

HNB2727W-OS01

Hong Series

Preliminary



Features

- Unique packaging technology provides better moisture resistance for outdoor use.
- Various options for color mixture including white.
- Good color fidelity and brightness uniformity across the viewing angle
- RoHS compliant.
- Black body provides better contrast for the display.
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm)

Description

- The HNB2727W-OS01 SMD LED package provides a perfect solution when users need a clear view of signage Display with any size board with 3 in 1 full color SMD LEDs which offer smaller pixel pitch between two LEDs to create a high resolution and better contrast with its black body design.

Applications

- Outdoor signage display
- Outdoor decorating and entertainment design
- Gaming equipment.
- Indicator and backlighting for all consumer electronics.

Device Selection Guide

Part No.	Chip Materials	Emitted Color
R	AlGaInP	Brilliant Red
G	InGaN	Brilliant Green
B	InGaN	Brilliant Blue

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	R	20
		G	20
		B	20
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	40	mA
Power Dissipation	Pd	R	50
		G	70
		B	70
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +90	°C
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	R	500	-----	1098	mcd	I _F =20mA
		G	965	-----	2448		I _F =15mA
		B	150	-----	426		I _F =10mA
Viewing Angle	2θ _{1/2}		-----	110	-----	deg	I _F =20mA
Dominant Wavelength	λ _d	R	615	-----	630	nm	I _F =20mA
		G	517		535		I _F =15mA
		B	465		480		I _F =10mA
Spectrum Radiation Bandwidth	Δλ	R	-----	20	-----	nm	I _F =20mA
		G		35			I _F =15mA
		B		25			I _F =10mA
Forward Voltage	V _F	R	1.8	-----	2.6	V	I _F =20mA
		G	2.5		3.5		I _F =15mA
		B	2.5		3.5		I _F =10mA
Reverse Current	I _R		-----	-----	10	μA	V _R =5V

Note:

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

Bin Range of Luminous Intensity

Color	Bin Code	Min.	Max.	Unit	Condition
Red	RA	500	650	mcd	$I_F = 20\text{mA}$
	RB	650	845		
	RC	845	1098		
Green	G0	965	1255	mcd	$I_F = 15\text{mA}$
	GA	1255	1632		
	GB	1632	2448		
Blue	B0	150	195	mcd	$I_F = 10\text{mA}$
	BA	195	253		
	BB	253	328		
	BC	328	426		

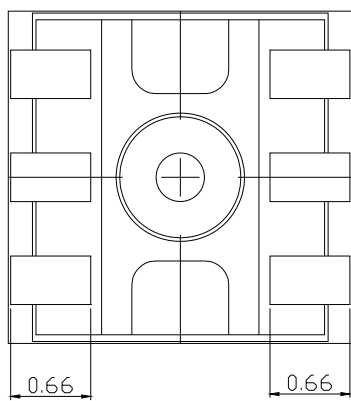
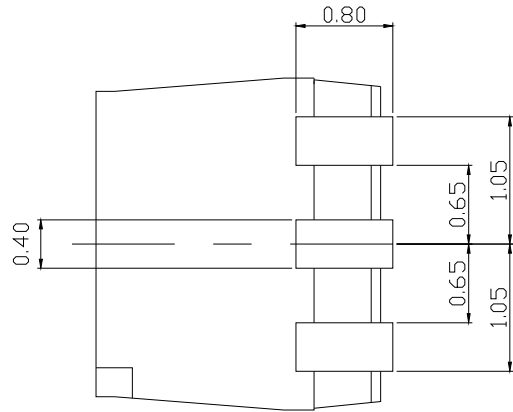
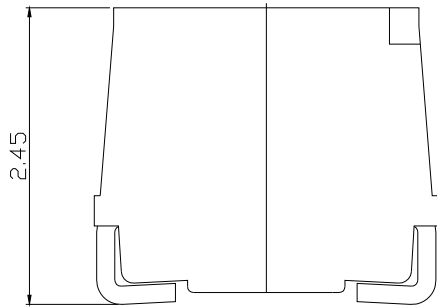
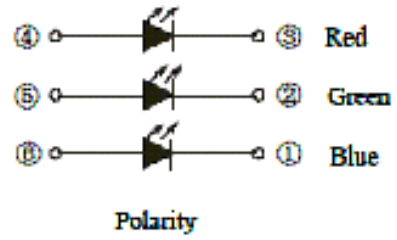
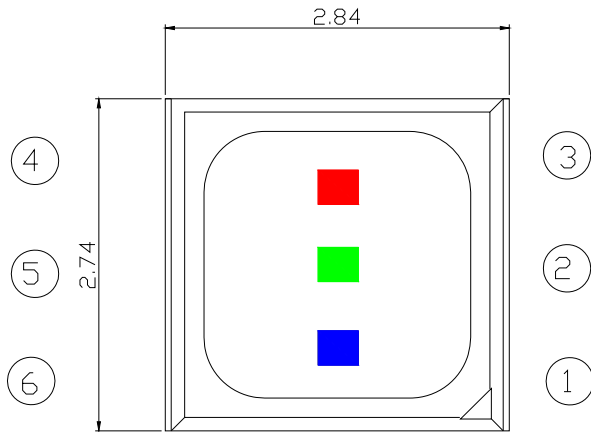
Bin Range of Dominant Wavelength

