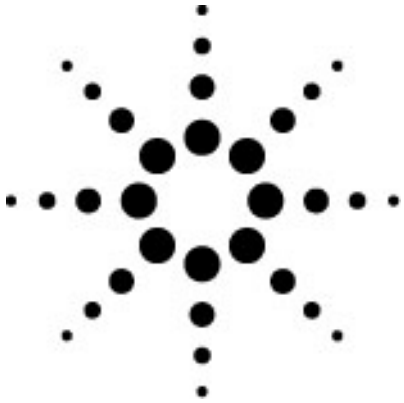

Preliminary Information

Agilent T-1 3/4 Precision Optical Performance White LED

Data Sheet

HLMP-CW15, HLMP-CW16, HLMP-CW23, HLMP-CW24, HLMP-CW30, HLMP-CW31

Description

These high intensity white LED lamps are based on InGaN material technology. A blue LED die is coated by a phosphor to produce white. The typical resulting color is described by the coordinates x = 0.32, y = 0.32 using the 1931 CIE Chromaticity Diagram.

These T-1 3/4 lamps are untinted, nondiffused, and incorporate precise optics producing well defined spatial radiation patterns at specific viewing cone angle.

Features

- Highly Luminous White Emission
- 15^{o}, 23^{o} and 30^{o} viewing angle

Applications

- Electronic Signs and Signals
- Small Area Illumination
- Legend Backlighting
- General Purpose Indicators

Benefit

- Reduced Power Consumption, Higher Reliability, and Increased Optical/Mechanical Design Flexibility Compared to Incandescent Bulbs and Other Alternative White Light Sources

CAUTION : These devices are Class 1 ESD sensitive. Please observe appropriate precautions during handling and processing. Refer to Agilent Technologies Application Note AN-1142 for additional details.

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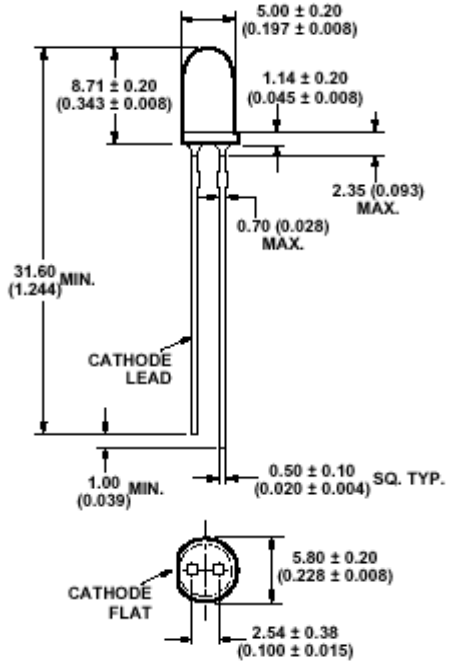
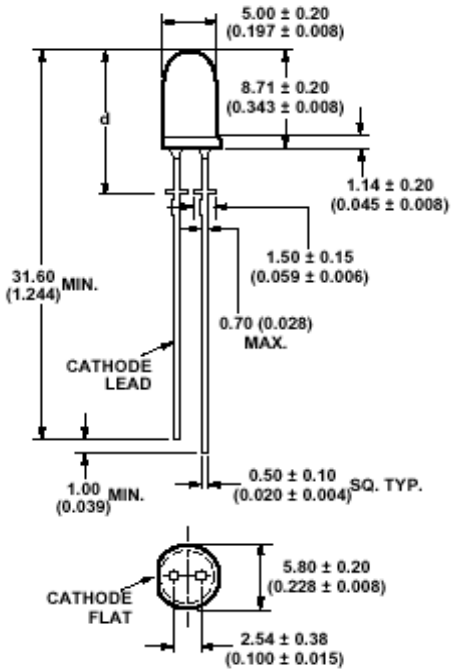
Package Dimensions



Package Dimension A



Package Dimension B

HLMP-CW16
d = 12.6 +/- 0.25 mm
(0.496 +/- 0.010 inch)

HLMP-CW24
d = 12.52 +/- 0.25 mm
(0.493 +/- 0.010 inch)

HLMP-CW31
d = 11.96 +/- 0.25 mm
(0.471 +/- 0.010 inch)

Notes :

