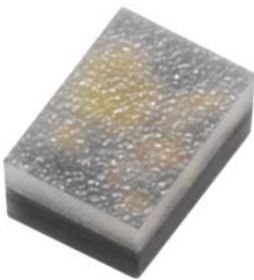


### SMD ■

### 19-047T/T8GABDR6X1-H01/4T



### Features

- Package in 8mm tape on 7" diameter reel
- Compatible with automatic placement equipment
- Compatible with infrared and vapor phase reflow
- Solder process
- Full-color type
- Pb-free
- Component solderable surface finish is Gold
- Component weight is 1.5 mg
- The Product itself will remain within RoHS compliant version
- Compliance with EU REACH
- Compliance Halogen Free.(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)

### Description

- The 19-047T SMD LED is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Moreover, with its black PCB, the 19-047T possess an ideal solution for high-contrast and high-resolution indoor signage display.

### Applications

- Indoor signage display applications
- Indoor decorating and entertainment design
- Flat backlight for LCD, switch and symbol
- Indicator and backlighting for all consumer electronics

## Device Selection Guide

| Chip Materials | Emitted Color   | Resin Color            |
|----------------|-----------------|------------------------|
| AlGaInP        | Brilliant Red   | White Surface Diffused |
| InGaN          | Brilliant Green |                        |
| InGaN          | Brilliant Blue  |                        |
| InGaN          | Brilliant White |                        |

## Absolute Maximum Ratings (Ta=25℃)

| Parameter                                 | Symbol             | Rating                                                                    | Unit |
|-------------------------------------------|--------------------|---------------------------------------------------------------------------|------|
| Forward Current                           | I <sub>F</sub>     | R6:10<br>GA:10<br>BD:10<br>T8: 10                                         | mA   |
| Peak Forward Current<br>(Duty 1/10 @1KHz) | I <sub>FP</sub>    | R6:15<br>GA:15<br>BD:15<br>T8: 15                                         | mA   |
| Power Dissipation                         | P <sub>d</sub>     | R6:19<br>GA:29<br>BD:29<br>T8:29                                          | mW   |
| Junction Temperature                      | T <sub>j</sub>     | 100                                                                       | ℃    |
| Operating Temperature                     | T <sub>opr</sub>   | -40 ~ +85                                                                 | ℃    |
| Storage Temperature                       | T <sub>stg</sub>   | -40 ~ +90                                                                 | ℃    |
| ESD<br>(Classification acc. AEC<br>Q101)  | ESD <sub>HBM</sub> | R:2000<br>G:150<br>B:150<br>W:150                                         | V    |
| Soldering Temperature                     | T <sub>sol</sub>   | Reflow Soldering : 260 ℃ for 10 sec.<br>Hand Soldering : 350 ℃ for 3 sec. |      |

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

| Parameter                          | Symbol            |    | Min.  | Typ.  | Max.  | Unit | Condition           |
|------------------------------------|-------------------|----|-------|-------|-------|------|---------------------|
| Luminous Intensity                 | I <sub>v</sub>    | R6 | 3     | ----  | 8.5   | mcd  | I <sub>F</sub> =1mA |
|                                    |                   | GA | 25    | ----  | 64    |      |                     |
|                                    |                   | BD | 5     | ----  | 16    |      |                     |
|                                    |                   | T8 | 10    | ----  | 30    |      |                     |
| Viewing Angle                      | 2θ <sub>1/2</sub> |    | ----- | 120   | ----- | deg  | I <sub>F</sub> =1mA |
| Dominant Wavelength<br>Color Temp. | λ <sub>d</sub>    | R6 | 616   | ----- | 628   | nm   | I <sub>F</sub> =1mA |
|                                    |                   | GA | 523   | ----- | 538   |      |                     |
|                                    | CT                | BD | 463   | ----- | 478   | K    |                     |
|                                    |                   | T8 | 5000  | ----- | 8000  |      |                     |
| Forward Voltage                    | V <sub>F</sub>    | R6 | 1.6   | ----- | 1.9   | V    | I <sub>F</sub> =1mA |
|                                    |                   | GA | 2.3   | ----- | 2.6   |      |                     |
|                                    |                   | BD | 2.5   | ----- | 2.8   |      |                     |
|                                    |                   | T8 | 2.5   | ----- | 2.8   |      |                     |
| Reverse Current <sup>4</sup>       | I <sub>R</sub>    |    | ----- | ----- | 10    | nA   | V <sub>R</sub> =9V  |

