AUDIO BUILDERS WORKSHOP

VISUAL BUILD GUIDE FOR METRONOME KIT

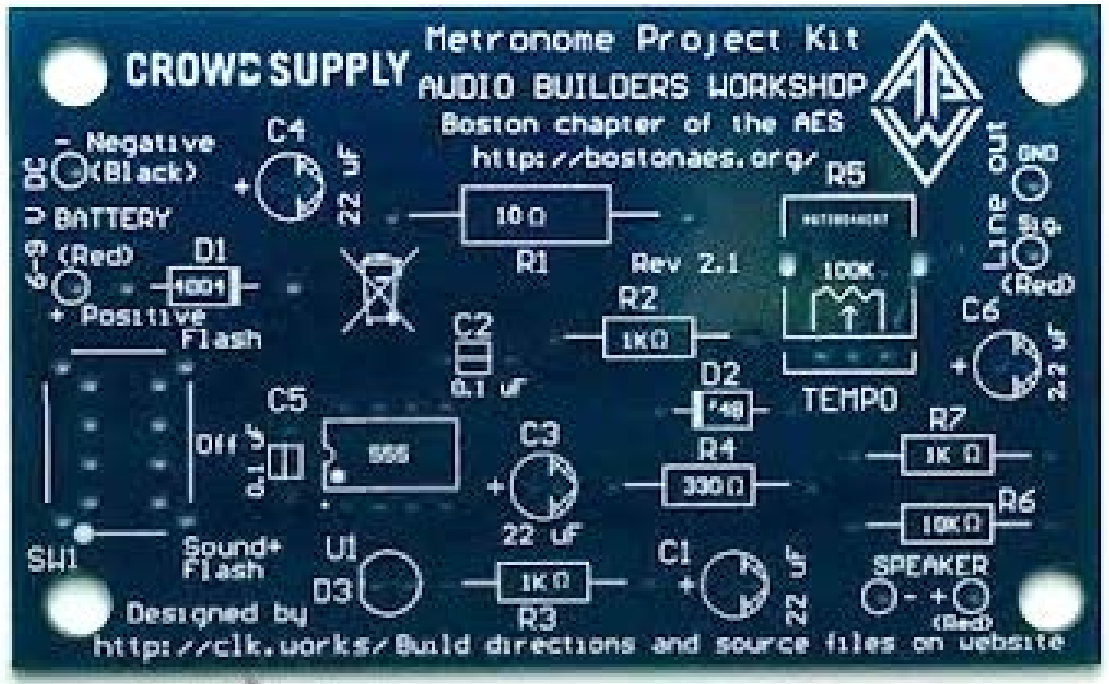
THIS GUIDE SUPPLEMENTS THE WRITTEN GUIDE

A STEP BY STEP VISUAL GUIDE TO THE MAIN DIRECTIONS

- If you've never built an electronics kit before you may find the additional pictures and notes in this guide helpful for checking your work against
- The parts used in this correspond to the current kits; it's very possible your kit has slightly different parts
- Help is available on the Audio Builder Workshop facebook page https://www.facebook.com/groups/AudioBuildersWorkshop/
- For the source to this file and other documentation see https://clk.works/2018/05/audio-builders-workshop-metronome-project-source-files/

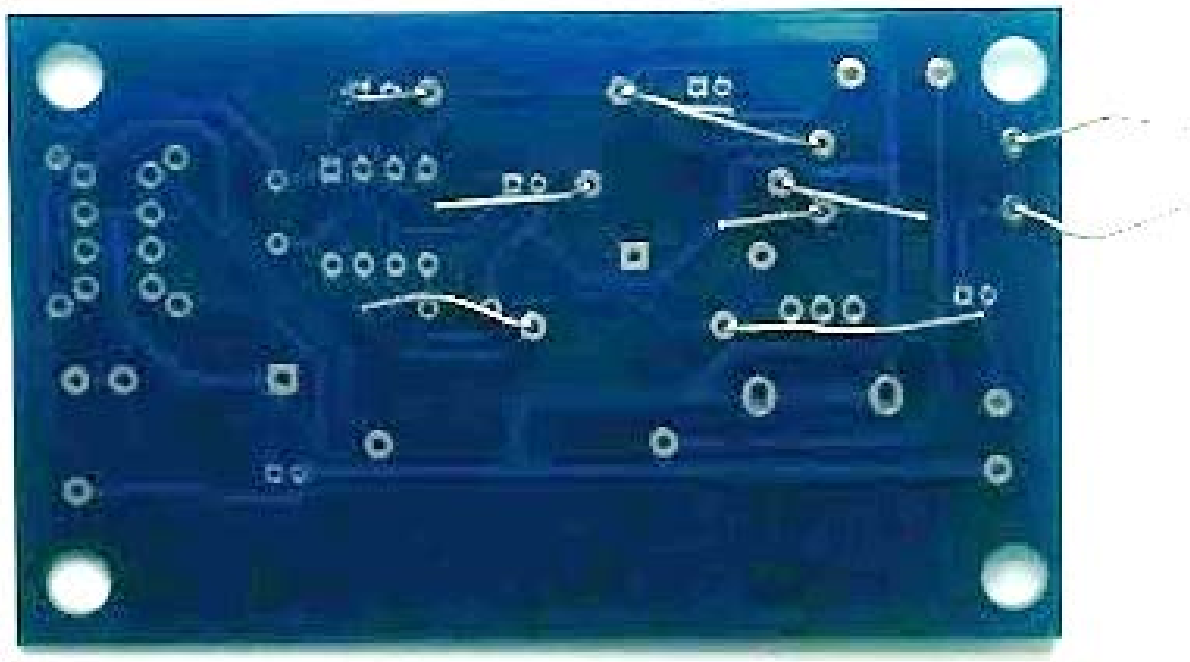
STEP 1 RESISTORS

- The steps match those in the Build Guide.
- Blank board and the first 5 parts to be installed



STEP 1 RESISTORS

- Back side, after insterting
- Wires are bent over to hold the parts in place



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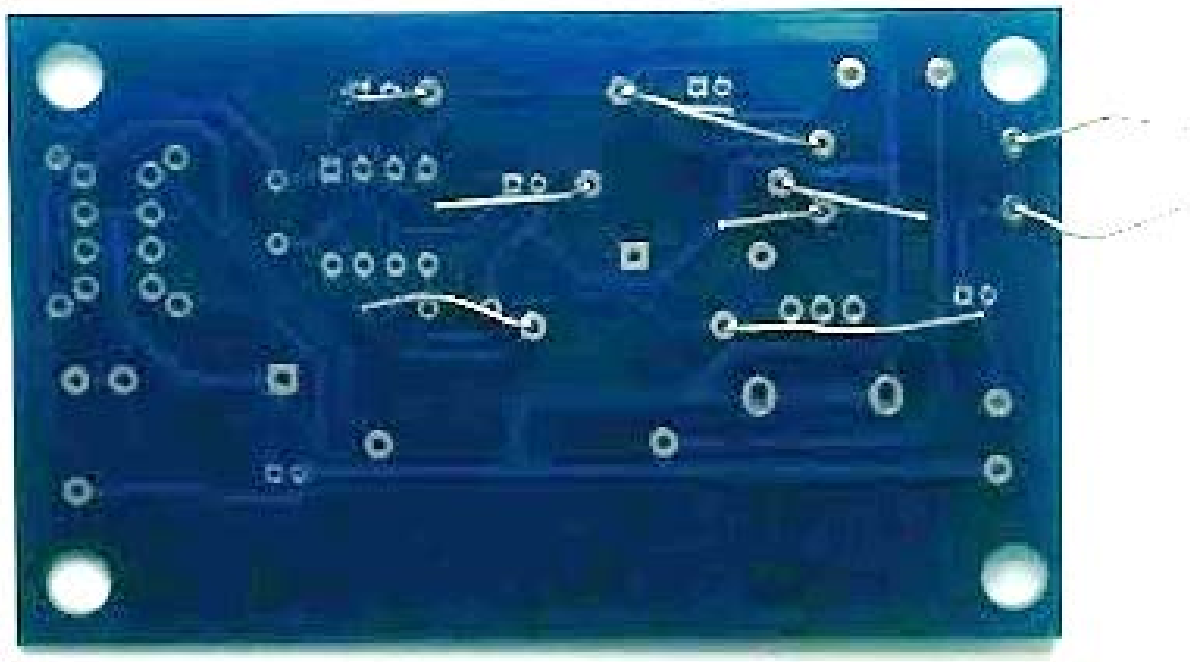
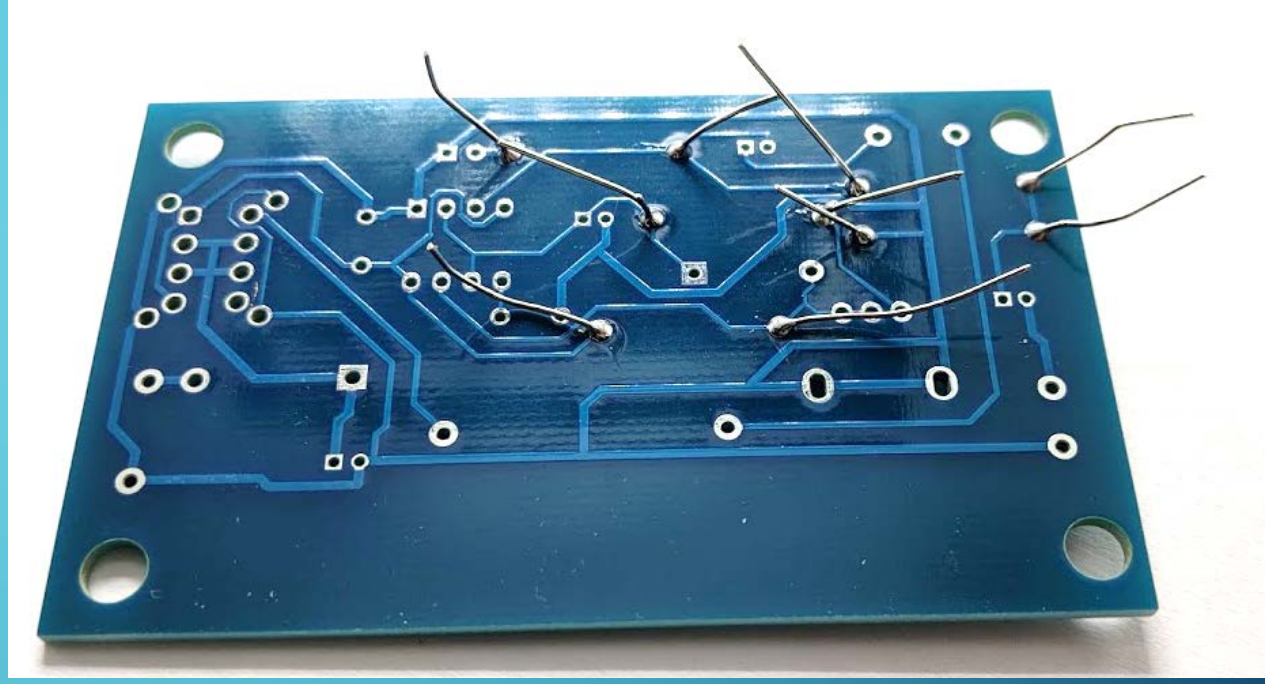


