

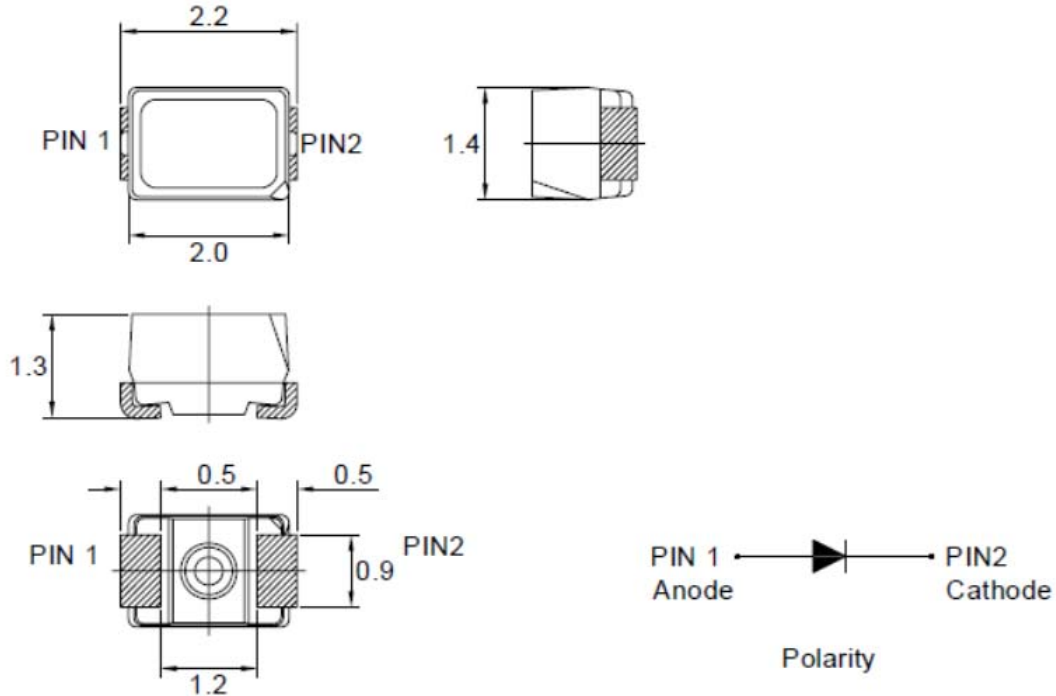


American Opto Plus LED Corp.

L224L-LYC-AM

2.2 x 1.4 x 1.3mm PLCC2 Yellow SMD LED (Automotive)

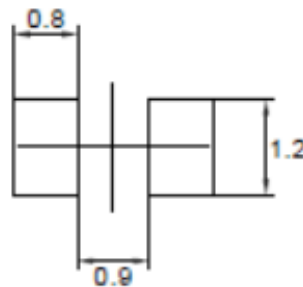
PACKAGE DIMENSION



Notes

1. All dimensions are in millimeters; tolerance is ± 0.2 mm unless otherwise noted
2. Specifications are subject to change without notice

RECOMMENDED SOLDERING PAD



Notes: All dimensions are in millimeters; tolerance is ± 0.1 mm unless otherwise noted

Material	Color	
	Emitted	Lens Color
AlGaInP	Yellow	Water Clear

Tentative Date: 10/18/2018 Specifications are subject to change without notice.

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ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

	Symbol	Rating	Unit
Forward Current	I _F	30	mA
Forward Peak Current (1/10 duty @10kHz)	I _{FP}	60	mA
Power Dissipation	P _D	78	mW
Reverse Current @12V	I _R	5	μA
Electrostatic Discharge	ESD	2000	V
Operating Temperature	T _{OPR}	-40~+100	°C
Storage Temperature	T _{STG}	-40~+100	°C
Thermal Resistance	Rth j-s	300	K/W
LED Junction Temperature	T _j	125	°C

OPTICAL-ELECTRICAL CHARACTERISTICS

(Ta=25°C)

	Symbol	Test Condition	Rating			Unit
			Min.	Typ.	Max.	
Luminous Intensity	I _v	I _F =20mA	140	260	450	mcd
Forward Voltage	V _f		1.7	--	2.6	V
Dominant Wavelength	λ _D		580	587	595	nm
Spectral Line Half-Width	Δλ		--	15	--	nm
Viewing Angle	2Θ _{1/2}		--	120	--	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
3. The dominant wavelength data did not including ±1nm testing tolerance.

