

How to Build 1Wamp in 5 Steps

With all the materials on hand it takes around 3 hours to build it successfully, do not rush and take your time to do it because it is fun, a nice weekend project.

The main idea is to start with the small components and then place the big ones, making all the process easier.

Have a quick read to the whole document before starting, it is very sort and it definitely will help you to build it.



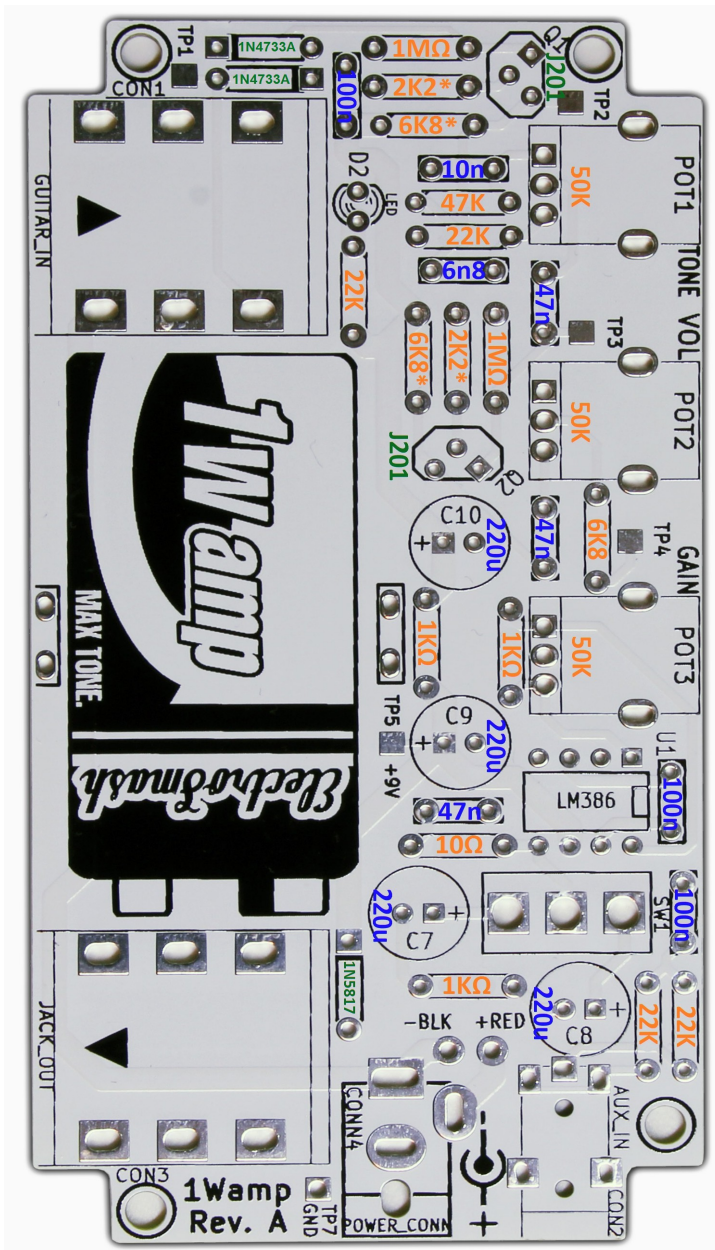
Step 0 – Prepare the Materials.



You need a solder iron, lead and cutting pliers.

The PCB has solder mask and plated holes, so it is easy to solder with any 15-30W cheap solder iron.

Keep in short hand the PCB plan and the Bill of Materials:



1Wamp Bill of Materials

Reference	Qty	Value
Capacitors		
C1	1	6.8n
C2	1	10n
C3,C4,C6	3	47n
C5,C11,C12	3	100n
C7,C8,C9,C10	4	220uF
Resistors		
R12	1	10R
R13,R15,R16	3	1K
R3,R8	2	2K2
R2, R7, R11	3	6K8
R5,R9,R10,R14	4	22K
R4	1	47K
R1,R6	2	1M
Pot1, Pot2, Pot3	3	50K
Connectors		
CON1, CON3	2	6.35 jack.
CON2	1	3.5 jack
CONN4	1	2.1mm conn.
Others		
D1	1	1N5817
D2	1	LED
D3,D4	2	1N4733A
8pin dip socket	1	8Pin socket
Q1,Q2	2	J201
Plastic Knobs	3	6.35mm knob.
SW1	1	toggle switch
9V Battery Conn.	1	Battery Clip
U1	1	LM386
Mechanical		
PCB	1	1Wamp PCB
Plexiglas Cover	2	-
Nylon Spacer	4	m3x16
M3x12 screws	8	-
Batt. optional clips	2	-

* Additional Comp.

