

## Mini Top View LEDs 65-21/B2P-V2X1E/2T



### Features

- White SMT package.
- Optical indicator.
- Wide viewing angle.
- Soldering methods: IR reflow soldering
- Available on tape and reel (8mm Tape).
- Pb-free.
- The product itself will remain within RoHS compliant version.
- Precondition: Bases on JEDEC J-STD 020D Level 3
- Compliance with EU REACH.
- Compliance Halogen Free .(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm).

### Description

The white LED which was fabricated using a blue LED and a phosphor, and the phosphor is excited by blue light and emits yellow fluorescence.

The mixture of blue light and yellow light results in a white emission.

### Applications

- Optical indicators.
- Coupling into light guides.
- Backlighting (LCD, cellular phones, switches, keys, displays, illuminated advertising, general lighting).
- Coupling into light guides; Interior automotive lighting (e.g. dashboard backlighting, etc.).

## Device Selection Guide

| Chip Materials | Emitted Color   | Resin Color |
|----------------|-----------------|-------------|
| InGaN          | Pastel Sky Blue | Water Clear |

## Absolute Maximum Ratings (Ta=25°C)

| Parameter                                 | Symbol           | Rating  | Unit |
|---|------------------|---|------|
| Reverse Voltage                           | V <sub>R</sub>   | 5   | V    |
| Forward Current                           | I <sub>F</sub>   | 30  | mA   |
| Peak Forward Current<br>(Duty 1/10 @1KHz) | I <sub>FP</sub>  | 110   | mA   |
| Power Dissipation                         | P <sub>d</sub>   | 100   | mW   |
| Operating Temperature                     | T <sub>opr</sub> | -40 ~ +85   | °C   |
| Storage Temperature                       | T <sub>stg</sub> | -40 ~ +90   | °C   |
| Electrostatic Discharge (HBM)             | ESD              | 2000  | V    |
| Soldering Temperature                     | T <sub>sol</sub> | Reflow Soldering : 260 °C for 10 sec.<br>Hand Soldering : 350 °C for 3 sec. |      |

Note:  
LED components are not supposed to be reverse operated.

## Electro-Optical Characteristics (Ta=25°C)

| Parameter          | Symbol            | Min.  | Typ.  | Max.  | Unit | Condition            |
|--------------------|-------------------|-------|-------|-------|------|----------------------|
| Luminous Intensity | I <sub>v</sub>    | 900   | ----- | 2250  | mcd  | I <sub>F</sub> =20mA |
| Viewing Angle      | 2θ <sub>1/2</sub> | ----- | 120   | ----- | deg  | I <sub>F</sub> =20mA |
| Forward Voltage    | V <sub>F</sub>    | 2.75  | ----- | 3.65  | V    | I <sub>F</sub> =20mA |
| Reverse Current    | I <sub>R</sub>    | ----- | ----- | 50    | μA   | V <sub>R</sub> =5V   |

Note:  
1. Tolerance of Luminous Intensity: ±10%  
2. Tolerance of Forward Voltage: ±0.1V  
3. All reliability item are tested under good thermal management. Dynamic reliability are tested at 20mA.  
4. All reliability item are tested under good thermal management. Dynamic reliability are tested at 20mA.  
5. LED components are not supposed to be reverse operated.

### Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition            |
|----------|------|------|------|----------------------|
| V2       | 900  | 1120 | mcd  | I <sub>F</sub> =20mA |
| W1       | 1120 | 1420 |      |                      |
| W2       | 1420 | 1800 |      |                      |
| X1       | 1800 | 2250 |      |                      |

### Bin Range of Forward Voltage

| Group | Bin Code | Min. | Max. | Unit | Condition            |
|-------|----------|------|------|------|----------------------|
| M     | 5        | 2.75 | 3.05 | V    | I <sub>F</sub> =20mA |
|       | 6        | 3.05 | 3.35 |      |                      |
|       | 7        | 3.35 | 3.65 |      |                      |

Note:

