SK501 Assembly guide

Safety warning

The kits are main powered and use potentially lethal voltages. Under no circumstance should someone undertake the realisation of a kit unless he has full knowledge about safely handling main powered devices.

Please read the "DIY guide" before beginning.
Print or open the following documents :

- SK501 Schematics
- SK501 Components layout
- SK501 Parts list
- SK501 Setup guide

Follow this guide from item number 1 till the end, in this order. The assembly order is based on components height, from low to high profile, in order to ease the soldering process : The component you are soldering is always taller than the previously assembled ones and it is pressing nicely against the work area foam.

SK501 Assembly guide – Main PCB

1. Soldering

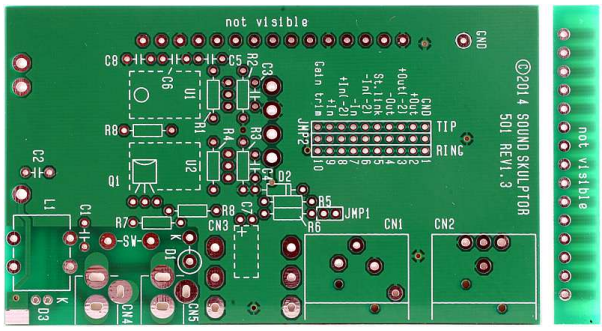
All the PCB holes are metallized. It means the connection between the top and bottom pads is already done. The parts must be soldered only from the bottom side (unless differently stated).

Use only small diameter solder, 0.5 or 0.7 mm, 1mm maximum. Use the minimum possible amount of solder. Bad joints are almost always caused by too much solder.

Here are two excellent introduction to soldering videos:
http://www.eevblog.com/2011/06/19/eevblog-180-soldering-tutorial-part-1-tools/
http://www.eevblog.com/2011/07/02/eevblog-183-soldering-tutorial-part-2/

2. PCB split

Split the PCB along the groove. You can use a vice or pliers to help the break.



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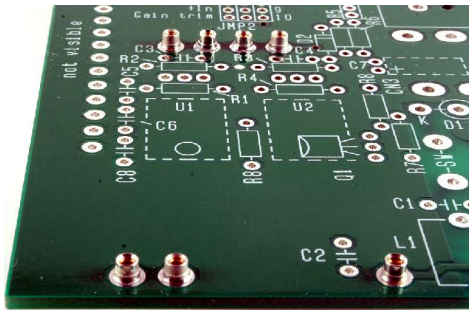
3. 1mm Pin Sockets



Solder the 7 pin sockets for the switcher. Solder one at a time. Insert one socket, turn over the PCB and press against a solid but flexible surface like cork or dense foam then solder. The correct positioning of the sockets is very important for easy insertion of the switcher.

4. Resistors

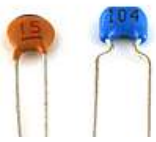
Add R1 to R9.
Control the resistor values with a digital multimeter. Bend the leads at 0.4" with a lead forming tool.

Warning : It is very important to check the resistors value with a DMM because the colour code can be ambiguous. For example 1K (brown-black-black-brown-brown) can be confused with 110R (brown-brewn-black-black-brown).

Warning : R9 is labelled R8 on the PCB so there are 2 R8's. R9 is located between U1 and U2.

5. Diode D2

Add D2. Use a lead forming tool to bend the leads at 0.4".
Warning : Make sure to respect the direction of the diode which is marked by a ring on the component and a double line on the PCB marking.

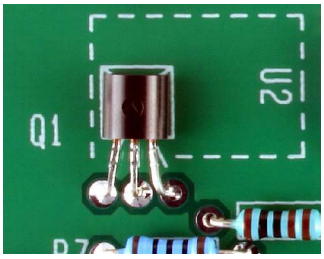


6. Ceramic capacitors

Add C1 to C6 and C8.
Make sure to insert all the components as close as possible to the PCB. It is necessary to keep the profile low because the switcher will be placed over these parts.

