

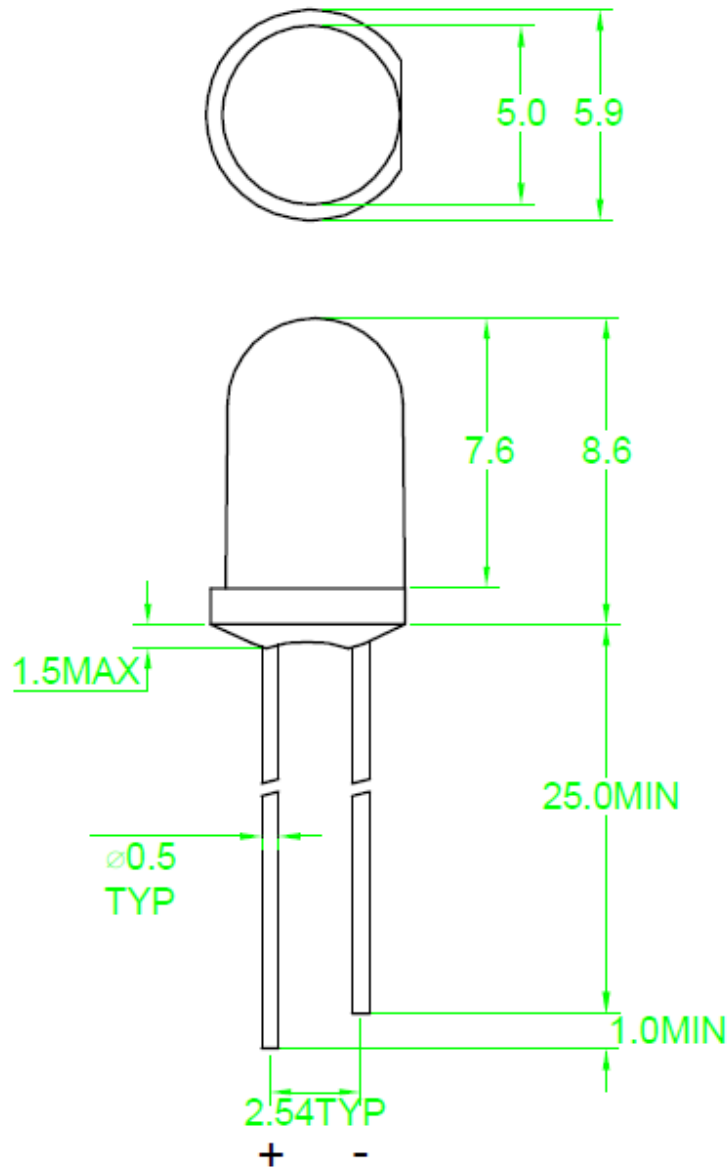


# American Opto Plus LED Corp.

## L513HD

5mm Red LED Lamp

### PACKAGE DIMENSION



Material	Color	
	Emitted	Lens
GaP	Red	Red Diffused

#### Notes

1. All dimensions are in millimeters; tolerance is  $\pm 0.25\text{mm}$  unless otherwise noted
2. Specifications are subject to change without notice



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### ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

	Symbol	Rating	Unit
Forward Current	I <sub>F</sub>	20	mA
Forward Peak Current (1/10 duty @10kHz)	I <sub>FP</sub>	60	mA
Power Dissipation	P <sub>D</sub>	50	mW
Reverse Current @5V	I <sub>R</sub>	10	μA
Operating Temperature	T <sub>OPR</sub>	-40~+85	°C
Storage Temperature	T <sub>STG</sub>	-40~+100	°C

### OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

	Symbol	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Forward Voltage	V <sub>f</sub>	I <sub>F</sub> =20mA	1.7	--	2.6	V
Luminous Intensity	I <sub>v</sub>	I <sub>F</sub> =10mA	4.5	8	--	mcd
Peak Wavelength	λ <sub>p</sub>	--	--	697	--	nm
Spectral Half Width	Δλ	--	--	90	--	nm
Viewing Angle	2Θ <sub>1/2</sub>	--	--	40	--	deg

#### Notes:

1. The Forward voltage data did not include ±0.1V testing tolerance
2. The luminous intensity data did not include ±15% testing tolerance



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#### TYPICAL ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