1. Tolerance of Luminous Intensity:  $\pm 10\%$
2. Tolerance of Forward Voltage:  $\pm 0.1V$

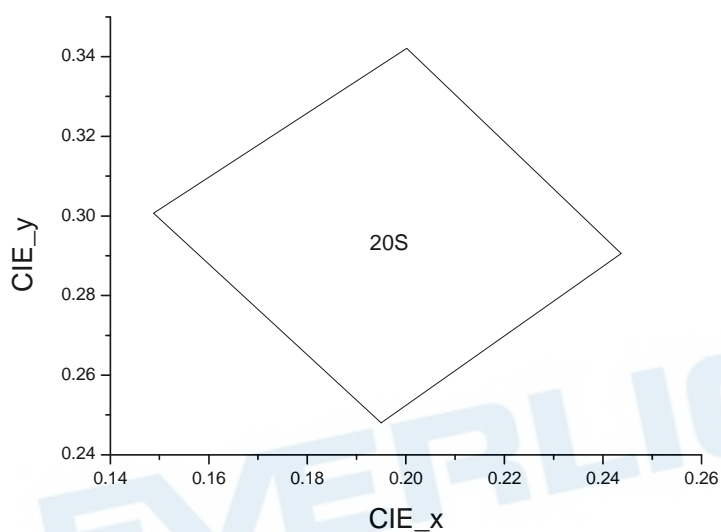
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### Bin Range of Chromaticity Coordinates Specifications

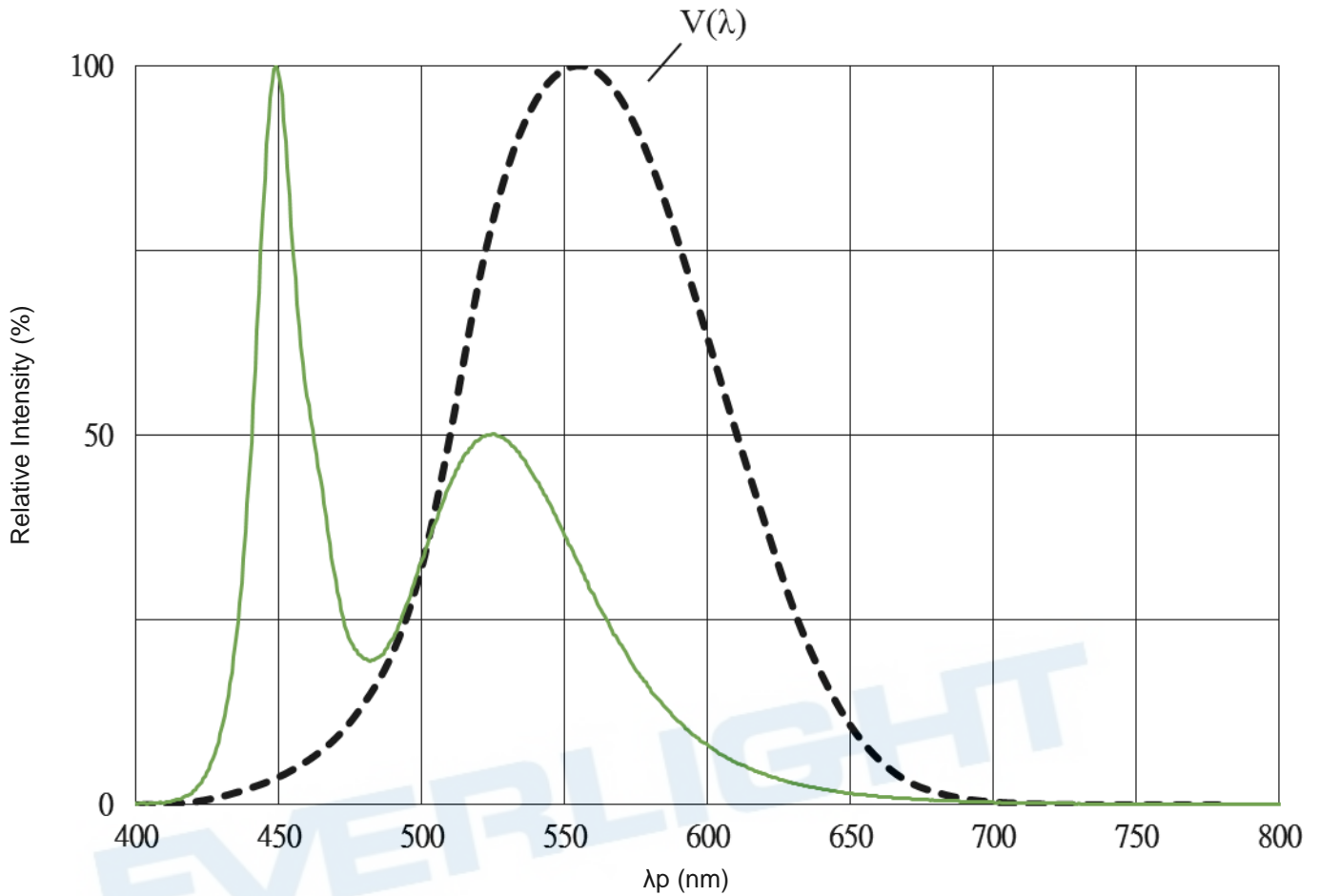
| Bin Code | CIE_x  | CIE_y  | Condition            |
|----------|--------|--------|----------------------|
| 20S      | 0.1950 | 0.2480 | I <sub>F</sub> =20mA |
|          | 0.1488 | 0.3007 |                      |
|          | 0.2002 | 0.3421 |                      |
|          | 0.2437 | 0.2906 |                      |

