Single Chip LED Light Bar

Technical Data

HLMP-T200
HLMP-T300
HLMP-T400
HLMP-T500

Features

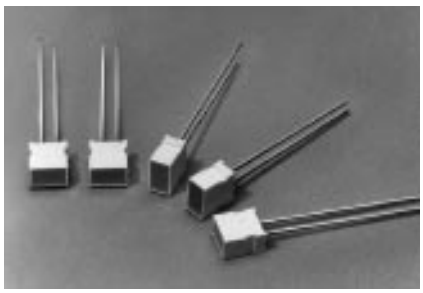
- **Flat Rectangular Light Emitting Surface**
- **Choice of 4 Bright Colors**
- **Excellent On/Off Contrast**
- **Ideal as Flush Mounted Panel Indicators**
- **Long Life: Solid State Reliability**
- **Solder Coated Leads**

Applications

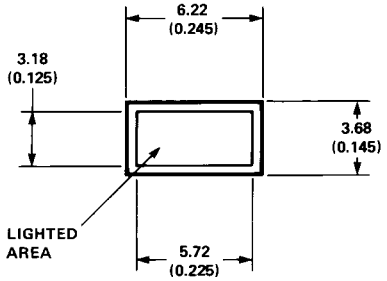
- **Bar Graphs**
- **Front Panel Status Indicators**
- **Telecommunications Indicators**
- **Push Button Illumination**
- **PC Board Identifiers**
- **Business Machine Message Annunciators**

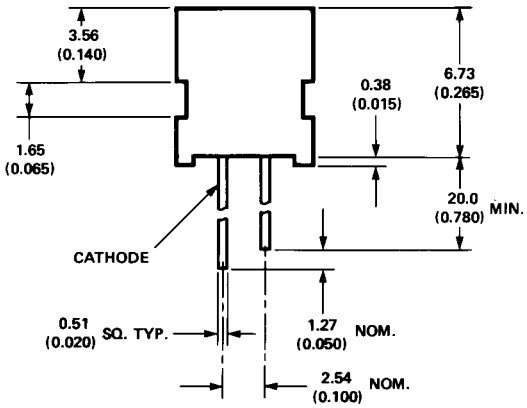
Description

The HLMP-T200/-T300/-T400/ -T500 light bars are rectangular light sources designed for a variety of applications where this shape and a high sterance are desired. These light bars consist of a rectangular plastic case around an epoxy encapsulated LED lamp. The encapsulant is tinted to match the color of the emitted light. The flat top surface is exceptionally uniform in light emission and the plastic case eliminates light leakage from the sides of the device.



Package Dimensions





NOTES:
1. DIMENSIONS ARE IN MILLIMETRES (INCHES).
2. TOLERANCES ARE ±0.25 mm (±0.010 INCH) UNLESS OTHERWISE NOTED.

Electrical/Optical Characteristics at T_A = 25°C

Symbol	Description	Device HLMP-	Min.	Typ.	Max.	Units	Test Conditions
I_V	Luminous Intensity	High Efficiency Red T200	3.0	4.8		mcd	I_F = 20 mA
		Orange T400	3.0	4.8			
		Yellow T300	3.0	4.8			
		Green T500	3.0	6.0			
$2\theta_{1/2}$	Included Angle Between Half Luminous Intensity Points	All		100		Deg.	I_F = 20 mA See Note 1
λ_{PEAK}	Peak Wavelength	High Efficiency Red Orange Yellow Green		635 612 583 565		nm	Measurement at Peak
λ_d	Dominant Wavelength	High Efficiency Red Orange Yellow Green		626 608 585 569		nm	See Note 2
τ_s	Speed of Response	High Efficiency Red Orange Yellow Green		350 350 390 870		ns	
C	Capacitance	High Efficiency Red Orange Yellow Green		4 4 8 11		pF	V_F = 0; f = 1 MHz
$R\theta_{JC}$	Thermal Resistance	All		260		°C/W	Junction to Cathode Lead at Seating Plane
V_F	Forward Voltage	HER/Orange Yellow Green	1.5 1.5 1.6	2.2 2.2 2.3	2.6 2.6 2.6	V	I_F = 20 mA
V_R	Reverse Breakdown Voltage	All	5.0			V	I_R = 100 µA
η_V	Luminous Efficacy	High Efficiency Red Orange Yellow Green		145 262 500 595		$\frac{\text{lumens}}{\text{Watt}}$	See Note 3

Notes:

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

Characteristics at T_A = 25°C

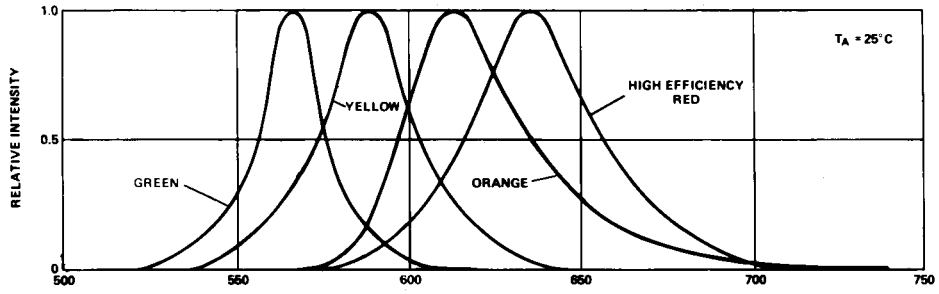


Figure 1. Relative Intensity vs. Wavelength.

