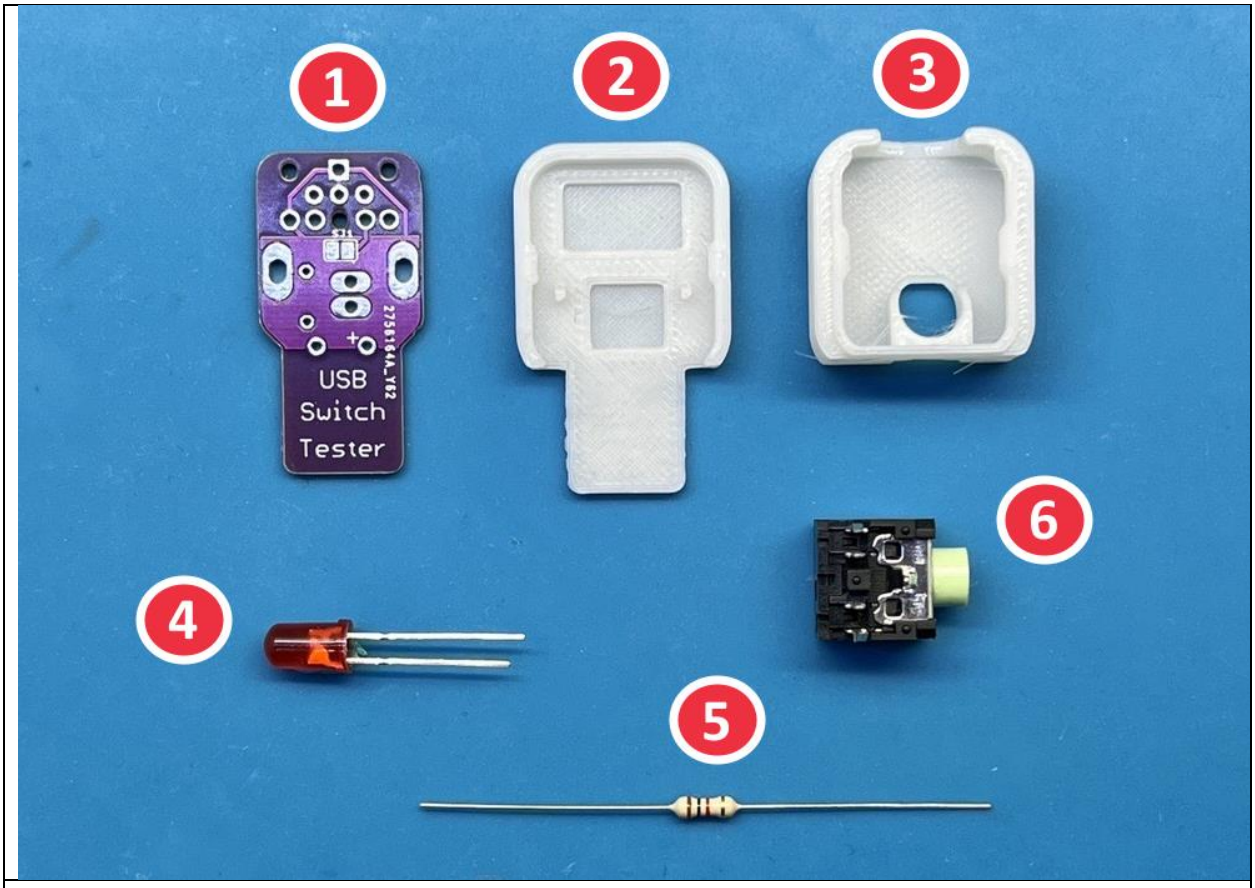
USB-Switch-Tester
ASSEMBLY GUIDE

Makers Making Change
A Neil Squire Program

Required Components



BOM

1. 1X USB-Switch-Tester PCB (Printed Circuit Board)
2. 1X USB-Switch-Tester Bottom Case
3. 1X USB-Switch-Tester Top Case
4. 1X 5MM Red LED
5. 1X 1KOhm Through-Hole Resistor
6. 1X STX-3120-5B 3.5mm Jack Stereo

Required Tools

- Temperature regulated soldering Iron
- Phillips Screwdriver
- Side cutters

Required Personal Protective Equipment (PPE)

