

## Technical Data Sheet

### White Reverse Package Top View LEDs

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#### 67-21UWC/S400-XX/TR10

#### Features

- Fluorescence Type
- High Luminous Intensity
- High Efficiency
- Emission Color:x=0.29,y=0.30
- Pb-free.

#### Descriptions

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

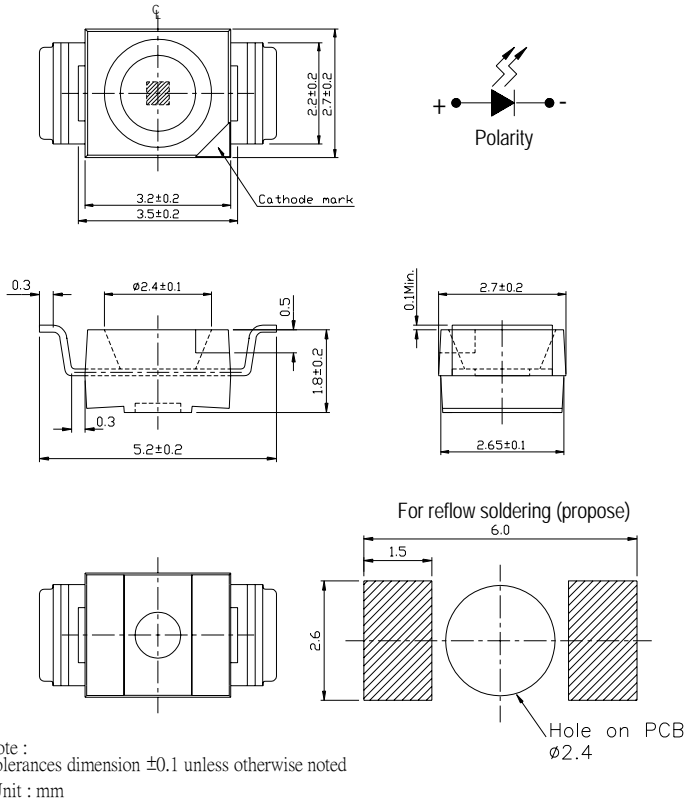
- OA Equipment
- Backlighting of Full Color LCD
- Automotive Equipment
- Replacement of Conventional Light Bulbs and Fluorescent Lamps

#### Device Selection Guide

| Chip     |               | Lens Color  |
|----------|---------------|-------------|
| Material | Emitted Color |             |
| InGaN    | White         | Water Clear |

**67-21UWC/S400-XX/TR10**

**Package Dimensions**



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

| Parameter                           | Symbol    | Rating     | Units |
|-------------------------------------|-----------|------------|-------|
| Forward Current                     | $I_F$     | 25         | mA    |
| Pulse Forward Current <sup>*1</sup> | $I_{FP}$  | 100        | mA    |
| Reverse Voltage                     | $V_R$     | 5          | V     |
| Power Dissipation                   | $P_d$     | 110        | mW    |
| Operating Temperature               | $T_{opr}$ | -40 ~ +85  | °C    |
| Storage Temperature                 | $T_{stg}$ | -40 ~ +100 | °C    |
| Soldering Temperature <sup>*2</sup> | $T_{sol}$ | 260        | °C    |
| Electrostatic Discharge             | ESD       | 150        | V     |

**Notes:** \*1: $I_{FP}$  Conditions--Pulse Width  $\leq 10$ msec and Duty  $\leq 1/10$ .

\*2:Soldering time  $\leq 5$  seconds.

