

T-1³/₄ (5 mm) AlInGaP Lamps

Technical Data

HLMP-Cx08 Series
HLMP-Cx25 Series
HLMP-Cx27 Series
HLMP-C610

Features

- High Intensity
- General Purpose Leads
- Popular 5 mm Diameter
- Available in Bulk, Tape and Reel, or Ammopack
- 8° or 25° Viewing Angles
- Choice of Colors: Amber or Red

- Spoiler, Car Decorative Lighting
- Motorcycle/Bicycle Warning Lights

Description

The HLMP-Cx08, HLMP-Cx25, HLMP-Cx27, and HLMP-C610 series are 5 mm lamps specially designed for applications requiring very high on-axis intensity that is not achievable with a standard lamp. These devices are capable of producing light output over a wide range of drive currents.

Built using AlInGaP technology, they are well suited for typical 5 mm TS-AlGaAs lamp applica-



tions, and have significantly SUPERIOR RELIABILITY than most TS-AlGaAs lamps in wet/hot environments. These lamps come with clear non-diffused lens and are optically designed to yield superior light output.

Applications

- Indoor/Outdoor Applications
- Small Store-front Signs
- Message Panels
- Road Construction Barrier Lights
- Center High Mount Stop Lights

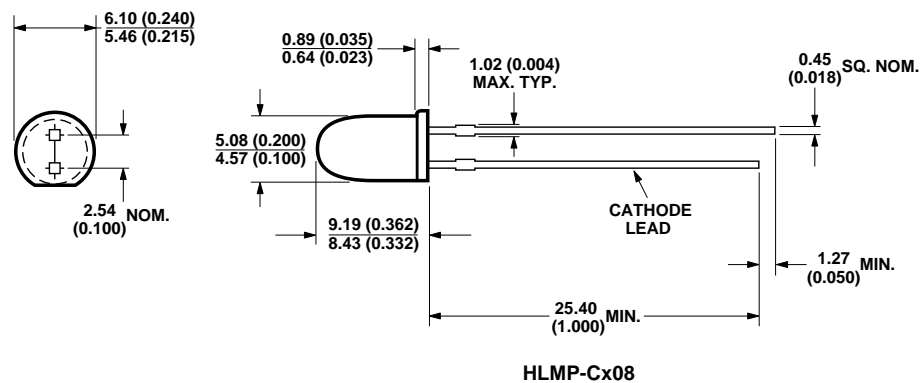
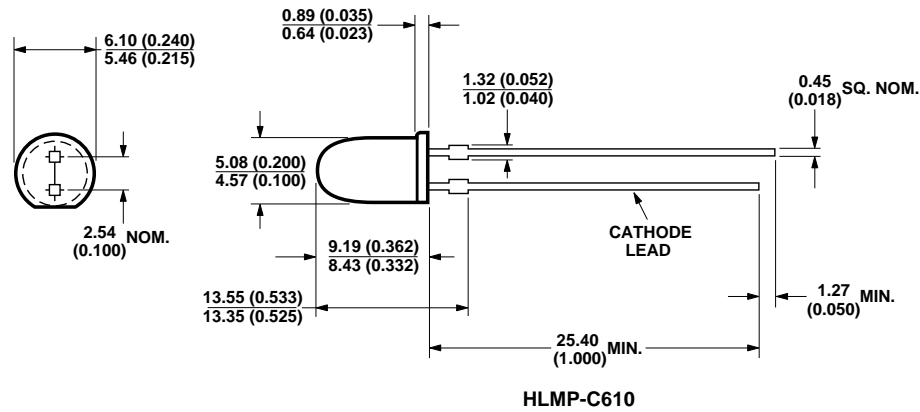
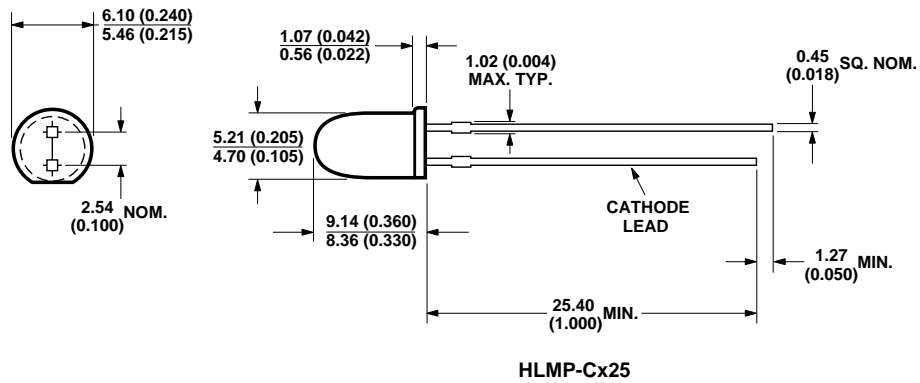
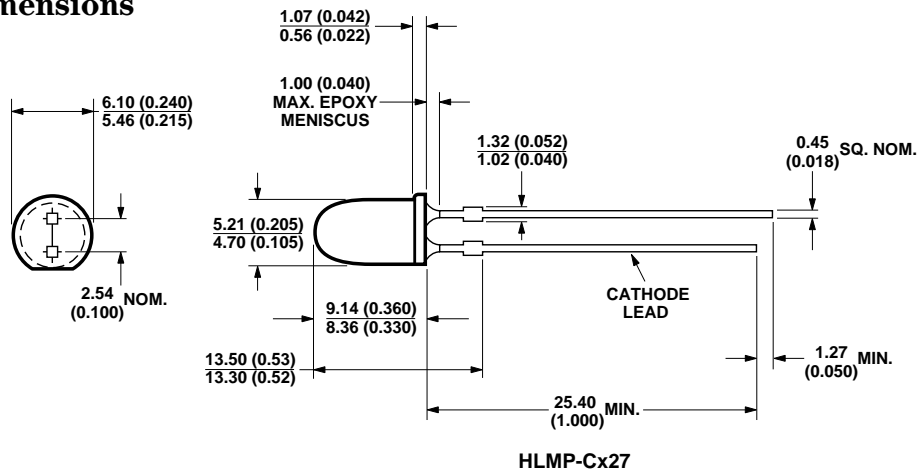
Device Selection

