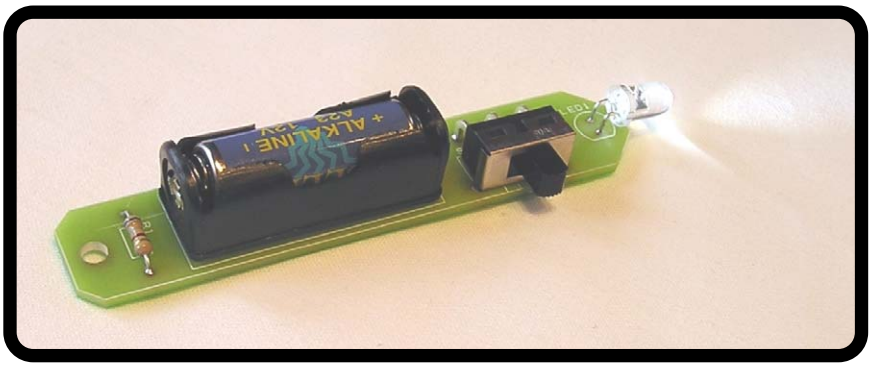
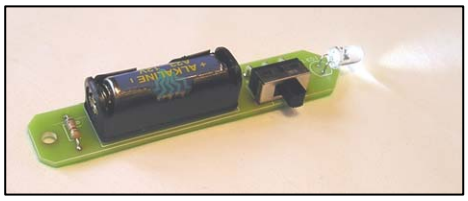
Mini Torch



Build Instructions

Issue 1.2

Build Instructions



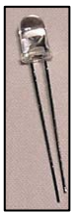
The finished torch is shown left.

Before you put any components in the board or pick up the soldering iron, just take a look at the Printed Circuit Board (PCB). The components go in the side with the writing on and the solder goes on the side with the tracks and silver pads.

You will find it easiest to start with the small components and work up to the taller larger ones. If you've not soldered before get your soldering checked after you have done the first few joints.

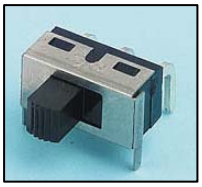
Step 1
Start with the resistor (shown right):
R1 is a 680Ω (it will be marked with blue, grey, brown coloured bands)

The text on the PCB shows where R1 should go. It doesn't matter which way around the resistor goes into the board.



Step 2
Place the Light Emitting Diode (LED - shown left) in to LED1. The light won't work if it doesn't go in the right way around. If you look carefully one side of the LED has a flat edge, which must line up with the flat edge on the outline on the PCB. **You will need to put a 90º bend into the LED legs**, just make sure you bend it so the flat edge on the LED is next to the flat edge on the board. Once you are happy solder into place.

Step 3
Solder the PCB mount right angled on / off switch (shown right) in to SW1. The row of three pins that exit the back of the switch must be soldered, but it won't matter too much if you can't solder the other two pins.



Step 4
Finally the battery holder needs to be soldered into the board where it is marked CONN1. The battery holder outline on your PCB shows the spring. Make sure when you put the holder into the board that the spring on the holder lines up with the spring marked on the board.

Checking Your Torch

Check the following before you insert the battery:

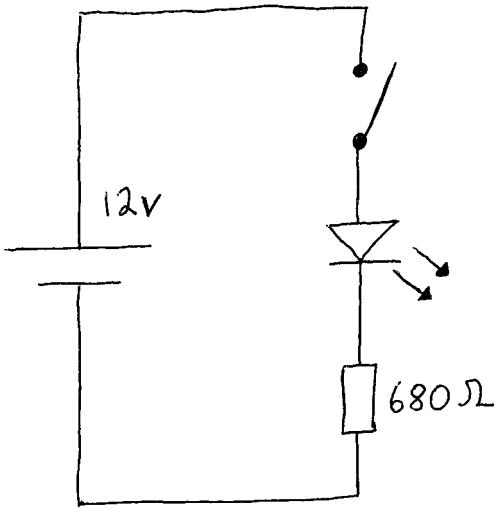
Check the bottom of the board to ensure that:

- All holes (except the large mounting hole) are filled with the lead of a component.
- All these leads are soldered.
- Pins next to each other are not soldered together.

Check the top of the board to ensure that:

- The flat edge on the LED matches the outline on the PCB.
- The spring on the battery holder is next to the resistor.

How the Torch Works



The circuit diagram for the torch is shown on the left. It is a very simple circuit, powered by a 12 volt battery.

The LED would be damaged if the current through it was not limited. A 680Ω resistor has been selected to limit the current through the LED. This allows approximately 10mA to flow through the LED so that it is at a good brightness.

Finally the on off switch allows the circuit to be opened when the LED will be off or completed when the LED will be on.