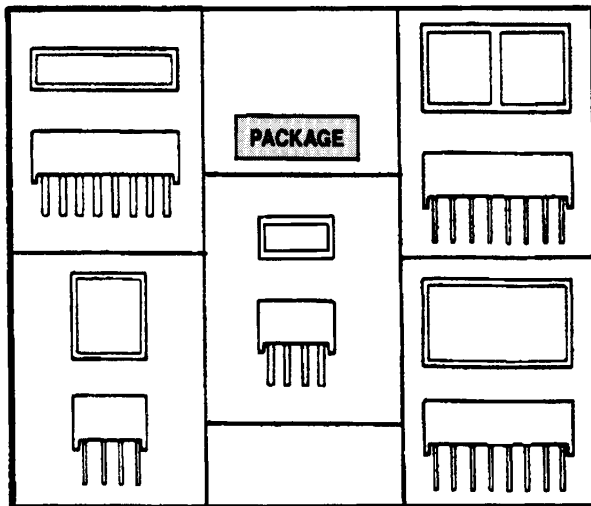


**HIGH EFFICIENCY RED HLMP-2300/2600 SERIES  
YELLOW HLMP-2400/2700 SERIES  
HIGH EFFICIENCY GREEN HLMP-2500/2800 SERIES**



**DESCRIPTION**


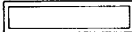

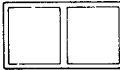
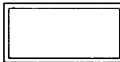
These LED Light Bar series are bright, large emitting area, rectangular devices that are designed for backlighting legend/message annunciators.

These devices are offered in single-in-line and dual-in-line packages that contain single or segmented light-emitting area. Each package style is offered in High Efficiency Red, Yellow, or Green emission color.

**FEATURES**

- Large area, uniform, bright light-emitting surfaces
- Select from six package styles
- Choice of three colors
- Categorized for intensity and color
- X-Y stackable
- Easily driven with I.C.s
- Alternate source for popular backlighting components

**MODEL NUMBERS**

PART NO.	COLOR	DESCRIPTION		PACKAGE	PIN OUT
HLMP-2300 HLMP-2400 HLMP-2500	High Efficiency Red Yellow High Efficiency Green	2 LED Single-in-line 0.35 in. x 0.15 in. Area		A	A
HLMP-2350 HLMP-2450 HLMP-2550	High Efficiency Red Yellow High Efficiency Green	4 LED Single-in-line 0.75 in. x 0.15 in. Area		B	B
HLMP-2655 HLMP-2755 HLMP-2855	High Efficiency Red Yellow High Efficiency Green	4 LED Dual-in-line 0.35 in. x 0.35 in. Area		C	C
HLMP-2670 HLMP-2770 HLMP-2870	High Efficiency Red Yellow High Efficiency Green	Dual 0.35 in. x 0.35 in. Area Dual-in-line package		D	D
HLMP-2685 HLMP-2785 HLMP-2885	High Efficiency Red Yellow High Efficiency Green	8 LED 0.35 in. x 0.75 in. Area Dual-in-line package		E	D

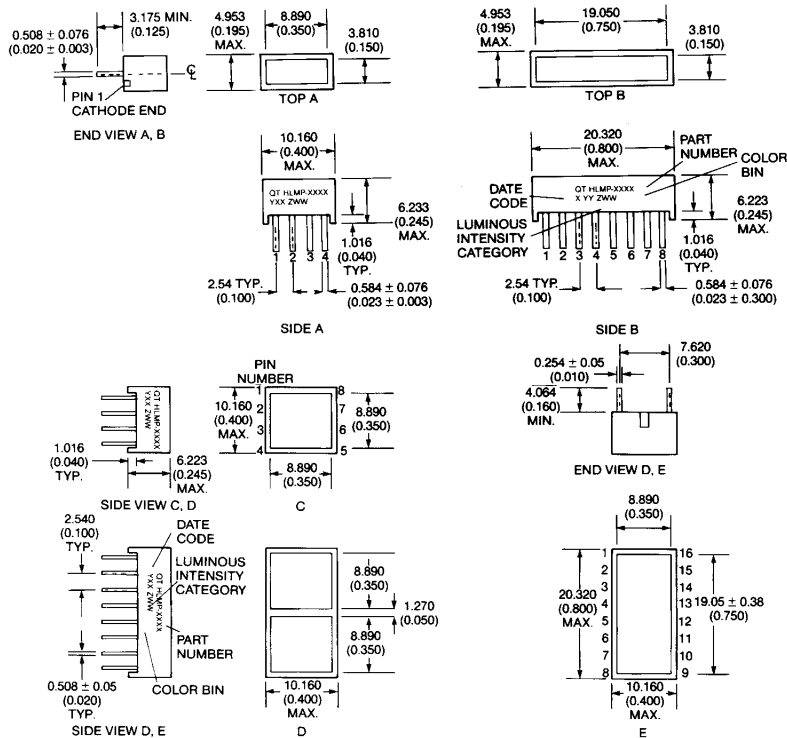
## ABSOLUTE MAXIMUM RATINGS $T_A=25^\circ\text{C}$ (Unless Otherwise Stated)