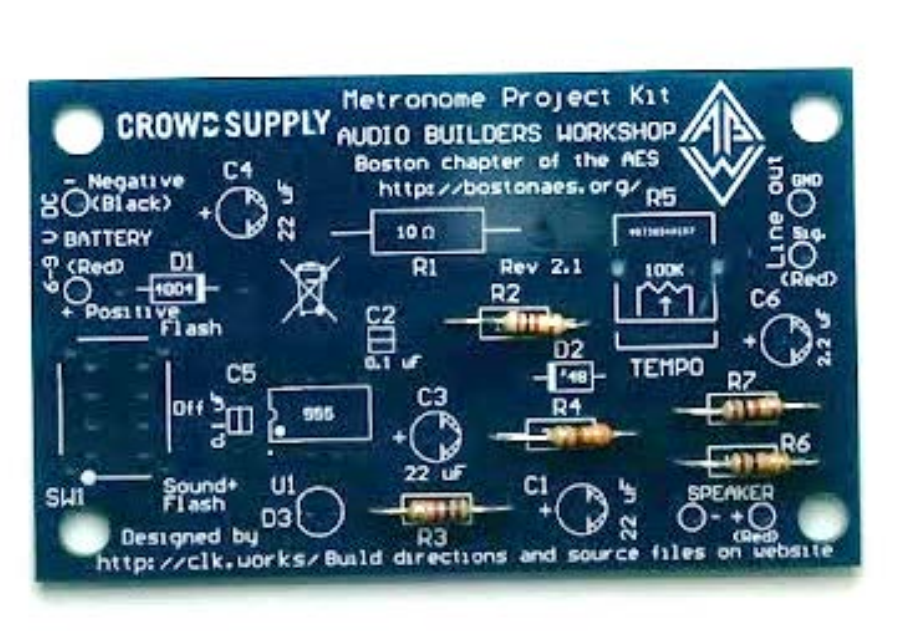
STEP 1 RESISTORS

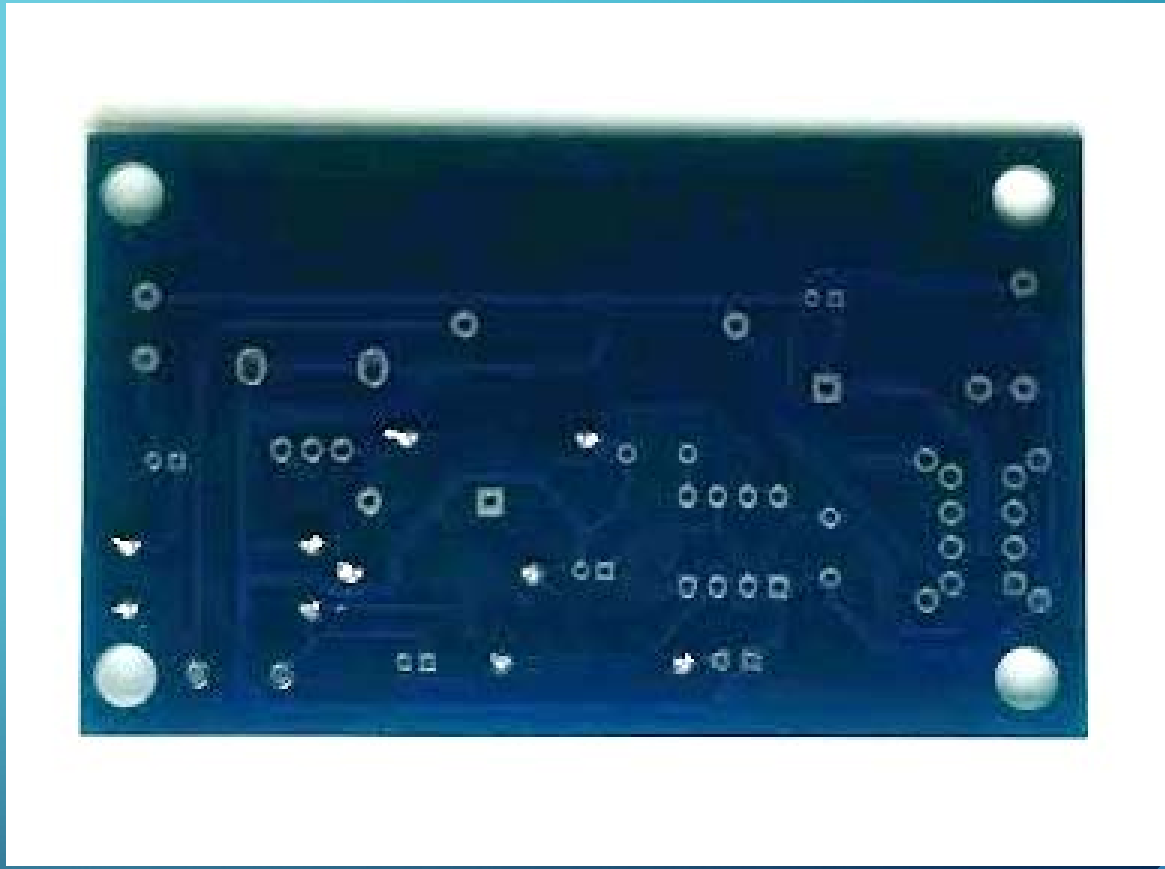
- After soldering
- Not too much solder, not too little…
- Review the solder guide comic if you're not sure



STEP 1 RESISTORS

- After trimming the leads

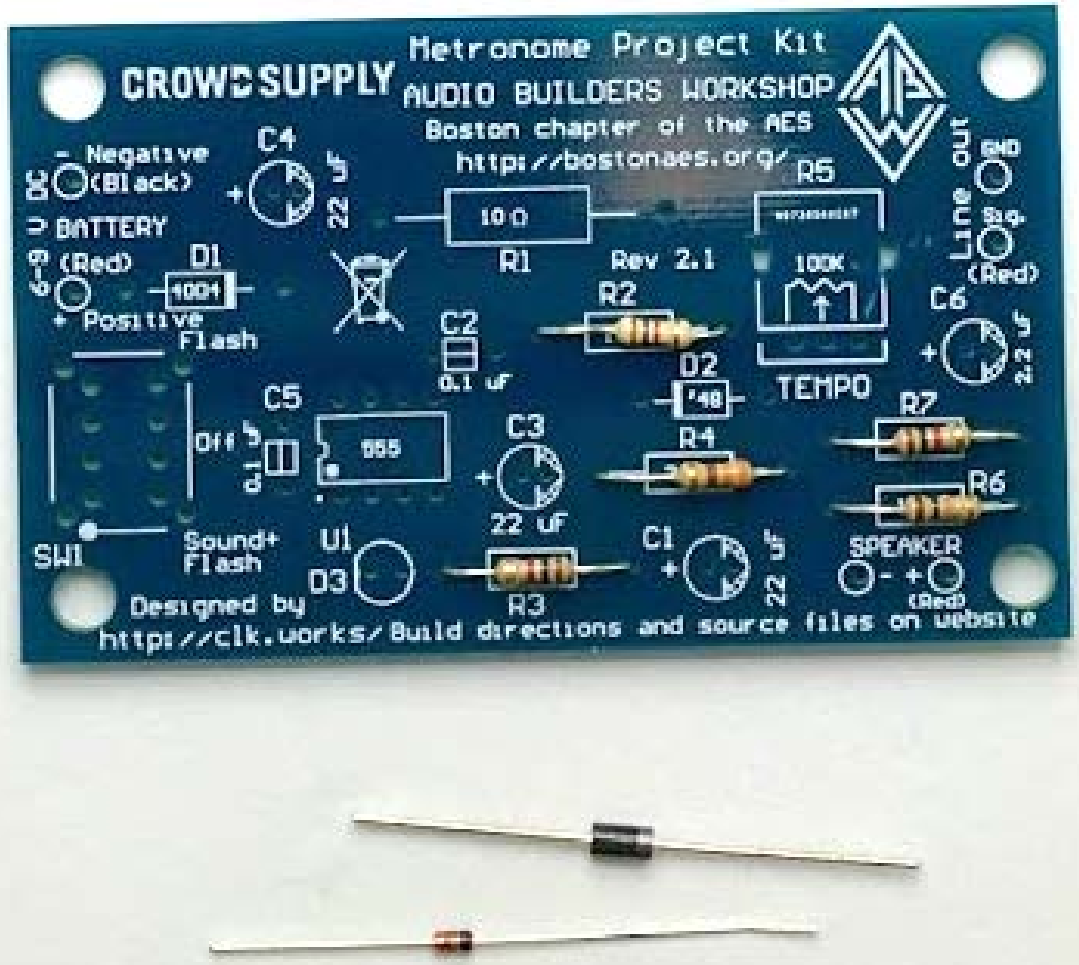




STEP 2 DIODES

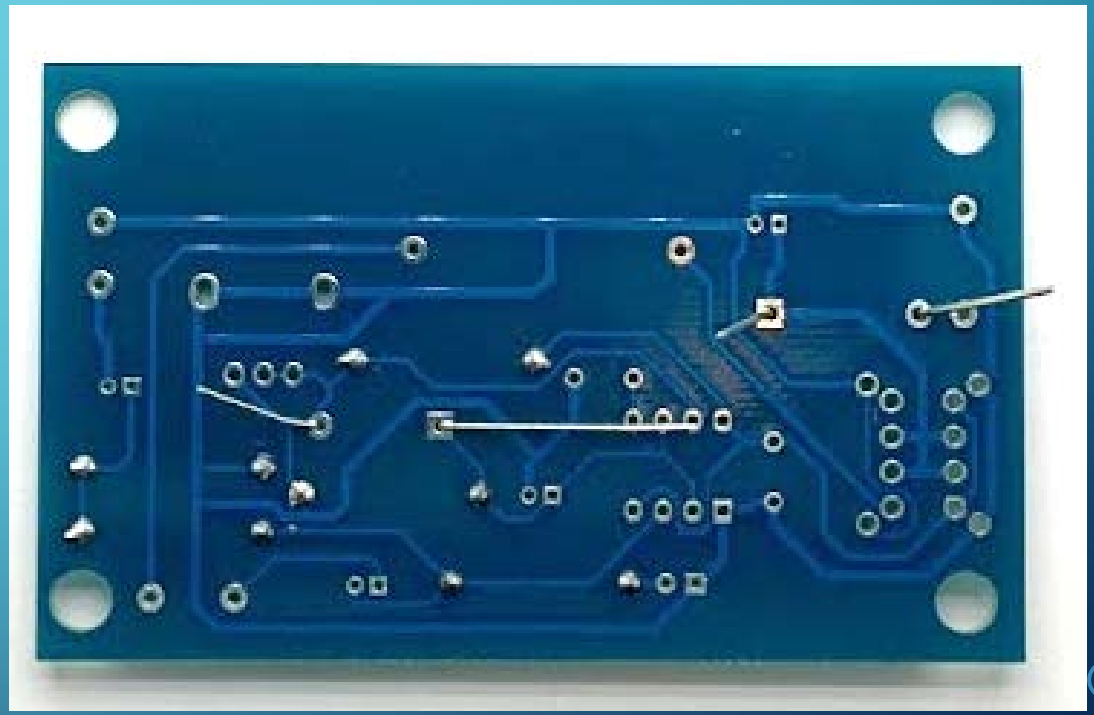
Diodes are polarized and must be inserted in the correct orientation.

