



# American Opto Plus LED Corp.

## L513LEC-15D

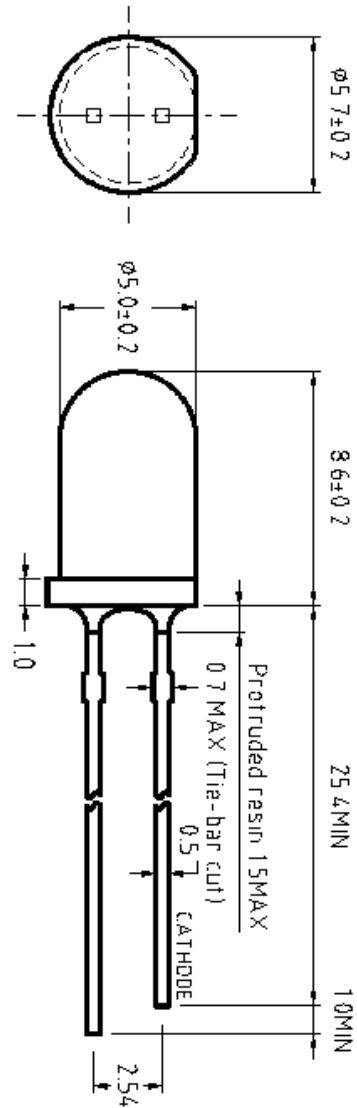
### 5MM RED LED LAMP

#### DESCRIPTION

- Round Type
- 5mm Diameter
- Lens Color: Water Clear
- With Flange
- Solder leads without standoff

#### FEATURES

- Epoxy Resin
- Ag Plating on SPCC lead frame
- Emitted Color: Red
- Technology: AlInGaP/Si
- Peak Wavelength  $\lambda_p = 635\text{nm}$
- Viewing Angle:  $15^\circ$



#### Notes:

1. All dimensions are in millimeters.
2. Lead spacing is measured where the lead emerges from the package.

Part Number	Material	Lens Color	
		Emitted	Lens
L513LEC-15D	AlInGaP/Si	Red	Water Clear



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#### ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

Parameter	Symbol	Ratings	Unit
DC Forward Current	I <sub>F</sub>	50	mA
Peak Pulsed Forward Current*	I <sub>FP</sub>	100	mA
Reverse Voltage	V <sub>R</sub>	5	V
Power Dissipation	P <sub>D</sub>	120	mW
Operating Temperature	T <sub>OPR</sub>	-30~+85	°C
Storage Temperature	T <sub>STG</sub>	-40~+100	°C
Soldering Temperature	T <sub>SOL</sub>	Max 260°C for 5 sec	

\*I<sub>FP</sub> = Pulse Width ≤ 10 ms, Duty Ratio ≤ 1/10

#### OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	--	--	50	μA
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =20mA	--	2.1	2.4	V
Luminous Intensity	I <sub>V</sub>		4200	7200	--	mcd
Peak Wavelength	λ <sub>P</sub>		--	632	--	nm
Dominant Wavelength	λ <sub>D</sub>		615	625	635	nm
Spectral Radiation Bandwidth	Δλ <sub>1/2</sub>		--	15	--	nm
Viewing Angle	2θ <sub>1/2</sub>		--	15	--	Deg



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#### LUMINOUS INTENSITY BIN TABLE

**IF=20mA**

Rank name	Min (mcd)	Max (mcd)
V	4200	5500
W	5500	7200
X	7200	9300
Y	9300	12000

Tolerance for each bin limit is  $\pm 15\%$

#### COLOR BIN TABLE

**IF=20mA**

Rank name	Min (nm)	Max (nm)
1	615	620
2	620	625
3	625	630
4	630	635

Tolerance for each bin limit is  $\pm 1\text{nm}$

#### Notes:

1. One delivery will include several color ranks and Iv ranks of products. The quantity-ratio of the different rank is decided by AOP.
2. Bin name typed on label: Iv rank + Color rank. For example: **BIN V2 means IV: 4200mcd~5500mcd and COLOR: 620nm~625nm**



