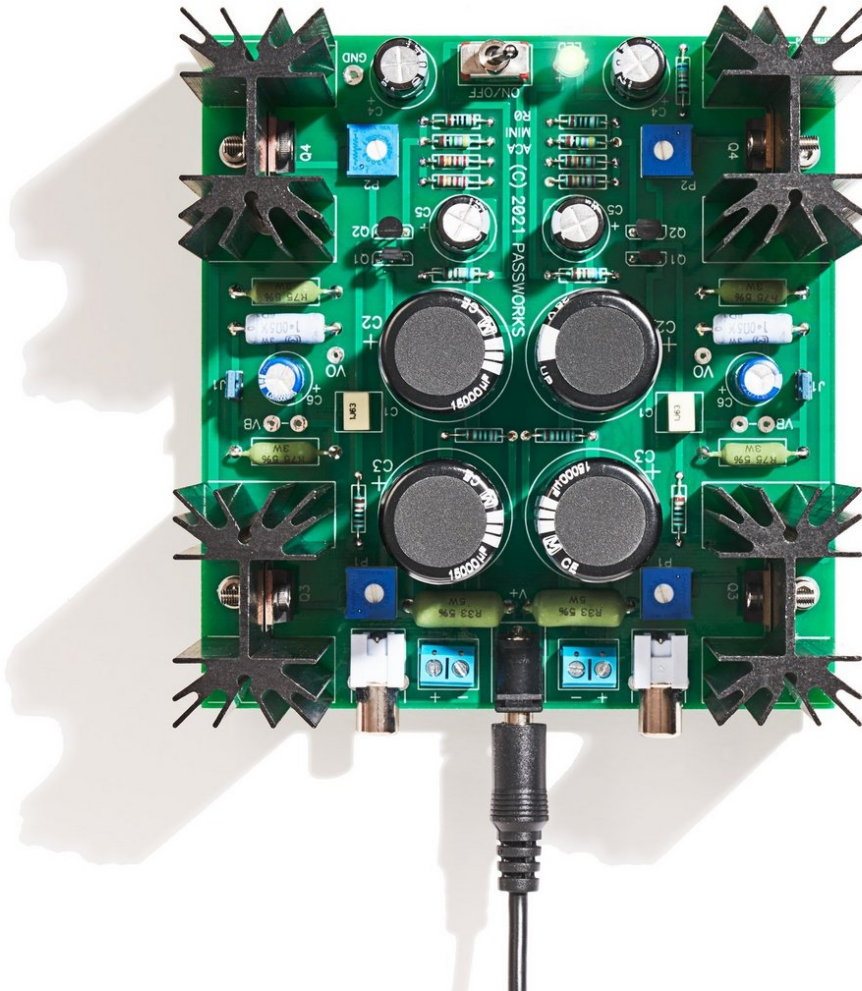


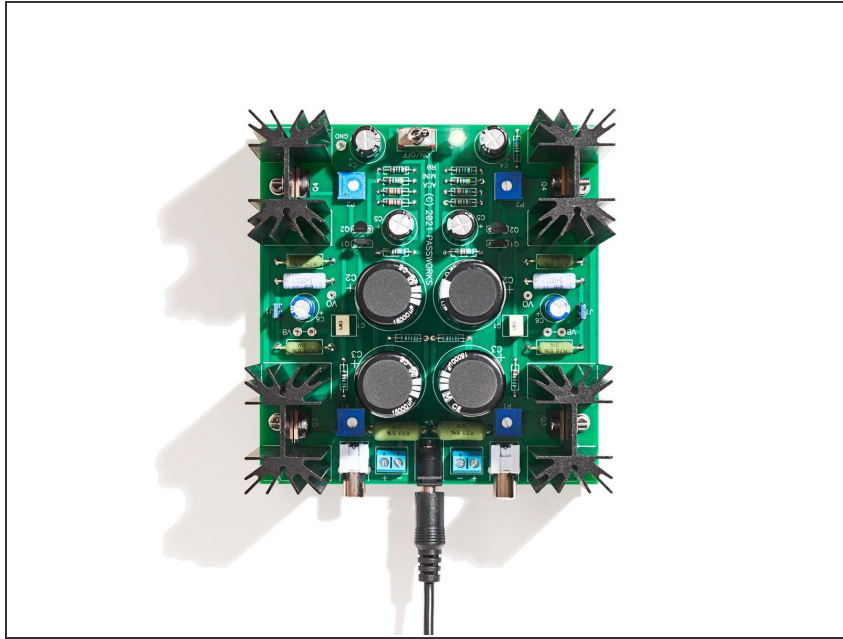
# diyAudio Guides

## ACA Mini

Written By: 6L6

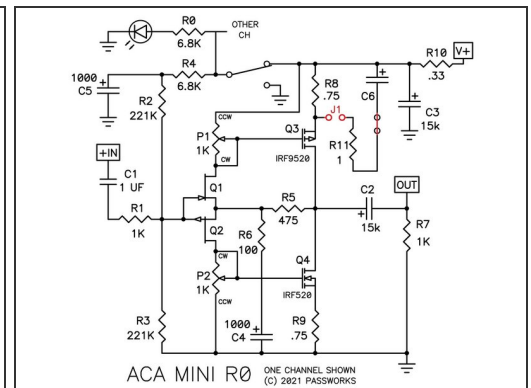


## Step 1 — ACA Mini



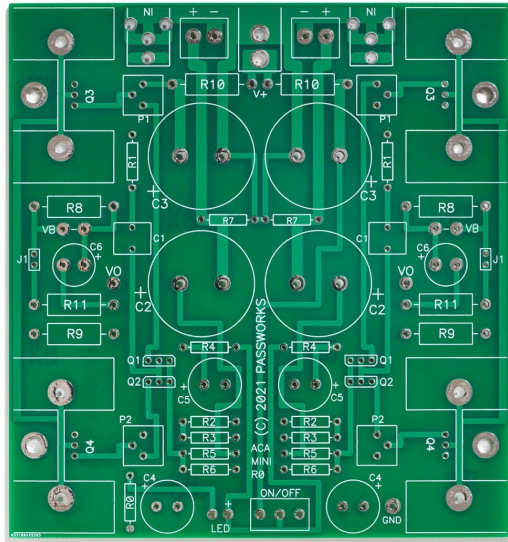
- The ACA mini by Nelson Pass.
- A fantastic amplifier, intended to be used as this boxless PCB, which is a fun industrial look, and saves the major expense of an enclosure.
- Power is 5W into 8ohm, 8W into 4ohm.
- This amplifier sounds fantastic, if you have any interest at all, you really should build one. :)

