EVER-LED

RoHS Compliant
PB Free

Features:

- ◇ P-LCC-4 package.
- ◇ White package.
- ◇ Optical indicator.
- ◇ Colorless clear window.
- ◇ Ideal for backlight and light pipe application.
- ◇ Inter reflector.
- ◇ Wide viewing angle.
- ◇ Suitable for vapor-phase reflow, Infrared reflow and wave solder processes.
- ◇ Computable with automatic placement equipment.
- ◇ Available on tape and reel (8mm Tape).
- ◇ The product itself will remain within RoHS compliant Version.

Descriptions:

- ◇ This series is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. This feature makes the SMT TOP LED ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application

Applications:

- ◇ Automotive: Backlight in dashboards and switches.
- ◇ Telecommunication: Indicator and backlight in telephone and fax
- ◇ Indicator and backlight for audio and video equipment.
- ◇ Indicator and backlight in office and family equipment.
- ◇ Flat backlight for LCD's, switches and symbols.
- ◇ Light pipe application.
- ◇ General use.

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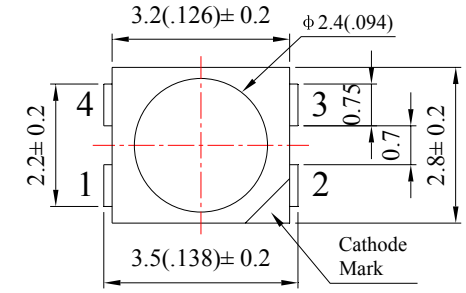
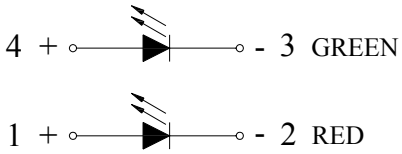
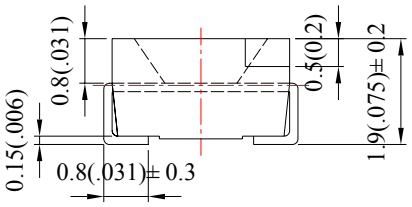
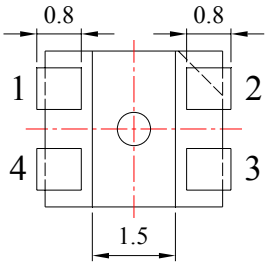
Package Dimension:



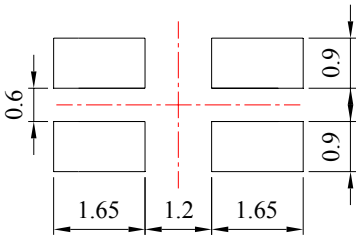


Polarity





Recommended Soldering Pad Dimensions



Unit: mm
Tolerance: ± 0.10mm

Part No.	Chip Material	Lens Color	Source Color
R352819-FLWC-V150-UG100	AlGaInP	Water Clear	Hyper Red
	AlGaInP		Super Yellow Green

Notes:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.10mm (.004”) unless otherwise specified.
3. Specifications are subject to change without notice.

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Absolute Maximum Ratings at Ta=25℃

Parameters	Symbol	Emitting Color	Max.	Unit
Power Dissipation	PD	Hyper Red	60	mW
		Super Yellow Green	60	
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	Hyper Red	100	mA
		Super Yellow Green	100	
Continuous Forward Current	IF	Hyper Red	25	mA
		Super Yellow Green	25	
Reverse Voltage	VR		5	V
Electrostatic Discharge (HBM)	ESD	Hyper Red	2000	V
		Super Yellow Green	2000	V
Operating Temperature Range	Topr	-40℃ to +80℃		
Storage Temperature Range	Tstg	-40℃ to +85℃		
Soldering Temperature	Tsld	260℃ for 5 Seconds		

