

HLMB-K305-F00xx / HLMB-K505-F00xx

3mm Auto Insertable LED Lamps



Data Sheet

Description

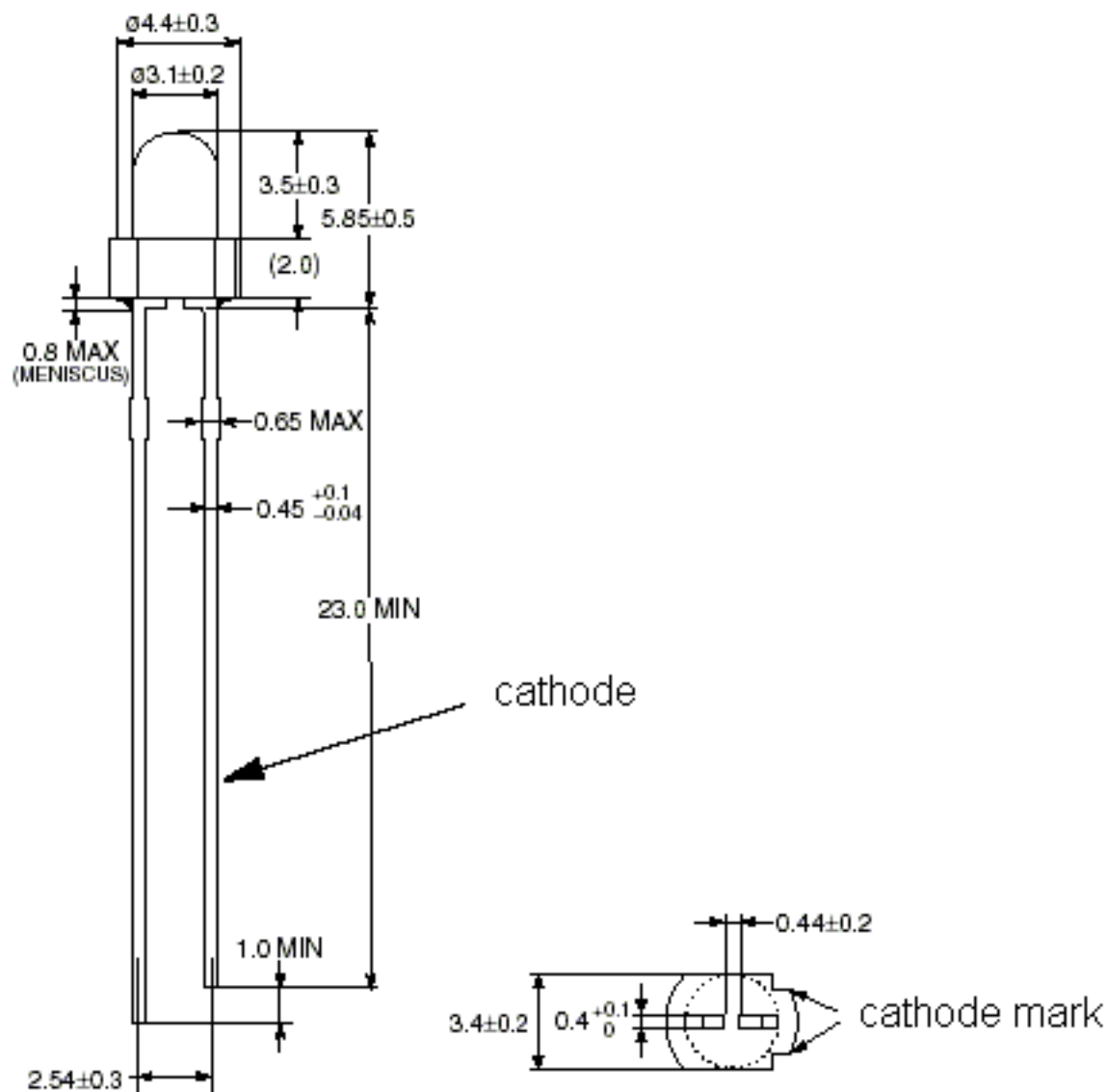
The product is capable of withstanding automatic insertion and wave soldering processes.

Designed with a thick epoxy flange and soft leadframe material, it is ideal for clinch and cut operations. The product is suitable for lead-free application.

Features

- 3mm Auto Insertable Package
- Tinted and Non-diffused Lens
- Lead-Free Leadframe

Package Dimension



Notes:

1. All dimensions are in millimeters (inches).
2. Epoxy Meniscus may extend about 1mm (0.040") down the leads.

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

| Parameter | HLMB-K305 (Yellow) | HLMB-K505 (Green) | Units |
|--|--|-------------------|--------------------|
| Peak Forward Current | 60 | 90 | mA |
| DC Current | 20 | 30 | mA |
| Reverse Voltage ($I_R=100\mu\text{A}$) | 5 | | V |
| Operating Temperature | -20 to +85 | | $^{\circ}\text{C}$ |
| Storage Temperature | -30 to +85 | | $^{\circ}\text{C}$ |
| Wave Solder Temperature | 260 $^{\circ}\text{C}$ for 5 seconds [1.6mm (0.060 in.) from body] | | |