Color	Bin Code	Min.	Max.	Unit	Condition
Red	R1	615	620	nm	$I_F = 20\text{mA}$
	R2	620	625		
	R3	625	630		
Green	G1	517	520	nm	$I_F = 15\text{mA}$
	G2	520	523		
	G3	523	526		
	G4	526	529		
	G5	529	532		
	G6	532	535		
Blue	B1	465	468	nm	$I_F = 10\text{mA}$
	B2	468	471		
	B3	471	474		
	B4	474	477		
	B5	477	480		

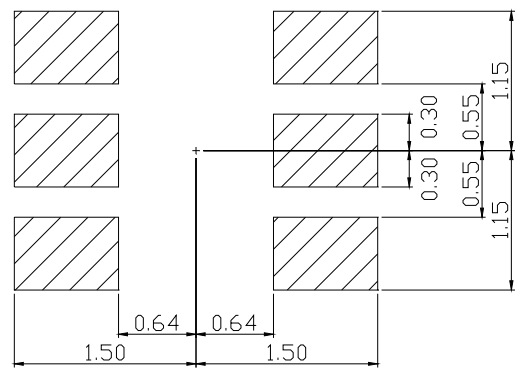
Note:

1. Tolerance of Luminous Intensity: $\pm 10\%$
2. Tolerance of Dominant Wavelength: $\pm 1\text{nm}$

Package Dimension



Bot. view



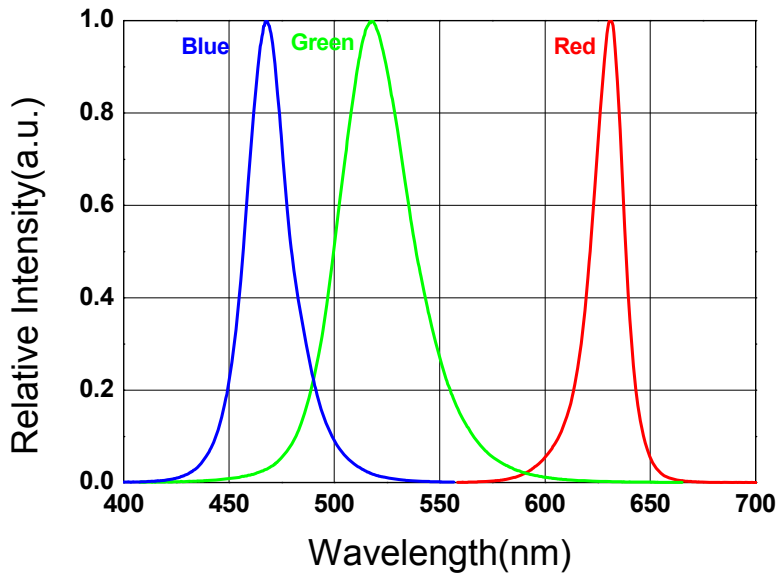
Soldering patterns

Notes:

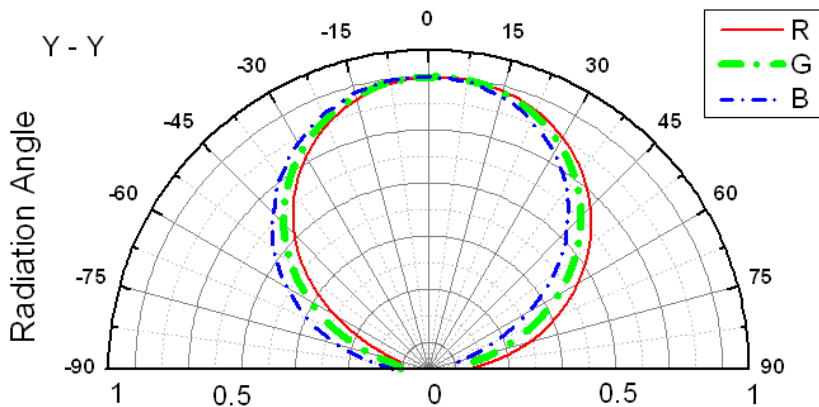
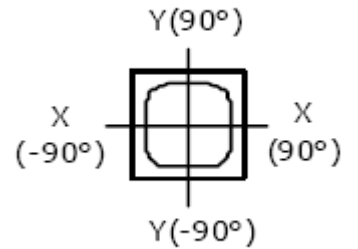
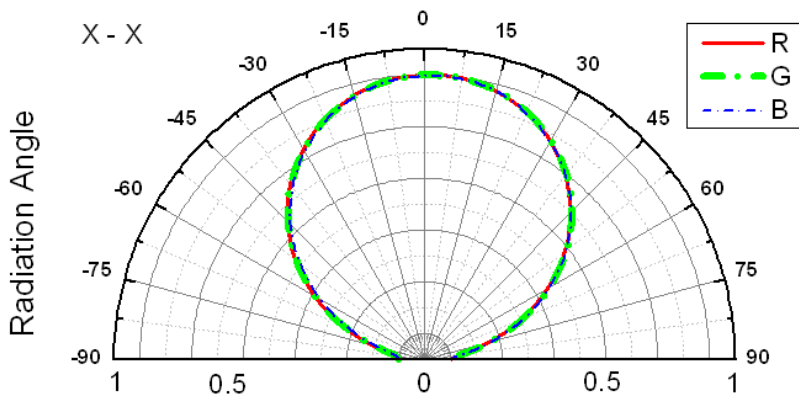
1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ± 0.1 mm.

Typical Electro-Optical Characteristics Curves

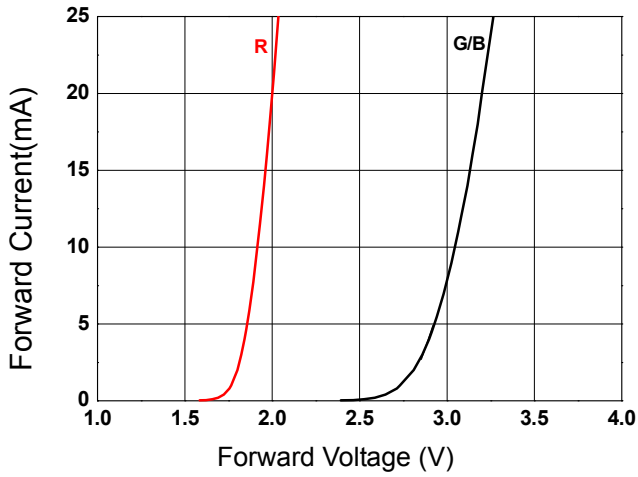
Relative Intensity vs. Wavelength (Ta=25°C)



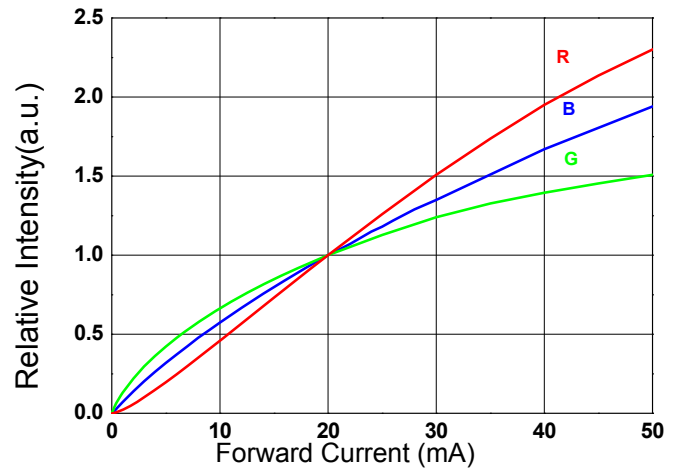
Directivity (Ta=25°C)



