

HLMP-331x Series

HLMP-341x Series

HLMP-351x Series

T-1³/₄ (5 mm) High Intensity LED Lamps



Data Sheet



Description

This family of T-1³/₄ nondiffused LED lamps is specially designed for applications requiring higher on-axis intensity than is achievable with a standard lamp. The light generated is focused to a narrow beam to achieve this effect.

Features

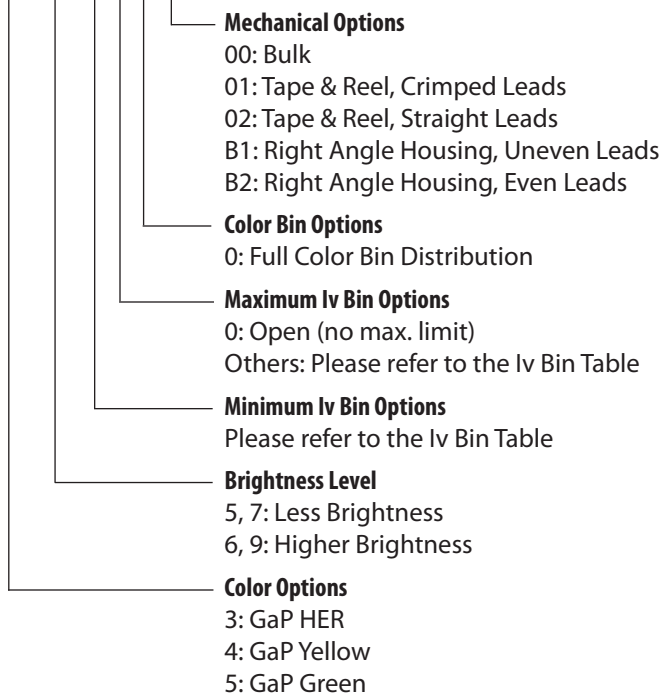
- High intensity
- Choice of 3 bright colors
 - High Efficiency Red
 - Yellow
 - High Performance Green
- Popular T-1³/₄ diameter package
- Selected minimum intensities
- Narrow viewing angle
- General purpose leads
- Reliable and rugged
- Available on tape and reel

Selection Guide

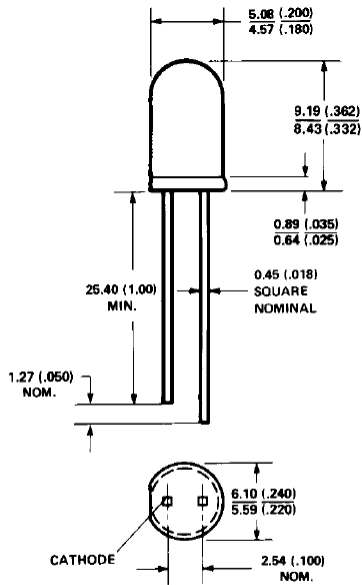
Color	Part Number	Luminous Intensity I _v (mcd) @ 10 mA	
		Min.	Max.
Red	HLMP-3316	22.00	-
	HLMP-3316-I00xx	22.0	-
Yellow	HLMP-3416	14.7	-
	HLMP-3416-G00xx	14.7	-
	HLMP-3416-IJ0xx	37.6	120.2
Green	HLMP-3519	10.6	-
	HLMP-3519-F00xx	10.6	-

Part Numbering System

HLMP - 3 x 1 x - x x x xx



Package Dimensions



- NOTES:
 1. ALL DIMENSIONS ARE IN MILLIMETRES (INCHES).
 2. AN EPOXY MENISCUS MAY EXTEND ABOUT 1mm (.040") DOWN THE LEADS.

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

Symbol	Description	Device			Units	Test Conditions
		HLMP-	Min.	Typ.		
I_V	Luminous Intensity	3316	22	60.0	mcd	$I_F = 10\text{ mA}$ (Figure 3)
		3416	14.7	50.0		$I_F = 10\text{ mA}$ (Figure 8)
		3519	10.6	70.0		$I_F = 10\text{ mA}$ (Figure 13)
$2\theta_{1/2}$	Including Angle Between Half Luminous Intensity Points	3316		35	Deg.	$I_F = 10\text{ mA}$ See Note 1 (Figure 6)
		3416		35		$I_F = 10\text{ mA}$ See Note 1 (Figure 11)
		3519		24		$I_F = 10\text{ mA}$ See Note 1 (Figure 16)
λ_{PEAK}	Peak Wavelength	331X		635	nm	Measurement at Peak (Figure 1)
		341X		583		
		351X		565		
$\Delta\lambda_{1/2}$	Spectral Line Halfwidth	331X		40	nm	
		341X		36		
		351X		28		
λ_d	Dominant Wavelength	331X		626	nm	See Note 2 (Figure 1)
		341X		585		
		351X		569		
τ_s	Speed of Response	331X		90	ns	
		341X		90		
		351X		500		
C	Capacitance	331X		11	pF	$V_F = 0; f = 1\text{ MHz}$
		341X		15		
		351X		18		
$R\theta_{J-PIN}$	Thermal Resistance	331X		260	$^\circ\text{C/W}$	Junction to Cathode Lead
		341X				
		351X				
V_F	Forward Voltage	331X		1.9	V	$I_F = 10\text{ mA}$ (Figure 2)
		341X		2.0		$I_F = 10\text{ mA}$ (Figure 7)
		351X		2.1		$I_F = 10\text{ mA}$ (Figure 12)
V_R	Reverse Breakdown Volt.	All	5.0		V	$I_R = 100\ \mu\text{A}$
η_V	Luminous Efficacy	331X		145	$\frac{\text{lumens}}{\text{Watt}}$	See Note 3
		341X		500		
		351X		595		

Notes:

- $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half 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.
- Radiant intensity, I_e , in watts/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.

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

Parameter	331X Series	341X Series	351X Series	Units
Peak Forward Current	90	60	90	mA
Average Forward Current ^[1]	25	20	25	mA
DC Current ^[2]	30	20	30	mA
Power Dissipation ^[3]	135	85	135	mW
Reverse Voltage ($I_R = 100 \mu\text{A}$)	5	5	5	V
Transient Forward Current ^[4] (10 μsec Pulse)	500	500	500	mA
LED Junction Temperature	110	110	110	$^\circ\text{C}$
Operating Temperature Range	-40 to +100	-40 to +100	-20 to +100	$^\circ\text{C}$
Storage Temperature Range	-40 to +100	-40 to +100	-40 to +100	$^\circ\text{C}$

Notes:

- See Figure 5 (Red), 10 (Yellow), or 15 (Green) to establish pulsed operating conditions.
- For Red and Green series derate linearly from 50°C at $0.5 \text{ mA}/^\circ\text{C}$. For Yellow series derate linearly from 50°C at $0.2 \text{ mA}/^\circ\text{C}$.
- For Red and Green series derate power linearly from 25°C at $1.8 \text{ mW}/^\circ\text{C}$. For Yellow series derate power linearly from 50°C at $1.6 \text{ mW}/^\circ\text{C}$.
- 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 the device be operated at peak currents beyond the peak forward current listed in the Absolute Maximum Ratings.

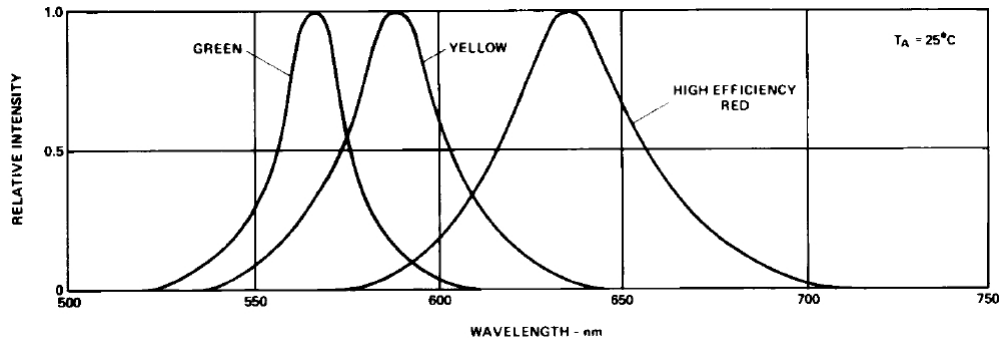


Figure 1. Relative intensity vs. wavelength.

Table 2. Intensity Bin Limit

Color	Bin	Intensity Range (mcd)	
		Min.	Max.
Red	H	15.5	24.8
	I	24.8	39.6
	J	39.6	63.4
	K	63.4	101.5
	L	101.5	162.4
	M	162.4	234.6
	N	234.6	340.0
	O	340.0	540.0
	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	

Table 2. (Cont'd)

Color	Bin	Intensity Range (mcd)	
		Min.	Max.
Yellow	G	16.6	26.5
	H	26.5	42.3
	I	42.3	67.7
	J	67.7	108.2
	K	108.2	173.2
	L	173.2	250.0
	M	250.0	360.0
	N	360.0	510.0
	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	

Table 2. (Cont'd)

Color	Bin	Intensity Range (mcd)	
		Min.	Max.
Green	E	7.6	12.0
	F	12.0	19.1
	G	19.1	30.7
	H	30.7	49.1
	I	49.1	78.5
	J	78.5	125.7
	K	125.7	201.1
	L	201.1	289.0
	M	289.0	417.0
	N	417.0	680.0
	O	680.0	1100.0
	P	1100.0	1800.0
	Q	1800.0	2700.0
	R	2700.0	4300.0
	S	4300.0	6800.0
T	6800.0	10800.0	
U	10800.0	16000.0	
V	16000.0	25000.0	
W	25000.0	40000.0	

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

Color Categories

Color	Cat #	Lambda (nm)	
		Min.	Max.
Green	6	561.5	564.5
	5	564.5	567.5
	4	567.5	570.5
	3	570.5	573.5
	2	573.5	576.5
	1	582.0	584.5
Yellow	3	584.5	587.0
	2	587.0	589.5
	4	589.5	592.0
	5	592.0	593.0

Mechanical Option Matrix

Mechanical Option Code	Definition
00	Bulk Packaging, minimum increment 500 pcs/bag
01	Tape & Reel, crimped leads, minimum increment 1300 pcs/bag
02	Tape & Reel, straight leads, minimum increment 1300 pcs/bag
B1	Right Angle Housing, uneven leads, minimum increment 500 pcs/bag
B2	Right Angle Housing, even leads, minimum increment 500 pcs/bag

Note:

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