## Step 2 — Read The Fancy Manual



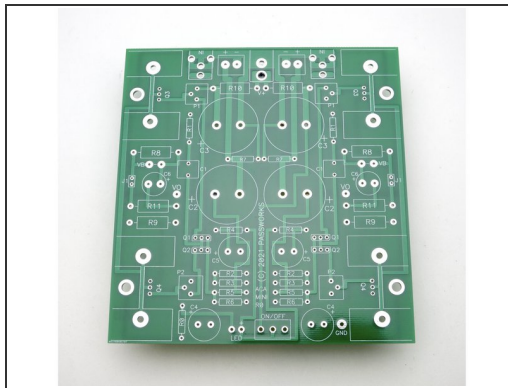
- Please read the notes and click through all the photos.
- Also, download and read [Nelson's ACA Mini article](#)
- Print the schematic and have in front of you when stuffing the PCB
- Ensure you are using the correct Bill of Materials. The current BOM used in the completion kit is [ACA Mini BOM V1.1](#).

## Step 3 — PCB



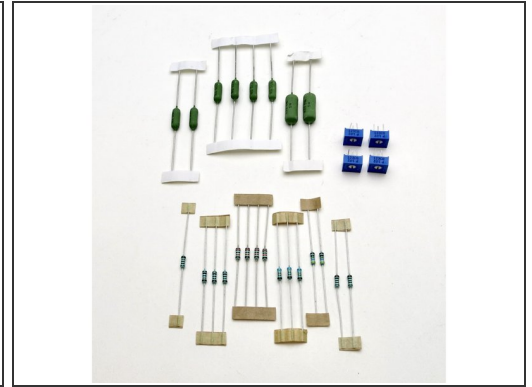
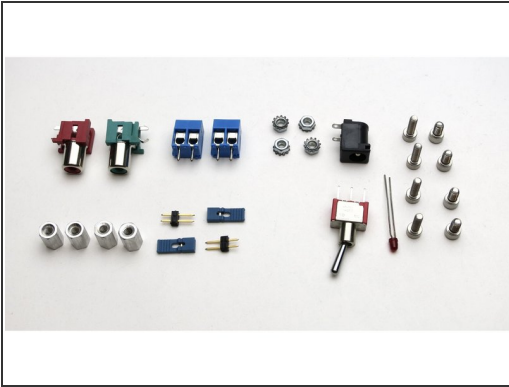
- PCB front. All components mount on this side.

