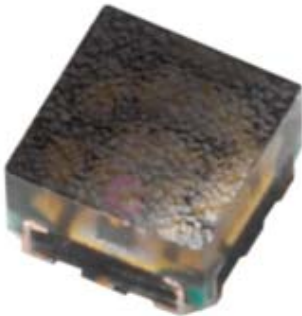


## SMD ■

### 18-038BT/BDGAR6S1-L40/10T



#### 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
- RoHS compliant

#### Description

- The 18-038BT 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 18-038BT 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	Black Surface Diffused
InGaN	Brilliant Green	
InGaN	Brilliant Blue	

## Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Forward Current	$I_F$	R6:10 GA:10 BD:10	mA
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	R6:20 GA:20 BD:20	mA
Power Dissipation	$P_d$	R6:24 GA:31 BD:31	mW
Junction Temperature	$T_j$	100	°C
Operating Temperature	$T_{opr}$	-40 ~ +85	°C
Storage Temperature	$T_{stg}$	-40 ~ +90	°C
ESD (Classification acc. AEC Q101)	$ESD_{HBM}$	R:2000 G:1000 B:1000	V
Soldering Temperature	$T_{sol}$	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Luminous Intensity	Iv	R6	18.4	-----	31.0	mcd	I <sub>F</sub> =5mA
		GA	61.0	-----	104.0		
		BD	8.8	-----	25.4		
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =5mA	
Peak Wavelength	λ <sub>p</sub>	R6		625		nm	I <sub>F</sub> =5mA
		GA	-----	525	-----		
		BD		465			
Dominant Wavelength	λ <sub>d</sub>	R6	619.0		629.0	nm	I <sub>F</sub> =5mA
		GA	523.0	-----	528.0		
		BD	463.0		468.0		
Spectrum Radiation Bandwidth	Δλ	R6		20		nm	I <sub>F</sub> =5mA
		GA	-----	25	-----		
		BD		25			
Forward Voltage	V <sub>F</sub>	R6	1.7	2.0	2.4	V	I <sub>F</sub> =5mA
		GA	2.5	2.9	3.2		
		BD	2.5	2.9	3.2		
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =5V	

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

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

Bin Code	Min.	Max.	Unit	Condition
RA	18.4	24.0	mcd	I <sub>F</sub> =5mA
RC	24.0	31.0		

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
R2	619.0	624.0	nm	I <sub>F</sub> =5mA
R3	624.0	629.0		

**Bin Range of Dominant Voltage**

Bin Code	Min.	Max.	Unit	Condition
R1	1.7	2.4	v	I <sub>F</sub> =5mA

Note:

- 1.Tolerance of Luminous Intensity: ±10%
- 2.Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

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

Bin Code	Min.	Max.	Unit	Condition
GC	61.0	80.0	mcd	I <sub>F</sub> =5mA
GE	80.0	104.0		

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
G2	523.0	526.0	nm	I <sub>F</sub> =5mA
G3	525.0	528.0		

**Bin Range of Dominant Voltage**

Bin Code	Min.	Max.	Unit	Condition
G1	2.5	3.2	v	I <sub>F</sub> =5mA

Note:

1. Tolerance of Luminous Intensity: ±10%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage: ±0.1V

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

Bin Code	Min.	Max.	Unit	Condition
BA	8.8	11.5	mcd	$I_F = 5\text{mA}$
BC	11.5	15.0		
BE	15.0	19.5		
BG	19.5	25.4		

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
B2	463.0	466.0	nm	$I_F = 5\text{mA}$
B3	465.0	468.0		

