Tuxgraphics Digital DC Power supply

http://www.tuxgraphics.org/electronics/200506/article379.shtml

1) The board

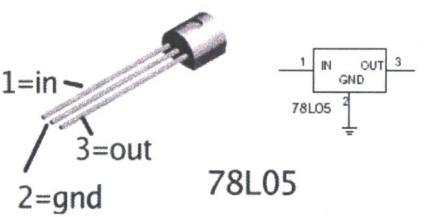
The board from tuxgraphics is properly etched and coated with a protecting resin. This is a special resin which does not only protect but helps also during the soldering process. Do not remove this resin coating. You might (dependent on the version you bought) still need to drill holes into the board. This should be done with a mini electric drill as shown on the right. You will need the drill bits:

- 1mm for the power resistors (R4 R14 R15) and push buttons
- 1.5mm for diode 1N5400 and transistor BD245B
- 0.8mm for all other 0.8 parts

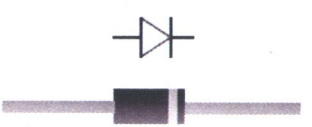
When you use a mini electric hand drill then put the board with the cooper layer facing you onto some soft foam material (Styropor) or a couple of layers of corrugated card board. This is to avoid that the small drill hits accidentally a hard surface.

2) The parts

78L05 voltage regulator:

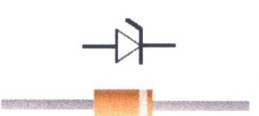


Diodes:



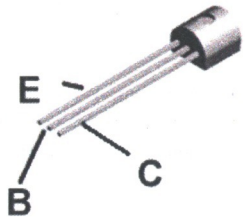
1N4004 or 1N5400

Z-Diode:

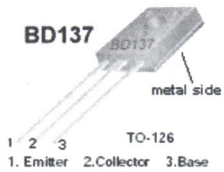


ZD 8.2

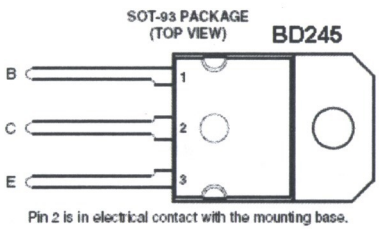
BC547 and BC557 transistors:



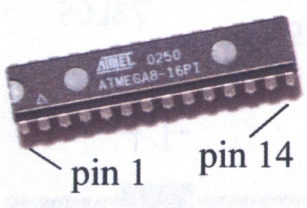
BD137 transistor:



BD245B transistor:

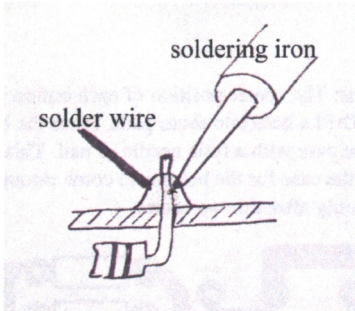


Atmega8:



3) Soldering tips

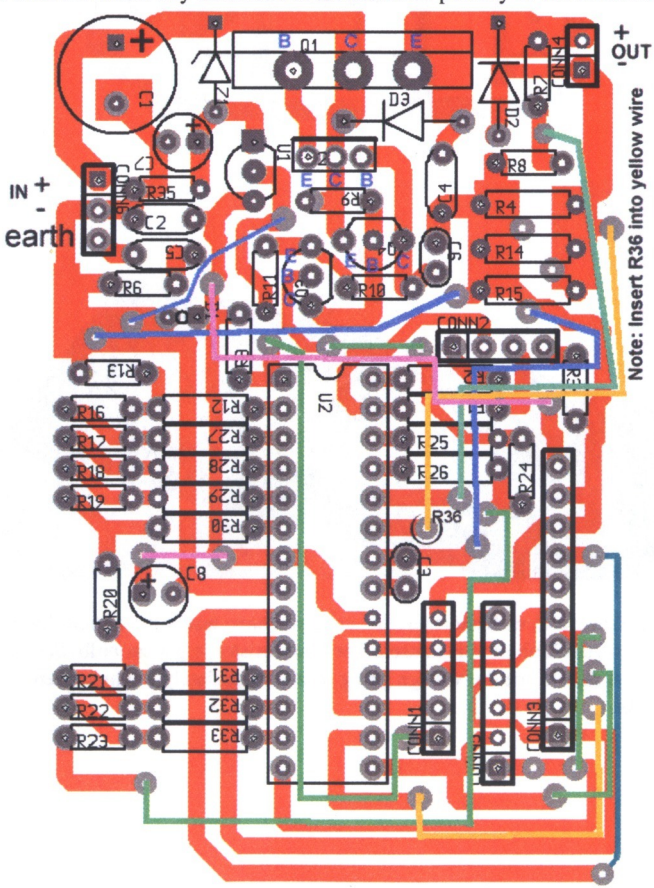
You should use a soldering iron with a small tip and a 1mm solder wire. Press the tip of the soldering iron against the wire of the component and then add solder from the other side.



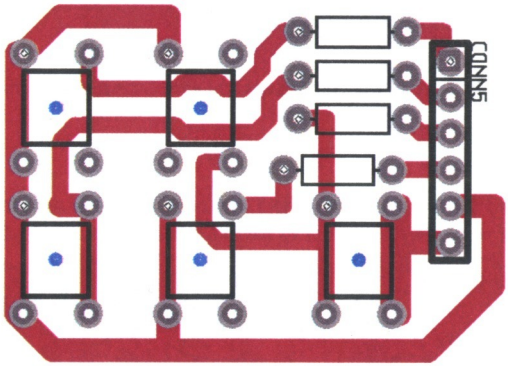
The solder will flow around the wire of the component and give a nice smooth surface.

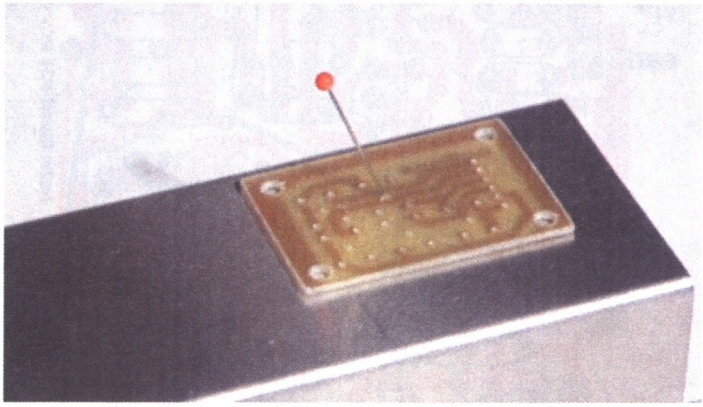
4) The circuit

The following picture shows the printed circuit board with components as seen form the top (component side). The colored lines are wires. Pay attentions to the indicated polarity of the diodes and capacitors.



The keyboard with the push buttons: The center position of each button is marked with a little round copper pad (marked blue below). Drill a hole into those pads. Place the board onto the case of your power supply. Mark these positions on the case with a little needle or nail. This gives you the exact positions where you need to drill holes into the case for the buttons to come through. Solder the buttons and the 470 Ohm resistors onto the board only after this was done.





A word of warning: Be careful with short circuits until you have tested the current limitation function. A save way to test the current limitation is to use a low ohm resistor, e.g a car bulb. Set a low current limit, e.g 30mA at 10V. You should see the voltage going down immediately to almost zero once you connect the bulb on the output.