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V
4. Only for Electronic test
5. RA test @ 1mA

## Floating Bin(R6) Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| RA       | 3.0  | 5.0  | mcd  | $I_F = 1\text{mA}$ |
| RB       | 4.0  | 6.8  |      |                    |
| RC       | 5.0  | 8.5  |      |                    |

## Bin Range of Dominant Wavelength

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| R1       | 616  | 628  | nm   | $I_F = 1\text{mA}$ |

## Bin Range of Dominant Voltage

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| R1       | 1.6  | 1.9  | v    | $I_F = 1\text{mA}$ |

Note:

1. Tolerance of Luminous Intensity:  $\pm 10\%$
2. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

## Floating Bin(GA) Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| GA       | 25.0 | 40.0 | mcd  | $I_F = 1\text{mA}$ |
| GB       | 32.5 | 52.0 |      |                    |
| GC       | 40.0 | 64.0 |      |                    |

## Bin Range of Dominant Wavelength

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| G1       | 523  | 538  | nm   | $I_F = 1\text{mA}$ |

## Bin Range of Dominant Voltage

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| G1       | 2.3  | 2.6  | v    | $I_F = 1\text{mA}$ |

Note:

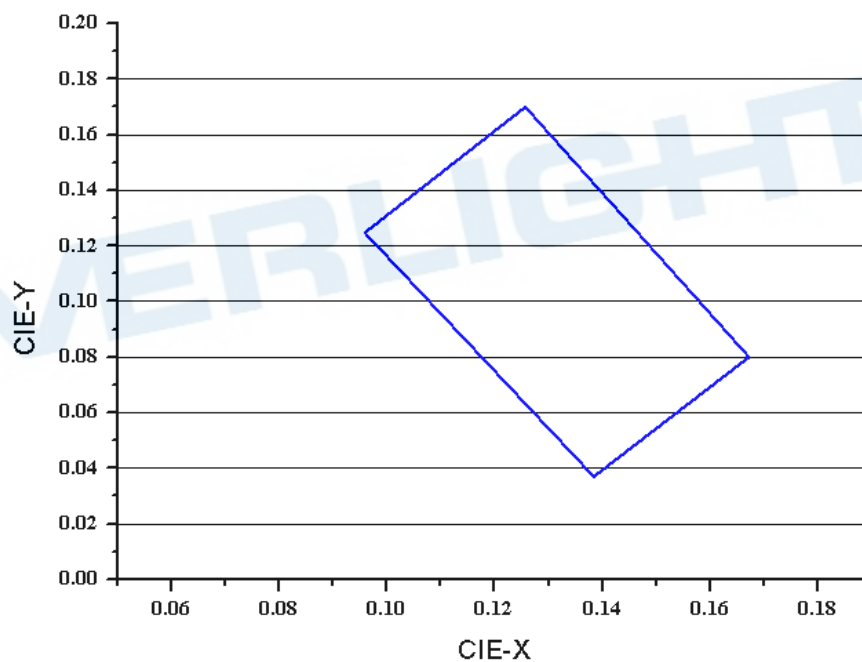
1. Tolerance of Luminous Intensity:  $\pm 10\%$
2. Tolerance of Dominant Wavelength:  $\pm 1\text{nm}$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

## Floating Bin(BD) Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| BA       | 5.0  | 9.0  | mcd  | $I_F = 1\text{mA}$ |
| BB       | 7.0  | 12.5 |      |                    |
| BC       | 9.0  | 16.0 |      |                    |

## Bin Range of CIE

| Bin Code | X      | Y.     | Condition          |
|----------|--------|--------|--------------------|
| B1       | 0.1384 | 0.0370 | $I_F = 1\text{mA}$ |
|          | 0.0959 | 0.1248 |                    |
|          | 0.1257 | 0.1700 |                    |
|          | 0.1672 | 0.0800 |                    |



## Bin Range of Dominant Voltage

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| B1       | 2.5  | 2.8  | v    | $I_F = 1\text{mA}$ |

Note:

1. Tolerance of Luminous Intensity:  $\pm 10\%$
2. Tolerance of Color coordinates:  $\pm 0.01$
3. Tolerance of Forward Voltage:  $\pm 0.1\text{V}$

**Floating Bin(T8)**  
**Bin Range of Luminous Intensity**

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| TA       | 10.0 | 17.0 | mcd  | $I_F = 1\text{mA}$ |
| TB       | 13.5 | 23.5 |      |                    |
| TC       | 17.0 | 30.0 |      |                    |

**Bin Range of Dominant Voltage**

| Bin Code | Min. | Max. | Unit | Condition          |
|----------|------|------|------|--------------------|
| T1       | 2.5  | 2.8  | v    | $I_F = 1\text{mA}$ |

Note:

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

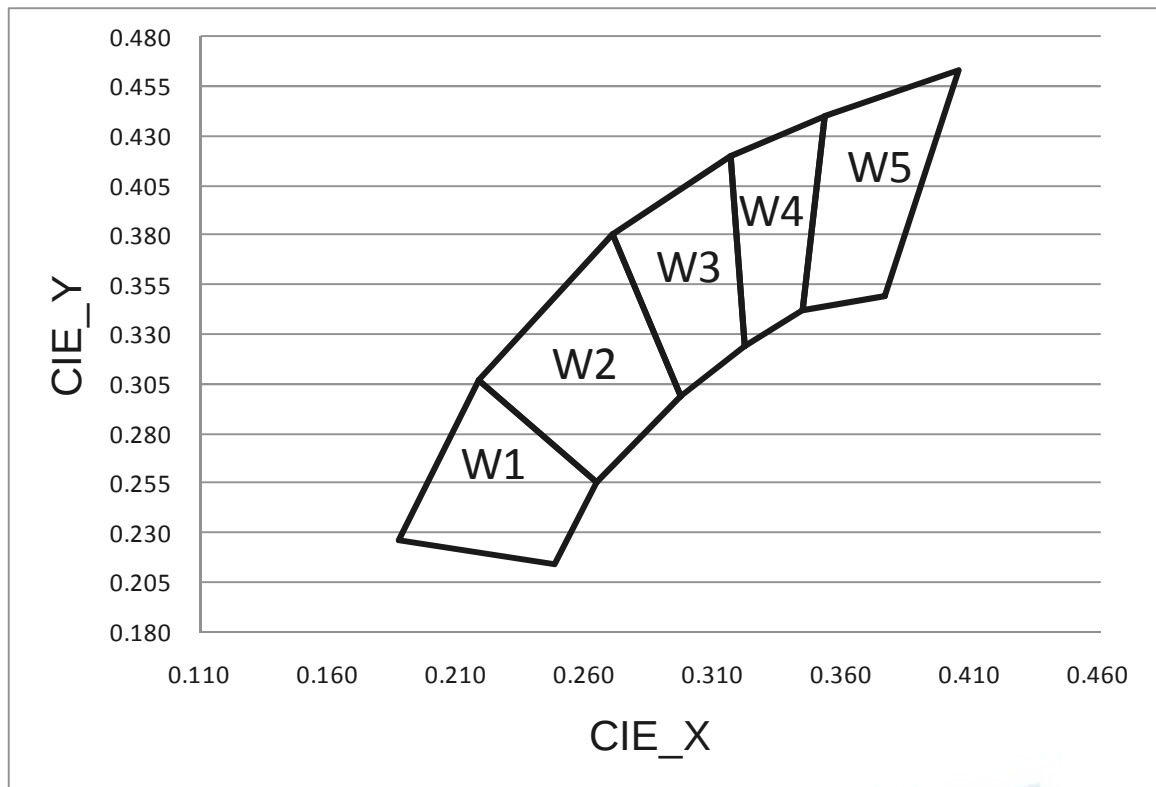
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## Bin Range of CIE

