

## Technical Data Sheet

### Luminosity White Color LED

**67-235USOP/S1048/TR8**

#### Features

- Super luminosity white LED.
- White SMT package.
- Built in 3 LED chips.
- Lead frame package with individual 6 pins.
- Wide viewing angle.
- Soldering methods: Reflow soldering.
- High performance.
- Pb-free.
- The product itself will remain within RoHS compliant version.



#### Descriptions

- Due to the package design, 67-235 has wide viewing angle, low power consumption and high luminous intensity. This feature makes it ideal for light pipe or lighting application.

#### Applications

- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.
- Lighting for small size device.

#### Device Selection Guide

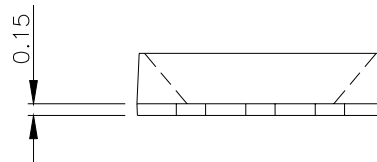
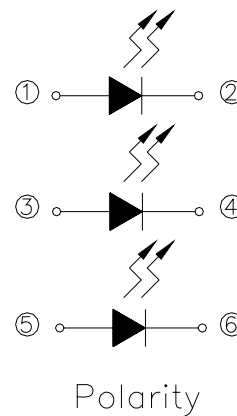
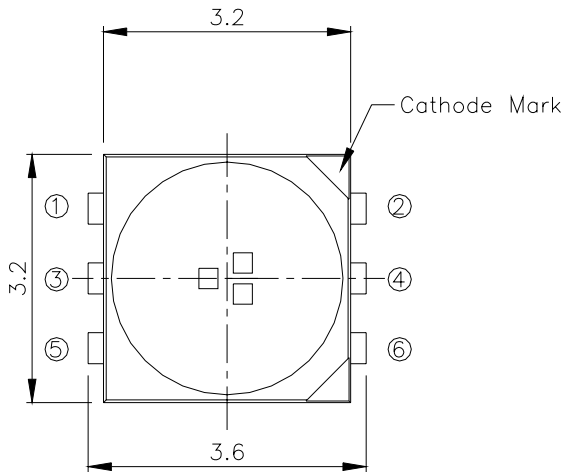
| Items      | Material      | Emitted Color | Resin Color |
|------------|---------------|---------------|-------------|
| Chip       | InGaN         | White         | Water Clear |
| Die attach | Silicon paste | -----         | -----       |

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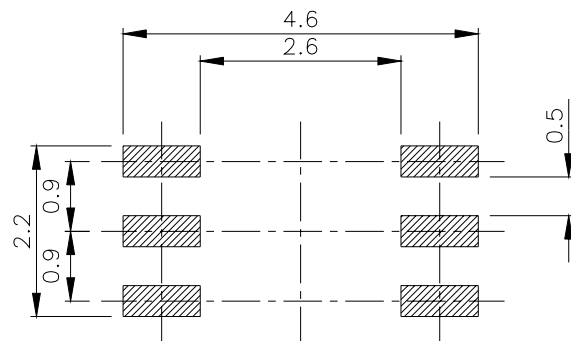
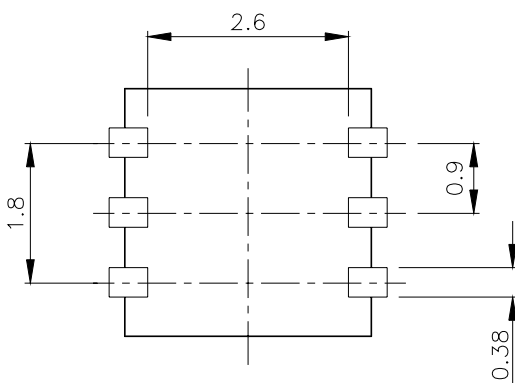
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**Package Outline Dimensions**



