

# High Visibility, Double Reflection LEDs

## DR-Series

### Get Twice the Brightness or Use Half the Energy of Typical LEDs

- Double reflection structure improves beam directivity for increased brightness comparable to incandescent and similar forms of lighting.
- Compact, 8.5 mm diameter LEDs with large luminous area.
- Designed for high-current applications.
- Greater purity of hue compared to other light sources.
- Available in red, orange, yellow, blue, green and blue-green.
- LEDs require little or no preventive maintenance, increase reliability and reduce cost of ownership compared to incandescent lighting.
- Through-hole mounting models; surface-mount versions available soon.
- 100% quality: each LED is tested before shipping.



## Ordering Information

### ■ Through-hole Mounting Models

Color	Dominant wavelength	Terminal type	Model number
Red	630 nm, typical	Through-hole	2MDR01-85R1A
Orange	608 nm, typical		2MDR01-85O1A
Yellow	590 nm, typical		2MDR01-85Y1A
Green	530 nm, typical		2MDR01-85G1A
Blue-green	503 nm, typical		2MDR01-85BG1A
Blue	470 nm, typical		2MDR01-85B1A

**Note:** Higher intensity bins available upon request.

### ■ Typical Applications

- Vehicle lighting
- Consumer interior lighting
- Traffic signals
- Display/signage for indoor or outdoor use
- Light source for optical sensor

## Specifications

### ■ Absolute Maximum Rating (at Ta=25°C)

Parameter		Rated value	Condition
Forward current	If	50 mA	---
Pulse forward current	IfP	70 mA	---
Reverse voltage	Vr	5 V	Ir = 100 μA (red, orange, yellow) Ir = 100 μA (green, blue-green, blue)
Operating temperature	Topr	-30° to 85°C (-22° to 185°F)	---
Storage temperature	Tstg	-30° to 100°C (-22° to 212°F)	---
Operating humidity		30 to 90% RH	---
Solder temperature	Tsol	260°C (500°F) for 6 seconds max.	

## ■ Optical and Electrical Characteristics (at Ta=25°C)

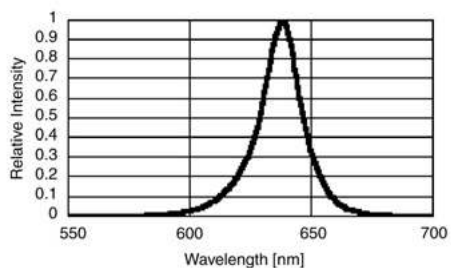
The color of light emitted by an LED is normally identified as a peak wavelength (l<sub>pk</sub>) measured in nanometers (nm) and also by spectral half bandwidth (secondary).

Parameter		Specification				Condition
		Color	Minimum	Typical	Maximum	
Forward voltage	V <sub>F</sub>	Red, orange, yellow	1.7 V	2.0 V	2.6 V	I <sub>F</sub> = 20 mA
		Green, blue-green, blue	3.0 V	3.4 V	3.8 V	
Reverse current	I <sub>r</sub>	Red, orange, yellow	--	--	100 μA	V <sub>r</sub> = 5 V
		Green, blue-green, blue	--	--	100 μA	
Peak wavelength	λ <sub>peak</sub>	Red	--	639 nm	--	I <sub>F</sub> = 20 mA
		Orange	--	612 nm	--	
		Yellow	--	592 nm	--	
		Green	--	520 nm	--	
		Blue-green	--	525 nm	--	
		Blue	--	460 nm	--	
Spectral half-width	Δλ 1/2	Red	--	17	--	I <sub>F</sub> = 20 mA
		Orange	--	17	--	
		Yellow	--	17	--	
		Green	--	45	--	
		Blue-green	--	35	--	
		Blue	--	25	--	
Dominant wavelength	λ <sub>d</sub>	Red	622 nm	630 nm	637 nm	I <sub>F</sub> = 20 mA
		Orange	600 nm	608 nm	615 nm	
		Yellow	583 nm	590 nm	600 nm	
		Green	520 nm	530 nm	540 nm	
		Blue-green	498 nm	503 nm	508 nm	
		Blue	465 nm	470 nm	475 nm	
Luminous intensity	I <sub>v</sub>	Red	850 mcd	6000 mcd	--	I <sub>F</sub> = 20 mA
		Orange	850 mcd	4000 mcd	--	
		Yellow	850 mcd	6000 mcd	--	
		Green	850 mcd	8000 mcd	--	
		Blue-green	850 mcd	5000 mcd	--	
		Blue	850 mcd	2500 mcd	--	