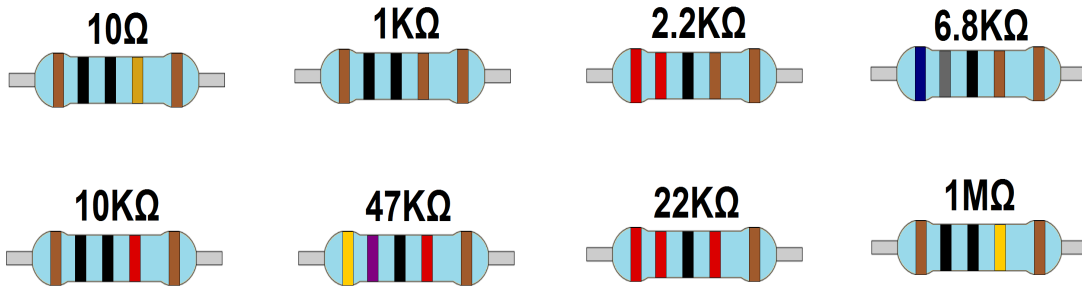
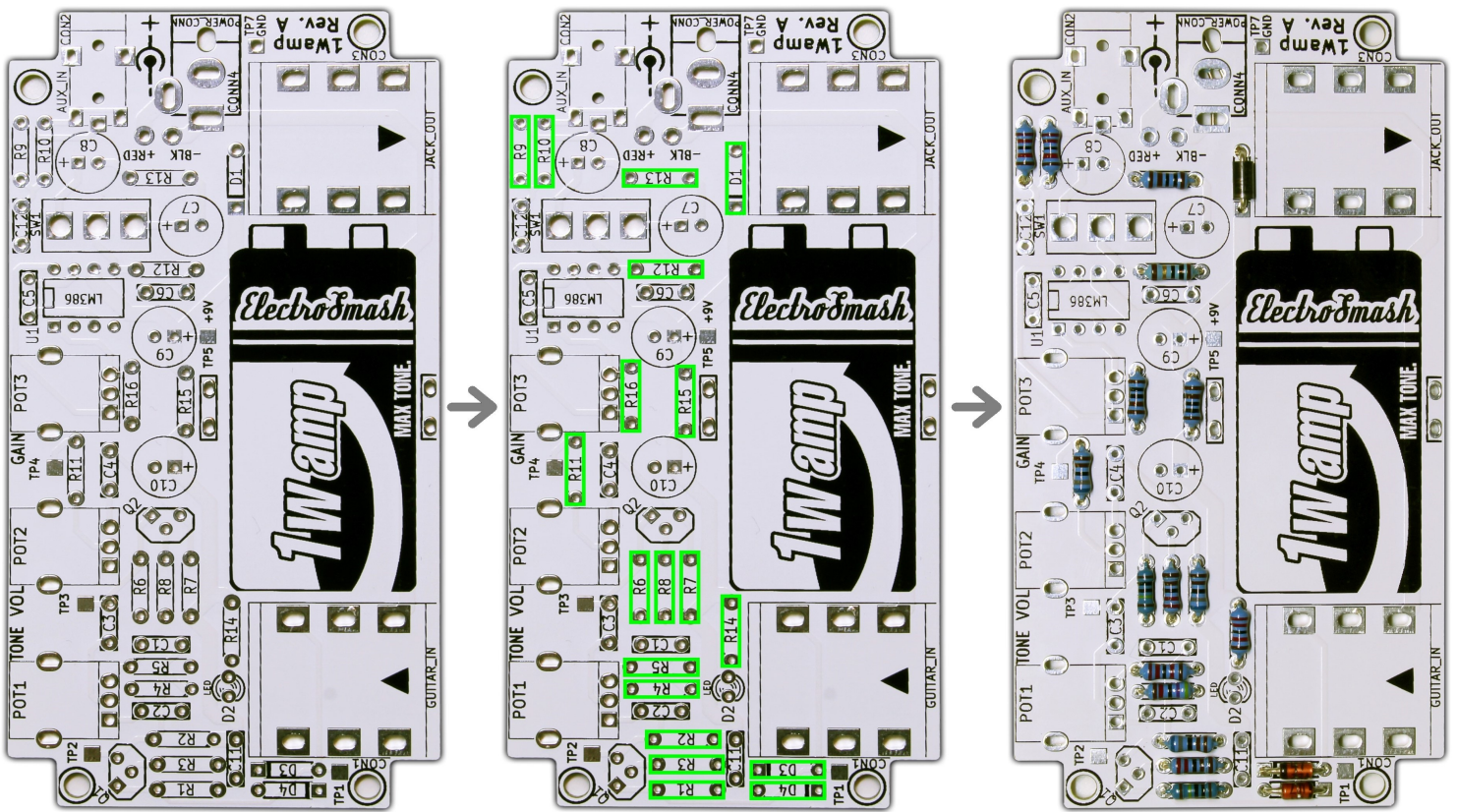
R2, R7	2	10K
R3, R8	2	1K

* R2, R3, R7 and R8 could be modified to implement different gain stages:

	R3 & R8	R2 & R7
Tillman Amp	2K2	6K8
Fetzer Valve	1K	10K
JFET Low Gain	1K	2K2

Step 1 – Soldering Resistors and Diodes.

There are 16 resistors and 3 diodes to be placed.



tips:

- Pay attention to diodes polarity, there is a line indicating the correct position. They get hot very fast when soldering, so try to do it carefully and wait between each solder point.

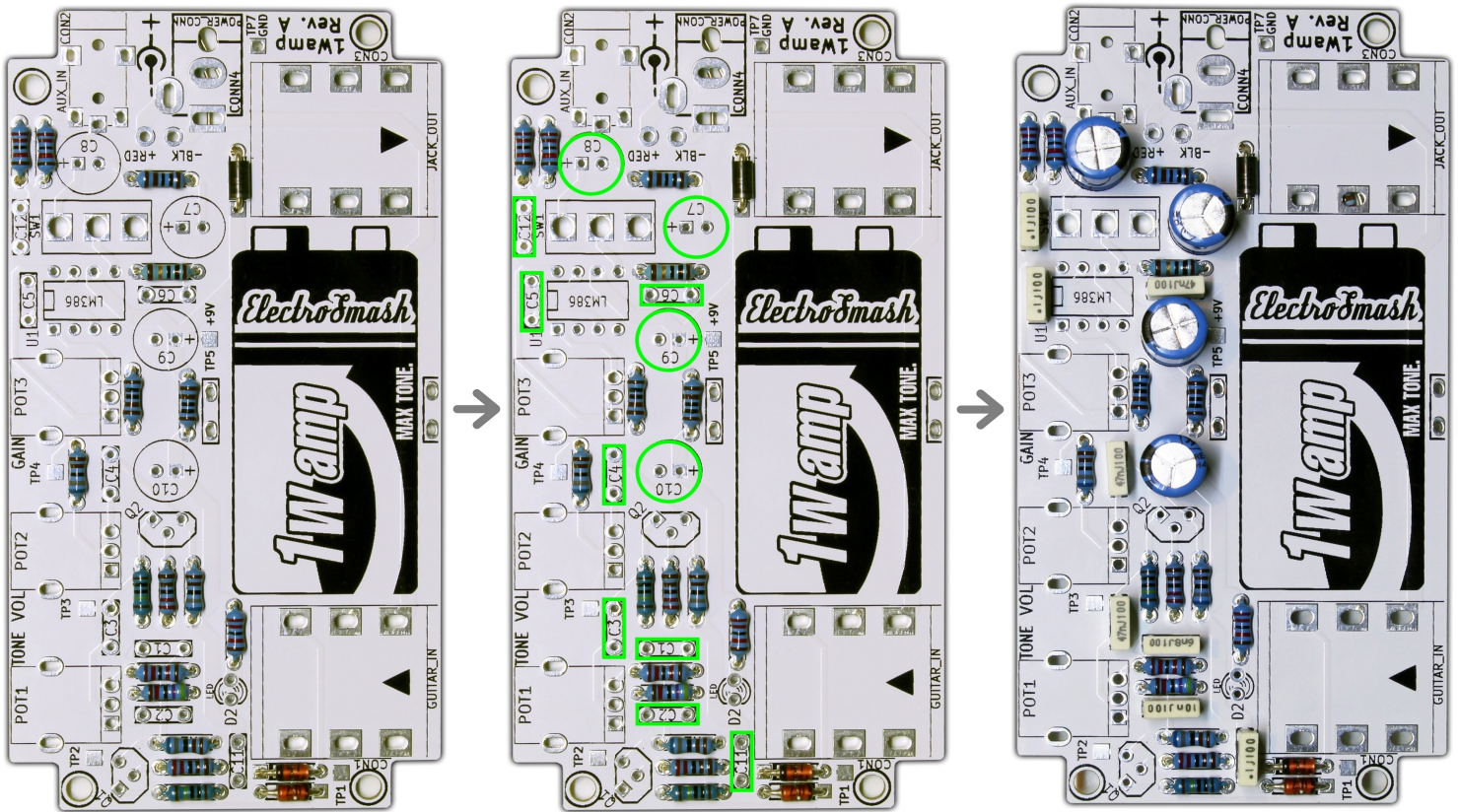