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LUMINOUS INTENSITY CLASSIFICATION

Bin Code	Iv(mcd) at 20mA	
	Min.	Max.
R2	140	180
S1	180	224
S2	224	280
T1	280	355
T2	355	450

DOMINANT WAVELENGTH CLASSIFICATION

Bin Code	λ_D (nm) at 20mA	
	Min.	Max.
Y0	580	583
Y1	583	586
Y2	586	589
Y3	589	592
Y4	592	595

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TYPICAL ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

Fig.1 Forward current vs. Forward Voltage

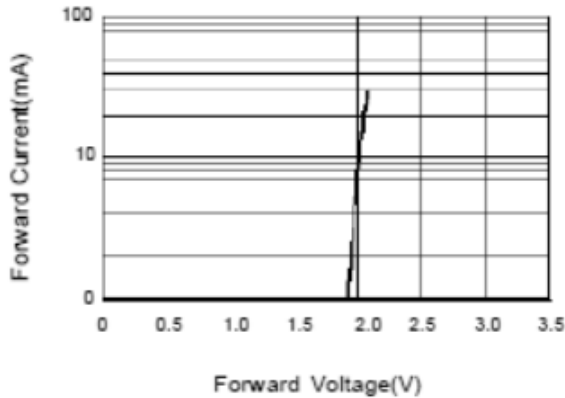


Fig.2 Luminous Intensity vs. Forward Current

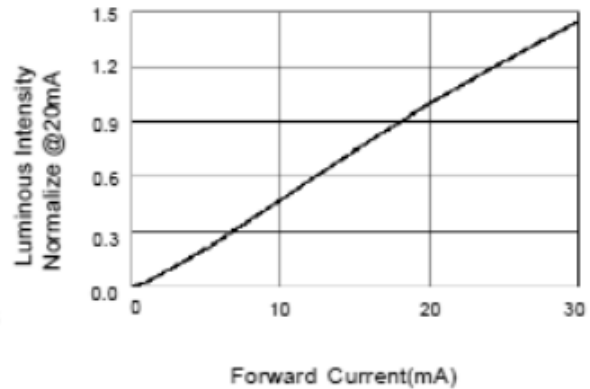


Fig.3 Forward Current vs. Temperature

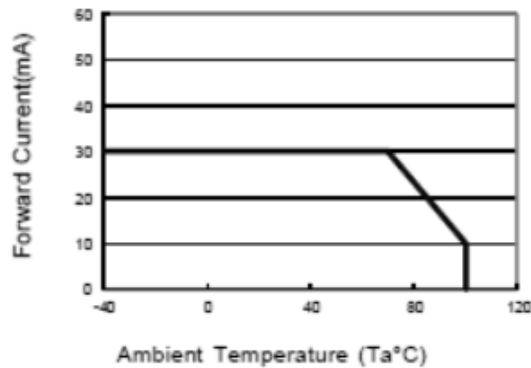


Fig.4 Luminous Intensity vs. Temperature

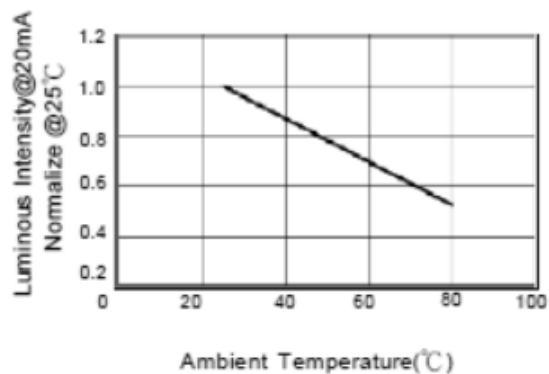


Fig.5 Relative Intensity vs. Wavelength

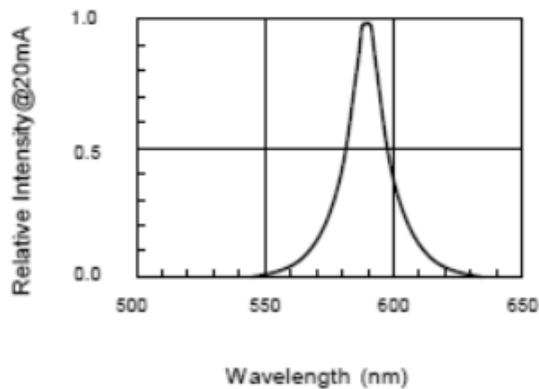
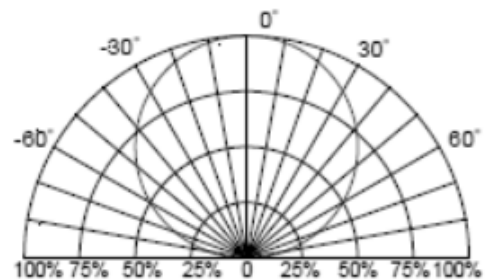


Fig.6 Directive Radiation





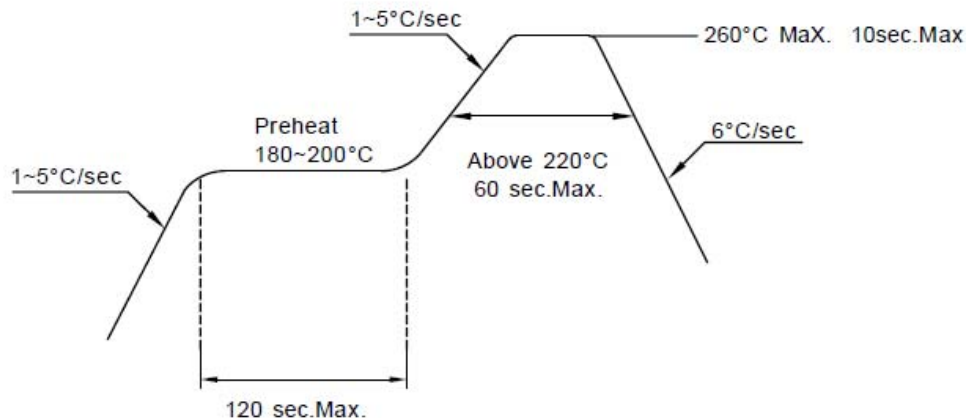
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RECOMMENDED SOLDERING CONDITION

1. Hand Solder
Basic spec is $\leq 320^{\circ}\text{C}$ for 3 seconds one time only
2. PB-Free Reflow Solder



Notes:

1. Reflow soldering should not be done more than 2 times
2. When soldering, do not put stress on the LEDs during heating
3. After soldering, do not warp the circuit board

PRECAUTION

Storage Time:

1. Calculated shelf life before opening is 12 months at $< 30^{\circ}\text{C}$ and $< 90\%$ relative humidity(RH)
2. After bag is opened, devices which will be subjected to reflow soldering or other high temperature processes must be