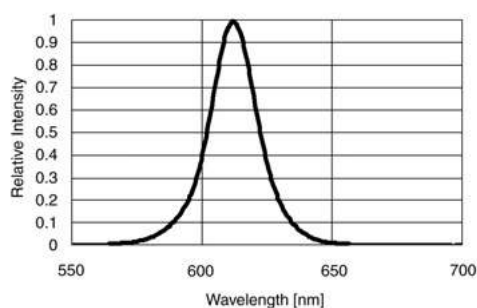
# Engineering Data

## ■ Relative Intensity vs. Wavelength

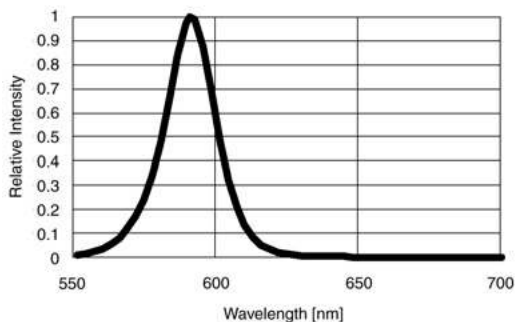
### Red



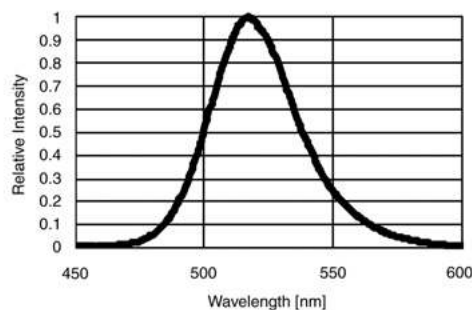
### Orange



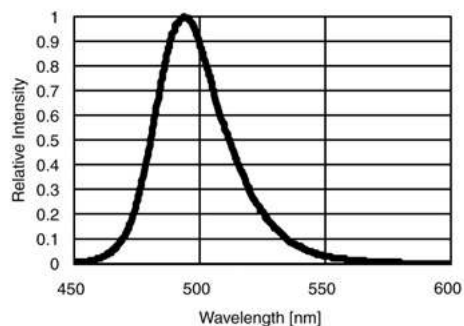
### Yellow



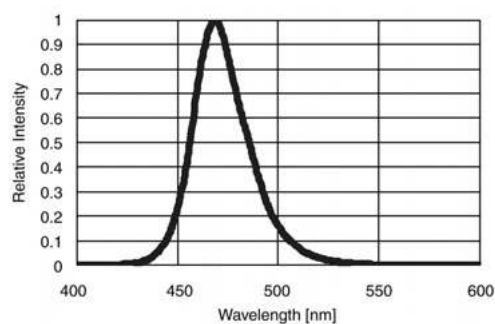
### Green



### Blue-green

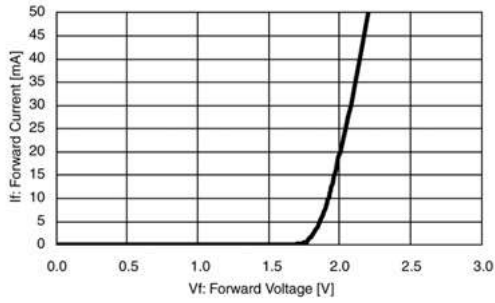


### Blue

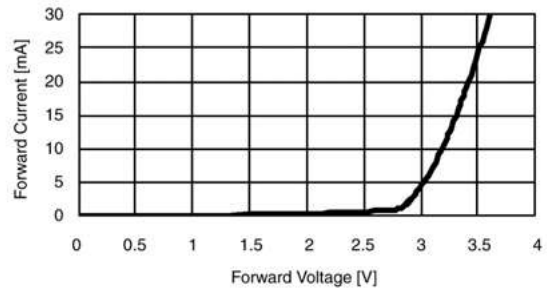


## ■ Forward Current vs. Forward Voltage

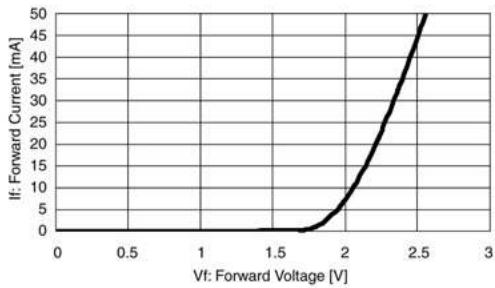
### Orange, Yellow



### Green, Blue-green, Blue

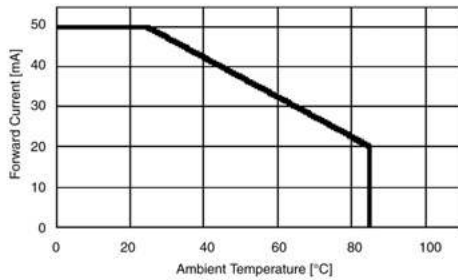


### Red

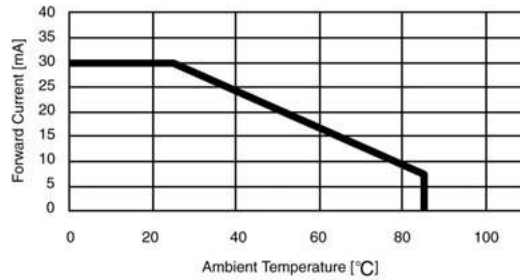


## ■ Forward Current vs. Ambient Temperature

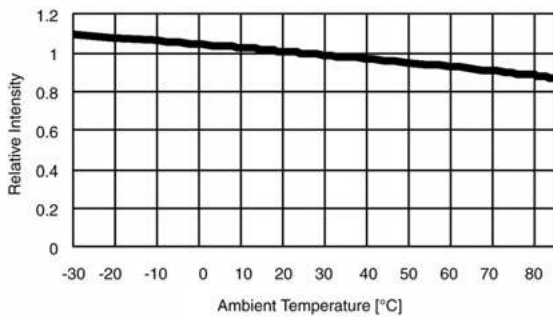
### Red, Orange, Yellow



### Green, Blue-green, Blue

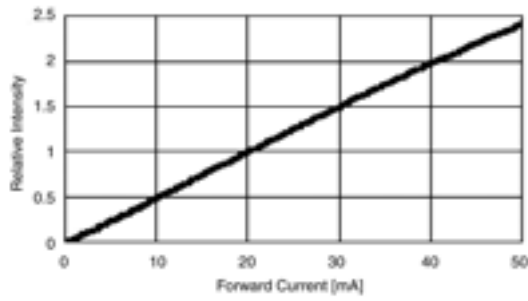


## ■ Relative Intensity vs. Ambient Temperature

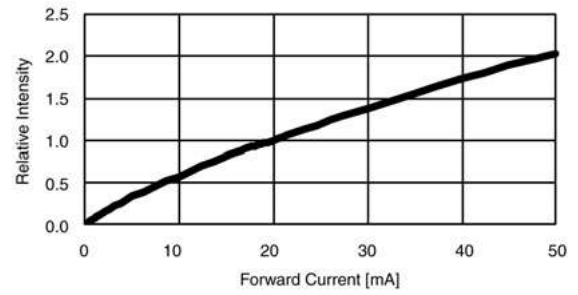


■ **Relative Intensity vs. Forward Current**