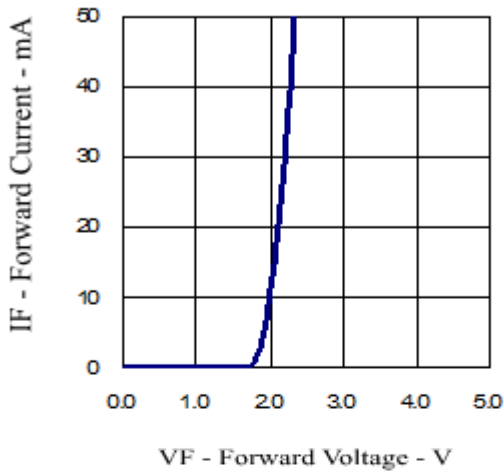
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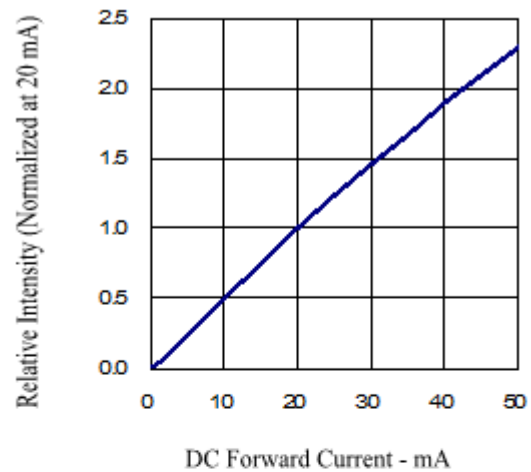
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## TYPICAL ELECTRO-OPTICAL CHARACTERISTIC CURVES

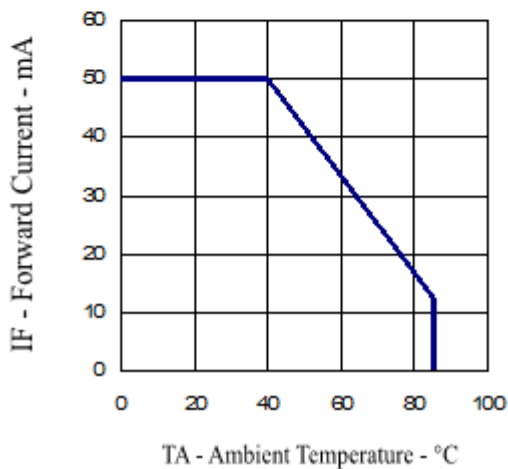
Forward Current vs. Forward Voltage



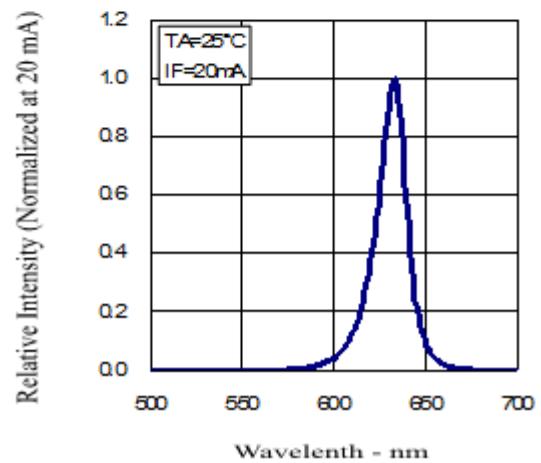
Relative Intensity vs. Forward Current



Forward Current vs. Ambient Temperature



Relative Intensity vs. Wavelength





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#### RECOMMENDED SOLDERING CONDITIONS

- Solder the LED no closer than 3mm from the base of the epoxy bulb. Soldering beyond the base of the tie bar is recommended.
- Recommended soldering conditions:

Dip Soldering	
<b>Pre-Heat</b>	100°C Max.
<b>Pre-Heat Time</b>	60 sec. Max.
<b>Solder Bath Temperature</b>	260°C Max.
<b>Dipping Time</b>	5 sec. Max.
<b>Dipping Position</b>	No lower than 3mm from the base of the epoxy bulb.

Hand Soldering		
	Current Series	Others (Including Lead-Free Solder)
<b>Temperature</b>	300 °C Max.	350 °C Max.
<b>Soldering time</b>	3 sec. Max.	3 sec. Max.
<b>Position</b>	No closer than 3mm from the base of the epoxy bulb.	No closer than 3mm from the base of the epoxy bulb.

- Do not apply any stress to the lead, particularly when heated.
- The LEDs must not be repositioned after soldering.
- After soldering the LEDs, the epoxy bulb should be protected from mechanical shock or vibration until the LEDs return to room temperature.
- Direct soldering onto a PC board should be avoided. Mechanical stress to the resin may be caused by the PC board warping or from the clinching and cutting of the lead frames. When it is absolutely necessary, the LEDs may be mounted in this fashion, but, the User will assume responsibility for any problems. Direct soldering should only be done after testing has confirmed that no damage, such as wire bond failure or resin deterioration, will occur. LEDs should not be soldered directly to double sided PC boards because the heat will deteriorate the epoxy resin.
- When it is necessary to clamp the LEDs to prevent soldering failure, it is important to minimize the mechanical stress on the LEDs.
- Cut the LED lead frames at room temperature. Cutting the lead frames at high temperatures may cause LED failure.