



American Opto Plus LED

L-513NPWC-15D

5mm Dia LED LAMP - WATER CLEAR

- ◆ 5.0mm DIA LED LAMP
- ◆ NON-PHOSPHOR WHITE
- ◆ LOW POWER CONSUMPTION
- ◆ HIGH LUMINOUS INTENSITY

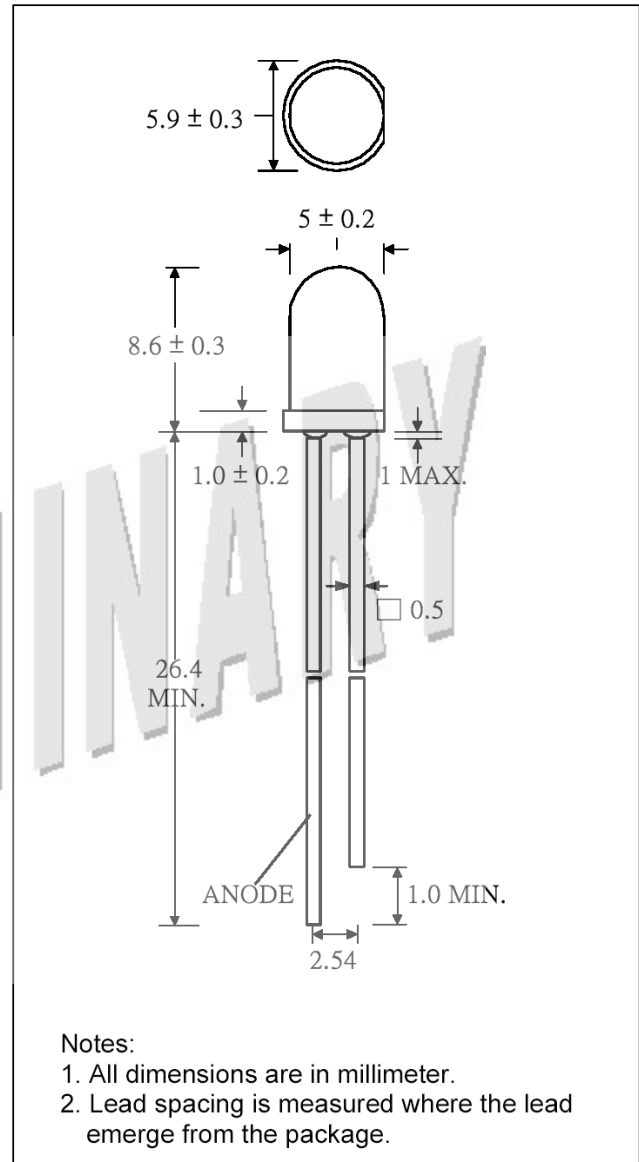
PRELIMINARY

DESCRIPTION

- Super bright LED Lamp
- Round type
- T1-3/4 (5mm) diameter
- Lens color: Water clear
- With flange
- Solder leads without stand-off

FEATURES

- Emitted color: White
- High luminous intensity
- Technology: InGaN / Sapphire
- Non-phosphor white LED
- Viewing angle: 15°



SELECTION GUIDE

Chip Material	Chip Emitted	Lens Color	Viewing Angle
InGaN / Sapphire	White	Water Clear	15°



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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Max Rating	Unit
Power Dissipation	P _D	120	mW
Pulse Forward Current (1/10 Duty Cycle @1KHz)	I _{PF}	100	mA
Forward Current	I _F	30	mA
Reverse Voltage	V _R	5.0	V
Operating Temperature Range	T _{OPR}	-40 ~ +80	°C
Storage Temperature Range	T _{STG}	-40 ~ +100	°C

Lead soldering temperature [1.6 mm (0.063 inch) from body]: 260°C for 5 seconds

OPTICAL-ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Luminous Intensity	I _v	I _F = 20mA	11300	15000		mcd
Forward Voltage	V _F	I _F = 20mA		3.5	4.0	V
Reverse Current	I _R	V _R = 5V			10	μA
Viewing Angle	2θ1/2	I _F = 20mA		15		deg.
Chromaticity Coordinates	X	I _F = 20mA		0.31		
	Y			0.32		



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ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Symbol	I _v		V _F		Color
Parameter	Luminous Intensity		Forward Voltage		
Condition	I _F = 20mA		I _F = 20mA		I _F = 20mA
Unit	mcd		V		Color Range
Binning	Grade	Range	Grade	Range	Grade
	Bin 1	11300 - 15800	Q0	2.5 - 3.0	W1
	Bin 2	15800 - 22100	Q1	3.0 - 3.5	W2
	Bin 3	22100 - 31000	Q2	3.5 - 4.0	W3
					W4
					W5
					W6
					W7
					W8
					W9
				W10	

Intensity: Tolerance of minimum and maximum = $\pm 15\%$

V_F: Tolerance of minimum and maximum = $\pm 0.05V$

Color coordinates: Uncertainty = ± 0.01

Notes: Static electricity and surge damages the LED. It is recommended to use an anti-static wrist band or anti-electrostatic glove when handling LEDs. All devices, equipment and machinery must be properly grounded.



