

Battery_Powered_LED_Night_Light_Construction_2004.txt

Survival very low power LED night light construction

Different voltages and configurations are discussed:

12 Volt 6 LED Night light with high and low setting. The 8000 MCD LED are designed for maximum life to be used between 14 volts, 40 ma, .56 Watts and 8.5 volts, 2.5 ma, .02 Watt . At 12 Volts it uses 26 ma or .312 Watt.

6 - 8000 MCD LEDs
Volts DC: 8.5, 12, 14
Mili-Amps: 2.5, 26, 40
Watts: .02, .312,

For a 8.5-14 volts DC source (or a typical 12 volt battery) using 3 series connected white LEDs (3.2 volt/each) add a 220 ohm and a 1000 ohm in series. Run an alligator clip off between the 220 and 1000-ohm resistors to DC power source for high light output about 20 Ma. For low setting connect to the series combination of 220 and 1000 ohm combination to a DC power source

For a 8.5-14 volt DC source (or a typical 12 volt battery) using 6 white LEDs (2 sets of 3 in series) add a 110 ohm (high light setting 40 ma) and a 1000 ohm (low light setting 4.8 ma) in series.

For four AAA or AA Ni-MH rechargeable batteries (about 5.4 volts maximum) use 1 white LED with a 91 ohm (high light setting 23 ma) and a 1000 ohm (low light setting 2.3 ma) in series. Note if new Alkaline batteries are used in this unit (6.4 Volts) then on high setting the 32 ma is over the 20 rating for the LED and will quickly shorten the life of the bulb. Recommend running only on low setting though a 1000 ohm resistor with a current of 3.1 ma when using Alkaline batteries.

For 3 - AA or AAA Ni-MH batteries (about 4.3 volts maximum) use 1 white LED with a 55-ohm (high light setting 20 ma) and a 1000-ohm (low light setting 1.6 ma) in series. The 4-cell arrangement is more efficient and longer lasting than the 3-

cell combination.

For 9 volt Ni-MH batteries (about 8.7 volts) use 1 white LED with a 150-162 ohm (high light setting 15 ma) and a 1000 ohm (low light setting 3.1 ma) in series.

Common resistors needed.

51-55 ohm x

90-91

110?

162 x

220

1000

Carbon film ordered from

<http://us.digikey.com/scripts/dksearch/DKSUS.dll?Criteria?Ref=112992&Site=US&Cat=32375357>

Chouse bulk and « watt and resistance.

I have found that LED in the dark tend to hurt ones eyes due to the extreme brightness coming from a very small area. So I have come up with ways to make your own LED lampshades.

Almost translucent plastic bags can be used as diffuser of light. Depending on the source of the bag (Wal-Mart, target, 99 cent store, etc) the opacity one can measure is approximately the following.

One layer of plastic 60-70% of light gets through.

Two layers of plastic 38-50% get though..

Four layers 20-24% gets though.

The idea is to use the minimum amount hopefully only one layer to allow one to

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work around the light in the dark without hurting ones eyes.