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Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Emitting Color	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity	IV	Hyper Red	100	150	---	mcd	IF=20mA (Note 1)
		Super Yellow Green	30	100	---		
Viewing Angle	$2\theta_{1/2}$	Hyper Red	---	120	---	Deg	IF=20mA (Note 2)
		Super Yellow Green	---	120	---		
Peak Emission Wavelength	λp	Hyper Red	---	632	---	nm	IF=20mA
		Super Yellow Green	---	575	---		
Dominant Wavelength	λd	Hyper Red	---	624	---	nm	IF=20mA (Note 3)
		Super Yellow Green	---	573	---		
Spectral Line Half-Width	△λ	Hyper Red	---	20	---	nm	IF=20mA
		Super Yellow Green	---	20	---		
Forward Voltage	VF	Hyper Red	1.60	2.00	2.40	V	IF=20mA
		Super Yellow Green	1.60	2.00	2.40		
Reverse Current	IR	Hyper Red	---	---	10	μA	V_R=5V
		Super Yellow Green			10		

Notes:

1. Luminous Intensity Measurement allowance is ± 10%.
2. $\theta_{1/2}$ is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. The dominant wavelength (λd) is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.

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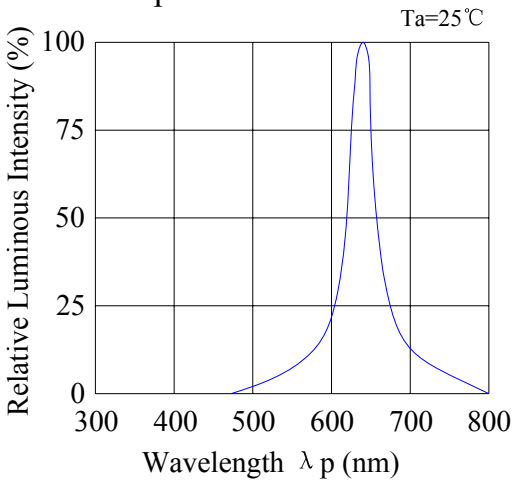
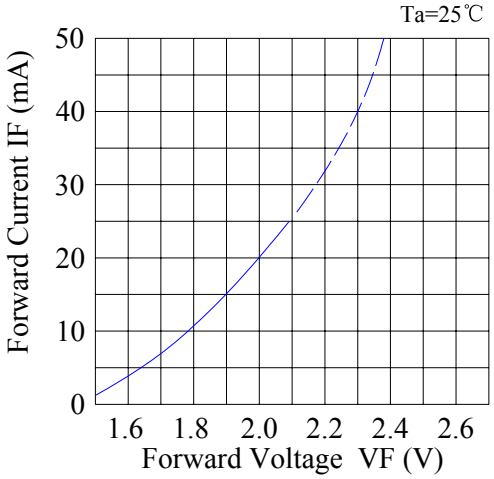
Typical Electrical / Optical Characteristics Curves
(25℃ Ambient Temperature Unless Otherwise Noted)
Hyper Red:

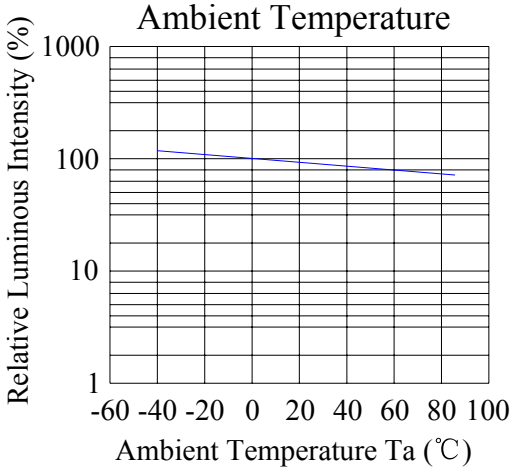
Spectrum Distribution



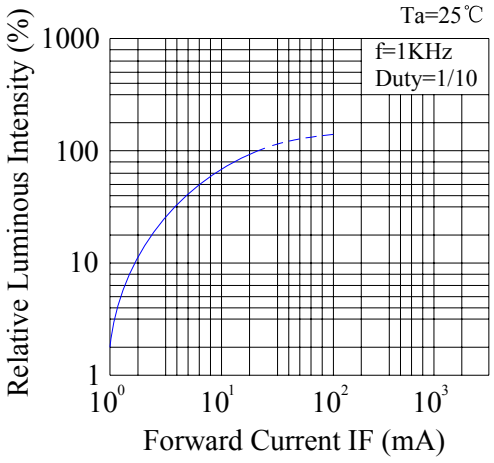
Forward Current & Forward Voltage



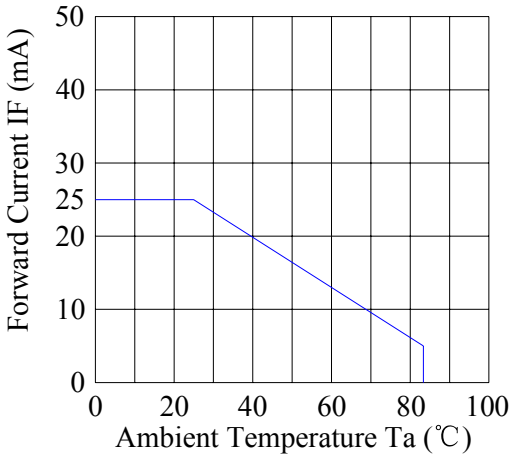
Luminous Intensity & Ambient Temperature



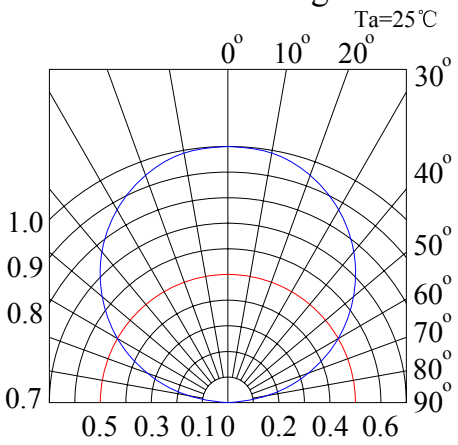
Luminous Intensity & Forward Current



Forward Current Derating Curve



Radiation Diagram



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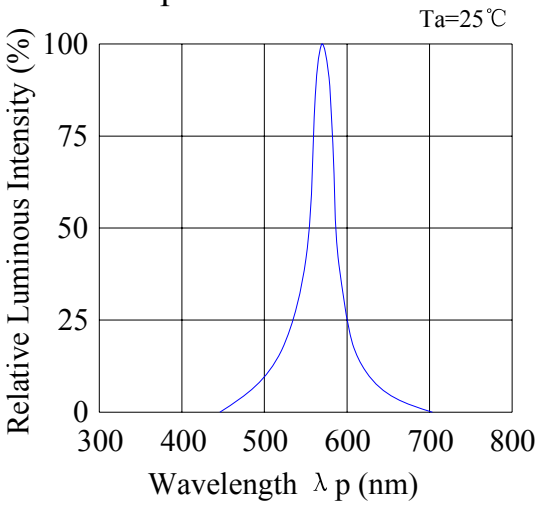
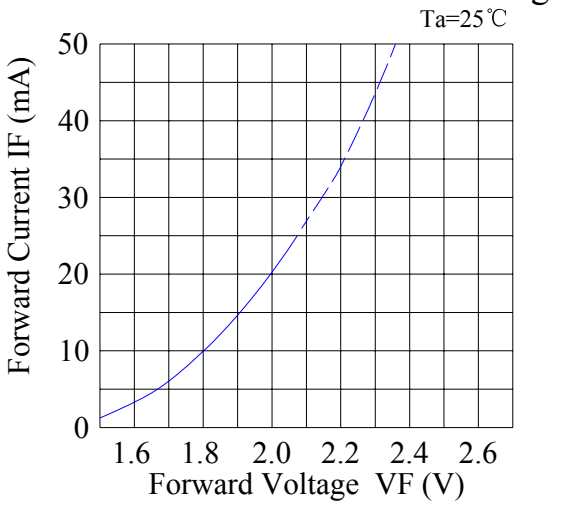
Super Yellow Green:

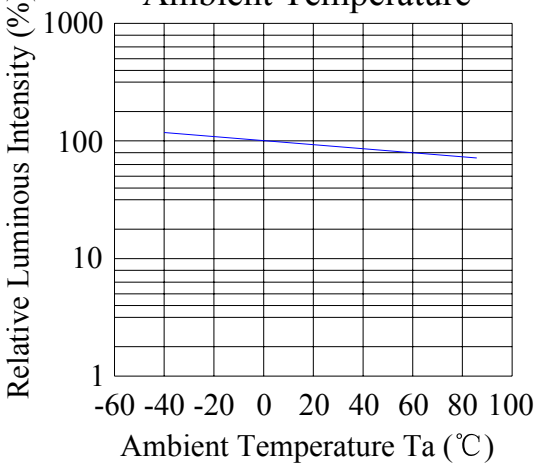
Spectrum Distribution



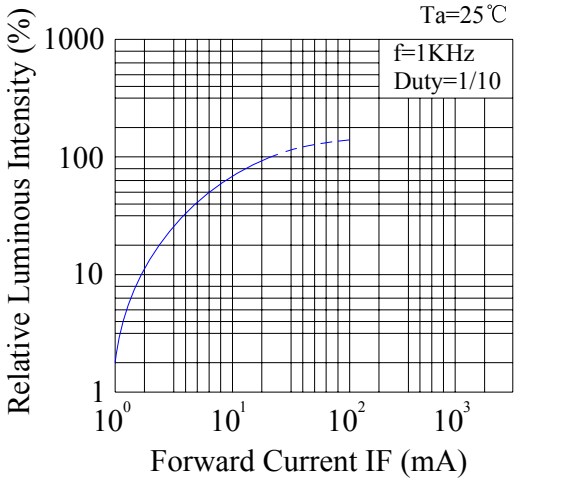
Forward Current & Forward Voltage



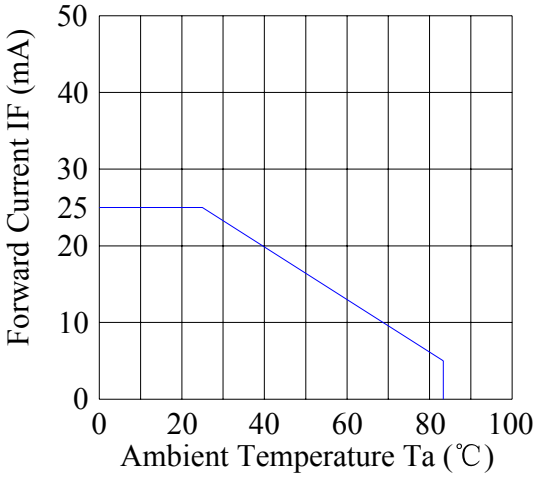
Luminous Intensity & Ambient Temperature



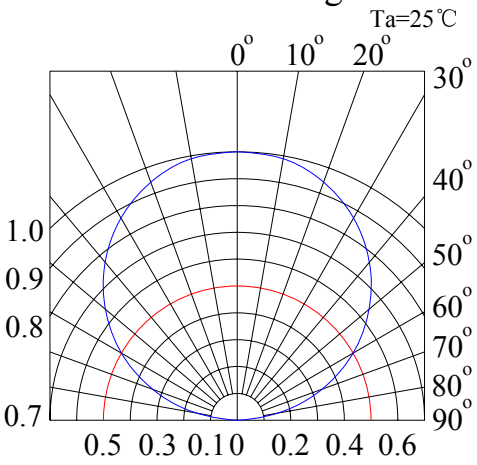
Luminous Intensity & Forward Current



Forward Current Derating Curve



Radiation Diagram



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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%.