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

| Parameter          | Symbol         | *Chip Rank | Min. | Typ. | Max. | Units | Condition            |
|--------------------|----------------|------------|------|------|------|-------|----------------------|
| Luminous Intensity | I <sub>v</sub> | A4         | 100  | 290  | --   | mcd   | I <sub>F</sub> =20mA |
|                    |                | A5         | 200  | 360  |      |       |                      |
|                    |                | A6         | 240  | 450  |      |       |                      |
|                    |                | X7         | 400  | 630  |      |       |                      |
|                    |                | X8         | 485  | 750  |      |       |                      |
|                    |                | X9         | 600  | 1000 |      |       |                      |
| Forward Voltage    | V <sub>F</sub> | --         | --   | 3.5  | 4.3  | V     | I <sub>F</sub> =20mA |
| Reverse Current    | I <sub>R</sub> | --         | --   | --   | 10   | μA    | V <sub>R</sub> =5V   |
| Viewing Angle      | 2θ 1/2         | --         | --   | 120  | --   | deg   | I <sub>F</sub> =20mA |
| Chromaticity       | x              | --         | --   | 0.29 | --   | --    | I <sub>F</sub> =20mA |
| Coordinates        | y              | --         | --   | 0.30 | --   | --    | I <sub>F</sub> =20mA |

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Chip Rank

**Notes:** \*The C.I.E. 1931 chromaticity diagram.

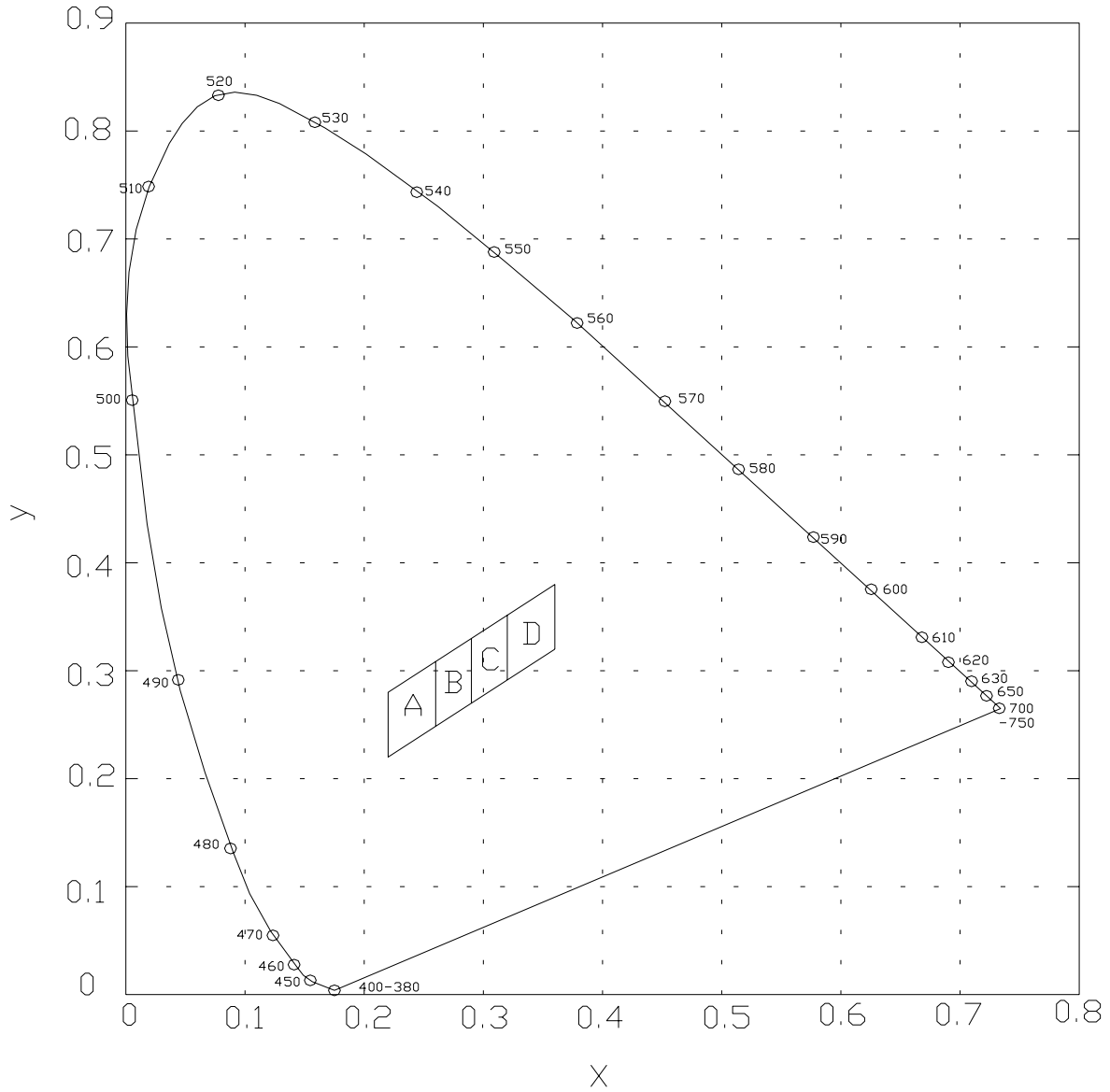
\*The products are sensitive to static electricity and care must be fully taken when handling products.