	HIGH EFFICIENCY RED HIGH EFFICIENCY GREEN HLMP-2300/-2500 -2600/-2800 SERIES	YELLOW HLMP-2400/ -2700 SERIES
Power dissipation per LED chip (See Note 1)	135 mW	85 mW
Peak forward current per LED chip, $T_A=50^\circ\text{C}$ (max. pulse width=2 ms) (See Notes 1 and 2)	90 mA	60 mA
Average forward per LED chip pulsed conditions, $T_A=50^\circ\text{C}$ (See Note 2)	25 mA	20 mA
DC forward current per LED chip, $T_A=50^\circ\text{C}$ (See Note 3)	30 mA	25 mA
Reverse voltage per LED chip	6V	6V
Storage and operating temperature range	$-40^\circ\text{C}$ to $+85^\circ\text{C}$	$-40^\circ\text{C}$ to $+85^\circ\text{C}$
Soldering time at $260^\circ\text{C}$ (See Note 4)	$260^\circ\text{C}$ for 3 sec.	$260^\circ\text{C}$ for 3 sec.

## NOTES

- For HLMP-2300/-2500/-2600/-2800 Series, derate above  $T_A=25^\circ\text{C}$  at  $1.8\text{ mW}/^\circ\text{C}$  per LED chip. For HLMP-2400/-2700 Series, derate above  $T_A=50^\circ\text{C}$  at  $1.8\text{ mW}/^\circ\text{C}$  per LED chip.
- See Figure 1/2 to establish pulse operating conditions.
- For HLMP-2300/-2500/-2600/-2800 Series, derate above  $T_A=50^\circ\text{C}$  at  $0.5\text{ mA}/^\circ\text{C}$  per LED chip. For HLMP-2400/-2700 Series derate above  $T_A=60^\circ\text{C}$  at  $9.5\text{ mA}/^\circ\text{C}$  per LED chip.
- Lead immersed to 1/16 in. from body of the device. Maximum unit surface temperature is  $140^\circ\text{C}$ .

## PACKAGE DIMENSIONS



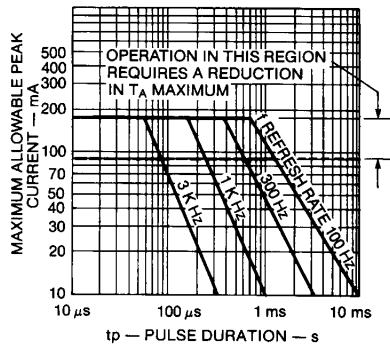
NOTE: DIMENSIONS IN MILLIMETERS (INCHES). TOLERANCES  $\pm 0.25$  ( $\pm 0.010$ ) UNLESS OTHERWISE INDICATED