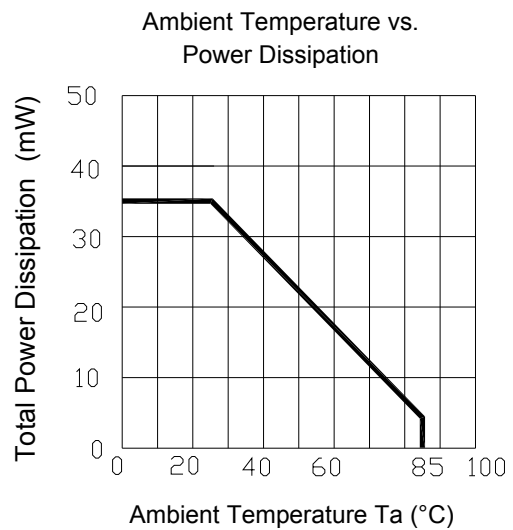
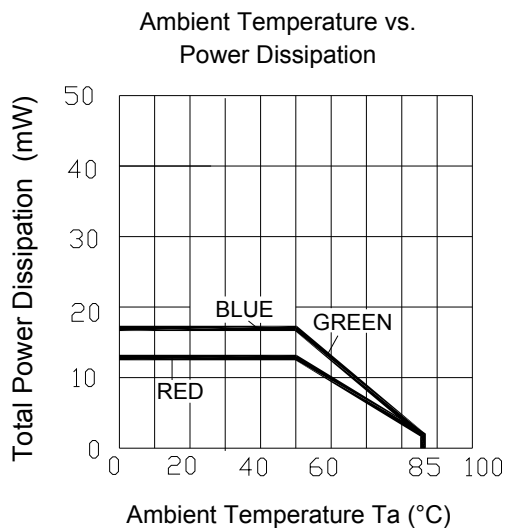
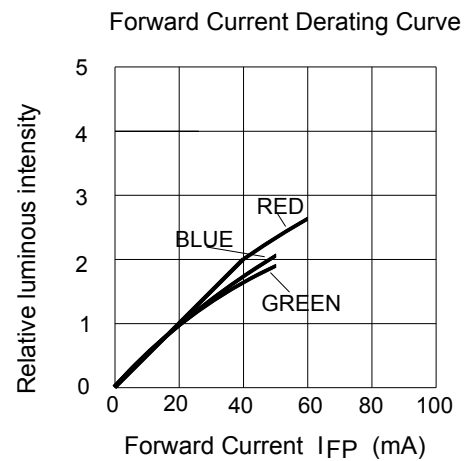
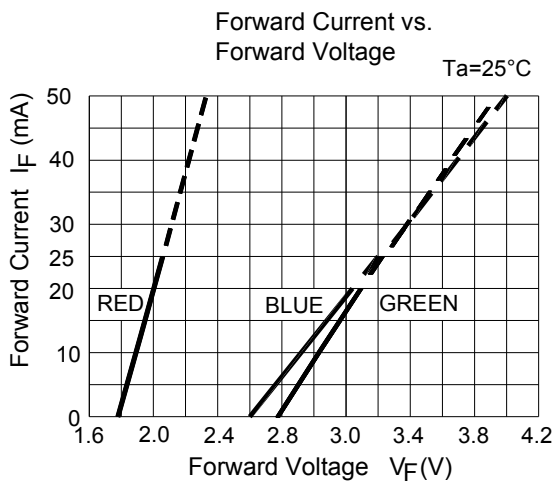
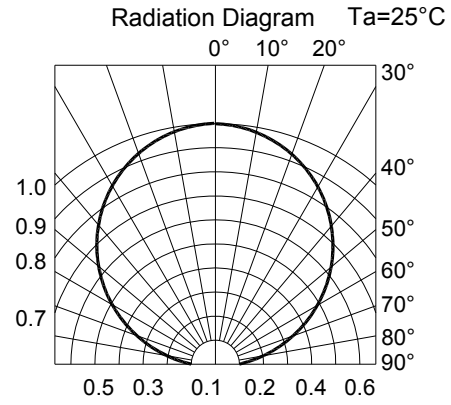
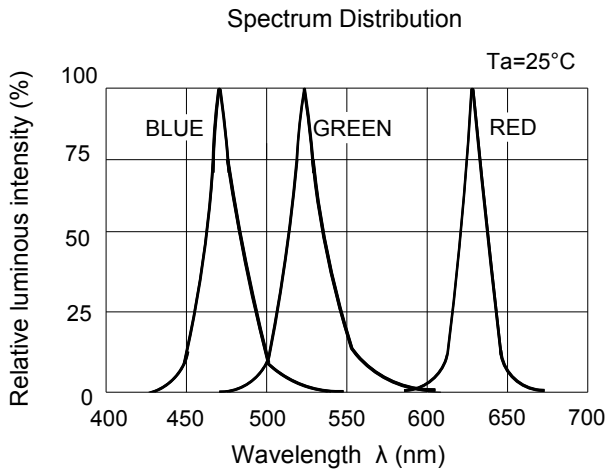
**Bin Range of Dominant Voltage**

