

# Technical Data Sheet

## Luminosity white Color LED

**69-23BUMD/TR8**

### Features

- Super luminosity white LED.
- Built in 3 LED chips.
- Soldering methods: Reflow soldering.
- High performance.
- Package in 12mm tape on 7" diameter reel.
- Pb-free.
- The product itself will remain within RoHS compliant version.



### Descriptions

- The 69-23B SMD Taping 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.
- Besides, lightweight makes them ideal for miniature applications. etc.

### Applications

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

### Device Selection Guide

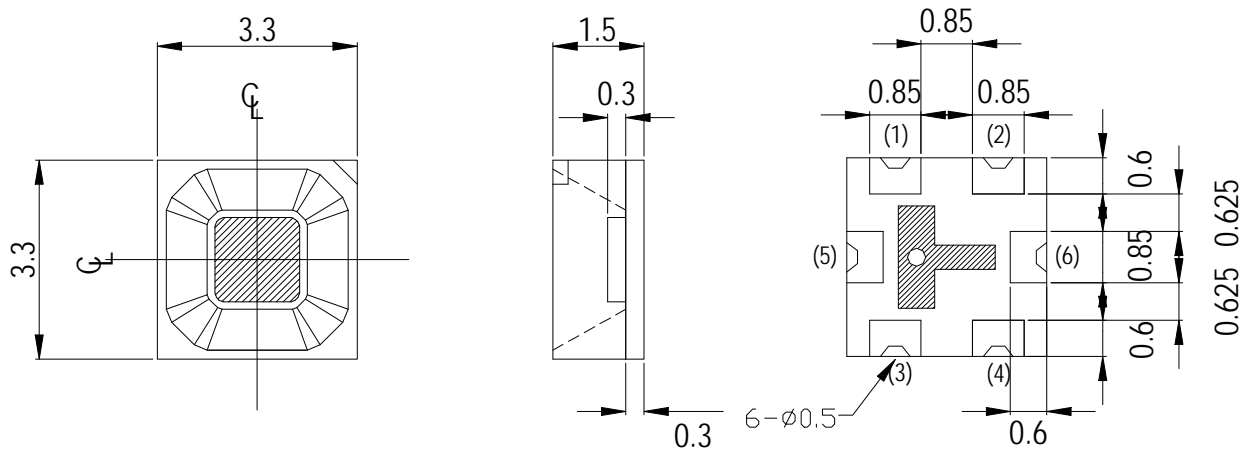
Chip	Emitted Color	Resin Color
Material		
InGaN	White	Yellow diffused

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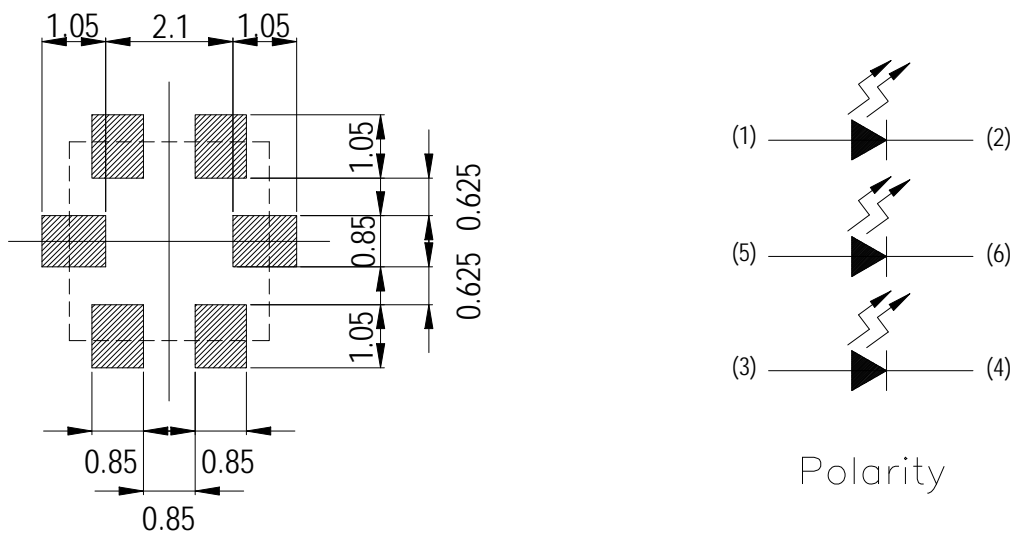
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**Package Outline Dimensions**



For Reflow Soldering(Propose)



Note: The tolerances unless dimension are  $\pm 0.1\text{mm}$ .

