

### Features

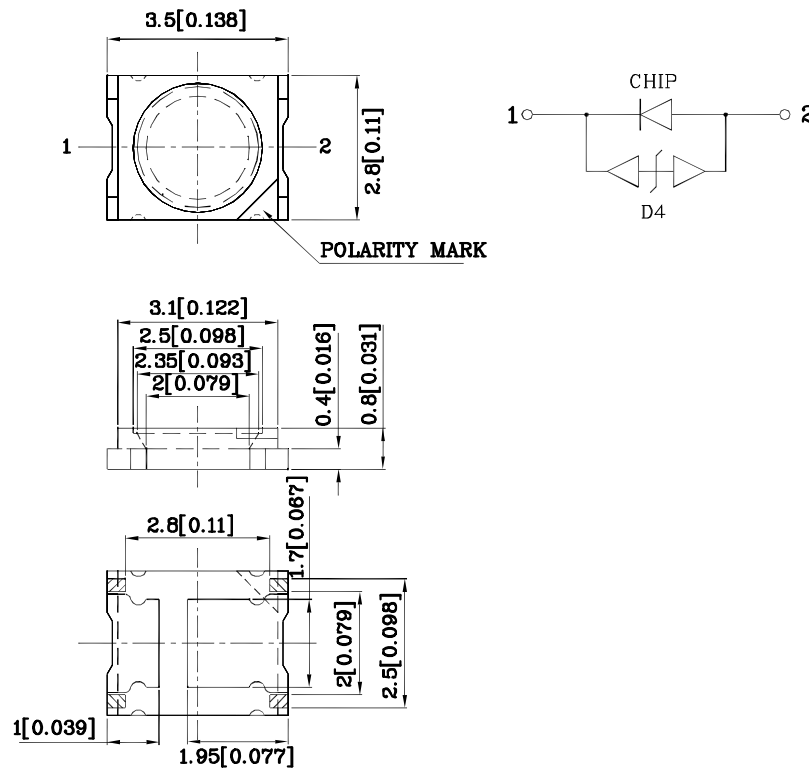
- 3.5mm X 2.8mm X 0.8mm SMD LED
- Ideal for indication for hand held products
- IR-reflow compatible
- Ideal 0.5-Watt power for backlighting and accent lighting
- Special colors available
- Standard Package: 2000pcs / Reel
- MSL (Moisture Sensitivity Level): 2a
- RoHS compliant



**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES



### Package Schematics



Notes:

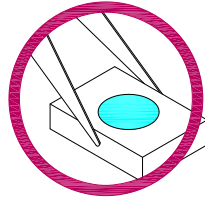
1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.25(0.01)$  unless otherwise noted.
3. Specifications are subject to change without notice.

### Handling Precautions

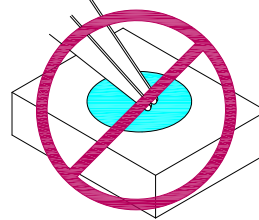
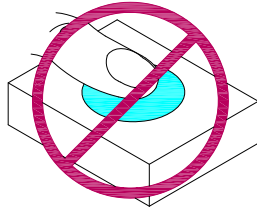
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more susceptible to damage by external mechanical force.

As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

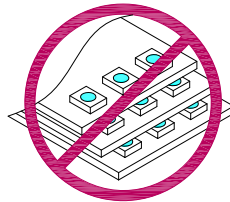
1. Handle the component along the side surfaces by using forceps or appropriate tools.



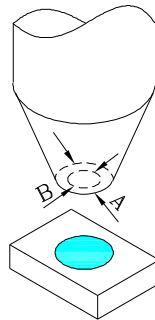
2. Do not directly touch or handle the silicone lens surface. It may damage the internal circuitry.



3. Do not stack together assembled PCBs containing exposed LEDs. Impact may scratch the silicone lens or damage the internal circuitry.



