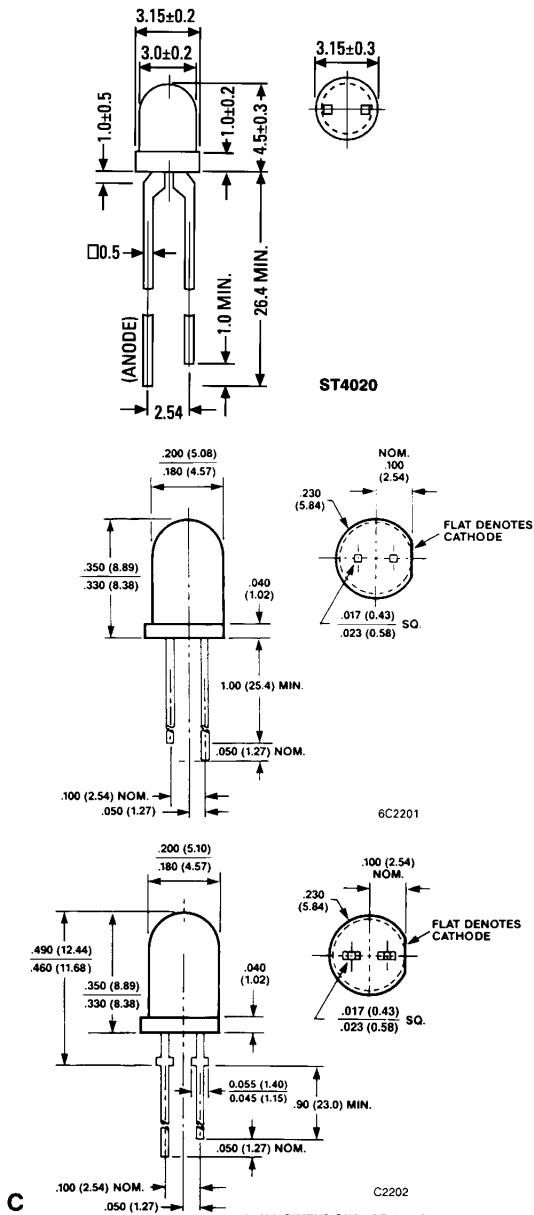


**DOUBLE HETEROJUNCTION AlGaAs  
HIGH INTENSITY RED LED LAMPS**

**T-1<sup>3/4</sup> HLMP-D101A/D105A  
T-1 HLMP-K101/K105**

**PACKAGE DIMENSIONS**



**DESCRIPTION**

Exceptional light output typifies these devices and provides for their use over a broad range of drive currents. The LED material is based on recently developed double heterojunction (DH) AlGaAs/GaAs technology. The light emitted is perceived as a deep red color, characterized by a dominant wavelength of 637 nanometers.

**FEATURES**

- Exceptional Brightness
- Wide Viewing Angle
- Outstanding Material Efficiency
- Low Forward Voltage
- CMOS/MOS Compatible
- TTL Compatible
- Deep Red Color

**APPLICATIONS**

- Bright Ambient Lighting Conditions
- Moving Message Panels
- Portable Equipment
- General Use

1. ALL DIMENSIONS ARE IN INCHES (mm)  
2. TOLERANCES ARE ±.010" UNLESS OTHERWISE SPECIFIED  
3. AN EPOXY MENISCUS MAY EXTEND ABOUT .040" (1 mm) DOWN THE LEADS



## DOUBLE HETEROJUNCTION AlGaAs HIGH INTENSITY RED LED LAMPS

PHYSICAL CHARACTERISTICS						
SIZE	TYPE	LENS EFFECT	I <sub>v</sub> (mcd) MIN	@ 20mA TYPE	VIEWING ANGLE 2Ø1/2 DEGREES	PKG.
T-1	HLMP-K101	Red Tinted Diffused	22	45	60	A
T-1	HLMP-K105	Clear	35	65	45	A
T-1 3/4	HLMP-D101A	Red Tinted Diffused	35	70	65	B
T-1 3/4	HLMP-D105A	Clear	100	240	24	C

ELECTRO-OPTICAL CHARACTERISTICS (T <sub>A</sub> = 25°C Unless Otherwise Specified)						
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Forward voltage	V <sub>f</sub>		1.8	2.2	V	I <sub>f</sub> = 20 mA
Peak wavelength	λ <sub>p</sub>		645		nm	I <sub>f</sub> = 20 mA
Dominant wavelength	λ <sub>d</sub>		637		nm	I <sub>f</sub> = 20 mA
Spectral line half width	Δλ <sub>1/2</sub>		20		nm	I <sub>f</sub> = 20 mA
Capacitance	C		30		pF	V <sub>r</sub> = 0, f = 1 MHz
Reverse breakdown voltage	V <sub>r</sub>	5.0	15.0		V	I <sub>r</sub> = 100 μA

ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25°C Unless Otherwise Specified)	
Power dissipation	87 mW
Operating temperature	-20°C to +100°C
Storage temperature	-55°C to +100°C
Lead soldering time at 260°C	5 seconds
Peak forward current (see Note 1)	300 mA
Reverse voltage (I <sub>r</sub> = 100 μA)	5V
Average forward current (see Note 2)	20 mA
D.C. current (see Note 3)	30 mA

NOTES
1. Maximum I <sub>peak</sub> at f = 1 kHz, DF = 6.7%
2. Refer to Figure 6 to establish pulsed operating conditions.
3. Derate linearly as shown in Figure 5.

**TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES**  
(25°C Free Air Temperature)

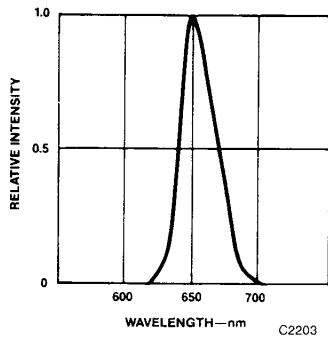


Fig. 1. Relative Intensity vs. Wavelength

C2203

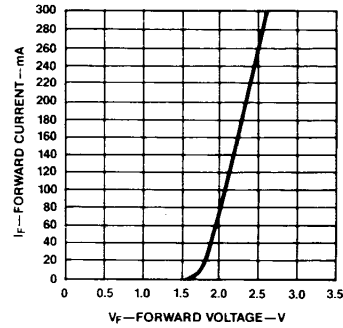


Fig. 2. Forward Current vs. Forward Voltage

C2206

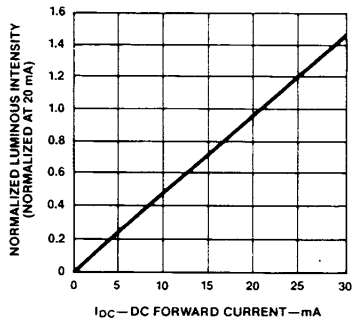


Fig. 3. Relative Luminous Intensity vs. DC Forward Current

C2204

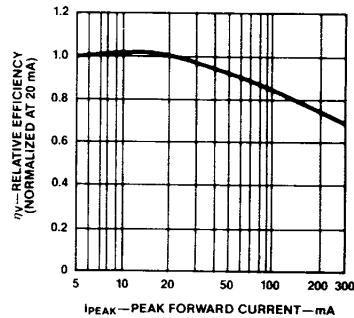


Fig. 4. Relative Efficiency vs. Peak Forward Current

C2207

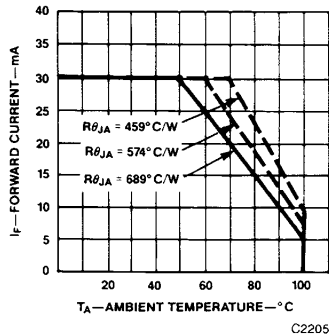


Fig. 5. Maximum Forward DC Current vs. Ambient Temperature. Derating Based on  $T_j$  MAX = 110°C.

C2205

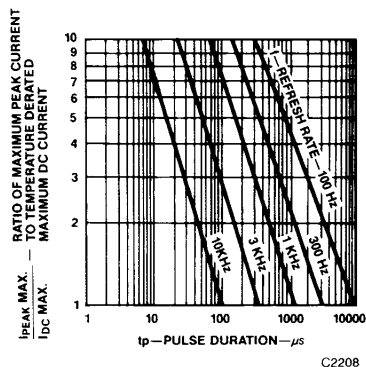


Fig. 6. Maximum Tolerable Peak Current vs. Peak Duration ( $I_{PEAK}$  MAX Determined from Temperature Derated  $I_{DC}$  MAX)

C2208

**TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES**  
(25°C Free Air Temperature) (Cont'd)

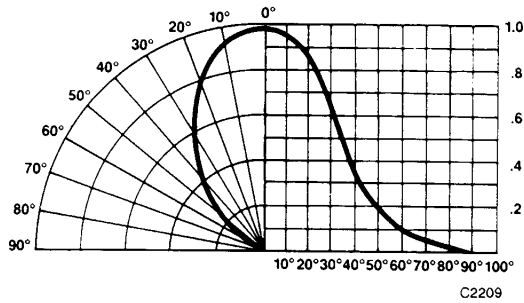


Fig. 7. Relative Luminous Intensity vs. Angular Displacement, HLMP-D101A

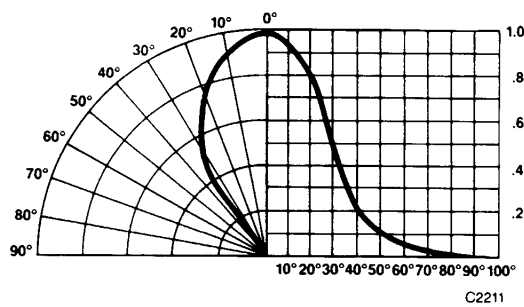


Fig. 8. Relative Luminous Intensity vs. Angular Displacement, HLMP-K101

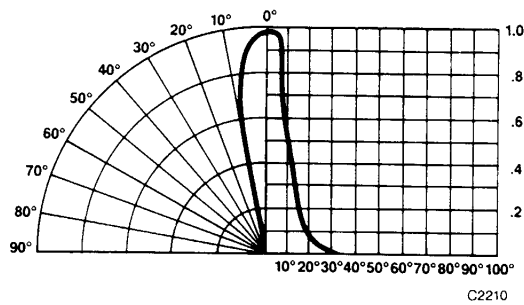


Fig. 9. Relative Luminous Intensity vs. Angular Displacement, HLMP-D105A

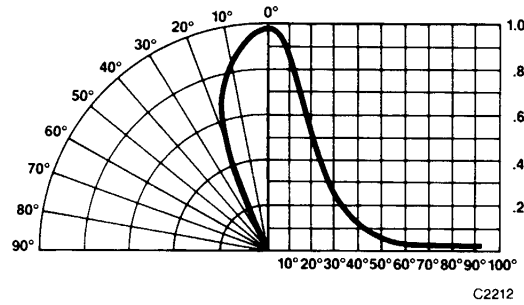


Fig. 10. Relative Luminous Intensity vs. Angular Displacement, HLMP-K105