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**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
Operating Temperature	Topr	-25 ~ +80	°C
Storage Temperature	Tstg	-40 ~ +90	°C
Electrostatic Discharge (HBM)	ESD	1000	V
Power Dissipation	Pd	111	mW
Peak Forward Current (Duty 1/10 @ 400ms)	IFP	100	mA
Soldering Temperature	Tsol	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

\* The value are based on the one-die performance.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity*1	I <sub>V</sub>	9.1	11.0	-----	cd	I <sub>F</sub> =20mA*2
Viewing Angle*1	2θ <sub>1/2</sub>	-----	60	-----	deg	I <sub>F</sub> =20mA*2
Forward Voltage*2	V <sub>F</sub>	2.7	3.3	3.7	V	I <sub>F</sub> =20mA*2
Reverse Current*2	I <sub>R</sub>	-----	-----	50	μA	V <sub>R</sub> =5V*2

\*1 When 3 LED dies are operated simultaneously.

\*2 For each die.

Note: 1. The products are sensitive to static electricity and care must be fully taken when handling products.

2. Tolerance of Luminous Intensity ±11%



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Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
Z12	9100	11500	mcd	I <sub>F</sub> =20mA*2
Z21	11500	14400		
Z22	14400	18000		

Bin Range of Chromaticity Coordinates

(I<sub>F</sub>=20mA\*2)

Rank	CCT	CIE_x	CIE_y
V4	5000K ~5650K	0.329	0.357
		0.329	0.369
		0.348	0.385
		0.347	0.372
V5		0.329	0.345
		0.329	0.357
		0.347	0.372
		0.346	0.359
V6		0.329	0.331
		0.329	0.345
		0.346	0.359
		0.344	0.344
V7	0.329	0.331	
	0.344	0.344	
	0.343	0.331	
	0.329	0.32	



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Bin Range of Chromaticity Coordinates

(I<sub>F</sub>=20mA\*2)

Rank	CCT	CIE_x	CIE_y
W4	5650K ~6300K	0.329	0.369
		0.329	0.357
		0.315	0.344
		0.314	0.355
W5		0.329	0.345
		0.316	0.333
		0.315	0.344
		0.329	0.357
W6		0.329	0.345
		0.329	0.331
		0.317	0.32
		0.316	0.333
W7	0.329	0.331	
	0.329	0.32	
	0.318	0.31	
	0.317	0.32	
W8	0.329	0.321	
	0.329	0.31	
	0.319	0.3	
	0.318	0.31	



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**Bin Range of Chromaticity Coordinates**