Double check the orientation of the band on the diode matches the band on the board BEFORE you solder them in.



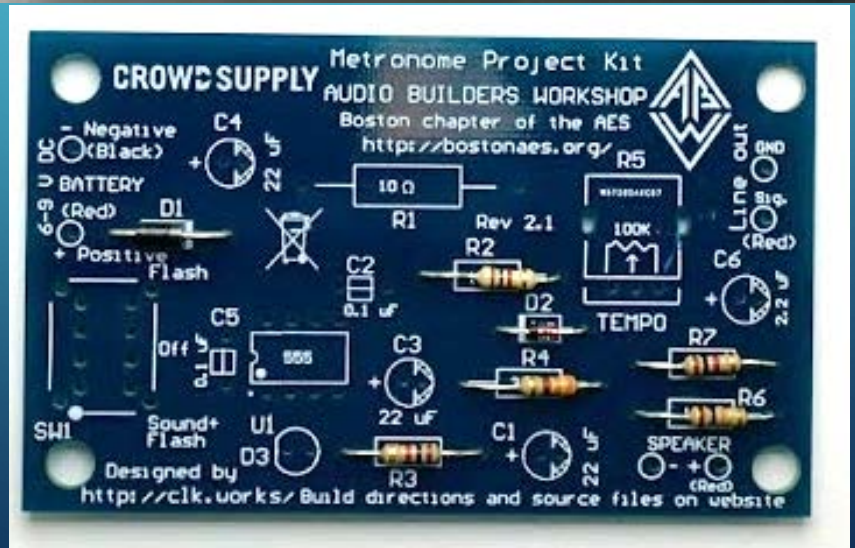
STEP 2 DIODES

- Diodes inserted, ready to be soldered



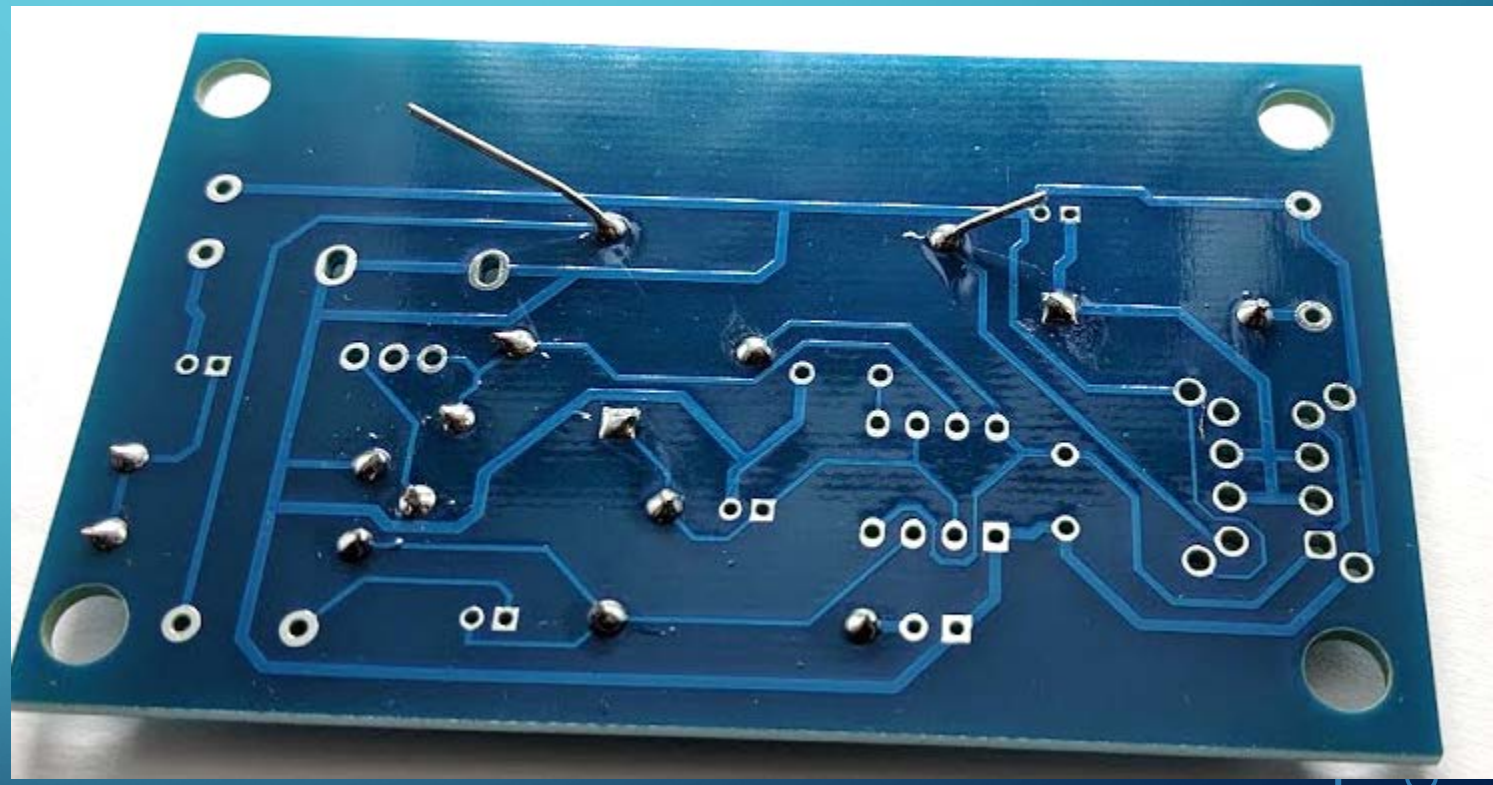
STEP 2 DIODES

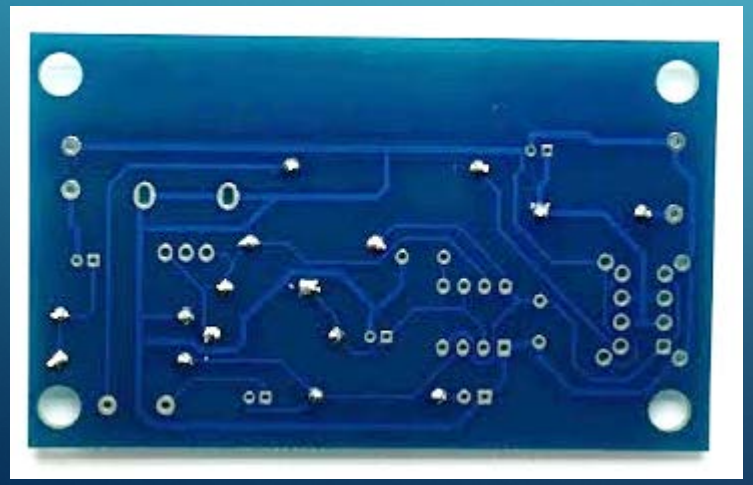
- After soldering trim the leads



STEP 3 10 OHM RESISTOR

- Insert the 10 ohm resistor and solder it in place
- Trim the leads



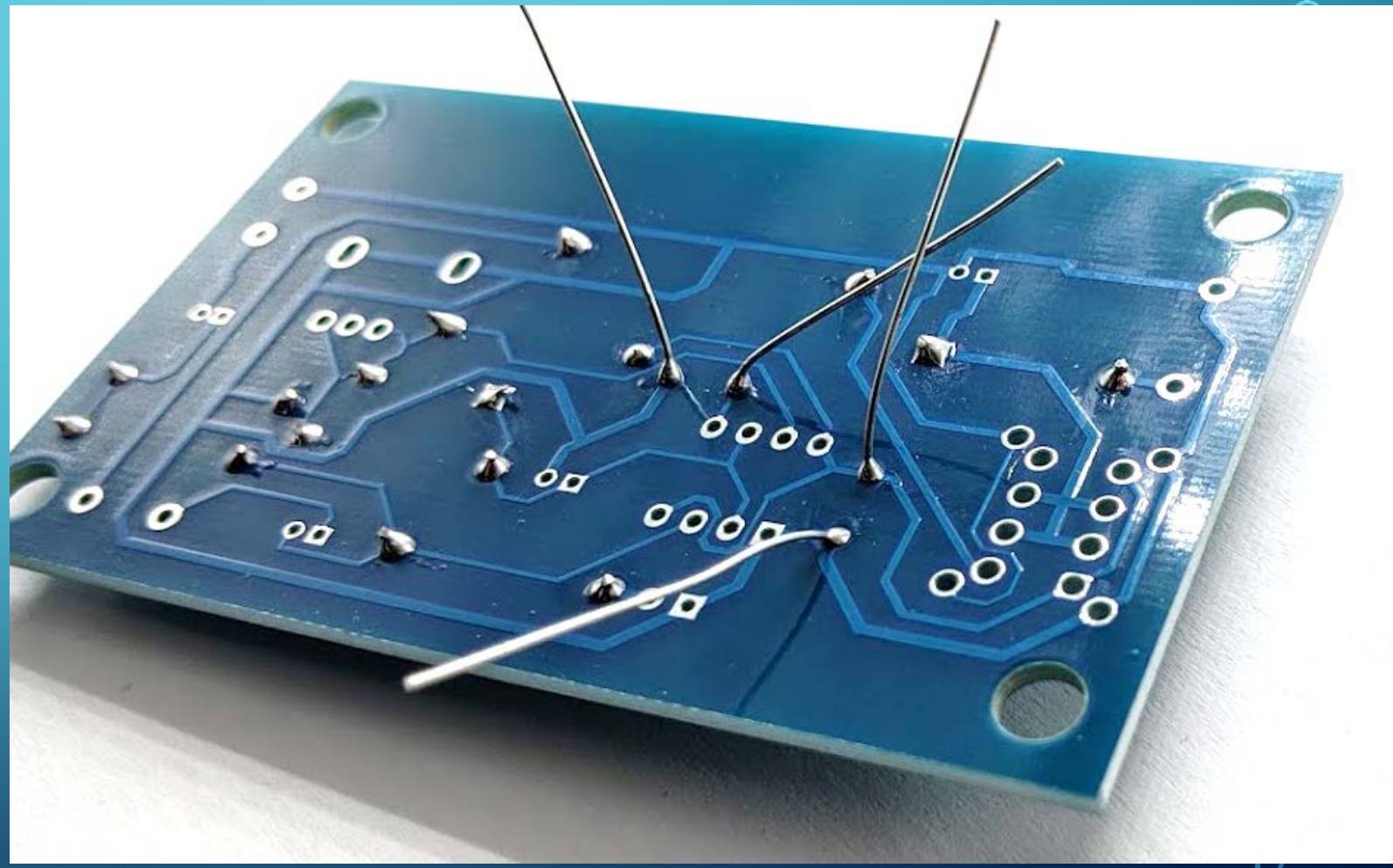


STEP 4 555 IC

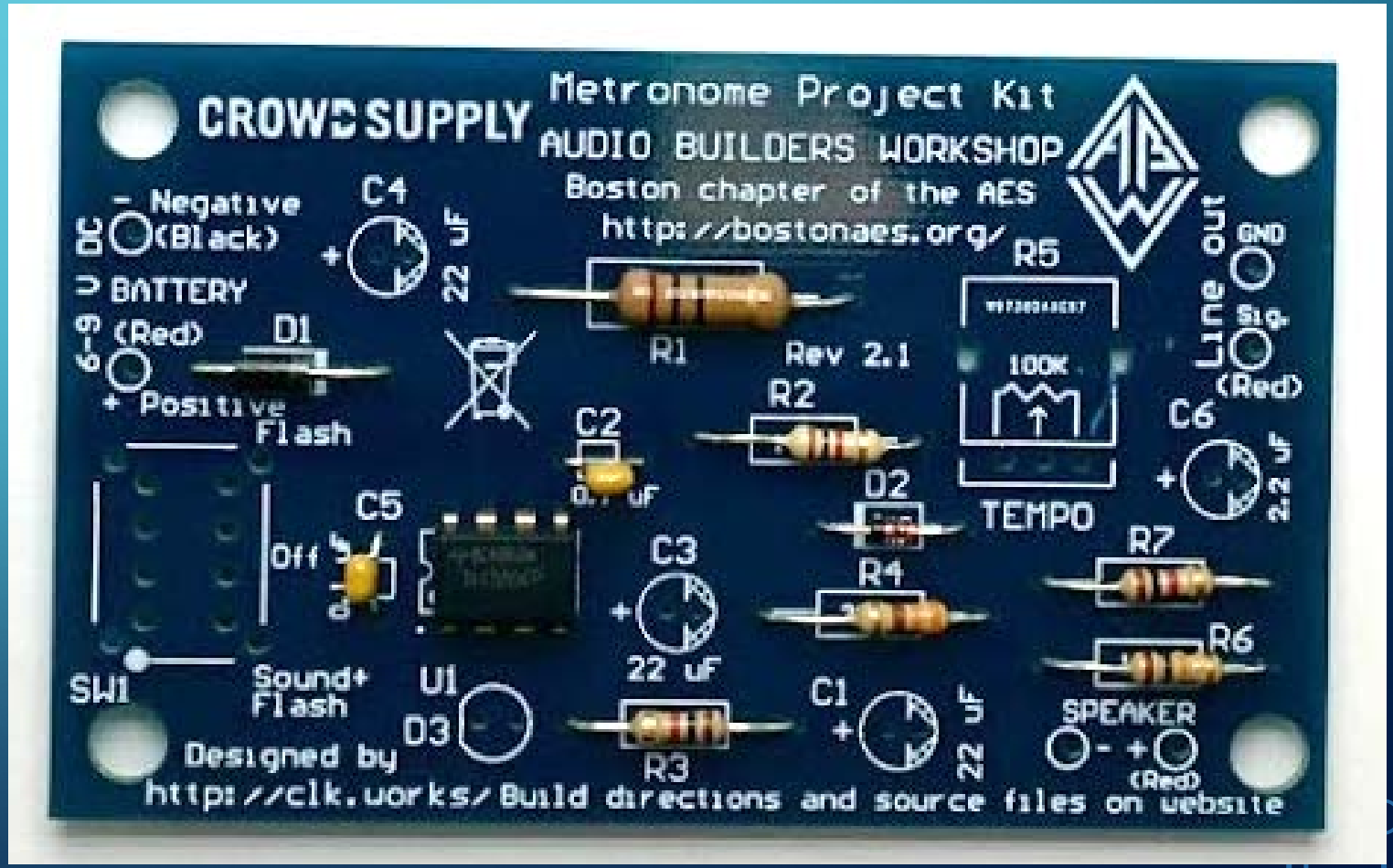
- Pay attention to getting pin 1 correct
- Bend 2 of the leads over to hold it in place