Notes: Tolerance of Chromaticity Coordinates : ±0.01

### The C.I.E. 1931 Chromaticity Diagram

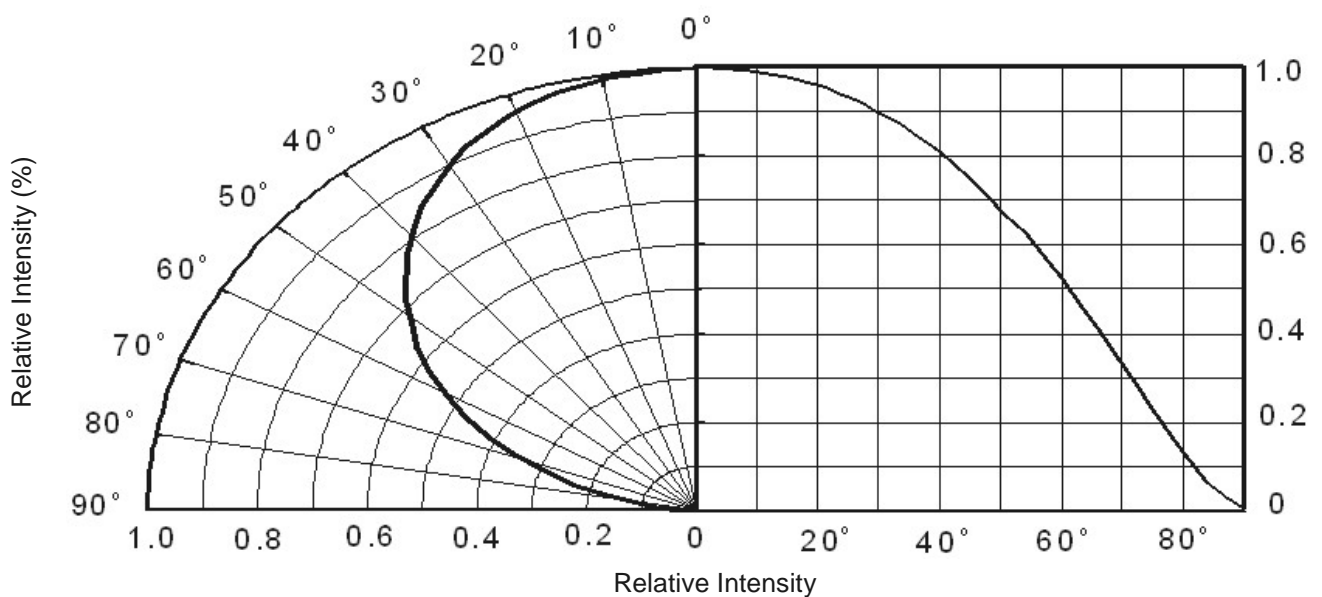


**Typical Electro-Optical Characteristics Curves**  
Typical Curve of Spectral Distribution



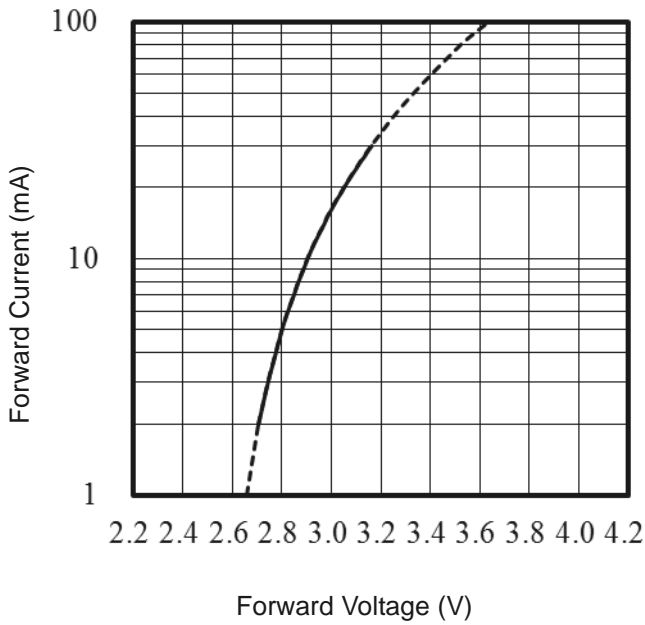