- In order to solder the components, bend the leads, introduce them in the footprint and once soldered cut the excess of lead as short as possible to avoid short circuits.

- Bend the legs as close as possible to the body because the footprint on the PCB is optimized for compact placement.

Step 2 – Soldering the Capacitors.

There are 8 film and 4 electrolytic caps.



Solder the film caps first (6.8nF, 10nF, 47nFx3, 100nFx3) and finish with the big electrolytic capacitors (220uFx4)

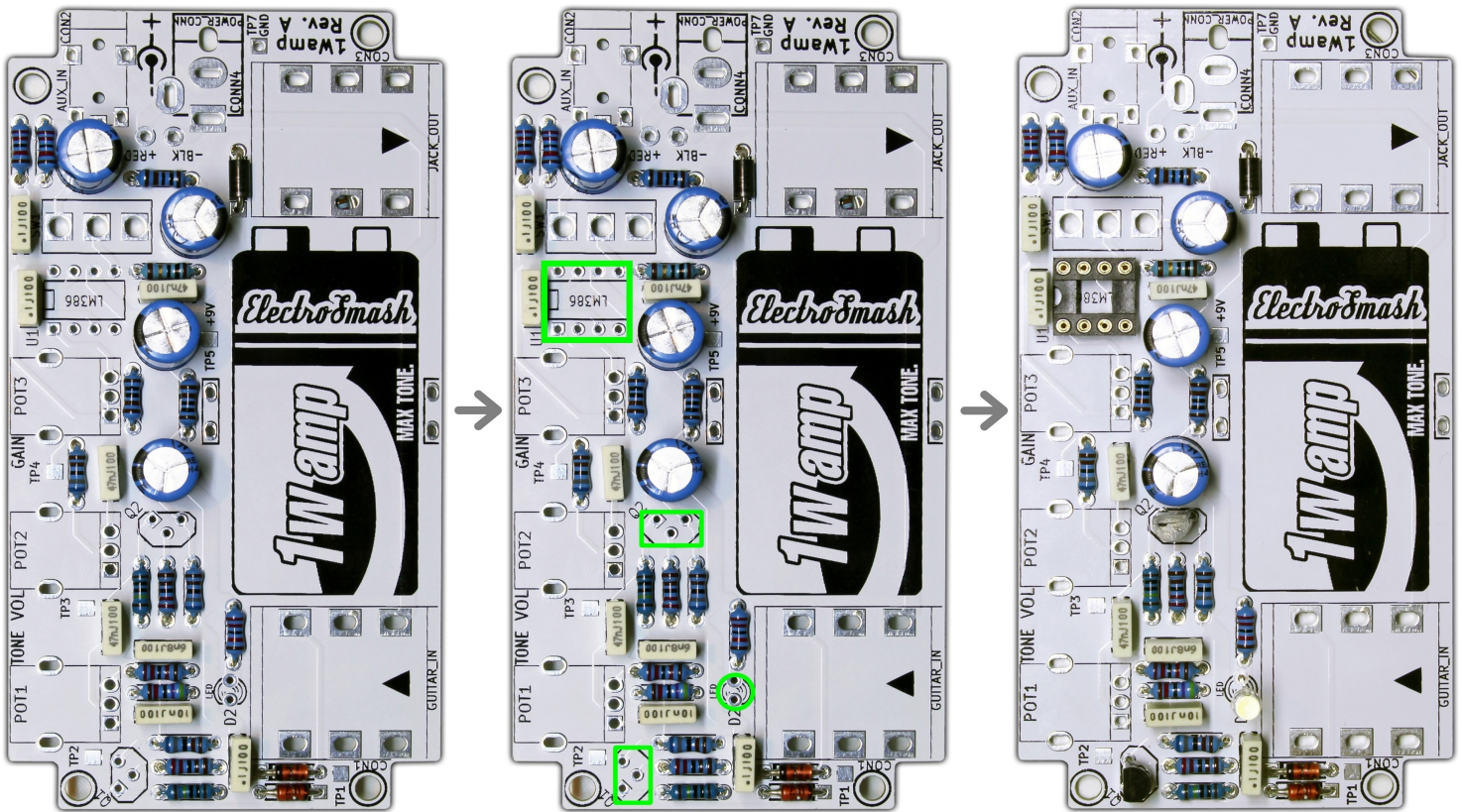
You can zoom over the above image to even see the components code value.