- Notice how pin1 solder pad is square? Many time a square pad indicates “pin 1” when it’s important for a component to be inserted in a particular orientation
- There’s no need to trim the leads after you solder the IC

STEP 5 CERAMIC CAPS

- Insert the two .1 uF capacitors, bend the leads and solder.
- Trim the leads

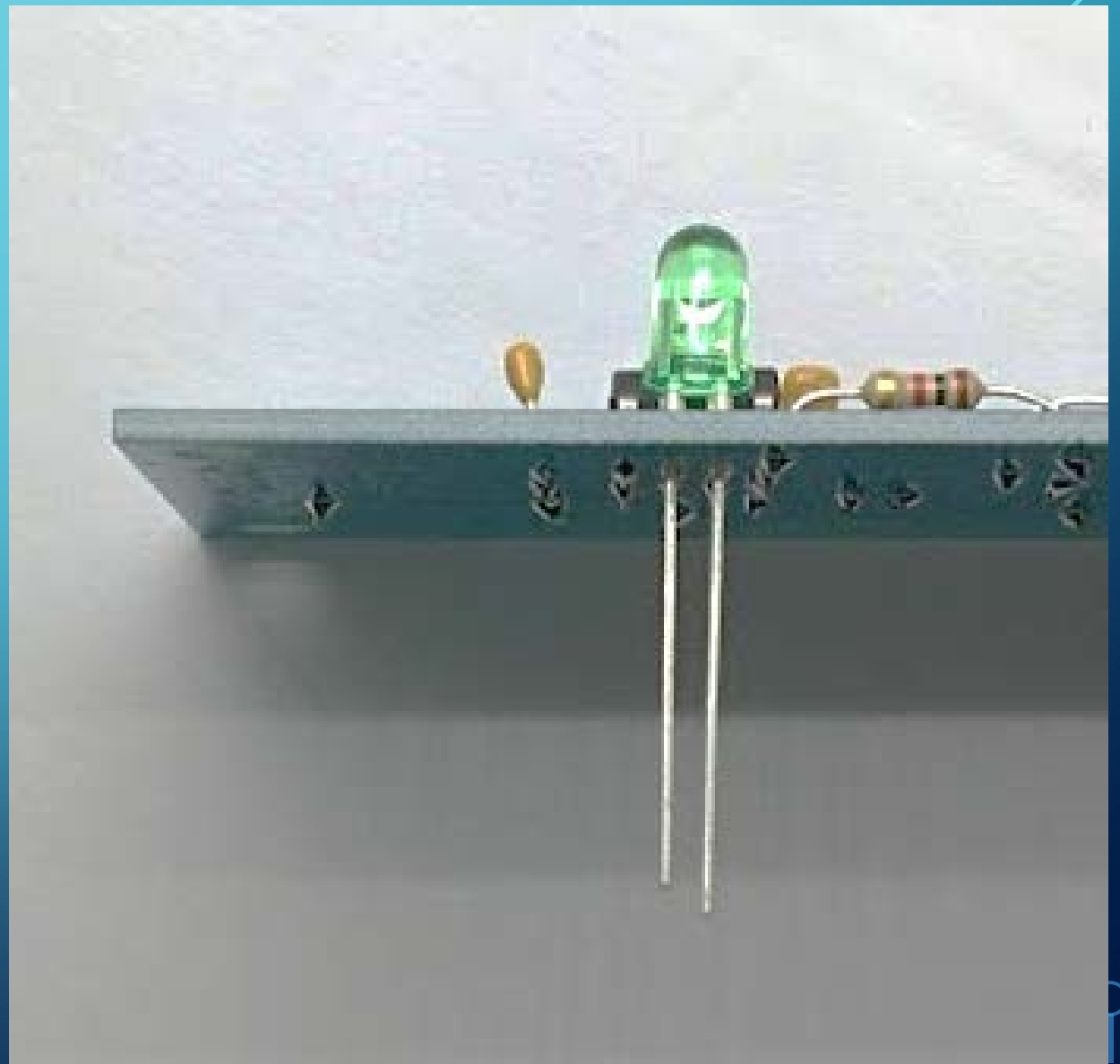


THE BOARD AFTER STEPS 1 TO 5



STEP 6 LED

- Must be inserted with the correct polarity
- Flat or notch on the left in this orientation, long lead on the right



STEP 6 LED

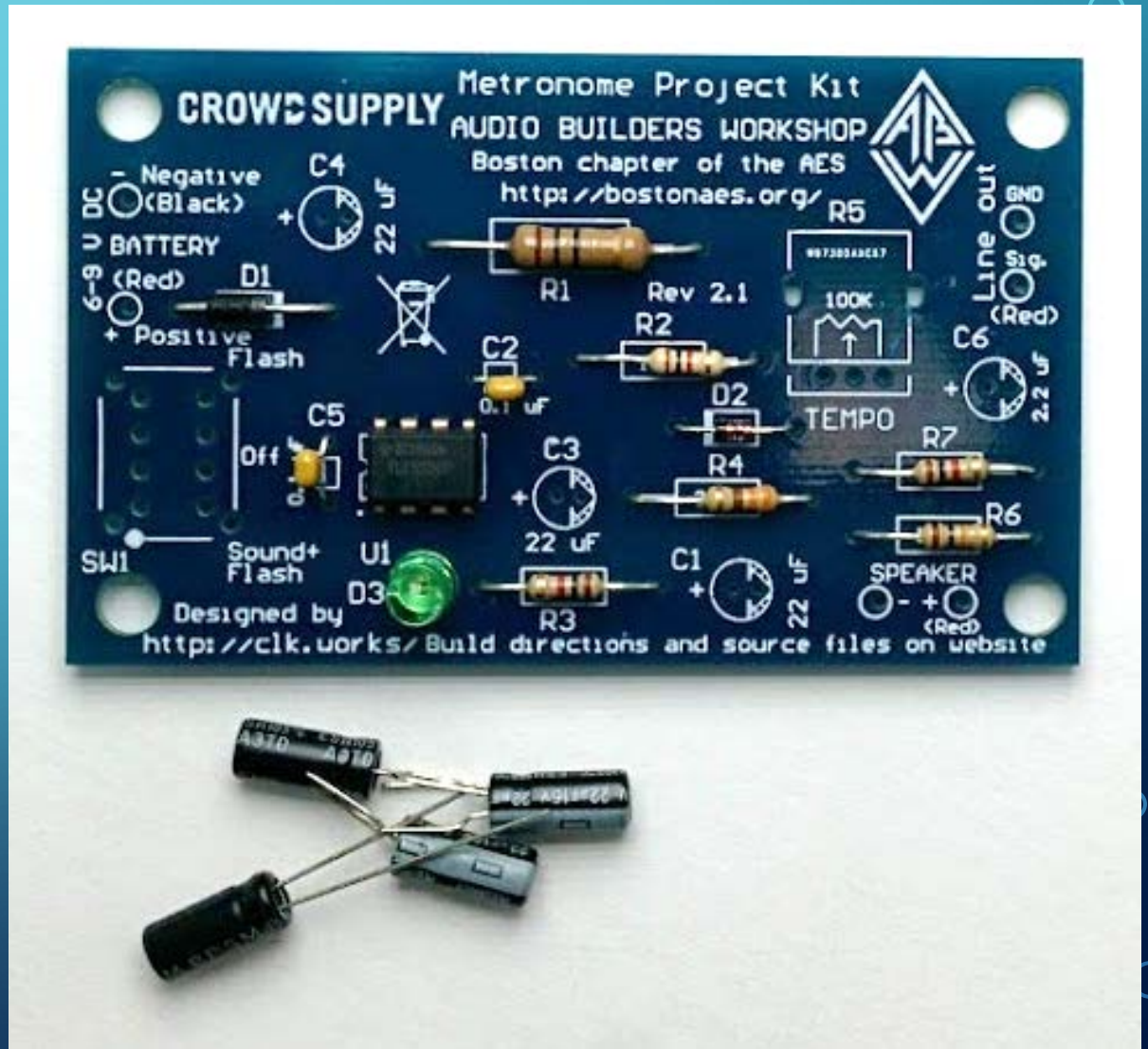
- Make sure you don't use too much solder and short the two wires

