

3W 12VDC LED Camping Bulb Mod

(5/4/2016)

These are sold on eBay, and other places search for: Camping 3W 12V LED bulbs

They can be modified (see picture for the result) to produce light more efficiently to get the max light output with minim power input. If 4 LEDs are used in series with a Polyfuse or resistor to run at about 1/10 rated current, then, this resulted in an improved light/watt more efficient wiring than the industry standard 3 LEDs in series with a resistor.

The original 3 watt LED camping bulb in the picture ended up with modifications using about 0.3 Watt at 12.3 V. 12.3 voltage is about average for a 50% charged lead-acid battery. The over all amount of light went down to about 40% of the unmodified 3 watt bulb. The light efficiency of light output per watt went up to between 50% and 75% greater than the original configuration.

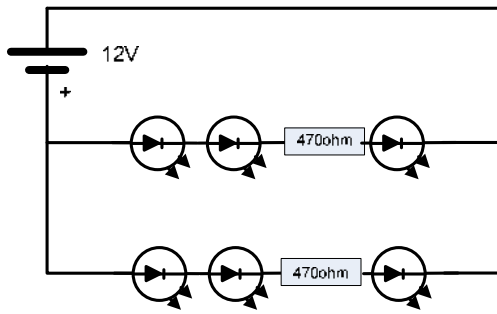


A polyswitch or resistor (22-25 ohm) in series with the 4 LEDs is the result. The original circuit had two sets of 3 LEDs in series with a 470 ohm resistor. This configuration modification results is about 50-75% more light/watt and uses about 0.3 watt in average use.

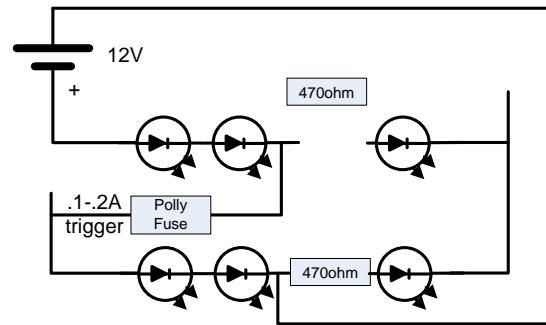
A polyswitch or resettable polyfuse is a relatively new electronic component that increases rapidly in resistance with increase in current around a trigger point. A proper size resistor can be used or for maximum light efficiency a polyfuse chosen to deliver the needed optimum current near its trigger point. The following is the original circuit and the modified resulting circuit.

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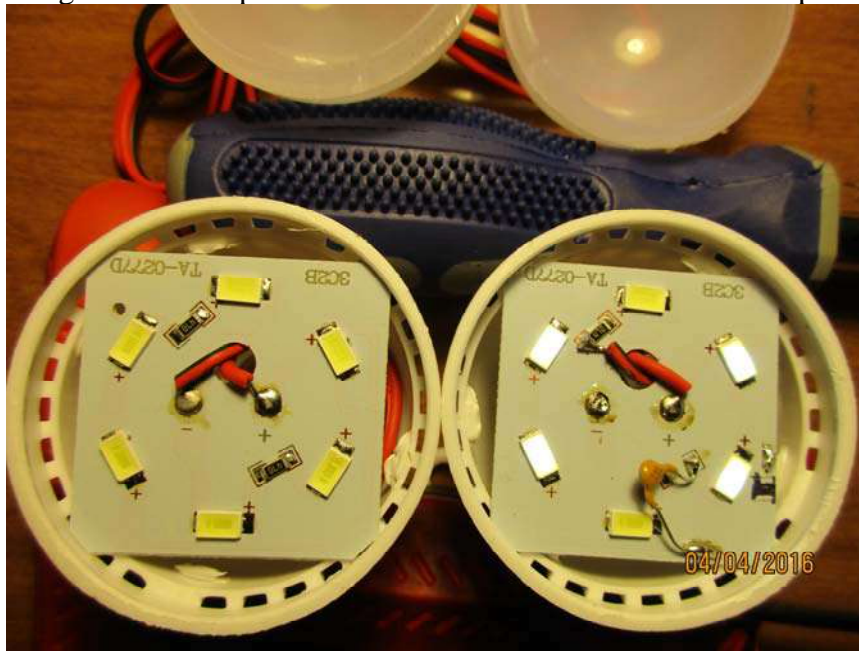
Original Camping Light Circuit