Recommended soldering pad design



**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm ;Unit = mm

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**Absolute Maximum Ratings (Ta=25°C)**

| Parameter                                 | Symbol          | Rating                                                                      | Unit |
|-------------------------------------------|-----------------|-----------------------------------------------------------------------------|------|
| Reverse Voltage*1                         | V <sub>R</sub>  | 5                                                                           | V    |
| Forward Current*1                         | I <sub>F</sub>  | 30                                                                          | mA   |
| Peak Forward Current (Duty 1/10 @1KHz) *1 | I <sub>FP</sub> | 100                                                                         | mA   |
| Power Dissipation*1                       | P <sub>d</sub>  | 120                                                                         | mW   |
| Electrostatic Discharge(HBM) *2           | ESD             | 1000                                                                        | V    |
| Operating Temperature                     | Topr            | -40 ~ +85                                                                   | °C   |
| Storage Temperature                       | Tstg            | -40 ~ +90                                                                   | °C   |
| Soldering Temperature                     | Tsol            | Reflow Soldering : 260 °C for 10 sec.<br>Hand Soldering : 350 °C for 3 sec. |      |

\*1 The value are based on 1 die performace

\*2The products are sensitive to static electricity and care must be fully taken when handling products.

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

| Parameter            | Symbol            | Min.  | Typ.  | Max.  | Unit | Condition              |
|----------------------|-------------------|-------|-------|-------|------|------------------------|
| Luminous Intensity*1 | I <sub>V</sub>    | 3600  | ----- | 5700  | mcd  | I <sub>F</sub> =20mA*2 |
| Luminous Flux*1      | Φ <sub>v</sub>    | 10    | ----- | ----- | lm   | I <sub>F</sub> =20mA*2 |
| Viewing Angle*1      | 2θ <sub>1/2</sub> | ----- | 120   | ----- | deg  | I <sub>F</sub> =20mA*2 |
| Forward Voltage*2    | V <sub>F</sub>    | 2.70  | ----- | 3.70  | V    | I <sub>F</sub> =20mA*2 |
| Reverse Current*2    | I <sub>R</sub>    | ----- | ----- | 50    | μA   | V <sub>R</sub> =5V     |

**Notes:**

\*1. When three LED dies are operated simultaneously.

\*2. For each die.

3. Tolerance of Luminous Intensity ±11%

4. Tolerance of Forward Voltage ±0.1V



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#### Bin Range of Luminous Intensity

| Bin Code | Min. | Max. | Unit | Condition            |
|----------|------|------|------|----------------------|
| Y2       | 3600 | 4500 | mcd  | I <sub>F</sub> =20mA |
| Z01      | 4500 | 5000 |      |                      |
| Z01-1    | 5000 | 5700 |      |                      |

#### Notes:

Tolerance of Luminous Intensity:  $\pm 11\%$

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**Bin Range of Chromaticity Coordinate**

**I<sub>F</sub> =20mA**

| Bin Code | CIE_x  | CIE_y  | Bin Code | CIE_x  | CIE_y  |
|----------|--------|--------|----------|--------|--------|
| D1       | 0.3575 | 0.3612 | D2       | 0.3545 | 0.3408 |
|          | 0.3610 | 0.3850 |          | 0.3575 | 0.3612 |
|          | 0.3988 | 0.4116 |          | 0.3897 | 0.3823 |
|          | 0.3897 | 0.3823 |          | 0.3822 | 0.3580 |

