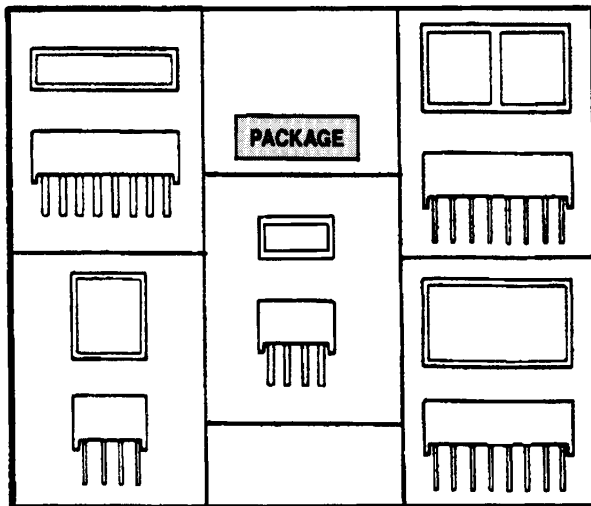


**HIGH EFFICIENCY RED HLMP-2300/2600 SERIES
YELLOW HLMP-2400/2700 SERIES
HIGH EFFICIENCY GREEN HLMP-2500/2800 SERIES**



DESCRIPTION


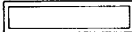

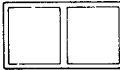
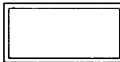
These LED Light Bar series are bright, large emitting area, rectangular devices that are designed for backlighting legend/message annunciators.

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

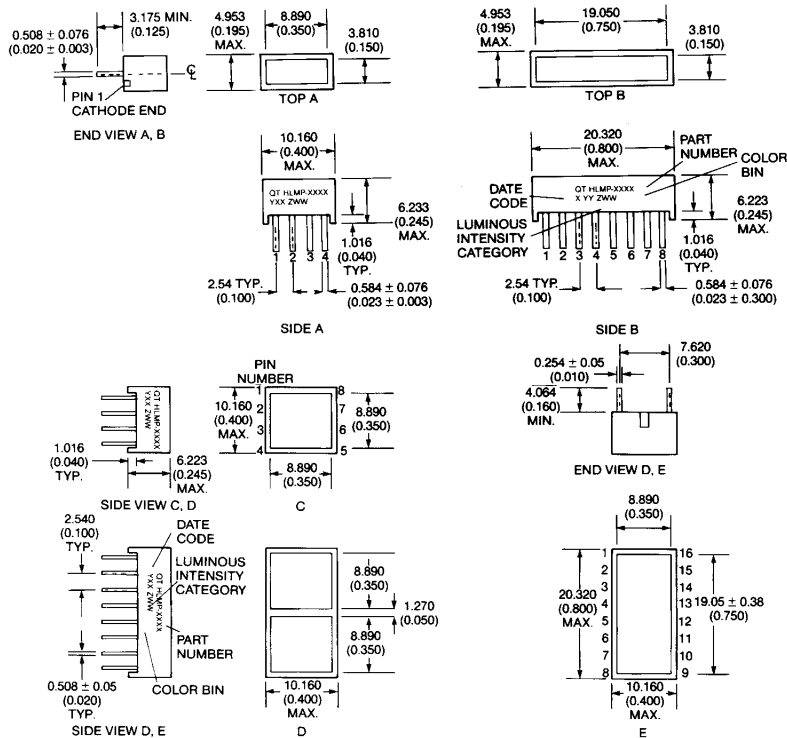
ABSOLUTE MAXIMUM RATINGS $T_A=25^\circ\text{C}$ (Unless Otherwise Stated)

	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°C to $+85^\circ\text{C}$	-40°C to $+85^\circ\text{C}$
Soldering time at 260°C (See Note 4)	260°C for 3 sec.	260°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°C .

PACKAGE DIMENSIONS



NOTE: DIMENSIONS IN MILLIMETERS (INCHES). TOLERANCES ± 0.25 (± 0.010) UNLESS OTHERWISE INDICATED

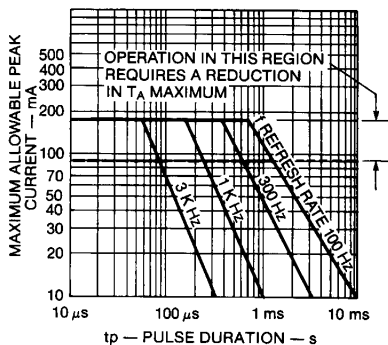
ELECTRO-OPTICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)									
HIGH EFFICIENCY RED									
PARAMETER	SYMBOL	HLMP					UNIT	TEST CONDITIONS	
		-2300	-2350	-2655	-2670	-2685			
Luminous Intensity	min.		6.0	13	13	13	22	mcd	$I_f=20\text{ mA}$
	typ.	I_v	23	45	43	45	80	mcd	$I_f=20\text{ mA}$
	typ.		30	50	50	50	100	mcd	$I_f=60\text{ mA pK, 1:3 D.F.}$
Forward voltage	max.	V_F	2.6	2.6	2.6	2.6	2.6	V	$I_f=20\text{ mA}$
	typ.		2.0	2.0	2.0	2.0	2.0		
Peak wavelength	typ.	λ_p	630	630	630	630	630	nm	
Dominant wavelength	typ.	λ_d	626	626	626	626	626	nm	
Capacitance	typ.	C	45	45	45	45	45	pF	$V_F=0, f=1\text{ MHz}$
Reverse voltage	min.	V_R	6	6	6	6	6	V	$I_R=100\ \mu\text{A}$
Thermal resistance	typ.	θ_{jL}	150	150	150	150	150	$^{\circ}\text{C/W/LED chip}$	

ELECTRO-OPTICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)									
YELLOW									
PARAMETER	SYMBOL	HLMP					UNIT	TEST CONDITIONS	
		-2400	-2450	-2755	-2770	-2785			
Luminous Intensity	min.		6	13	13	13	26	mcd	$I_f=20\text{ mA}$
	typ.	I_v	20	38	35	35	70	mcd	$I_f=20\text{ mA}$
	typ.		33	60	60	60	115	mcd	$I_f=60\text{ mA pK, 1:3 D.F.}$
Forward voltage	max.	V_F	2.6	2.6	2.6	2.6	2.6	V	$I_f=20\text{ mA}$
	typ.		2.1	2.1	2.1	2.1	2.1		
Peak wavelength	typ.	λ_p	585	585	585	585	585	nm	
Dominant wavelength	typ.	λ_d	588	588	588	588	588	nm	
Capacitance	typ.	C	35	35	35	35	35	pF	$V_F=0, f=1\text{ MHz}$
Reverse voltage	min.	V_R	6	6	6	6	6	V	$I_R=100\ \mu\text{A}$
Thermal resistance	typ.	θ_{jL}	150	150	150	150	150	$^{\circ}\text{C/W/LED chip}$	

ELECTRO-OPTICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)									
HIGH EFFICIENCY GREEN									
PARAMETER	SYMBOL	HLMP					UNIT	TEST CONDITIONS	
		-2500	-2550	-2855	-2870	-2885			
Luminous Intensity	min.		5	11	11	11	22	mcd	$I_f=20\text{ mA}$
	typ.	I_v	25	50	50	50	100	mcd	$I_f=20\text{ mA}$
	typ.		38	75	75	75	150	mcd	$I_f=60\text{ mA pK, 1:3 D.F.}$
Forward voltage	max.	V_F	2.6	2.6	2.6	2.6	2.6	V	$I_f=20\text{ mA}$
	typ.		2.2	2.2	2.2	2.2	2.2		
Peak wavelength	typ.	λ_p	565	565	565	565	565	nm	
Dominant wavelength	typ.	λ_d	567	567	567	567	567	nm	
Capacitance	typ.	C	40	40	40	40	40	pF	$V_F=0, f=1\text{ MHz}$
Reverse voltage	min.	V_R	6	6	6	6	6	V	$I_R=100\ \mu\text{A}$
Thermal resistance	typ.	θ_{jL}	150	150	150	150	150	$^{\circ}\text{C/W/LED chip}$	

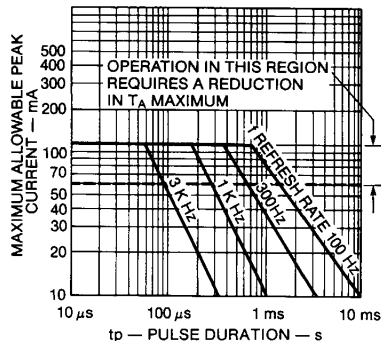
TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES

(25°C Free Air Temperature Unless Otherwise Specified)



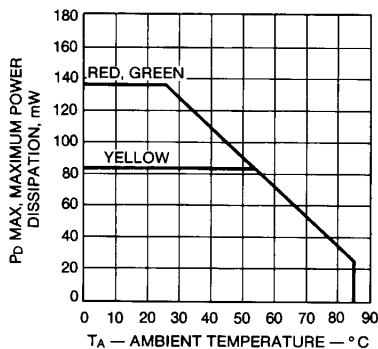
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Fig. 1. Maximum Tolerable Peak Current per LED Chip vs. Pulse Duration for HLMP-23X0/-26XX/-25X0/-28XX



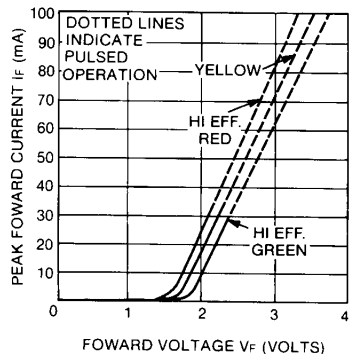
C2014

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



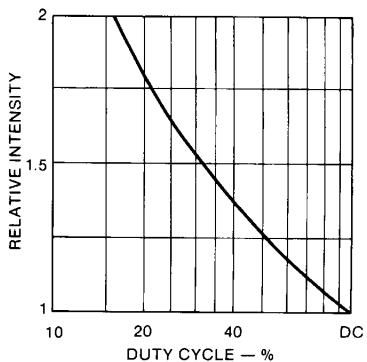
C2025

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



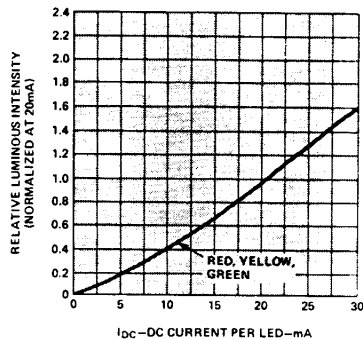
C1833A

Fig. 4. Forward Current vs. Forward Voltage



C1194C

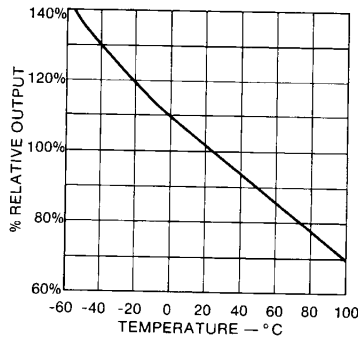
Fig. 5. Luminous Intensity vs. Duty Cycle



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 Cathode	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

