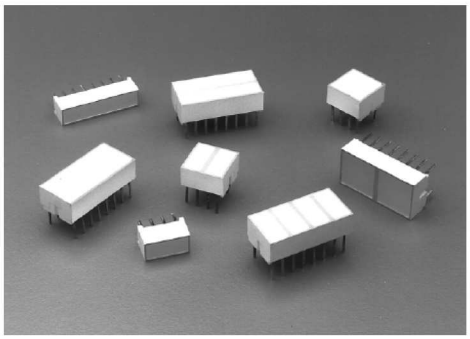
LED Light Bars

HLCP-A100/-B100/-C100/D100/-E100/-F100/-G100/-H100
HLMP-2300/-2350/-2400/-2450/-2500/-2550
HLMP-2600/-2620/-2635/-2655/-2670/-2685
HLMP-2700/-2720/-2735/-2755/-2770/-2785
HLMP-2800/-2820/-2835/-2855/-2870/-2885
HLMP-2950/-2965

Data Sheet



Description

The HLCP-X100 and HLMP-2XXX series light bars are rectangular light sources designed for a variety of applications where a large bright source of light is required. These light bars are configured in single-in-line and dual-in-line packages that contain either single or segmented light emitting areas. The AlGaAs Red HLCP-X100 series LEDs use double heterojunction AlGaAs on a GaAs substrate. The HER HLMP-2300/2600 and Yellow HLMP-2400/2700 series LEDs have their p-n junctions diffused into a GaAsP epitaxial layer on a GaP substrate. The Green HLMP-2500/2800 series LEDs use a liquid phase GaP epitaxial layer on a GaP substrate. The bicolor HLMP-2900 series use a combination of HER/Yellow or HER/Green LEDs.

Features

- Large bright, uniform light emitting areas
- Choice of colors
- Categorized for light output
- Yellow and Green categorized for dominant wavelength
- Excellent ON-OFF contrast
- X-Y stackable
- Flush mountable
- Can be used with panel and legend mounts
- Light emitting surface suitable for legend attachment per Application Note 1012
- HLCP-X100 Series designed for low current operation
- Bicolor devices available