 - a. Assembled within 168 hours in an environment of $\leq 30^{\circ}\text{C}/60\%$ RH or
 - b. Stored at ambient of 10% RH or less
3. Devices are required baking before assembly if:
 - a. Humidity indicator card reads $> 10\%$ (for level 2a-5a) or $> 60\%$ (for level 2) at ambient temperature $23 \pm 5^{\circ}\text{C}$
 - b. 2.a) or 2.b) doesn't meet
4. If baking is required, devices should be baked for > 72 hours at $60 \pm 5^{\circ}\text{C}/5\%$ RH. Performing baking only once and using baked devices within 72 hours
5. MSL Level 3



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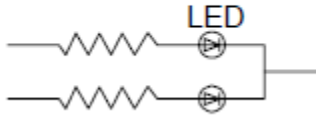
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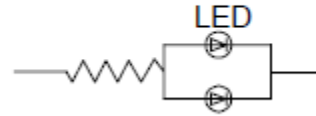
Drive method:

LED is a current operated device and therefore require some kind of current limiting incorporated into the driver circuit. This current limiting typically takes the form of a current limiting resistor places in series with the LED. Consider worst case voltage variations than could occur across the current limiting resistor. The forward current should not be allowed to change by more than 40% of its desired value

Circuit model A



Circuit model B



- a. Recommended circuit
- b. The difference of brightness between LED could be found due to the VF-IF characteristics of LED

Cleaning:

1. Use alcohol based cleaning solvents such as isopropyl alcohol to clean the LED

Electrostatic Discharge(ESD)

1. Static electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded