

# T-1<sup>3/4</sup> (5 mm), T-1 (3 mm) Blue LED Lamps

## Technical Data

### Features

- Popular T-1<sup>3/4</sup> and T-1 Diameter Packages
- General Purpose Leads
- Reliable and Rugged
- Available on Tape and Reel
- Binned for Color and Intensity

### Applications

- Status Indicators
- Small Message Panel
- Running and Decorative Lights for Commercial Use

### Description

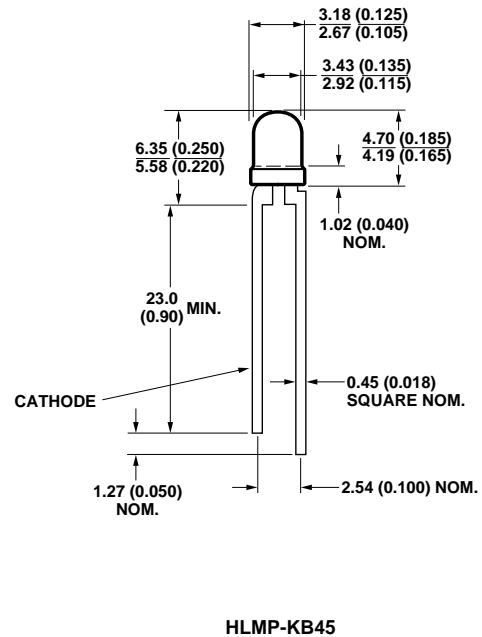
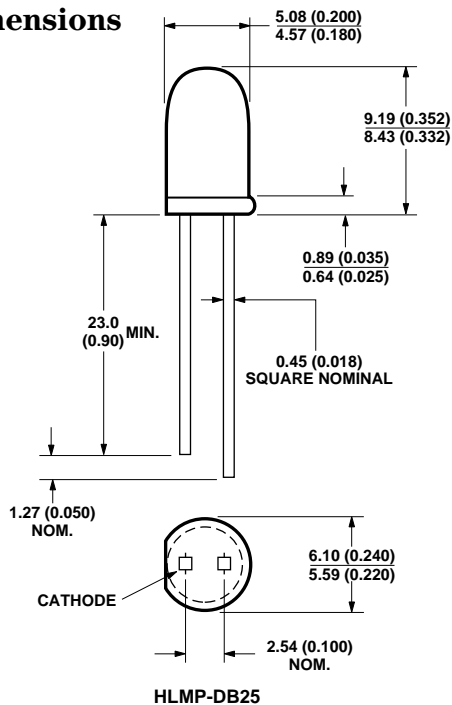
These blue LEDs are designed in industry standard T-1 and T-1<sup>3/4</sup> package with clear and non diffused optics. They are also available in tape and reel, and ammo-pack option for ease of handling and use.

These blue lamps are ideal for use as indicators and for general purpose lighting. Blue lamps offer color differentiation as blue is attractive and not widely available.

**HLMP-DB25-B00xx**  
**HLMP-KB45-A00xx**



### Package Dimensions



- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES).
  2. EPOXY MENISCUS MAY EXTEND ABOUT 1 mm (0.040") DOWN THE LEADS.

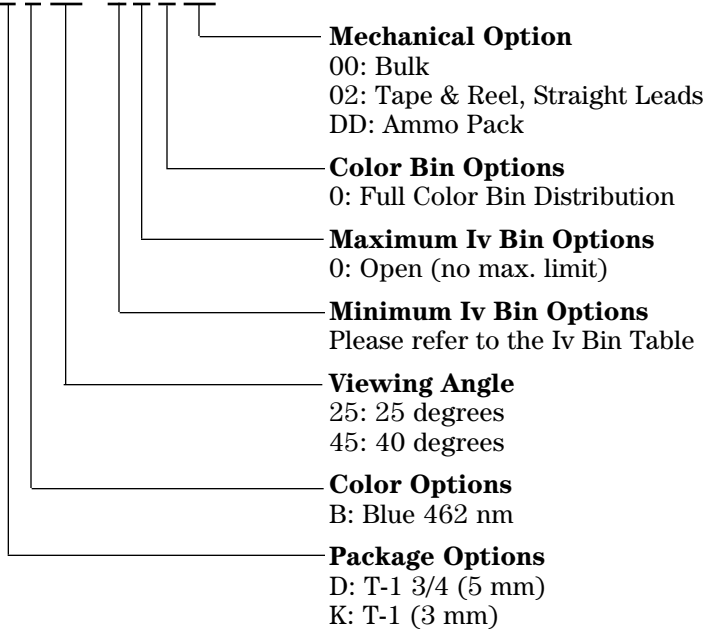
**CAUTION:** Devices are Class II ESD sensitive. Please observe appropriate precautions during handling and processing. Refer to Application Note AN-1142 for additional details.

## Selection Guide

Part Number	Package	Viewing Angle	Luminous Intensity Iv (mcd)	
			Min.	Max.
HLMP-KB45-A00xx	T-1	40	30	–
HLMP-DB25-B00xx	T-1 3/4	25	40	–

## Part Numbering System

HLMP - x x xx - x x x xx



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

Parameter	Blue	Units
Peak Forward Current	70	mA
DC Current <sup>[1]</sup>	30	mA
Reverse Voltage ( $I_R = 100 \mu\text{A}$ )	5	V
Transient Forward Current <sup>[2]</sup> (10 $\mu\text{sec}$ Pulse)	350	mA
LED Junction Temperature	115	$^\circ\text{C}$
Operating Temperature	-20 to +80	$^\circ\text{C}$
Storage Temperature	-30 to +100	$^\circ\text{C}$
Lead Soldering Temperature [1.6 mm (0.063 in.) from body]	260 $^\circ\text{C}$ for 5 seconds	

### Notes:

- Derate linearly from 50  $^\circ\text{C}$  as shown in Figure 6.
- 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 Characteristics at $T_A = 25^\circ\text{C}$

Part Number	Luminous Intensity $I_V$ (mcd) @ $I_F = 20\text{ mA}$		Color, Dominant Wavelength $\lambda_d^{[1]}$ (nm) Typ.	Peak Wavelength $\lambda_{PEAK}$ (nm) Typ.	Viewing Angle $2\theta_{1/2}^{[2]}$ Degrees Typ.
	Min.	Typ.			
HLMP-DB25-B00xx	40	100	462	426	25
HLMP-KB45-A00xx	30	45	462	426	40

#### Notes:

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

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

Part Number	Forward Voltage $V_F$ (Volts) @ $I_F = 20\text{ mA}$		Reverse Breakdown $V_R$ (Volts) @ $I_R = 100\ \mu\text{A}$		Speed Response $\tau_s$ (ns) Typ.	Capacitance $C$ (pF), $V_F = 0$ , $f = 1\text{ MHz}$ Typ.	Thermal Resistance $R_{\theta J-PIN}$ ( $^\circ\text{C}/\text{W}$ ) Junction to Cathode Lead Typ.
	Typ.	Max.	Min.	Typ.			
HLMP-DB25-B00xx	4.0	5.0	5.0	30	500	97	260
HLMP-KB45-A00xx	4.0	5.0	5.0	30	500	97	290

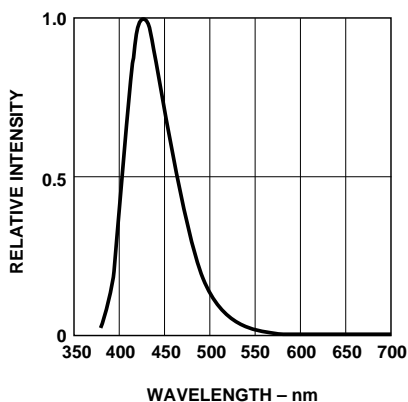


Figure 1. Relative Intensity vs. Wavelength.

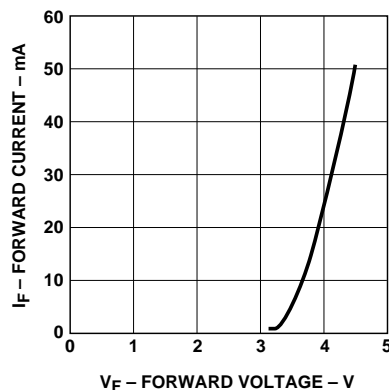


Figure 2. Forward Current vs. Forward Voltage.

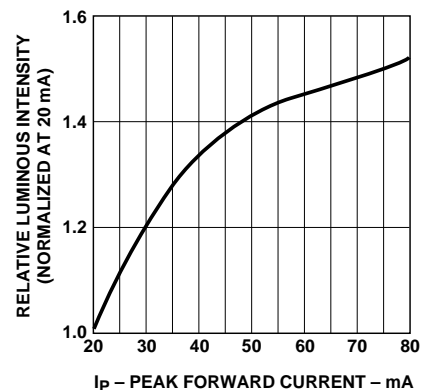


Figure 3. Relative Intensity vs. Peak Forward Current (300  $\mu\text{s}$  pulse width, 10 ms period).

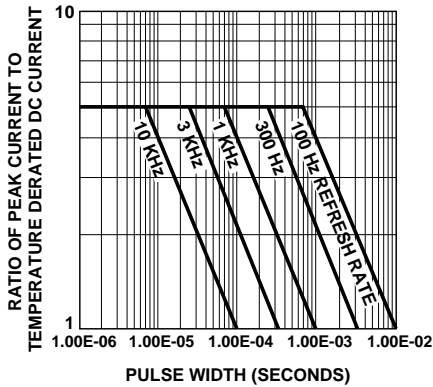


Figure 4. Forward Current vs. Forward Voltage.

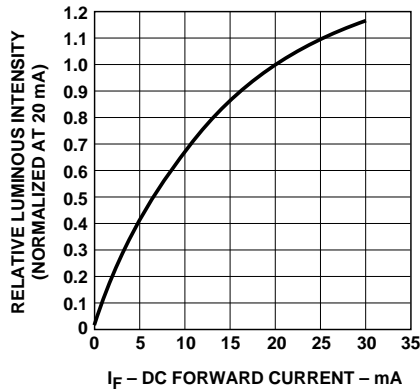


Figure 5. Relative Luminous Intensity vs. Forward Current.

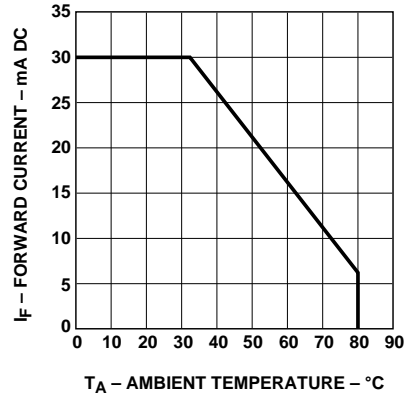


Figure 6. Maximum DC Forward Current vs. Ambient Temperature. Derating Based on  $T_J$  Max. = 115 °C.

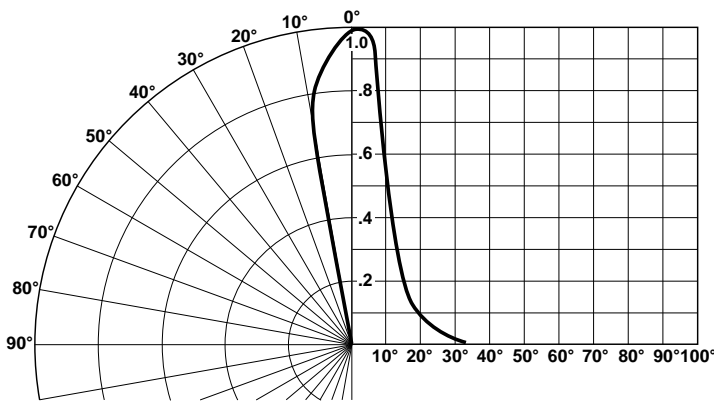


Figure 7. Relative Luminous Intensity vs. Angular Displacement for HLMP-DB25.

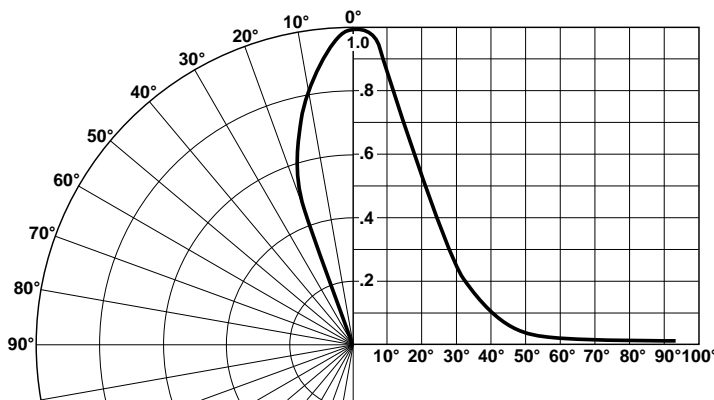


Figure 8. Relative Luminous Intensity vs. Angular Displacement for HLMP-KB45.

### 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

Bin	Intensity Range (mcd)	
	Min.	Max.
A	30.0	40.0
B	40.0	50.0
C	50.0	65.0
D	65.0	85.0
E	85.0	110.0
F	110.0	140.0
G	140.0	180.0
H	180.0	240.0
J	240.0	310.0
K	310.0	400.0
L	400.0	520.0
M	520.0	680.0
N	680.0	880.0

### Color Bin Limits (nm at 20 mA)

Blue	nm @ 20 mA	
Bin ID	Min.	Max.
1	460.0	464.0
2	464.0	468.0
3	468.0	472.0
4	472.0	476.0
5	476.0	480.0

Tolerance for each bin limit will be  $\pm 0.5\text{nm}$ .

### 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

**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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Data subject to change.

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