**Chromaticity Coordinates Specifications for Bin Grading**

| Color grading |    | CIE_x |       | CIE_y |       |
|---------------|----|-------|-------|-------|-------|
|               |    | Min   | Max   | Min   | Max   |
| A             |    | 0.22  | 0.27  | 0.215 | 0.315 |
| B             | B1 | 0.25  | 0.285 | 0.245 | 0.325 |
|               | B2 | 0.265 | 0.3   | 0.255 | 0.335 |
| C             | C1 | 0.28  | 0.315 | 0.265 | 0.345 |
|               | C2 | 0.295 | 0.33  | 0.275 | 0.355 |
| D             |    | 0.31  | 0.37  | 0.285 | 0.385 |

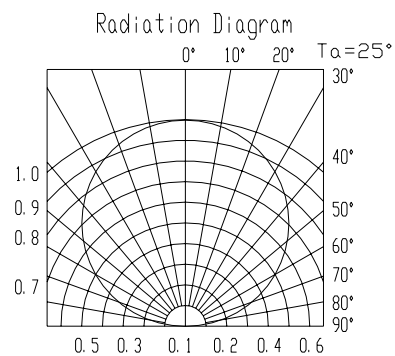
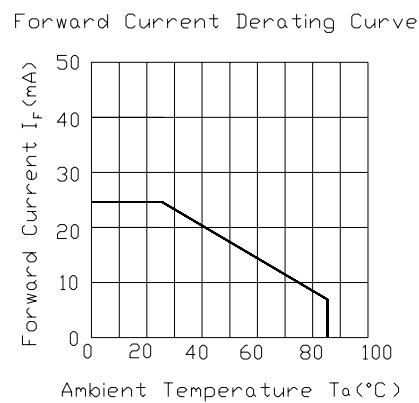
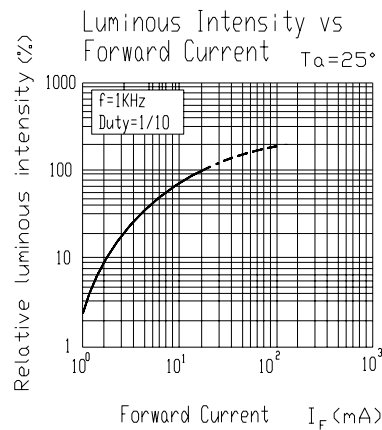
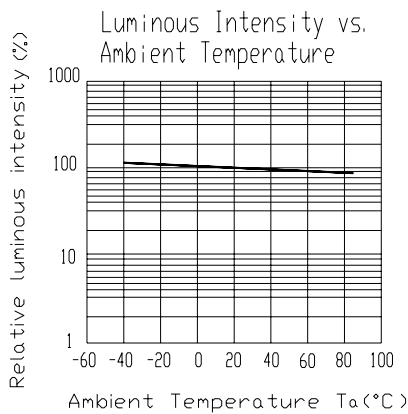
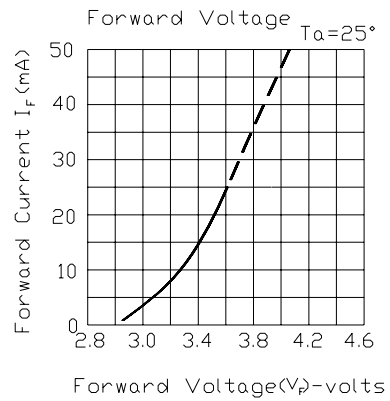
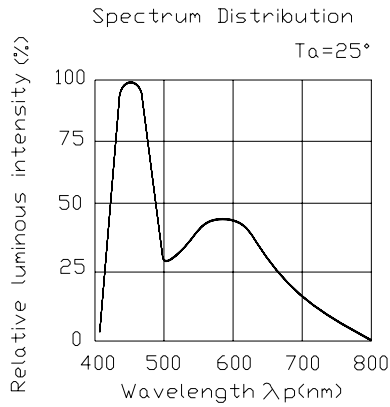
**67-21UWC/S400-XX/TR10**