Bin Code	Min.	Max.	Unit	Condition
B1	2.5	3.2	v	$I_F = 5\text{mA}$

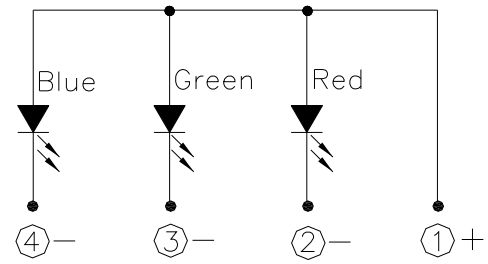
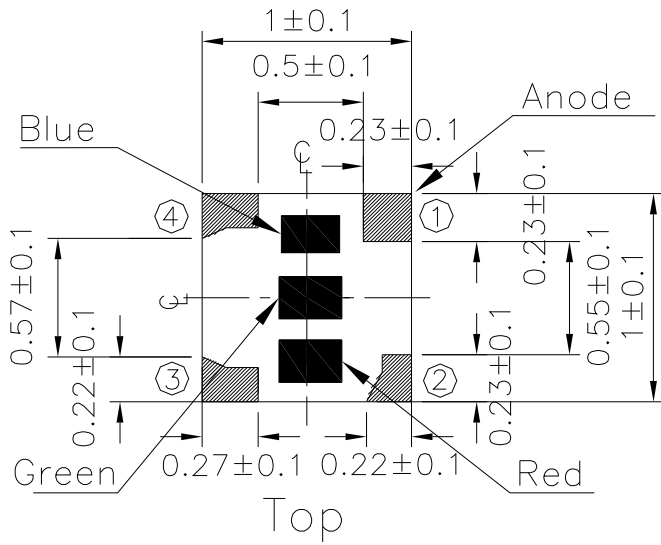
Note:

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

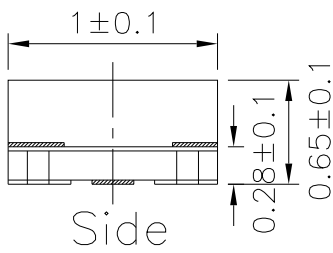
## Typical Electro-Optical Characteristics Curves



