

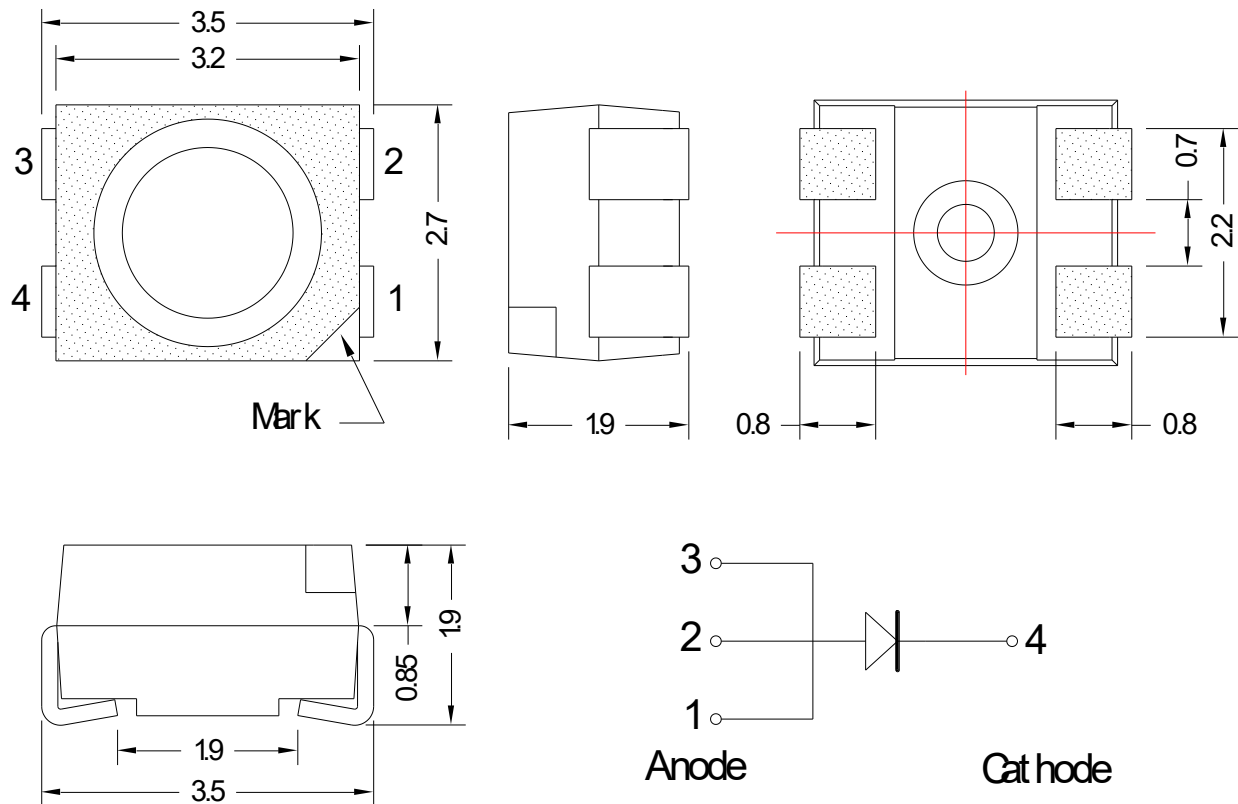


American Opto Plus LED Corp.

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

Version 1.0 Date: 03/01/2018 Specifications are subject to change without notice.

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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 | P_d | 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 | Φ_V | | -- | 3600 | -- | mlm |
| Luminous Intensity | I_v | | 880 | 1200 | 1900 | mcd |
| Dominant Wavelength | λ_d | | 610 | 615 | 620 | nm |
| Peak Wavelength | λ_p | | -- | 620 | -- | nm |
| Spectral Half Width | $\Delta\lambda_{1/2}$ | | -- | 16 | -- | nm |
| Viewing Angle | $2\theta_{1/2}$ | -- | -- | 120 | -- | deg |
| Reverse Current | I_R | $V_R=5V$ | -- | -- | 10 | μA |

Notes:

1. Measurement Uncertainty of Luminous Intensity: $\pm 10\%$
2. Please refer to CIE1931 chromaticity diagram



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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 $\pm 15\%$

COLOR BIN TABLE

IF=20mA

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

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

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 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