tips:

- Be careful with the electrolytic caps polarity, the negative lead (the short one) has to be placed in the round hole. The positive hole is always square-shaped and it is marked with a + symbol.

Step 3 – Soldering the Socket, LED and Transistors.

The is one 8-pin socket, one LED and 2 transistors:

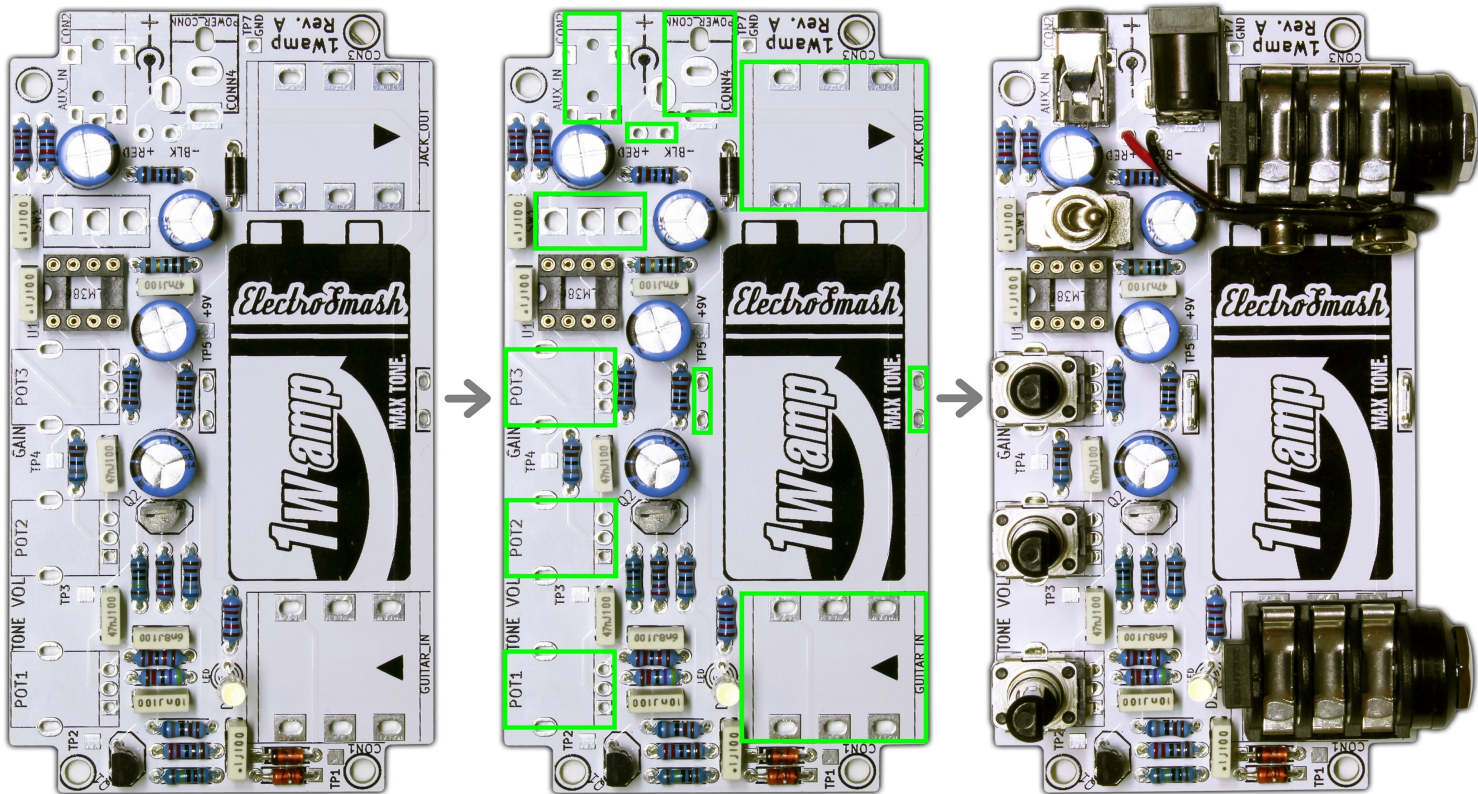


tips:

- To solder the LED D2, place the plastic cover or enclosure to size the length of the leads. The short lead (cathode) goes to the flat side of the diode mark.