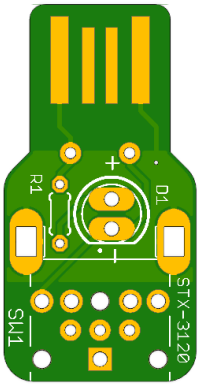
- Safety glasses
- Disposable examination gloves (Optional- solder residue may irritate sensitive skin)

Assembly Instructions

PCB Sides:

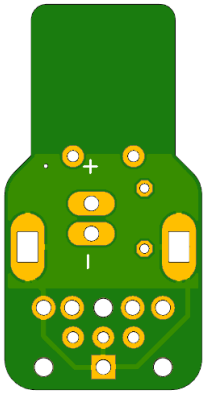
In these instructions the terms **component side** and **solder side** are used often and are defined below:

Component Side



- USB metal rectangle contact points can be seen.
- Visible painted white lines can be seen on this side of the board outlining a circle, R1, and D1.
- The side of the PCB board with the label “Milador” is the component side of the PCB (not pictured in above photo).

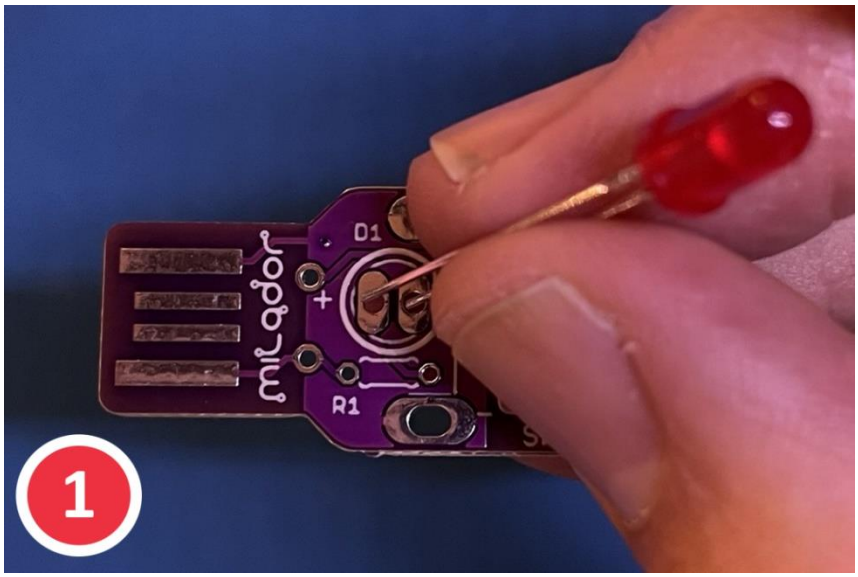
Solder Side



- No USB metal rectangle contact points can be seen
- The side of the PCB board with the label “USB Switch Tester” is the component side of the PCB (not pictured in above photo).

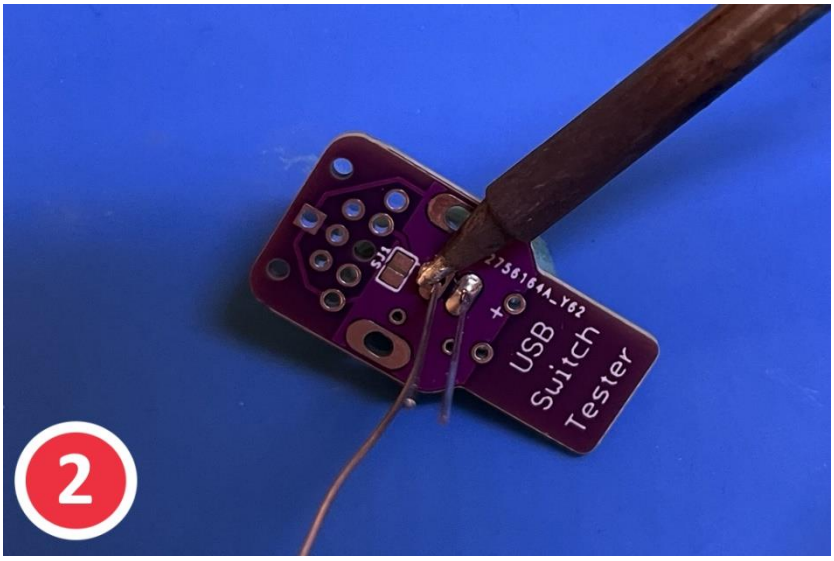
Step 1

Insert the LED into component side of the PCB (shown). Make sure the longer lead of the LED (positive lead) goes into the side marked "+" (closest to USB edge connector). Also ensure the LED is all the way in, and flush with the PCB.