## Step 4 — Kit contents



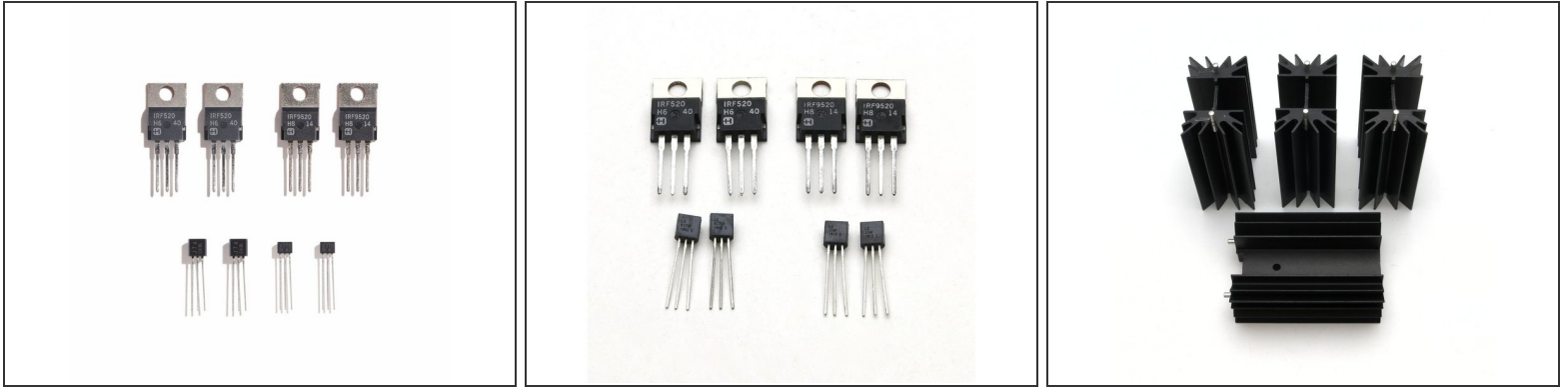
- This is a beautifully simple kit.
- PCB
- 24V 90W PSU brick. Double insulated, Universal input.

## Step 5 — Kit contents 2



- Photo 1 - Connectors and hardware
- Photo 2 - Rear 15,000uF capacitors. Front 1,000uF (Black cans), 3.3F (blue cans), 1uF film (blue box)
- Photo 3 - resistors, potentiometers. Please note the pots in the current batch of completion kits require their leads bent before installation, [here is how to bend the leads](#).
- Neat fact - 3.3F is 3,300,000uF

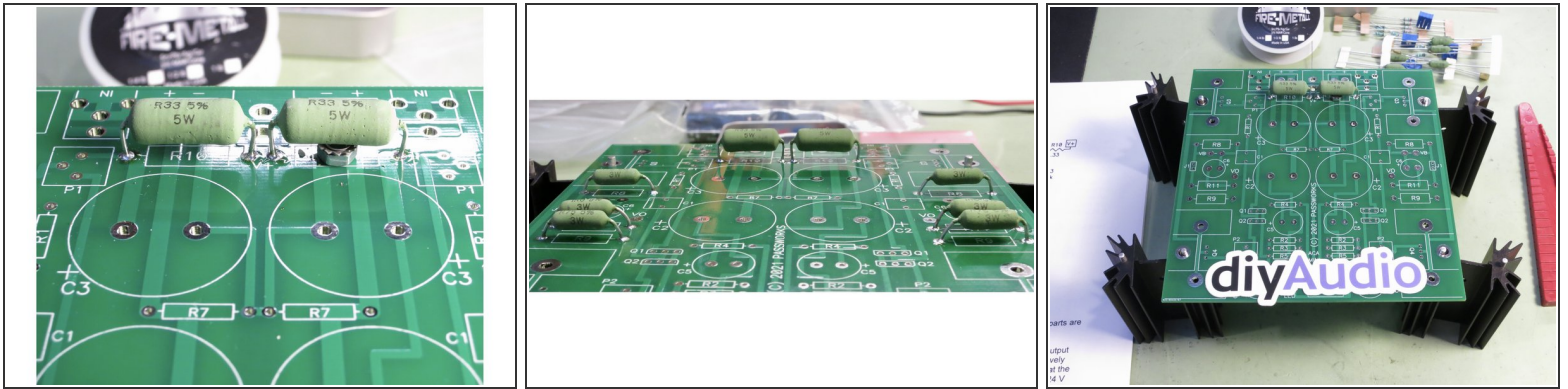
## Step 6 — Transistors



- Rear - IRF520 (N-channel **Q4**) and IRF9520 (P-channel **Q3**)
- Small signal Jfets can be LS parts or Toshiba.
- LSK170, 2SK370, 2SK170 can all be supplied for the N-channel devices intended for position **Q1**
- LSJ74, 2SJ74, 2SJ108 can all be supplied for the P-channel devices for use in position **Q2**
- Photo 3 - Heatsinks