**Typical Electro-Optical Characteristics Curves**



**67-21UWC/S400-XX/TR10**

**Typical Electro-Optical Characteristics Curves**



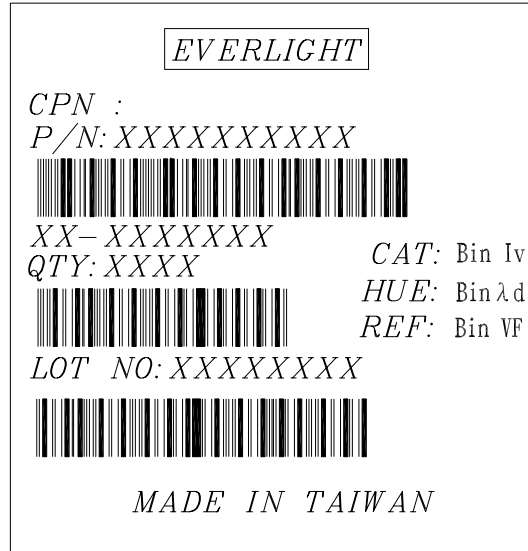
**67-21UWC/S400-XX/TR10**

**Label explanation**

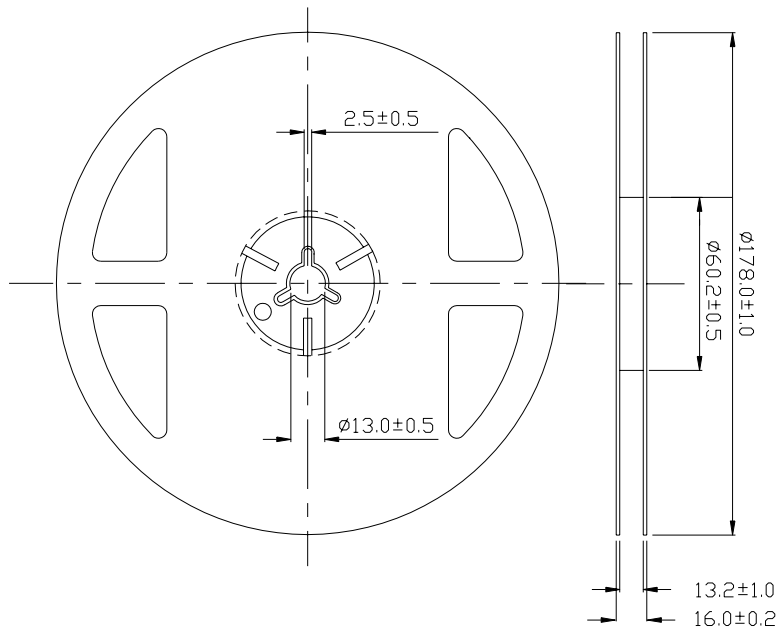
