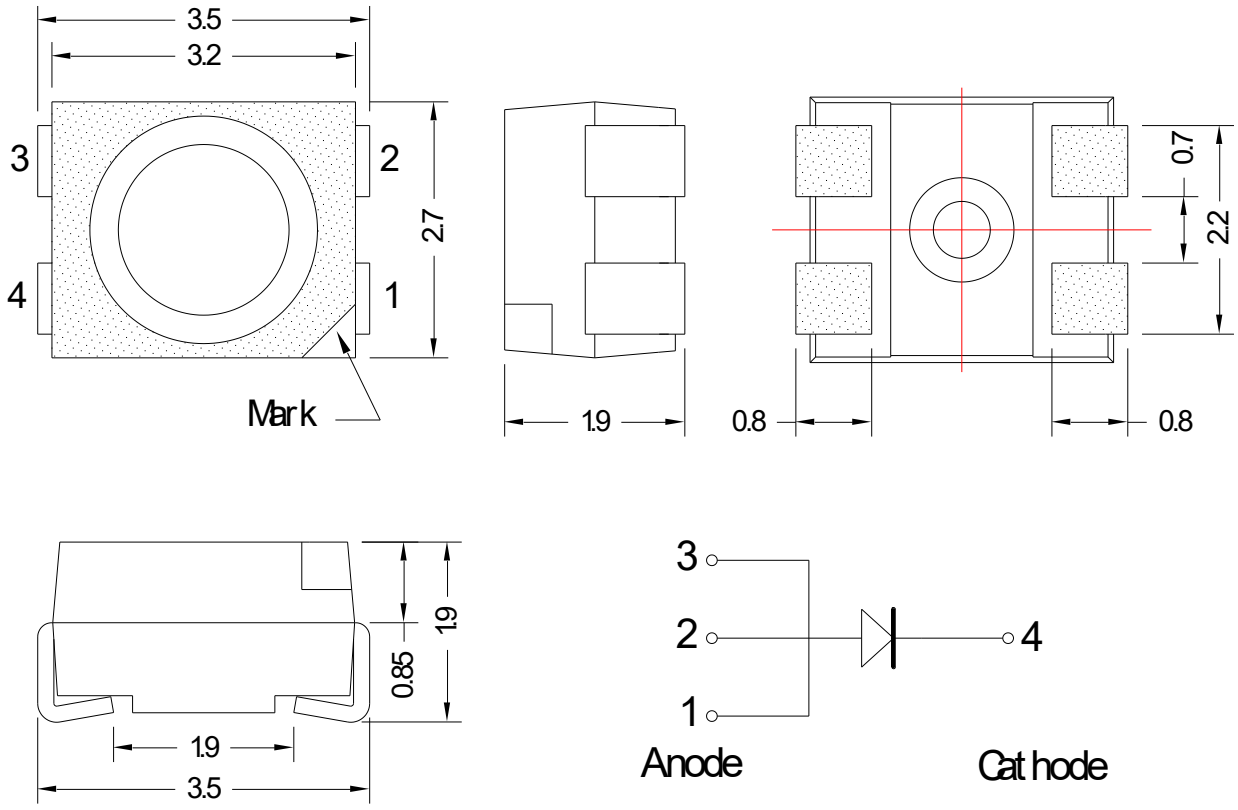
American Opto Plus LED Corp.

SMP-MAC-S

3.5 x 2.7 x 1.9mm Amber PLCC-4 SMD LED

PACKAGE DIMENSION



Item	Materials
Package	Heat-Resistant Polymer
Encapsulating Resin	Silicone
Electrodes	Ag Plating Copper Alloy
Chip	AlInGaP/Sapphire
Emitted Color	Amber

Notes

1. All dimensions are in millimeters
2. Electrical connection between all cathodes is recommended

ABSOLUTE MAXIMUM RATINGS **(Ta=25°C)**

	Symbol	Absolute Maximum Rating	Unit
DC Forward Current	I_F	50	mA
Peak Pulsed Forward Current	I_{FP}	100	mA
Reverse Voltage	V_R	5	V
Power Dissipation	Pd	125	mW
Operating temperature	T_{opr}	-30~+100	°C
Storage temperature	T_{stg}	-40~+100	°C
Solder Temperature	T_{sld}	265°C for 10 sec	--