Note:  $V(\lambda)$ =Standard eye response curve

**Diagram Characteristics of Radiation**

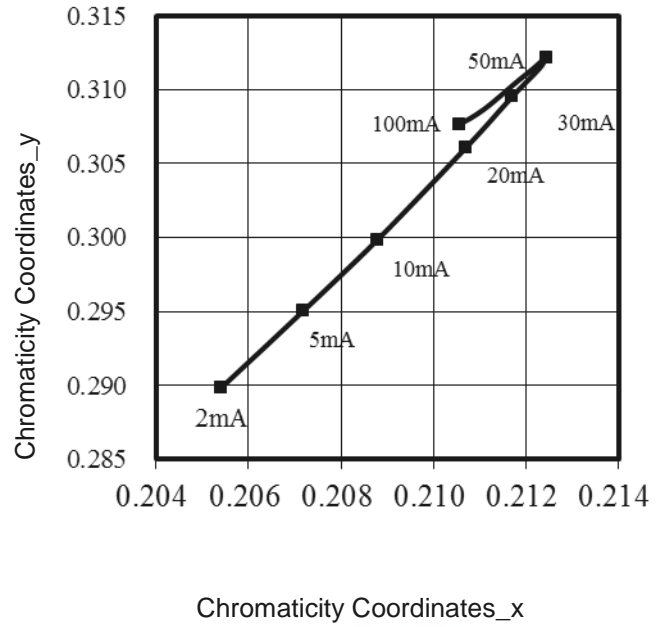


### Typical Electro-Optical Characteristics Curves

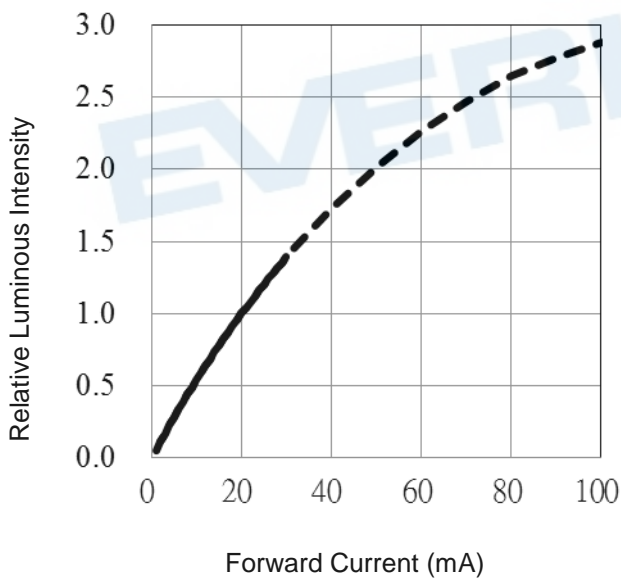
Forward Current vs. Forward Voltage (Ta=25°C)