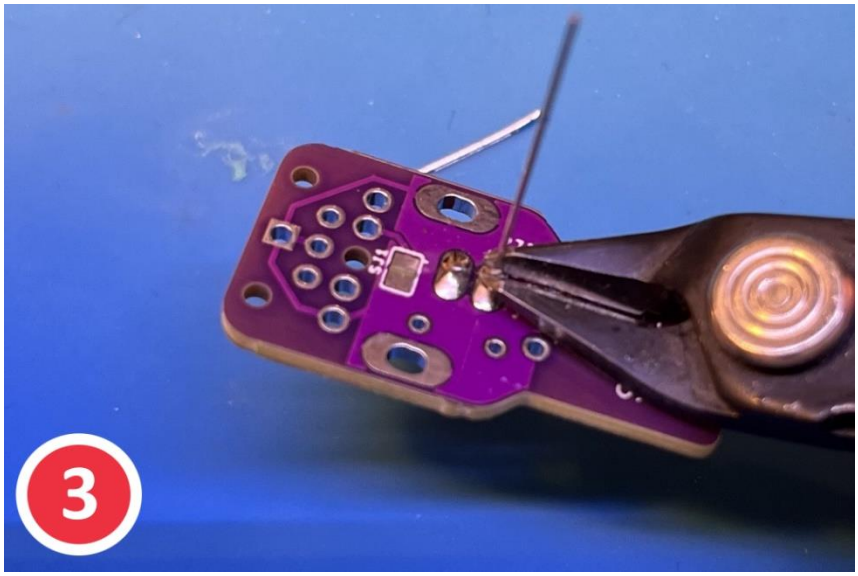
Step 2

Using the heated soldering iron, solder the two LED terminals on the solder side of the PCB.



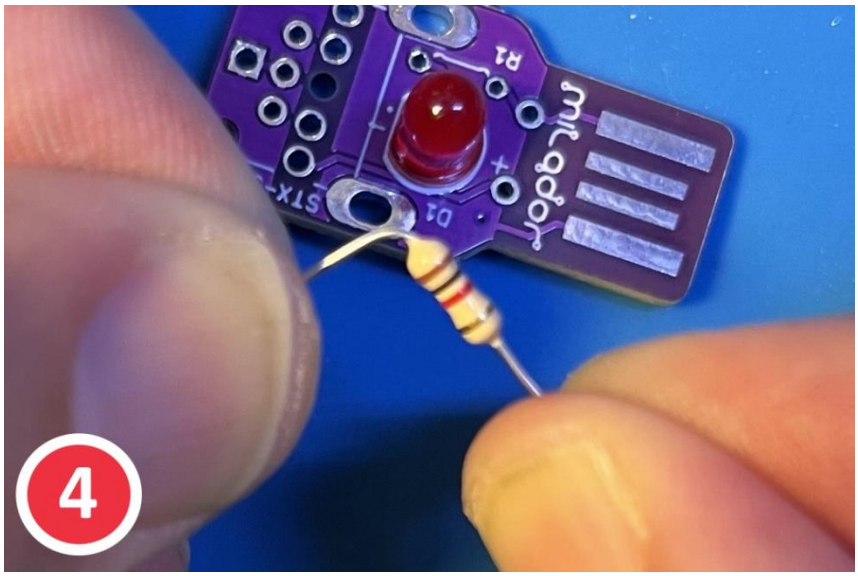
Step 3

Using side cutters, trim the LED leads from the freshly soldered joints, as close to the board as possible.