OPTICAL-ELECTRICAL CHARACTERISTICS **(Ta=25°C)**

	Symbol	Test condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	I_F=20mA	--	2.1	2.5	V
Luminous Flux	ΦV		--	3600	--	mlm
Luminous Intensity	Iv		880	1200	1900	mcd
Dominant Wavelength	λd		610	615	620	nm
Peak Wavelength	λp		--	620	--	nm
Spectral Half Width	Δλ1/2		--	16	--	nm
Viewing Angle	2θ1/2	--	--	120	--	deg
Reverse Current	I_R	V_R=5V	--	--	10	μA

Notes:
1. Measurement Uncertainty of Luminous Intensity: ±10%
2. Please refer to CIE1931 chromaticity diagram

LUMINOUS INTENSITY BIN TABLE

IF=20mA

Rank Name	Min(mcd)	Max(mcd)
P	880	1150
Q	1150	1500
R	1500	1900

Note: Tolerance for each bin limit is ±15%

COLOR BIN TABLE

IF=20mA

Rank Name	Min(nm)	Max(nm)
1	610	615
2	615	620

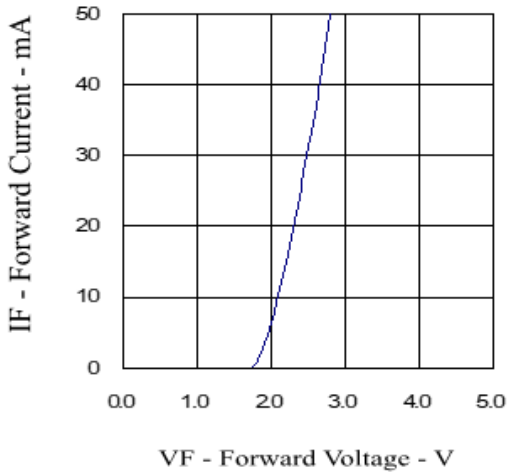
Note: Tolerance for each bin limit is ±1nm

Notes:

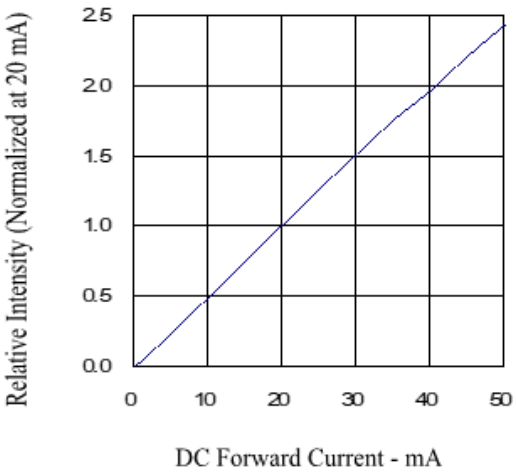
1. One delivery will include several color ranks and Iv ranks of products. The quantity ratio of the different rank is decided by AOP
2. Bin name typed on label: IV Rank + Color Rank. For example, Bin Q2 means IV: 1150~1500 mcd and Color: 615~620nm
3. AOP has the right to update the information without notice. Please double confirm the spec details before placing an order