Step 4 – Soldering the Big Components.

The last components to be placed are the jack connectors (2), potentiometers (3), toggle-switch, mini-jack, the power connector and the battery clip.



If you intend to place the amp in a closed enclosure, it is a good idea to check the position of potentiometers and switches against the cover before solder them.

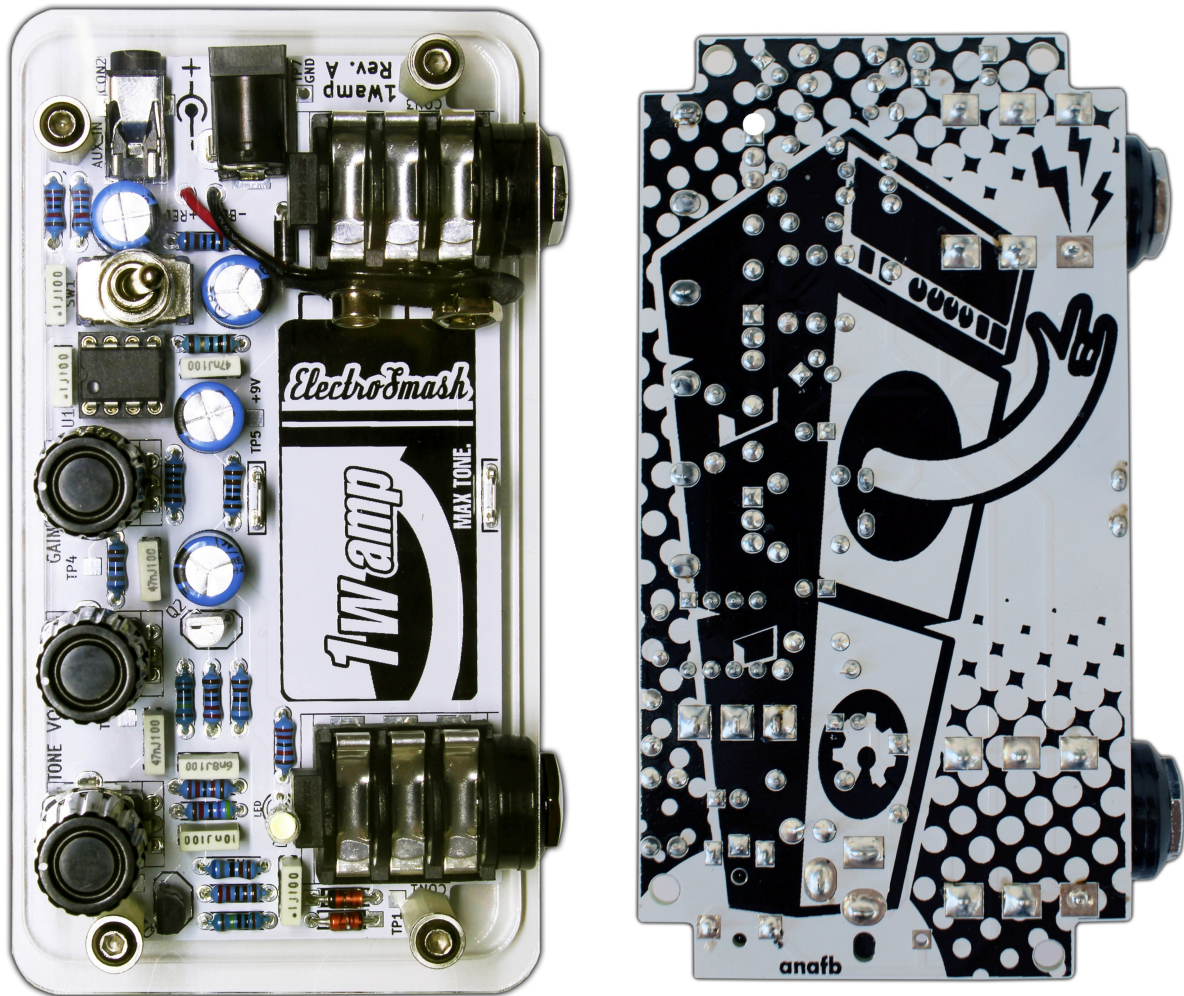
Big components with big terminal get pretty hot during soldering, so take your time to avoid overheating them.