Part Number	Standoff	Typical Viewing Angle ^[1] (degrees), 2θ ^{1/2}	Luminous Intensity, I _v (mcd) @ 20 mA		Color	Dominant Wavelength ^[2]
			Min.	Typ.		
HLMP-C008-U00xx	No	8	2900.0	6000.0	Red	626
HLMP-C208-S00xx		8	2600.0	3000.0	Amber	590
HLMP-C608-R00xx		8	1000.0	2000.0	Red	635
HLMP-C610-R00xx	Yes	8	1000.0	2000.0	Red	635
HLMP-C025-P00xx	No	25	500.0	1000.0	Red	626
HLMP-C225-O00xx		25	450.0	800.0	Amber	590
HLMP-C625-P00xx		25	500.0	700.0	Red	635
HLMP-C027-P00xx	Yes	25	500.0	1000.0	Red	626
HLMP-C627-P00xx		25	500.0	700.0	Red	635

Notes:

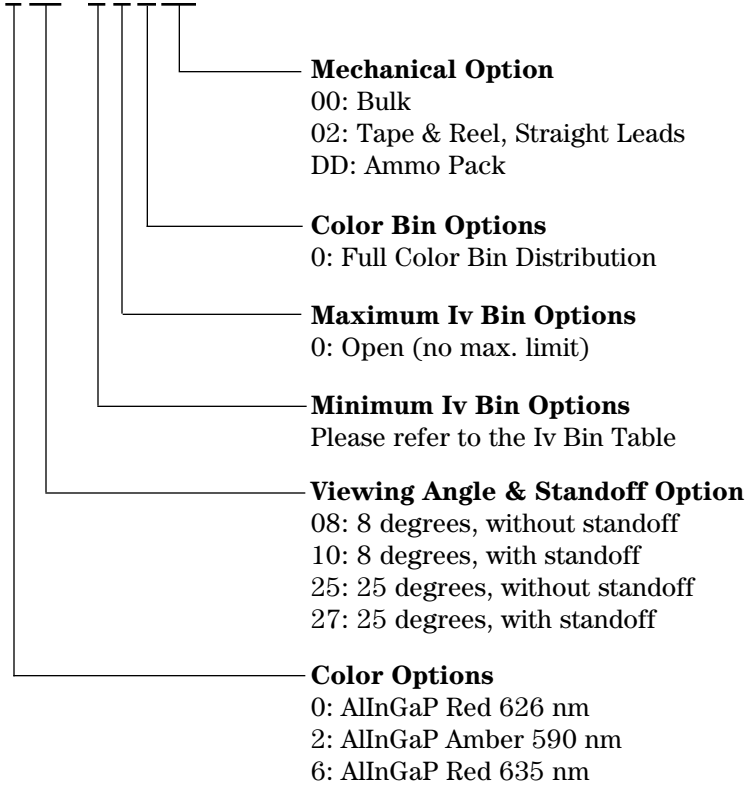
1. θ^{1/2} is the off-axis angle at which the luminous intensity is half of the axial luminous intensity.
2. The dominant wavelength, λ_d, is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

Package Dimensions



Part Numbering System

HLMP - C x xx - x x x xx



Absolute Maximum Ratings at $T_A=25^\circ\text{C}$

Parameter	Absolute Maximum	Units
Peak Forward Current	70	mA
Average Forward Current ^[1]	30	mA
DC Current ^[2]	50	mA
Reverse Voltage ($I_R = 100 \mu\text{A}$)	5	V
LED Junction Temperature	110	$^\circ\text{C}$
Operating Temperature	-40 to +100	$^\circ\text{C}$
Storage Temperature	-40 to +120	
Lead Soldering Temperature [1.59 mm (0.060 in.) below seating plane]	260 $^\circ\text{C}$ for 5 seconds	

Notes:

- See Figure 2 to establish pulsed operating conditions.
- Derate linearly from 50 $^\circ\text{C}$ at 0.5 mA/ $^\circ\text{C}$.
- The transient peak current is the maximum non-recurring peak current that can be applied to the device without damaging the LED die and wirebond. It is not recommended that this device be operated at peak currents above the Absolute Maximum Peak Forward Current.

