

HLMP-D101/D105, HLMP-K101/K105

T-1^{3/4} (5 mm), T-1 (3 mm), High Intensity,
Double Heterojunction AlGaAs Red LED Lamps



Data Sheet

Description

These solid-state LED lamps utilize newly developed double heterojunction (DH) AlGaAs/GaAs material technology. This LED material has outstanding light output efficiency over a wide range of drive currents. The color is deep red at the dominant wavelength of 637 nanometers. These lamps may be DC or pulse driven to achieve desired light output.

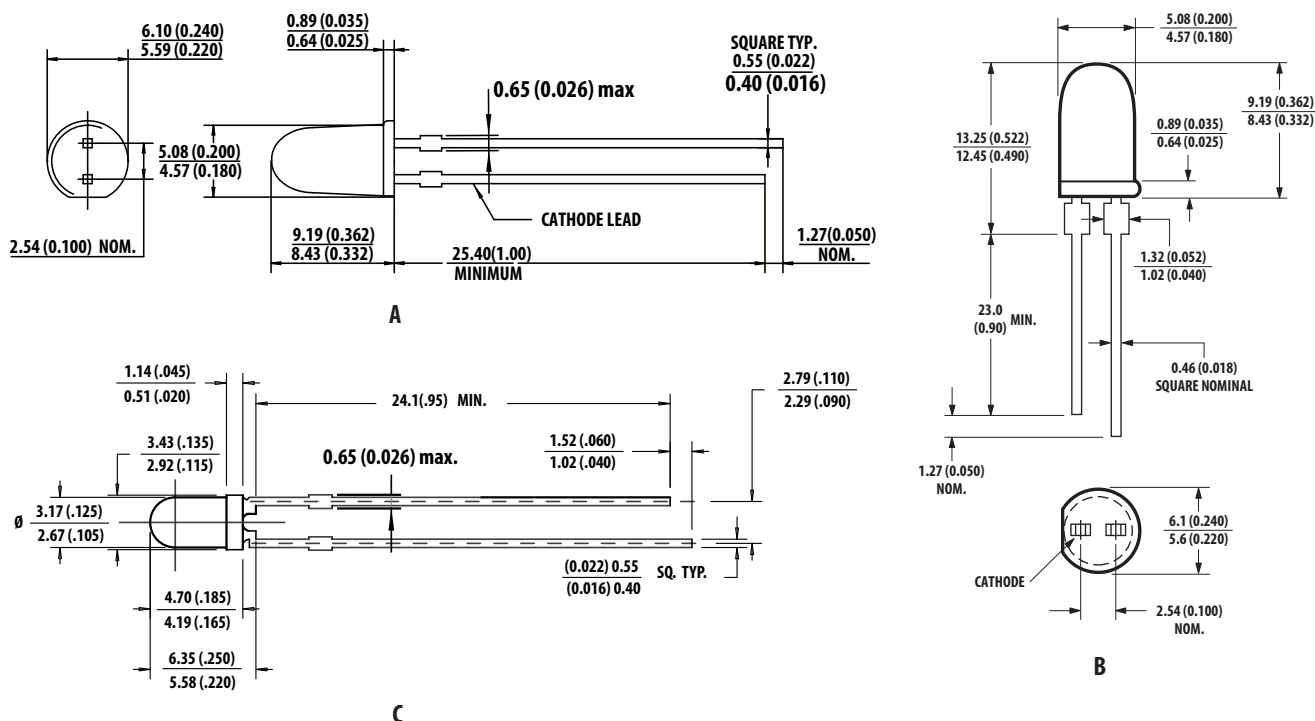
Features

- Exceptional brightness
- Wide viewing angle
- Outstanding material efficiency
- Low forward voltage
- CMOS/MOS compatible
- TTL compatible
- Deep red color

Applications

- Bright ambient lighting conditions
- Moving message panels
- Portable equipment
- General use

Package Dimensions



Notes:

1. All dimensions are in mm (inches).
2. An epoxy meniscus may extend about 1 mm (0.040") down the leads.
3. For PCB hole recommendations, see the Precautions section.