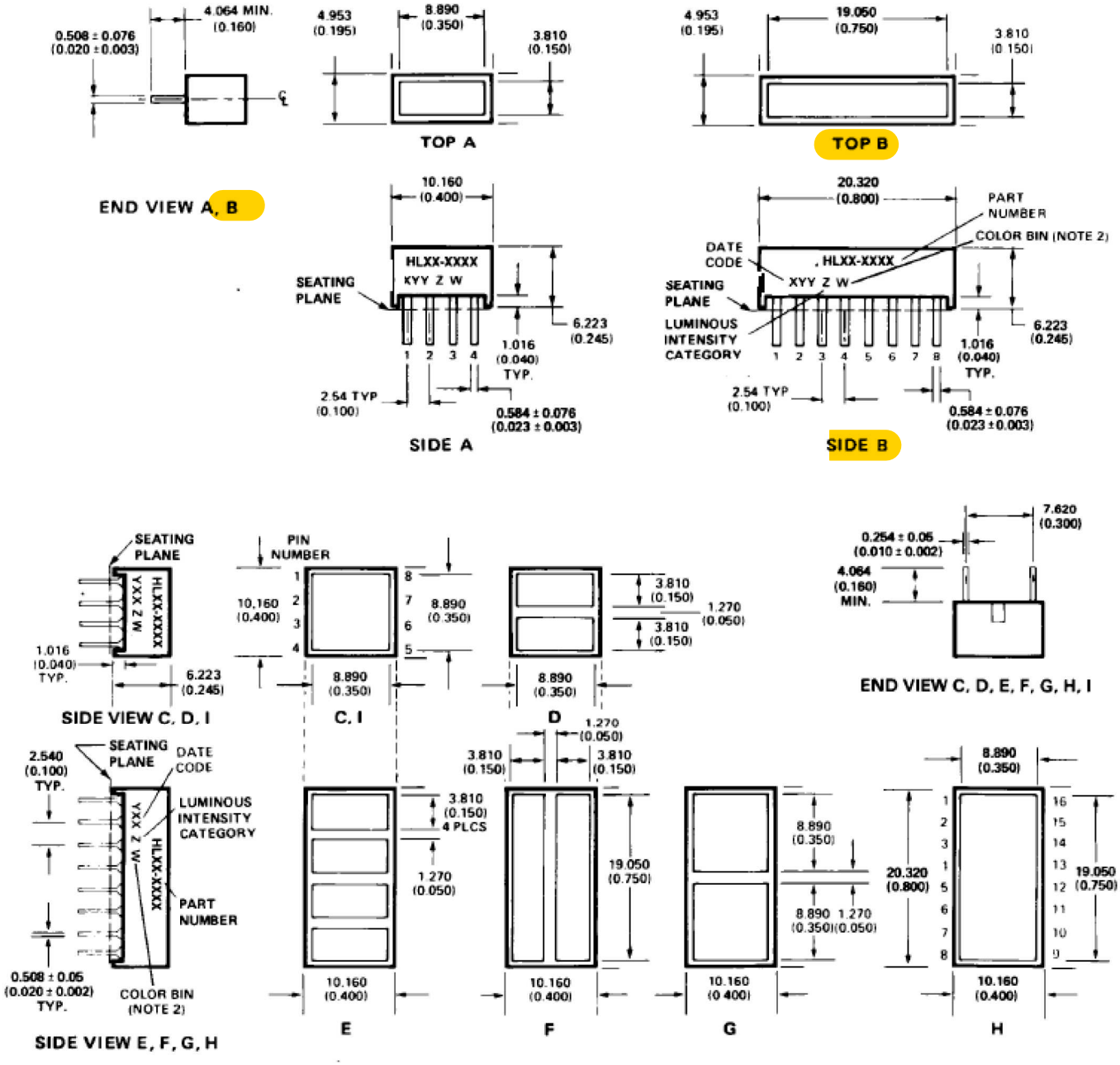
Applications

- Business machine message annunciators
- Telecommunications indicators
- Front panel process status indicators
- PC board identifiers
- Bar graphs

Selection Guide

Light Bar Part Number				Size of Light Emitting Areas	Number of Light Emitting Areas	Package Outline
HLCP-		HLMP-				
AlGaAs	HER	Yellow	Green			
A100	2300	2400	2500	8.89 mm x 3.81 mm (.350 in. x .150 in.)	1	A
B100	2350	2450	2550	19.05 mm x 3.81 mm (.750 in. x .150 in.)	1	B
D100	2600	2700	2800	8.89 mm x 3.81 mm (.350 in. x .150 in.)	2	D
E100	2620	2720	2820	8.89 mm x 3.81 mm (.350 in. x .150 in.)	4	E
F100	2635	2735	2835	3.81 mm x 19.05 mm (.150 in. x .750 in.)	2	F
C100	2655	2755	2855	8.89 mm x 8.89 mm (.350 in. x .350 in.)	1	C
G100	2670	2770	2870	8.89 mm x 8.89 mm (.350 in. x .350 in.)	2	G
H100	2685	2785	2885	8.89 mm x 19.05 mm (.350 in. x .750 in.)	1	H
	2950	2950		8.89 mm x 8.89 mm (.350 in. x .350 in.)	Bicolor	I
	2965		2965	8.89 mm x 8.89 mm (.350 in. x .350 in.)	Bicolor	I

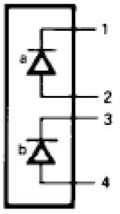
Package Dimensions



NOTES:

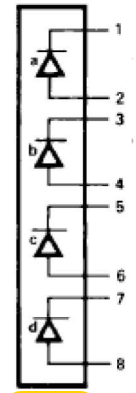
1. DIMENSIONS IN MILLIMETRES (INCHES). TOLERANCES ±0.25 mm (±0.010 IN.) UNLESS OTHERWISE INDICATED.
2. FOR YELLOW AND GREEN DEVICES ONLY.

Internal Circuit Diagrams

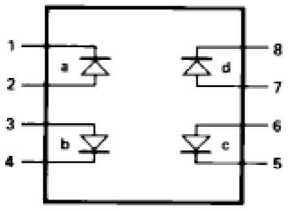


A

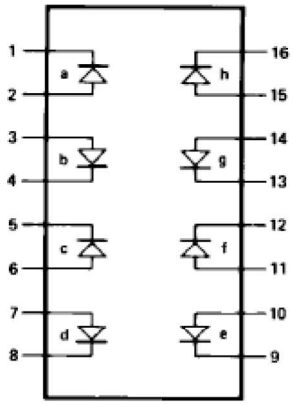
PIN FUNCTION		
PIN	A -2300/-2400 -2500/A100	B -2350/-2450 -2550/B100
1	CATHODE a	CATHODE a
2	ANODE a	ANODE a
3	CATHODE b	CATHODE b
4	ANODE b	ANODE b
5		CATHODE c
6		ANODE c
7		CATHODE d
8		ANODE d



B

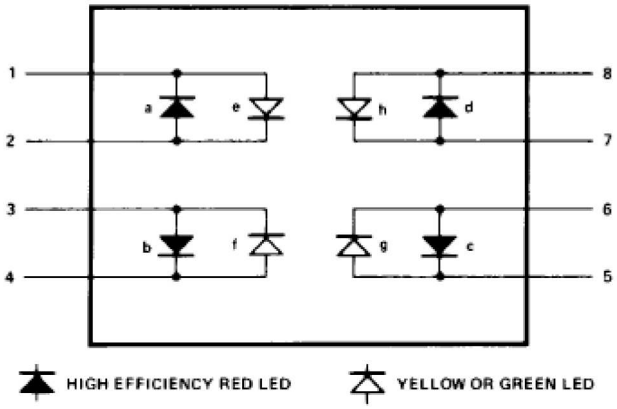


C,D



E,F,G,H

PIN	PIN FUNCTION	
	C, D	E, F, G, H
1	CATHODE a	CATHODE a
2	ANODE a	ANODE a
3	ANODE b	ANODE b
4	CATHODE b	CATHODE b
5	CATHODE c	CATHODE c
6	ANODE c	ANODE c
7	ANODE d	ANODE d
8	CATHODE d	CATHODE d
9		CATHODE e
10		ANODE e
11		ANODE f
12		CATHODE f
13		CATHODE g
14		ANODE g
15		ANODE h
16		CATHODE h



PIN	PIN FUNCTION	
	HER	YELLOW/ GREEN
1	CATHODE a	ANODE e
2	ANODE a	CATHODE e
3	ANODE b	CATHODE f
4	CATHODE b	ANODE f
5	CATHODE c	ANODE g
6	ANODE c	CATHODE g
7	ANODE d	CATHODE h
8	CATHODE d	ANODE h

Absolute Maximum Ratings

Parameter	AlGaAs Red HLCP-X100 Series	HER HLMP-2300/ 2600/29XX Series	Yellow HLMP-2400/ 2700/2950 Series	Green HLMP-2500/ 2800/2965 Series
Average Power Dissipated per LED Chip	37 mW[1]	135 mW[2]	85 mW[3]	135 mW[2]
Peak Forward Current per LED Chip	45 mA[4]	90 mA[5]	60 mA[5]	90 mA[5]
Average Forward Current per LED Chip	15 mA	25 mA	20 mA	25 mA
DC Forward Current per LED Chip	15 mA[1]	30 mA[2]	25 mA[3]	30 mA[2]
Reverse Voltage* per LED Chip	5 V		6 V[6]	
Operating Temperature Range	–20°C to +100°C[7]	–40°C to +85°C		–20°C to +85°C
Storage Temperature Range	–40°C to +85°C			
Wave Soldering Temperature 1.6 mm (1/16 inch) below Body	250°C for 3 seconds			

* Reverse Voltage is for LED testing purpose and not recommended to be used as application condition.

Notes:
1. Derate above 87°C at 1.7 mW/°C per LED chip. For DC operation, derate above 91°C at 0.8 mA/°C.
2. Derate above 25°C at 1.8 mW/°C per LED chip. For DC operation, derate above 50°C at 0.5 mA/°C.
3. Derate above 50°C at 1.8 mW/°C per LED chip. For DC operation, derate above 60°C at 0.5 mA/°C.
4. See Figure 1 to establish pulsed operation. Maximum pulse width is 1.5 mS.
5. See Figure 6 to establish pulsed operation. Maximum pulse width is 2 mS.
6. Does not apply to bicolor parts.
7. For operation below –20°C, contact your local Avago sales representative.