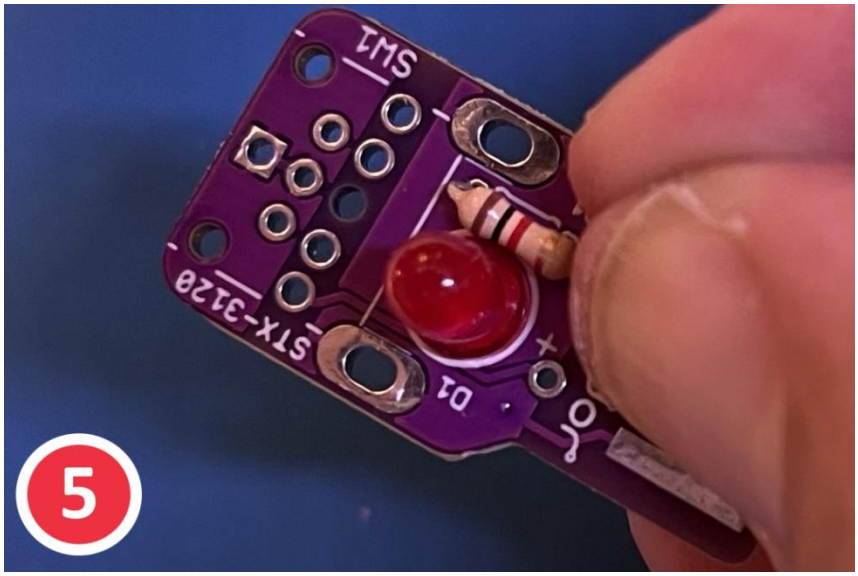
Step 4

Bend both leads of the 1K resistor (marked with stripes: brown black red) to 90 degrees next to the resistor body. After bending, both resistor leads should be parallel, and pointing in the same direction.



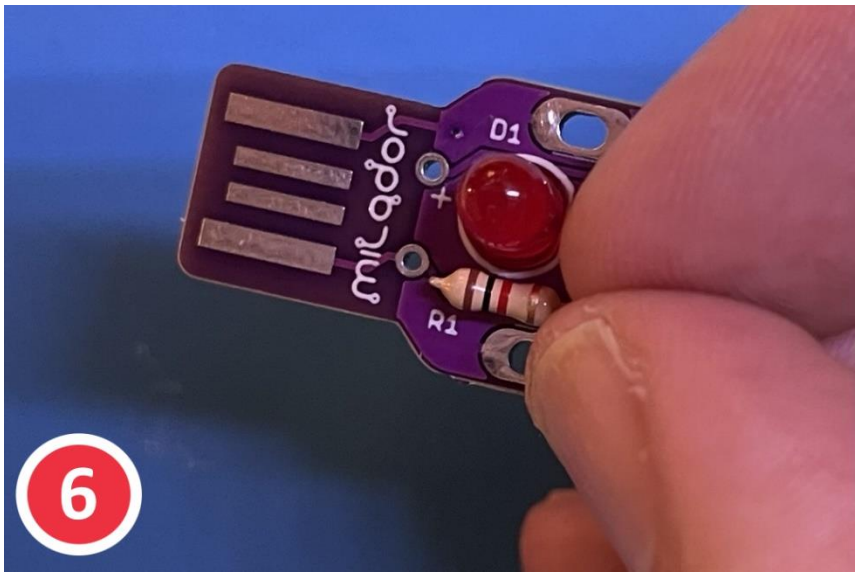
Step 5

Insert the resistor into the resistor outline R1 holes next to the LED, as shown.



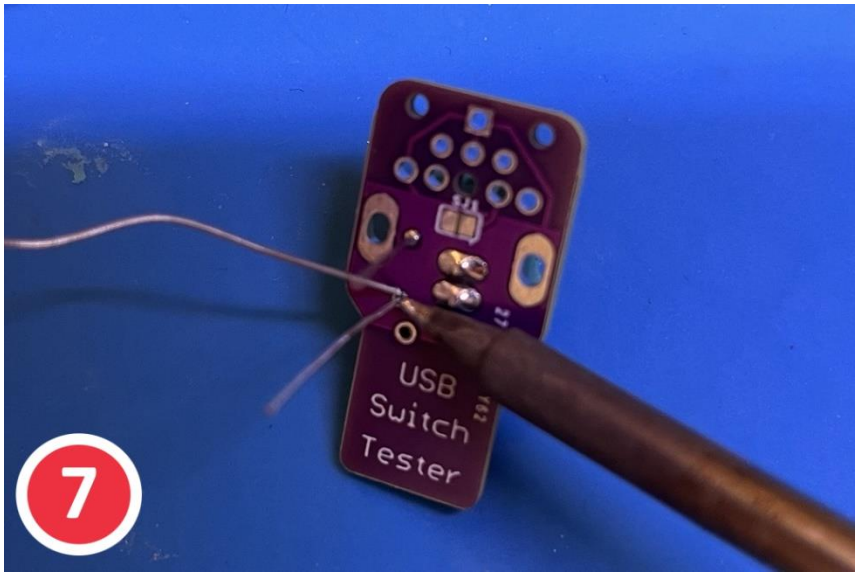
Step 6

Ensure the resistor is flush with board, then bend the resistor wires apart slightly, to minimize unwanted part movement during soldering.