7. Transistor

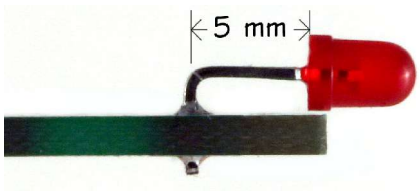
Add Q1. It must be placed flat on the PCB, flat side against PCB.

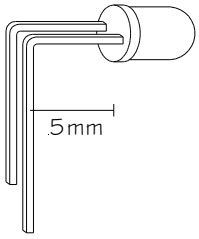


8. Led

Bend the leads of D3 at 5mm from the body taking care of the anode position.
The LED body must rest on the PCB.
Start by soldering one lead, adjust the position, then solder the second lead.

Warning : it is easy to bend it in the wrong direction !





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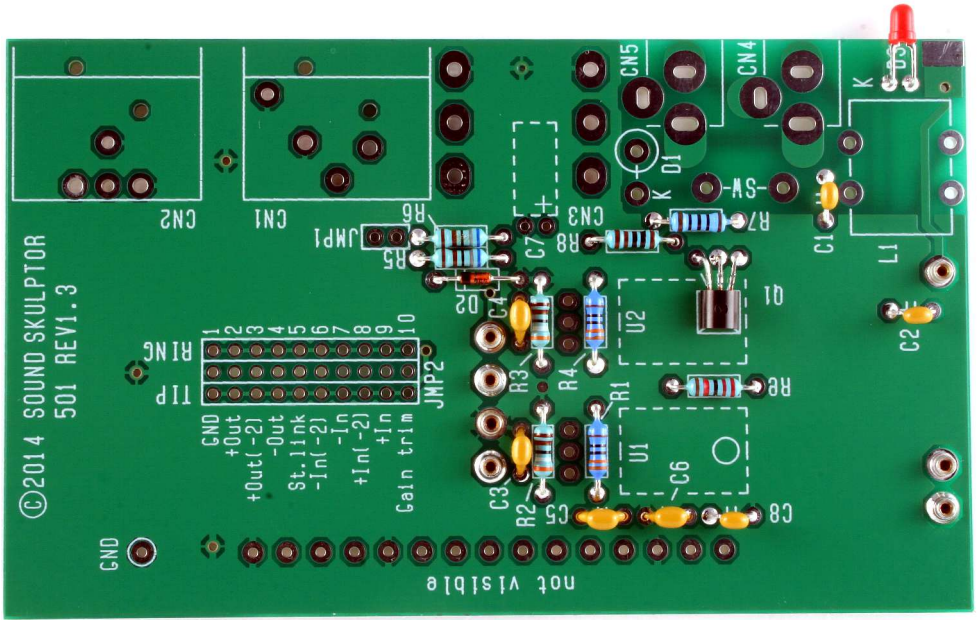
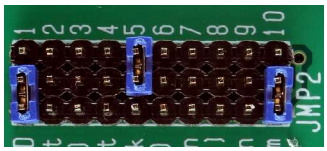
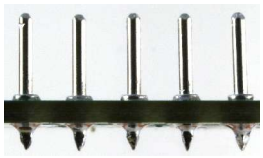


9. Jumper headers



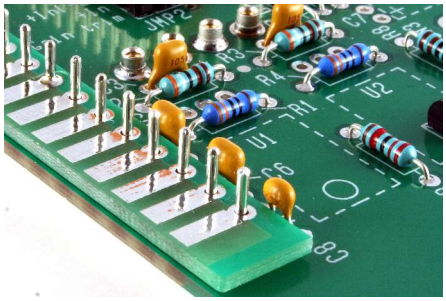
Solder JMP1. Solder one pin first, check verticality, then solder the other pin.
Solder the 3 rows of jumper header JMP2. It is convenient to attach the 3 rows of headers together with 3 jumpers before soldering. This keeps the headers parallel. Solder one pin first, check verticality, then solder the other pins.