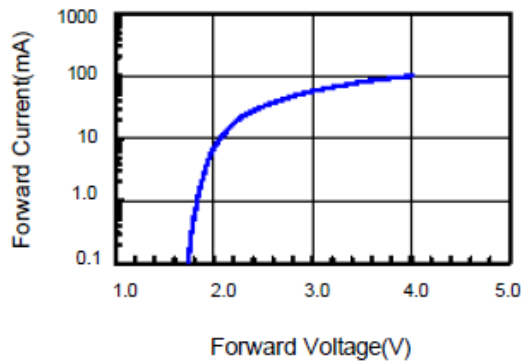


Fig.2 Relative Intensity vs. Forward Current

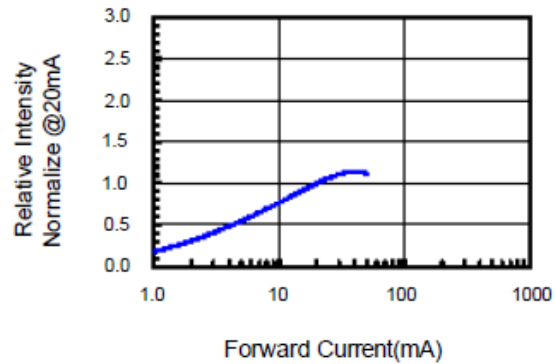


Fig.3 Forward Voltage vs. Temperature

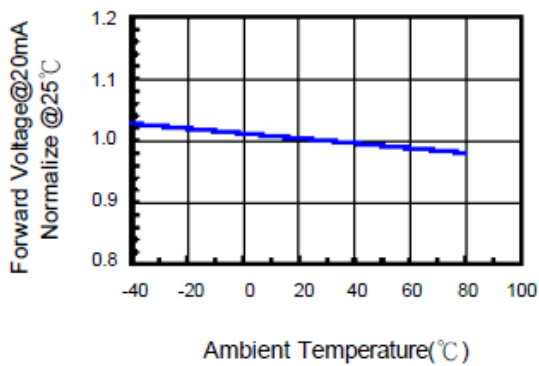


Fig.4 Relative Intensity vs. Temperature

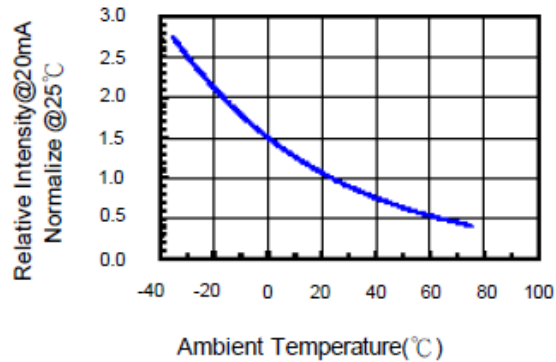
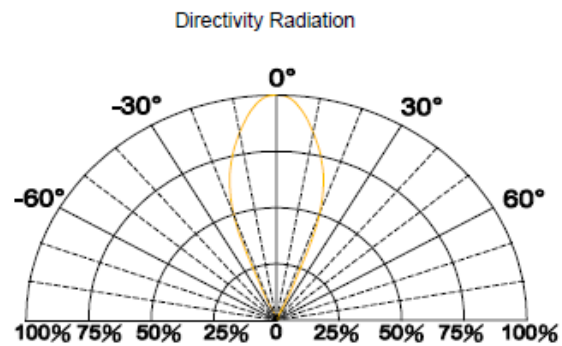
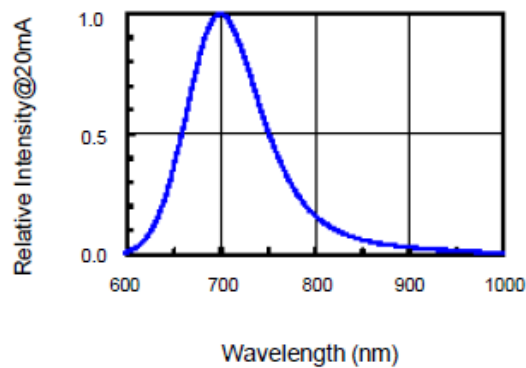


Fig.5 Relative Intensity vs. Wavelength





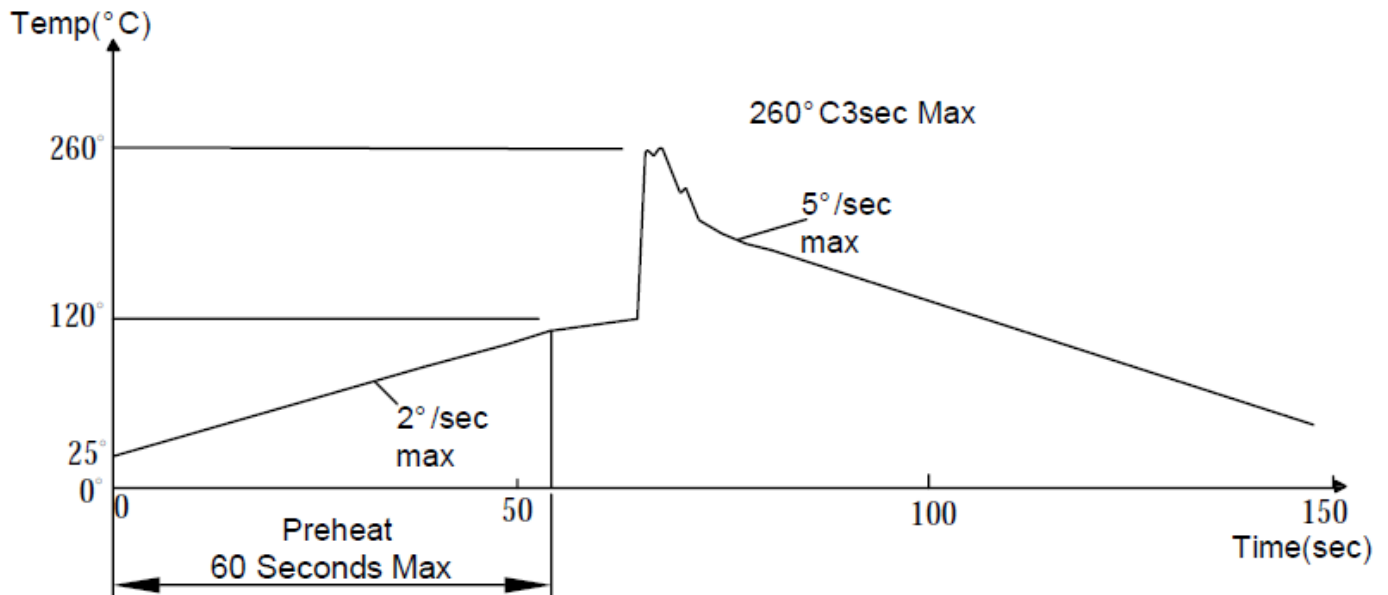
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### RECOMMENDED SOLDERING CONDITION

#### Pb-Free



#### 1. Iron:

- Soldering Iron: 30W Max
- Temperature 350°C Max
- Soldering Time: 3 Seconds Max (One time only)
- Distance: 2mm Min (From solder joint to body)

#### 2. Wave Soldering Profile

- Dip Soldering
- Preheat: 120°C Max
- Preheat time: 60 seconds Max
- Ramp-up
- 2°C/sec (max)
- Ramp-Down: -5°C/sec (max)
- Solder Bath: 260°C Max
- Dipping Time: 3 seconds Max
- Distance: 2mm Min (From solder joint to body)

#### Notes:

1. Wave solder should not be made more than one time
2. You can just only select one of the soldering conditions as above



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#### RELIABILITY TEST

Test Item	Test Condition	Description	Reference Standard
Operating Life Test	1.Under Room Temperature 2.If=20mA 3.t=1000 hrs (-24hrs, +72hrs)	This test is conducted for the purpose of determining the resistance of a part in electrical and thermal stressed.	MIL-STD-750: 1026 MIL-STD-883: 1005 JIS C 7021: B-1
High Temperature Storage Test	1.Ta=105 °C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of high temperature for hours.	MIL-STD-883:1008 JIS C 7021: B-10
Low Temperature Storage Test	1.Ta=-40 °C±5°C 2.t=1000 hrs (-24hrs, +72hrs)	The purpose of this is the resistance of the device which is laid under condition of low temperature for hours.	JIS C 7021: B-12
High Temperature High Humidity Test	1.Ta=65 °C±5°C 2.RH=90 %~95% 3.t=240hrs ±2hrs	The purpose of this test is the resistance of the device under tropical for hours.	MIL-STD-202:103B JIS C 7021: B-11
Thermal Shock Test	1.Ta=105 °C±5°C & -40 °C±5°C (10min) (10min) 2.total 10 cycles	The purpose of this is the resistance of the device to sudden extreme changes in high and low temperature.	MIL-STD-202: 107D MIL-STD-750: 1051 MIL-STD-883: 1011
Solder Resistance Test	1.T.Sol=260 °C±5°C 2.Dwell time= 10 ±1sec.	This test intended to determine the thermal characteristic resistance of the device to sudden exposures at extreme changes in temperature when soldering the lead wire.	MIL-STD-202: 210A MIL-STD-750: 2031 JIS C 7021: A-1
Solderability Test	1.T.Sol=245 °C±5°C 2.Dwell time=5 ±1sec	This test intended to see soldering well performed or not.	MIL-STD-202: 208D MIL-STD-750: 2026 MIL-STD-883: 2003 JIS C 7021: A-2