**CAT: Luminous Intensity Rank**

**HUE: Chromaticity Coordinates Rank**

**REF: Forward Voltage Rank**



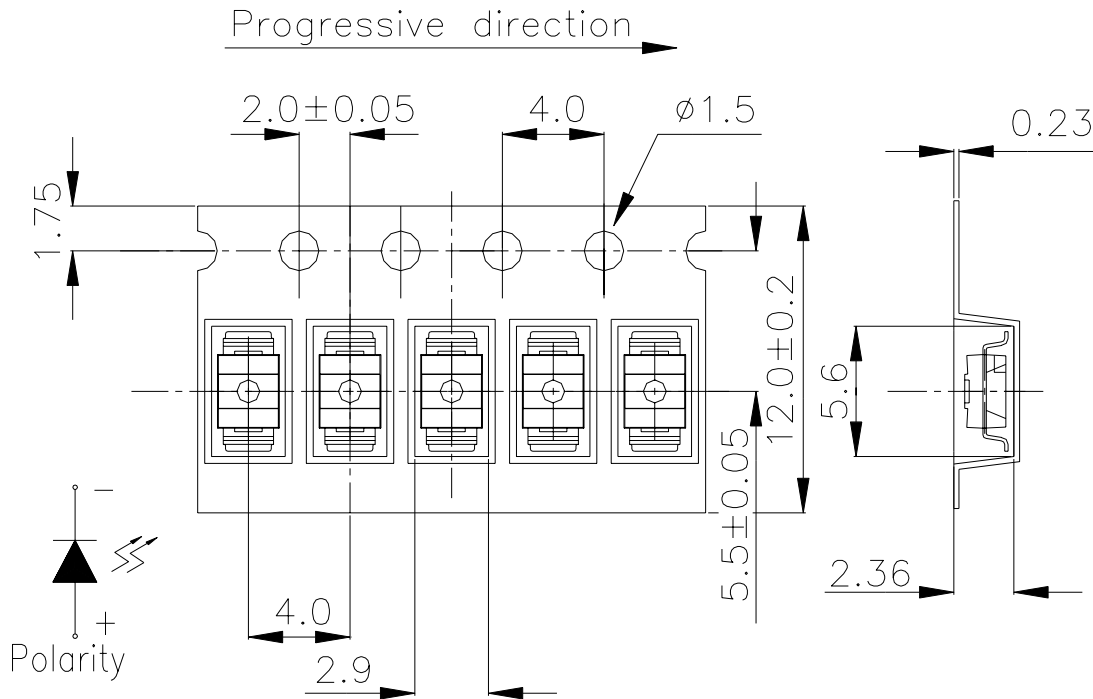
**Reel Dimensions**



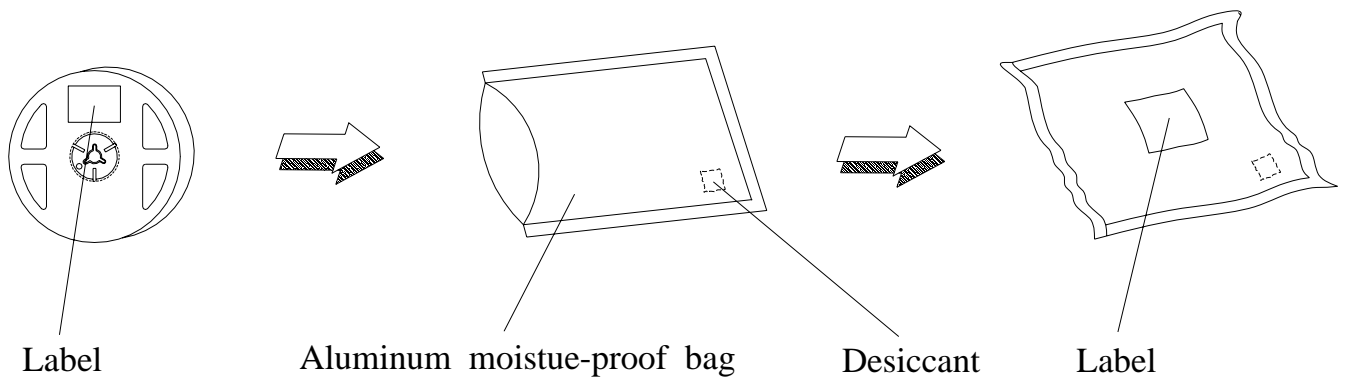
**Note:** The tolerances unless mentioned is  $\pm 0.1\text{mm}$  ,Unit = mm

