

## Tip of the month - Mar 2019

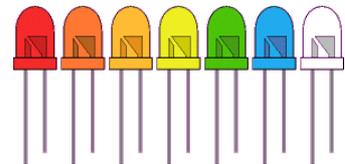
### Light up your life! (or at least light up your layout)

A wide range of LED lighting is available for your layout.  
Here is a quick overview.

### LED Types

#### **Single colour**

Available in many colours (e.g. red, green, amber, blue) as well as in warm white and cool white. Coloured LEDs have many uses in ground signals, traffic lights, police cars, etc. The warm white version is useful for representing incandescent bulbs, with cool white used for fluorescent lights. They can also be used on control panels to great effect.



#### **Bi-colour**

Two separate coloured LEDs are wired into the same case, with only two external leads. Connecting the power one way lights one LED, while reversing the power lights the other LED.

#### **Tri-colour**

This type also uses two separate coloured LEDs, but it has three connecting leads. Each LED can be lit on its own, providing two different colours. Providing power to both LEDs provides the third colour. Varying the illumination level of each LED provides additional colour variations.



#### **Flashing**

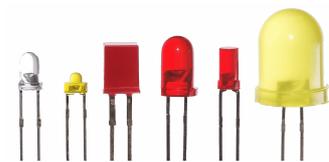
This LED has a built-in chip that makes the LED flash, usually at 1Hz, 2Hz or 6Hz. You cannot alter the rate of the flash.

#### **Flickering**

This LED has a built-in chip that makes the LED flicker. Designed for use in electronic candles, these are handy to emulate gas lamps, fires, ash pits, etc.

### LED sizes and shapes

The most common sizes are 1mm, 3mm and 5mm, with tiny surface mount versions available (see later).



Although round topped LEDs are the most common, you can buy LEDs in a variety of shapes - cylindrical, rectangular, triangular, straw hat, tower/lighthouse, flat top, etc.

There are two main uses for lights.

- To be viewed directly (e.g. traffic lights, car lights, etc.).
- To illuminate an area (e.g. a yard light, building interiors, etc.).

You choose the type needed for your circumstances.

Smaller, low level illumination LEDs are best suited for direct viewing.

Straw hat / flat top LEDs produce a more even distribution of light.

## Surface mounted LEDs

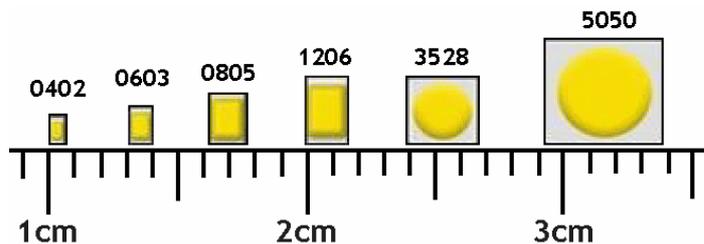
These are designed to be mounted on printed circuit boards but their very small sizes makes them useful for smaller gauge railways.

Their measurements are given in inches.

For example, a 0603 LED measures 0.06in by 0.03in.

The most common individual LED sizes are:

Type	Length (mm)	Width (mm)
0402	1.0	0.5
0603	1.6	0.8
0805	2.0	1.25
1206	3.2	1.5



The 3528 and 5050 versions are found on LED strips.

### Micro Litz

The problem with the smallest LEDs is soldering leads on to them.



We recently purchased over 1,200 pre-wired tiny 0402 LEDs in various colours. The picture shows one of them compared to the head of a match.



They use very thin flexible Micro Litz leads, allowing easy installation in vehicles, signals, traffic lights, etc.

## LED strips

These are available in various lengths, although we only stock 5m lengths.

We stock 5m strips in warm white and cool white, although they are also available in other colours such as red, amber, green, blue, purple, etc.

They are ideal for illuminating large areas or large buildings. These are handy for fading between strips (sunny day to dull day, daytime to dusk, etc.).

### Lastly

5V and 12V versions of LEDs are available, as they have a resistor already built into them. However, most LEDs need to use an external series resistor.

And, don't forget they only work when connected the right way round!