| Bin Code | X     | Y.    | Condition           |
|----------|-------|-------|---------------------|
| W1       | 0.264 | 0.256 | I <sub>F</sub> =1mA |
|          | 0.218 | 0.307 |                     |
|          | 0.187 | 0.226 |                     |
|          | 0.248 | 0.214 |                     |
| W2       | 0.297 | 0.299 |                     |
|          | 0.270 | 0.380 |                     |
|          | 0.218 | 0.307 |                     |
|          | 0.264 | 0.256 |                     |
| W3       | 0.297 | 0.299 |                     |
|          | 0.270 | 0.380 |                     |
|          | 0.316 | 0.420 |                     |
|          | 0.322 | 0.324 |                     |
| W4       | 0.322 | 0.324 |                     |
|          | 0.316 | 0.420 |                     |
|          | 0.353 | 0.440 |                     |
|          | 0.344 | 0.342 |                     |
| W5       | 0.377 | 0.349 |                     |
|          | 0.405 | 0.463 |                     |
|          | 0.353 | 0.440 |                     |
|          | 0.344 | 0.342 |                     |

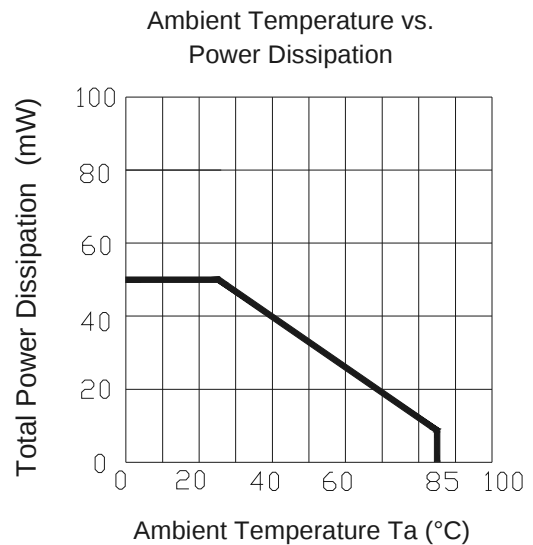
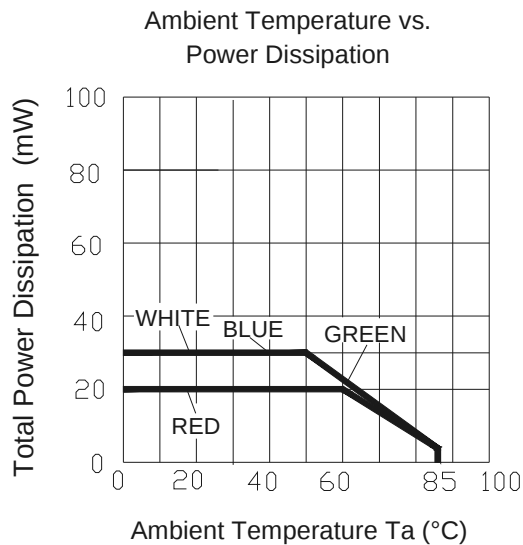
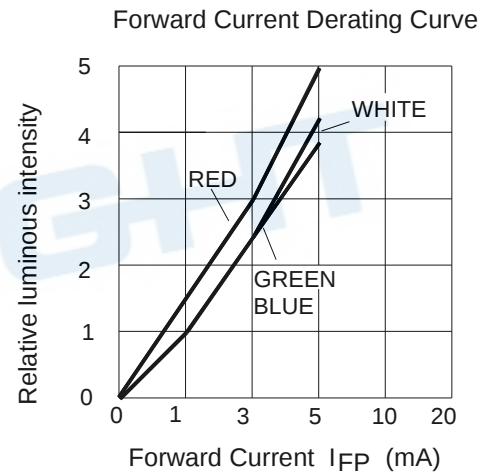
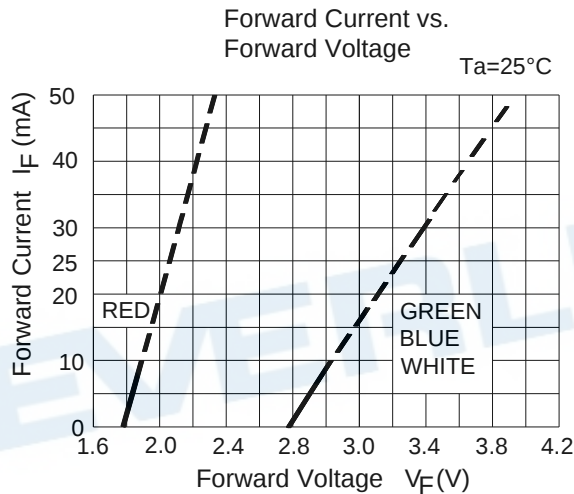
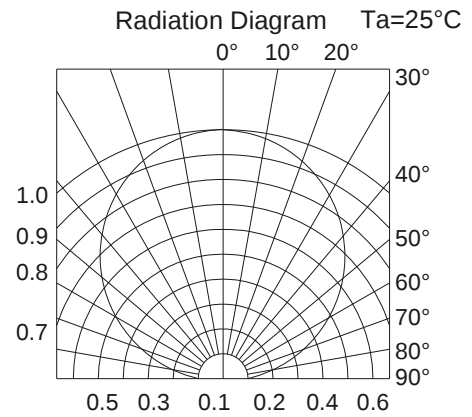
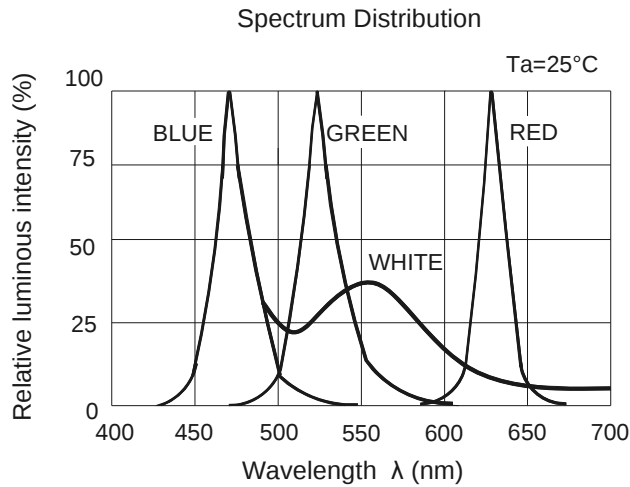
Note:

1. Tolerance of Color coordinates:  $\pm 0.01$

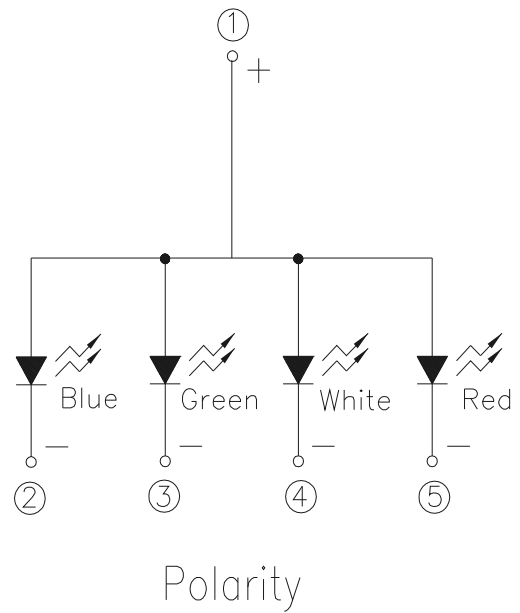
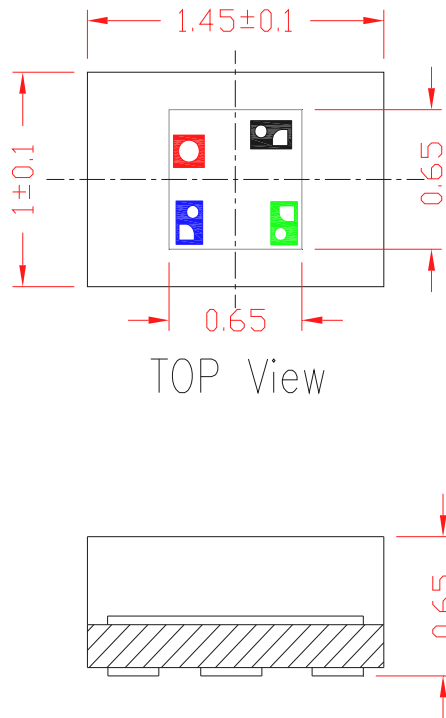


