# Lantern

Description of the Lantern:

It is easiest to mount the components from low to high. All resistors are mounted horizontally. For this, bend both wires at an angle of 90 degrees, taking into account the distance between the holes on the PCB. Insert the resistors through the PCB and carefully bend the wires slightly apart at the bottom of the PCB. The print can now be turned over to solder without the resistors falling out of the PCB. After soldering, cut off the remaining wires just above the soldering, also for all other components with longer legs such as the LED and the capacitor. When in doubt about the correct placement, look at the photos of the built copy.

Tip 1: The balls at the beginning of the line can be coloured in to indicate which parts have already been assembled.

Tip 2: When in doubt about the mounting of a component, look at the photo of the built-up board. Once soldered wrongly, repair can sometimes be very difficult.

Tip 3: A component bending tool can be convenient for the resistors.
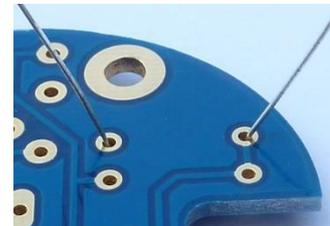
Assembly sequence:

Mount the following resistors in sequence::

o R1:   100 Ω   (brown, black, brown, gold)

o R2,R4:   1.5 KΩ (brown, green, red, gold)

o R3:   47 KΩ (yellow, purple, orange, gold)

o R5:   270 KΩ (red, purple, yellow, gold)

o Mount switch, S1.

o Mount transistor Q1. **Pay attention** to the drawing on the PCB.

o   Mount LED D1.

o   **ATTENTION**: this may only be mounted in one way. The short leg comes on the side of the text "D1" on the PCB. You will then see that the flat side of the LED is exactly as indicated on the PCB. It can also be mounted flat against the PCB so that the copper surface acts as a reflector.

o Mount electrolytic capacitor C1.

o   **ATTENTION:** this may only be mounted in one way. The long leg should be in the hole on the print where + is. The pole is marked on the capacitor on the housing.

o Mount the battery holder for the button cell, look at the drawing on the PCB.

ATTENTION: this is mounted at the bottom of the PCB and soldered at the top.

o Carefully place the button cell (CR2032 battery) in the holder, the plus is indicated on the metal tab (see photo). The lantern is now ready for use. This type of battery is not very short-proof, so check the PCB well before the battery is installed.

Board txt	Component
R1	100 Ω
R2	1.5 KΩ
R3	47 KΩ
R4	1.5 KΩ
R5	270 KΩ
C1	220 µF
D1	LED yellow
Q1	BC33725
S1	switch
BT1	battery holder

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Operation:

The operation is very simple, when you press the switch the LED turns on and after a while slowly goes out. There are also two copper surfaces on the PCB (W1 and W2), for example, a switch or a Morse key can be connected. This allows the LED to be switched off and on. These can also be touched with a slightly damp finger. The LED then lights up and stays on for a while, how long depends on the resistance of your finger and how long you have touched the contacts. The holes in the copper surfaces are 4 mm, in which a banana plug can be inserted.

Built-up board:

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