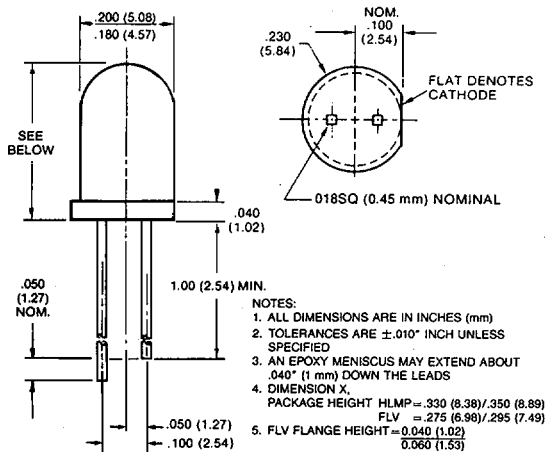


**HIGH EFF. RED HLMP-3300 HIGH EFF. RED HLMP-3315  
HIGH EFF. RED HLMP-3301 HIGH EFF. RED HLMP-3316  
STANDARD RED FLV110**

**PACKAGE DIMENSIONS**



**DESCRIPTION**

Direct replacements for popular T-1<sup>3</sup>/<sub>4</sub> lamps from Fairchild and Hewlett-Packard. The FLV110 is a Standard Red Lamp with a low profile (.285 inch) lens. HLMP-33XX parts are High Efficiency Red with a standard T-1<sup>3</sup>/<sub>4</sub> package.

FLV110, HLMP-3300 and HLMP-3301 are diffused. HLMP-3315 and HLMP-3316 are non-diffused.

**FEATURES**

- Replace Fairchild and Hewlett-Packard devices
- Popular, general purpose lamps
- Wide and narrow viewing angle devices for direct view or backlighting
- Solid state reliability
- Sturdy leads for easier assembly

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**FLV110 HLMP-3300 HLMP-3301 HLMP-3315 HLMP-3316**

**ELECTRO-OPTICAL CHARACTERISTICS (25°C Ambient Temperature)**

PARAMETER		SYMBOL	HLMP-3300	HLMP-3301	HLMP-3315	HLMP-3316	FLV* 110	UNITS	TEST CONDITIONS
Luminous Intensity (See Note 1)	min.	$I_v$	2.0	4.0	12	20	0.8*	mcd	$I_F = 10$ mA
	typ.		3.5	7.0	18	35	3.0*	mcd	$I_F = 10$ mA
Forward voltage	max.	$V_F$	3.0	3.0	3.0	3.0	2.0	V	$I_F = 10$ mA
	typ.		2.2	2.2	2.2	2.2	1.6	V	$I_F = 10$ mA
Peak wavelength	typ.	$\lambda_p$	635	635	635	635	665	nm	$I_F = 10$ mA
Capacitance	typ.	C	45	45	45	45	30	pF	$V = 0, f = 1$ MHz
Reverse breakdown voltage	min.	$V_{BR}$	5	5	5	5	5	V	$I_R = 100\mu$ A
Total viewing angle between half Luminous Intensity Points	typ.		26½	65	35	35	70	degrees	

\*For FLV110 Test  $I_F = 20$  mA

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

Power dissipation	135 mW
Derate linearly from 25°C	1.8 mW/°C
Storage and operating temperatures	-55°C to +100°C
Lead soldering time @ 260°C (See Note 2)	5 sec.
Continuous forward current	30 mA
Peak forward current (1 $\mu$ sec pulse, 0.3% duty cycle) (FLV110 1 amp)	90 mA
Reverse voltage	5.0 V

**NOTES**

- As measured with a Photo Research Corp. "SPECTRA" Microcandela Meter (Model IV-D).
- From a point minimum 1/16 inch (1.6 mm) from the bottom of the lamp.

**FLV110 HLMP-3300 HLMP-3301 HLMP-3315 HLMP-3316**

**TYPICAL ELECTRO-OPTICAL CHARACTERISTICS CURVES**

(25°C Free Air Temperature Unless Otherwise Specified)

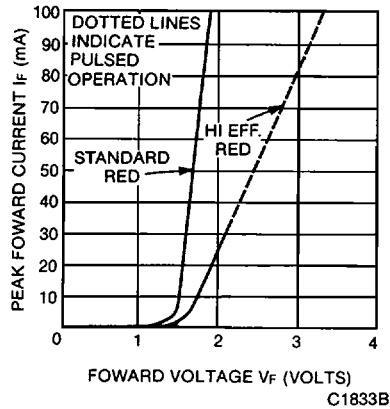


Fig. 1. Forward Current vs. Forward Voltage

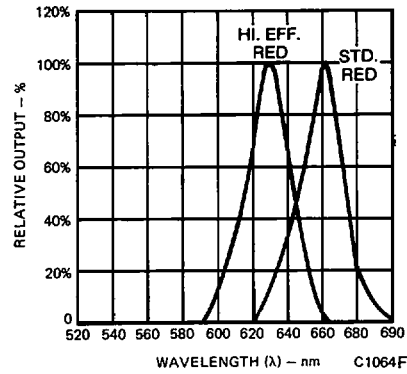


Fig. 2. Spectral Distribution

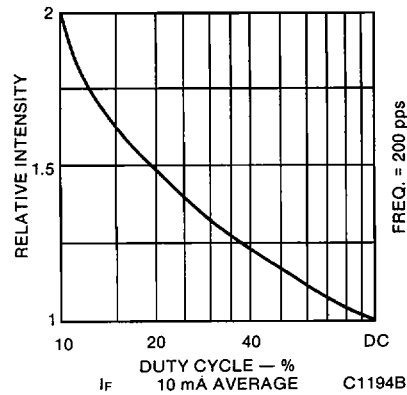


Fig. 3. Luminous Intensity vs. Duty Cycle

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**FLV110 HLMP-3300 HLMP-3301 HLMP-3315 HLMP-3316**