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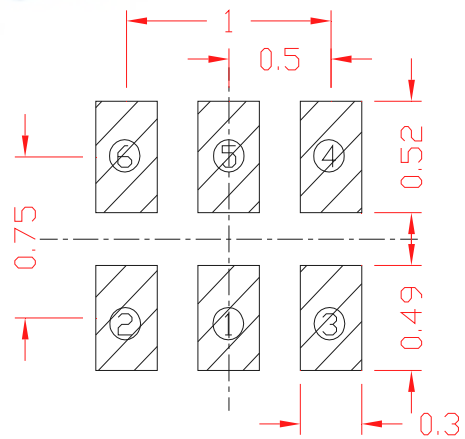
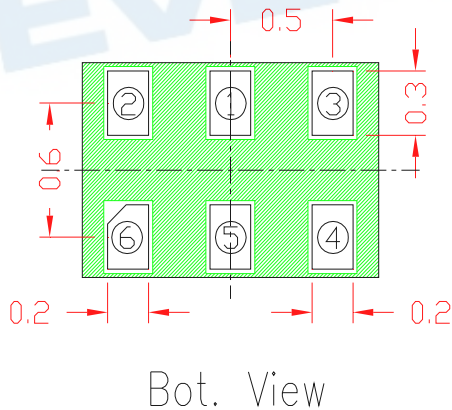
## Typical Electro-Optical Characteristics Curves



## Package Dimension



## Recommend Soldering Pad



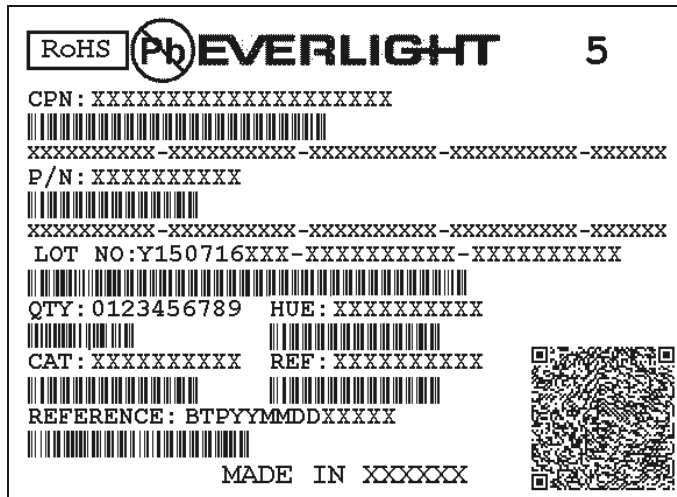
單位:mm 公差:±0.05

Suggested pad dimension is just for reference only.  
Please modify the pad dimension based on individual need.

Note: Tolerances unless mentioned  $\pm 0.1\text{mm}$ . Unit = mm  
PAD 6 is only for soldering use, not for electrical use.