- 4.1. The inner diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks.
- 4.2. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup.
- 4.3. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



5. As silicone encapsulation is permeable to gases, some corrosive substances such as  $H_2S$  might corrode silver plating of leadframe. Special care should be taken if an LED with silicone encapsulation is to be used near such substances.

| Part Number | Emitting Color | Emitting Material | Lens-color  | Luminous Intensity<br>CIE127-2007*<br>(I <sub>F</sub> =150mA)<br>mcd |       | Luminous Flux<br>CIE127-2007*<br>(I <sub>F</sub> =150mA)<br>mlm |        | Wavelength<br>CIE127-2007*<br>nm<br>λP | Viewing Angle<br>2 θ 1/2 |
|-------------|----------------|-------------------|-------------|--|-------|---|--------|--|--------------------------|
|             |                |                   |             | min.   | typ.  | min.  | typ.   |  |                          |
| XZMOLA109FS | Red            | AlGaInP           | Water Clear | 3100*  | 4190* | 8600*   | 11700* | 640*                                   | 120°                     |

Notes:

LEDs are binned according to their luminous flux.

\*Luminous intensity/luminous flux value and wavelength are in accordance with CIE127-2007 standards.

**Absolute Maximum Ratings at TA=25°C**

| Parameter   | Symbol              | Value     | Unit |
|---|---------------------|-----------|------|
| Power Dissipation                                 | P <sub>D</sub>      | 450       | mW   |
| Junction Temperature [1]                          | T <sub>J</sub>      | 110       | °C   |
| Operating Temperature                             | T <sub>op</sub>     | -40 ~ +85 | °C   |
| Storage Temperature                               | T <sub>stg</sub>    | -40 ~ +85 | °C   |
| DC Forward Current [1]                            | I <sub>F</sub>      | 150       | mA   |
| Peak Forward Current [3]                          | I <sub>FM</sub>     | 350       | mA   |
| Reverse Voltage                                   | V <sub>R</sub>      | 5         | V    |
| Thermal Resistance [1]<br>(Junction/ambient)      | R <sub>th j-a</sub> | 155       | °C/W |
| Thermal Resistance [1]<br>(Junction/solder point) | R <sub>th j-s</sub> | 60        | °C/W |
| Electrostatic Discharge Threshold (HBM)           |                     | 8000      | V    |

Notes:

1. Results from mounting on PC board FR4 (pad size ≥ 70mm<sup>2</sup>), mounted on pc board-metal core PCB is recommend for lowest thermal Resistance.

2. θ<sub>1/2</sub> is the angle from optical centerline where the luminous intensity is 1/2 of the optical peak value.

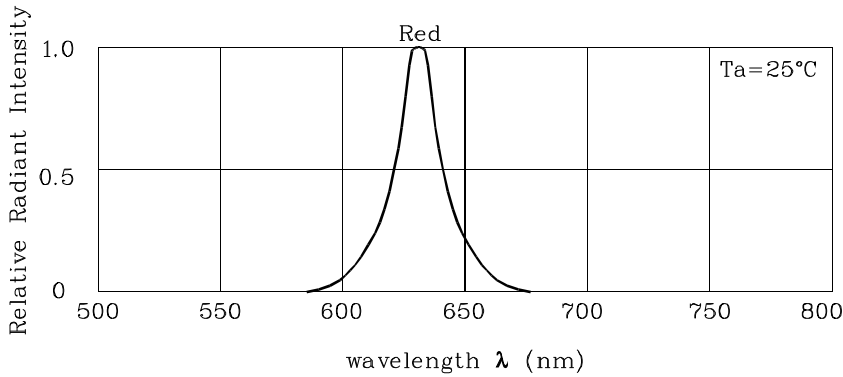
3. 1/10 Duty Cycle, 0.1ms Pulse Width.