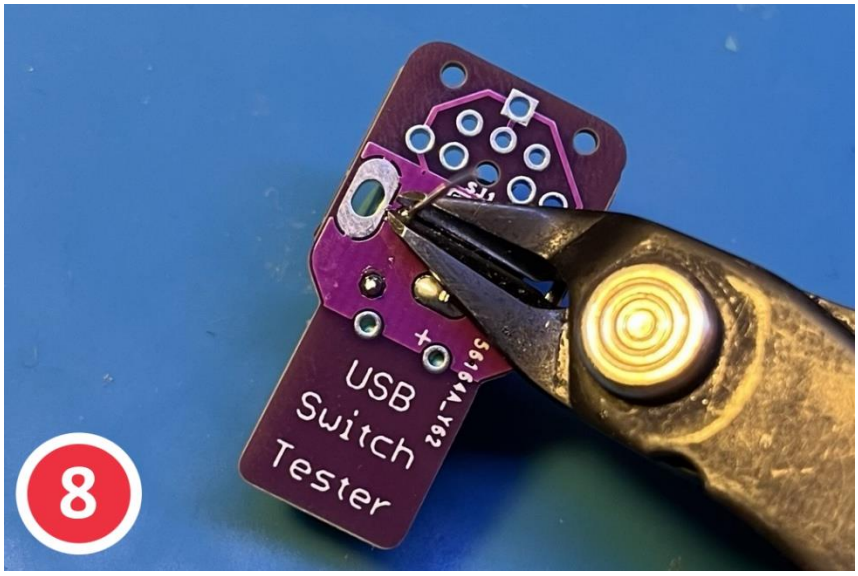
Step 7

Using the heated soldering iron, solder the resistor wires on the solder side of the PCB.



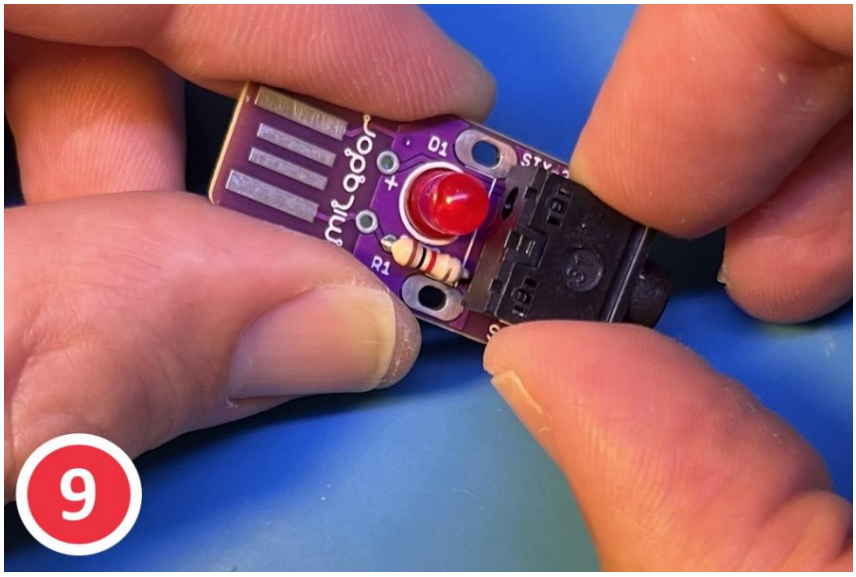
Step 8

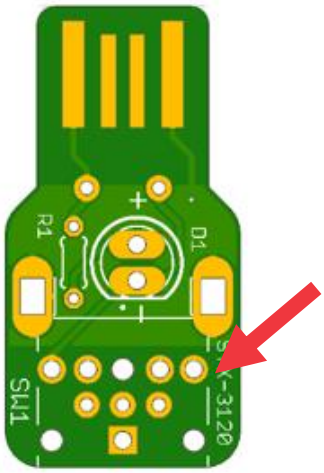
Using side cutters, trim the resistor leads from the freshly soldered joints, as close to the board as possible.