**67-21UWC/S400-XX/TR10**

**Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel.**



**Moisture Resistant Packaging**



**67-21UWC/S400-XX/TR10**

**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<br>Min. 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   |



**67-21UWC/S400-XX/TR10**

**Precautions For Use**

1. Over-current-proof

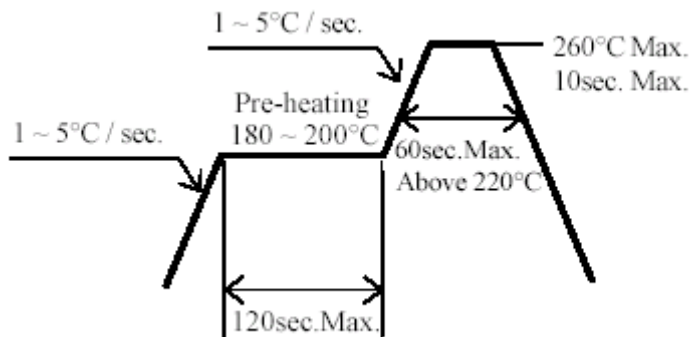
Customer must apply resistors for protection , otherwise slight voltage shift will cause big current change ( Burn out will happen ).

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 The LEDs should be used within a year.
- 2.4 After opening the package, the LEDs should be kept at 30°C or less and 70%RH or less.
- 2.5 The LEDs should be used within 168 hours (7 days) after opening the package.
- 2.6 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



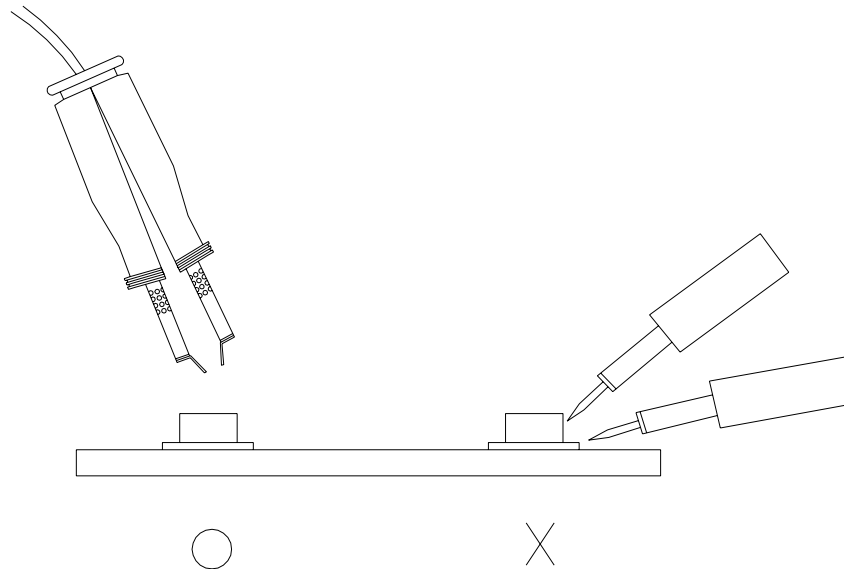
- 3.2 Reflow soldering should not be done more than two times.
- 3.3 When soldering, do not put stress on the LEDs during heating.
- 3.4 After soldering, do not warp the circuit board.

4.Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 280°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.

**67-21UWC/S400-XX/TR10****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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