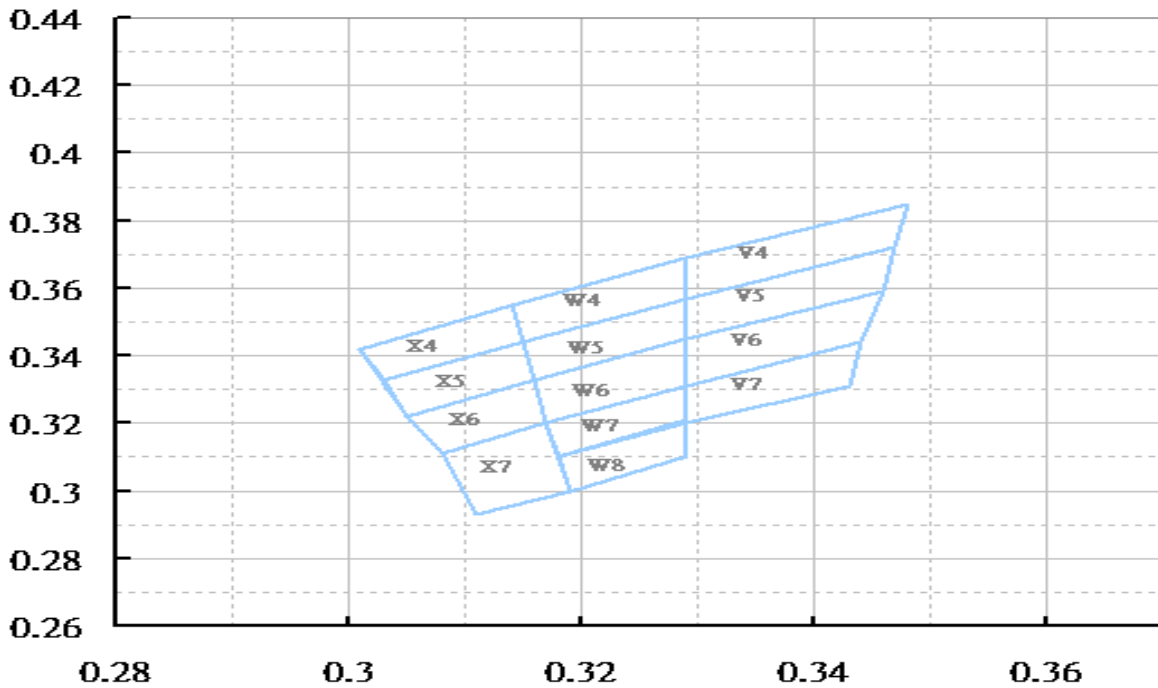
( $I_F=20mA^*2$ )

Rank	CCT	CIE_x	CIE_y
X4	6300K ~7000K	0.301	0.342
		0.314	0.355
		0.315	0.344
		0.303	0.333
X5		0.305	0.322
		0.303	0.333
		0.315	0.344
		0.316	0.333
X6		0.308	0.311
		0.305	0.322
		0.316	0.333
		0.317	0.320
X7		0.308	0.311
		0.317	0.320
		0.319	0.300
		0.311	0.293

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- \*1 When 3 LED dies are operated simultaneously.
- \*2 For each die.
- \*3 The C.I.E. 1931 chromaticity diagram ( Tolerance  $\pm 0.01$ ).

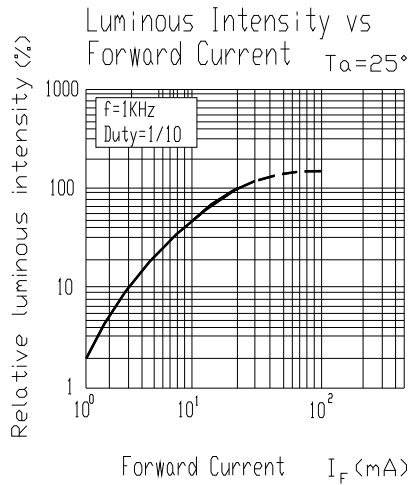
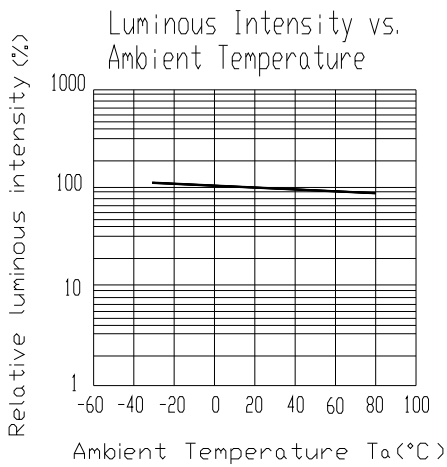
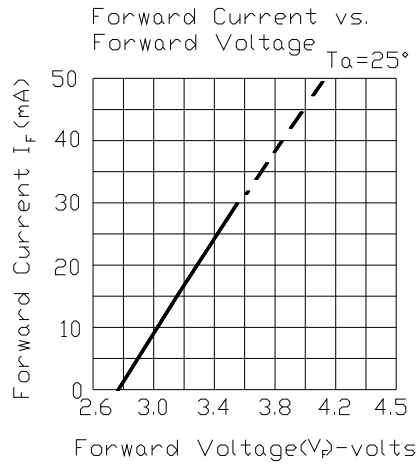
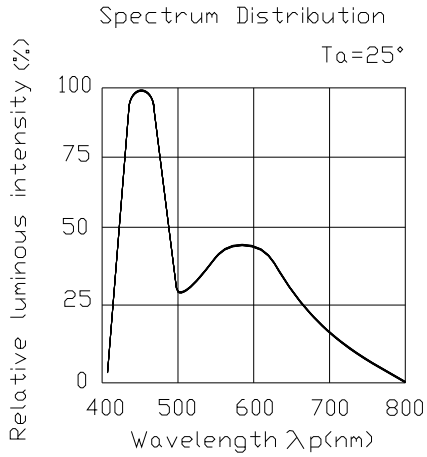
Note: 1. The products are sensitive to static electricity and care must be fully taken when handling products.  
 2. Tolerance of Luminous Intensity  $\pm 11\%$