Red, Orange, Yellow

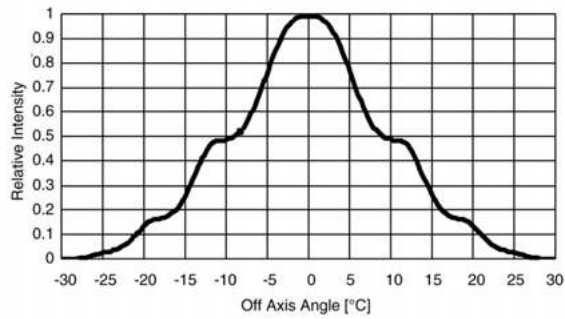


Green, Blue-green, Blue

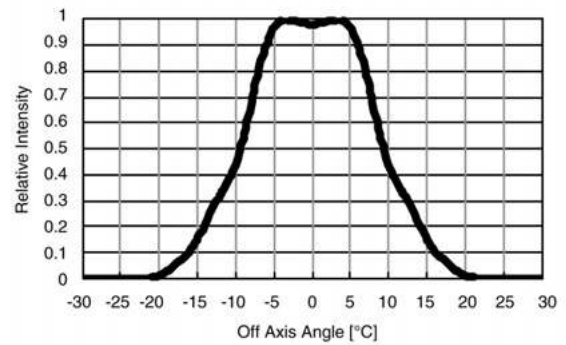


■ **Relative Intensity vs. Off Axis Angle**

Red, Orange, Yellow



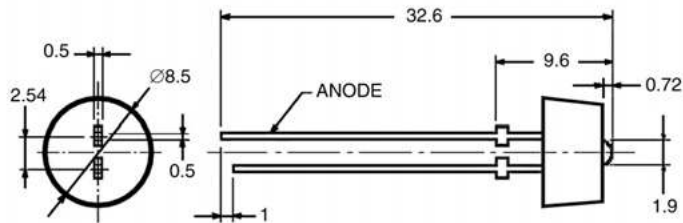
Green, Blue-green, Blue



## Dimensions

Unit: mm

### ■ All Colors



## Precautions

### ■ General

1. Do not stick any flux or chemical on the surface of the envelope.
2. Do not apply heavy pressure to the DR LEDs as it will damage them.

### ■ Soldering

1. The DR LEDs should not be soldered above the tie bar because of the thin flashing.
2. Solder the leads at 260°C (500°F) for 6 seconds max., 1.6 mm away from the epoxy envelope.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS. To convert millimeters into inches, divide by 25.4

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Specifications subject to change without notice

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