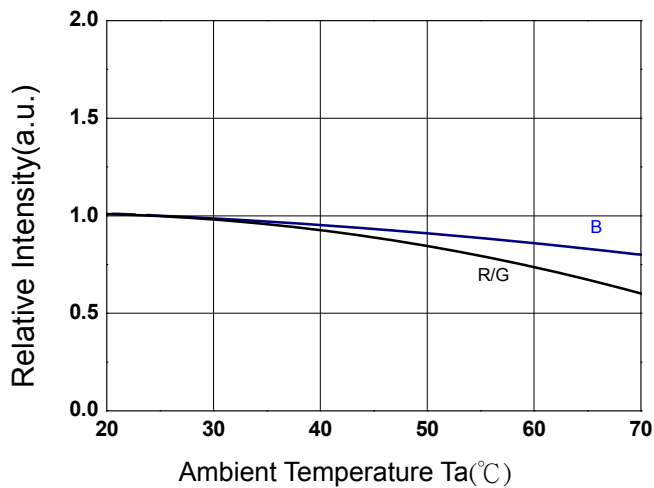
Forward Current vs. Forward Voltage (Ta=25°C)



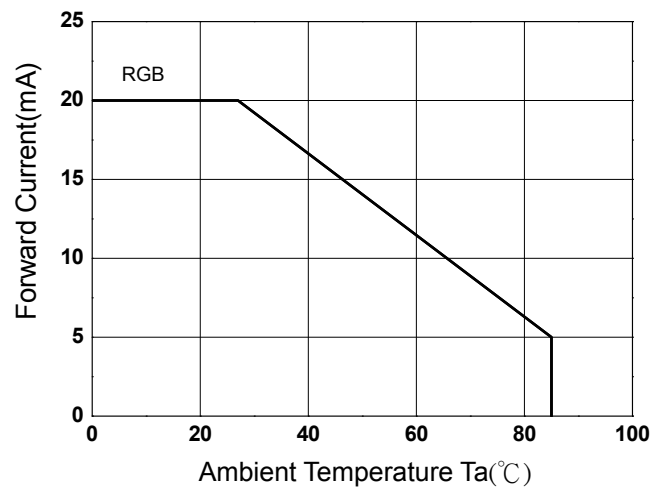
Relative Intensity vs. Forward Current (Ta=25°C)



Relative Intensity vs. Ambient Temp.

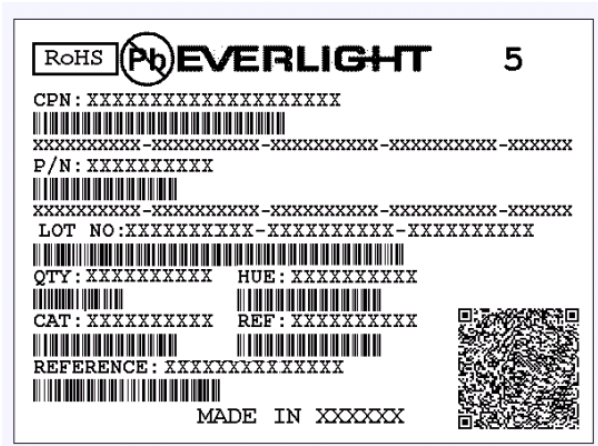


Forward Current vs. Ambient Temp.