STEP 7 ELECTROLYTIC CAPACITORS

- Most electrolytic capacitors are polarized and have a stripe on the “-” side.
- In some kits C6 may be unpolarized (no stripe) can be inserted either way
- The board marks the “+” side; yes it seems backwards that the capacitor is marked for the “-” side and the board is marked for the “+” side, but that is the convention.
- In some kits the capacitors may have bent leads that needs to be straightened to fit the holes on board

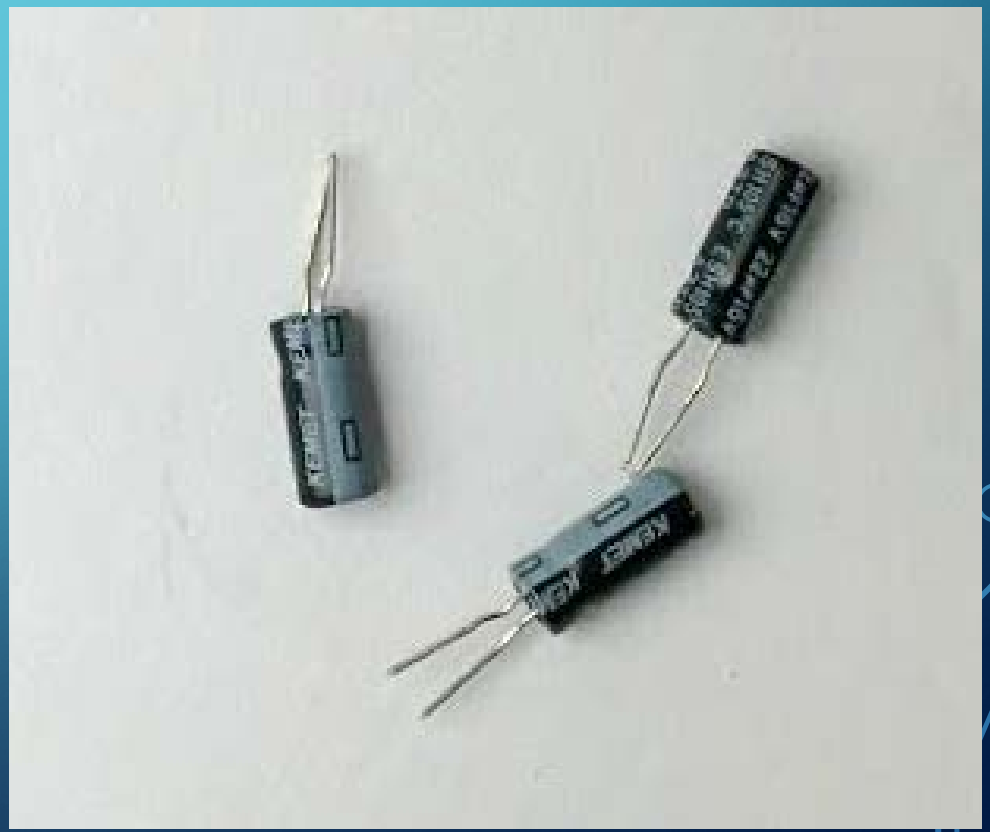
STEP 7 ELECTROLYTIC CAPACITORS

- Example of unpolarized (no stripe) on 2.2uF (C6) and caps with bent leads



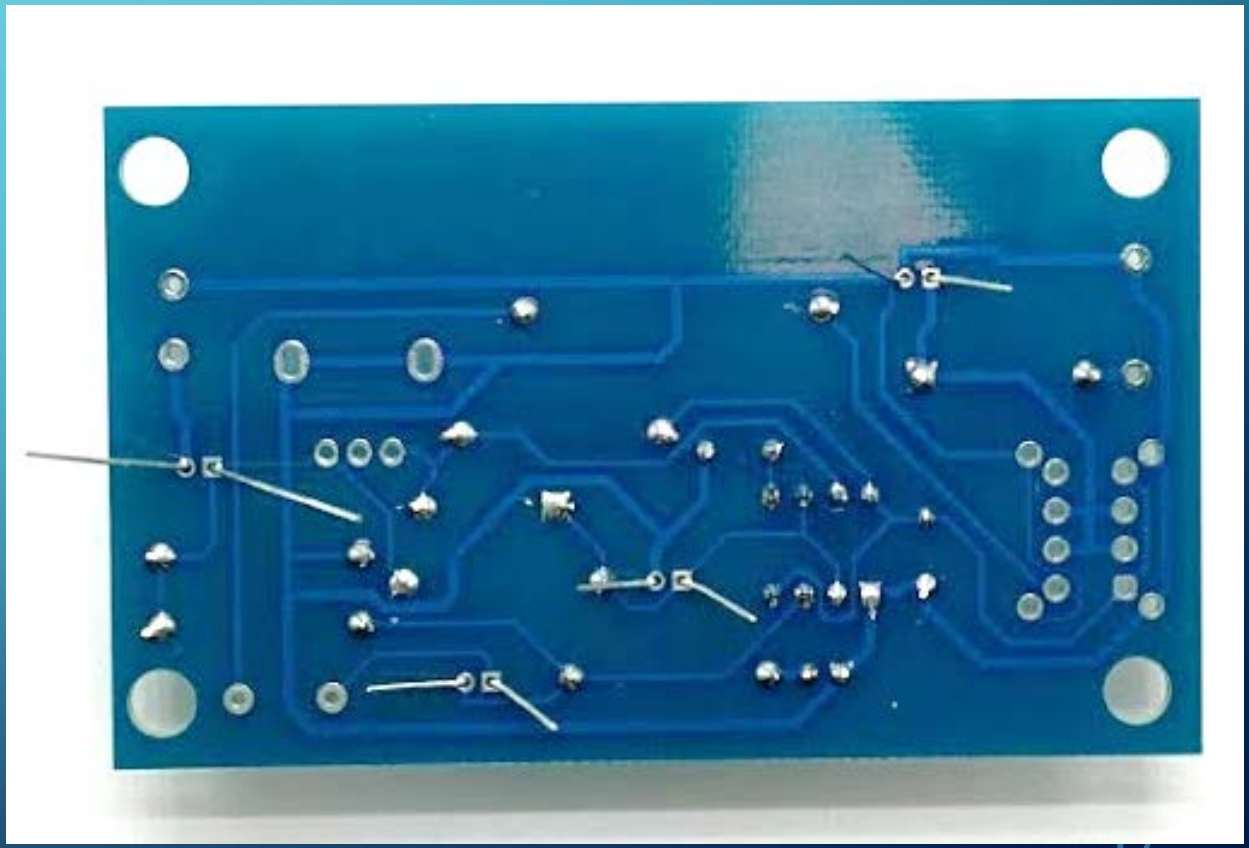
STEP 7 ELECTROLYTIC CAPACITORS

- (If needed) After leads have been straightened the parts will fit in the holes one the board



STEP 7 ELECTROLYTIC CAPACITORS

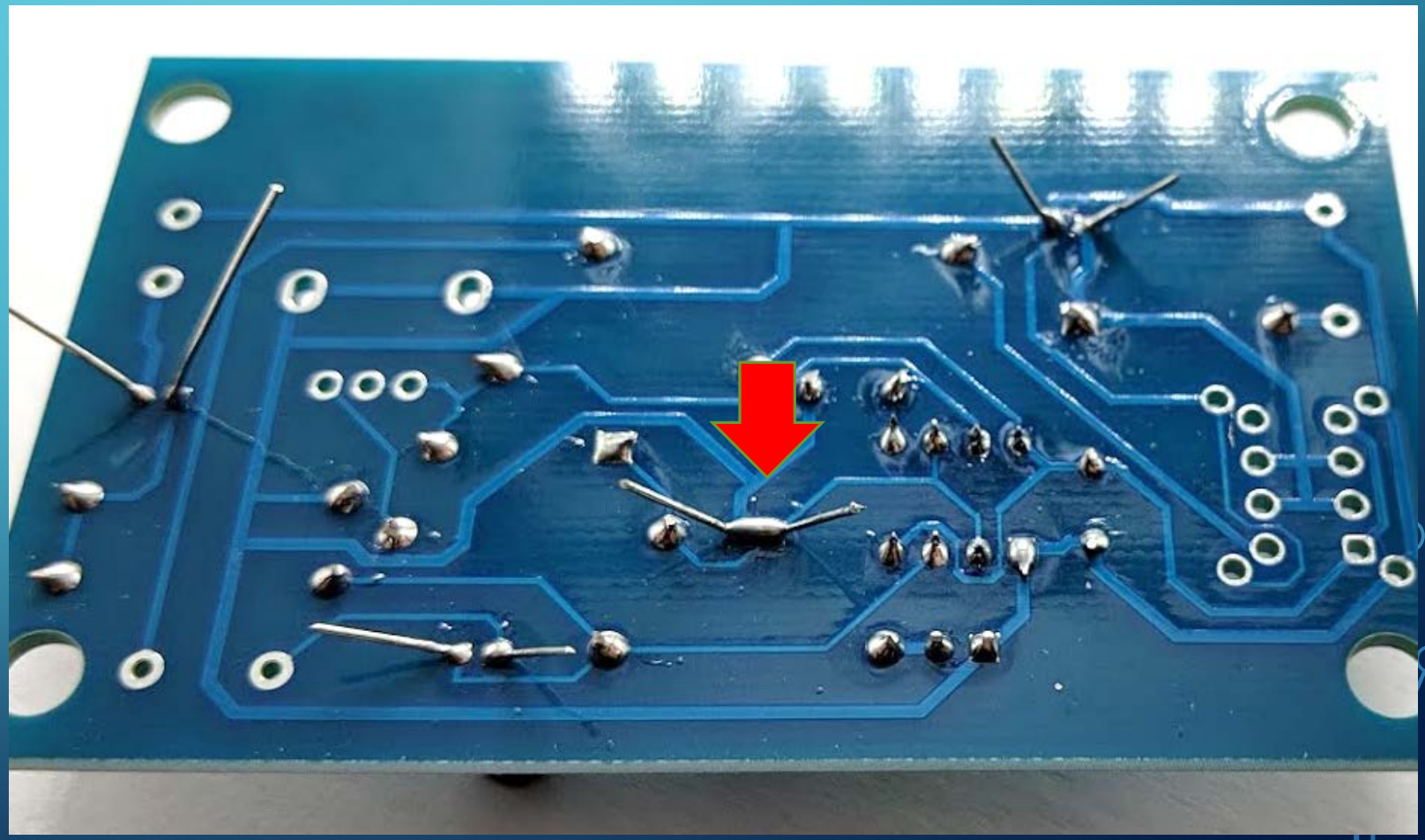
- Back side after capacitors have been inserted