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CHROMATICITY COORDINATES BINNING

Rank		W1				W2				W3				W4			
Chromaticity	X	0.280	0.264	0.283	0.296	0.287	0.283	0.304	0.307	0.307	0.304	0.330	0.330	0.296	0.287	0.307	0.311
Coordinates	Y	0.248	0.267	0.305	0.276	0.295	0.305	0.330	0.315	0.315	0.330	0.360	0.339	0.276	0.295	0.315	0.294
Rank		W5				W6				W7				W8			
Chromaticity	X	0.311	0.307	0.330	0.330	0.330	0.330	0.361	0.356	0.264	0.254	0.276	0.283	0.283	0.276	0.300	0.304
Coordinates	Y	0.294	0.315	0.339	0.318	0.318	0.360	0.385	0.351	0.267	0.280	0.319	0.305	0.305	0.319	0.350	0.330
Rank		W9				W10											
Chromaticity	X	0.304	0.300	0.330	0.330	0.330	0.330	0.362	0.361								
Coordinates	Y	0.330	0.350	0.380	0.360	0.360	0.380	0.387	0.385								

CIE CHROMATICITY DIAGRAM





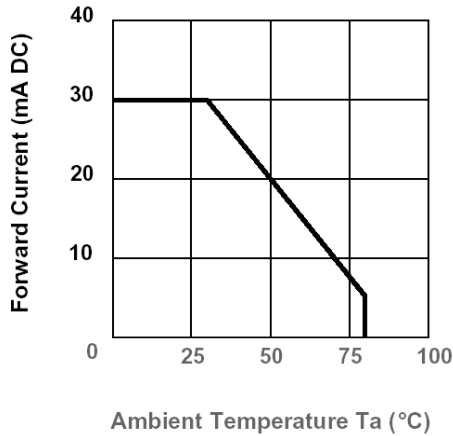
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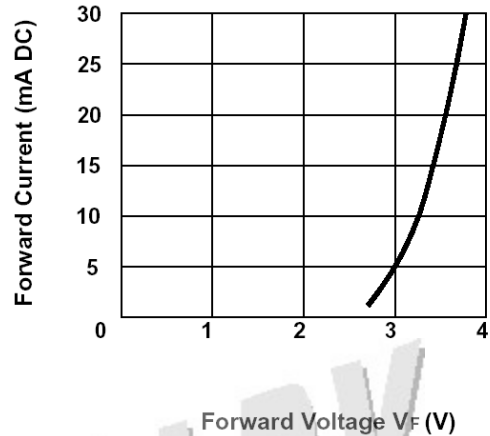
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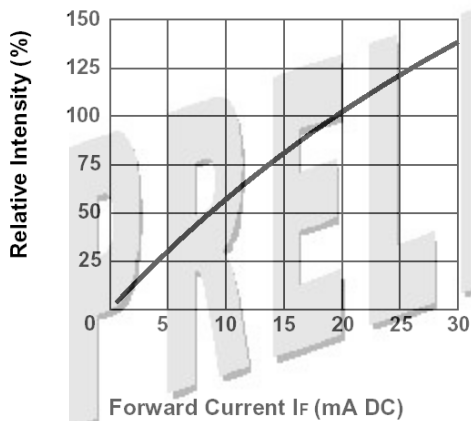
Forward Current vs. Ambient Temperature



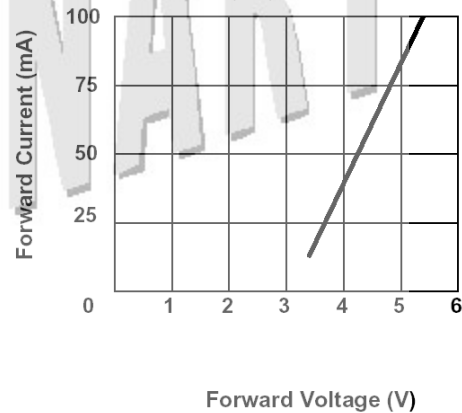
Forward Current vs. Forward Voltage



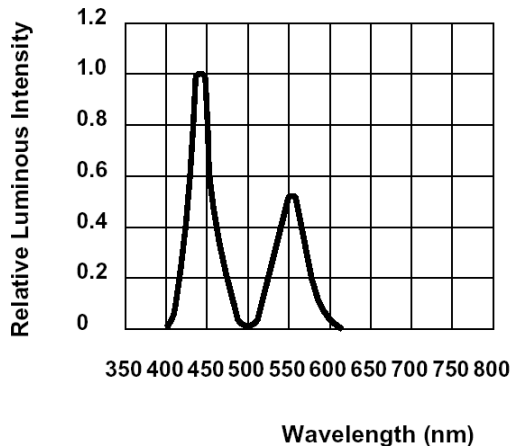
Relative Intensity vs. Forward Current



Peak Forward Voltage vs. Forward Current (100µs test pulse, 1% duty cycle)



Relative Intensity vs. Wavelength



Radiation Diagram

