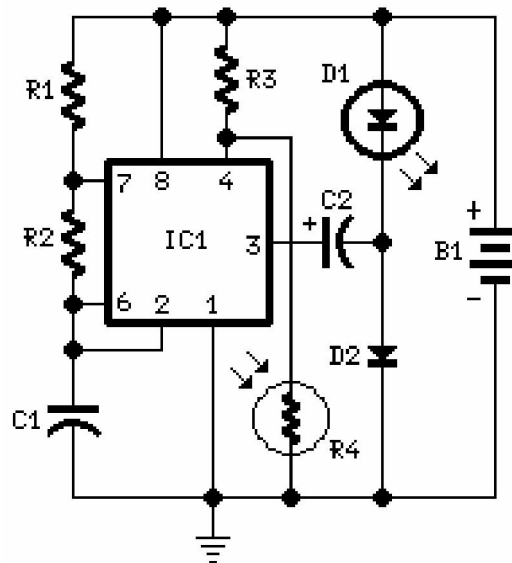


# Battery-powered Night Lamp



- R1,R2 \_\_\_\_\_ 1M 1/4W Resistors  
R3 \_\_\_\_\_ 47K 1/4W Resistor (optional: see Notes)  
R4 \_\_\_\_\_ Photo resistor (any type, optional: see Notes)  
C1 \_\_\_\_\_ 100nF 63V Polyester Capacitor  
C2 \_\_\_\_\_ 220 $\mu$ F 25V Electrolytic Capacitor  
D1 \_\_\_\_\_ LED Red 10mm. Ultra-bright (see Notes)  
D2 \_\_\_\_\_ 1N5819 40V 1A Schottky-barrier Diode (see Notes)  
IC1 \_\_\_\_\_ 7555 or TS555CN CMOS Timer IC  
B1 \_\_\_\_\_ 1.5V Battery (AA or AAA cell etc.)

## Device purpose:

This circuit is usable as a Night Lamp when a wall mains socket is not available to plug-in an ever running small neon lamp device. In order to ensure minimum battery consumption, one 1.5V cell is used, and a simple voltage doubler drives a pulsating ultra-bright LED: current drawing is less than 500 $\mu$ A.

An optional Photo resistor switches-off the circuit in daylight or when room lamps illuminate, allowing further current economy.

This device will run for about 3 months continuously on an ordinary AA sized cell or for around 6 months on an alkaline type cell but, adding the Photo resistor circuitry, running time will be doubled or, very likely, triplicated.

## Circuit operation:

IC1 generates a square wave at about 4Hz frequency. C2 & D2 form a voltage doubler, necessary to raise the battery voltage to a peak value able to drive the LED.

Notes:

- IC1 must be a CMOS type: only these devices can safely operate at 1.5V supply or less.
- If you are not needing Photo resistor operation, omit R3 & R4 and connect pin 4 of IC1 to positive supply.
- Ordinary LEDs can be used, but light intensity will be poor.
- An ordinary 1N4148 type diode can be used instead of the 1N5819 Schottky-barrier type diode, but LED intensity will be reduced due to the higher voltage drop.
- Any Schottky-barrier type diode can be used in place of the 1N5819.