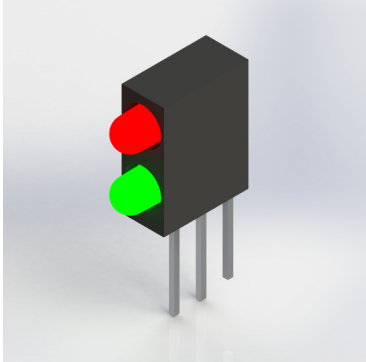
109 SERIES
PCB MOUNTING LED



FEATURES

- 3mm Duplex PCB
- Diffused LED
- Standard Intensity LED
- Lead cropping available
- Range of LED colour and voltage options
- Conforms to UL94 V-0 Flammability Rating
- Reverse polarity options

BENEFITS

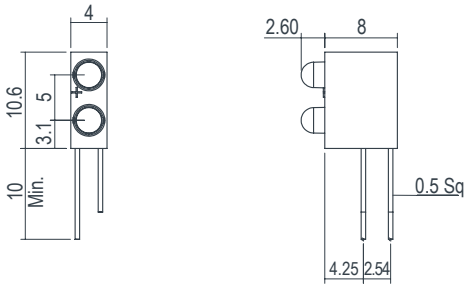
- Saves on board space
- Diffused LED gives wide viewing angle
- Reduced power consumption
- Saves on assembly time
- Suitable for a wide range of PCB applications
- Meets industrial requirements
- Suits semi-custom PCB designs
- Outstanding reliability

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
109-305-01	Red	1.7	2	2	627	-40 to +85	-40 to +85
109-311-01	Yellow	1.8	2	2	590	-40 to +85	-40 to +85
109-314-01	Green	1.9	2	4	565	-40 to +85	-40 to +85
109-330-01	Red/Green Bi-Colour	1.7/1.9	2	2/2	627/565	-40 to +85	-40 to +85
109-000-01-50	Red over Green	1.7/1.9	2	2/4	627/565	-40 to +85	-40 to +85
109-000-01-51	Green over Red	1.9/1.7	2	4/2	565/627	-40 to +85	-40 to +85
109-000-01-53	Red over Yellow	1.7/1.8	2	2/2	627/590	-40 to +85	-40 to +85
109-000-01-54	Green over Yellow	1.9/1.8	2	4/2	565/590	-40 to +85	-40 to +85
109-305-04	Red	2.0	20	32	627	-40 to +85	-40 to +85
109-311-04	Yellow	2.1	20	32	590	-40 to +85	-40 to +85
109-314-04	Green	2.2	20	44	565	-40 to +85	-40 to +85
109-330-04	Red/Green Bi-Colour	2.0/2.2	20	20/20	627/565	-40 to +85	-40 to +85
109-000-04-50	Red over Green	2.0/2.2	20	32/44	627/565	-40 to +85	-40 to +85
109-000-04-51	Yellow over Red	2.1/2.0	20	32/32	590/627	-40 to +85	-40 to +85
109-000-04-52	Green over Yellow	2.2/2.1	20	44/32	565/590	-40 to +85	-40 to +85
109-000-04-53	Yellow over Green	2.1/2.2	20	32/44	590/565	-40 to +85	-40 to +85
109-000-04-54	Green over Red	2.2/2.0	20	44/32	565/627	-40 to +85	-40 to +85
109-381-20	Red	5.6 †	13 @5V	20 @5V	627	-40 to +70	-40 to +85
109-382-20	Yellow	5.6 †	13 @5V	15 @5V	590	-40 to +70	-40 to +85
109-383-20	Green	5.6 †	13 @5V	20 @5V	565	-40 to +70	-40 to +85
109-000-20-51	Green over Red	5.6 †	13 @5V	20/20 @5V	565/627	-40 to +70	-40 to +85
109-000-20-52	Red over Green	5.6 †	13 @5V	20/20 @5V	627/565	-40 to +70	-40 to +85
		Vdc	mA	mcd	nm	°C	°C

TECHNICAL DRAWING

Weight (g): 0.61

Dimensions in mm (typical). Not to scale.



NOTES

Intensities (Iv) may vary between LEDs within a batch. Figures for Bi-Colour LEDs and multi-LED products are per LED and denoted respectively. Additional LED Colours, LED Colour Combinations, Voltage Options and Reverse Polarity options available for semi-custom projects. Please contact our Sales Team.

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

† The 5-6V products in this series use LEDs with built-in resistors. (All other products must be current-limited as normal).

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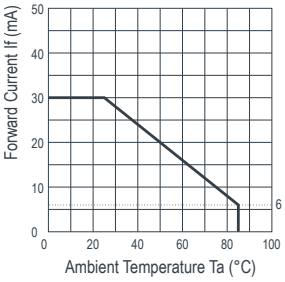
109 SERIES
PCB MOUNTING LED

HOUSING MATERIAL

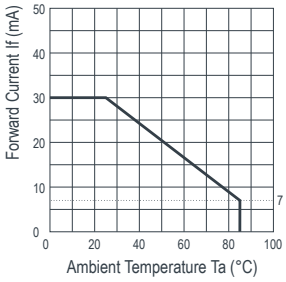
Nylon6,6 PA66 FR(30)
This material offers UL94 V-0 flame retardancy. This material has a melting point of 263°C and is suitable for use in the majority of automatic soldering processes.

DE-RATING GRAPHS

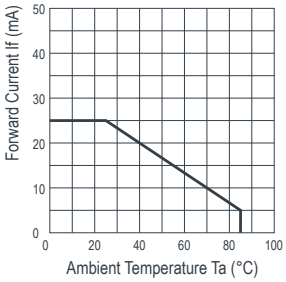
Red 305 LED



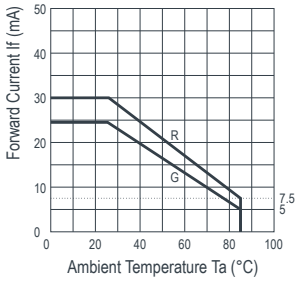
Yellow 311 LED



Green 314 LED



Red+Green Bi-Colour LED



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 bicolour 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 109-305-01-26)
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 current BSI guidelines for protection of electronic devices from electrostatic phenomena.

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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