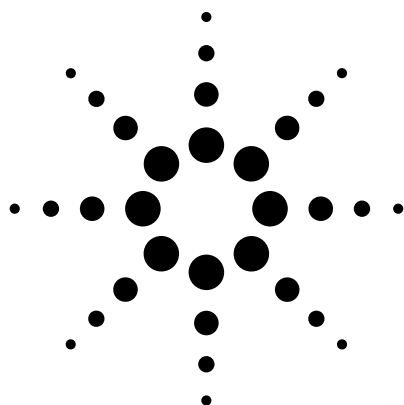


Agilent HLMP-40xx, HLMP-08xx T-1 3/4, 2 mm x 5 mm Rectangular Bicolor LED Lamps

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.

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-4010	Green/As AlGaAs Red	27.3	22.0		20
	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

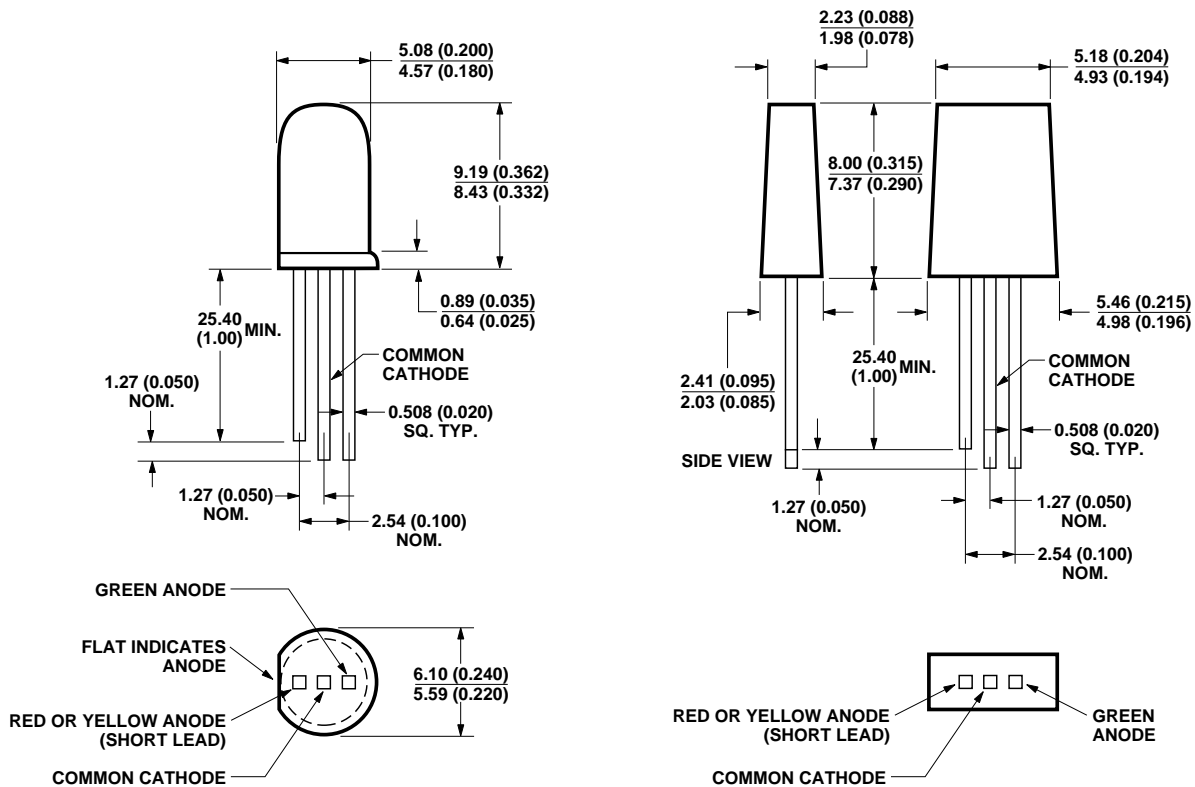
Color Options

00: High Efficiency Red (HER) / High Efficiency Green
10: As AlGaAs Red / High Efficiency Green
05/15: Yellow / High Efficiency Green