1. All dimensions are in milimetres /inches.
2. Epoxy meniscus may extend about 1mm (0.040") down the leads.

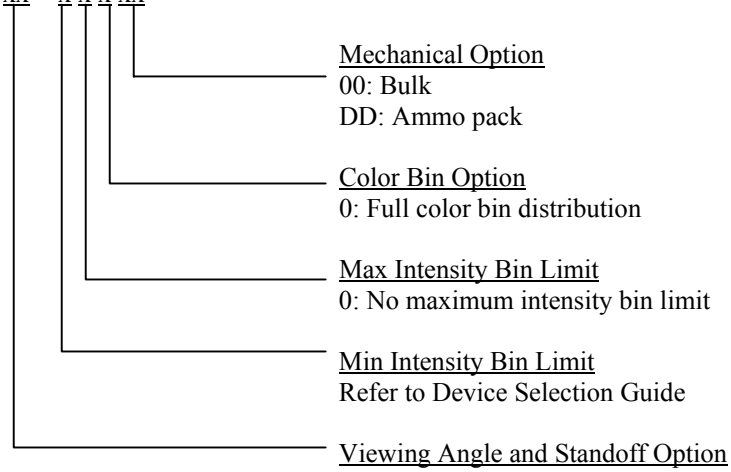
Device Selection Guide

Part Number	Viewing Angle	Luminous Intensity Iv(mcd) @ 20mA		Standoff Leads	Package
	Typ.	Minimum	Maximum		Dimension
HLMP-CW15-R00xx	15°	1500	-	No	A
HLMP-CW15-TW0xx	15°	2500	7200	No	A
HLMP-CW16-R00xx	15°	1500	-	Yes	B
HLMP-CW16-TW0xx	15°	2500	7200	Yes	B
HLMP-CW23-R00xx	23°	1500	-	No	A
HLMP-CW23-SV0xx	23°	1900	5500	No	A
HLMP-CW24-R00xx	23°	1500	-	Yes	B
HLMP-CW24-SV0xx	23°	1900	5500	Yes	B
HLMP-CW30-M00xx	30°	520	-	No	A
HLMP-CW30-PS0xx	30°	880	2500	No	A
HLMP-CW31-M00xx	30°	520	-	Yes	B
HLMP-CW31-PS0xx	30°	880	2500	Yes	B

Tolerance for each intensity limit is +/- 15%

Part Numbering System

HLMP – CWxx - x x x xx



Mechanical Option
00: Bulk
DD: Ammo pack

Color Bin Option
0: Full color bin distribution

Max Intensity Bin Limit
0: No maximum intensity bin limit

Min Intensity Bin Limit
Refer to Device Selection Guide

Viewing Angle and Standoff Option
15: 15 degree, without standoffs
16: 15 degree, with standoffs
23: 23 degree, without standoffs
24: 23 degree, with standoffs.
30: 30 degree, without standoffs
31: 30 degree, with standoffs

Absolute Maximum Ratings

T_A = 25°C

Parameter	Value	Units
DC Forward Current [1]	30	mA
Peak Forward Current[2]	100	mA
Power Dissipation	120	mW
Reverse Voltage (I_R = 10μA)	5	V
LED Junction Temperature	110	°C
Operating Temperature Range	-40 to +80	°C
Storage Temperature Range	-40 to +100	°C
Dip-Drag Solder Temperature [3]	260 for 5 secs	°C
Wave Solder Temperature [3]	245 for 3 secs	°C

Note:

1. Derate linearly as shown in Figure 5.
2. Duty factor 10%, I KHz.
3. 1.59mm (0.06 inch) below seating plane.

Electrical Characteristics
T_A = 25°C

Forward Voltage, V_F (V) @ I_F = 20 mA		Reverse Breakdown, V_R (V) @ I_R = 10μA	Capacitance, C (pF), V_F = 0,f = 1 MHz	Thermal Resistance $R\theta_{J\text{-}PIN}$ (°C/W)
Typ.	Max.	Min.	Typ.	Typ.
3.8	4.0	5	70	240

Optical Characteristics
T_A = 25°C

Part Number	Typical Chromaticity Coordinates [1]		Viewing Angle $2\theta_{1/2}$ Degrees [2]
	X	y	Typ.
HLMP-CW3x-xxxxx	0.32	0.32	30
HLMP-CW2x-xxxxx	0.32	0.32	23
HLMP-CW1x-xxxxx	0.32	0.32	15

Notes:
1. The chromaticity coordinates are derived from the CIE 1931 Chromaticity Diagram and represent the perceived color of the device.
2. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is ½ the peak intensity.