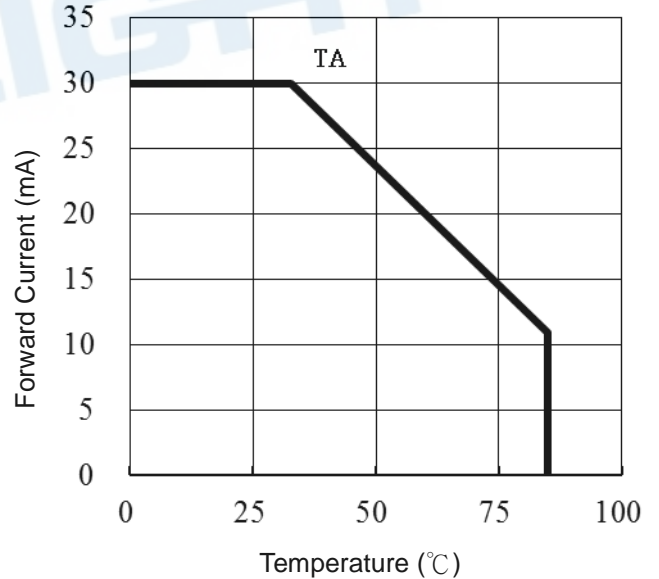
Chromaticity Coordinates vs. Forward Current (Ta=25°C)



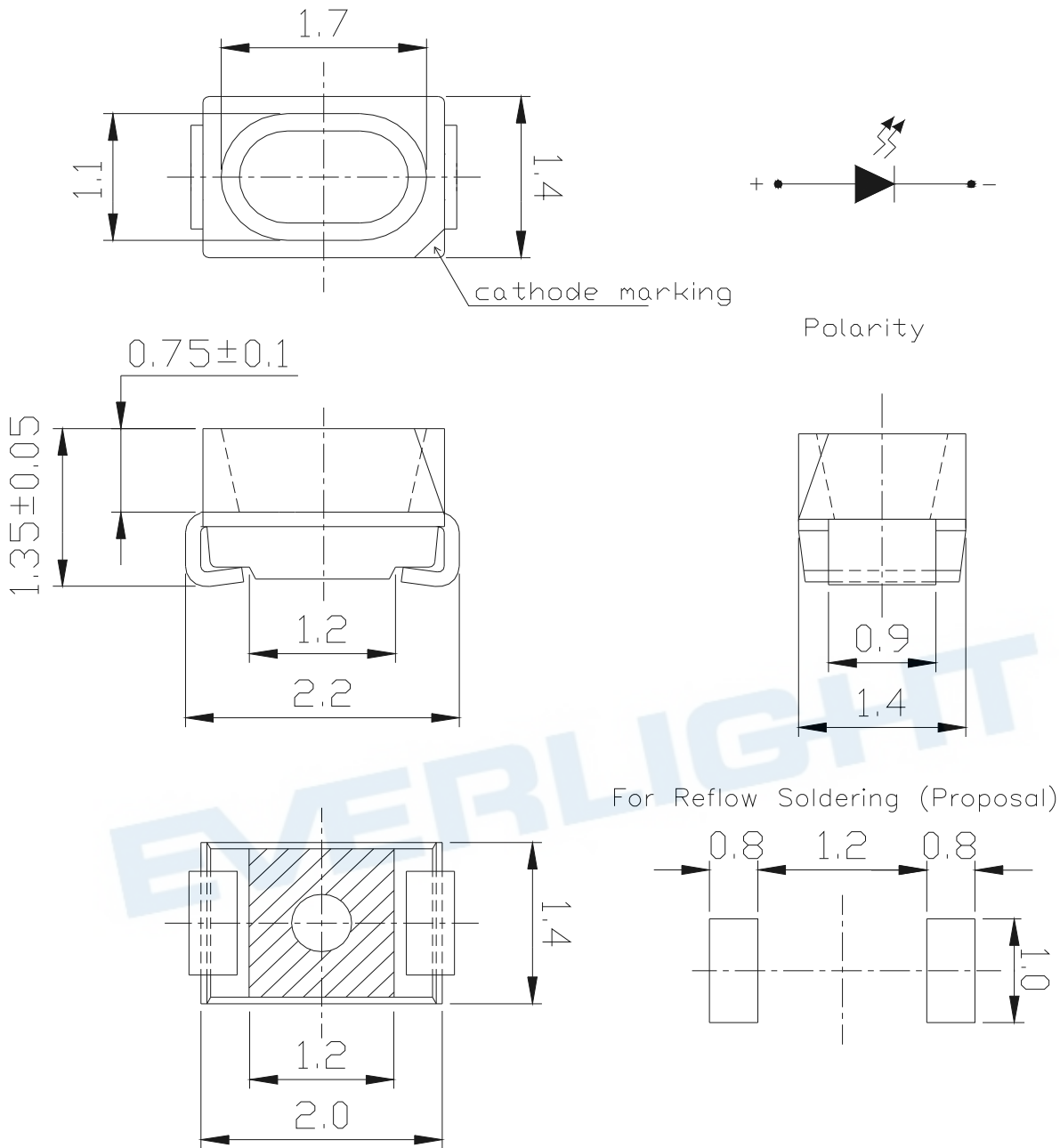
Relative Luminous Intensity vs. Forward Current (Ta=25°C)



