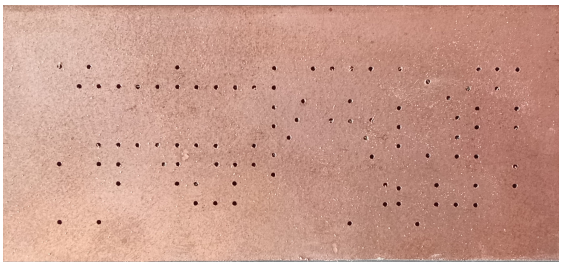
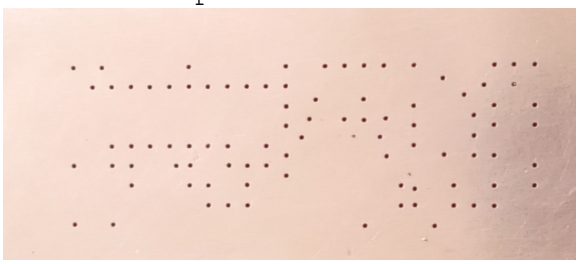
# Making the print with hot/cold method dry film.

This method gave a good result.
On CNC router use ‘bottom_drill 0.6mm.nc’ and 0.6mm drill.



Polish the copper, use copper brass and steel wool no. 0000.
Clean the print and the holes with water.
Clean the print with 99% alcohol and a cotton ball.



Remove one protective layer from the dry film.

Place the dry film on the print and pass it 3 times through a laminator.

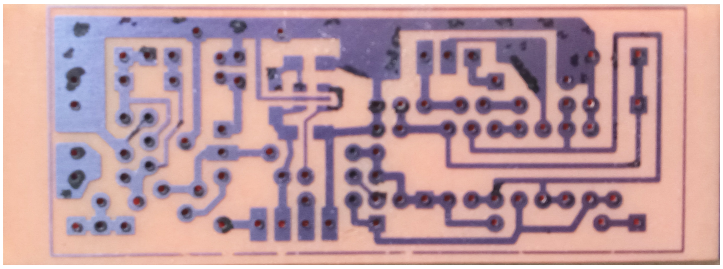
Better method is to place the dry film underwater on the print.
Use a big soup plate so you can use both hands.
Let it dry for at least 24 hour.

Align the 'SMD RAM UPS dry film--' using the holes,
place the printed side down on the dry film.

Place a glass plate on it.
I used a 15W TUV TL at 5cm distance and exposed for 6 minutes,
this is not a good lamp, 253.7nm is way outside the dry film specs.

Now remove the second protective layer of the dry film !

Remove unexposed dry film with sodium carbonate solution,
4gram sodium on 200ml water. Use a soft brush.



If it looks good,
leave it for 2 more minutes.

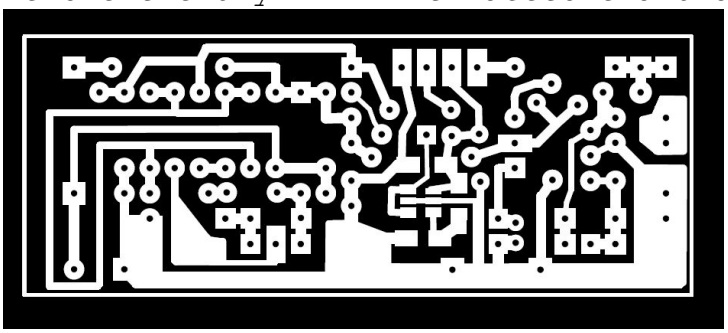
To be sure the trace edges
are sharp.

< Old layout.

Rinse the print in water.

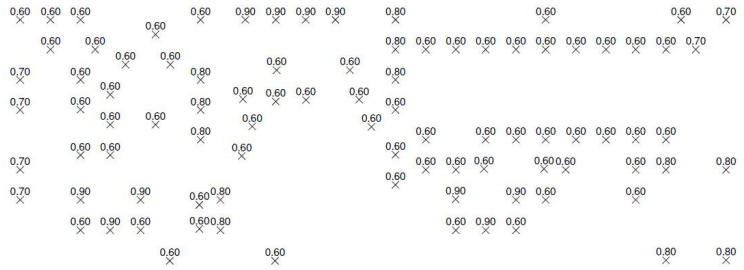
Etch the print with FeCl between 5 and 10 minutes.
If it looks good, leave it for 2 more minutes.
To be sure the trace edges are sharp.
Rinse the print in water.

Remove the dry film with acetone and a cotton ball.



< New layout.

For some part pins, re-drill those holes with 0.7 / 0.8 / 0.9 mm.



< New layout.

Cut out the print.

Protect the print with a resin solution.

Resin.

Scrap some resin and
Dissolve in some turpentine
or thinner.