10. Pins



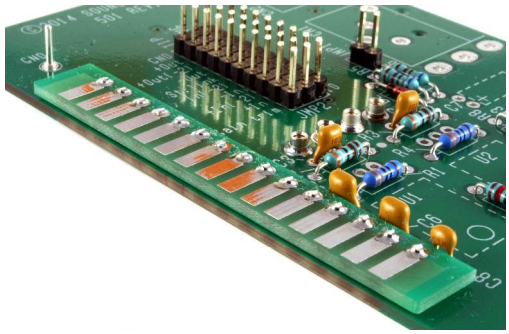
Insert and solder the sixteen 10mm pins (15 connector pins + 1 GND pin). The pins must be inserted from the PCB top side, square section part first. They may need some pressure to be inserted properly.
Warning : Do not confuse these pins with the pins of Switcher3 which are 15mm long.

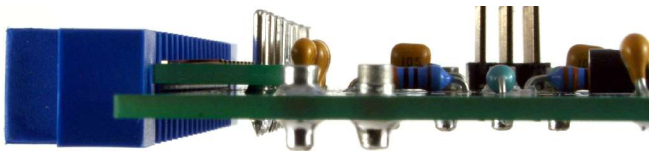
11. Second PCB assembly



Insert the second PCB (the one we split from the main in step 2) on the 15 pins, "not visible" sides facing each other. Solder one pin. Use the 2 x 15 pins connector to help adjusting the correct distance between the 2 PCB's. Reflow until it is correct then solder the other pins.

Cut the pins perfectly flush (this is important because the switcher will come over these pins).





Warning: Do not cut the GND pin which do not belong to the connector.

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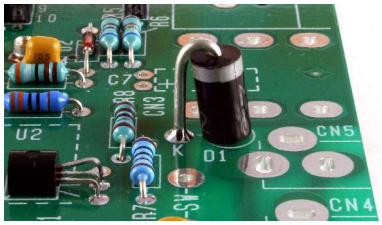
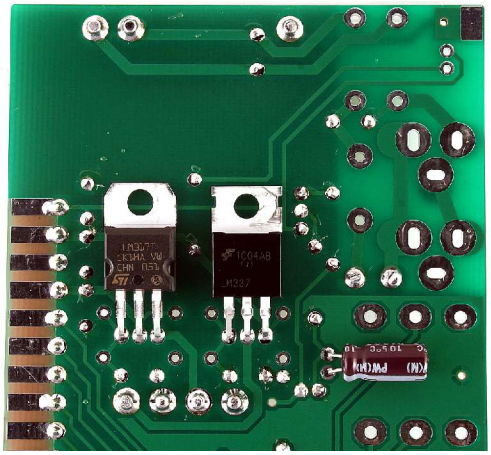
12. Diode D1

Add D1. D1 is installed vertically, cathode on top. Bend the lead on the cathode side marked by a ring.
Warning : Make sure to respect the direction of the diode. The cathode side is marked by a K on the PCB.



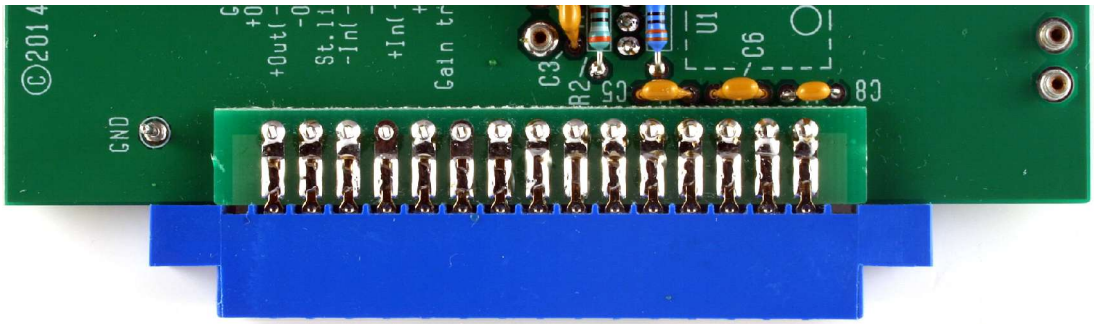
13. U1 and U2

U1 and U2 are installed on the back of the PCB. Insert the parts in their respective position and bend the leads until they lay flat on the PCB. Solder from the same side and cut the leads on the components side.



14. C7

C7 is also installed on the backside. Insert C7 taking care of the + lead position (marked on the components side). Bend the leads so it lays flat on the PCB. Solder from the other side (components side).



15. 2 x 15 connector

Position the connector so that all pins are centred on their respective pad and solder on both sides.

16. DC in connectors

Add the 2 DC input connectors. Make sure they sit perfectly flat on the PCB.

17. Common mode coil

Add L1.

18. Jack socket

Add the stereo jack socket CN3. Make sure it sits perfectly flat on the PCB.

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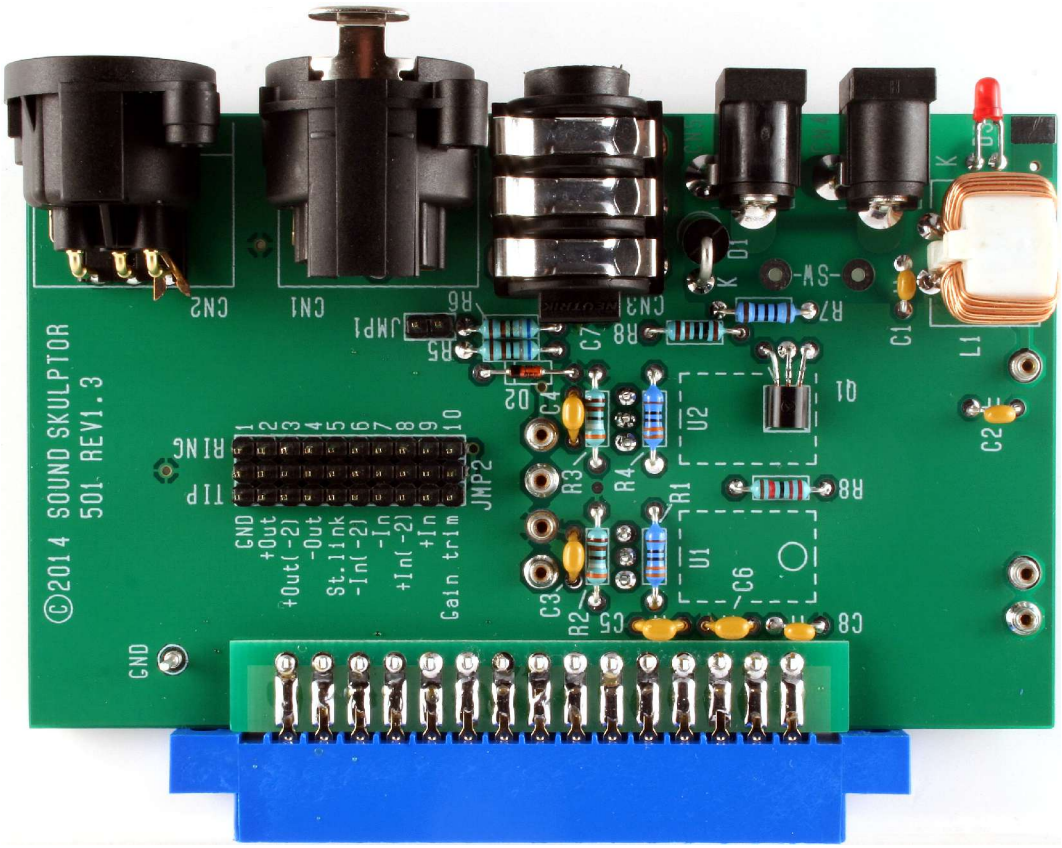
19. XLR sockets

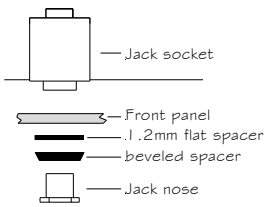
Add the male and female XLR sockets CN1, CN2. Make sure they sit perfectly flat on the PCB.