High Efficiency Red, Orange, Yellow, and Green Light Bars

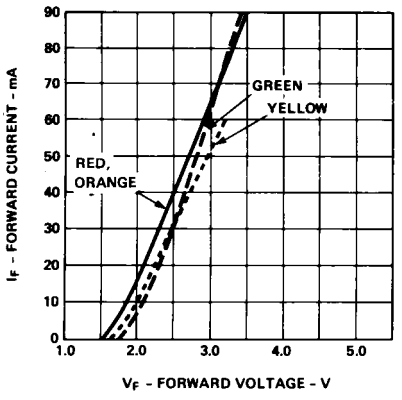


Figure 2. Forward Current vs. Forward Voltage Characteristics.

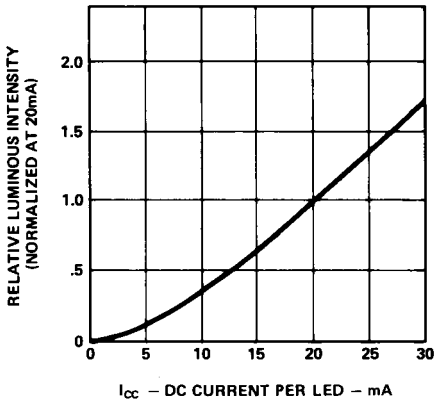


Figure 3. Relative Luminous Intensity vs. DC Forward Current.

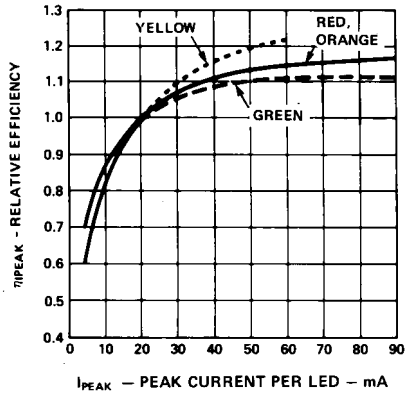


Figure 4. Relative Efficiency (Luminous Intensity per Unit Current) vs. LED Peak Current.

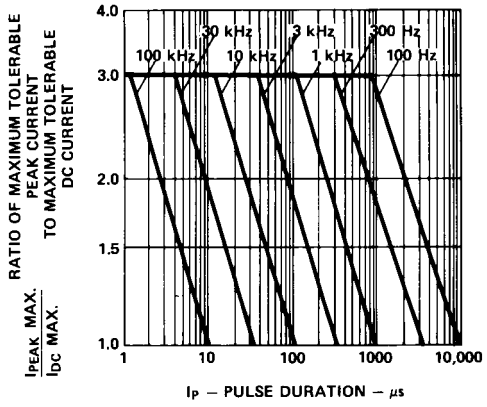


Figure 5. Maximum Tolerable Peak Current vs. Pulse Duration. (I_{DC} MAX as per MAX Ratings).

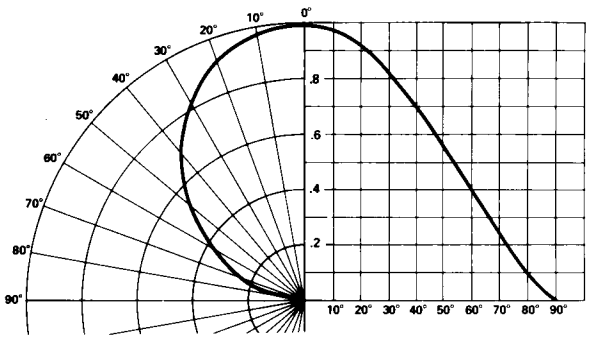


Figure 6. Relative Luminous Intensity vs. Angular Displacement.

Absolute Maximum Ratings at T_A = 25°C

Parameter	High Efficiency Red/ Orange	Yellow	Green	Units
Peak Forward Current	90	60	90	mA
Average Forward Current[1]	25	20	25	mA
DC Current[2]	30	20	30	mA
Power Dissipation	88	64	88	mW
LED Junction Temperature	110			°C
Operating Temperature Range	-40 to +85	-40 to +85	-20 to +85	°C
Storage Temperature Range	-55 to +100	-55 to +100	-55 to +100	
Reverse Voltage (I_R = 100 μA)	5			V
Transient Forward Current[3] (10 μsec Pulse)	500			mA
Lead Soldering Temperature [1.6 mm (0.063 in.) below seating plane]	260°C for 3 seconds			

Notes:
1. See Figure 5 to establish pulsed operating conditions.
2. For Red, Orange, and Green derate linearly from 50°C at 0.5 mA/°C. For Yellow derate linearly from 50°C at 0.34 mA/°C.
3. 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 the device be operated at peak currents beyond the peak forward current listed in the Absolute Maximum Ratings.

Optical

The radiation pattern for these light bar devices is approximately Lambertian. The luminous sterance may be calculated using one of the two following formulas:

$$L_V\ (cd/m^2) = \frac{I_V\ (cd)}{A\ (m^2)}$$

$$L_V\ (footlamberts) = \frac{\pi I_V\ (cd)}{A\ (ft^2)}$$

Size of light emitting area (A)

= 3.18 mm x 5.72 mm

= 18.19 x 10^{-6} m^2

= 195.8 x 10^{-6} ft^2