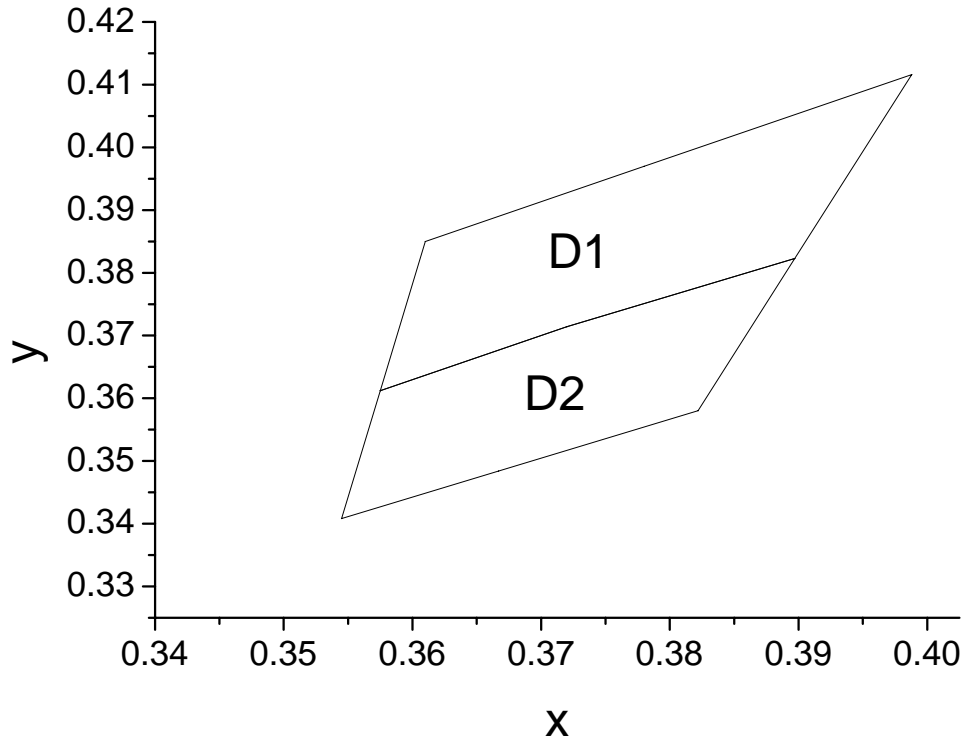
**Note:** Tolerance of Chromaticity Coordinate: ±0.01

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**The CIE 1931 Chromaticity Diagram**

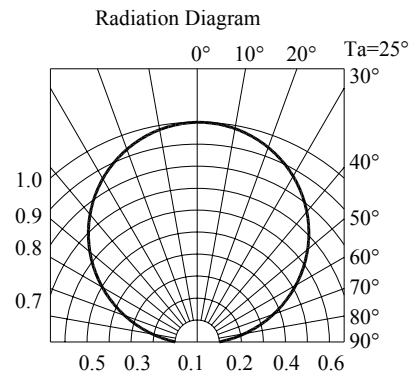
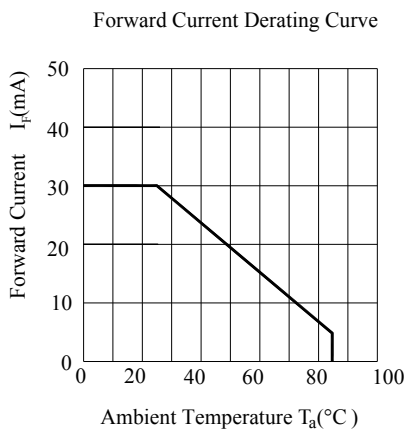
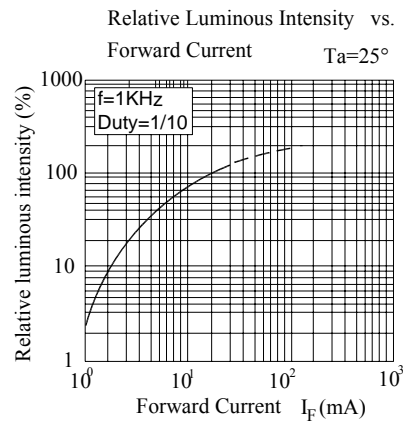
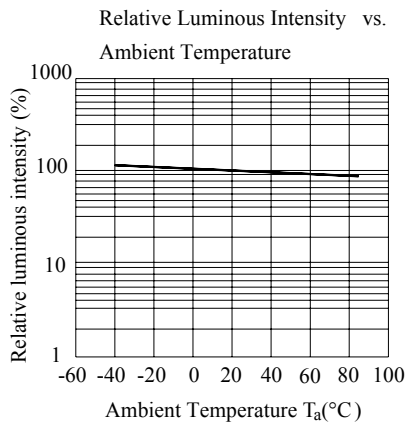
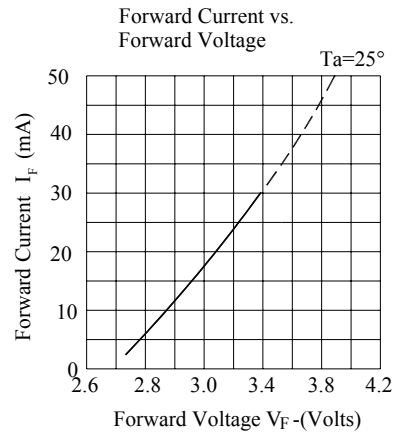
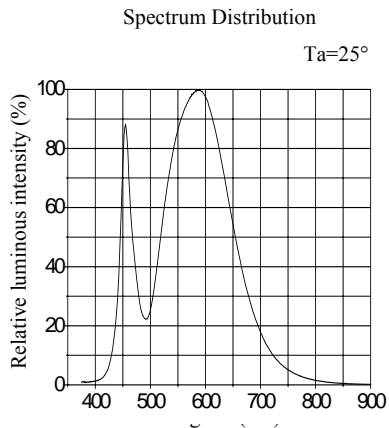