Max. Permissible Forwarded Current (Ta=25°C)

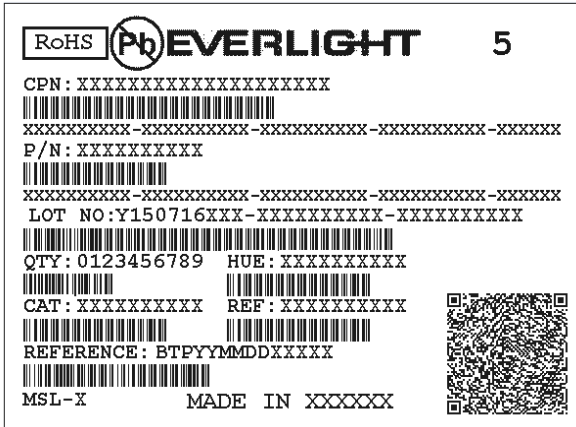


Package Dimension



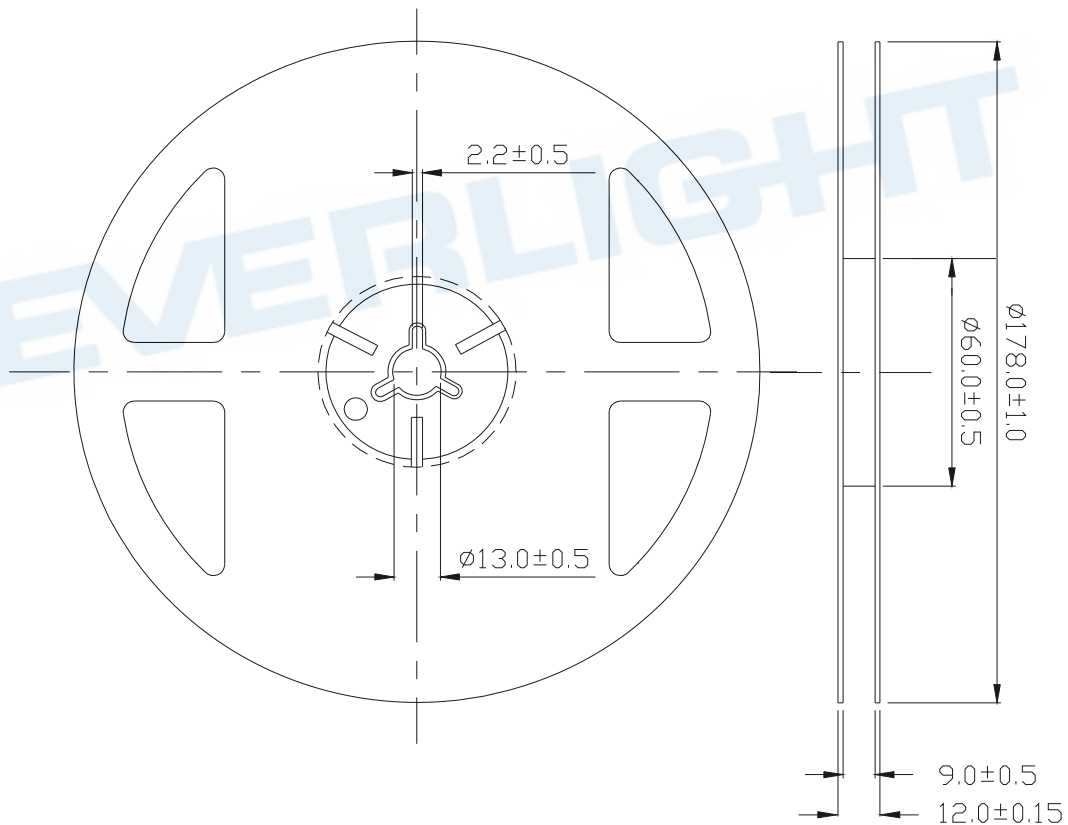
Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