Electrical/Optical Characteristics at $T_A = 25°C$

AlGaAs Red HLCP-X100 Series

Parameter	HLCP-	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Luminous Intensity per Lighting Emitting Area[1]	A100/D100/E100	I_V	3	7.5		mcd	$I_F = 3$ mA
	B100/C100/F100/G100		6	15		mcd	
	H100		12	30		mcd	
Peak Wavelength		λ_{PEAK}		645		nm	
Dominant Wavelength[2]		λ_d		637		nm	
Forward Voltage per LED		V_F		1.8	2.2	V	$I_F = 20$ mA
Reverse Breakdown Voltage per LED		V_R	5	15		V	$I_R = 100$ µA
Thermal Resistance LED Junction-to-Pin		$R\theta_{J\text{-}PIN}$		250		°C/W/ LED	

High Efficiency Red HLMP-2300/2600/2900 Series

Parameter	HLMP-	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Luminous Intensity per Lighting Emitting Area[1]	2300/2600/2620	I_V	6	23		mcd	I_F = 20 mA
	2350/2635/2655/2670/2950[3]		13	45		mcd	
	2965[4]		19	45		mcd	
	2685		22	80		mcd	
Peak Wavelength		λ_{PEAK}		635		nm	
Dominant Wavelength[2]		λ_d		626		nm	
Forward Voltage per LED		V_F		2.0	2.6	V	I_F = 20 mA
Reverse Breakdown Voltage per LED[5]		V_R	6	15		V	I_R = 100 µA
Thermal Resistance LED Junction-to-Pin		$R\theta_{J\text{-}PIN}$		150		°C/W/ LED	

Yellow HLMP-2400/2700/2950 Series

Parameter	HLMP-	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Luminous Intensity per Lighting Emitting Area[1]	2400/2700/2720	I_V	6	20		mcd	I_F = 20 mA
	2450/2735/2755/2770/2950[3]		13	38		mcd	
	2785		26	70		mcd	
Peak Wavelength		λ_{PEAK}		583		nm	
Dominant Wavelength[2]		λ_d		585		nm	
Forward Voltage per LED		V_F		2.1	2.6	V	I_F = 20 mA
Reverse Breakdown Voltage per LED[5]		V_R	6	15		V	I_R = 100 µA
Thermal Resistance LED Junction-to-Pin		$R\theta_{J\text{-}PIN}$		150		°C/W/ LED	

High Performance Green HLMP-2500/2800/2965 Series

Parameter	HLMP-	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Luminous Intensity per Lighting Emitting Area[1]	2500/2800/2820	I_V	5	25		mcd	I_F = 20 mA
	2550/2835/2855/2870		11	50		mcd	
	2965[4]		25	50		mcd	
	2885		22	100		mcd	
Peak Wavelength		λ_{PEAK}		565		nm	
Dominant Wavelength[2]		λ_d		572		nm	
Forward Voltage per LED		V_F		2.2	2.6	V	I_F = 20 mA
Reverse Breakdown Voltage per LED[5]		V_R	6	15		V	I_R = 100 µA
Thermal Resistance LED Junction-to-Pin		$R\theta_{J\text{-}PIN}$		150		°C/W/ LED	

Notes:

1. These devices are categorized for luminous intensity. The intensity category is designated by a letter code on the side of the package.
2. The dominant wavelength, λ_d, is derived from the CIE chromaticity diagram and is the single wavelength which defines the color of the device. Yellow and Green devices are categorized for dominant wavelength with the color bin designated by a number code on the side of the package.
3. This is an HER/Yellow bicolor light bar. HER electrical/optical characteristics are shown in the HER table. Yellow electrical/optical characteristics are shown in the Yellow table.
4. This is an HER/Green bicolor light bar. HER electrical/optical characteristics are shown in the HER table. Green electrical/optical characteristics are shown in the Green table.
5. Does not apply to HLMP-2950 or HLMP-2965.