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**Typical Electro-Optical Characteristics Curves**



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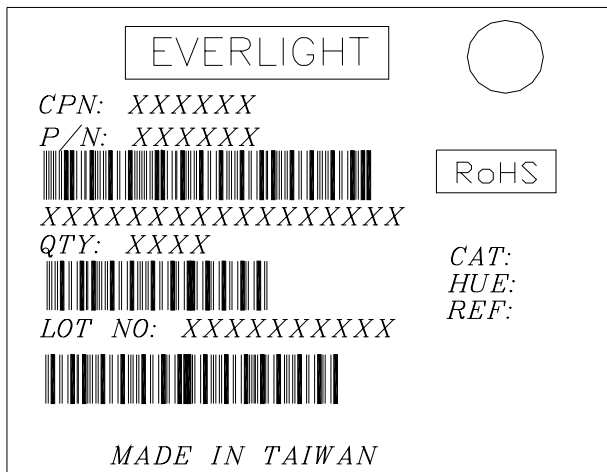
**67-235USOP/S1048/TR8**

**Label Explanation**

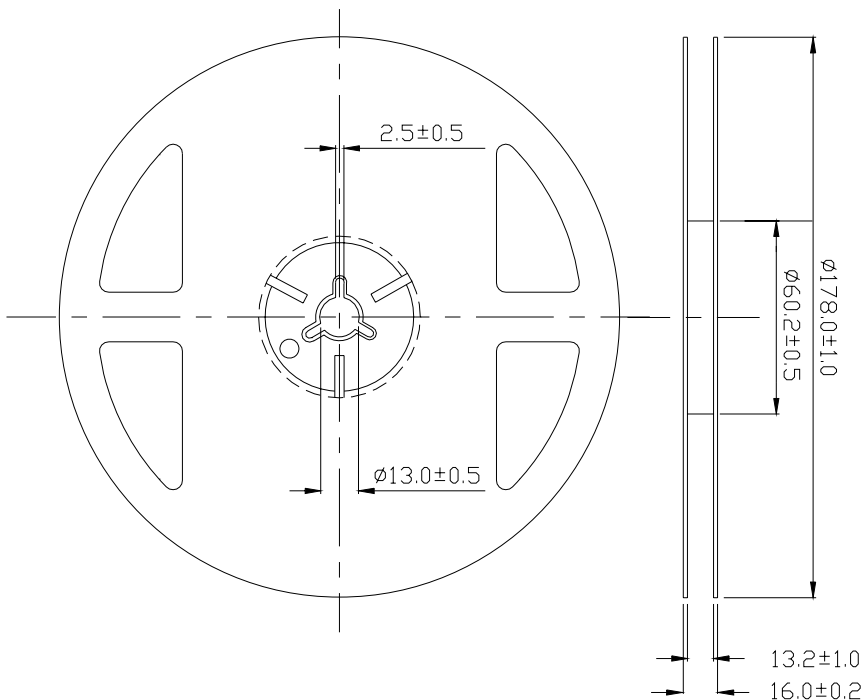
CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank



**Reel Dimensions**



**Note:** The tolerances unless mentioned is ±0.1mm, Unit = mm

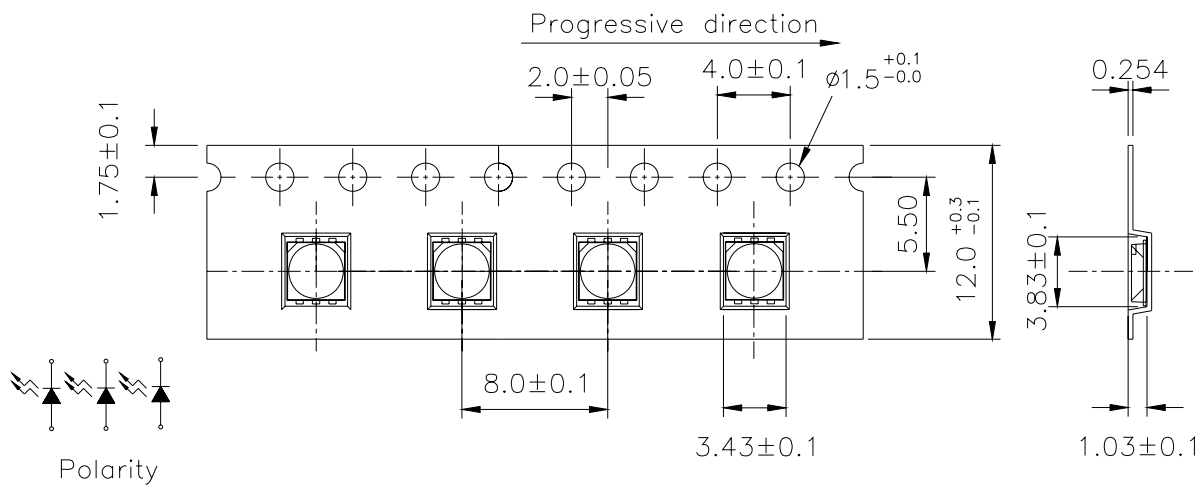


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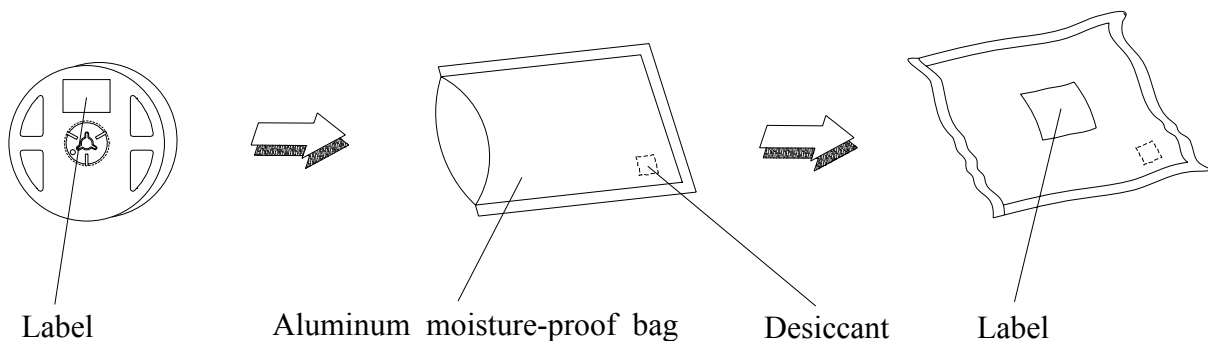
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**Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel**