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

| Symbol | Description | Part Number | Minimum | Typical | Maximum | Units | Conditions |
|-------------------------|-------------------------|-------------|---------|---------|---------|-----------------------------|------------------------|
| I_v | Luminous Intensity | HLMB-K305 | 9.2 | 35 | | mcd | $I_F=10\text{mA}$ |
| | | HLMB-K505 | 10.6 | 46 | | | |
| λ_{PEAK} | Peak Wavelength | HLMB-K305 | | 583 | | nm | Measurement at Peak |
| | | HLMB-K505 | | 565 | | | |
| λ_d | Dominant Wavelength | HLMB-K305 | | 585 | | nm | |
| | | HLMB-K505 | | 571 | | | |
| $\Delta\lambda_{1/2}$ | Spectral Line Halfwidth | HLMB-K305 | | 36 | | nm | |
| | | HLMB-K505 | | 28 | | | |
| $2\theta_{1/2}$ | Viewing Angle | All | | 40 | | degree | $I_F=10\text{mA}$ |
| θ_{J-PIN} | Thermal Resistance | All | | 290 | | $^{\circ}\text{C}/\text{W}$ | |
| t_s | Speed of Respond | HLMB-K305 | | 90 | | ns | |
| | | HLMB-K505 | | 500 | | | |
| C | Capacitance | HLMB-K305 | | 15 | | pF | $V_f=0, f=1\text{MHz}$ |
| | | HLMB-K505 | | 18 | | | |
| V_F | Forward Voltage | HLMB-K305 | | 2.0 | 2.6 | V | $I_F=10\text{mA}$ |
| | | HLMB-K505 | | 2.1 | 2.7 | | |
| I_R | Reverse Current | All | | | 100 | mA | $V_R=5\text{V}$ |

Note:

1. The dominant wavelength is derived from the CIE chromaticity diagram and represents the single wavelength, which defines the color of the devices.

