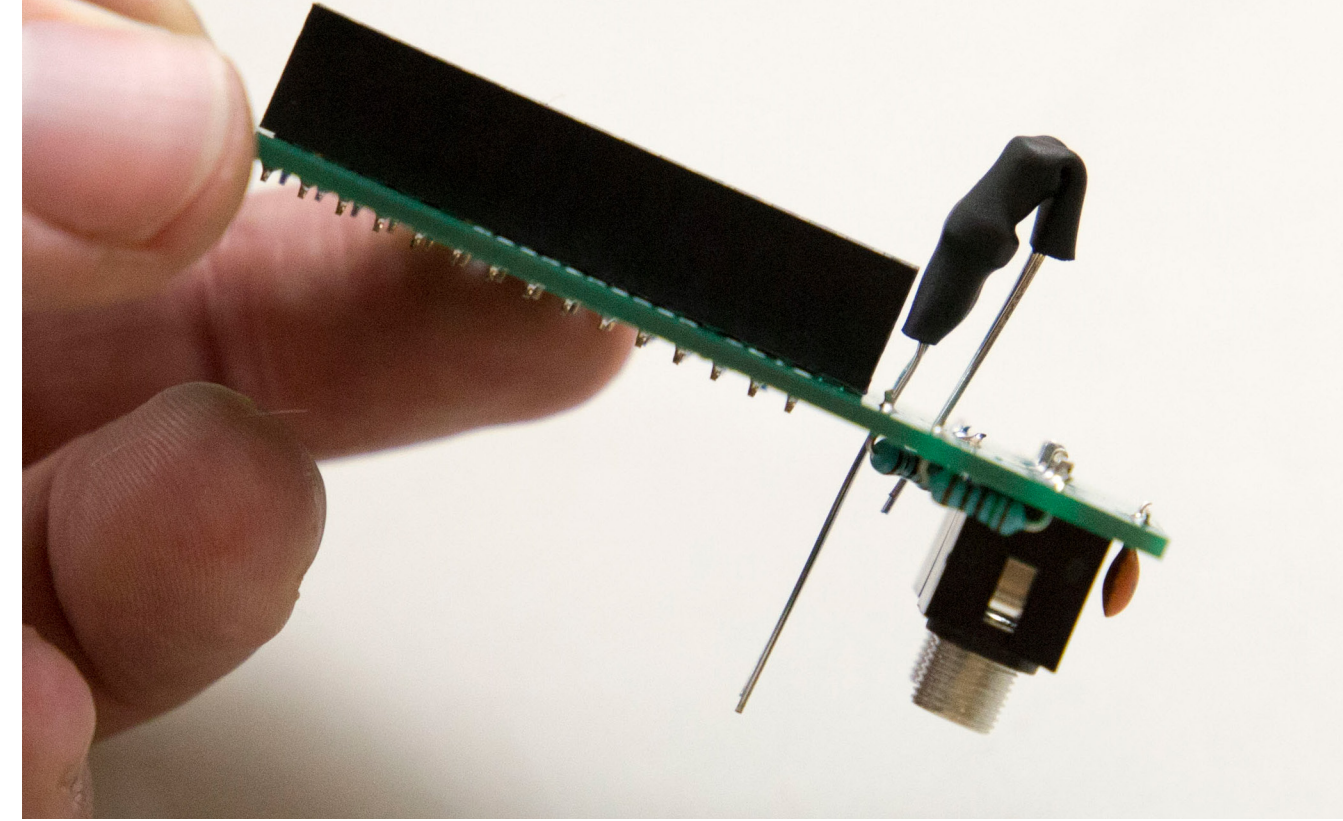
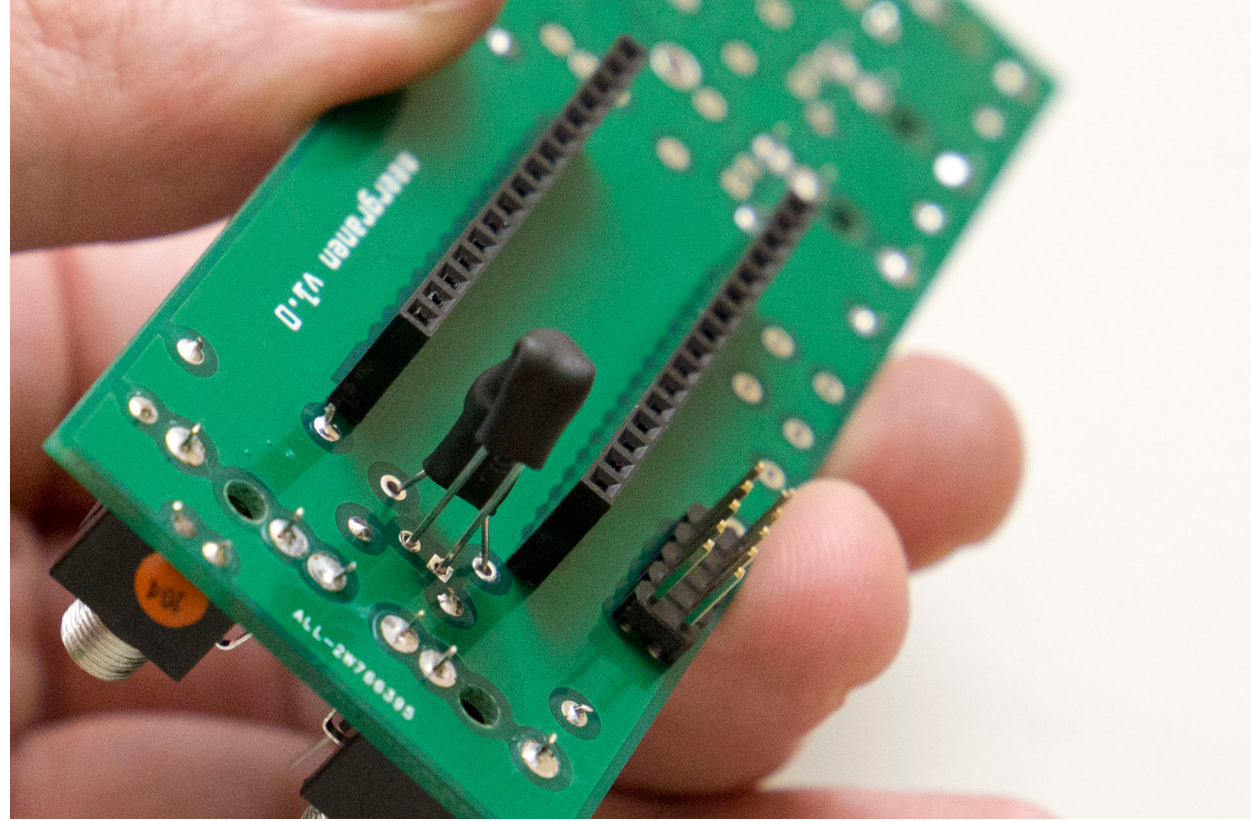
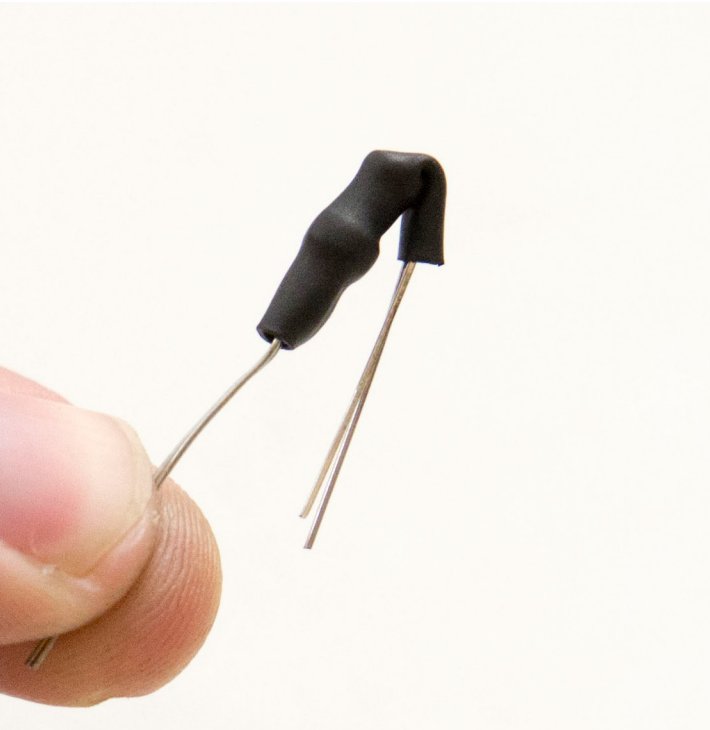
NOTE: We need to make one bride: pin 7 and 8 of JP (see photos)! Use one of the trimmed of legs you will fiend around you. Don't bridge any other pins!



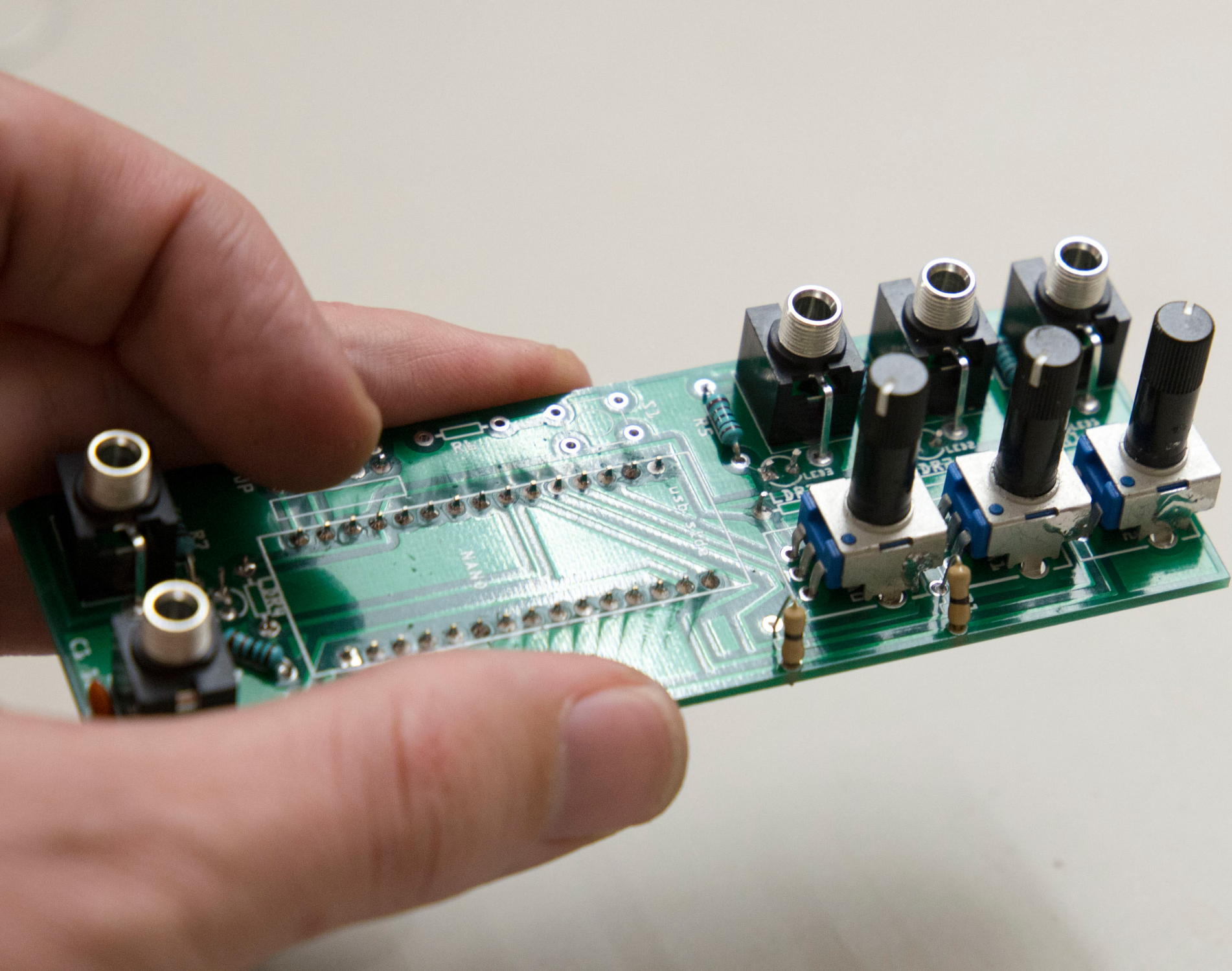
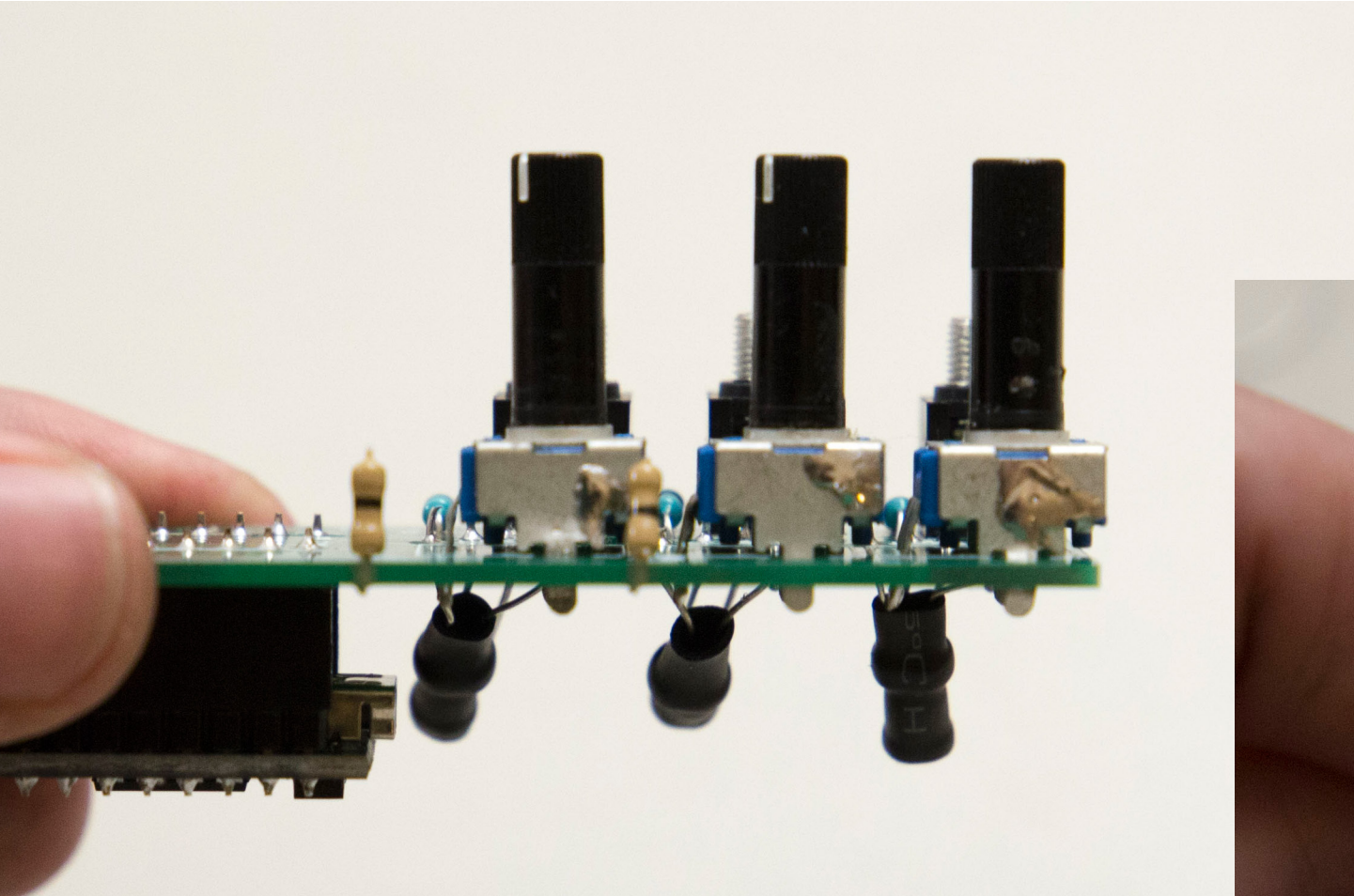
9 On the back, solder the Arduino (with male+female headers! This allows you to swap Arduino's in case it gets fried)...Again, many pins close together, don't make any solder bridges! Make sure everything is flush (first solder one or two pins at each end and check/make sure!).



10 Insert the vactrols through the back. First bend the LEDs legs (the thicker ones) flat towards the LDRs legs (see photo). NOTE the polarity of the LEDs: long leg is positive, should go in the SQUARE silver hole! This is also important for the direction in which you bend the legs! Make sure the LDR legs don't touch each other, they're kinda flimsy.

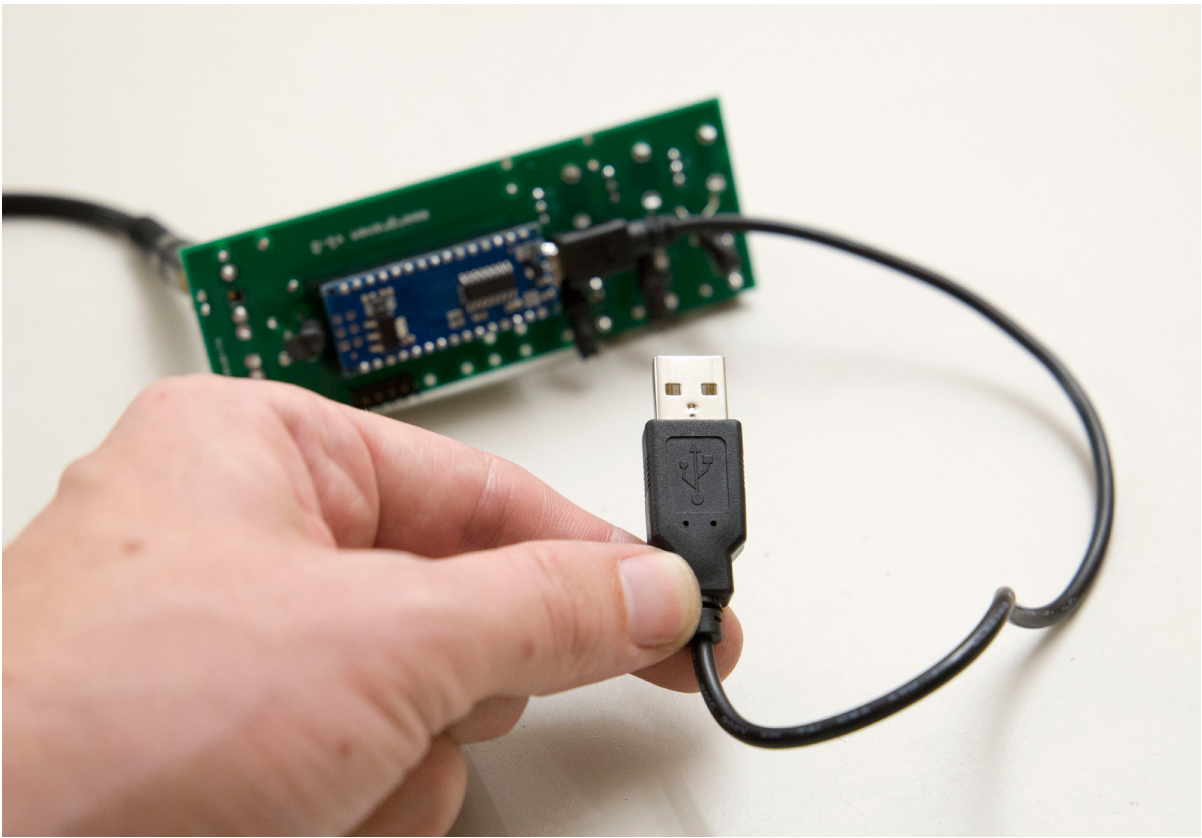
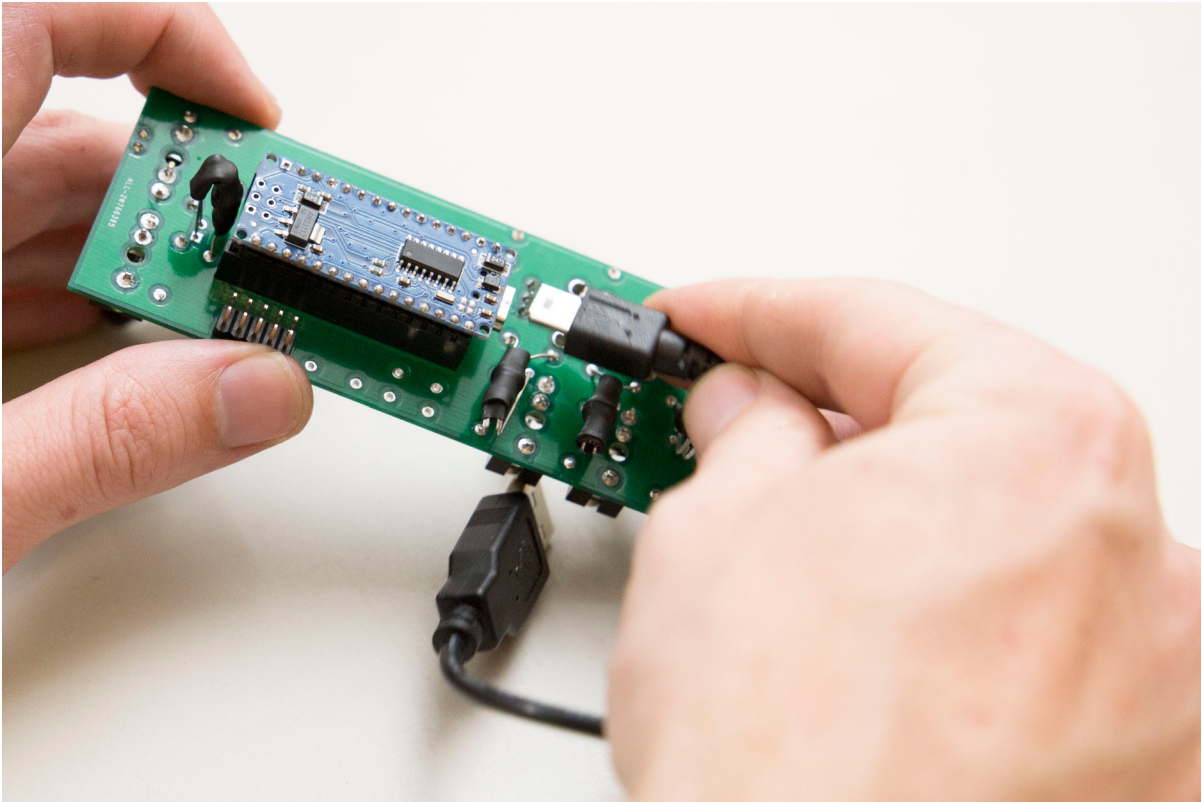
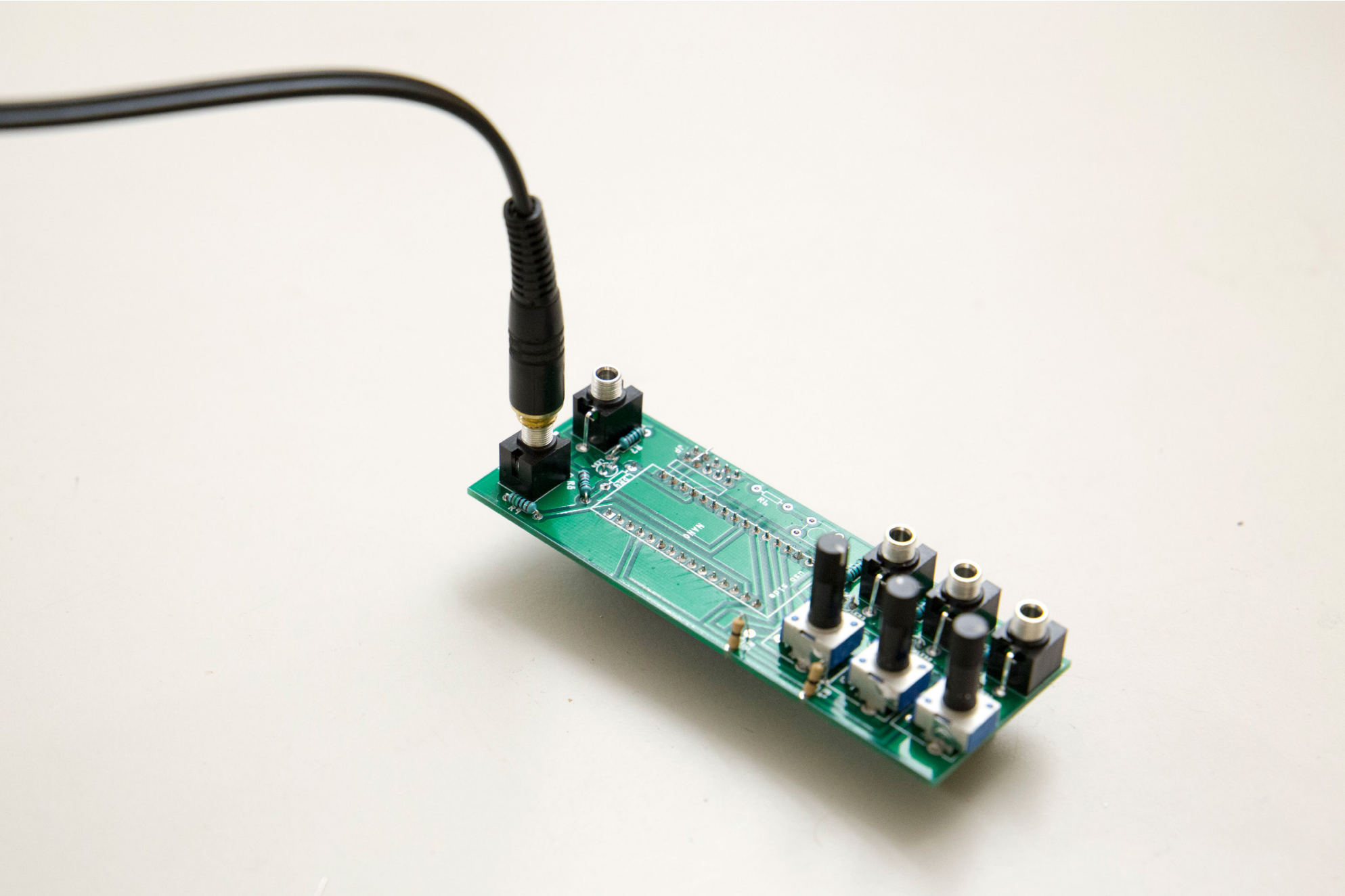