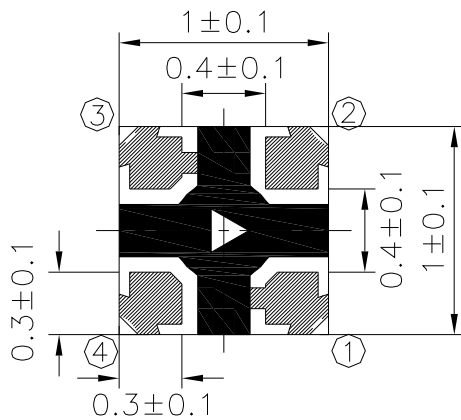
### Package Dimension



Polarity

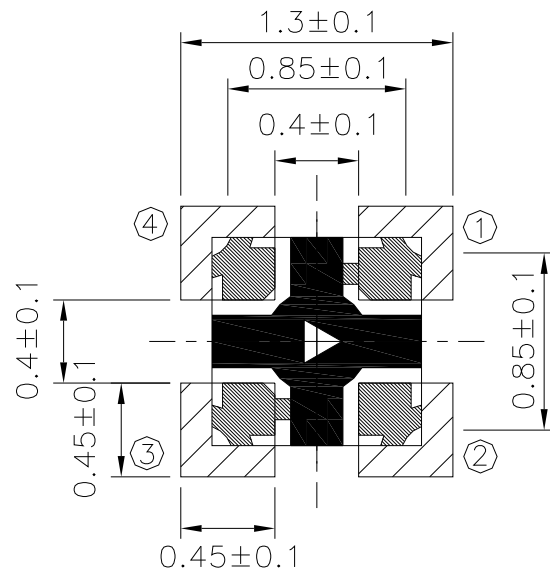


Side



Bottom

Recommend soldering pad



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

Note: Tolerances unless mentioned ±0.1mm. Unit = mm



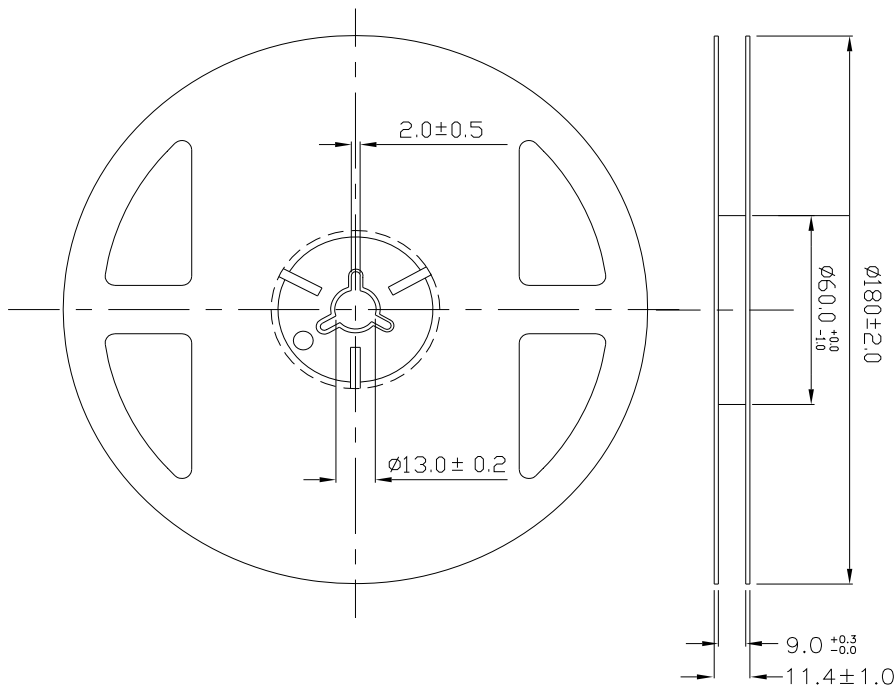
## Moisture Resistant Packing Materials

### Label Explanation



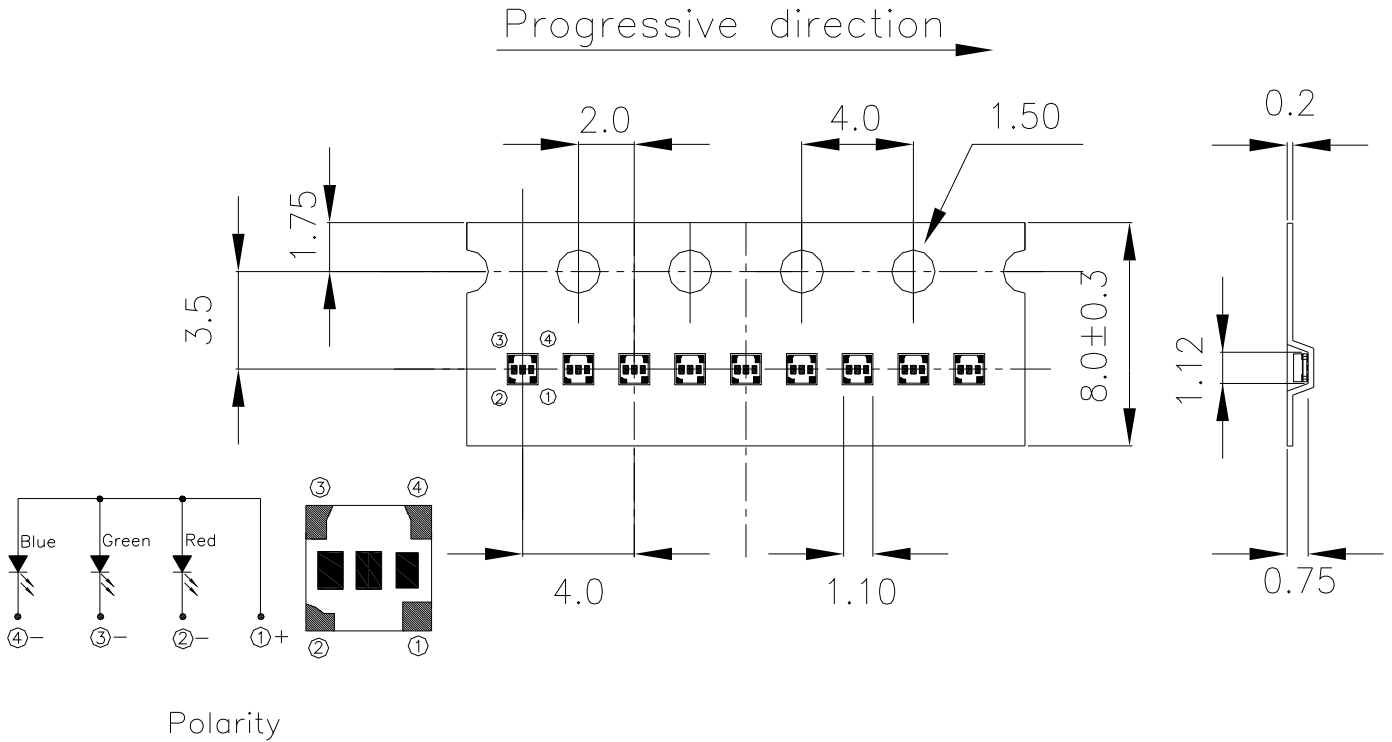
- PN: Customer's Product Number
- SPECIFICATION: LED
- PO TYPE: the label's function
- LOT No: Lot Number
- QTY: Packing Quantity
- VENDOR P/N: express the product type
- VENDOR/Code: EVERLIGHT'code