Step 9

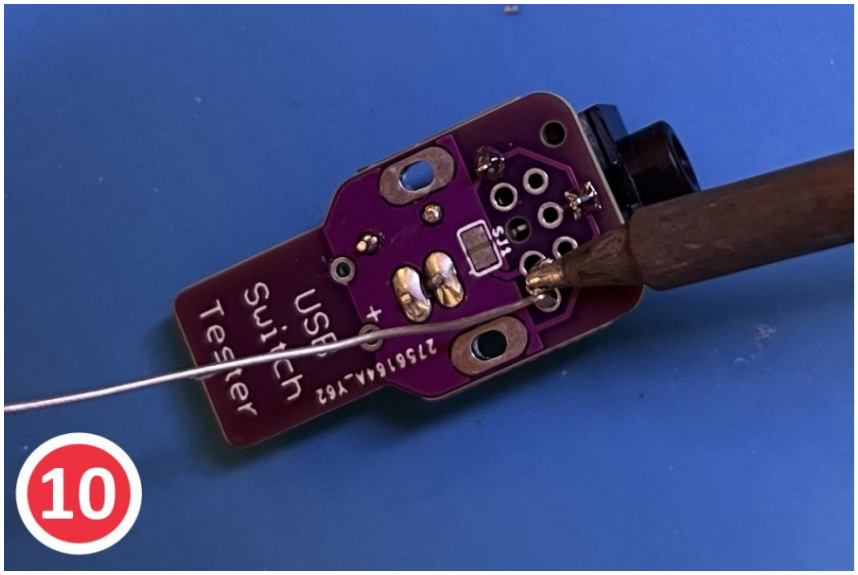
Insert the 3.5 mm jack pins into the holes on the contact side of the PCB with the jack hole facing away from the LED.





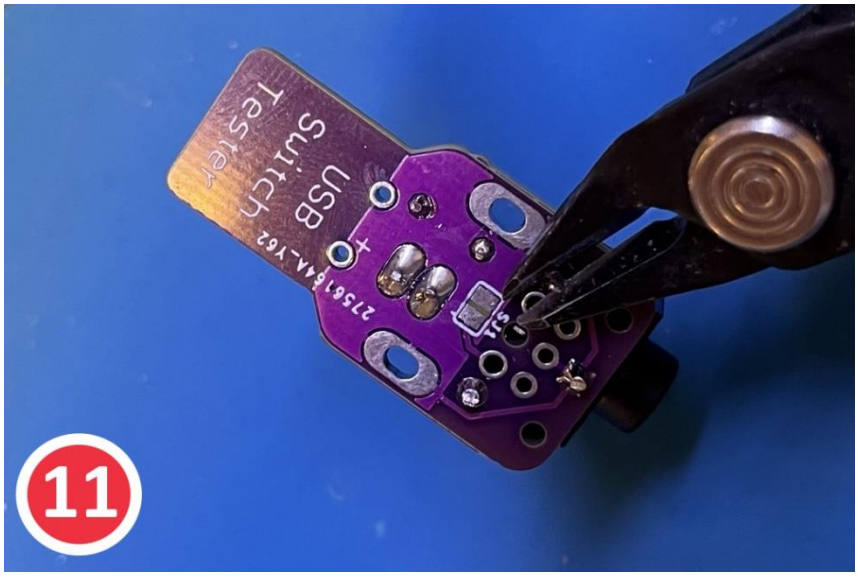
Step 10

Using the heated soldering iron, solder the 3.5 mm jack pins on the solder side of the PCB.