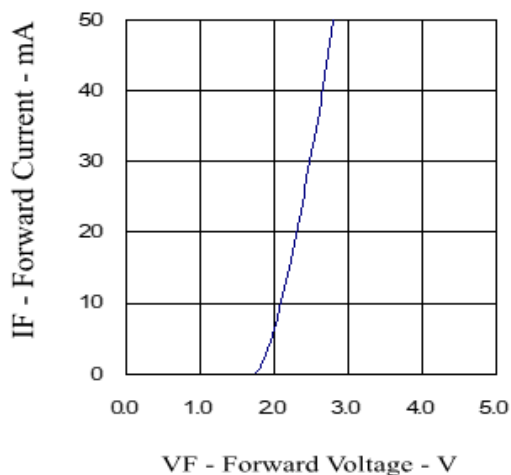


American Opto Plus LED Corp. SMP-MAC-S

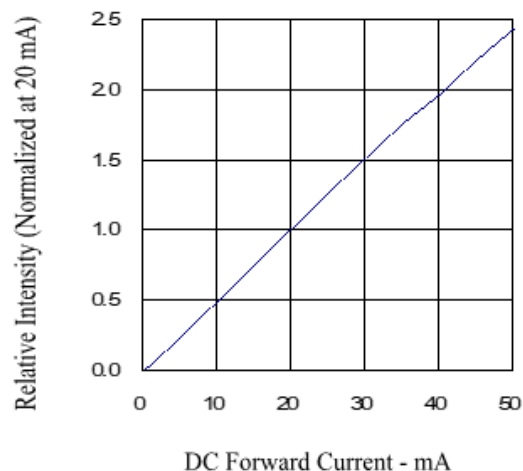
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TYPICAL ELECTRICAL-OPTICAL CHARACTERISTIC CURVES

