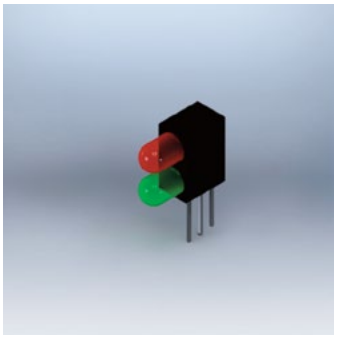
# 110 SERIES
## PCB MOUNTING LED



### FEATURES

- 5mm Duplex PCB
- Diffused LED
- Standard Intensity LED
- Lead cropping available (14mm as standard)
- Range of LED colour and voltage options
- Conforms to UL94 V-0 Flammability Rating
- Reverse polarity options

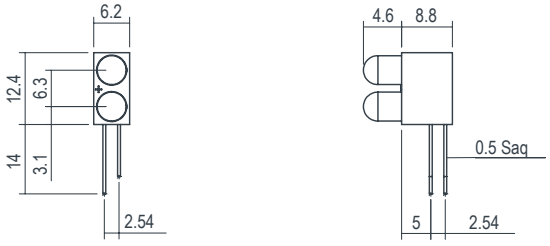
### BENEFITS

- Saves on board space
- Diffused LED gives wide viewing angle
- Reduced power consumption
- Saves on assembly time
- Suitable for a wide range of PCB applications
- Meets industrial requirements
- Suits semi-custom PCB designs
- Outstanding reliability

| Marl Part Number | LED Colour | Typical LED Voltage DC Vf | Typical LED Current DC If | Typical LED Luminous Intensity | Typical LED Wavelength λp | Operating Temp Topr * | Storage Temp Tstg |
|---|---|---|---|---|---|---|---|
| 110-505-04 | Red | 2.0 | 20 | 80 | 627 | -40 to +85 | -40 to +85 |
| 110-511-04 | Yellow | 2.1 | 20 | 60 | 590 | -40 to +85 | -40 to +85 |
| 110-514-04 | Green | 2.2 | 20 | 60 | 565 | -40 to +85 | -40 to +85 |
| 110-530-04 | Red/Green Bi-Colour | 2.0/2.2 | 20 | 30/20 | 625/565 | -40 to +85 | -40 to +85 |
| | | Vdc | mA | mcd | nm | °C | °C |

### TECHNICAL DRAWING

Weight (g): 1.05
Dimensions in mm (typical). Not to scale.




### NOTES

Intensities (Iv) may vary between LEDs within a batch. Figures for Bi-Colour LEDs are denoted respectively. Additional LED Colours, Voltage Options and Reverse Polarity options available for semi-custom projects. Please contact our Sales Team. All LED components are supplied in anti-static packaging.

* LED Characteristics stated at 25°C. For operating temperature derating graphs, please refer to sheet 2.

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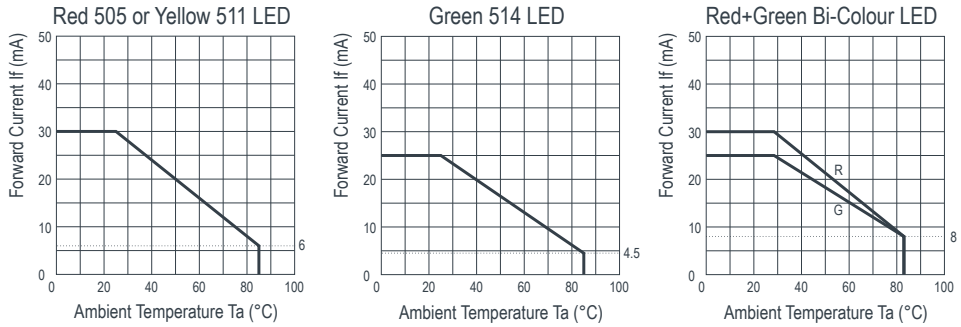
### HOUSING MATERIAL

**Nylon66 (A82)**
This material offers UL94 V-0 flame retardancy* and a high impact strength. This material has a melting point of 200-220°C and is suitable for use in the majority of automatic soldering processes.

*Material test thickness of 1.6mm

### DE-RATING GRAPHS




### DESIGN CONSIDERATIONS

**LED Polarity**
Anode identification is shown in the dimensional diagram. The long lead of a non cropped unit can also be used to help identify the anode. For the 2 pin bi-colour units the standard colour configuration is red anode to the '+' sign.

**Reverse Polarity**
This is offered on all PCB units, with the exception of the 125 series, if requested to help overcome the problem of systems with reverse polarity connections. Multiple units can also be supplied in reverse polarity but not with mixed polarities. The 2 pin and 3 pin bi-colours can be supplied in reverse colour configuration.

**Bi-Colour**
2 pin operation. To achieve the second colour for a 2 pin bi-colour unit, the supply must be reversed, standard colour configuration for these units is red anode to the '+' sign.

**Lead Cropping**
Should lead cropping be required, Marl offer two standard lengths, either by request or by adding one of the following codes to the end of the part number:-
-24 = 3mm.
-26 = 5mm (e.g 113-305-01-26)
Other non standard lead lengths are available on request.

**Electro-Static Discharge (ESD)**
Build up of electro-static discharge occurs in many situations involving people moving and handling products.The range of possible situations is very diverse but voltage levels as high as several thousand volts can and do arise in many individual situations. When an operator charged up to these levels handles a static sensitive device, there is a very probable likelihood that the device will be irreversibly damaged. It is essential that precautions are taken at all stages during manufacture and assembly of these products. Although LEDs were never considered to be static sensitive devices, changes in manufacturing technology and materials used to produce higher intensity products over a large range of the wavelength spectrum have changed this. Marl has an approved system of ESD control from goods in, through production and into final packing and despatch. Marl recommend all users of LED based products follow the guidelines of BS 100015.

**Voltage, Current and Temperature**
The forward voltage / current value of an LED is dependent upon the ambient temperature of the environment in which it is operated. Therefore, care must be taken to operate the LED at the correct voltage / current values, depending upon the ambient temperature.

Marl should be contacted if the device is to be operated outside the temperature range specified. Marl accept no liability for any product that is operated outside the stated voltage or temperature range.

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