Package Options

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

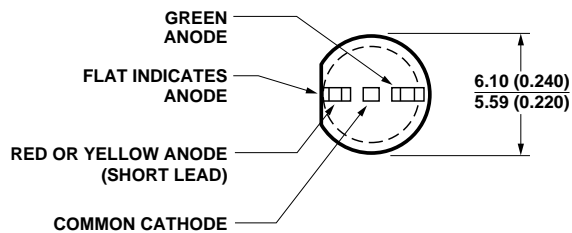
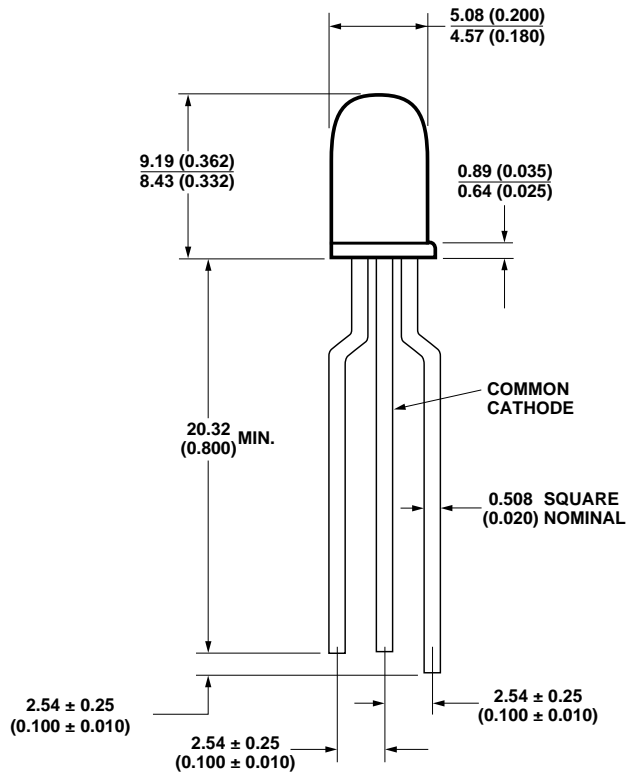
Package Dimensions



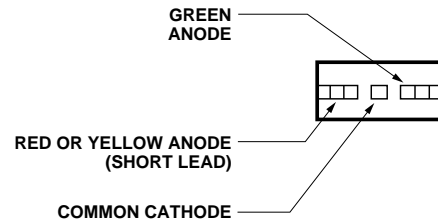
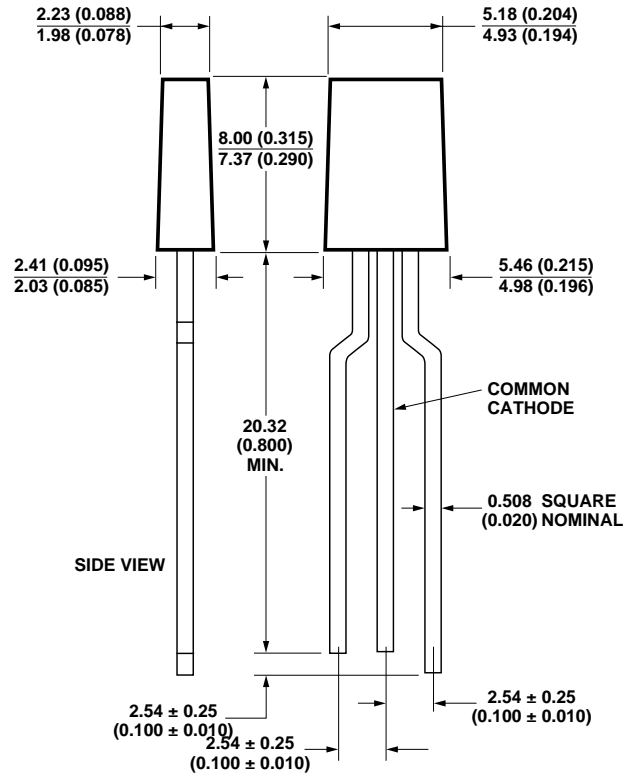
HLMP-40xx Straight Leads

HLMP-08xx Straight Leads

Package Dimensions, continued



HLMP-40xx Spread Leads



HLMP-08xx Spread Leads

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

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

Notes:

1. See Figure 5 to establish pulsed operating conditions.
2. The combined simultaneous current must not exceed the maximum.
3. The combined simultaneous current must not exceed the maximum.
4. 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			As AlGaAs Red			Green			Yellow			Units	Test Condition
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.		
λ_{PEAK}	Peak Wavelength	635			645			568			583			nm	20 mA
λ_{d}	Dominant Wavelength ^[1]	626			637			570			585			nm	20 mA
τ_{s}	Speed of Response	90			30			260			90			ns	
C	Capacitance	11			30			18			15			pF	V _F = 0, f = 1 MHz
V _F	Forward Voltage	1.9 2.6			1.8 2.2			2.2 3.0			2.1 2.6			V	20 mA
V _R	Reverse Voltage	5			5			5			5			V	I _R = 100 μA
R _{θJ-PIN}	Thermal Resistance	210			210			210			210			°C/W	Junction-to-Cathode Lead
2θ _{1/2}	Included Angle between half luminous intensity points ^[2] HLMP-40xx HLMP-08xx													degree	
		65			65			65			65				
		100			100			100			100				
η _v	Luminous Efficacy ^[3]	145			80			595			500			lm/W	

Notes:

1. The dominant wavelength, λ_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 the axial luminous intensity.
3. 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.