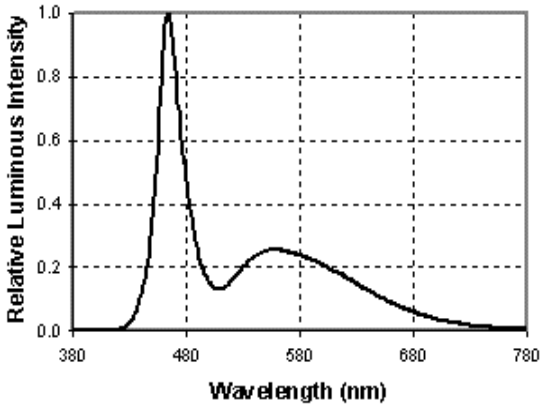


Figure 1. Relative Intensity vs Wavelength

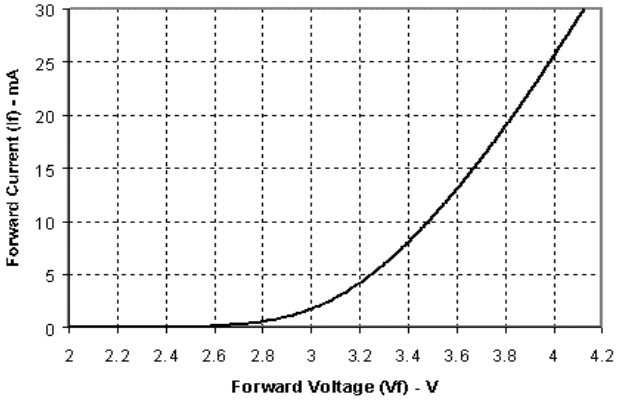


Figure 2. Forward Current vs Forward Voltage

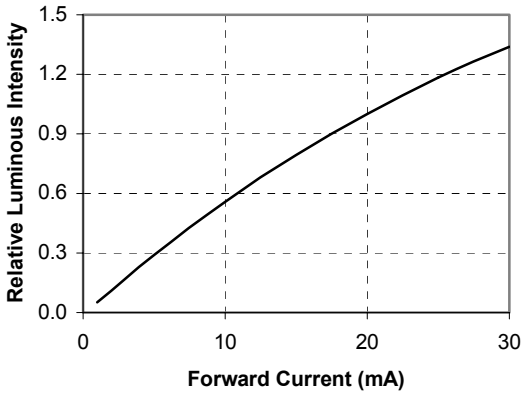


Figure 3. Relative Iv vs. Forward Current

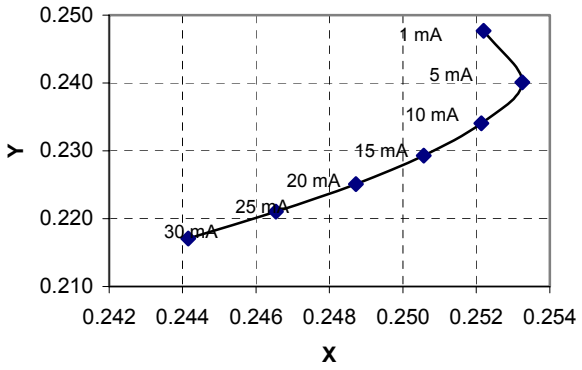


Figure 4. X,Y Coordinates vs Forward Current

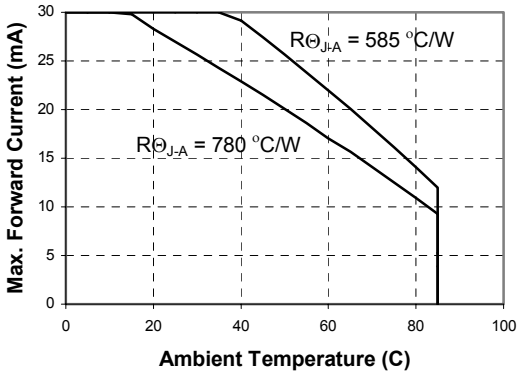


Figure 5. Maximum Fwd. Current vs Temperature

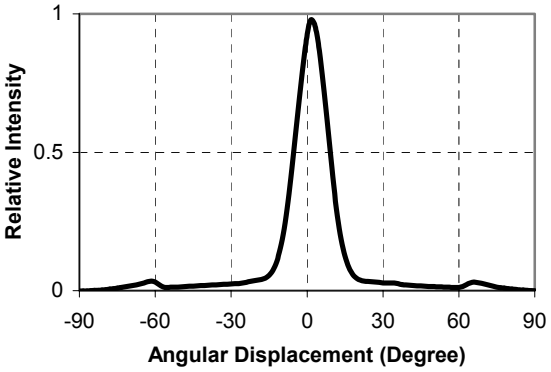


Figure 6a. CW1x Spatial Radiation Pattern

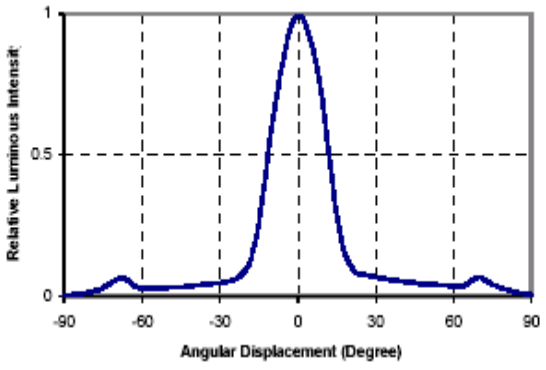


Figure 6b. CW2x Spatial Radiation Pattern

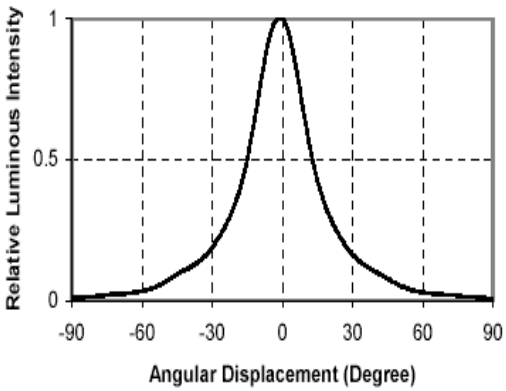


Figure 6c. CW3x Spatial Radiation Pattern

Intensity Bin Limits (mcd at 20 mA)

Bin	Min.	Max.
M	520	680
N	680	880
P	880	1150
Q	1150	1500
R	1500	1900
S	1900	2500