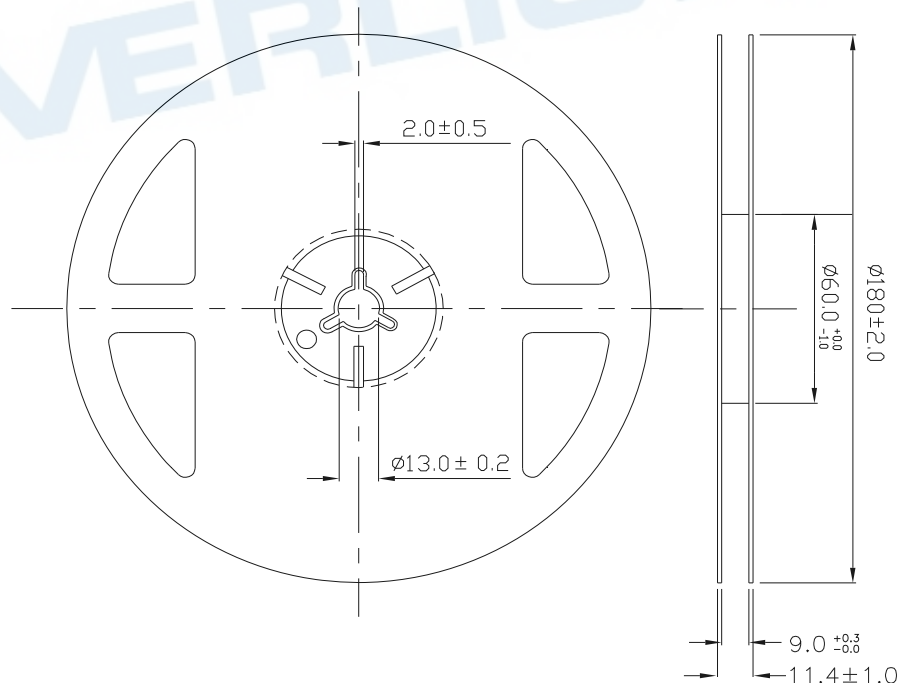
## Moisture Resistant Packing Materials

### Label Explanation



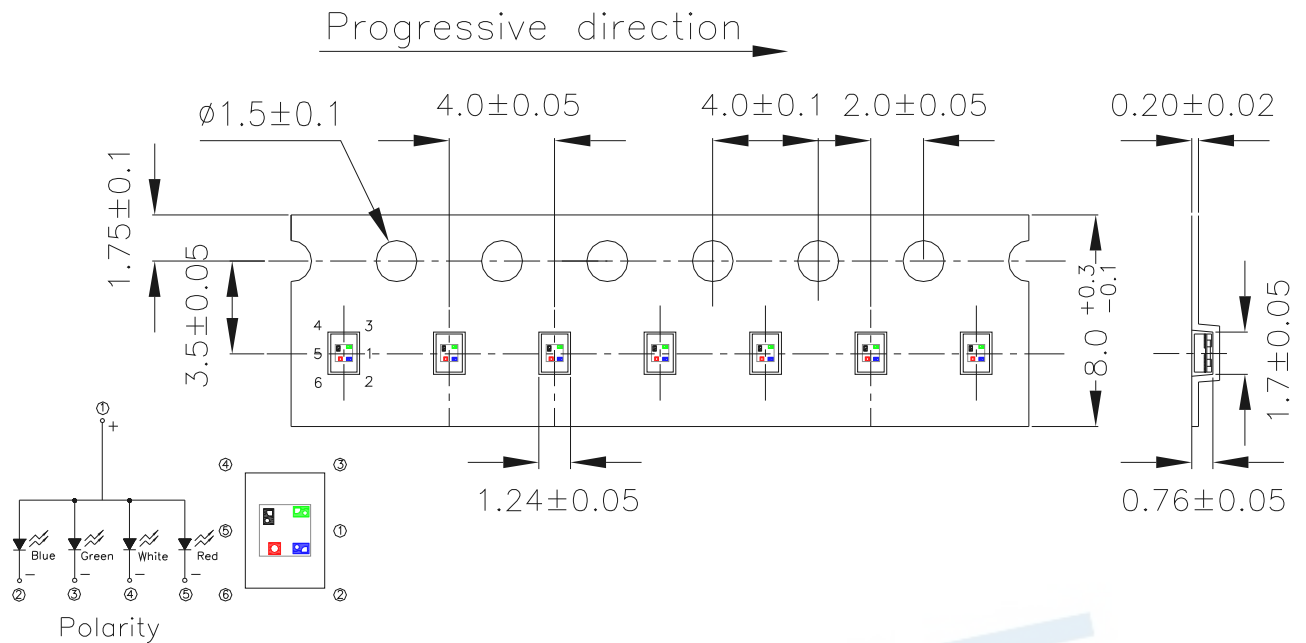
- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