4. A Relative Humidity between 40% and 60% is recommended in ESD-protected work areas to reduce static build up during assembly process (Reference JEDEC/JESD625-A and JEDEC/J-STD-033)

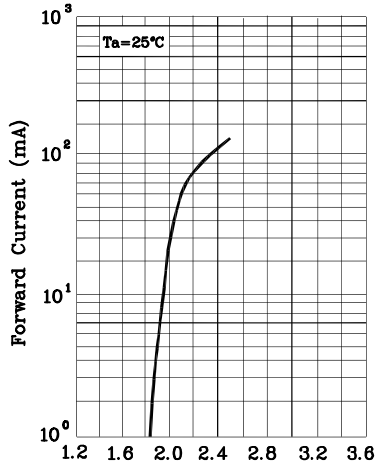
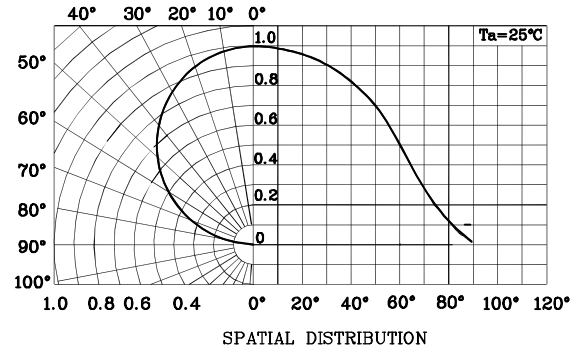
**Electrical / Optical Characteristics at TA=25°C**

| Parameter  | Symbol               | Value | Unit |
|--|----------------------|-------|------|
| Wavelength at peak emission CIE127-2007* I <sub>F</sub> = 150mA [Typ.] | λ <sub>peak</sub>    | 631*  | nm   |
| Dominant Wavelength CIE127-2007* I <sub>F</sub> = 150mA [Typ.]         | λ <sub>dom</sub> [1] | 623*  | nm   |
| Spectral Line Half-width I <sub>F</sub> = 150mA [Typ.]                 | Δλ                   | 20    | nm   |
| Capacitance [V <sub>F</sub> = 0V; f = 1MHz]                            | C                    | 27    | pF   |
| Forward Voltage I <sub>F</sub> = 150mA [Typ.]                          | V <sub>F</sub> [2]   | 2.5   | V    |
| Forward Voltage I <sub>F</sub> = 150mA [Max.]                          |                      | 3.0   |      |
| Allowable Reverse Current [Max.]                                       | I <sub>R</sub>       | 10    | mA   |

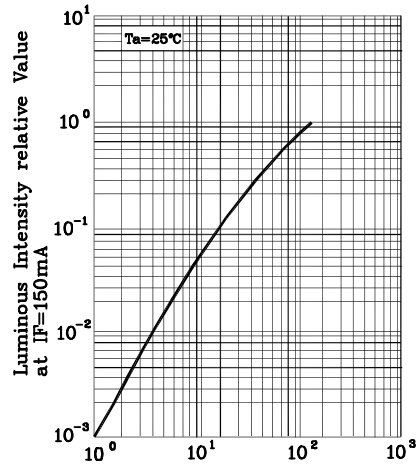
\*wavelength value is in accordance with CIE127-2007 standards.



