

# Agilent HLMP-LD17

## 4mm Precision Optical Performance Red Oval LED Lamps

### Data Sheet

#### Description

This Precision Optical Performance Oval LED is specifically designed for full color/video and passenger information signs. The oval shaped radiation pattern (50° x 100°) and high luminous intensity ensure that this device is excellent for wide field of view outdoor applications where a wide viewing angle and readability in sunlight are essential. This lamp has very smooth, matched radiation patterns ensuring consistent color mixing in full color applications, message uniformity across the viewing angle of the sign. High efficiency LED

material is used in this lamp: Aluminum Indium Gallium Phosphide (AlInGaP II) is used. It is made with an advanced optical grade epoxy offering superior high temperature and high moisture resistance in outdoor applications. The package epoxy contains both UV-a and UV-b inhibitors to reduce the effects of long term exposure to direct sunlight.

Designers can select parallel (where the axis of the leads is parallel to the wide axis of the oval radiation pattern) or perpendicular orientation. Both of the lamps are red diffused-tinted.

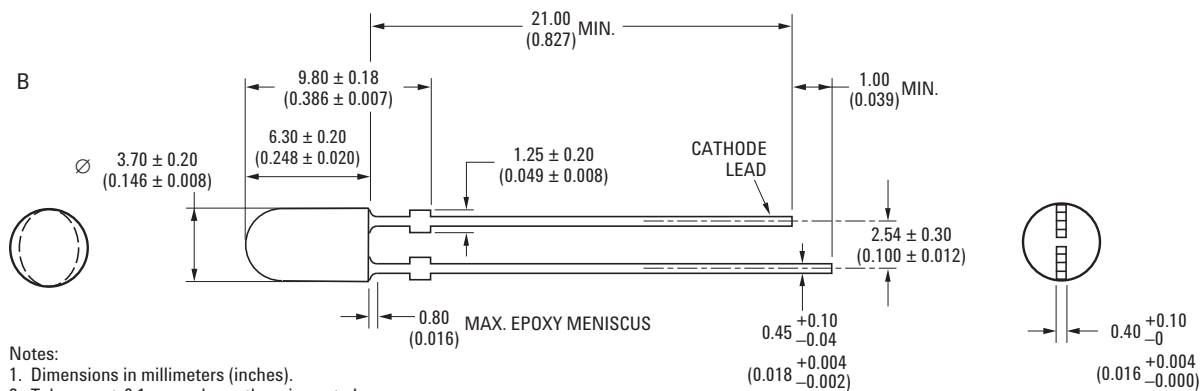
#### Features

- Well defined spatial radiation pattern
- High brightness material
- AlInGaP
- 630nm Red
- Superior resistance to moisture
- Wide viewing angle
- Major axis: 100°
- Minor axis: 50°

#### Applications

- Full color signs
- Commercial outdoor advertising.

#### Package Dimension



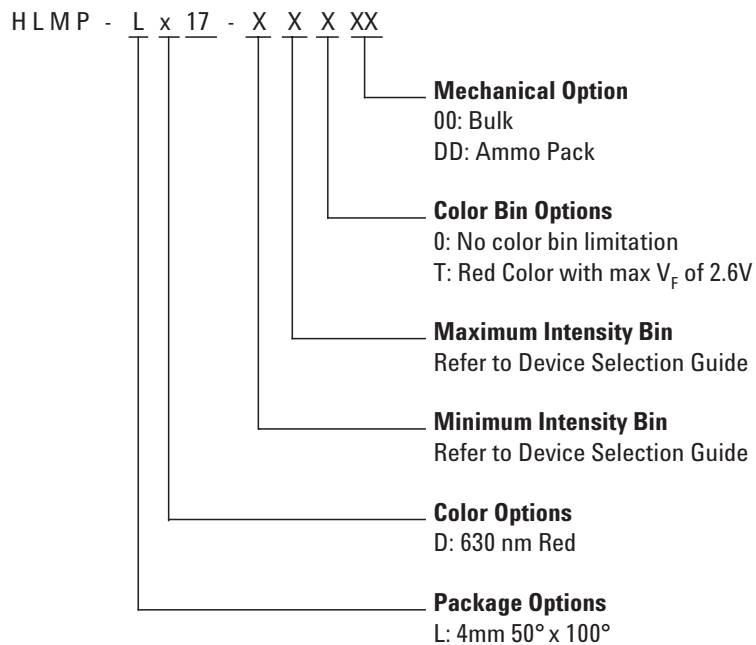
## Device Selection Guide

Part Number	Color and Dominant Wavelength $\lambda_d$ (nm) Typical	Luminous Intensity $I_v$ (mcd) at 20 mA		Tinting Type
		Minimum	Maximum	
HLMP-LD17-MNTxx	Red 630	520	880	Red
HLMP-LD17-MQTxx	Red 630	520	1500	Red
HLMP-LD17-NP0xx	Red 630	680	1150	Red
HLMP-LD17-NPTxx	Red 630	680	1150	Red

Notes:

1. The luminous intensity is measured on the mechanical axis of the lamp package
2. The tolerance for intensity limit is  $\pm 15\%$
3. The optical axis is closely aligned with the package mechanical axis
4. The dominant wavelength,  $\lambda_d$ , is derived from the Chromaticity Diagram and represents the color of the lamp.

### Part Numbering System



**Absolute Maximum Rating (T<sub>A</sub> = 25°C)**

Parameter	Value	Unit
DC Forward Current <sup>[1]</sup>	50	mA
Peak Forward Current <sup>[2]</sup>	100	mA
Average Forward Current	30	MA
Power Dissipation	120	mW
Reverse Voltage (I <sub>R</sub> = 100 mA)	5	V
LED Junction Temperature	130	°C
Operating Temperature Range	-40 to +100	°C
Storage Temperature Range	-40 to +120	°C
Soldering Temperature <sup>[3]</sup>	260 for 5 secs	°C

Notes:

1. Derate linearly as shown in Figure 3 for temperature above 50°C.
2. 1.59mm (0.062 inch) below seating plane.

**Electrical/Optical Characteristics (T<sub>A</sub> = 25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Condition
Typical Viewing Angle						
Major	2θ <sub>1/2</sub>		100		Degree	
Minor			50			
Forward Voltage	V <sub>F</sub>		2.0	2.4 <sup>[1]</sup>	V	I <sub>F</sub> = 20 mA
Reverse Voltage	V <sub>R</sub>	5	20		V	I <sub>R</sub> = 100 μA
Peak Wavelength					nm	Peak of wavelength of spectral distribution at I <sub>F</sub> = 20 mA
Red (λ <sub>d</sub> = 630nm)	λ <sub>peak</sub>		639			
Spectral Half width					nm	Wavelength width at spectral distribution power point at I <sub>F</sub> = 20 mA
Red (λ <sub>d</sub> = 630nm)	Δλ <sub>1/2</sub>		17			
Capacitance	C		40		pF	V <sub>F</sub> = 0, F = 1 MHz
Thermal Resistance	Rθ <sub>J-PIN</sub>		240		°C/W	LED Junction to cathode lead
Luminous Efficacy					Lm/W	Emitted luminous power/emitted radiant power
Red (λ <sub>d</sub> = 630nm)	η <sub>v</sub>		155			

Notes:

1. For option -xxTxx, maximum forward voltage, V<sub>F</sub> is 2.6V.
2. 2θ<sub>1/2</sub> is the off-axis angle where the luminous intensity is ½ the on-axis intensity
3. The radiant intensity, I<sub>e</sub> in watts per steradian, may be found from the equation I<sub>e</sub> = I<sub>v</sub>/η<sub>v</sub> where I<sub>v</sub> is the luminous intensity in candelas and η<sub>v</sub> is the luminous efficacy in lumens/watt.

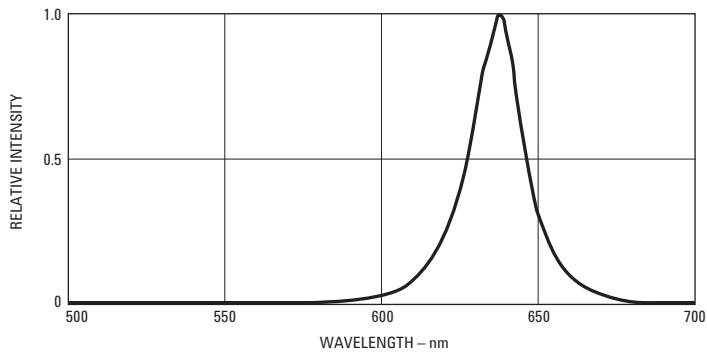


Figure 1. Relative intensity vs. wavelength

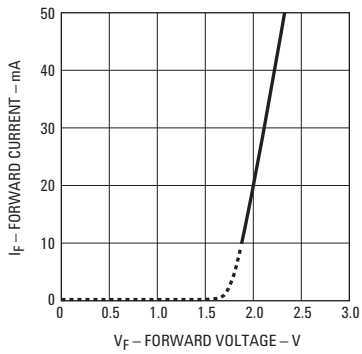


Figure 2. AllnGaP forward current vs. forward voltage

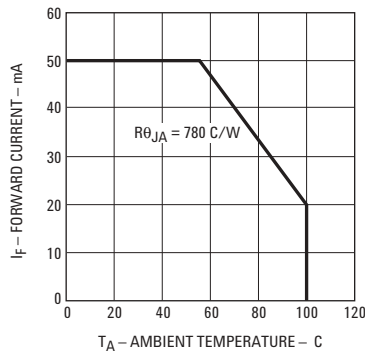


Figure 3. AllnGaP maximum forward current vs. ambient temperature.

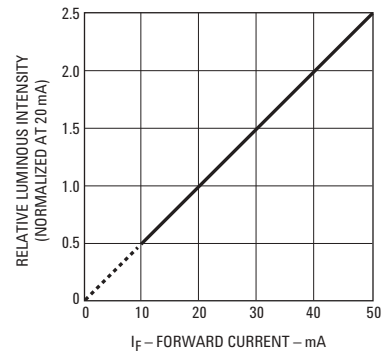


Figure 4. AllnGaP relative luminous intensity vs. forward current.

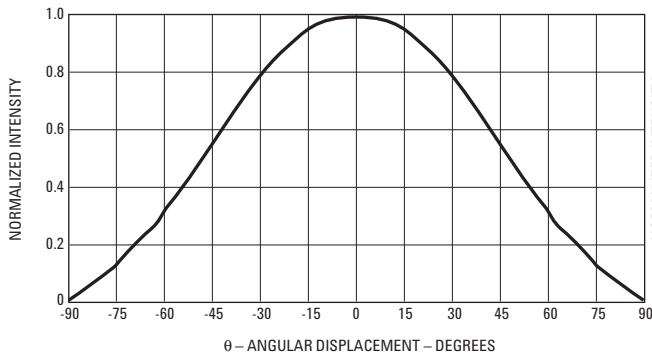


Figure 5a. Representative spatial radiation pattern - horizontal.

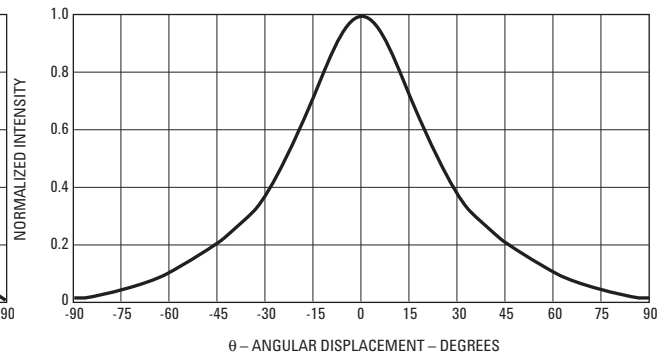


Figure 5b. Representative spatial radiation pattern - vertical.

### Intensity Bin Limit Table (mcd at 20 mA)

<b>Bin Name</b>	<b>Min.</b>	<b>Max.</b>
L	400	520
M	520	680
N	680	880
P	880	1150
Q	1150	1500

Tolerance for each bin limit is  $\pm 15\%$

Note:

1. Bin categories are established for classification of products. Products may not be available in all bin categories.

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