Camping Mod with PolySwitch

The ideal polyswitch or polyfuse was found to be a 50ma 60V from eBay. If not available then use a 22-25 ohm resistor. Resistors are much easier to find at this time. Recommend starting with a resistor.

The following shows the modifications needed. Note the black mark indicates that the PC board copper was cut though with a sharp knife blade a few times to disconnect or open circuit that point.



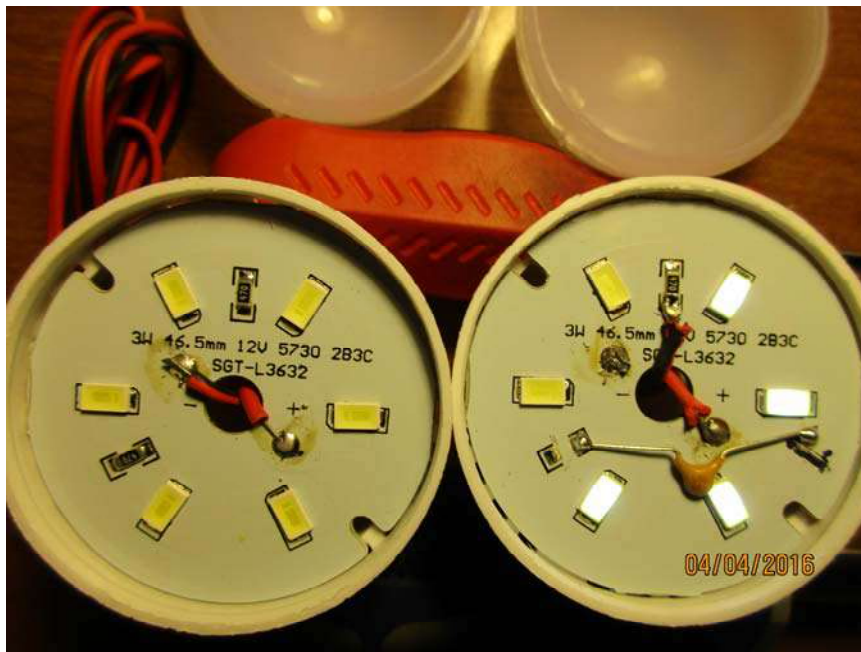
Two types of configuration: This is the square one. The original unmodified is on the left and on the right is shown after modification with a small amount of power applied to show which LEDs are still in the circuit.

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A close up of the square configuration. Note the black mark showing where a sharp knife was used to cut though the copper printed circuit.



This shows the round aluminum plate configuration. The original on the left and modified is on the right. Note where the black mark is on the right that shows the copper printed circuit having been cut to open circuit at that point.

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This is a close up of the round configuration after being modified.



This shows how one can tip the unit it an angle to get a reflection of light to show where the copper printed circuit path is.

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This shows that one can just as well use a resistor if one does not have Polyfuse of the right size.

Also noted that if the plastic frosted dome were taken off that the light intensity went up by an added 36% to 38% from what it was with the dome in place. This would be useful in a limited power survival situation.

A typical car battery has about 40-80 amp-hr fully charged or about 1 amp-hr/pound of battery. A typical deep cell battery has about 100-200 amp-hr fully charged or about 2 amp-hr/pound.

A 50 amp-hr 12 volt battery would power this modified LED camping light for approximately 2000 hrs or 83 days running continuously. Thus this would be useful in an extended survival situation.