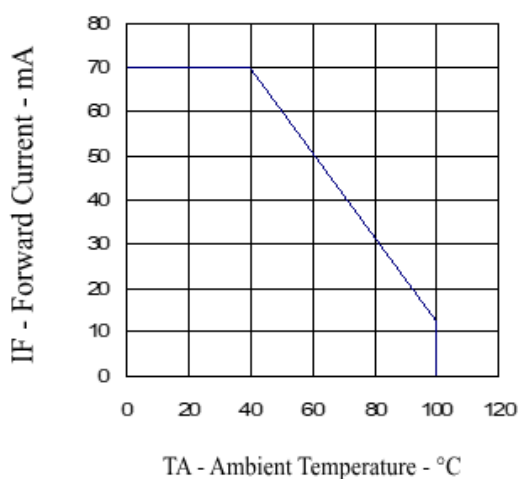
Forward Current vs. Forward Voltage



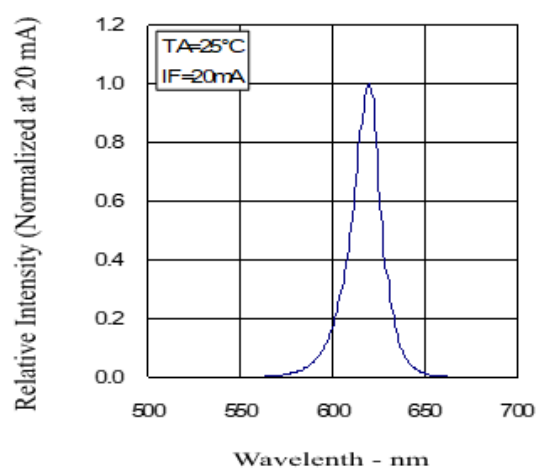
Relative Intensity vs. Forward Current



Forward Current vs. Ambient Temperature



Relative Intensity vs. Wavelength



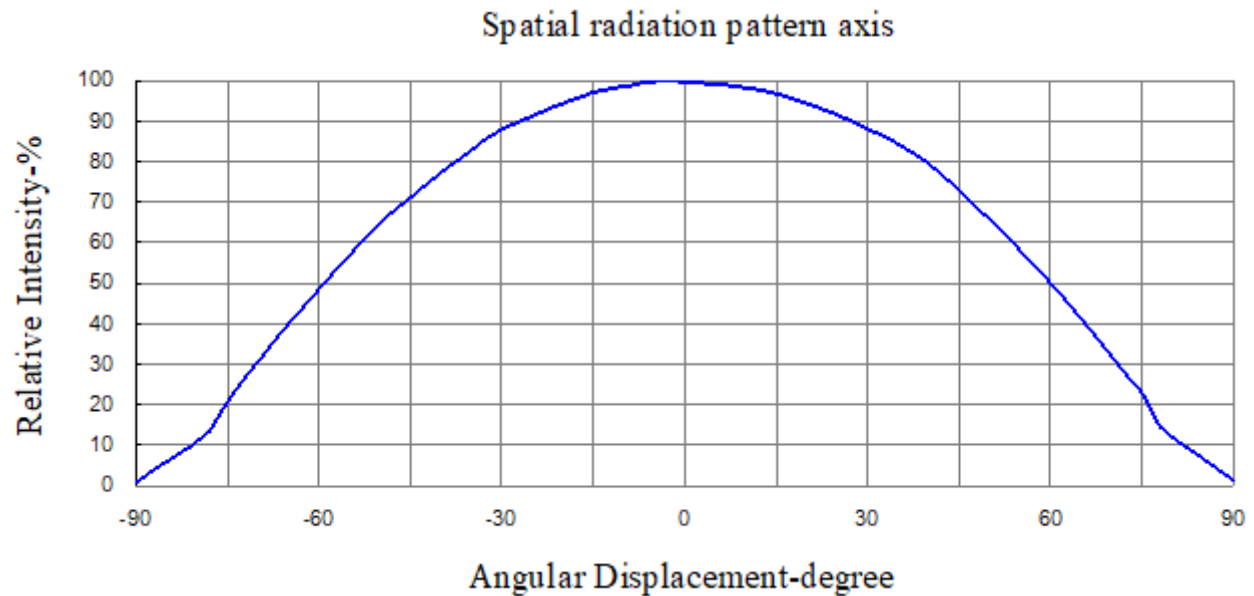


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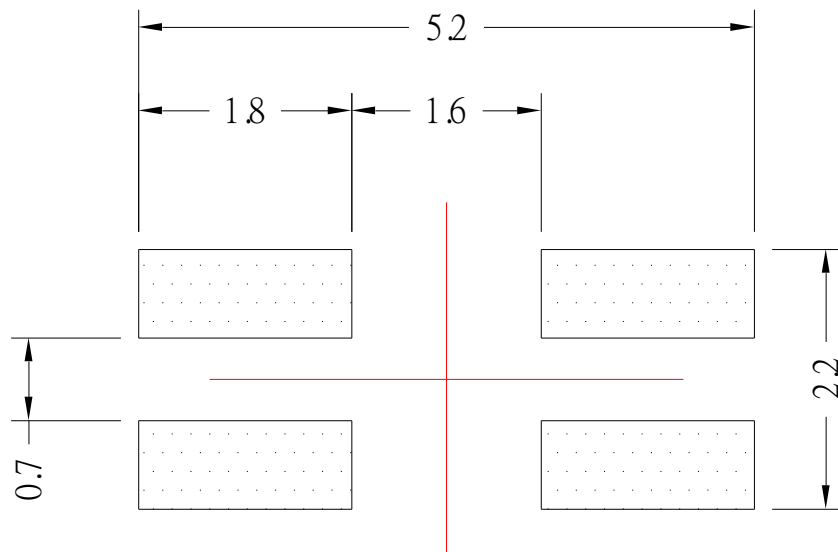
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RADIATION PATTERN