### Reel Dimensions



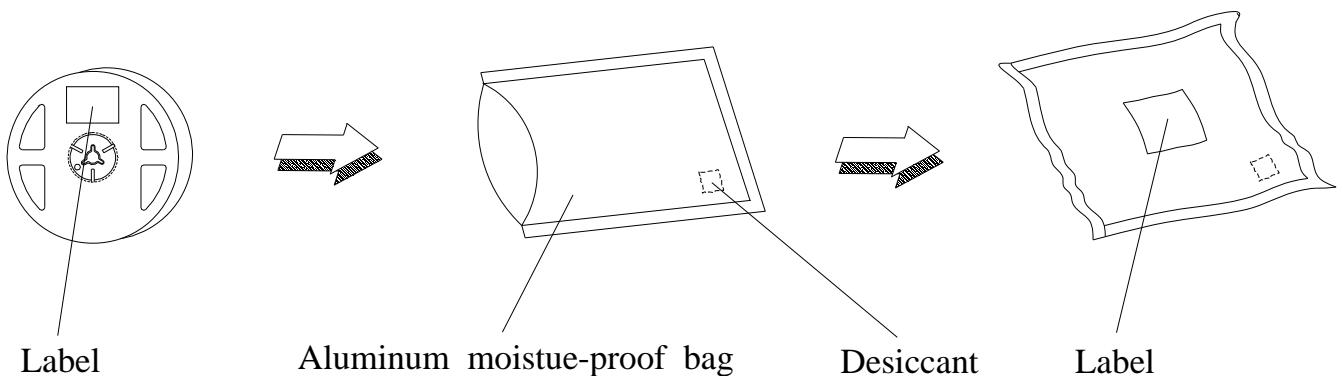
### Carrier Tape Dimensions:

The minimum quantity of packing is 10000 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.

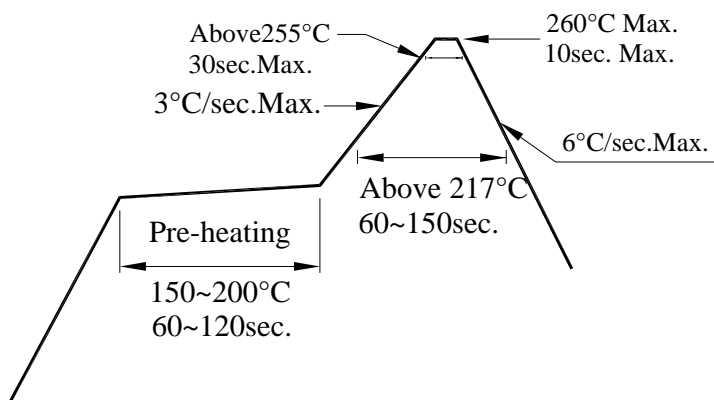
2.4 If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions.

Baking treatment : 60±5°C for 24 hours.

2.5 Before using LEDs, baking treatment should be implemented based on the following conditions: pre-curing at 60±5°C for 24 hours or 125±5°C for 3 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.

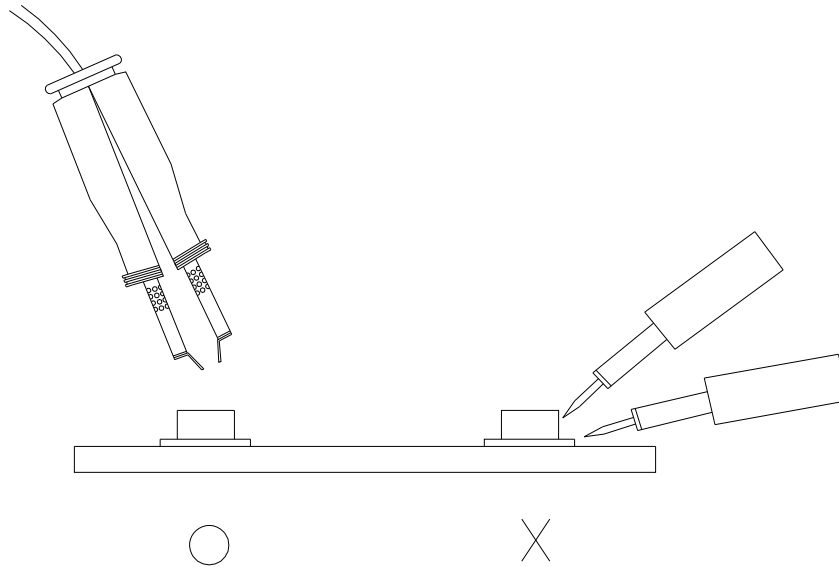
3.4 After soldering, do not warp the circuit board.

### 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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