T	2500	3200
U	3200	4200
V	4200	5500
W	5500	7200
X	7200	9300
Y	9300	12000
Z	12000	16000

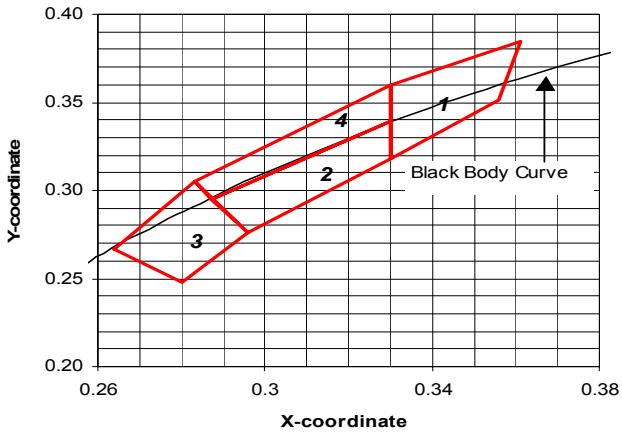
Tolerance for each bin limit is ± 15%.

Color Bin Limit Tables

Rank	Limits (Chromaticity Coordinates)				
1	x	0.330	0.330	0.356	0.361
	y	0.360	0.318	0.351	0.385
2	x	0.287	0.296	0.330	0.330
	y	0. 295	0.276	0.318	0.339
3	x	0.264	0.280	0.296	0.283
	y	0.267	0.248	0.276	0.305
4	x	0.283	0.287	0.330	0.330
	y	0.305	0.295	0.339	0.360

Tolerance for each bin limit is +/- 0.01

Color Bin Limits with Respect to CIE 1931 Chromaticity Diagram



Note:

1. Bin categories are established for classification of products. Products may not be available in all bin categories. Please contact your Agilent representative for information on currently available

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