### Reel Dimensions



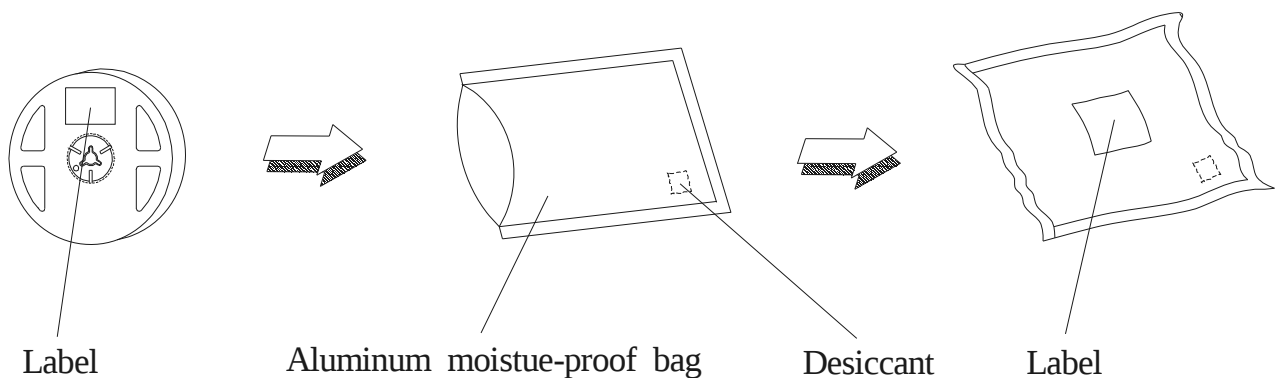
## Carrier Tape Dimensions:

Minimum packing amount is 4000 pcs per reel



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

## Moisture Resistant Packing Process



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

## Precautions for Use

### 1. Over-current-proof

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

### 2. Storage

2.1 Do not open moisture proof bag before the products are ready to use.

2.2 Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.

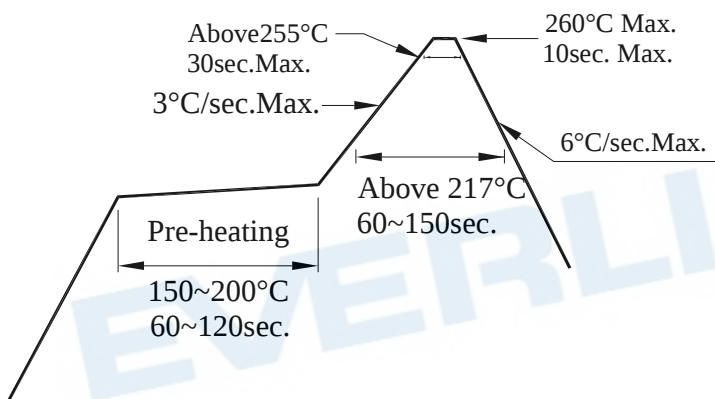
2.3 After opening the package: The LED's floor life is 168Hrs under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded storage time, baking treatment should be performed using the following conditions.

Baking treatment : 60±5°C 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.

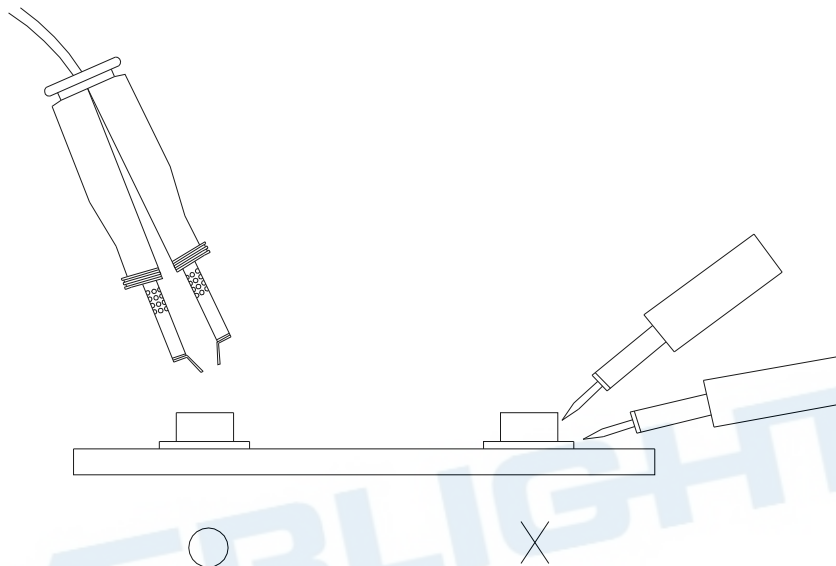
3.4 After soldering, do not warp the circuit board.

### 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.



## 6.Directions for use

The LEDs should be operated with forward bias. The driving circuit must be designed so that the LEDs are not subjected to forward or reverse voltage while it is off. If reverse voltage is continuously applied to the LEDs, It may cause migration resulting in LED damage.

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## DISCLAIMER

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
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.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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