11 Solder potentiometers P1 to P3, make sure they're straight and flush.

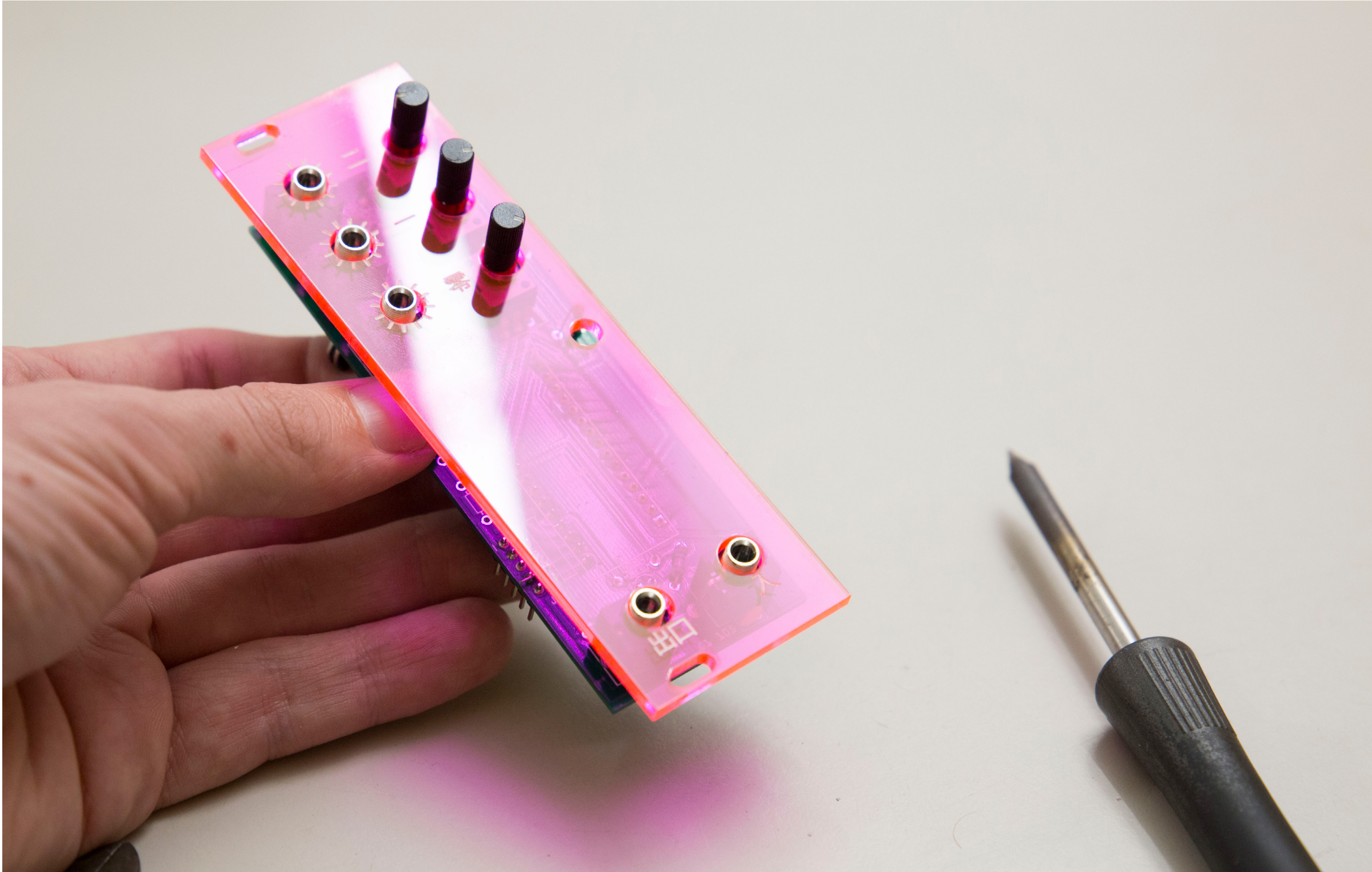


12 Flash Arduino!

13 Test! Plug in a headphone in the output jack and plug the mini usb in the arduino and a powerbank, wall wart or laptop (if you are feeling confident/rich), enjoy!



14 Cut front panel! Get some Ply wood or Plexiglas (3mm) and laser cut! You can also try out different patches in the zip file and or try making your own audio sample!



Final Front and Back for reference:

