



Switcher3 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 :

- Switcher3 Schematics
- Switcher3 Components layout
- Switcher3 Parts list
- Switcher3 Setup guide

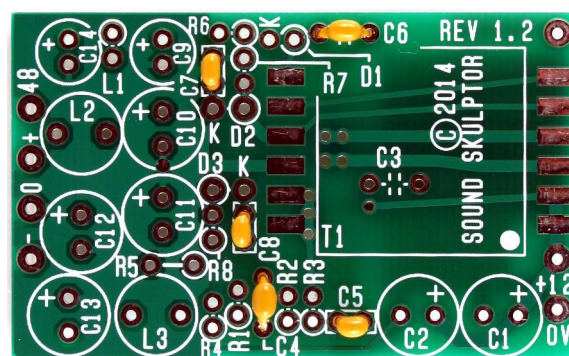
Follow this guide from item number 1 till the end, in this order. The assembly order is based on components height, from low to high profile, in order to ease the soldering process : The component you are soldering is always taller than the previously assembled ones and it is pressing nicely against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

Switcher3 Assembly guide – Main PCB

1. Ceramic capacitors



Add C4, C5, C6, C7, C8.
C3 which is placed *under* the PCB will be installed later.



2. Resistors



Add R1 to R6 and R8. R7 will be installed later in order to leave an easy access for soldering the transformer.

The resistors are installed vertically.

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-brown-black-black-brown).

3. Axial Inductor



Add L1, vertically like the resistors.

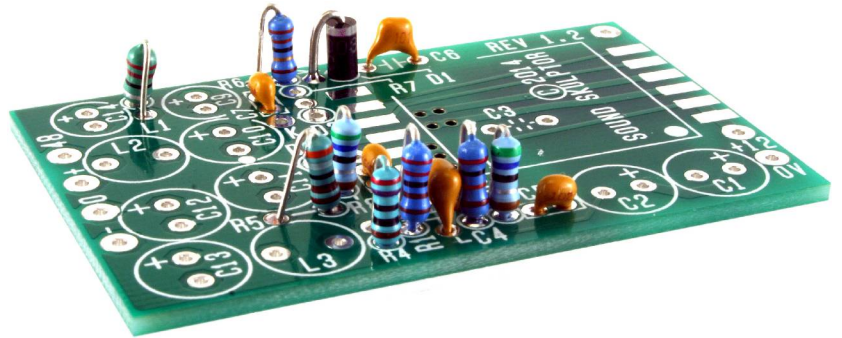
Switcher3 Assembly guide – Main PCB



4. Diode D1

Add D1. D2 and D3 will be soldered later. The diodes are placed vertically, cathode on top. Bend the cathode lead (marked by a ring on the diode body).

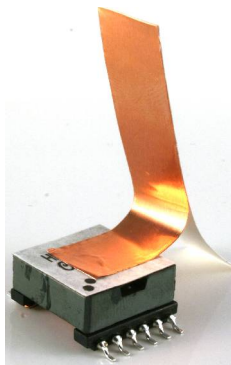
Warning : Make sure to respect the direction of the diodes. The cathode side is marked by a K on the PCB.



5. Ceramic capacitor C3

Add C3 *under* the PCB.
Cut the leads ultra short.

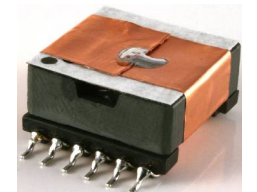
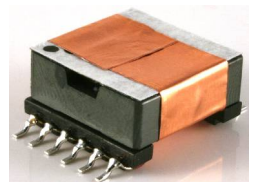
6. Copper shorted turn



In order to reduce the transformer radiations we will add a copper foil turn around the outside of the transformer.

Start by redrawing the dot on the top of the transformer, a little further in the corner because the original will be hidden by the foil.

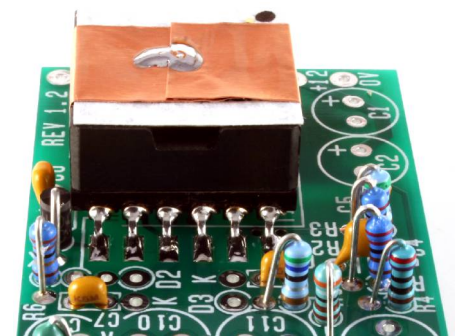
Partially remove the backing tape from the adhesive copper foil and place it on the top of the transformer, as shown on the picture. Make a full while removing the backing tape. Solder the two ends to electrically close the loop.



7. Transformer soldering

Apply a small quantity of solder on one of the transformer PCB pads.

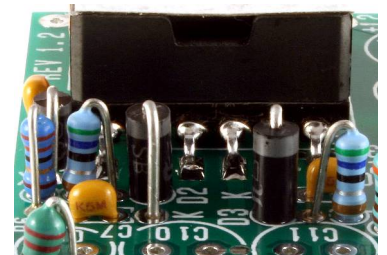
Position the transformer, making sure the dot is in the correct place and reflow the pad solder to lock the transformer. Adjust until all the transformer pins are all well centred on their respective pad. Solder one pin on the opposite row. When the position is correct, solder all the pins.



8. Resistor R7 & diodes D2, D3

Add R7 and diodes D2, D3.

The R7 silk-screen writing is hidden by the transformer. It is adjacent to C7 and D2.



Switcher3 Assembly guide – Main PCB



9. Radial inductors

Add L2, L3.



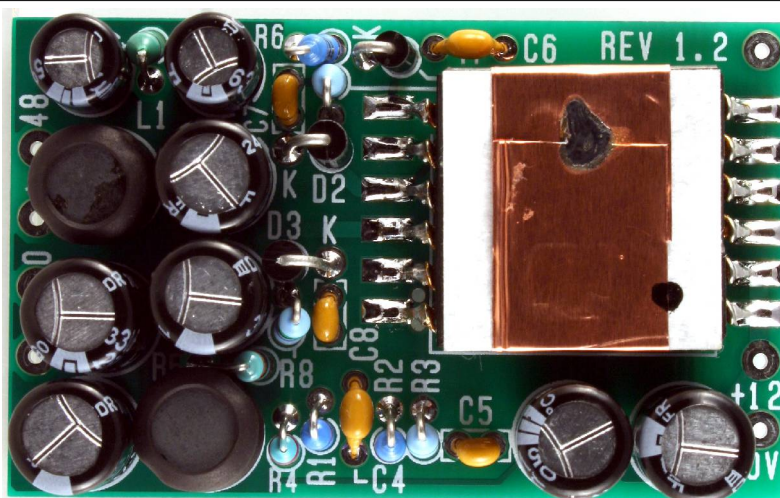
10. Electrolytic capacitors

Add C1, C2, C9, C14, C10 to C13.

Solder one lead first, adjust verticality then solder the second lead.

Warning : The +lead must go into the +hole. Do not reverse (they may explode !)

Warning : Make sure the caps are inserted as low as possible because they define the height of the module.



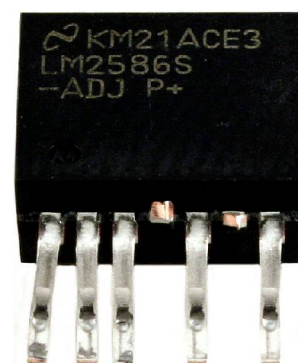
11. LM2586

The LM2586 is soldered on the back side of the PCB.

It is a surface mount component with relatively close pins. In order to make the soldering process easier, we are going to cheat a little:

Lift pins 4 and 6 (counting from the left) and cut them off.
And gently bend pin 1 towards the left.

This gives us a good iron access to each pin.



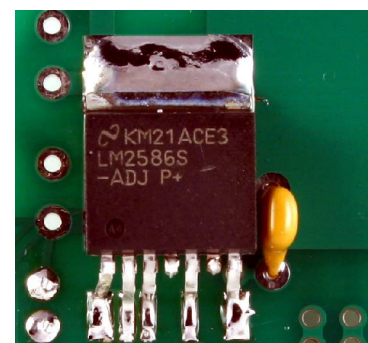
12. Soldering the LM2586

Put a small quantity of solder on the rightmost pad. Place the IC and reflow the solder, adjusting the position until all the pins are centred on their respective pad.

Once in position, solder the other pins.

Do not forget that a bad solder joint is almost always caused by too much solder.

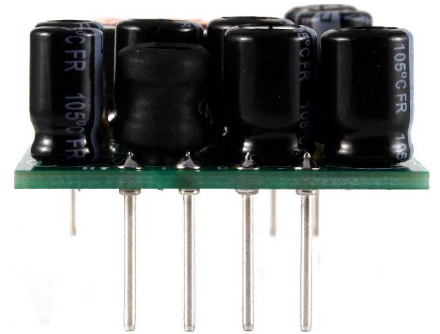
Last thing is to solder the IC top tab to the PCB. Start by heating the metal tab until the solder flows and goes down to the PCB.



Switcher3 Assembly guide – Main PCB

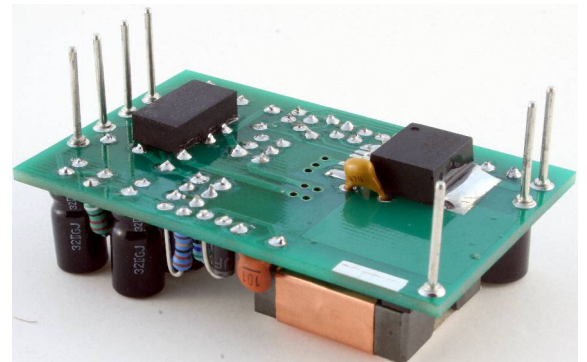
13. Connecting pins

Insert the 7 long pins from the solder side and solder. It is necessary to put a little pressure on the pins to insert them all the way down.



14. Spacer

Stick the rubber spacer on the Switcher3 PCB, at the position shown on the picture, between the solder pads.



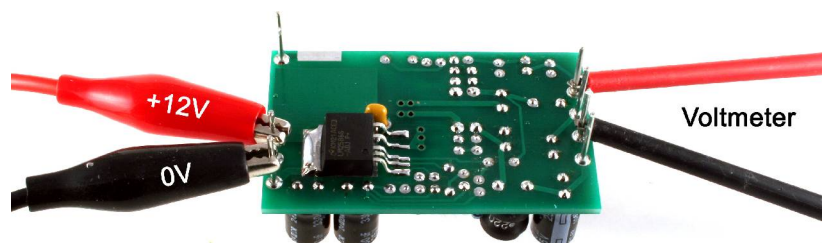
Switcher3 Quick testing

The switcher can be tested directly in the SK501 module but it is a good idea to check it alone if you can. What you need is a 12V DC source and a voltmeter.

Connect the 12V source between the (+12) and (0V) supply pins (near transformer) and connect the voltmeter between the (0) and (+) pins on the output side.

After powering, you should read
+19 to 20Volts on the (+) pin,
-19 to -20Volts on the (-) pin,
+55V to 60V on the (48) pin.

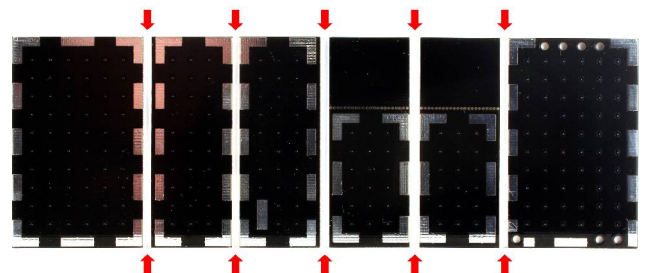
The full test requires pulling current and will be done with the 501 module.



Switcher3 Assembly guide – Shield

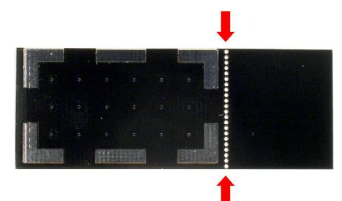
1. PCB split

Split the shield PCB into 6 pieces.



2. PCB split

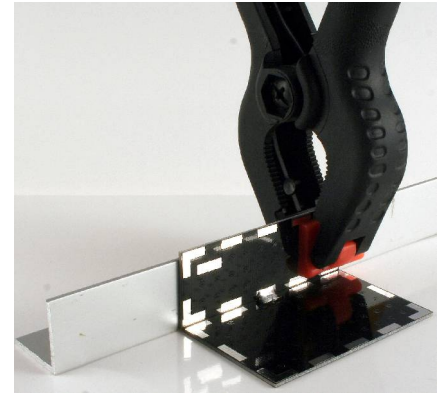
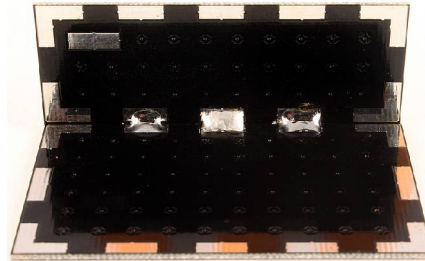
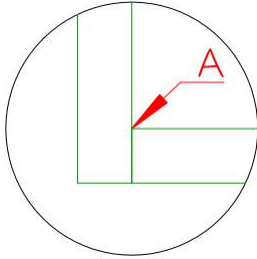
Break the 2 sides along the hole line and smooth out the jagged side by rubbing it on a piece of sand paper.



Switcher3 Assembly guide – Shield

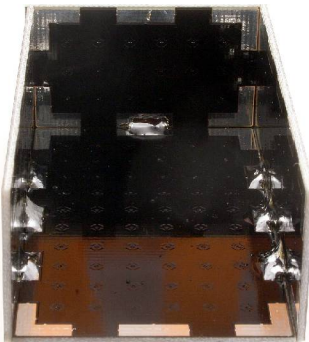
3. Soldering side A

Use a tool with a sharp right angle, like a ruler or an aluminium profile to help position the sides. Place the top side flat on the table (“Sound Skulptor” facing down) and the (A) labelled side at a 90° angle. (A) edge against (A) edge. The vertical panel rests on the table, not on the top panel. Solder the centre pad. Reflow the solder until the 2 panels are perfectly lined and at 90° then solder the next 2 pads.



4. Soldering side B

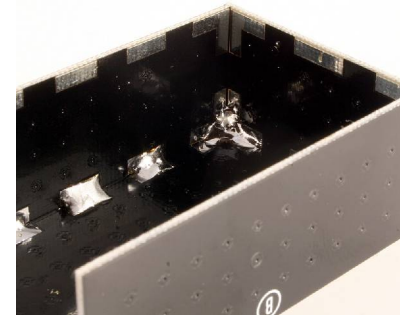
Repeat the same operation for side B



5. Soldering sides C and D

Position the C side against the assembly and solder the centre pad. Next solder the 2 low corners. Do not solder the top angles yet.

Repeat for the D side.



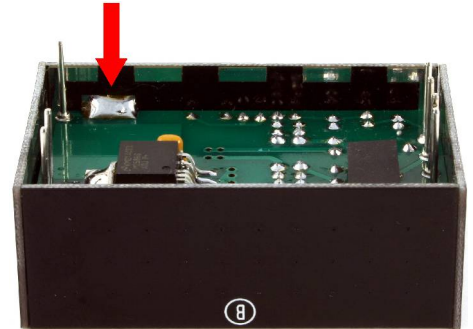
Switcher3 Assembly guide – Shield

6. Switcher-Shield assembly

Warning: This must be done after the switcher has been fully tested in the 501.

Insert the switcher PCB into the shield, making sure the pins position follows the shield top writing.

Check that the PCB is horizontal and solder the connecting pad on the side.



7. Closing the shield

Place the closing side over the switcher PCB. Check that it is horizontal and regularly recessed then solder the pads.