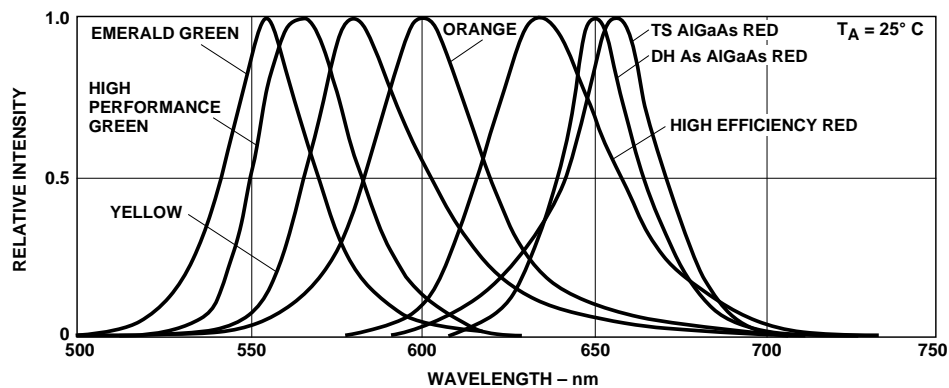


Figure 1. Relative intensity vs. wavelength.

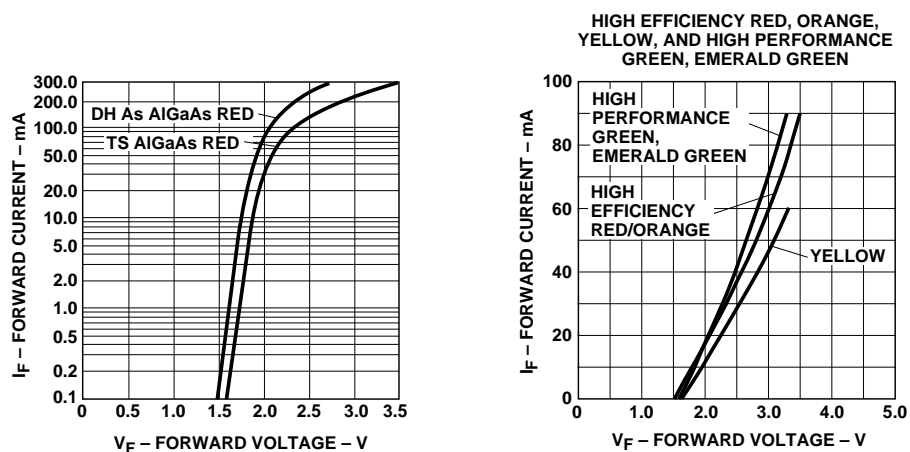


Figure 2. Forward current vs. forward voltage characteristics.

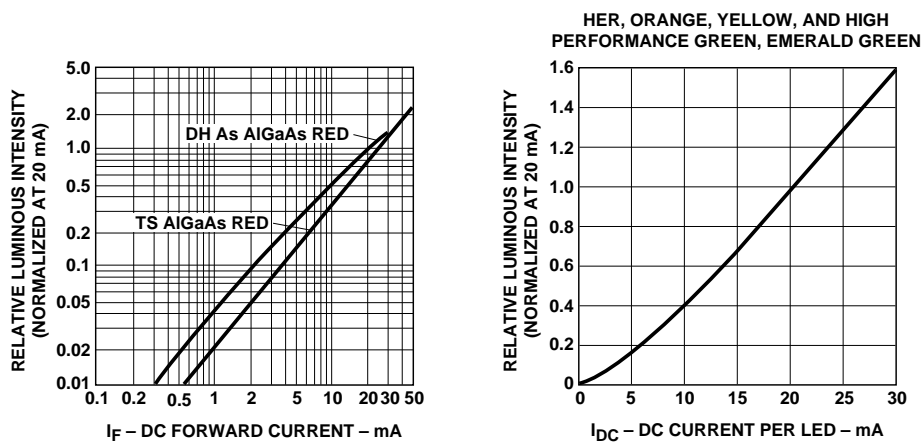


Figure 3. Relative luminous intensity vs. DC forward current.