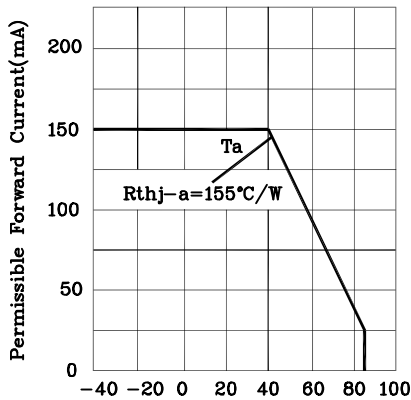
Relative Intensity Vs. CIE Wavelength



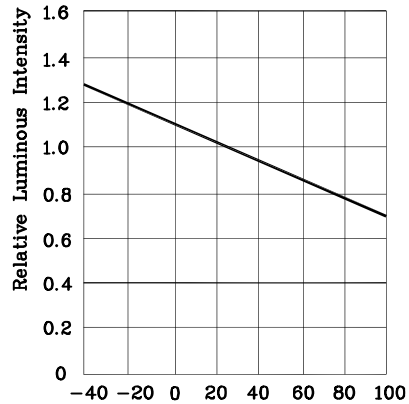
FORWARD CURRENT Vs. FORWARD VOLTAGE



LUMINOUS INTENSITY Vs. FORWARD CURRENT



FORWARD CURRENT DERATING CURVE

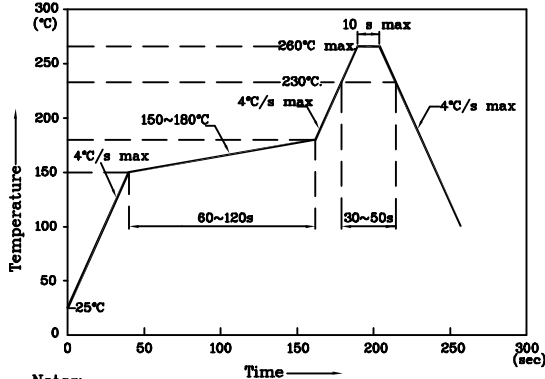


LUMINOUS INTENSITY VS. AMBIENT TEMPERATURE

LED is recommended for reflow soldering and soldering profile is shown below.

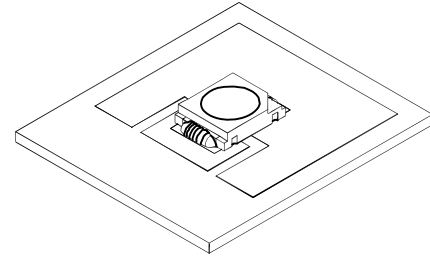
❖ The device has a single mounting surface. The device must be mounted according to the specifications.

Reflow Soldering Profile for SMD Products (Pb-Free Components)



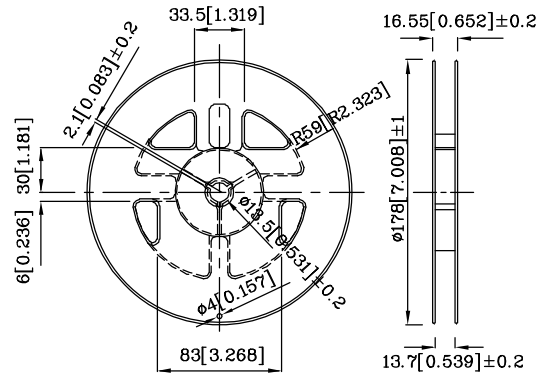
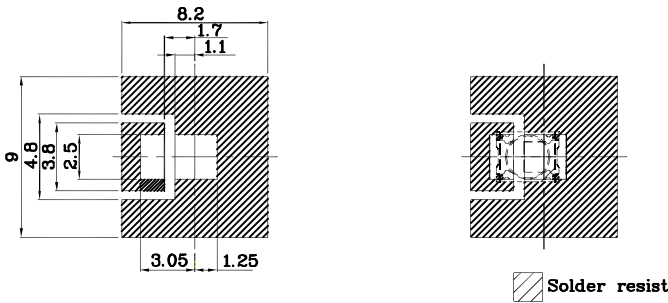
Notes:

1. Maximum soldering temperature should not exceed 260°C
2. Recommended reflow temperature: 145°C-260°C
3. Do not put stress to the epoxy resin during high temperatures conditions

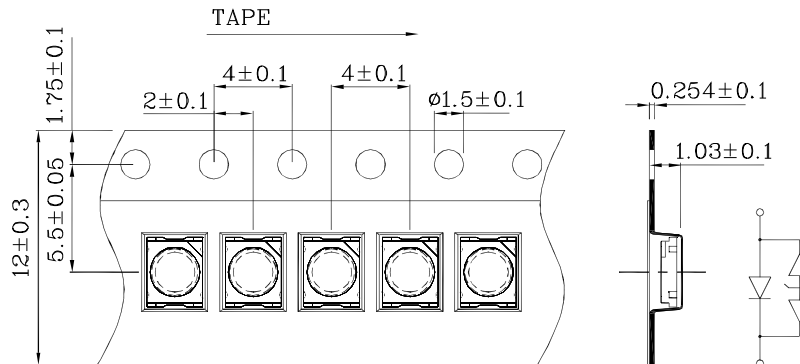


❖ Recommended Soldering Pattern (Units : mm; Tolerance: ± 0.1)