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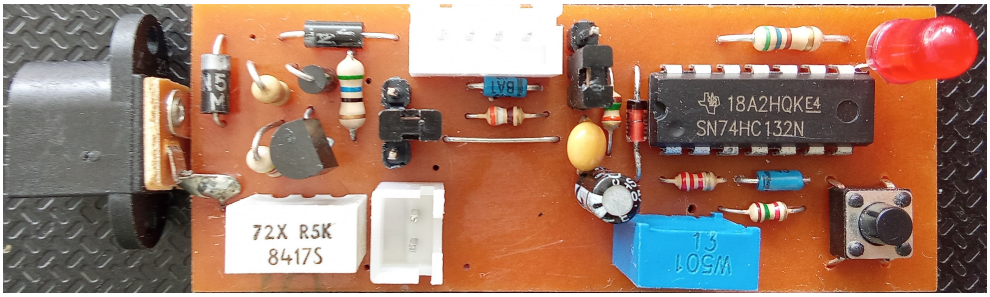
^ Brush it on the print and let it dry.

Select what you want to put on the print Charger / Limiter parts.
The print supports any combination.

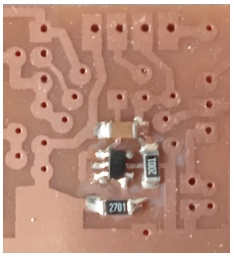
Charger-1 and Limiter-1




< New layout.

Adjust P1 and P2
Connect the Li cell and test the charge unit.
And the print is ready.

Limiter-2 Use a conversion print
Or mount the SMD parts on the solder side.

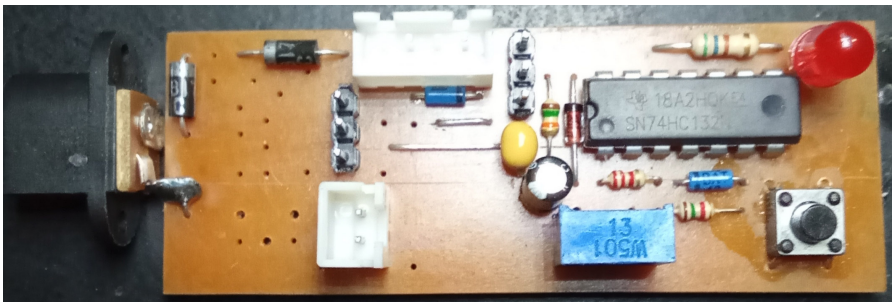


< C5 can be replaced by c5' on top side.

< New layout.

^ C5'

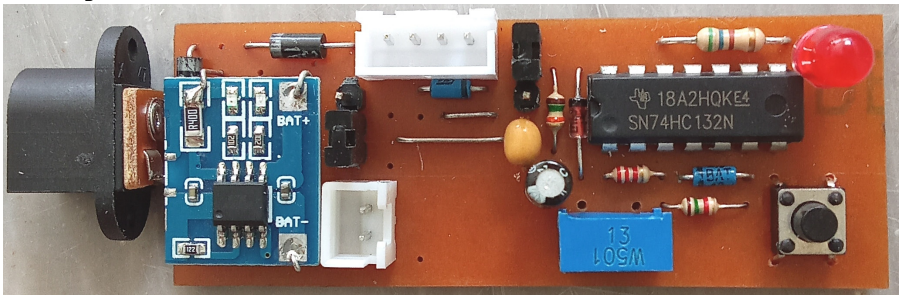
Put the other parts on the print.



< New layout.

^ wire to fix GND jack.

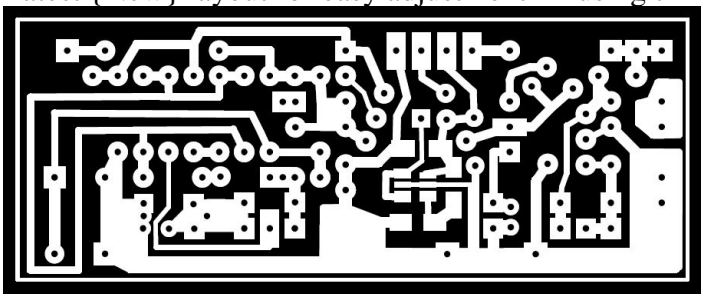
Charger-2



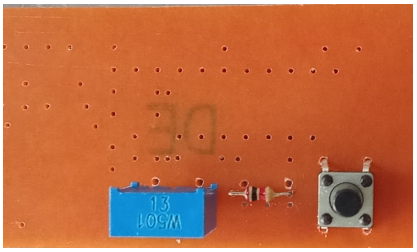
< New layout.

Now adjust P2.
Connect the Li cell and test the charge unit.
And the print is ready.

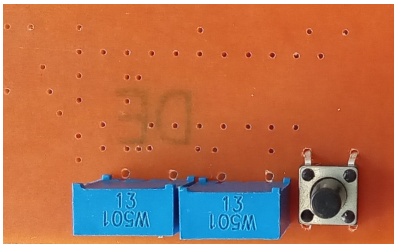
Latest {New} layout for easy adjustment P2 using trimpot for R7



Still support Rx value for R7.



P2 and R7



P2 and Px