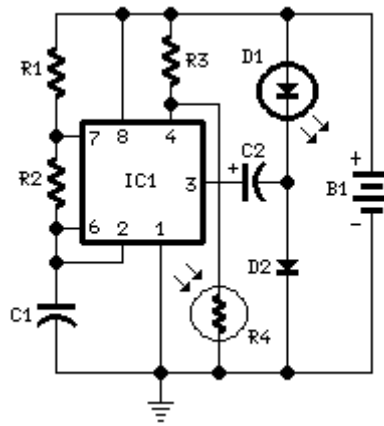


Battery-powered Night Lamp

**Ultra-low current drawing
1.5V battery supply**

Circuit diagram:



Parts:

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 _____ 220µF 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 μ 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.
-