1) Test Items and Results:

No.	Test Item	Test Hours/Cycles	Test Conditions	Sample Size	Ac/Re
1	Resistance to Soldering Heat	6 Min	Tsld=260±5℃, Min. 5sec	25pcs	0/1
2	Thermal Shock	300 Cycles	H: +100℃ 5min ∫ 10 sec L: -10℃ 5min	25pcs	0/1
3	Temperature Cycle	300 Cycles	H: +100℃ 15min ∫ 5min L: -40℃ 15min	25pcs	0/1
4	High Temperature Storage	1000Hrs.	Temp: 100℃	25pcs	0/1
5	DC Operating Life	1000Hrs.	IF=20mA	25pcs	0/1
6	Low Temperature Storage	1000Hrs.	Temp: -40℃	25pcs	0/1
7	High Temperature/ High Humidity	1000Hrs.	85℃/85%RH	25pcs	0/1

2) Criteria for Judging the Damage:

Item	Symbol	Test Conditions	Criteria for Judgment	
			Min	Max
Forward Voltage	VF	IF=20mA	---	F.V.*)×1.1
Reverse Current	IR	VR=5V	---	F.V.*)×2.0
Luminous Intensity	IV	IF=20mA	F.V.*)×0.7	---

*) F.V.: First Value.

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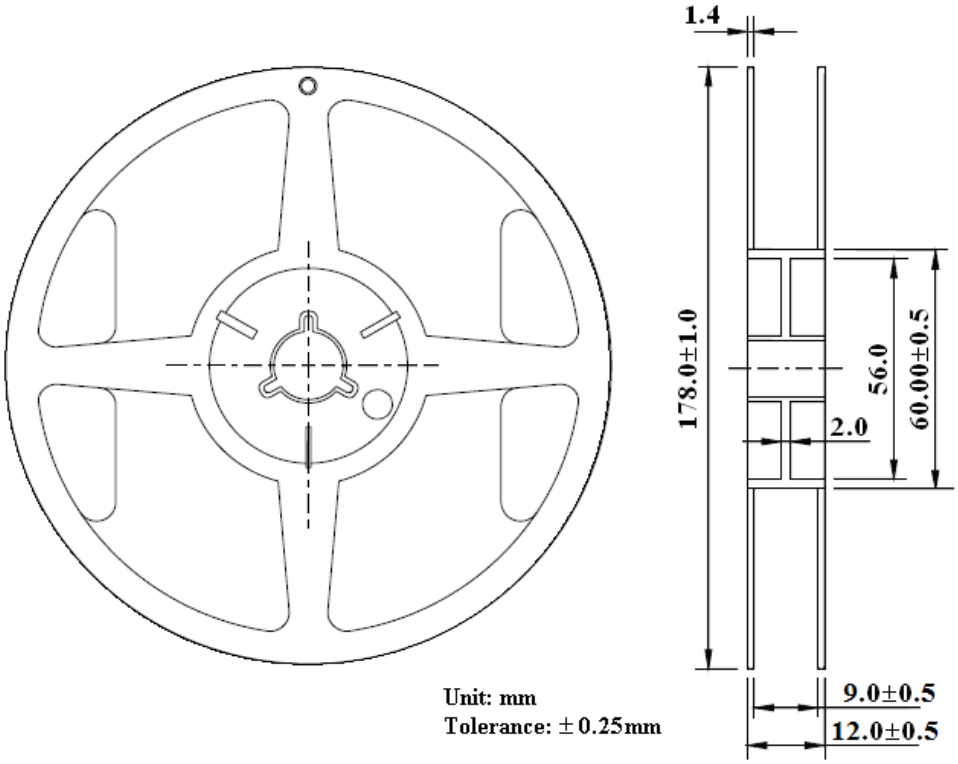
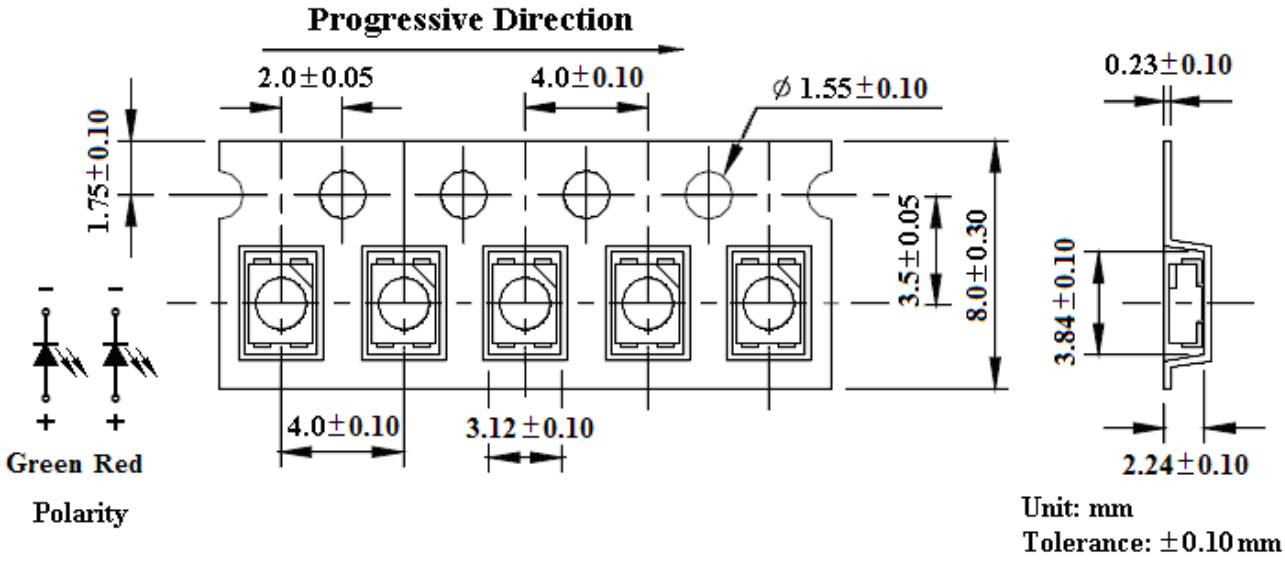
Reel Dimensions:



Carrier Tape Dimensions:

Loaded quantity 2000PCS per reel.



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Please read the following notes before using the product:

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℃ or less and 80%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℃ or less and 60%RH or less.

2.5 The LEDs should be used within 168 hours (7 days) after opening the package.

2.6 If the moisture adsorbent material has fabled away or the LEDs have exceeded the storage time, baking treatment should be performed using the following conditions. Baking treatment: 60±5℃ for 24 hours.

3. Soldering Condition

When soldering, for Lamp without stopper type and must be leave a minimum of 3mm clearance from the base of the lens to the soldering point.

To avoided the Epoxy climb up on lead frame and was impact to non-soldering problem, dipping the lens into the solder must be avoided.

Do not apply any external stress to the lead frame during soldering while the LED is at high temperature.

Recommended soldering conditions:

Soldering Iron		Wave Soldering	
Temperature Soldering Time	300℃ Max. 3 sec. Max. (one time only)	Pre-heat Pre-heat Time Solder Wave Soldering Time	100℃ Max. 60 sec. Max. 260℃ Max. 5 sec. Max.

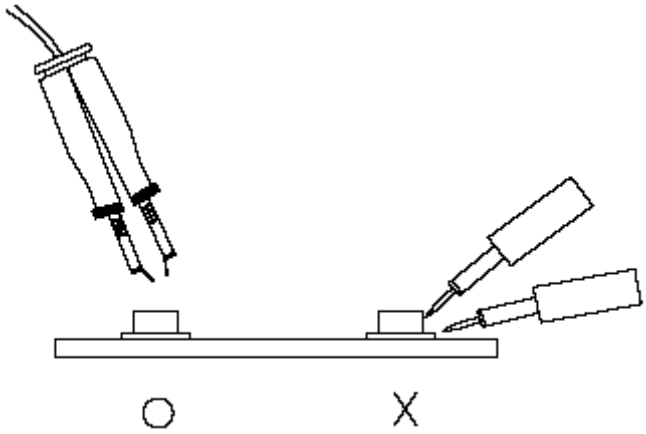
Note: Excessive soldering temperature and / or time might result in deformation of the LED lens or catastrophic failure of the LED.

4. Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 260℃ for 5 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. Caution in ESD

Static Electricity and surge damages the LED. It is recommended to use a wrist band or anti-electrostatic glove when handling the LED. All devices, equipment and machinery must be properly grounded.