**Moisture Resistant Packaging**



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#### Reliability Test Items And Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

| No. | Items                            | Test Condition                                 | Test Hours/Cycles | Sample Size | Ac/Re |
|-----|----------------------------------|------------------------------------------------|-------------------|-------------|-------|
| 1   | Reflow Soldering                 | Temp. : 260°C±5°C Min.<br>5sec.                | 6 Min.            | 22 PCS.     | 0/1   |
| 2   | Temperature Cycle                | H : +100°C 15min<br>∫ 5 min<br>L : -40°C 15min | 300 Cycles        | 22 PCS.     | 0/1   |
| 3   | Thermal Shock                    | H : +100°C 5min<br>∫ 10 sec<br>L : -10°C 5min  | 300 Cycles        | 22 PCS.     | 0/1   |
| 4   | High Temperature Storage         | Temp. : 100°C                                  | 1000 Hrs.         | 22 PCS.     | 0/1   |
| 5   | Low Temperature Storage          | Temp. : -40°C                                  | 1000 Hrs.         | 22 PCS.     | 0/1   |
| 6   | DC Operating Life                | I <sub>F</sub> = 20 mA                         | 1000 Hrs.         | 22 PCS.     | 0/1   |
| 7   | High Temperature / High Humidity | 85°C / 85%RH                                   | 1000 Hrs.         | 22 PCS.     | 0/1   |

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#### 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.

MSL-3

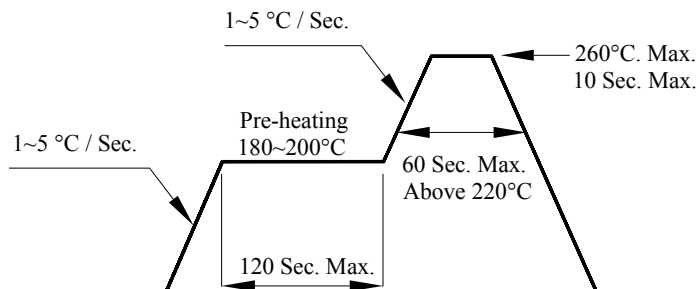
2.3 After opening the package: The LED's floor life are 72 hours under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the 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.

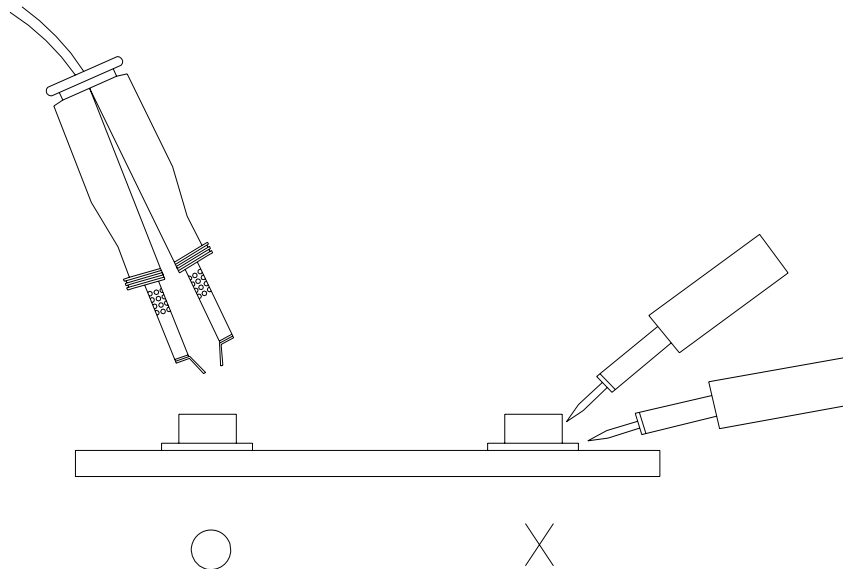
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#### 5. Repairing

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.



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