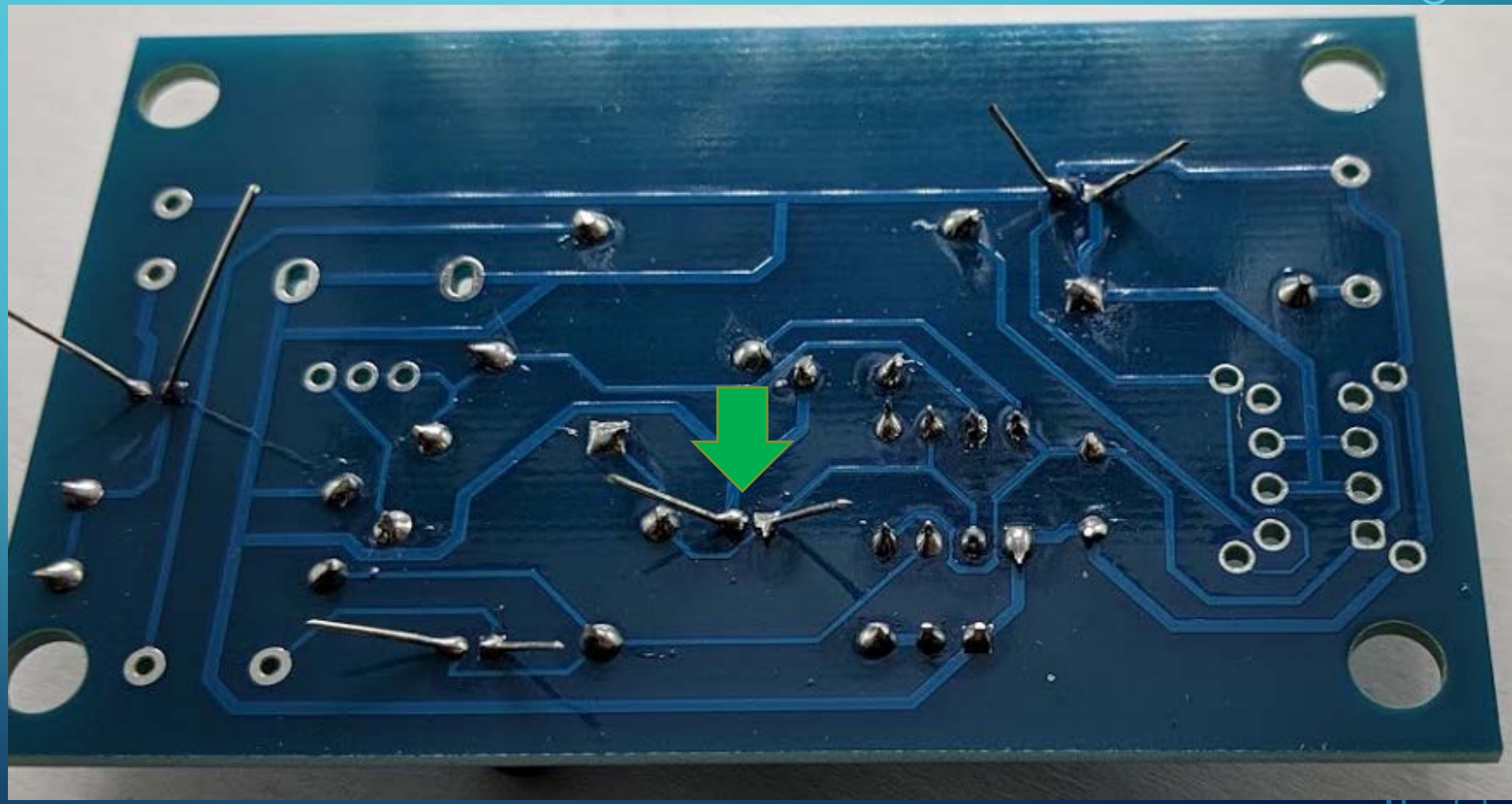
EXAMPLE OF A SOLDER BRIDGE

Cause: Using too much solder, or holding tip in contact with both leads

To fix: Use solderwick to remove excess solder.



AFTER FIXING

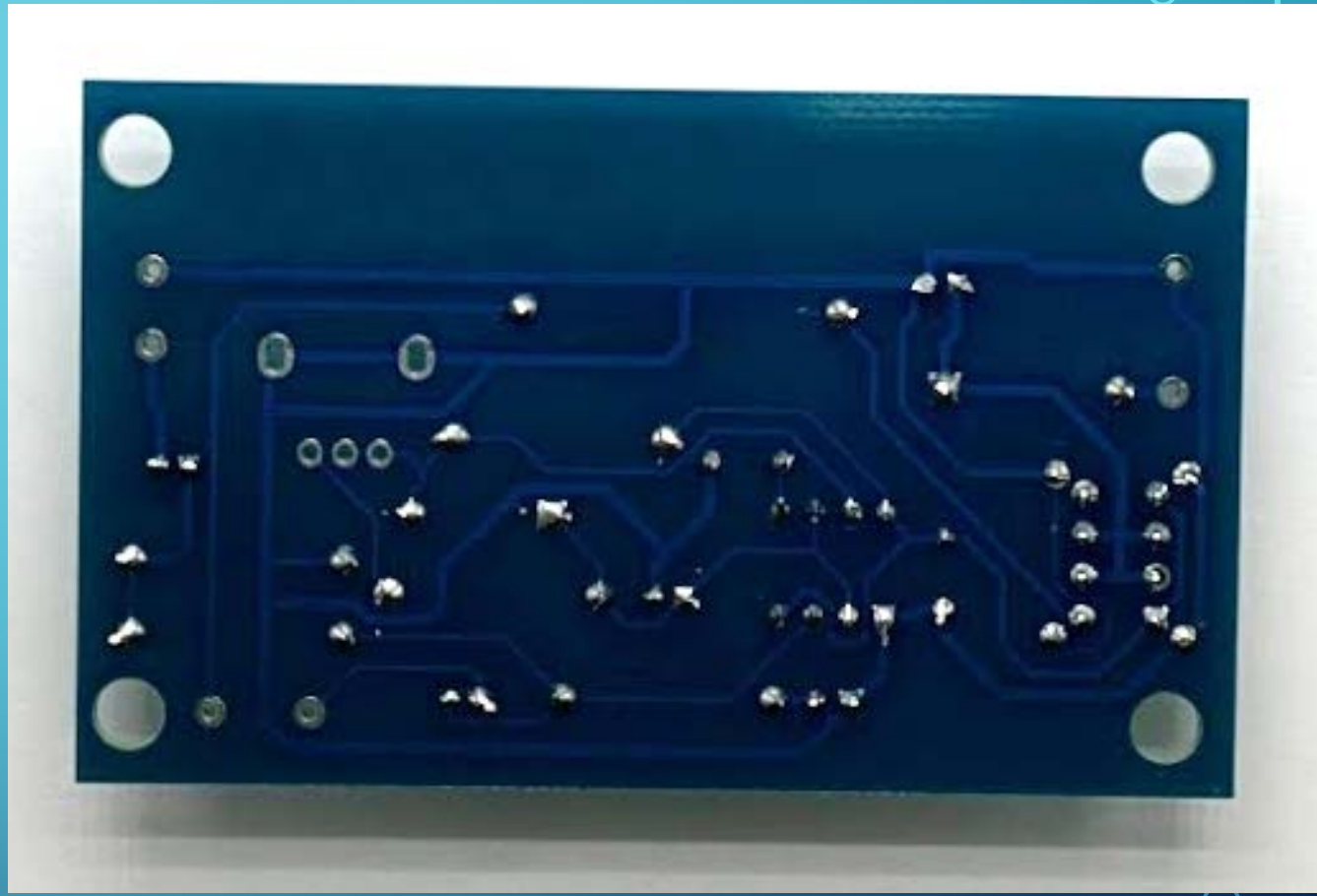


STEP 8 SWITCH

- Not possible to bend leads to hold in place
- Suggest solder one pin.
- Check that the part is straight
- If not heat the one soldered pin and push the switch back down
- Solder another pin and recheck
- Then solder the remaining pins

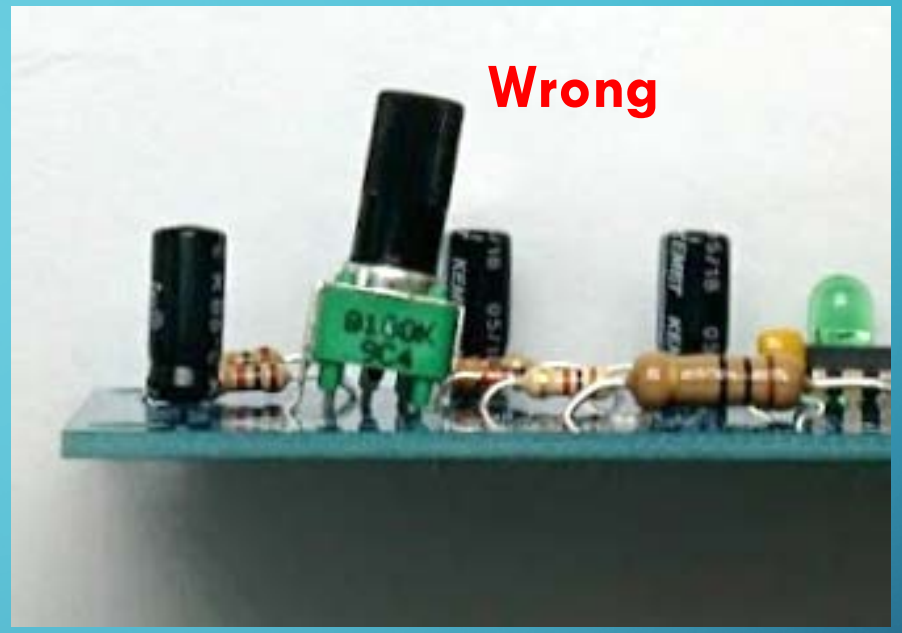
STEP 9 POT

- Back side of the board should look like this.
- Only one part left to solder in place