Step 11

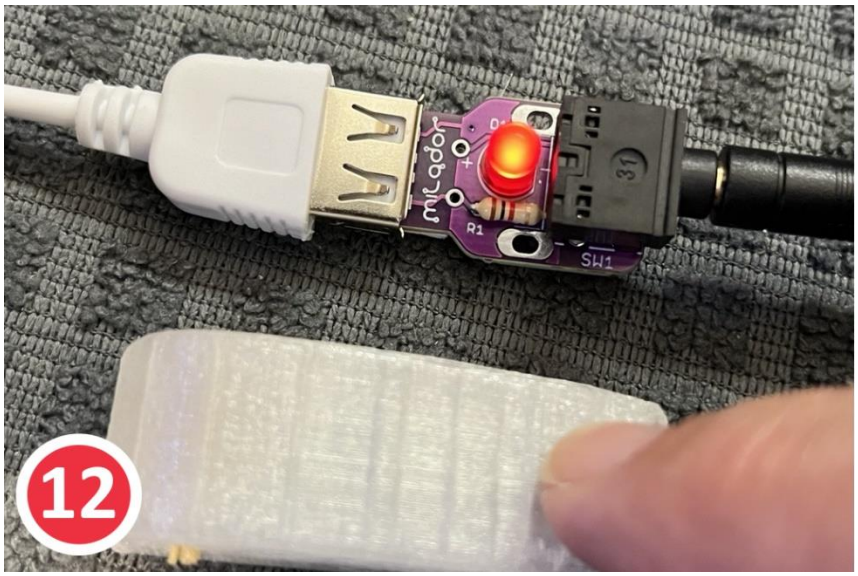
Using side cutters, trim the 3.5 mm jack leads from the freshly soldered joints, as close to the board as possible.



Step 12 – Preliminary Testing

All electronic components are now assembled and the device can be tested. To test follow the steps below:

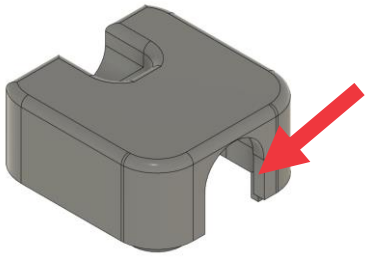
1. Plug in the PCB into a USB port that has power. An example of this would be to plug the USB into a USB Type A port on a laptop.
2. Plug in an adaptive switch with a 3.5 mm plug into the 3.5 mm jack.
3. Press down on the adaptive switch
4. If the light:
    a. **Turns on** when you press the adaptive switch the test was successful and move on to Step 13.
    b. **Does not turn on** check the solder connections on the solder side of the device and make sure there is no connections touching.



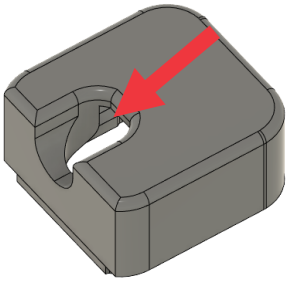
Step 13

Insert the electronic assembly into the 3D printed top case. Locate the cut outs on the top case for the 3.5 mm jack and LED. Ensure the jack and LED fit inside of these exits.

3.5 mm Jack exit

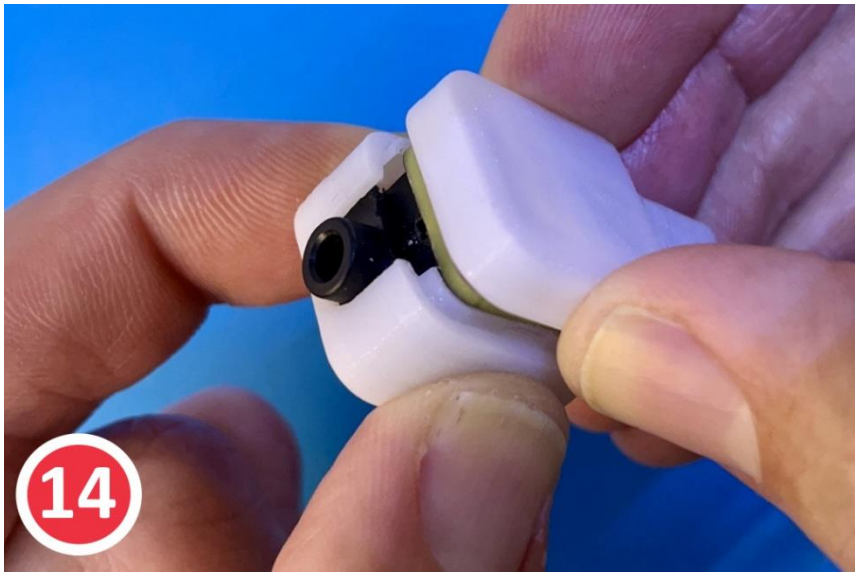


LED exit



Step 14

Place the 3D printed bottom case on the solder side of the PCB and press down gently until you feel the top and bottom case clip together. After the top and bottom case are clipped together the whole device should feel secured.



Step 15

The assembly is complete, congratulations! Please refer to the *Maker Checklist* document that can be found on the website page for this device for the next steps.