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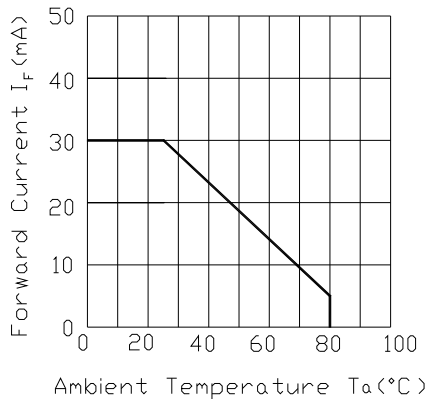
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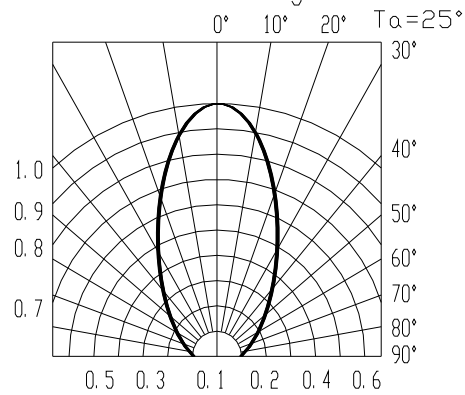
**Typical Electro-Optical Characteristics Curves**



Forward Current Derating Curve



Radiation Diagram







LIGHTING FOREVER

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Label Explanation

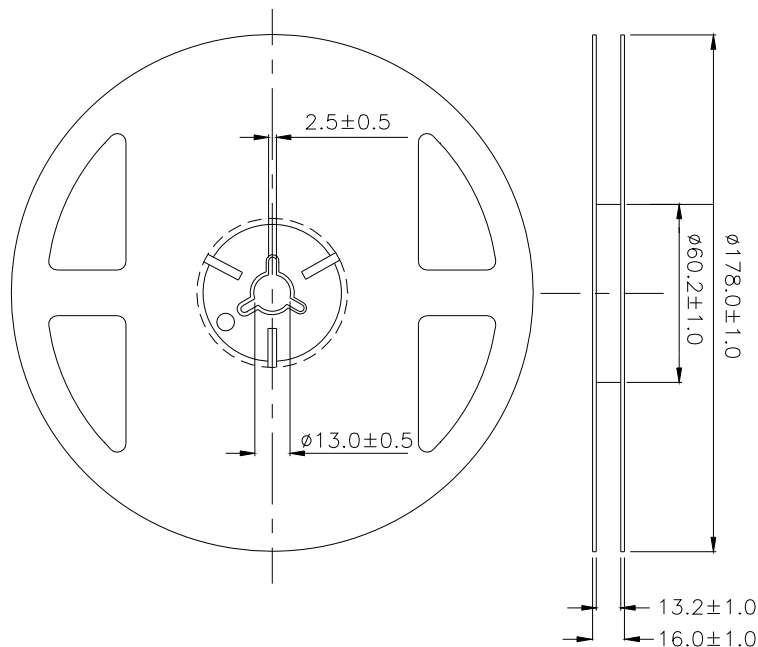
CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank



Reel Dimensions



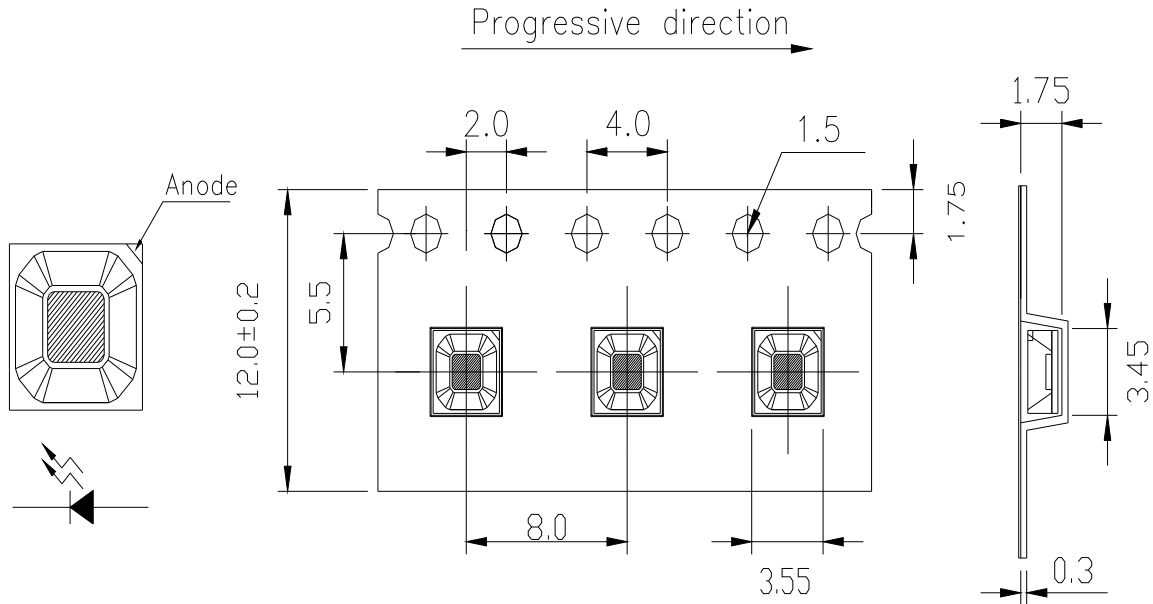
Note: The tolerances unless dimension are ± 0.1mm.

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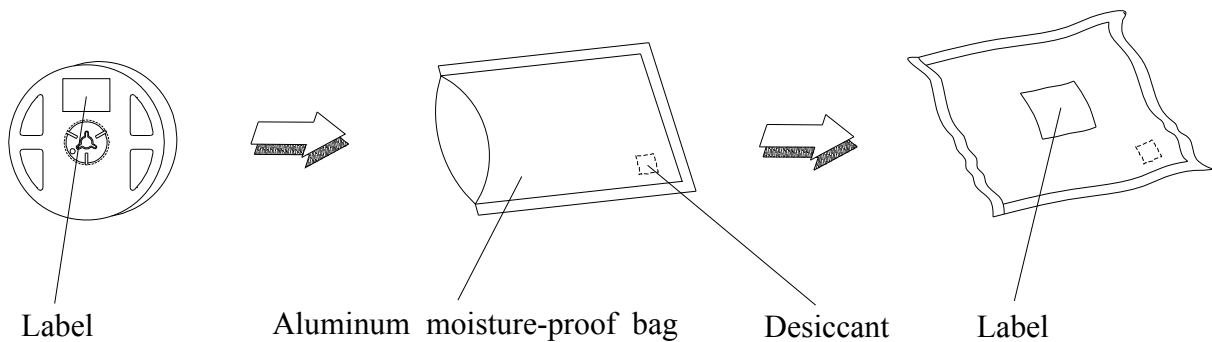
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**Carrier Tape Dimensions: Loaded Quantity 1000 pcs. Per Reel**



Note: The tolerances unless dimension are  $\pm 0.1$ mm.

