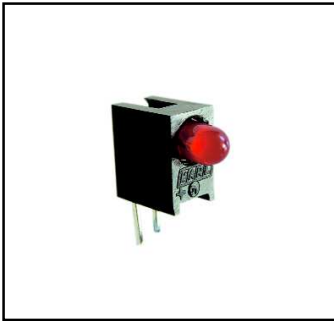


● PCB MOUNTING LEDs - Ø 3mm

## FEATURES



### 113 SERIES

PACK QUANTITY = 250 PIECES

- Material conforms to UL94 V-O flammability ratings
- Up to 8 units may be integrated in 1 array with a rugged tie bar
- Multi-colour options available
- Reverse polarity options available
- Product illustrated 113-314-04
- Typically available ex stock

## SPECIFICATIONS

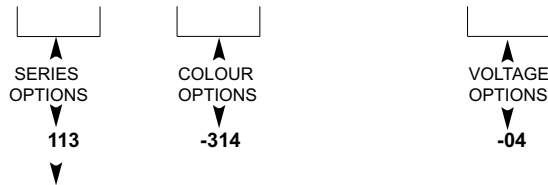
Ordering Information & Typical Technical Characteristics (Ta = 25°C)

Mean Time Between Failure up to = 100,000 Hours. Luminous intensity figures refer to the unmodified discrete LED.

PART NUMBER	COLOUR	LENS	VOLTAGE DC Vopr	CURRENT DC Iopr	LUMINOUS INTENSITY lv@20mA	WAVE LENGTH λp	OPERATING TEMP Topr	STORAGE TEMP Tstg		
<b>STANDARD INTENSITY</b>										
113-305-04	Red		Colour Diffused	2.0*	20	40	627	-40 ~ +85^	-40 ~ +85	Yes
113-311-04	Yellow		Colour Diffused	2.1*	20	30	590	-40 ~ +85^	-40 ~ +85	Yes
113-314-04	Green		Colour Diffused	2.2*	20	40	565	-40 ~ +85^	-40 ~ +85	Yes
113-330-04	Red/Green		White Diffused	2.0/2.2*	20	20/16	627/565	-40 ~ +85^	-40 ~ +85	Yes
113-381-20	Red		Colour Diffused	5	13	20@13mA	627	-40 ~ +70	-40 ~ +85	Yes
113-382-20	Yellow		Colour Diffused	5	13	15@13mA	590	-40 ~ +70	-40 ~ +85	Yes
113-383-20	Green		Colour Diffused	5	11.5	20@11.5mA	565	-40 ~ +70	-40 ~ +85	Yes
<b>UNITS</b>			<b>Vdc</b>	<b>mA</b>	<b>mcd</b>	<b>nm</b>	<b>°C</b>	<b>°C</b>		



= Make up of Order Code **113 - 314 - 04**



- 113 - (1 LED SEGMENT DEVICE)
- 114 - (2 LED SEGMENT DEVICE)
- 115 - (3 LED SEGMENT DEVICE)
- 116 - (4 LED SEGMENT DEVICE)
- 117 - (5 LED SEGMENT DEVICE)
- 118 - (6 LED SEGMENT DEVICE)
- 119 - (7 LED SEGMENT DEVICE)
- 120 - (8 LED SEGMENT DEVICE)

For multi-array devices,  
replace initial 3 digits of part  
number to reflect the number  
of LED segment required

\* = Voltage DC for 20mA product is Vf@20mA, not Vopr

^ = Products must be derated according to the derating information.

Each derating graph refers to specific LEDs. - Refer to page 3

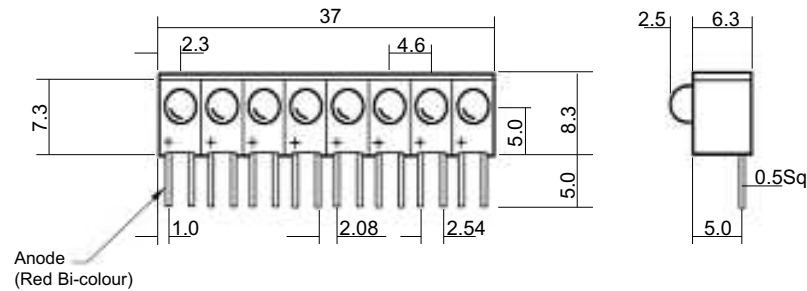
### How to Order:

website: [www.marl.co.uk](http://www.marl.co.uk) • email: [sales@marl.co.uk](mailto:sales@marl.co.uk) •

• Telephone +44 (0)1229 582430 • Fax: +44 (0)1229 585155

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## 113 Series



Dimensions in mm (Typical)  
Not to scale

## Housing Material

Polycarbonate

This material offers UL94 V-0 flame retardancy\* and a high impact strength. This material has a melt point of 290-340°C and is suitable for use in the majority of automatic soldering processes.

\*Material test thickness 1.6mm

## LEDs

### 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.

### Electro-static Discharge (ESD)

Build up of electrostatic 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. We recommend all users of LED based products follow the guidelines of BS 100015.

Note: All luminous intensity figures refer to the unmodified discrete LED.

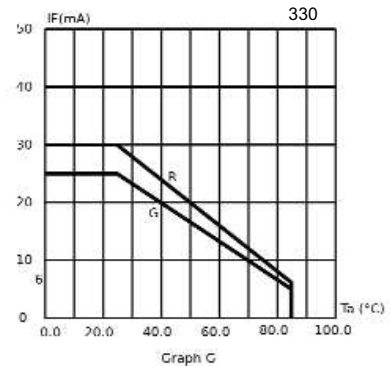
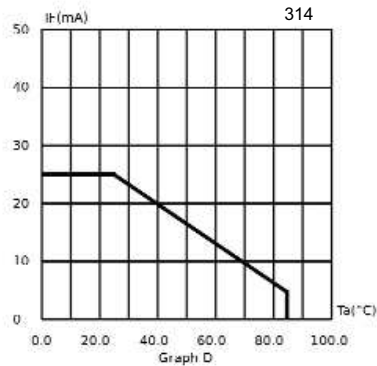
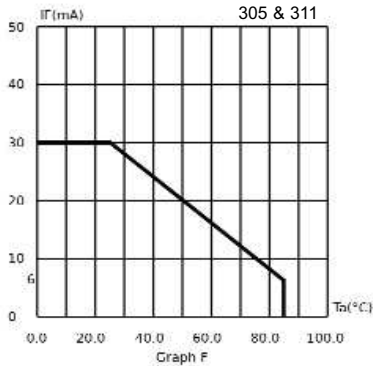
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## De-rating Information



## 113-120 Series

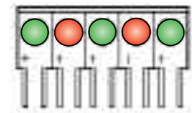
Part numbers also available in the 113-120 Series:

PART NO.	COLOUR (Vdc) Vopr	VOLTAGE DC
113-305-04	Red	20mA
113-305-04-50	Red	20mA
113-305-04-52	Red	20mA
113-305-13	Red	20mA RP
113-311-01	Yellow	2mA
113-311-04-53	Yellow	20mA
113-311-13	Yellow	20mA RP
113-314-01	Green	2mA
113-314-01-24	Green	2mA
113-314-01-25	Green	2mA
113-314-04-53	Green	20mA
113-314-10	Green	2mA RP
113-314-13	Green	20mA RP
113-326-04	Blue	20mA
113-330-01	Red/Green Bi-colour	2mA
113-336-04	Red	20mA
113-931-04	Red	20mA
114-000-01-51	RY	2mA
114-311-01	Yellow	2mA
115-000-01-50	RYG	2mA
115-314-04	Green	20mA
115-330-04	Red/Green Bi-colour	20mA
116-000-04-50	RGRG	20mA
116-000-04-54	GGRR	20mA
116-000-04-59	YRRR	20mA
116-000-04-60	GGYR	20mA
116-000-13-50	RRRY RP	20mA RP
UNITS		VDC

PART NO.	COLOUR (Vdc) Vopr	VOLTAGE DC
116-305-01	Red	2mA
116-305-04	Red	20mA
116-311-04	Yellow	20mA
116-314-04	Green	20mA
117-000-04-50	GRGRG	20mA
117-000-04-52	RRYGG	20mA
117-314-01	Green	2mA
117-314-04	Green	20mA
117-330-04	Red/Green Bi-colour	20mA
118-000-04-50	YYRYR	20mA
118-000-04-52	RRRYGG	20mA
118-305-01-1	Red	2mA
118-305-04	Red	20mA
118-314-04	Green	20mA
118-330-04	Red/Green Bi-colour	20mA
119-305-04	Red	20mA
119-314-04	Green	20mA
120-305-01	Red	2mA
120-305-04	Red	20mA
120-314-01	Green	2mA
120-314-04	Green	20mA
120-332-04	Green/Yellow Bi-colour	20mA
UNITS		VDC

\*\* = Multi-colour options are verified as example:

117-000-04-50



The products listed above illustrate all of the options available to order. These products may have custom modifications that alter their operation beyond the generic information contained within this datasheet. Please contact sales for further information.

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