

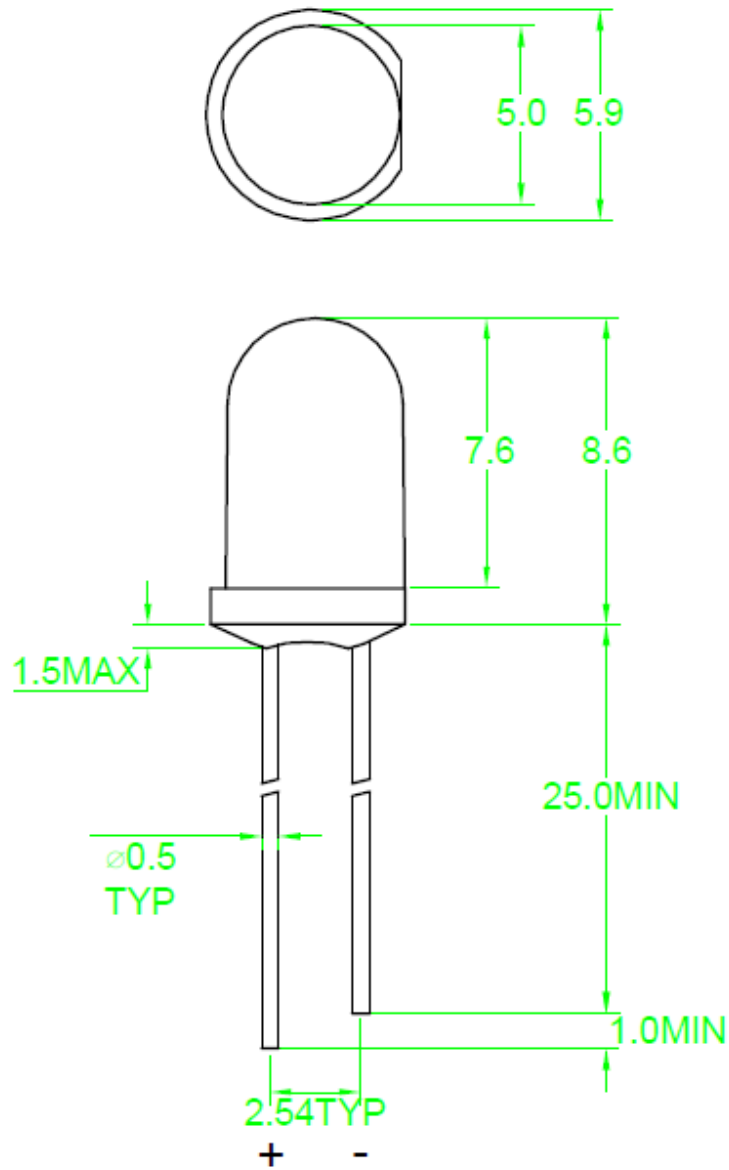


American Opto Plus LED Corp.

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



American Opto Plus LED Corp.

L513HD

5mm Red LED Lamp

ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

	Symbol	Rating	Unit
Forward Current	I _F	20	mA
Forward Peak Current (1/10 duty @10kHz)	I _{FP}	60	mA
Power Dissipation	P _D	50	mW
Reverse Current @5V	I _R	10	μA
Operating Temperature	T _{OPR}	-40~+85	°C
Storage Temperature	T _{STG}	-40~+100	°C

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

	Symbol	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Forward Voltage	V _f	I _F =20mA	1.7	--	2.6	V
Luminous Intensity	I _v	I _F =10mA	4.5	8	--	mcd
Peak Wavelength	λ _p	--	--	697	--	nm
Spectral Half Width	Δλ	--	--	90	--	nm
Viewing Angle	2Θ _{1/2}	--	--	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



American Opto Plus LED Corp.

L513HD

5mm Red LED Lamp

TYPICAL ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

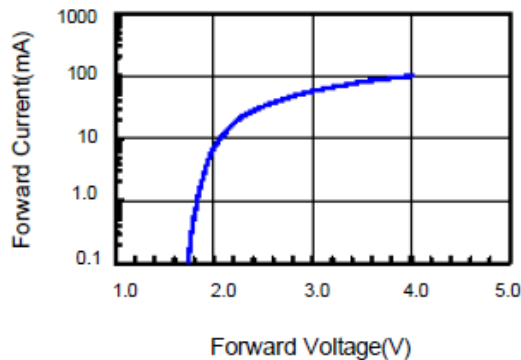


Fig.2 Relative Intensity vs. Forward Current

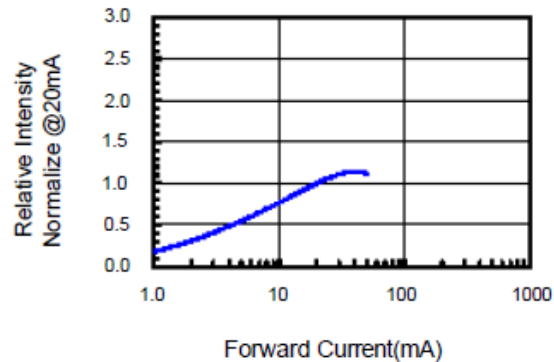


Fig.3 Forward Voltage vs. Temperature

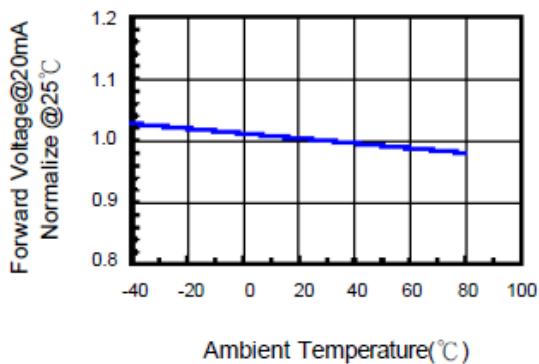


Fig.4 Relative Intensity vs. Temperature

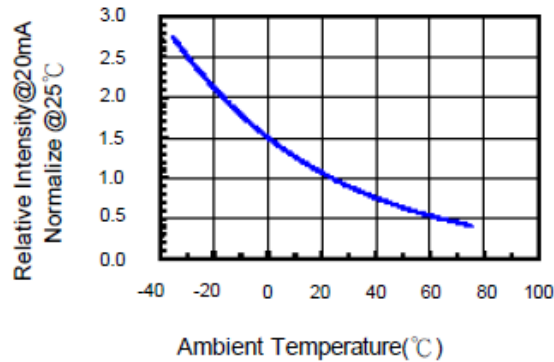
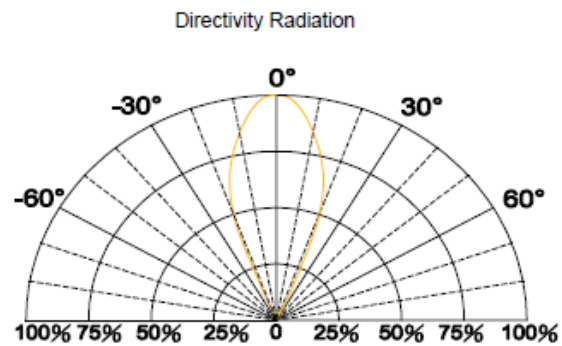
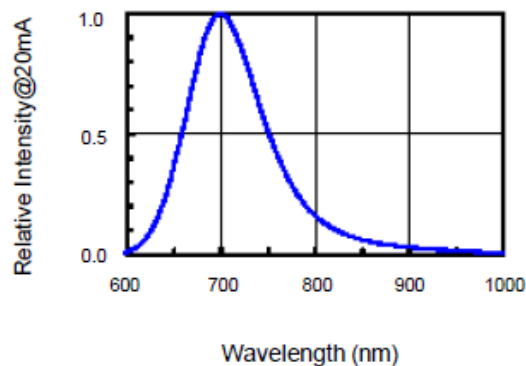


Fig.5 Relative Intensity vs. Wavelength





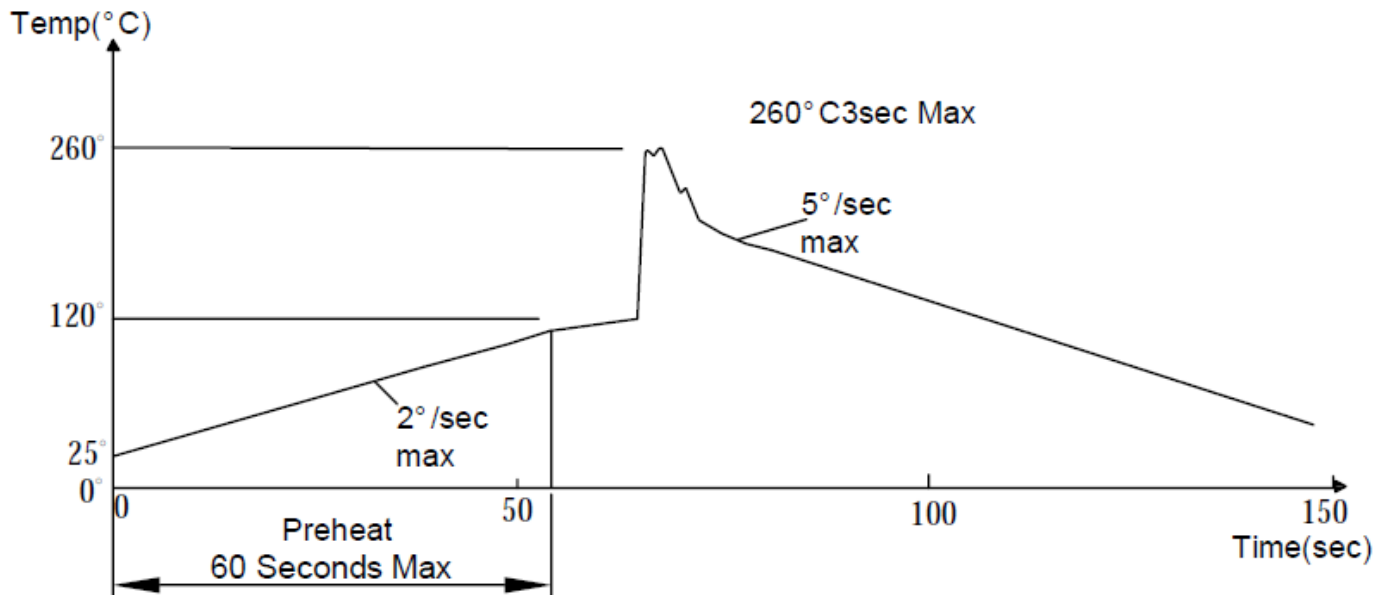
American Opto Plus LED Corp.

L513HD

5mm Red LED Lamp

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



American Opto Plus LED Corp.

L513HD

5mm Red LED Lamp

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