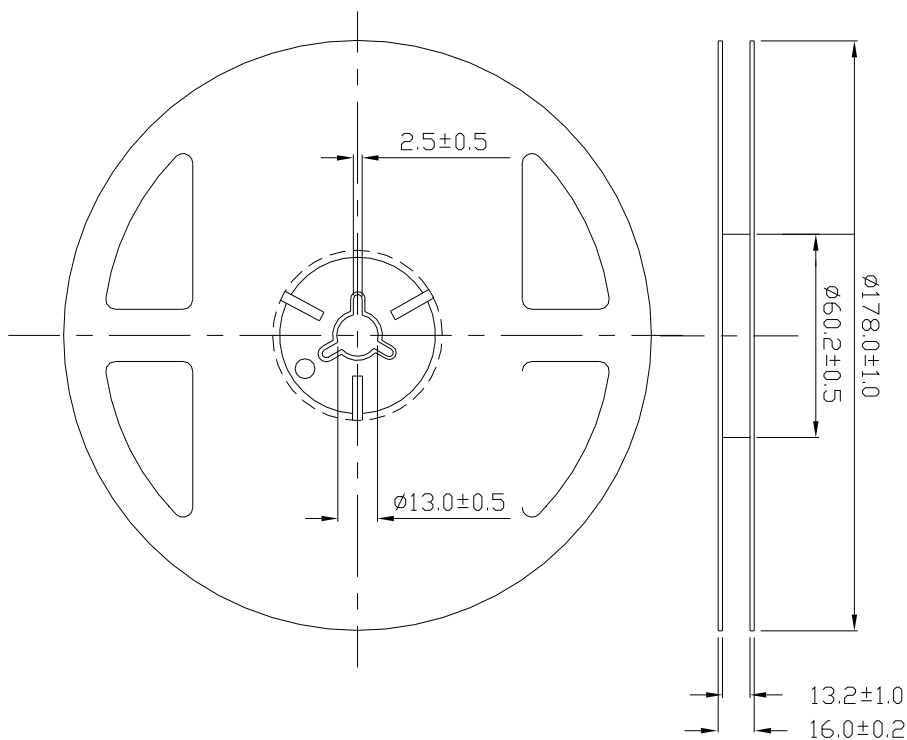
Moisture Resistant Packing Materials

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

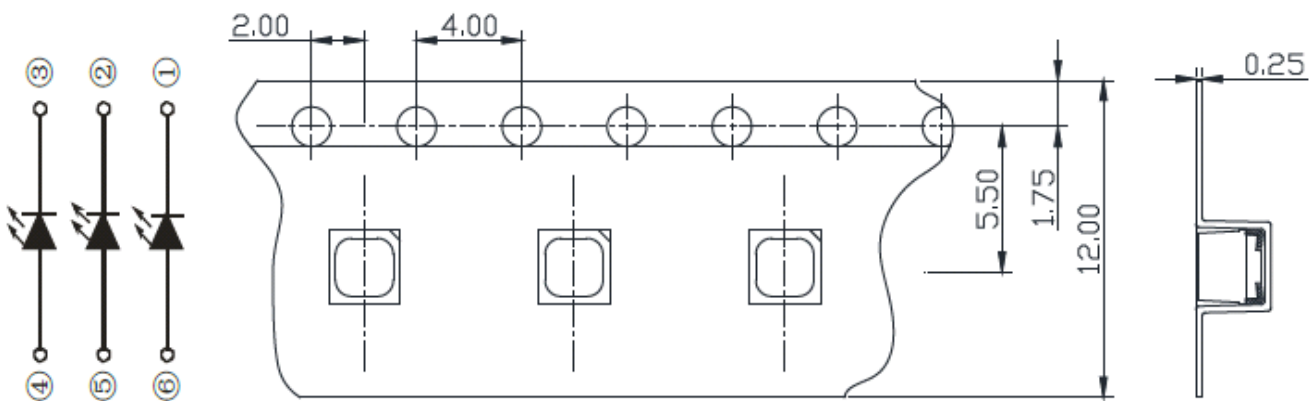


Notes:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ± 0.1 mm.

Carrier Tape Dimensions:

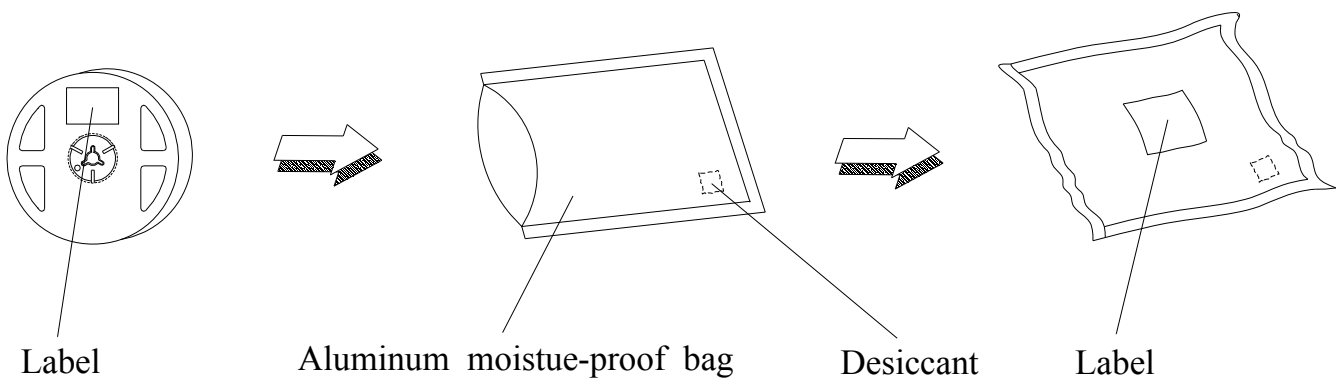
The minimum quantity of packing is 2000 pcs per reel. The rest quantity which could not reach 2000 pcs per reel will go to 500 pcs per reel.



