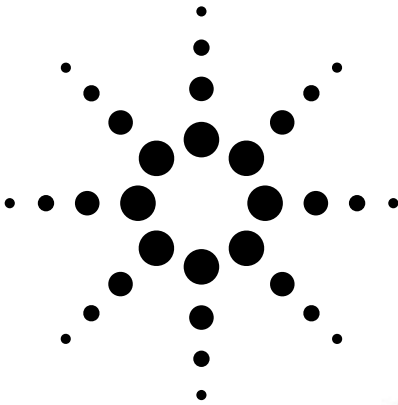


Agilent HLMP-40xx, HLMP-08xx T-1 3/4, 2 mm x 5 mm Rectangular Bicolor LED Lamps

Data Sheet



Features

- Two color operation
- Three leads with one common cathode
- Option of straight or spread leads configuration
- Diffused, wide visibility range

Description

The T-1 3/4 HLMP-40xx and 2 mm by 5 mm rectangular HLMP-08xx are three leaded bicolor light sources designed for a variety of applications where dual state illumination is required in the same package. There are two LED chips, mounted on a central common cathode lead for maximum on-axis viewability. Colors between the two chips can be generated by independently pulse width modulating the LED chips.

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Selection Guide

| Package | Part Number | Color | Min. Luminous Intensity I _v (mcd) | | | I _F (mA) |
|-------------|---------------|--------------|--|-----|--------|---------------------|
| | | | Green | Red | Yellow | |
| T-1 3/4 | HLMP-4000 | Green/HER | 4.2 | 2.1 | | 10 |
| | HLMP-4000#xxx | | 4.2 | 2.1 | | 10 |
| | HLMP-4015 | Green/Yellow | 20.0 | | 20 | 20 |
| Rectangular | HLMP-0800 | Green/HER | 2.6 | 2.1 | | 20 |
| | HLMP-0805 | Green/Yellow | 2.6 | | 1.4 | 20 |



Part Numbering System

HLMP - X X X X # X X X

Mechanical Options

- 002: Tape & Reel, Straight Leads
- 010: Right Angle Housing, Even Leads

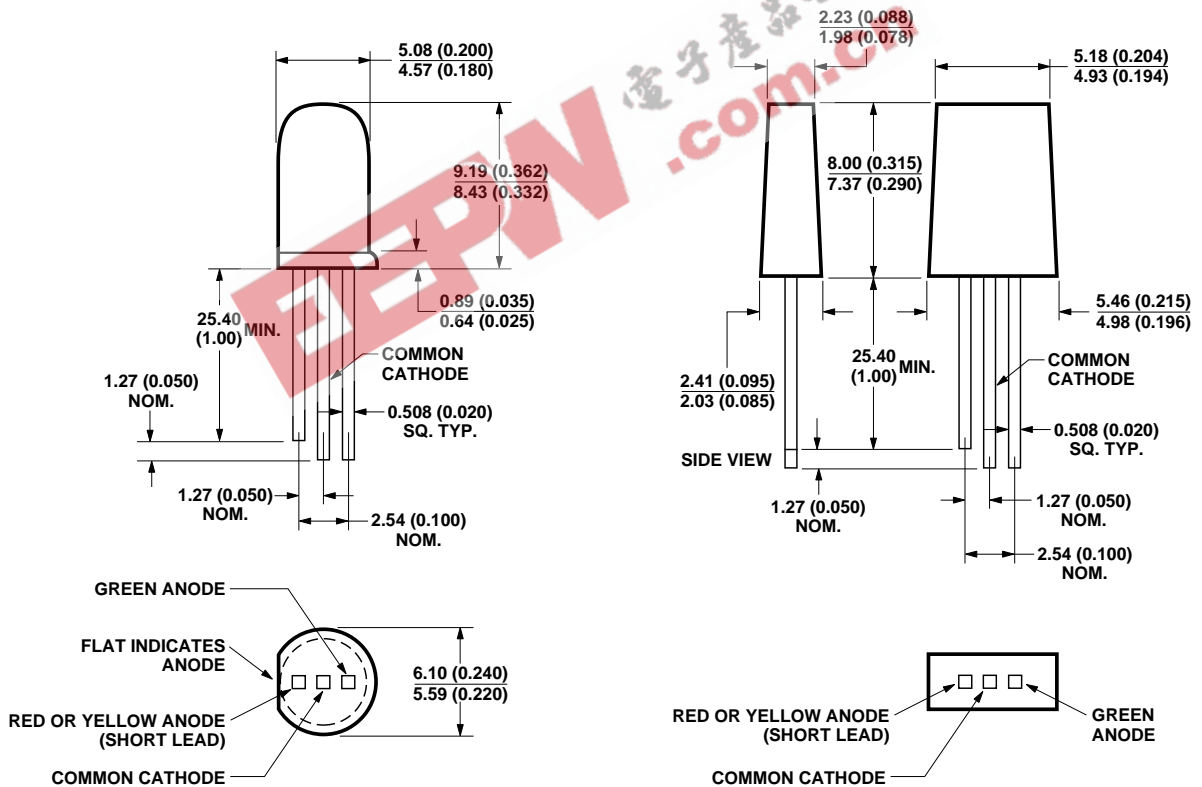
Color Options

- 00: High Efficiency Red (HER) / High Efficiency Green
- 05/15: Yellow / High Efficiency Green