<b>ELECTRO-OPTICAL CHARACTERISTICS (T<sub>A</sub>=25°C)</b>									
<b>HIGH EFFICIENCY RED</b>									
PARAMETER	SYMBOL	HLMP					UNIT	TEST CONDITIONS	
		-2300	-2350	-2655	-2670	-2685			
Luminous Intensity	min.		6.0	13	13	13	22	mcd	I <sub>F</sub> =20 mA
	typ.	I <sub>V</sub>	23	45	43	45	80	mcd	I <sub>F</sub> =20 mA
	typ.		30	50	50	50	100	mcd	I <sub>F</sub> =60 mA pK, 1:3 D.F.
Forward voltage	max.	V <sub>F</sub>	2.6	2.6	2.6	2.6	2.6	V	I <sub>F</sub> =20 mA
	typ.		2.0	2.0	2.0	2.0	2.0		
Peak wavelength	typ.	λ <sub>p</sub>	630	630	630	630	630	nm	
Dominant wavelength	typ.	λ <sub>d</sub>	626	626	626	626	626	nm	
Capacitance	typ.	C	45	45	45	45	45	pF	V <sub>F</sub> =0, f=1 MHz
Reverse voltage	min.	V <sub>R</sub>	6	6	6	6	6	V	I <sub>R</sub> =100 μA
Thermal resistance	typ.	θ <sub>JL</sub>	150	150	150	150	150	°C/W/ LED chip	

<b>ELECTRO-OPTICAL CHARACTERISTICS (T<sub>A</sub>=25°C)</b>									
<b>YELLOW</b>									
PARAMETER	SYMBOL	HLMP					UNIT	TEST CONDITIONS	
		-2400	-2450	-2755	-2770	-2785			
Luminous Intensity	min.		6	13	13	13	26	mcd	I <sub>F</sub> =20 mA
	typ.	I <sub>V</sub>	20	38	35	35	70	mcd	I <sub>F</sub> =20 mA
	typ.		33	60	60	60	115	mcd	I <sub>F</sub> =60 mA pK, 1:3 D.F.
Forward voltage	max.	V <sub>F</sub>	2.6	2.6	2.6	2.6	2.6	V	I <sub>F</sub> =20 mA
	typ.		2.1	2.1	2.1	2.1	2.1		
Peak wavelength	typ.	λ <sub>p</sub>	585	585	585	585	585	nm	
Dominant wavelength	typ.	λ <sub>d</sub>	588	588	588	588	588	nm	
Capacitance	typ.	C	35	35	35	35	35	pF	V <sub>F</sub> =0, f=1 MHz
Reverse voltage	min.	V <sub>R</sub>	6	6	6	6	6	V	I <sub>R</sub> =100 μA
Thermal resistance	typ.	θ <sub>JL</sub>	150	150	150	150	150	°C/W/ LED chip	

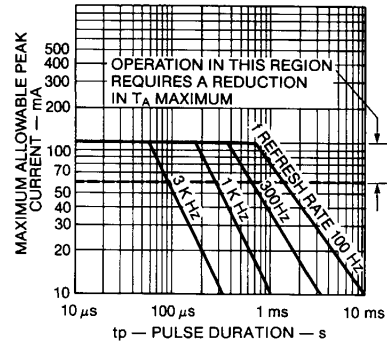
<b>ELECTRO-OPTICAL CHARACTERISTICS (T<sub>A</sub>=25°C)</b>									
<b>HIGH EFFICIENCY GREEN</b>									
PARAMETER	SYMBOL	HLMP					UNIT	TEST CONDITIONS	
		-2500	-2550	-2855	-2870	-2885			
Luminous Intensity	min.		5	11	11	11	22	mcd	I <sub>F</sub> =20 mA
	typ.	I <sub>V</sub>	25	50	50	50	100	mcd	I <sub>F</sub> =20 mA
	typ.		38	75	75	75	150	mcd	I <sub>F</sub> =60 mA pK, 1:3 D.F.
Forward voltage	max.	V <sub>F</sub>	2.6	2.6	2.6	2.6	2.6	V	I <sub>F</sub> =20 mA
	typ.		2.2	2.2	2.2	2.2	2.2		
Peak wavelength	typ.	λ <sub>p</sub>	565	565	565	565	565	nm	
Dominant wavelength	typ.	λ <sub>d</sub>	567	567	567	567	567	nm	
Capacitance	typ.	C	40	40	40	40	40	pF	V <sub>F</sub> =0, f=1 MHz
Reverse voltage	min.	V <sub>R</sub>	6	6	6	6	6	V	I <sub>R</sub> =100 μA
Thermal resistance	typ.	θ <sub>JL</sub>	150	150	150	150	150	°C/W/ LED chip	