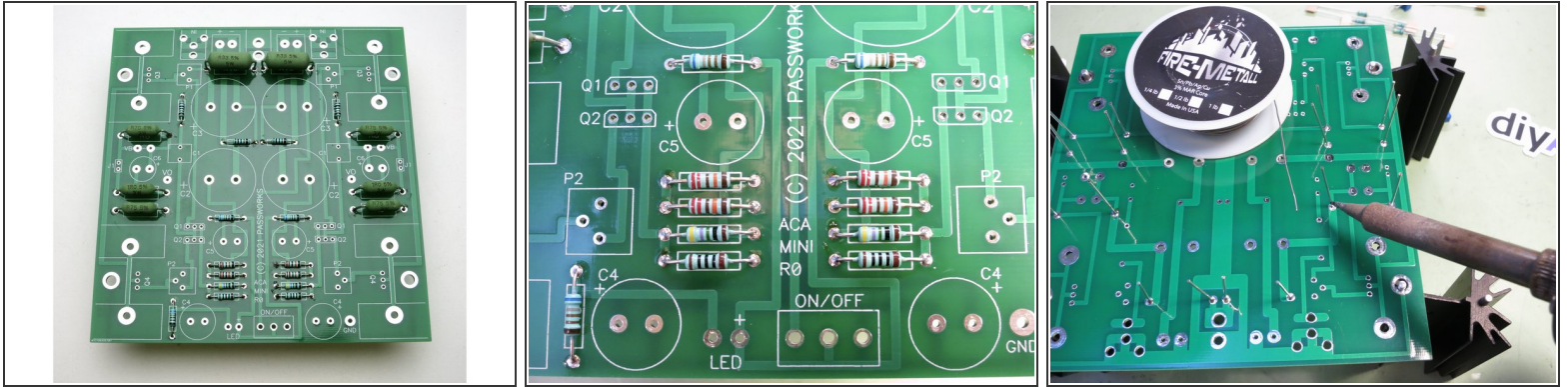


## Step 7 — Power Resistors



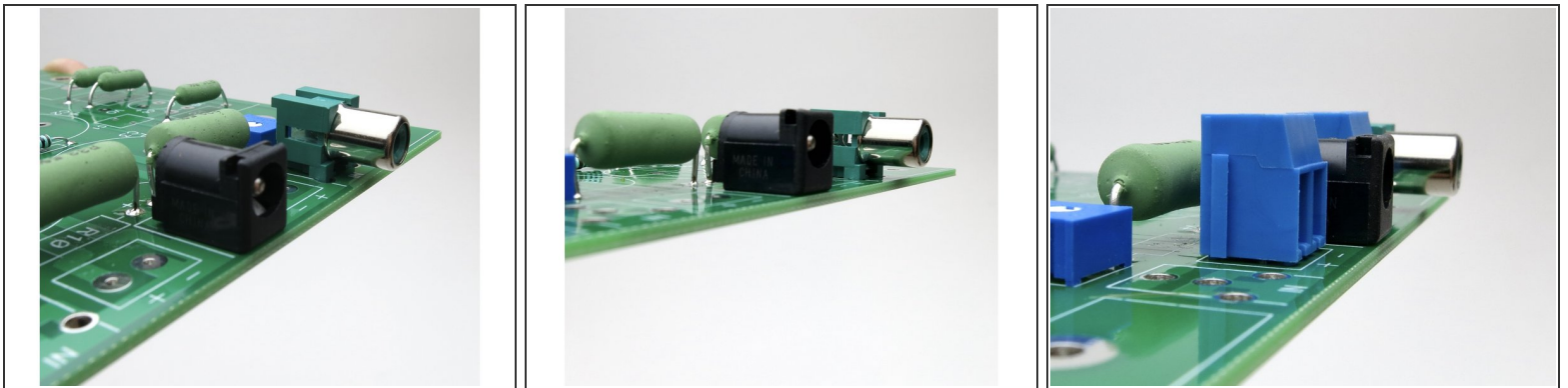
- Power resistors are mounted first.
- Leave some room under them for airflow. The nut is a good gauge.
- You can use the heatsinks as an impromptu stand for holding the PCB.
- Neatness counts - Bend the leads so the value is readable, and so it reads left to right. The value markings are R33, R75, 1R0.
- Low-ohmic resistors use "R" as a decimal point. "R33" means 0.33ohm. "1R0" is 1.0ohm.
- It's difficult to measure low-ohmic resistors because the resistance of your multimeter leads (normally 0.2-0.4Ω) will be added. You can measure your leads and subtract the value, just trust the values which are printed on them, or [build a low resistance value test rig](#).