20. Power switch

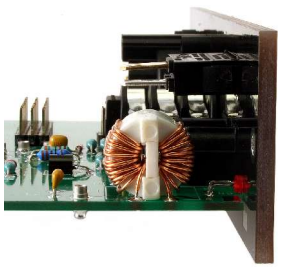
Clip the power switch in the back panel.

21. Back panel assembly



Put the back panel in place on the in/out connectors and attach it with the jack nut.

Attach the XLR socket with 4 self taping screws



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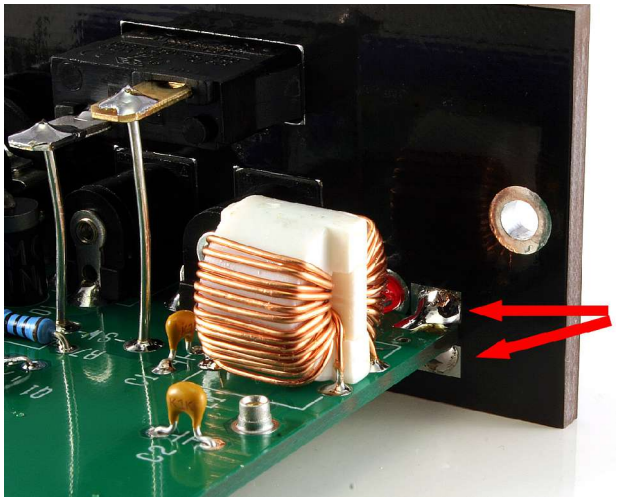
22. Power switch wiring

Solder 2 pieces of bare wire between the switch pins and the corresponding PCB pads underneath.

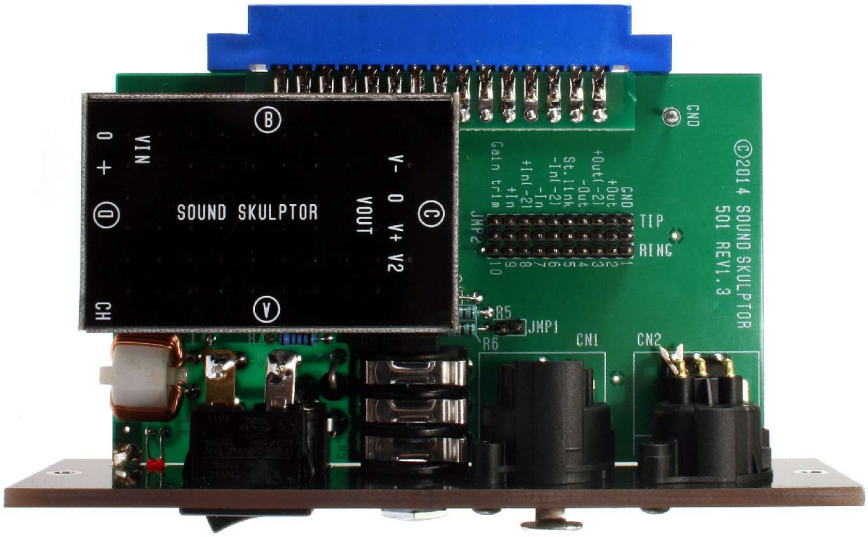


23. Backplate soldering

Once all the testing has been done, solder the connecting pads on both sides of the PCB.

24. Switcher installation

Simply plug the switcher into the PCB sockets. The SK501 is ready for testing. The switcher assembly is described in another document.



25. Hardware assembly

Assemble the 2 parts of the case an attach them with six M3x6 black, countersunk screws.

Insert the main PCB into any end of the case and attach the back plate with two M3x10 mm screws.