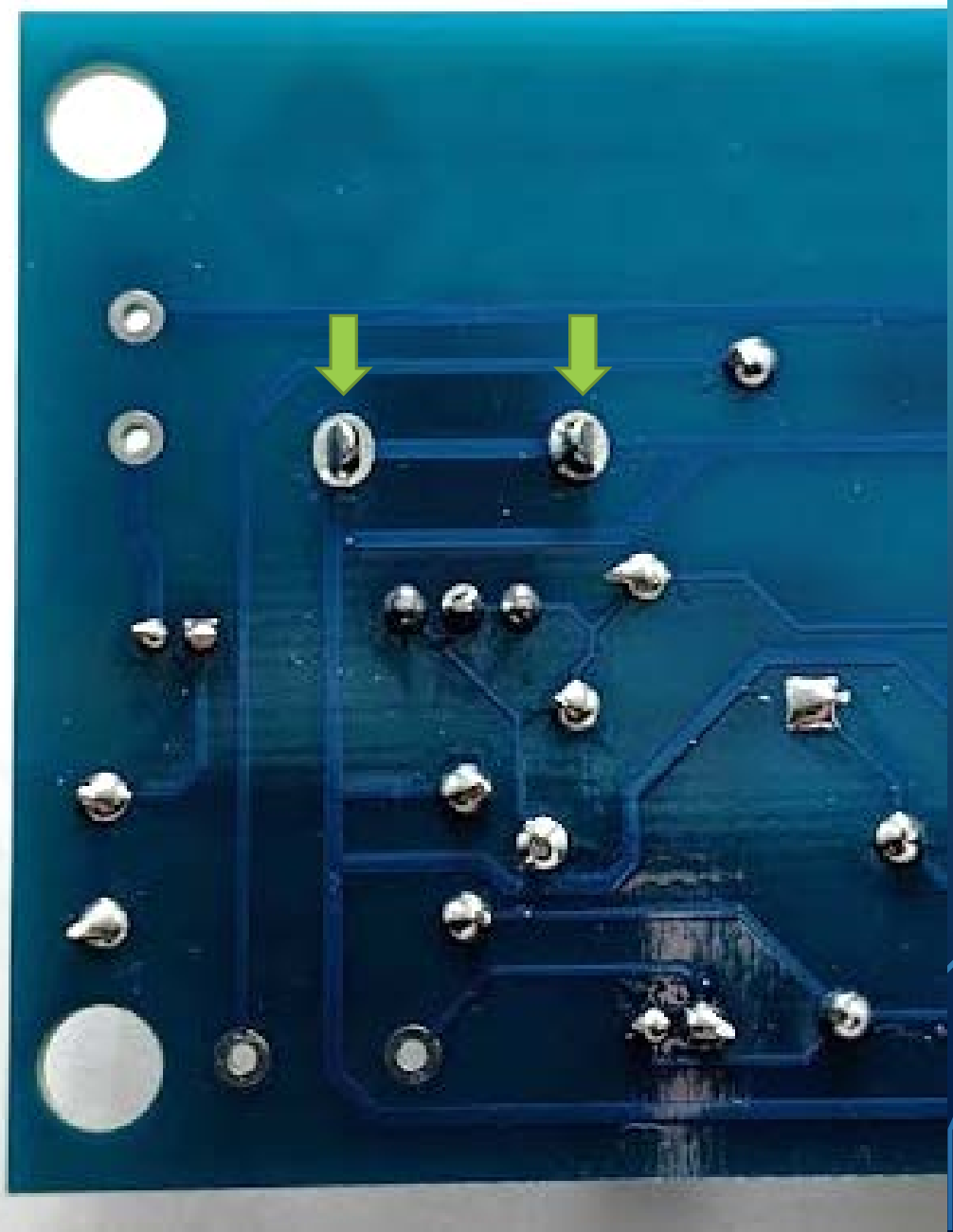
STEP 9 POT

- Check that the pot is fully pushed in



STEP 9 POT

- The two large tabs are for mechanical support
- They have a lot of metal and therefor do not heat up fast
- Solder may not flow all of the way around the tabs, this is OK



STEP 10 WIRES

- Cut them in half and strip the ends about 0.6 mm (1/4”)

STEP 10A SPEAKER

- If your speaker looks like this you will have to wrap the wire around the little tab
- Make sure the exposed part of the wire after you wrap it around the tab doesn't touch the metal speaker basket

STEP 10A SPEAKER

- It's probably easier to attach one wire at a time
- The red wire should go to the "+" terminal

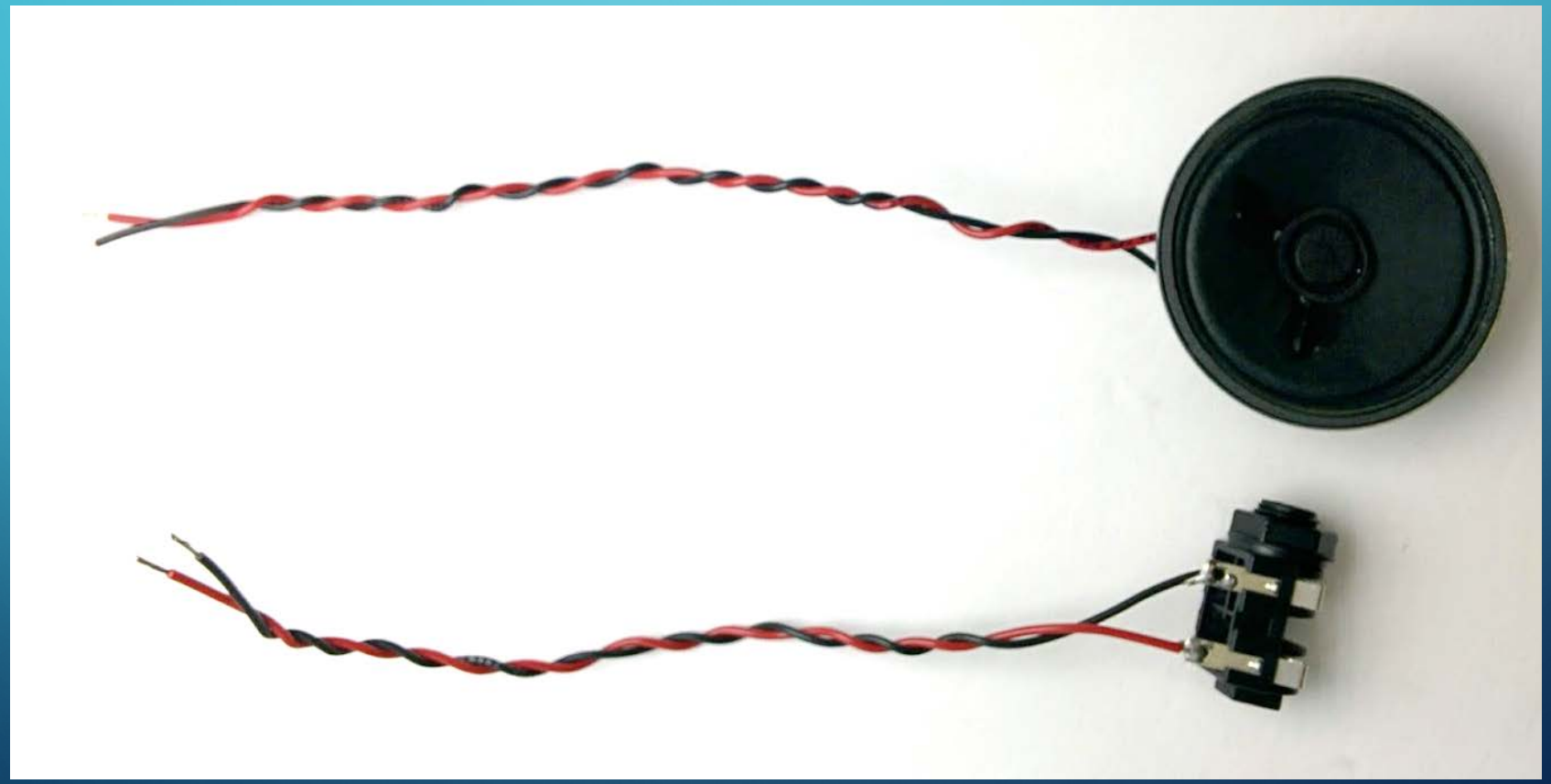
STEP 10A SPEAKER

STEP 10B JACK

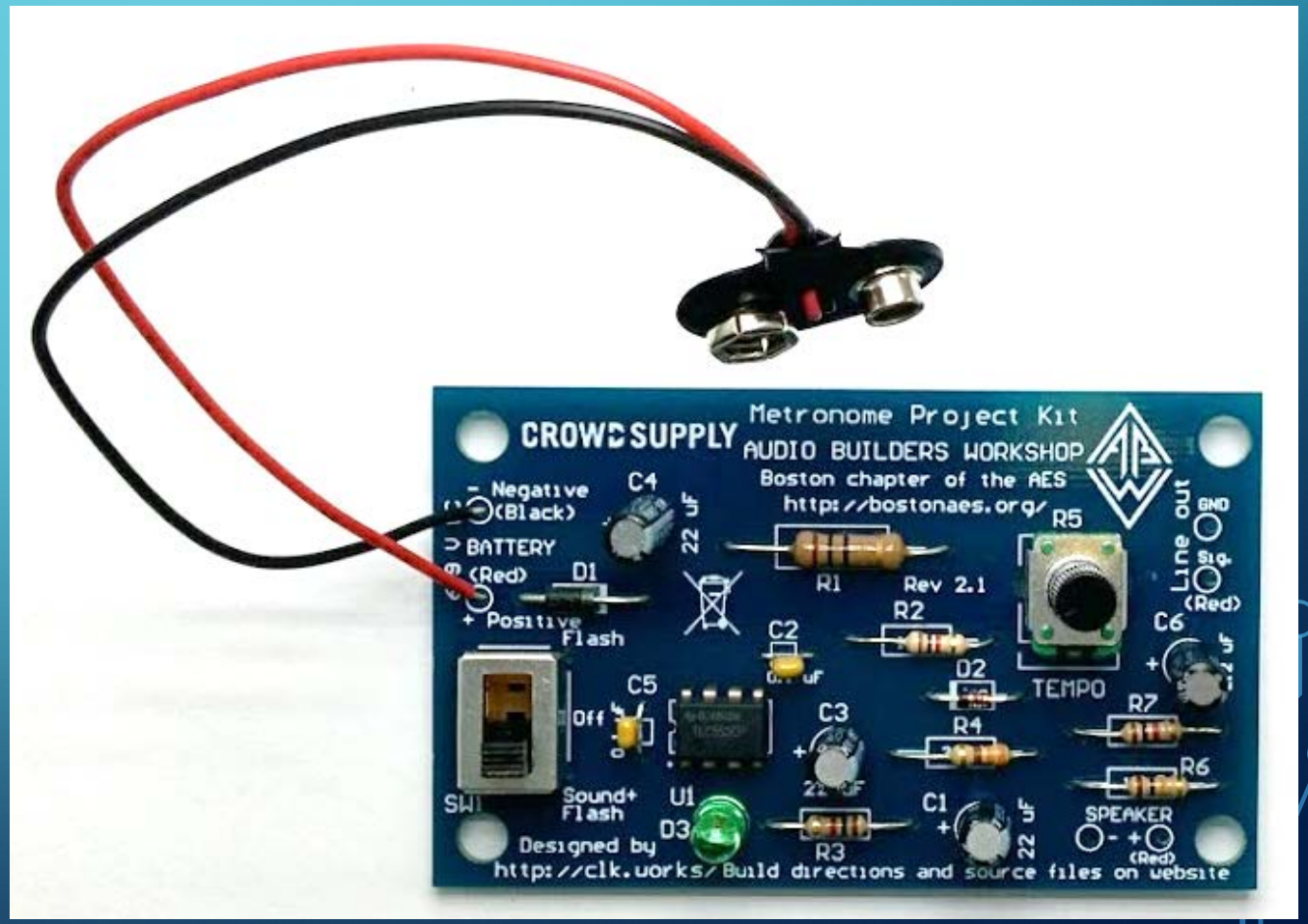
- There are 3 different jacks that have been used with the kits
- This picture is for the most recent version
- Black wire to the front (near the nut) tab
- Red wire to the tip (opposite the nut end)