tips:

- Be careful soldering the big components perpendicularly because they tend to be slightly tilted.

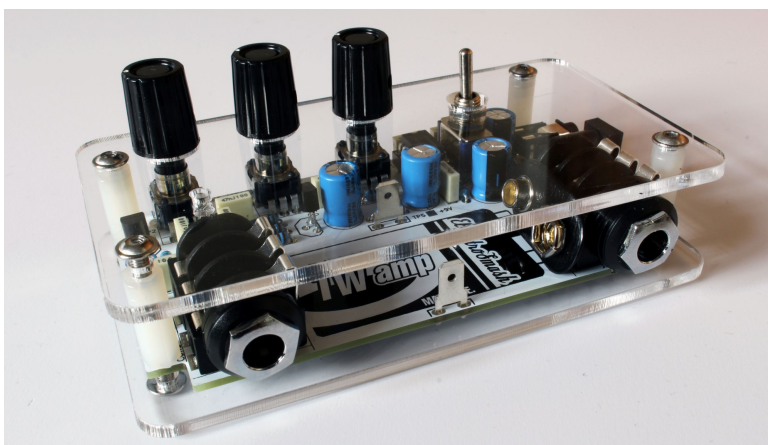
Step 5 – Checking Out the Job Done.

After this 5 stages you will have a mounted board exactly like the one shown below:



Double check your PCB with the model component by component, before power it up, check this 3 ticks:

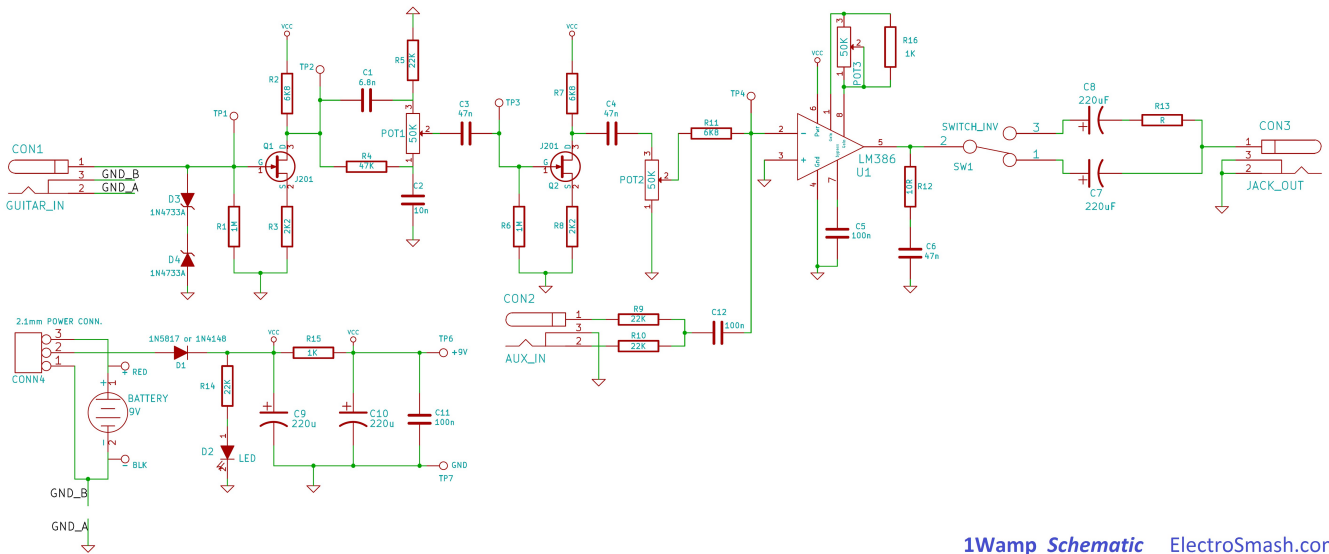
- ✓ 1. Visual inspection of the PCB bottom, there is no short circuits or long uncut leads.
- ✓ 2. The polarized components are placed correctly: diodes and electrolytic caps.
- ✓ 3. The parts are not swapped or wrongly placed.



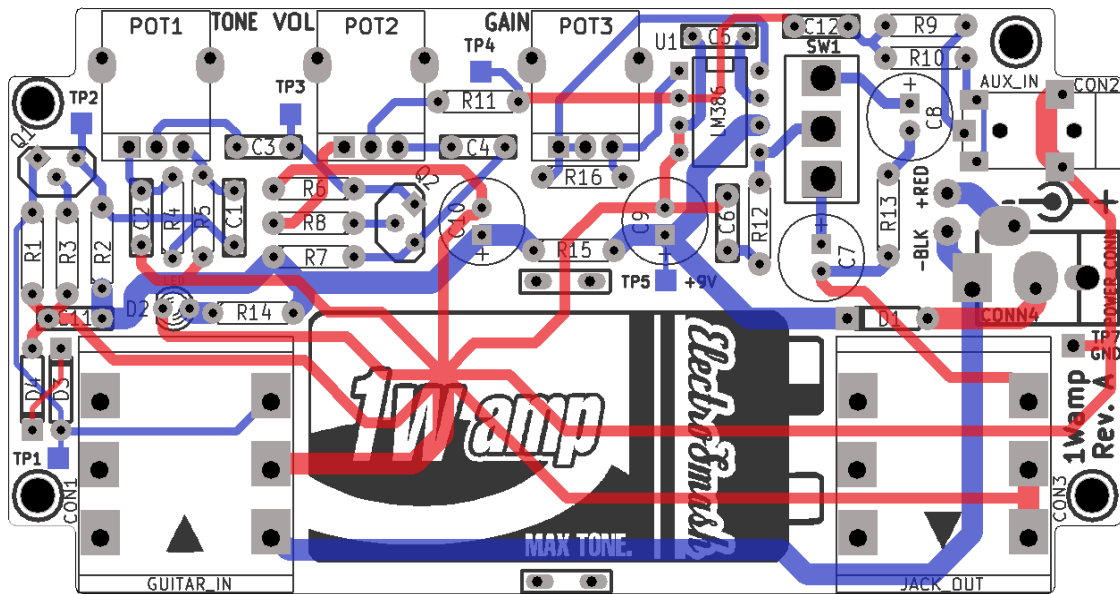
Finally the plastic covers can be installed together with 8 screws + 4 spacers.

The plastic knobs are the last parts to be mounted.

Appendix: 1Wamp Schematic and Layout.



1Wamp Schematic ElectroSmash.com



- top layer
- bottom layer