## Step 8 — Small resistors



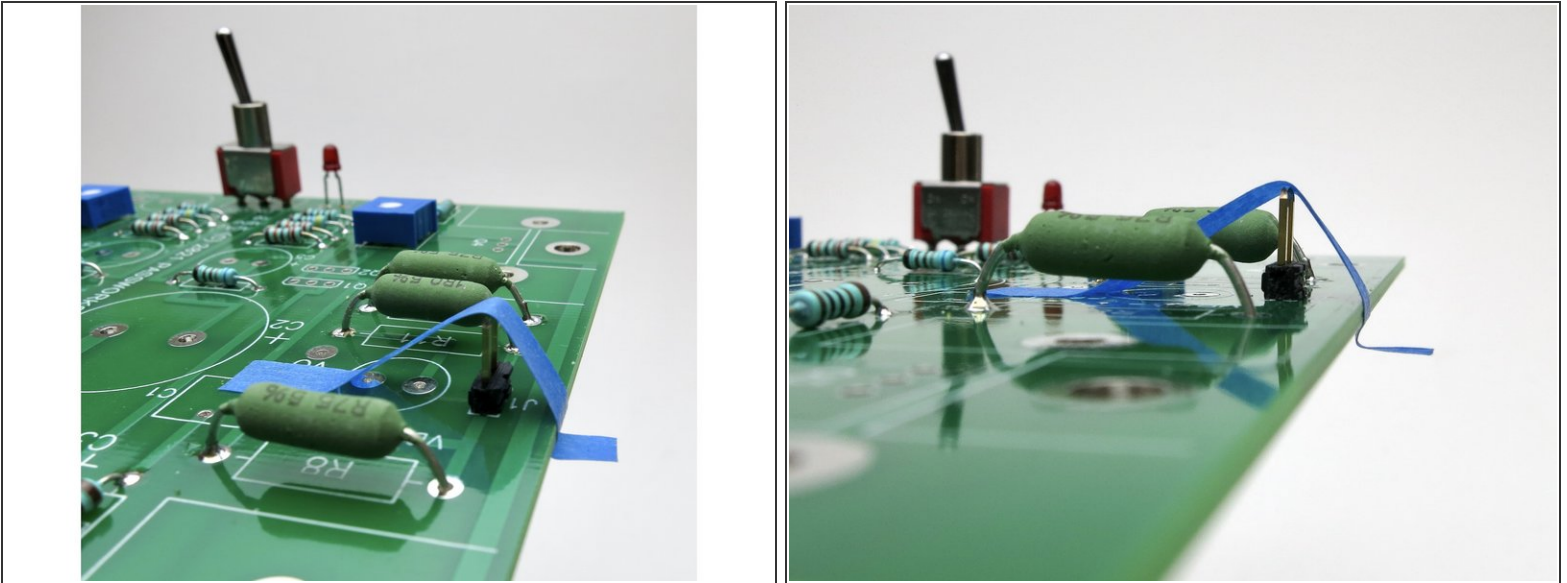
- Install and solder the small resistors next.
- Measure every one before installation.
- Face them so the heavier brown stripe is on the right. (Or bottom, for the three resistors that point up.)
- Photo 2 is provided as a reference to help stuffing, but it's much better to measure every one and refer to the schematic before installation.

## Step 9 — PC mount connectors



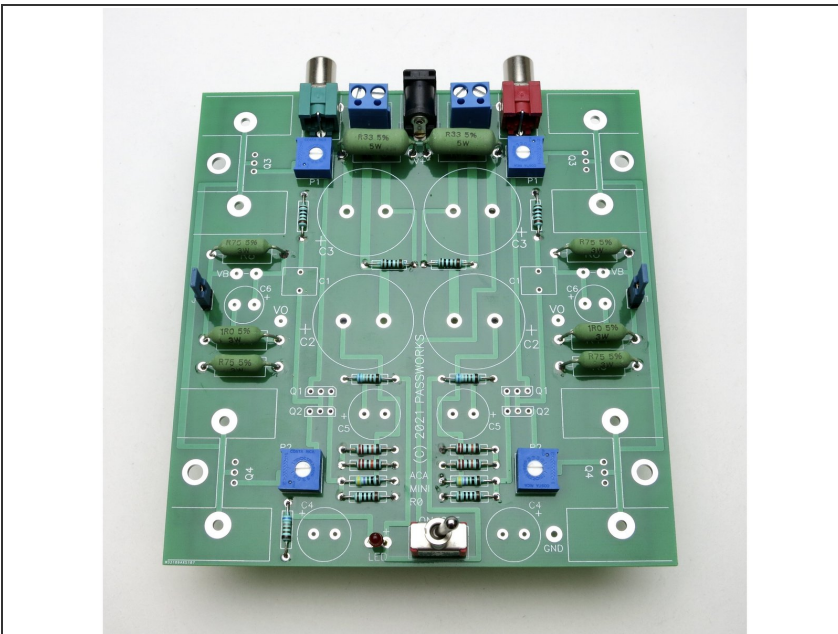
- In all cases, make sure the connectors are flat and properly aligned with the PCB before soldering.