Moisture Resistant Packing Materials  
Label Explanation



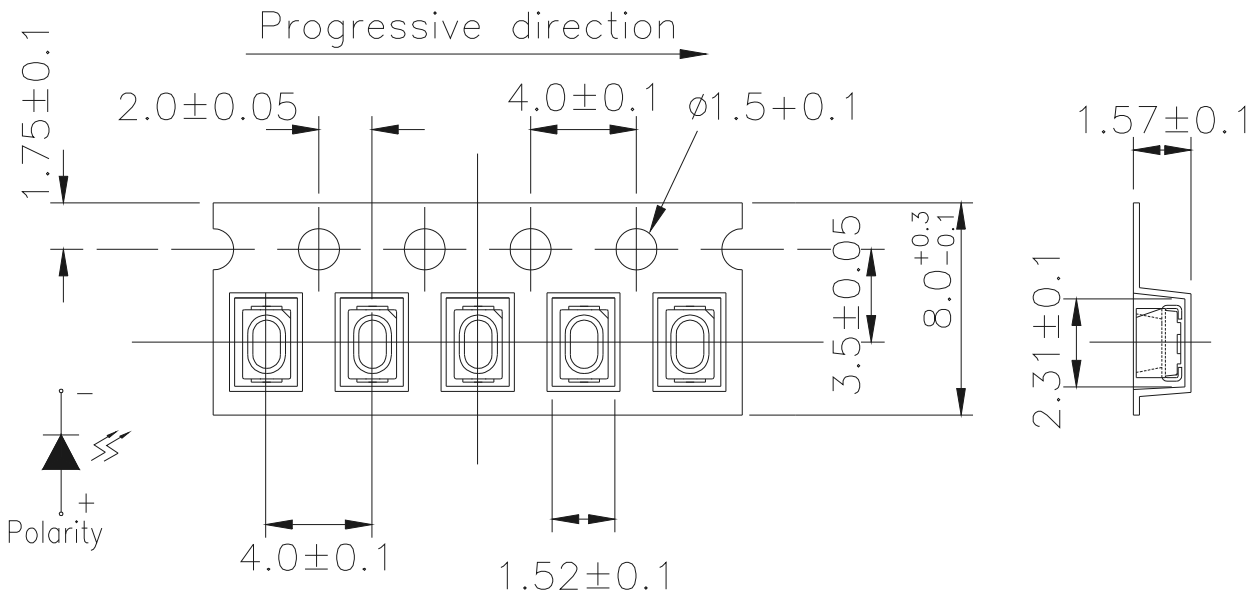
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions



Note: Tolerance unless mentioned is  $\pm 0.1$ mm; Unit = mm

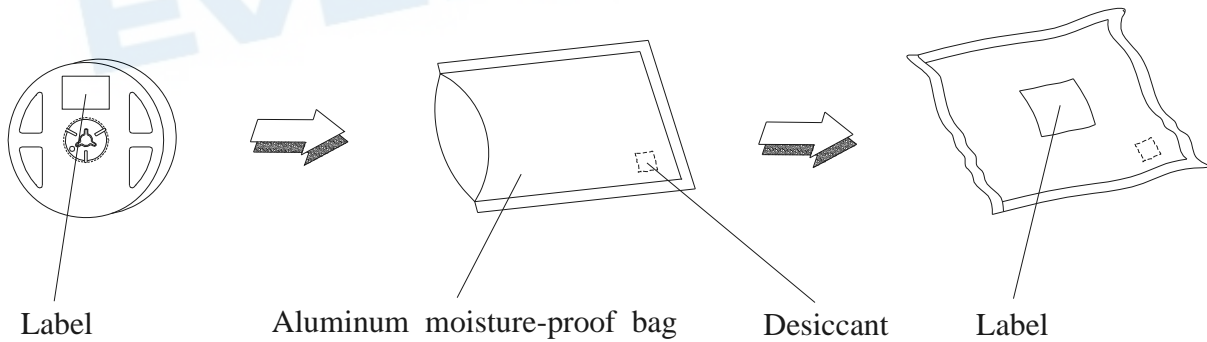
**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel**



**Notes:**

1. Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm
2. Minimum packing amount is 250/500/1000/2000 pcs per reel

**Moisture Resistant Packing Process**

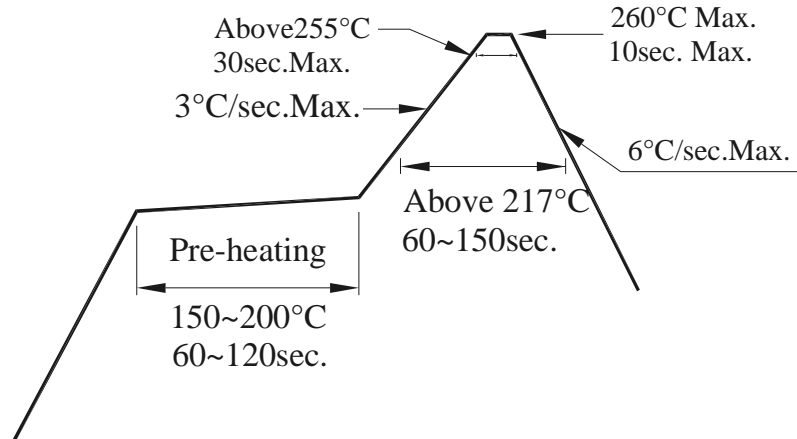


Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

## Precautions for Use

### 1. Over-current-proof

1.1 Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change ( Burn out will happen ).



### 2. Storage

- 2.1 Moisture proof bag should only be opened immediately prior to usage.
- 2.2 Environment should be less than 30°C and 60% RH when moisture proof bag is opened.
- 2.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.
- 2.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

### 3. Soldering Condition

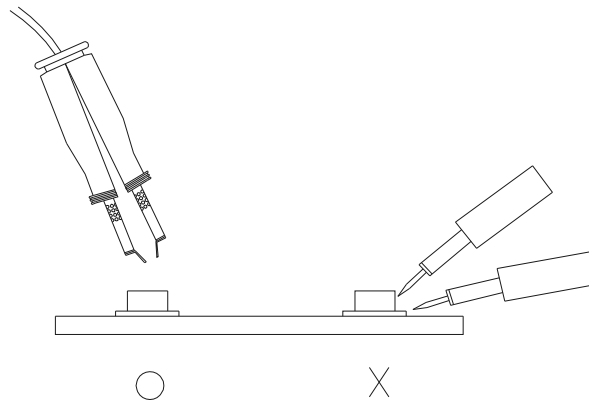
- 3.1 Pb-free solder temperature profile
- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

### 4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 350°C for 3 seconds within once in less than the soldering iron capacity 25W. Leave two seconds and more intervals, and do soldering of each terminal. Be careful because the damage of the product is often started at the time of the hand solder.

### 5. Repairing

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing.



## Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.

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2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
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