❖ Reel Dimension



❖ Tape Specification (Units : mm)



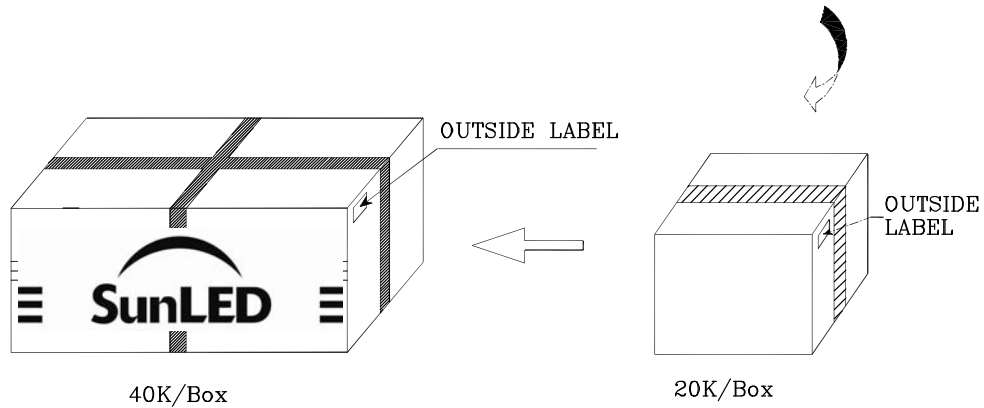
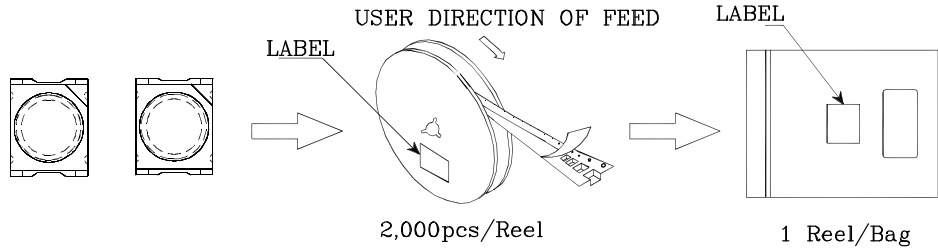

Remarks:



If special sorting is required (e.g. binning based on forward voltage, Luminous intensity / luminous flux, or wavelength), the typical accuracy of the sorting process is as follows:

1. Wavelength: +/-1nm
2. Luminous intensity / luminous flux: +/-15%
3. Forward Voltage: +/-0.1V

Note: Accuracy may depend on the sorting parameters.

**PACKING & LABEL SPECIFICATIONS**

|  |   |       |     |            |        |
|--|---|-------|-----|------------|--------|
|                                   | <table border="1" style="margin: auto;"> <tr><td style="text-align: center;">Q. C.</td></tr> <tr><td style="text-align: center;">Q C</td></tr> <tr><td style="text-align: center;">XX XX XXXX</td></tr> <tr><td style="text-align: center;">PASSED</td></tr> </table> | Q. C. | Q C | XX XX XXXX | PASSED |
| Q. C.  |   |       |     |            |        |
| Q C  |   |       |     |            |        |
| XX XX XXXX   |   |       |     |            |        |
| PASSED   |   |       |     |            |        |
| P/NO : XZxxx109x   |   |       |     |            |        |
| QTY : 2,000 pcs  | CODE: XXX   |       |     |            |        |
| S/N : XX   |   |       |     |            |        |
| LOT NO :   |   |       |     |            |        |
| <br>XXXXXXXXXXXXXXXXXXXXXXXXXXXX |   |       |     |            |        |
| RoHS Compliant   |   |       |     |            |        |

**TERMS OF USE**

1. Data presented in this document reflect statistical figures and should be treated as technical reference only.
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