Selection Guide

Package Description	Device HLMP-	Luminous Intensity Iv (mcd) at 20 mA			2 $\theta_{1/2}$ ^[1] Degree	Package Outline
		Min.	Typ.	Max.		
T-1 3/4 Red Tinted Diffused	D101	35.2	70.0	–	65	A
	D101-J00xx	35.2	70.0	–	65	A
	D101-JK0xx	35.2	70.0	112.8	65	A
T-1 3/4 Red Untinted Non-diffused	D105	138.0	240.0	–	24	B
	D105-M00xx	138.0	240.0	–	24	B
T-1 Red Tinted Diffused	K101	22.0	45.0	–	60	C
	K101-I00xx	22.0	45.0	–	60	C
T-1 Red Untinted Non-diffused	K105	35.2	65.0	–	45	C
	K105-J00xx	35.2	65.0	–	45	C

Note:

1. $\theta_{1/2}$ is the off axis angle from lamp centerline where the luminous intensity is $1/2$ the on-axis value.

Part Numbering System

HLMP - x x xx - x x x xx

Mechanical Option

00: Bulk
02: Tape & Reel, Straight Leads

Color Bin Options

0: Full Color Bin Distribution

Maximum Iv Bin Options

0: Open (no max. limit)
Others: Please refer to the Iv Bin Table

Minimum Iv Bin Options

Please refer to the Iv Bin Table

Lens Type

01: Tinted, Diffused
05: Untinted, Nondiffused

Color Options

1: AlGaAs Red

Package Options

D: T-1^{3/4}
K: T-1

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

Parameter	Value
Peak Forward Current ^[1,2]	300 mA
Average Forward Current ^[2]	20 mA
DC Current ^[3]	30 mA
Power Dissipation	87 mW
Reverse Voltage ($I_R = 100\ \mu\text{A}$)	5 V
Transient Forward Current (10 μs Pulse) ^[4]	500 mA
LED Junction Temperature	110°C
Operating Temperature Range	-20 to +100°C
Storage Temperature Range	-40 to +100°C

Notes:

1. Maximum I_{PEAK} at $f = 1\ \text{kHz}$, $DF = 6.7\%$.
2. Refer to Figure 6 to establish pulsed operating conditions.
3. Derate linearly as shown in Figure 5.
4. The transient peak current is the maximum non-recurring peak current the device can withstand without damaging the LED die and wire bonds. It is not recommended that the device be operated at peak currents beyond the Absolute Maximum Peak Forward Current.

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

Symbol	Description	Min.	Typ.	Max.	Unit	Test Condition
V_F	Forward Voltage		1.8	2.2	V	$I_F = 20\ \text{mA}$
V_R	Reverse Breakdown Voltage	5.0	15.0		V	$I_R = 100\ \mu\text{A}$
λ_p	Peak Wavelength		645		nm	Measurement at Peak
λ_d	Dominant Wavelength		637		nm	Note 1
$\Delta\lambda_{1/2}$	Spectral Line Halfwidth		20		nm	
τ_s	Speed of Response		30		ns	Exponential Time Constant, e^{-t}/T_s
C	Capacitance		30		pF	$V_F = 0$, $f = 1\ \text{MHz}$
$R_{\theta J-PIN}$	Thermal Resistance		260 ^[3] 210 ^[4] 290 ^[5]		°C/W	Junction to Cathode Lead
η_V	Luminous Efficacy		80		lm/W	Note 2

Notes:

1. The dominant wavelength, λ_d , is derived from the CIE chromaticity diagram and represents the color of the device.
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 luminous efficacy in lumens/watt.
3. HLMP-D101.
4. HLMP-D105.
5. HLMP-K101/-K105.