Notes:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ± 0.1 mm.

Moisture Resistant Packing Process



Notes:

1. Dimensions are in millimeters.
2. Tolerances for fixed dimensions are ± 0.1 mm.

Precautions for Use

1. Over-current-proof

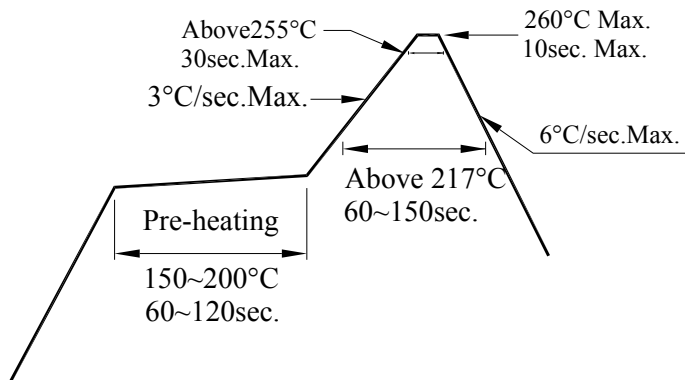
- Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change (Burn out will happen).

2. Storage

- Do not open moisture proof bag before the products are ready to use.
- Before opening the package: The LEDs should be kept at 30°C or less and 90%RH or less.
- 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.
- 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

- Pb-free solder temperature profile



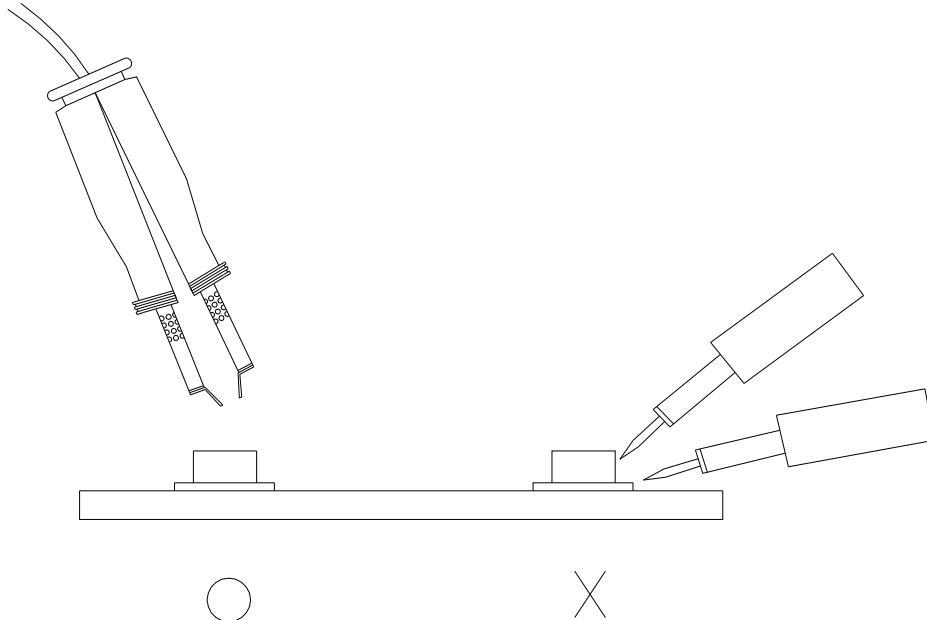
- Reflow soldering should not be done more than two times.
- When soldering, do not put stress on the LEDs during heating.
- After soldering, do not warp the circuit board.

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. ESD (Electrostatic Discharge)

- The products are sensitive to static electricity or surge voltage. ESD can damage a die and its reliability. When handling the products, the following measures against electrostatic discharge are strongly recommended:
 - Eliminating the charge
 - Grounded wrist strap, ESD footwear, clothes, and floors
 - Grounded workstation equipment and tools
 - ESD table/shelf mat made of conductive materials
- Proper grounding is required for all devices, equipment, and machinery used in product assembly. Surge protection should be considered when designing of commercial products.
- If tools or equipment contain insulating materials such as glass or plastic, the following measures against electrostatic discharge are strongly recommended:
 - Dissipating static charge with conductive materials
 - Preventing charge generation with moisture
 - Neutralizing the charge with ionizers.

7. 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.