Agilent HLMP-HD51
5 mm Precision Optical Performance Red Oval LED Lamps
Data Sheet

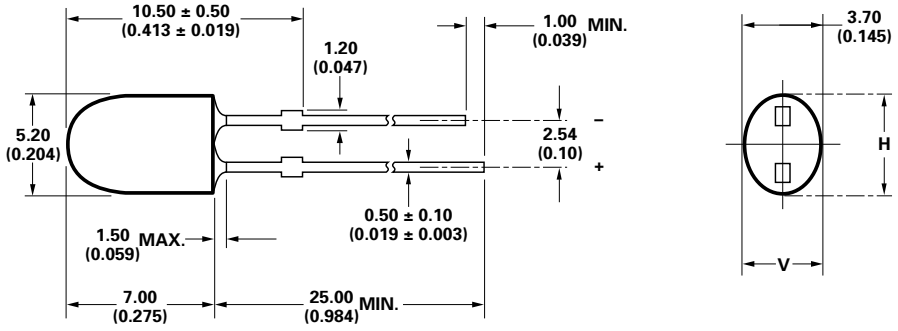
Features
- **Well defined spatial radiation pattern**
- **High brightness material Red AlInGaP 630 nm**

Benefits
- **Viewing angle designed for wide field of view applications**
- **Superior performance for outdoor environments**

Applications
- **Full color signs**
- **Commercial outdoor advertising**

Description
This Precision Optical Performance Oval LED is specifically designed for Full Color/Video and Passenger Information Signs. The Oval shaped radiation pattern 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) for Red Color. The higher performance AlInGaP II is used.

Package Dimensions



Note: Dimensions in millimeters (inches).

Absolute Maximum Ratings

T_A = 25°C

Parameter	Red
DC Forward Current[1]	50 mA
Peak Pulsed Forward Current	100 mA
Average Forward Current	30 mA
Reverse Voltage (I_R = 100 μA)	5 V
Power Dissipation	120 mW
LED Junction Temperature	110°C
Operating Temperature Range	–30 to +80°C
Storage Temperature Range	–40 to +100°C
Soldering Temperature	260°C for 5 seconds

Note:

1. Derate linearly as shown in Figure 4.

Electrical/Optical Characteristics

T_A = 25°C

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Typical Viewing Angle Major Minor	$2\theta_{1/2}$		 110 50		 deg	
Forward Voltage	V_F		2.0	2.4	V	I_F = 20 mA
Reverse Voltage	V_R	5	20		V	I_R = 100 μA
Peak Wavelength	λpeak		639		nm	Peak of Wavelength of Spectral Distribution at I_F = 20 mA
Spectral Halfwidth	$\Delta\lambda_{1/2}$		17		nm	Wavelength Width at Spectral Distribution 1/2 Power Point at I_F = 20 mA
Capacitance	C		40		pF	V_F = 0, F = 1 MHz
Luminous Efficacy	η_v		155		lm/W	Emitted Luminous Power/ Emitted Radiant Power at I_F = 20 mA
Dominant Wavelength	λd		630			I_F = 20 mA

Notes

1. $2\theta_{1/2}$ is the off-axis angle where the luminous intensity is 1/2 the on-axis intensity.
2. The radiant intensity, I_e in watts per steradian, may be found from the equation $I_e = I_v/\eta_v$ where I_v is the luminous intensity in candelas and η_v is the luminous efficacy in lumens/watt.
3. The luminous intensity is measured on the mechanical axis of the lamp package.
4. The optical axis is closely aligned with the package mechanical axis.
5. The dominant wavelength λ_d is derived from the CIE Chromaticity Diagram and represents the color of the lamp.

Device Selection Guide

Part Number	Color Dominant Wavelength λ_d (nm) Typ.	Luminous Intensity I_V (mcd) at 20 mA Min.	Max.	Tinting Type
HLMP-HD51-LP000	Red 630	345	1330	Red
HLMP-HD51-MQ000	Red 630	450	1730	Red

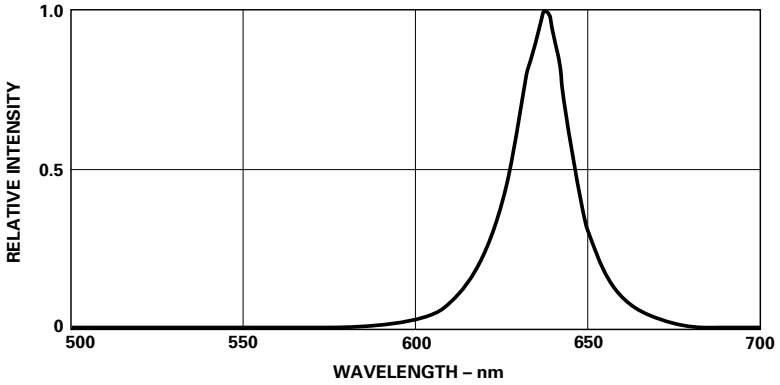


Figure 1. Relative Intensity vs. Wavelength.

