

Description:

UltraBright White
5mm (T1 3/4) Light Emitting Diode (LED)

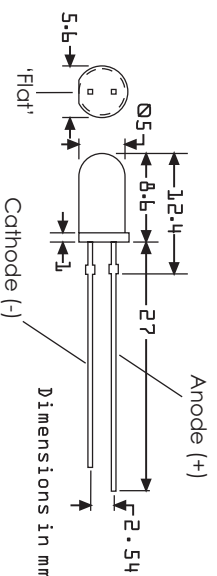
Physical appearance:



Electrical characteristics:

- Semiconductor Material: **InGaN**
- Emitted Colour: **White**
- Light Output: **5000mcd (typ) 6000mcd (max)**
- Package : **Water Clear**
- Reverse Voltage: **5V**
- Forward Voltage (DC): **3.3V (typ)**
- Forward Current (DC): **20mA**
- Viewing Angle: **15 degrees**

Physical dimensions:



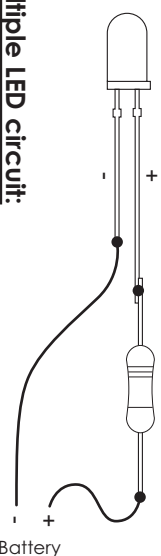
Package Type: 5mm/T1 3/4 Water Clear

Circuit examples:

These light emitting diodes (LED's) will only operate if connected to their power supply the correct way round. The positive (+) side of the power supply or battery should be connected (through a current limiting resistor) to the longest wire (or 'leg') of the LED (known as the Anode). The shorter 'leg' of the LED (Cathode) is connected to ground, or the negative (-) side of the battery. If the LED's wires become cut, and you can no longer tell which wire is which, look at the bottom of the LED's case, where you will see that one side is flat. The wire closest to the flat side is the cathode (-).

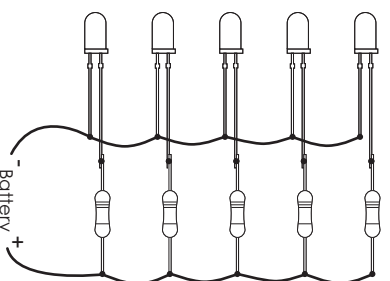
Simple circuit:

To connect a single LED to a battery, connect the LED and series resistor, as in the following diagram. (Refer to the table opposite for details on choosing a suitable series resistor). It doesn't matter which way around you connect the resistor, it will work either way.



Multiple LED circuit:

Each LED in the circuit must have it's own current limiting resistor. Wire each LED as shown above, then connect all the positive, and negative connections as shown.



Note:

If using these LED's as part of a vehicles wiring, you should insert a fuse in the positive feed wire, as close to the battery as possible. The correct rating fuse can be calculated by multiplying the number of LED's in the circuit by 20mA.
eg. 10 LED's x 20mA = 200mA.
The correct rating for the fuse should be a bit higher than this number, eg. 250 - 300 mA should be fine.

Series resistor:

The following table gives the values of series resistors that are required for various voltages and currents. The maximum forward current for this LED (20mA) should never be exceeded, as this will may result in permanent damage to the component.

Supply Voltage	Series resistor required for current:			Suggested Value
	10mA	15mA	20mA	
5	170Ω	113Ω	85Ω	100Ω
6	270Ω	180Ω	135Ω	150Ω
7.5	420Ω	280Ω	210Ω	220Ω
9	570Ω	380Ω	285Ω	330Ω
12	870Ω	580Ω	435Ω	470Ω
24	2070Ω	1380Ω	1035Ω	1200Ω

Example:

If you wanted to power this LED from a 9 Volt PP3 battery, you must connect it in series with a resistor with a value between 285 Ohms and 570 Ohms. This will supply the LED with a current between 10mA and 20mA. The lower the operating current, the longer the LED will last. It's a good idea to operate the LED at about 15-20mA, as this will give a good brightness and long life. The recommended resistor for 9V operation is shown on the right hand side of the table, as 330 Ohms. This is the closest available value of resistor.

Note:

As well as using the correct value of resistor, you must also use a resistor that is adequately rated to handle the power it is dissipating from the circuit.

Most small resistors are rated at 0.25 Watts. These are OK to use with supply voltages up to 12V, but for voltages greater than 12V (eg. 24V HGV supplies), larger rated resistors are required. For 24V you must use resistors rated at 0.6 Watts or greater.

WARNING!

HIGH BRIGHTNESS LED'S ARE MODERATELY HAZARDOUS. NEVER STARE DIRECTLY INTO THE BEAM, AS EYE DAMAGE MAY OCCUR.