

LED LAMP

DEEPAK GUPTA



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Multiple LEDs in tube as fluorescent replacements is best for school and office lighting, It will be 55% energy Savings, no fluorescent paint and gas contamination of premises, bypass expensive ballasts and wire direct. The LED has advantages over other lighting technology. LEDs have better energy efficiency over incandescent bulbs and most halogen bulbs, Saving energy 80% to 90%. The Fluorescent lights are usually only able to survive 1-3 years. LEDs are very long operating life (up to 100,000 hours). This means that if the LED light 24 hours a day it would hold for 10 years. Having a Low voltage DC operation (12V AC/DC) or Mains voltage operation (Input voltage between AC 85V and AC265V, Or any voltage for customized design). Cool light output (no UV or heat energy. Narrow, medium and wide angle lense. Any combination of lighting colors (Warm White (2700K to 4300k), Daylight white / Pure White (5000K to 6500K, it is equivalent to natural sunlight in color), Cool white (up to 8000K), Amber, Orange, Pink, Red, Cyan, Blue, Royal Blue, Green).

A array of white LEDs can be used to built a small lamp for the living room. LED lamps are available ready-made, look exactly the same as standard halogen lamps and can be fitted in a standard 230-V light fitting.

The circuit makes use of a capacitor to drop the

voltage from 230 V to the voltage suitable for the LEDs. This method is cheaper and smaller compared to using a transformer. The lamp uses only 1 watt and therefore also gives off less light than, say, a 20 W halogen lamp.

R2 and R3 limits the inrush current when the circuit is switched on. C1 behaves as a voltage dropping 'resistor' and ensures that the current is not too high (about 12 mA). R1 is a bleeder resistor which drains the stored charge from C1 when the AC input is switched OFF. Diodes D1 to D4 forms a bridge rectifier that rectifies the reduced AC voltage. LEDs can only operate from a DC voltage. They will even fail when the negative voltage is greater than 5 V. C2 is the electrolytic capacitor having a double function: it ensures that there is sufficient voltage to light the LEDs when the mains voltage is less than the forward voltage of the LEDs and it takes care of the inrush current peak that occurs when the mains is switched on. This current pulse could otherwise damage the LEDs. Finally Zener diode D5 is connected in parallel to provide regulation to the five LEDs connected in series.