TYPICAL ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

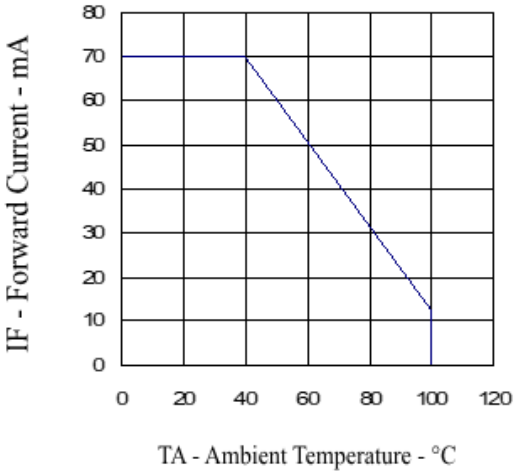
Forward Current vs. Forward Voltage



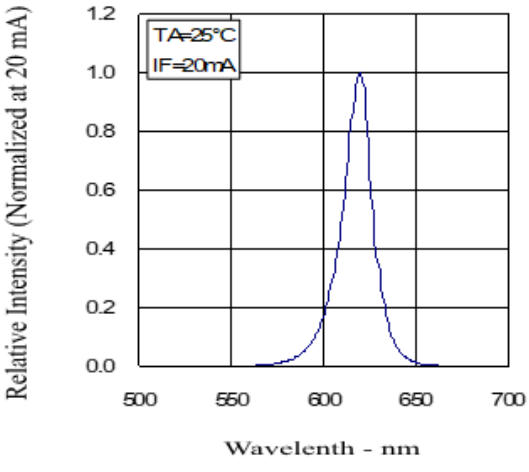
Relative Intensity vs. Forward Current



