

# LED Checker

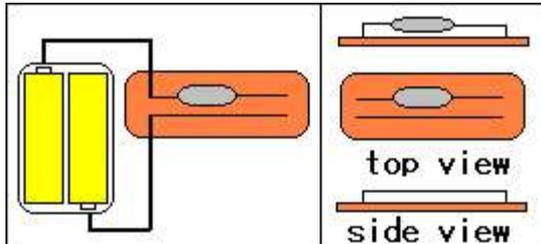
## \*Abstract

LED (Light Emitting Diode) has two pins.

One is 'Anode', other is 'Cathode'.

When flow current from Anode to Cathode, LED turns on.

In order to check which 'Anode' or 'Cathode', use current limiter resistance and 3V or 5V DC power supply.



## \*Principle

Except blue LED, LEDs have about forward voltage DC 1.8V.

As LED current endurance is from 1 mA to 10 mA, you must not connect LED to battery directly.

Fail to put the current limiter resistance between LED and battery.

LED checker tells which pin is Anode.

When use 5V DC power supply, current is 3 mA. Resistance value is  $(5 - 1.8) \text{ V} / 3 \text{ mA} = 1.06 \text{ kilo ohm} \rightarrow 1 \text{ kilo ohm}$ .

And calculate consumption power.

$$3 \text{ mA} \times (5 - 1.8) \text{ V} = 3 \text{ mA} \times 3.2 \text{ V} = 9.6 \text{ mW}$$

Resistance power endurance is adequate to be 250mW.

We can use resistance maximum power endurance 125 mW or 250 mW for this application.

When you will use 12V DC power supply, that LED is not broken.

When use 12V DC power supply and 1 kilo ohm resistor, calculate current.  $(12 - 1.8) \text{ V} / 1 \text{ kilo ohm} = 10.2 \text{ mA}$

LED current endurance is from 1 mA to 10 mA.  $\leq$  OK!

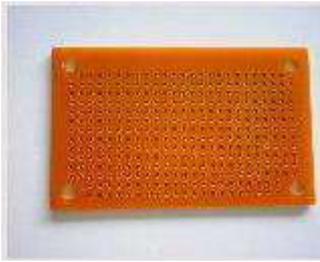
And calculate resistor consumption power.

$$10.2 \text{ mA} \times (12 - 1.8) \text{ V} = 10.2 \text{ mA} \times 10.2 \text{ V} = 104.04 \text{ mW}$$

A resistor (endurance 250mW) is no problem.

## \*Parts

1 Board



2 Current limiter resistance (470ohm  $\leftrightarrow$  1 kilo ohm)



3 Wire



4 'U' letter lead ( bend lead line )



## \*Soldering

- 1 Mark two 'U' letter lead location with felt pen.
- 2 Mark a resistance location with felt pen.
- 3 Solder 'U' letter lead on a board.
- 4 Solder a resistance and 'U' letter lead.
- 5 Solder a 'U' letter lead.
- 6 Mark 'A' with red pen and 'K' with black pen.

Refer top photo !