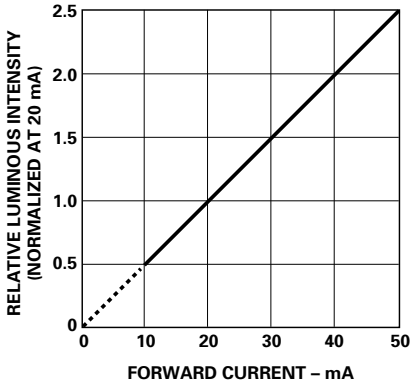


Figure 2. Relative Luminous Intensity vs. Forward Current.

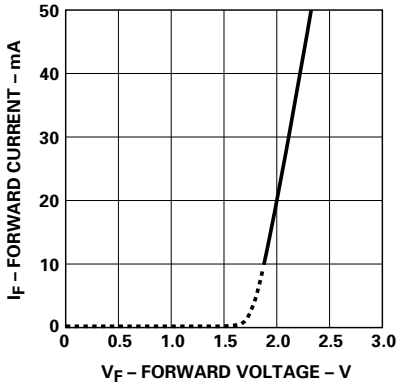


Figure 3. Forward Current vs. Forward Voltage.

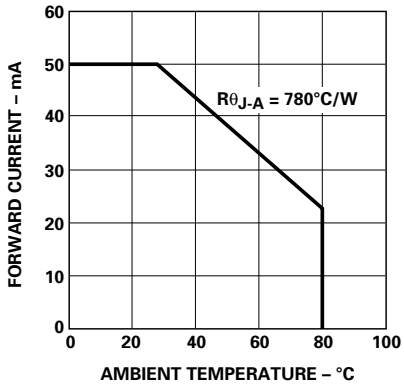


Figure 4. Maximum Forward Current vs. Ambient Temperature.

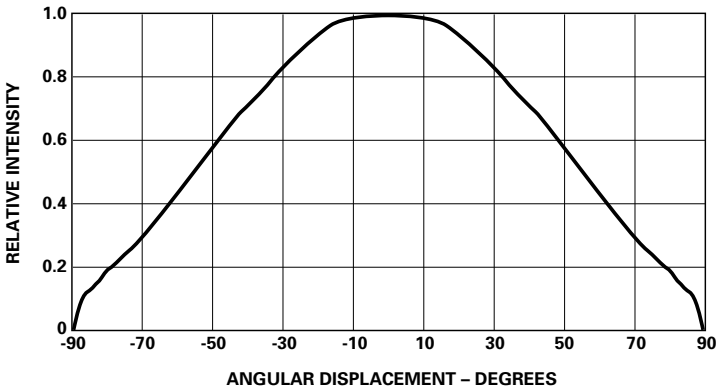


Figure 5a. Representative Spatial Radiation Pattern for Major Axis.

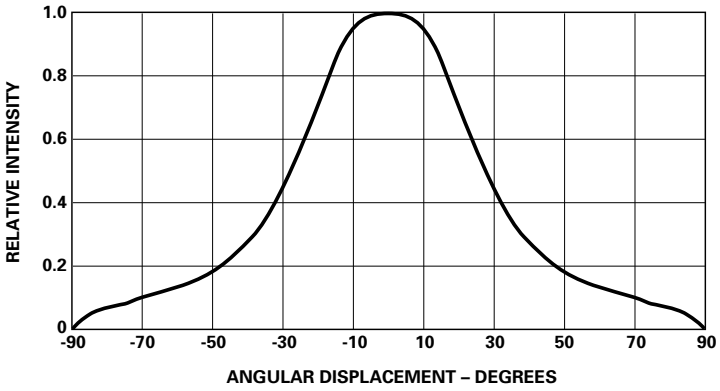


Figure 5b. Representative Spatial Radiation Pattern for Minor Axis.

Intensity Bin Limits (mcd at 20 mA)

Bin ID	Min.	Max.
L	400	520
M	520	680
N	680	880
P	880	1150
Q	1150	1500

Tolerance for each bin limit is ± 15%.

Note:

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

www.semiconductor.agilent.com

Data subject to change.
Copyright © 2000 Agilent Technologies

Obsoletes 5980-0264E

5980-1281E (5/00)

Agilent Technologies
Innovating the HP Way