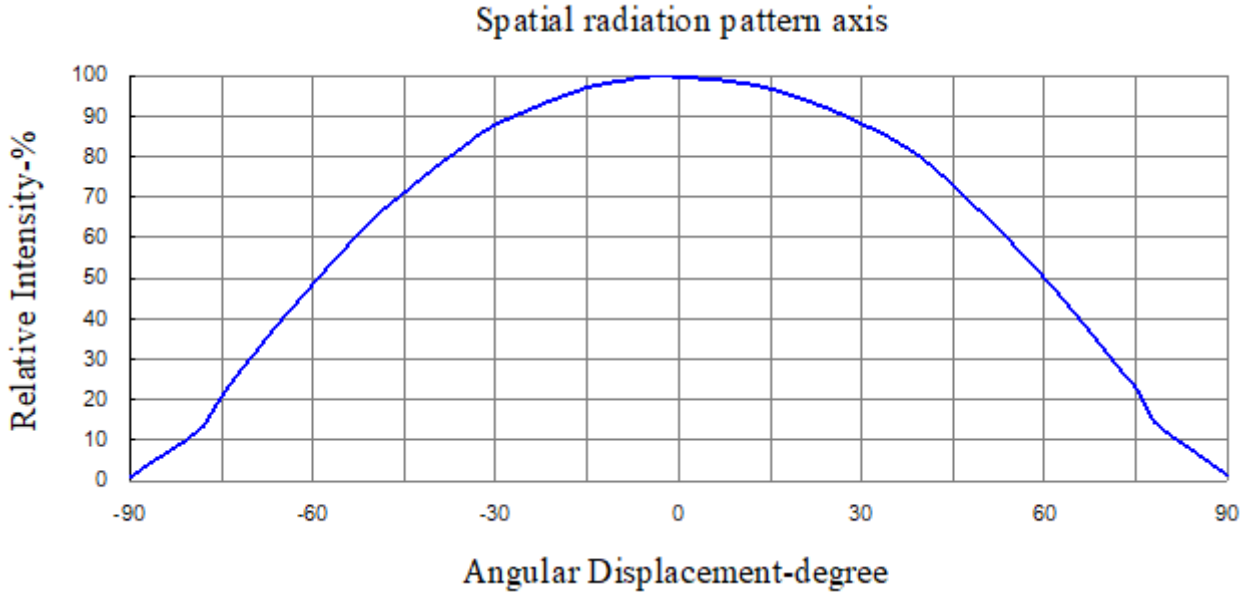
Forward Current vs. Ambient Temperature



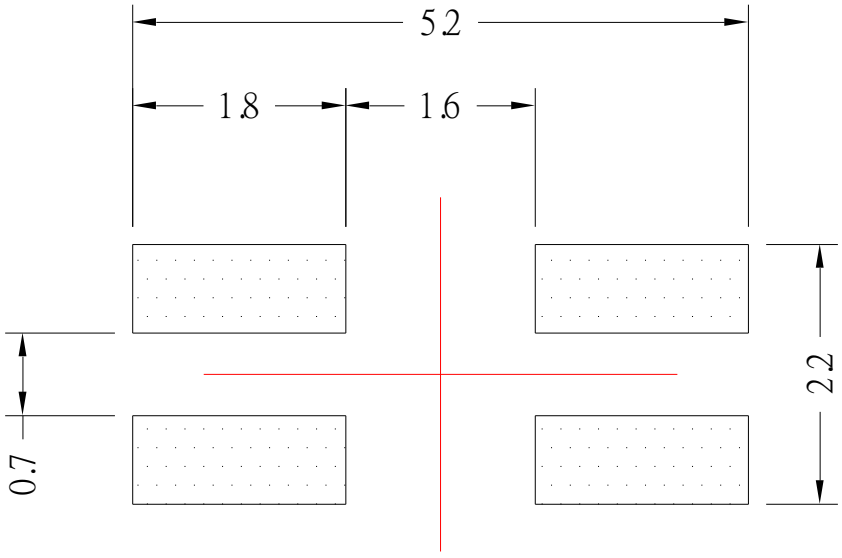
Relative Intensity vs. Wavelength



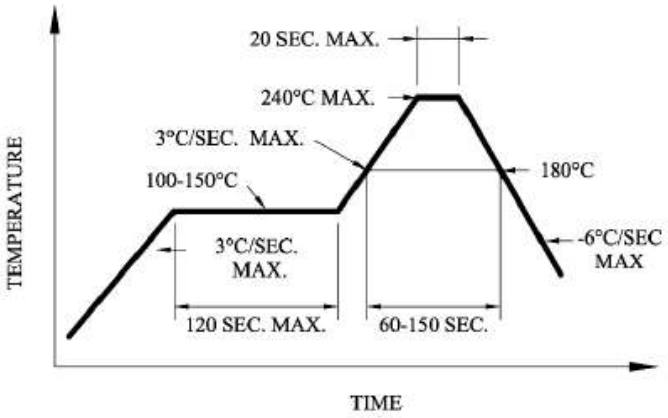
RADIATION PATTERN



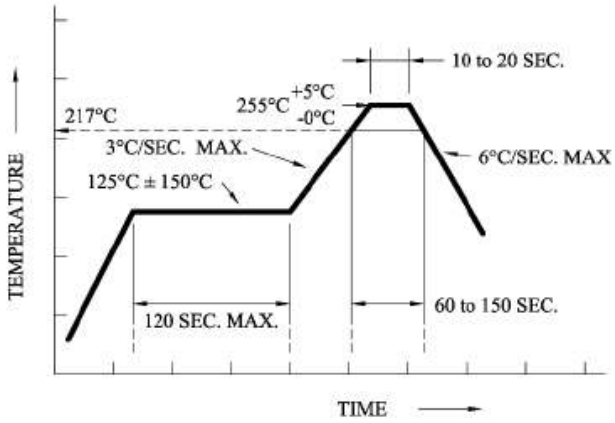
RECOMMENDED SOLDERING PAD PATTERN



SOLDERING CONDITIONS



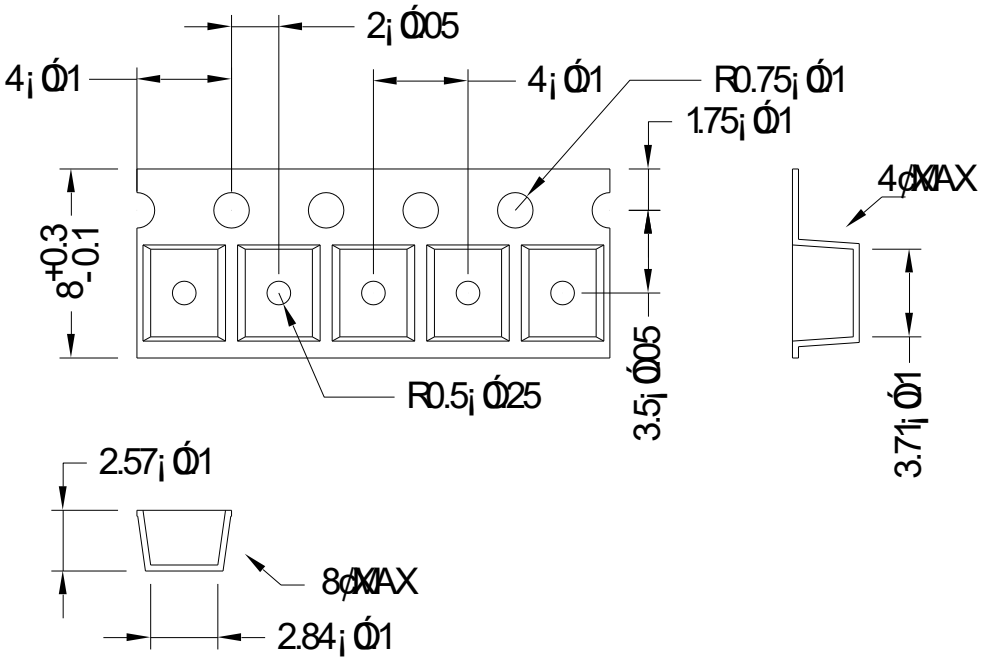
Recommended reflow soldering profile



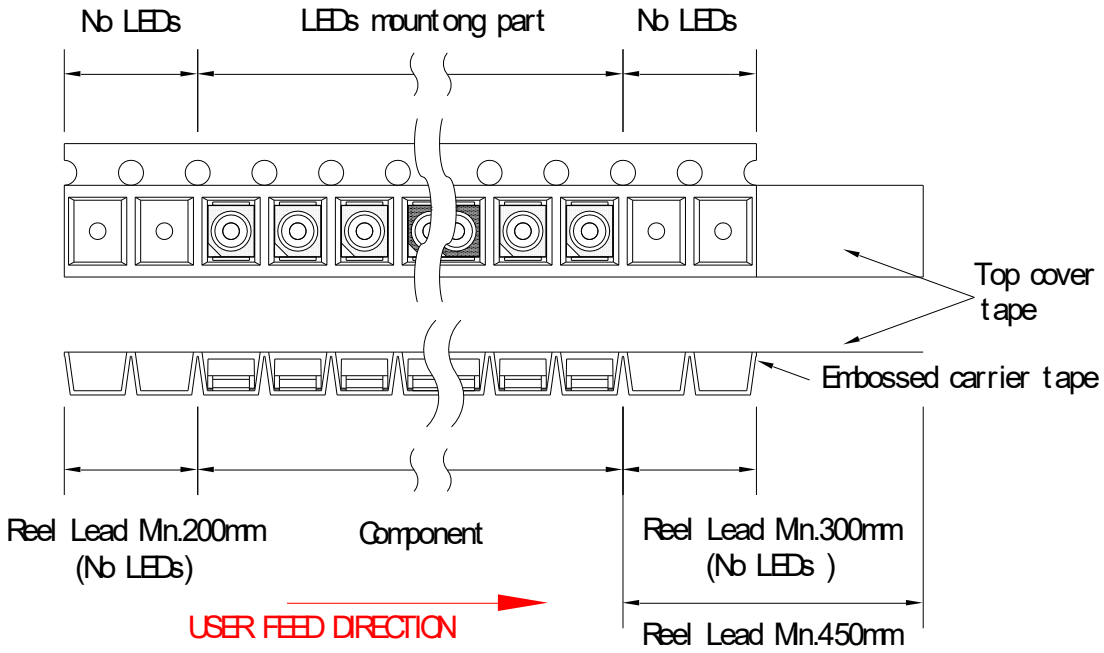
Recommended Pb-free reflow soldering profile.

- Repairing should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used. I should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing
- Reflow soldering should not be done more than two times
- When soldering, do not put stress on the LEDs during heating
- After soldering, do not warp the circuit board

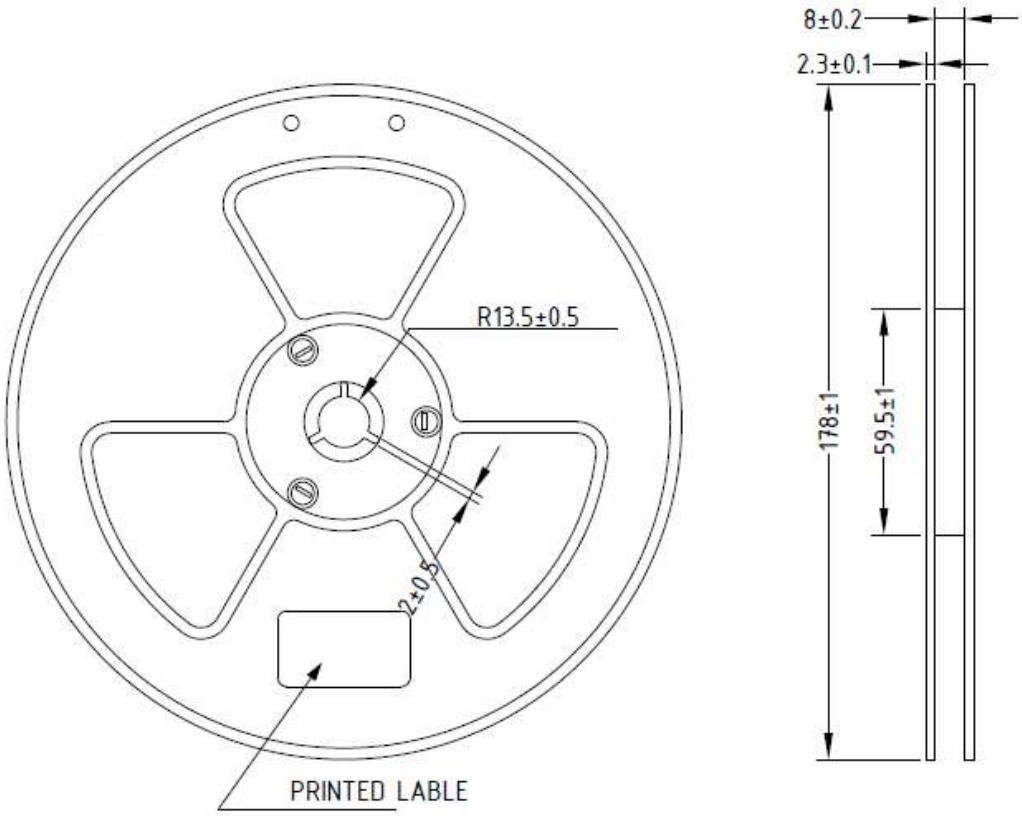
TAPE DIMENSION



TAPE LEADER AND TRAILER DIMENSION



REEL DIMENSION



Notes:

1. Baking is required under the following conditions:
   The pack has been opened for more than 72 hours
2. Baking recommended conditions:
   60±5°C for 20 hours
3. 8mm tape and 7 inch reel; 2000pcs/Reel

MOISTURE SENSITIVITY

AOP's SMD LED are shipped in sealed, moisture-barrier bags (MBB) designed for long shelf life. If SMD LED has exposed with moist environments before soldering, this may cause damage to SMD LED during soldering (reflow) operation

STORAGE / FLOOR TIME

Condition	Temperature (°C)	Humidity (RH)	Period of Time
Before Open	30	60	1year from shipping date
After Open	30	60	Within 72 hours

- MSL of this product are MSL4, please see IPC/JEDEC STD020D for more detail
- LEDs reach floor time may be damaged while soldering/reflow processing, please baking the LEDs before use
- If RH indicator card show 60% RH when unseal the package, please bake/discard the LED

RESEAL

- AOP's aluminum MBB may reuse as to reseal the unused LED If MBB has not damaged or had any holes on it
- Moisture absorbent material (Silica gel) may be reuse if it does not become pink
- Proper resealed LED's floor time will not reset, only stop counting until open
- If RH indicator card show 60% RH when open the package, please bake/discard the LED

BAKING

Condition	Temperature (°C)	Period of Time
With Reel	60	More than 24 hours, but not more than 48 hours
Without Reel	90	24 hours

- Baking of LED available ONCE only, more than nonce may damage the LEDs while baking
- Baking only required when LED reach it's floor time