Optical/Electrical Characteristics at $T_A=25^\circ\text{C}$

Symbol	Parameter	Device	Min.	Typ. ^[3]	Max.	Units	Test Conditions
$2\theta^{1/2}$	Included Angle Between Half Luminous Intensity Points ^[1]	HLMP-C008 HLMP-C208 HLMP-C608 HLMP-C025 HLMP-C225 HLMP-C625 HLMP-C610 HLMP-C027 HLMP-C627		8 8 8 25 25 25 8 25 25		Deg.	$I_F = 20\text{ mA}$ See Note 1
λ_d	Dominant Wavelength ^[2]	HLMP-C008 HLMP-C208 HLMP-C608 HLMP-C025 HLMP-C225 HLMP-C625 HLMP-C610 HLMP-C027 HLMP-C627		626 590 635 626 590 635 635 626 635		nm	See Note 2
λ_{PEAK}	Peak Wavelength	HLMP-C008 HLMP-C208 HLMP-C608 HLMP-C025 HLMP-C225 HLMP-C625 HLMP-C610 HLMP-C027 HLMP-C627		635 594 650 635 594 650 650 635 650		nm	Measurement at Peak
$\Delta\lambda^{1/2}$	Spectral Line Halfwidth			17		nm	
τ_s	Speed of Response			20		ns	
C	Capacitance			40		pF	$V_F = 0;$ $f = 1\text{ MHz}$
$R\theta_{\text{J-PIN}}$	Thermal Resistance			260		$^\circ\text{C/W}$	Junction to Cathode Lead
V_F	Forward Voltage	HLMP-C008 HLMP-C208 HLMP-C608 HLMP-C025 HLMP-C225 HLMP-C625 HLMP-C610 HLMP-C027 HLMP-C627		1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	2.4 2.6 2.6 2.4 2.6 2.6 2.6 2.4 2.6	V	$I_F = 20\text{ mA}$
V_R	Reverse Breakdown Voltage		5.0			V	$I_R = 100\ \mu\text{A}$

Notes:

- $\theta^{1/2}$ is the off-axis angle at which the luminous intensity is half of the axial luminous intensity.
- The dominant wavelength, λ_d , is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
- Typical specification for reference only. Do not exceed absolute maximum ratings.

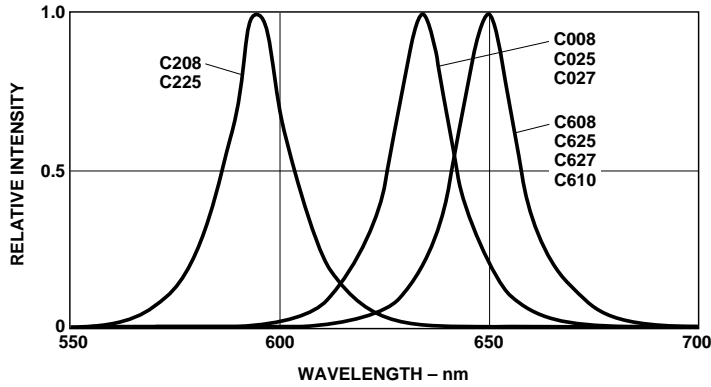


Figure 1. Relative Intensity vs. Wavelength.

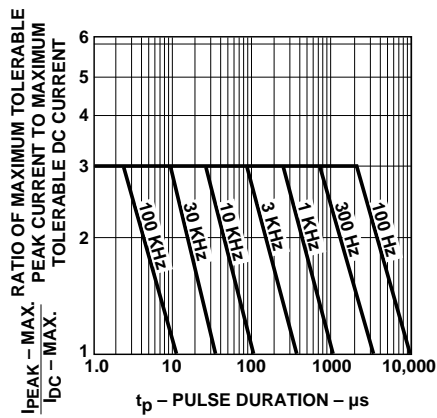


Figure 2. Maximum Tolerable Peak Current vs. Pulse Duration.

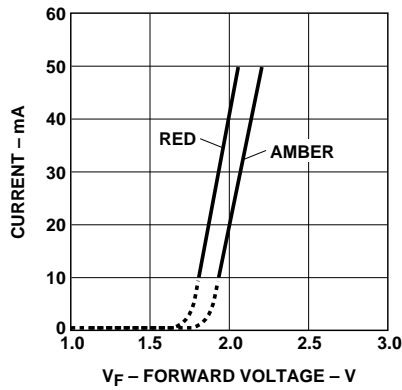


Figure 3. Forward Current vs. Forward Voltage.

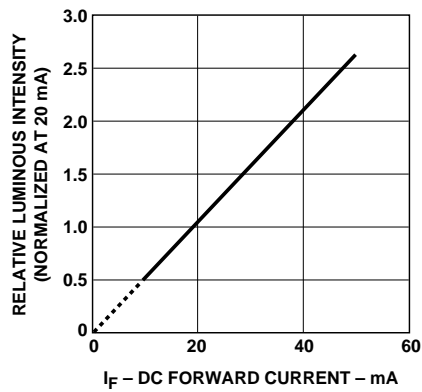


Figure 4. Relative Luminous Intensity vs. Forward Current.

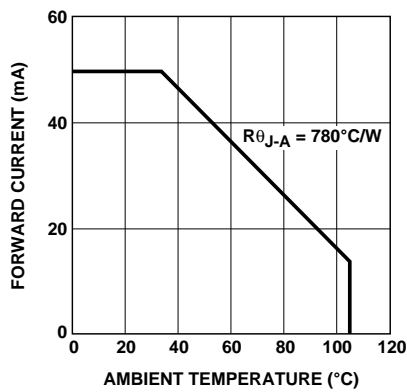


Figure 5. Maximum Forward DC Current vs. Ambient Temperature.

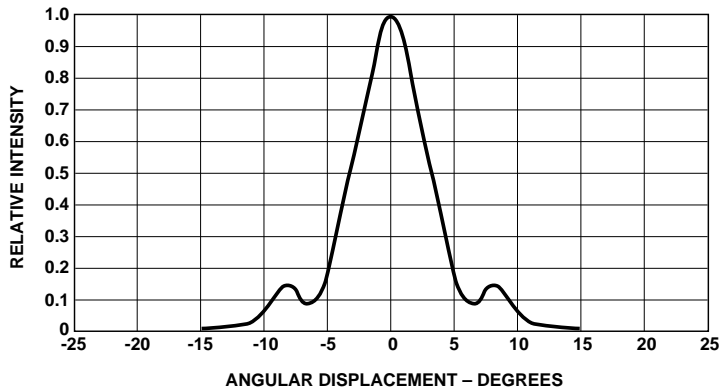


Figure 6. Relative Luminous Intensity vs. Angular Displacement for HLMP-Cx08 and HLMP-Cx10.

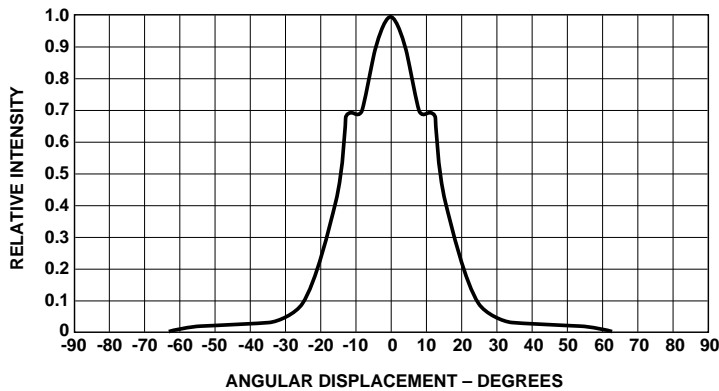


Figure 7. Relative Luminous Intensity vs. Angular Displacement for HLMP-Cx25 and HLMP-Cx27.

Soldering/Cleaning

Cleaning agents from the ketone family (acetone, methyl ethyl ketone, etc.) and from the chlorinated hydrocarbon family (methylene chloride, trichloroethylene, carbon tetrachloride, etc.) are not recommended for cleaning LED parts. All of these various solvents attack or dissolve the encapsulating epoxies used to form the package of plastic LED parts.

For information on soldering LEDs, please refer to Application Note 1027.

Intensity Bin Limits

Color	Bin	Intensity Range (mcd)	
		Min.	Max.
Red	P	540.0	850.0
	Q	850.0	1200.0
	R	1200.0	1700.0
	S	1700.0	2400.0
	T	2400.0	3400.0
	U	3400.0	4900.0
	V	4900.0	7100.0
	W	7100.0	10200.0
	X	10200.0	14800.0
	Y	14800.0	21400.0
Z	21400.0	30900.0	
Yellow	O	510.0	800.0
	P	800.0	1250.0
	Q	1250.0	1800.0
	R	1800.0	2900.0
	S	2900.0	4700.0
	T	4700.0	7200.0
	U	7200.0	11700.0
	V	11700.0	18000.0
W	18000.0	27000.0	

Maximum tolerance for each bin limit is $\pm 18\%$.

Color Categories

Color	Category #	Lambda (nm)	
		Min.	Max.
Amber	3	584.5	587.0
	2	587.0	589.5
	4	589.5	592.0
	6	592.0	594.5
	7	594.5	597.0

Tolerance for each bin limit is ± 0.5 nm.

Mechanical Option Matrix

Mechanical Option Code	Definition
00	Bulk Packaging, minimum increment 500 pcs/bag
02	Tape & Reel, straight leads, minimum increment 1300 pcs/bag
DD	Ammo Pack, straight leads with minimum increment 2K/pack

Note:

All categories are established for classification of products. Products may not be available in all categories. Please contact your local Agilent representative for further clarification/information.

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June 25, 2001
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5988-2231EN