## Step 10 — Jumper pins



- It is very helpful to tape the jumper pins to the PCB before soldering. This will hold them in place and keep the vulgar language down to an absolute minimum.
- Don't try to hold them on with a finger whilst soldering, that is a fantastic way to burn yourself.

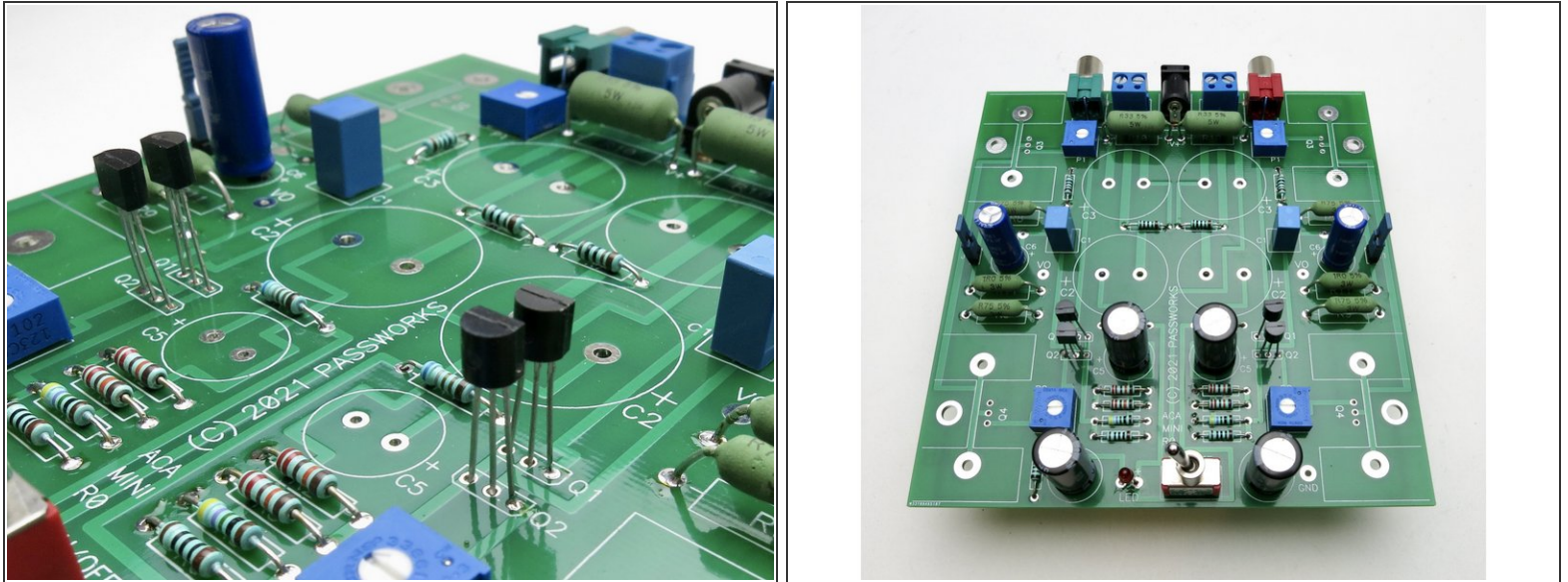
## Step 11 — Continuing PCB stuffing



- At this point you should have the edge connector items stuffed, and the potentiometers.
- Power switch orientation does not matter.
- LED needs to be stuffed with the long lead in the + hole.
- If you want to swap the LED for a different color, feel free, it's used only to indicate power on/off.

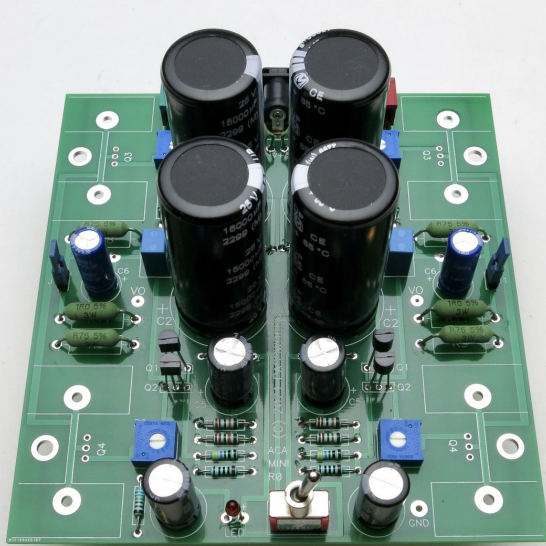


## Step 12



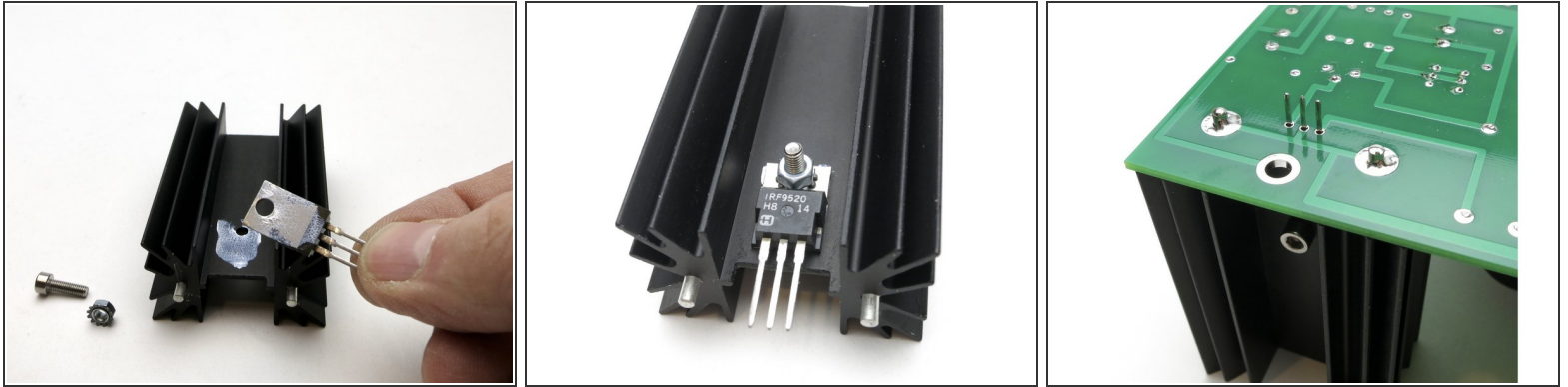
- This document was generated on 2023-09-22 07:41:11 AM (MST).

## Step 13 — Large capacitors



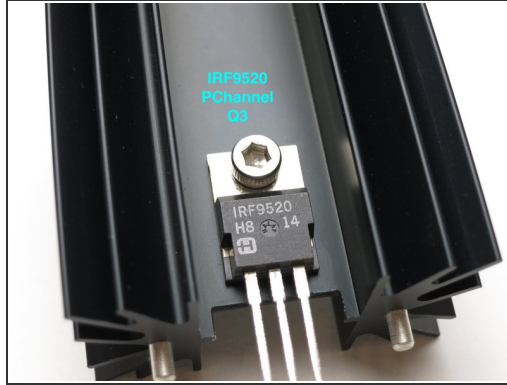
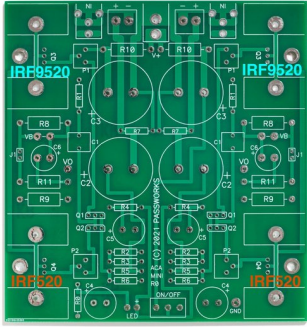
- Install the large capacitors. Orient the - marks on the cans all to the inside.

## Step 14 — Mounting Mosfets



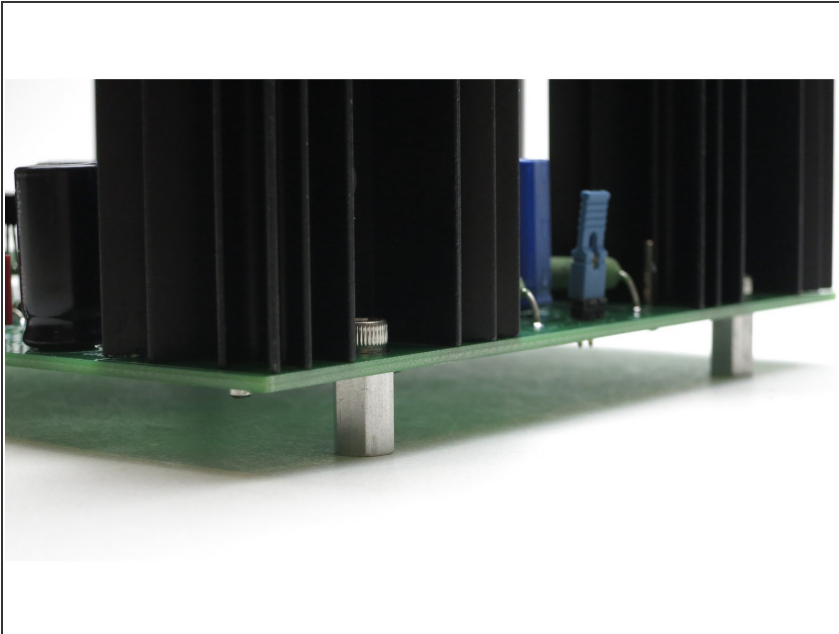
- A little heatsink goop is helpful if you have some.
- **1)** Attach the Mosfet to the heatsink *but leave slightly loose*.
- **2)** Insert Heatsink/Mosfet assembly into PCB.
- **3)** Solder heatsink to the PCB first. There's no trick to this, it just takes some time with the soldering iron, as it is a heatsink after all...
- **4)** Snug down (modest torque, please don't crank it) the Mosfet attach hardware.
- **5)** Finally solder the Mosfet.
- The Q3 positions use the IRF**9**520 devices. The IRF520 devices are in positions Q4.