**Moisture Resistant Packaging**



**Technical Data Sheet****Luminosity white Color LED****69-23BUMD/TR8****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 Qty'	Ac/Re
1	Reflow Soldering	Temp.: 260°C±5°C Max. 10 sec.	6 Min.	22 pcs.	0/1
2	Temperature Cycle	H: +100°C 15min. ↓ 5 min. L: -40°C 15min.	300 cycles	22 pcs.	0/1
3	Thermal Shock	H: +100°C 5min. ↓ 10 sec. L: -10°C 5min.	300 cycles	22 pcs.	0/1
4	High Temperature Storage	Temp.: 100°C±5°C	1000 hrs.	22 pcs.	0/1
5	Low Temperature Storage	Temp.: -40°C±5°C	1000 hrs.	22 pcs.	0/1
6	DC Operating Life	I <sub>F</sub> = 20 mA / 25°C	1000 hrs.	22 pcs.	0/1
7	High Temperature / High Humidity	85°C±5°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 Don't 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.

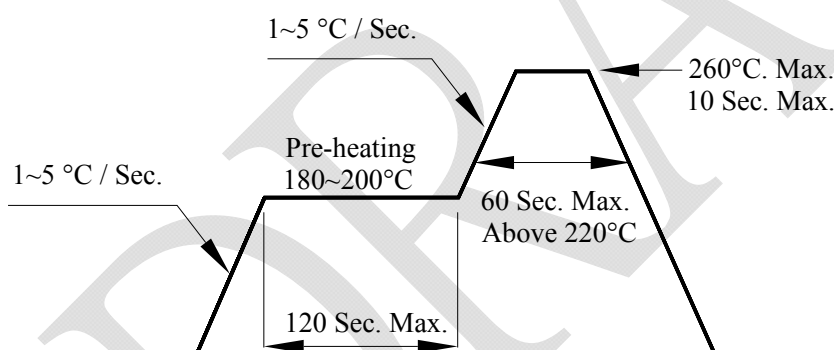
2.3 After opening the package: The LED's floor life is 1 year under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

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.

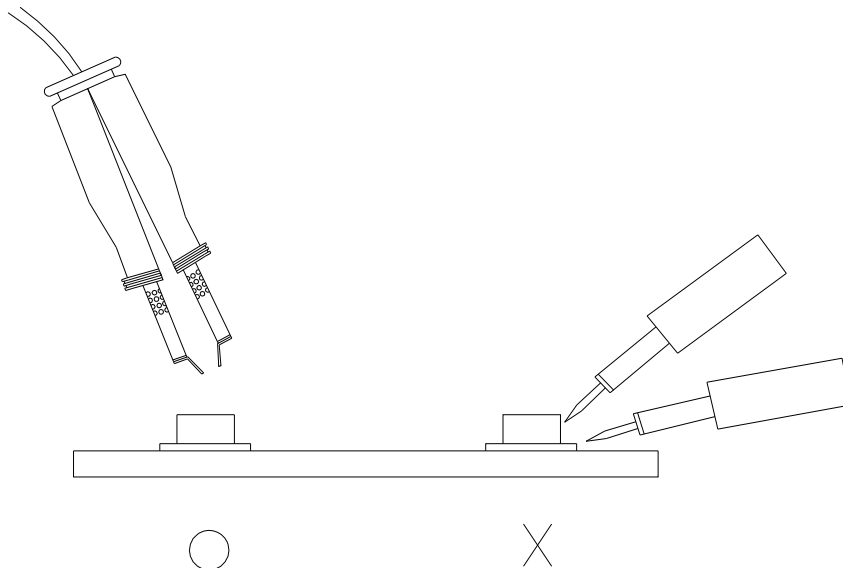
3.4 After soldering, do not warp the circuit board.

**Technical Data Sheet****Luminosity white Color LED****69-23BUMD/TR8****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.



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