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



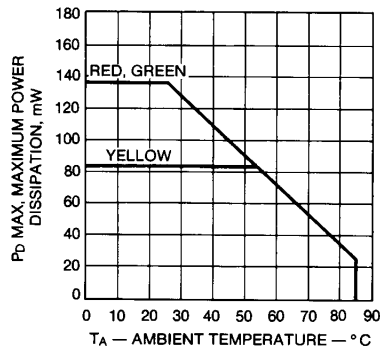
C2013

Fig. 1. Maximum Tolerable Peak Current per LED Chip vs. Pulse Duration for HLMP-23X0/-26XX/-25X0/-28XX



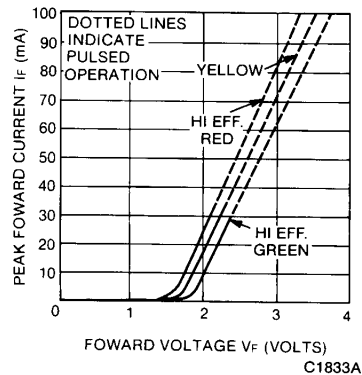
C2014

Fig. 2. Maximum Tolerable Peak Current per LED Chip vs. Pulse Duration for HLMP-24X0/-27XX Devices



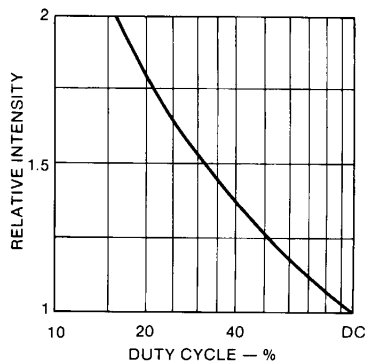
C2025

Fig. 3. Maximum Power Dissipation per LED vs. Ambient Temperature



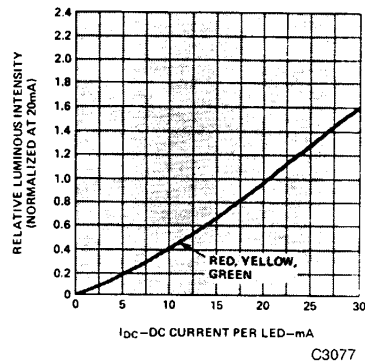
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Fig. 4. Forward Current vs. Forward Voltage



C1194C

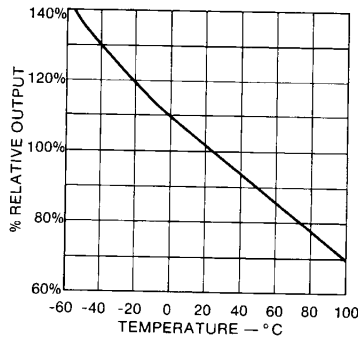
Fig. 5. Luminous Intensity vs. Duty Cycle



C3077

Fig. 6. Luminous Intensity vs. Forward Current

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



C654B

Fig. 7. Output vs. Temperature

**PIN CONNECTIONS TO ELECTRICAL SCHEMATIC**

PIN	ELECTRICAL CONNECTION			
	HLMP-2X00	HLMP-2X50	HLMP-2X55	HLMP-2X70/-2X85
1	1 Cathode	1 Cathode	1 Cathode	1 Cathode
2	1 Anode	1 Anode	1 Anode	1 Anode
3	2 Cathode	2 Cathode	2 Cathode	2 Cathode
4	2 Anode	2 Anode	2 Anode	2 Anode
5		3 Cathode	3 Cathode	3 Cathode
6		3 Anode	3 Anode	3 Anode
7		4 Cathode	4 Cathode	4 Cathode
8		4 Anode	4 Anode	4 Anode
9				4 Cathode
10				5 Cathode
11				5 Anode
12				6 Anode
13				6 Cathode
14				7 Cathode
15				7 Anode
16				8 Anode
				8 Cathode

**ELECTRICAL SCHEMATIC**