## Step 15 — Power mosfet positions



- Please observe the positions for the power mosfets.
- IRF520 on the front of the board.(power switch end)
- IRF9520 towards the back of the PCB. (wiring end)

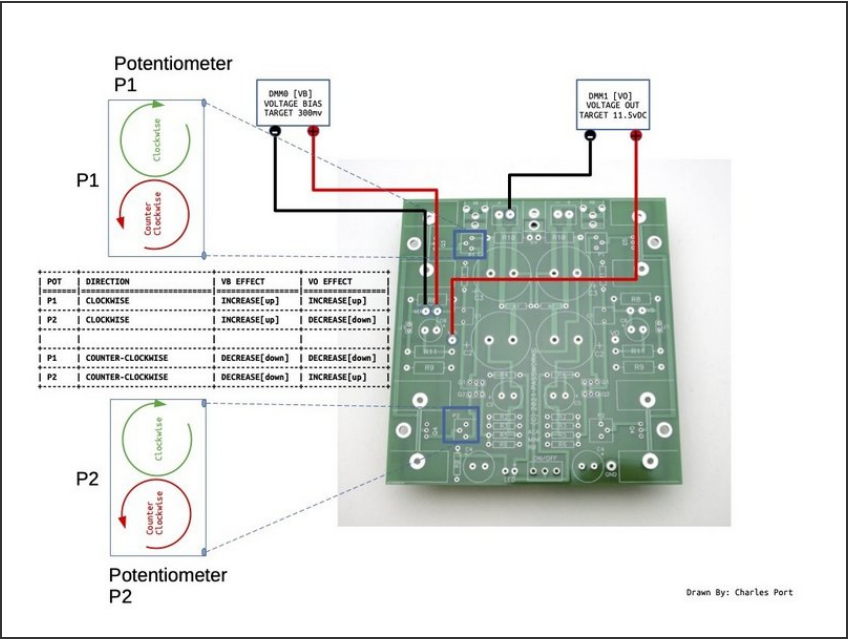
## Step 16 — Mounting feet



- The provided metal standoffs and their associated screws are used as feet.
- You may use something else if you choose to, this is DIY after all... :)

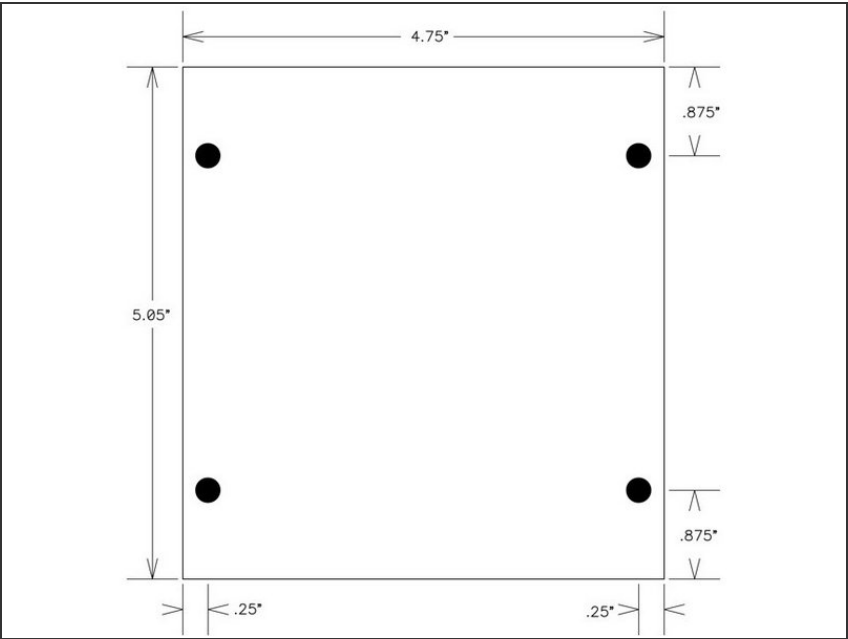


Step 17 — Setting Bias



- Member Charles Port drew this wonderful diagram. Thank you!
- Refer to article until this guide is completed

Step 18 — PCB dimensions



- If you want to DIY a base of some sort, here are the PCB dimensions.