RECOMMENDED SOLDERING PAD PATTERN



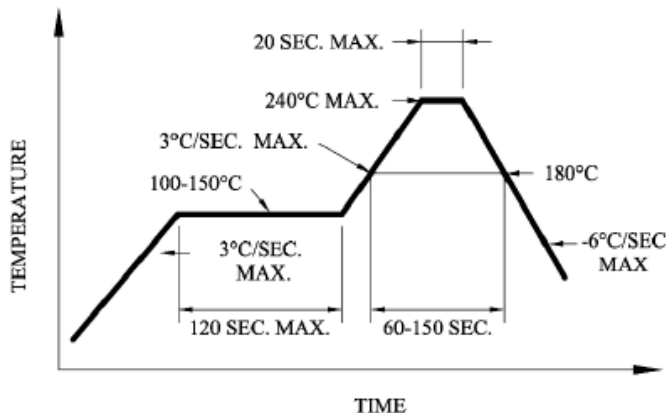


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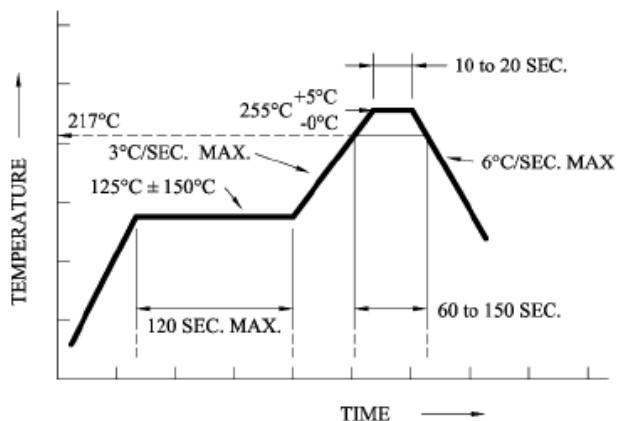
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SOLDERING CONDITIONS