Package Options

- 40: T-1 3/4 (5 mm)
- 08: Rectangular

Package Dimensions



HLMP-40xx Straight Leads

HLMP-08xx Straight Leads

Notes:

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

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

| Parameter | HER/Green | Yellow/Green | Units |
|---|-------------|-------------------|------------------|
| Peak Forward Current | 90 | 60 | mA |
| Average Forward Current ^[1,2] (Total) | 25 | 20 | mA |
| DC Current ^[2] (Total) | 30 | 20 | mA |
| Power Dissipation ^[3] (Total) | 135 | 135 | mW |
| Operating Temperature Range | -20 to +100 | -20 to +100 | $^\circ\text{C}$ |
| Storage Temperature Range | -55 to +100 | -55 to +100 | $^\circ\text{C}$ |
| Reverse Voltage ($I_R = 100 \mu\text{A}$) | 5 | 5 | V |
| Transient Forward Current ^[4] (10 μsec Pulse) | 500 | 500 | mA |
| Solder Dipping Temperature (1.6 mm (0.063 inch) below seating plane) | | 260 for 5 seconds | $^\circ\text{C}$ |

Notes:

- See Figure 5 to establish pulsed operating conditions.
- The combined simultaneous current must not exceed the maximum.
- The combined simultaneous current must not exceed the maximum.
- The transient peak current is the maximum non-recurring 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.

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

| Symbol | Parameter | High Efficiency Red | | | Green | | | Yellow | | | Units | Test Condition |
|--------------------------|--|---------------------|-----------|------|-------|-----------|------|--------|-----------|------|--------------------|------------------------------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. | | |
| λ_{PEAK} | Peak Wavelength | | 635 | | | 568 | | | 583 | | nm | 20 mA |
| λ_d | Dominant Wavelength ^[1] | | 626 | | | 570 | | | 585 | | nm | 20 mA |
| τ_s | Speed of Response | | 90 | | | 260 | | | 90 | | ns | |
| C | Capacitance | | 11 | | | 18 | | | 15 | | pF | $V_F = 0, f = 1 \text{ MHz}$ |
| V_F | Forward Voltage | | 1.9 | 2.6 | | 2.2 | 3.0 | | 2.1 | 2.6 | V | 20 mA |
| V_R | Reverse Voltage | 5 | | | 5 | | | 5 | | | V | $I_R = 100 \mu\text{A}$ |
| $R\theta_{\text{J-PIN}}$ | Thermal Resistance | | 210 | | | 210 | | | 210 | | $^\circ\text{C/W}$ | Junction-to-Cathode Lead |
| $2\theta_{1/2}$ | Included Angle between half luminous intensity points ^[2] HLMP-40xx HLMP-08xx | | 65 100 | | | 65 100 | | | 65 100 | | degree | |
| η_v | Luminous Efficacy ^[3] | | 145 | | | 595 | | | 500 | | lm/W | |

Notes:

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

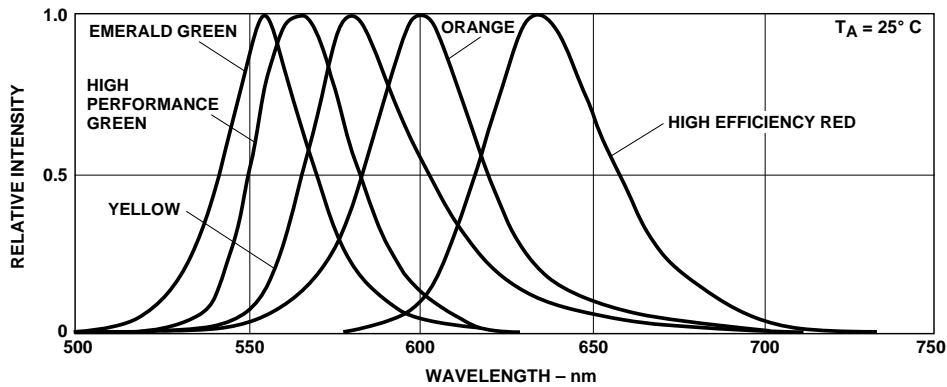


Figure 1. Relative intensity vs. wavelength.

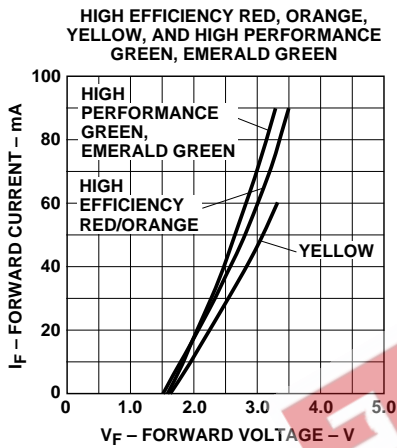


Figure 2. Forward current vs. forward voltage characteristics.

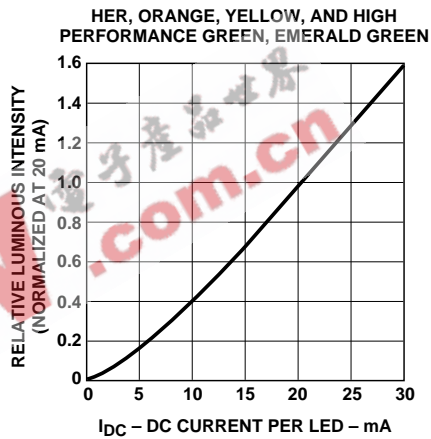


Figure 3. Relative luminous intensity vs. DC forward current.

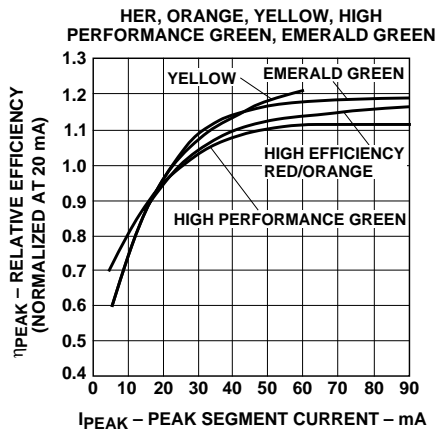


Figure 4. Relative efficiency (luminous intensity per unit current) vs. peak LED current.

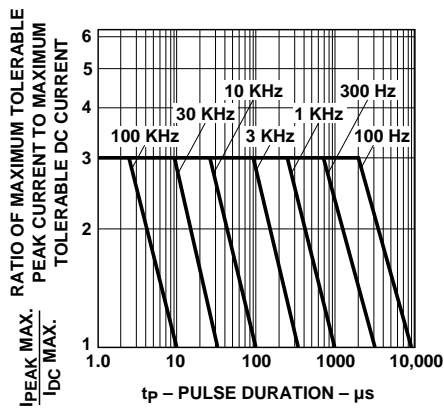


Figure 5. Maximum tolerable peak current vs. pulse duration. (I_{DC} Max. as per maximum ratings.)

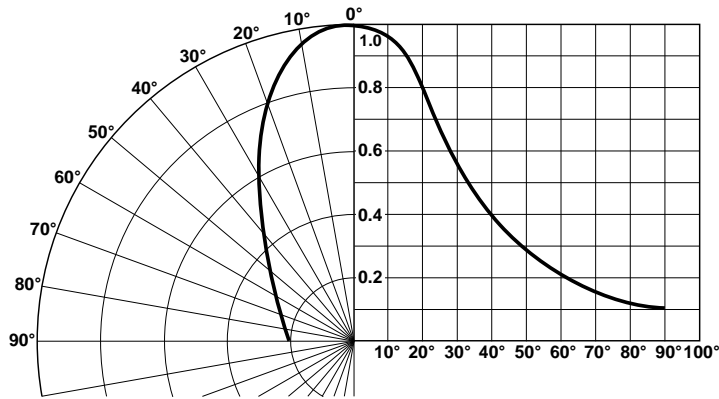


Figure 6. Relative luminous intensity vs. angular displacement for HLMP-40xx.

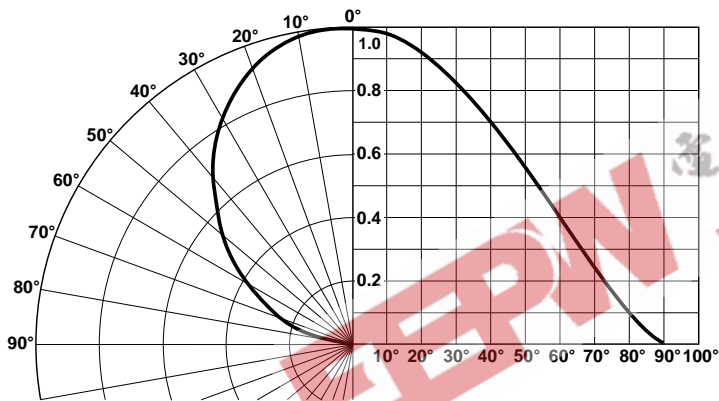


Figure 7. Relative luminous intensity vs. angular displacement for HLMP-08xx.

Mechanical Option Matrix

| Mechanical Option Code | Definition |
|------------------------|--|
| 002 | Tape & Reel, straight leads, minimum increment 1300 pcs/bag |
| 010 | 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 Agilent representative for further clarification/information.

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