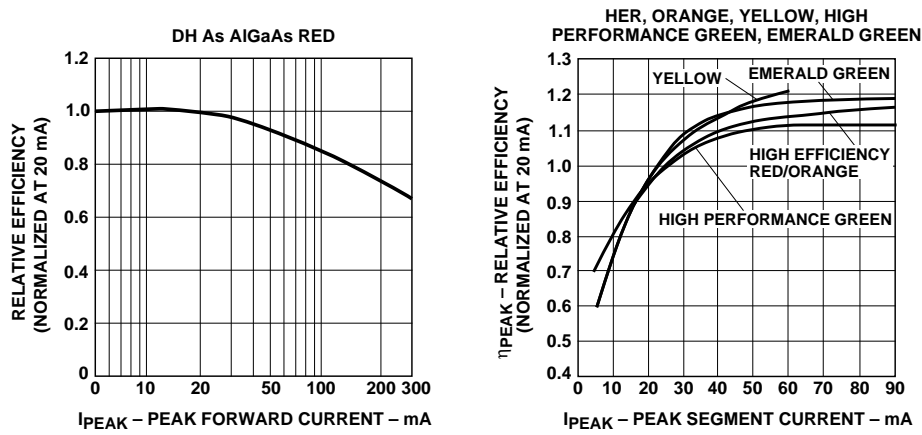


Figure 4. Relative efficiency (luminous intensity per unit current) vs. peak LED current.

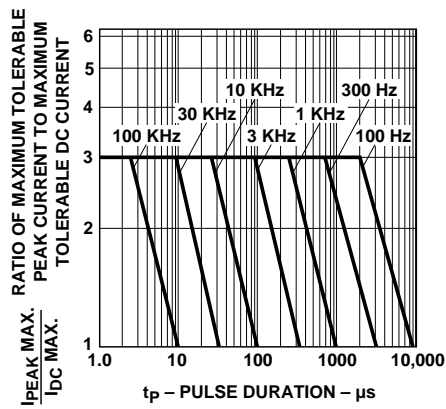


Figure 5. Maximum tolerable peak current vs. pulse duration. (I_{DC} Max. as per maximum ratings.)

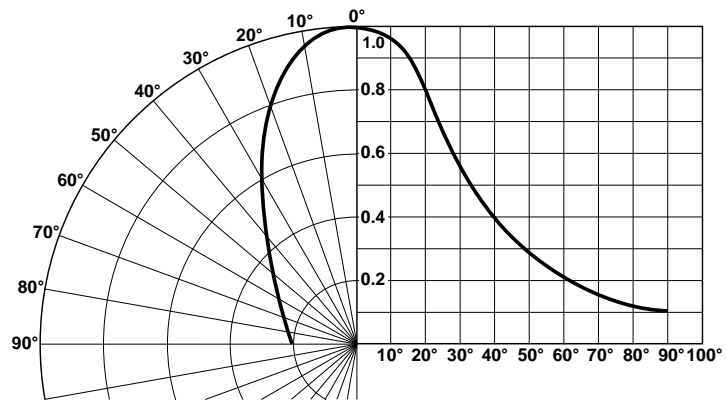


Figure 6. Relative luminous intensity vs. angular displacement for HLMP-40xx.

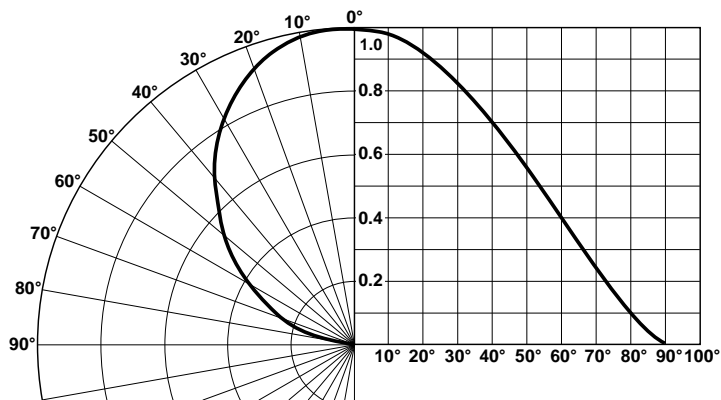


Figure 7. Relative luminous intensity vs. angular displacement for HLMP-08xx.

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.