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

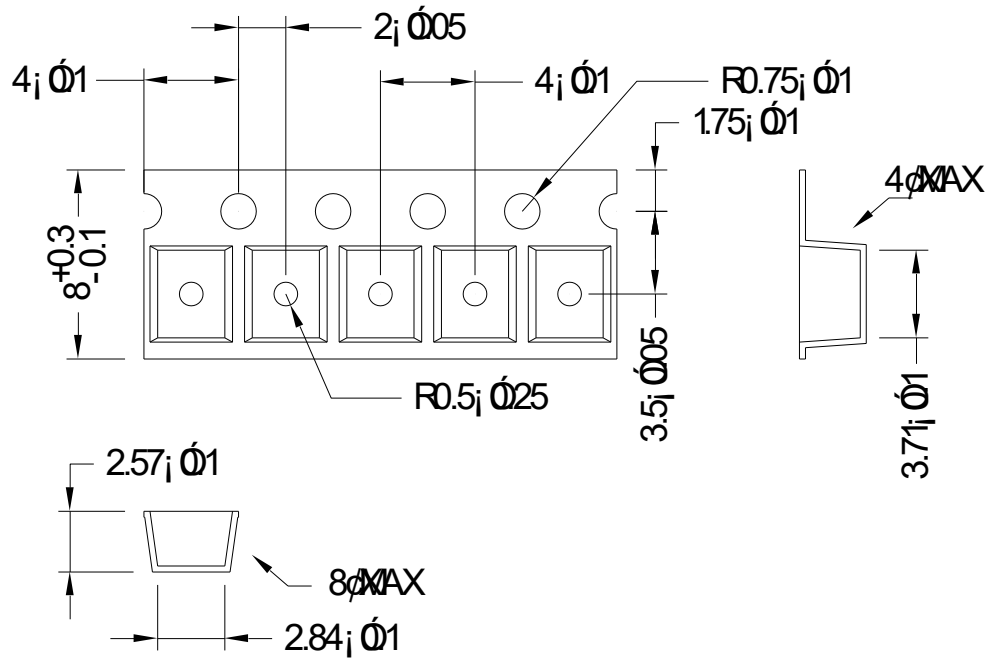


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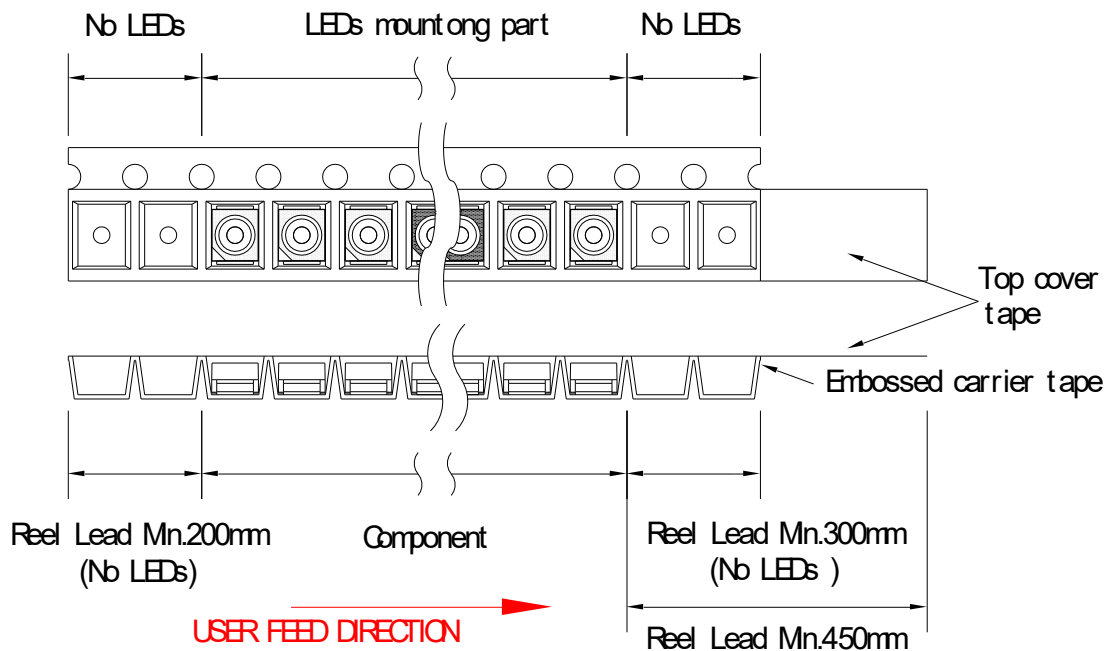
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TAPE DIMENSION



TAPE LEADER AND TRAILER DIMENSION



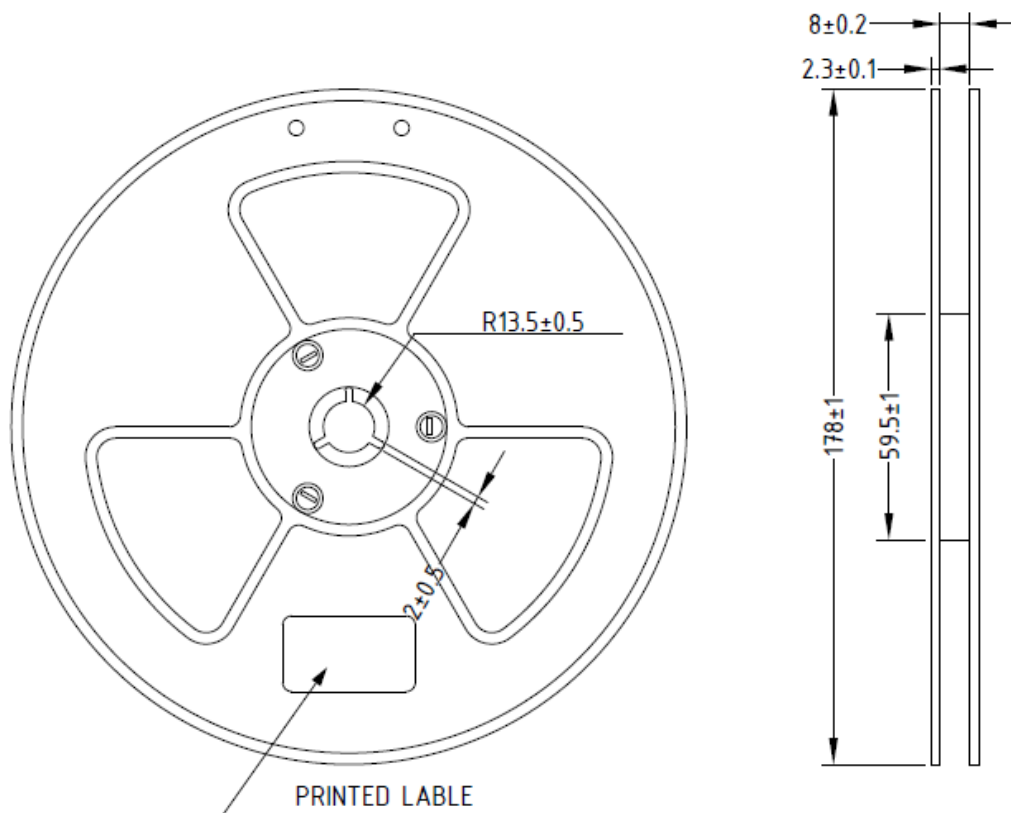


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REEL DIMENSION



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



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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