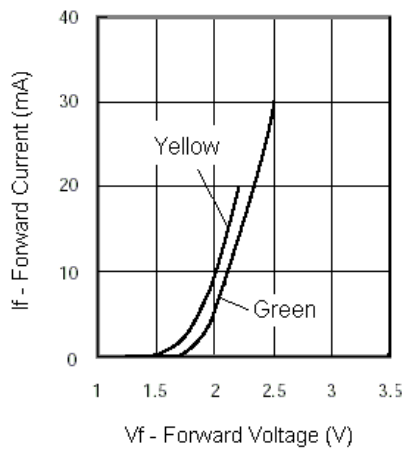


Figure 1. Forward Current vs. Forward Voltage

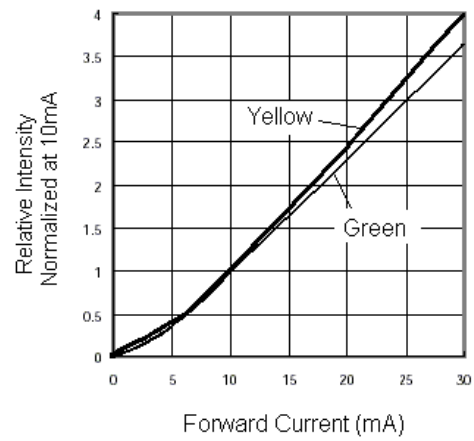


Figure 2. Relative Luminous Intensity vs. DC Forward Current

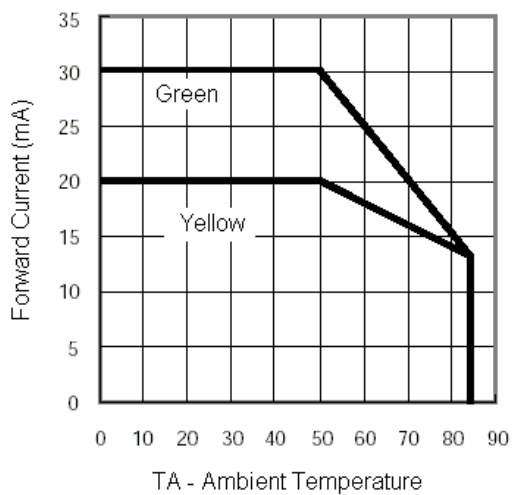


Figure 3. Ambient Temperature vs. Maximum DC Forward Current

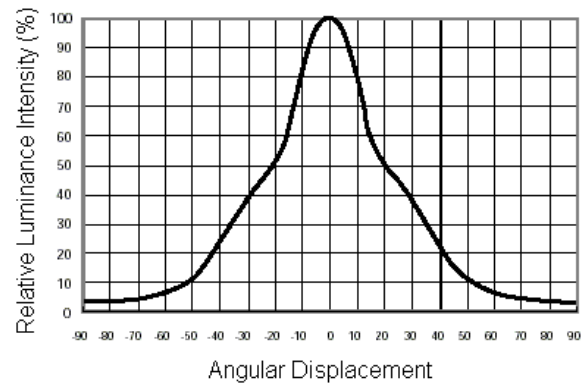


Figure 4. Radiation Pattern

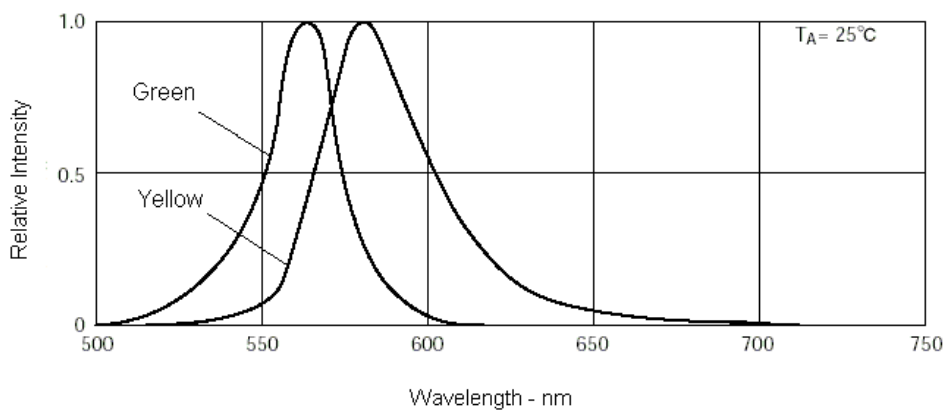


Figure 5. Wavelength vs. Relative Intensity

Taping Specifications

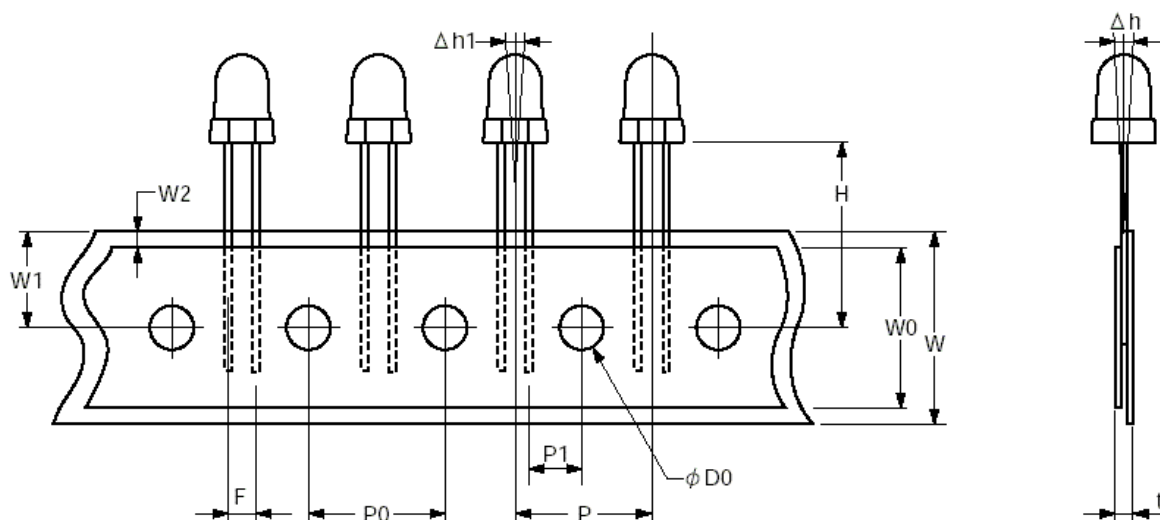


Figure 6. Taping Specifications

| Dimension | Option CA (mm) |
|-----------|-------------------|
| H | 18.0 ± 1.0 |
| F | $2.5 + 0.8/-0.2$ |
| W | $18.0 + 1.0/-0.5$ |
| W0 | 15.0 ± 0.3 |
| W1 | $9.0 + 0.75/-0.5$ |
| W2 | 0~2.0 |
| P | 12.7 ± 1.3 |
| P0 | 12.7 ± 1.3 |
| P1 | 3.81 ± 0.5 |
| ØD0 | 4.0 ± 0.2 |
| Δh1 | 0.00 ± 1.0 |
| Δh | 0.00 ± 1.0 |
| T | 1.2 ± 0.2 |

Recommended Assembly Condition

A single-sided phenolic printed circuit board (PCB) is preferred. Double-sided PCB and other materials may cause greater lead stress. Recommended through-hole diameter is 0.93 to 1.03mm. Lead length below the PCB should be 1.5 to 2.0mm, and the clinching angle (angle between the lead and PCB) should be 30 ± 10 degrees.

If SMT devices and an adhesive are used on the same PCB as these lamps, the adhesive should be cured before the lamps are auto-inserted. If curing must be done after lamp insertion, the cure temperature and time should not exceed 140°C, 100 seconds. This is the temperature of the surface normal to the IR source.

Solder Condition:

Preheat: Temperature ramp rate of 2 to 4°C per second. Do not exceed 150°C delta temperature between preheat and solder temperatures. The maximum time at preheat should not exceed 30 seconds.

Solder: 245°C \pm 5°C, 3 seconds
(1.6mm below seating plane).

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