STEP 10B JACK AFTER SOLDERING

SPEAKER AND JACK READY TO BE CONNECTED TO THE BOARD

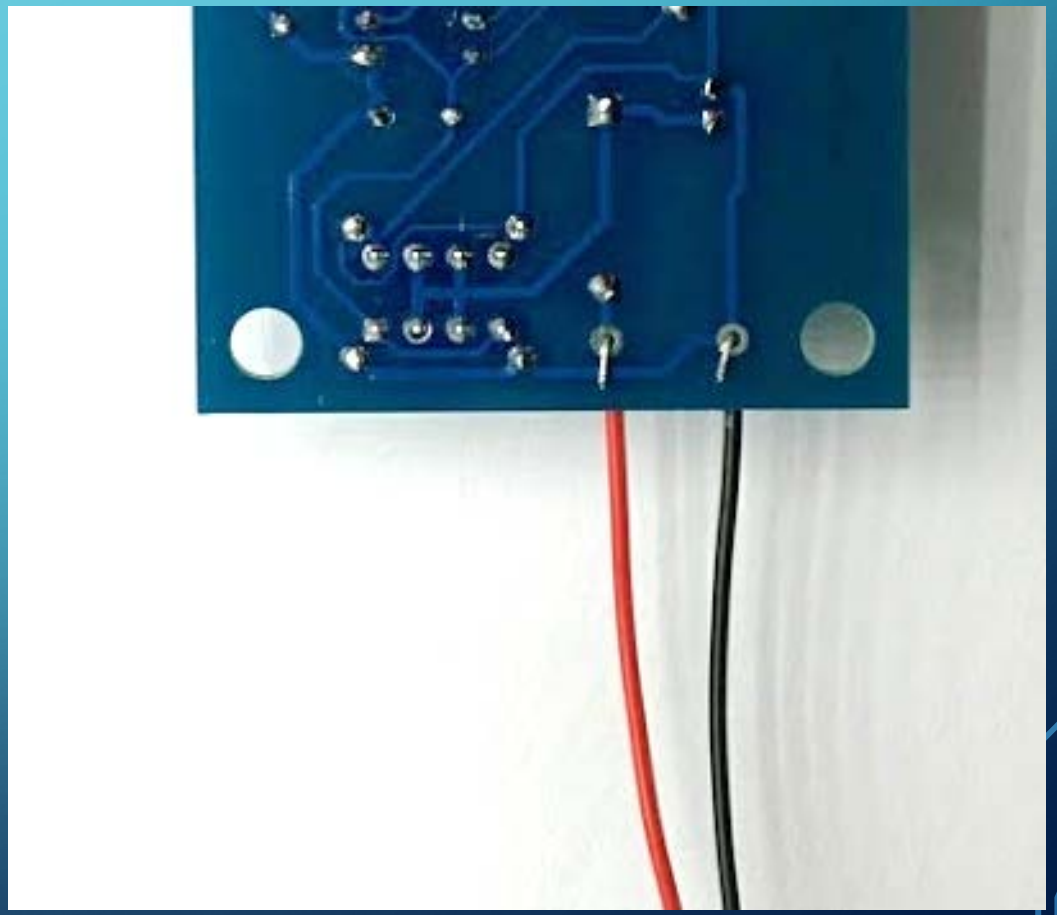


STEP 11A BATTERY WIRES

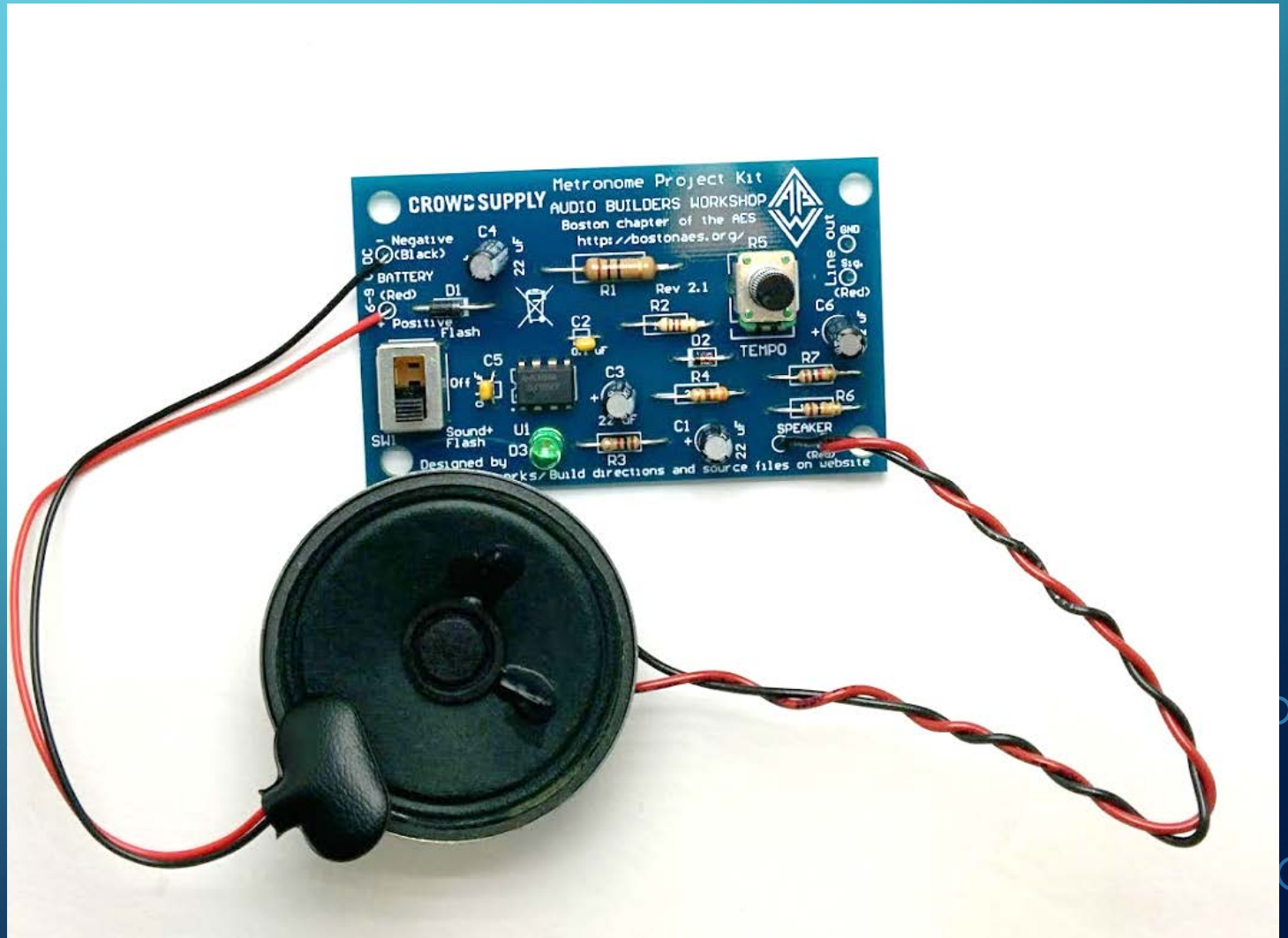


STEP 11A BATTERY WIRES

- Make sure to match the wire color to the label correctly
- Push the wire all the way in and bend the end over
- Trim the excess after soldering

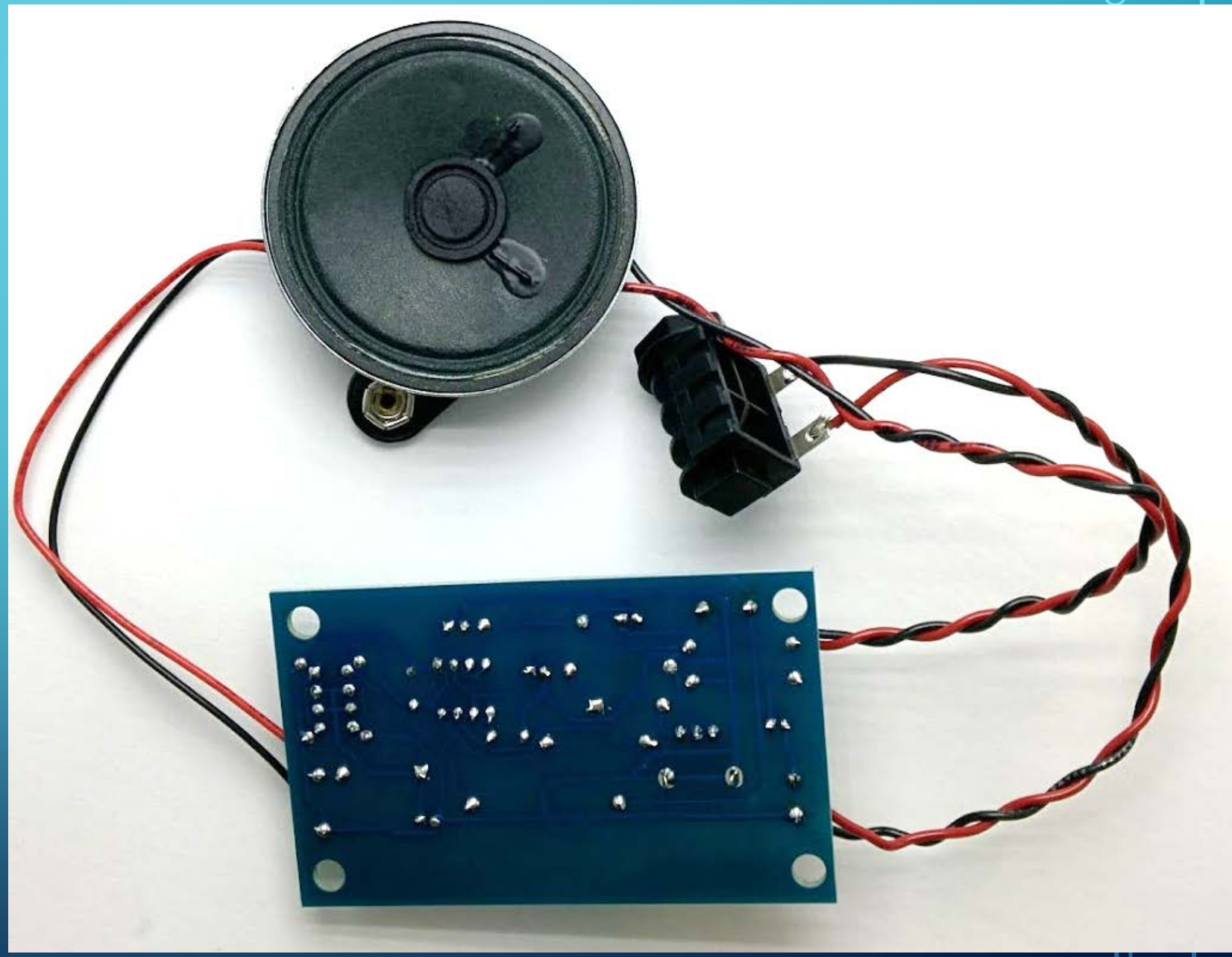


STEP 11B SPEAKER WIRES



STEP 11C OUTPUT JACK WIRES

BACKSIDE VIEW



TEST IT!

- Recheck all polarized components
- Recheck for solder shorts
- Look for bad solder joints
- THEN connect the battery
- Switch “UP” – LED only (plus line out)
- Switch “DOWN” – LED & speaker (plus line out)
- Switch “Center” - OFF

DON'T FORGET THE HOT MELT

- Otherwise the wires will eventually break off