EVER-LED

RoHS Compliant
PB Free

Features:

- ◇ PLCC-2 package.
- ◇ White package.
- ◇ Optical indicator.
- ◇ Colorless clear window.
- ◇ Ideal for backlight and light pipe application.
- ◇ Inter reflector.
- ◇ Wide viewing angle.
- ◇ Suitable for automatic placement equipment.
- ◇ Suitable for vapor-phase reflow, Infrared reflow and wave solder processes.
- ◇ Available on tape and reel (8mm Tape).
- ◇ The product itself will remain within RoHS compliant Version.

Descriptions:

- ◇ This series is available in soft red, orange, yellow, green, blue and white. 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 where power is at a premium.
- ◇ 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 white emission.
- ◇ Utilizing advanced InGaN chip technology.

Applications:

- ◇ Automotive: Backlighting 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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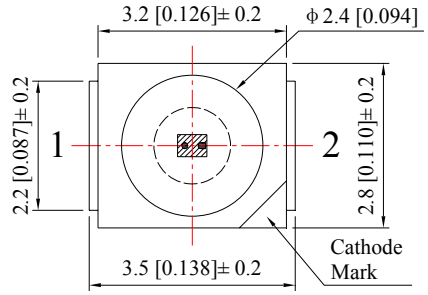
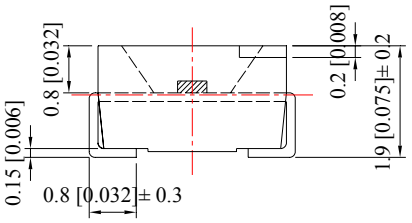
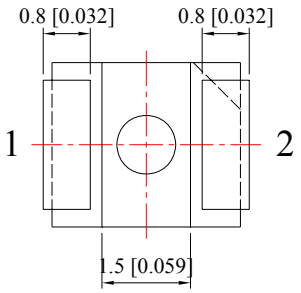
Package Dimension:

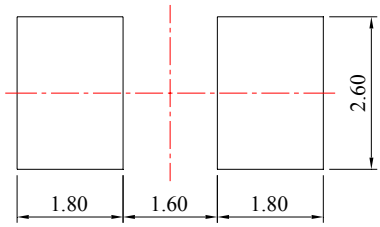


Polarity





Recommended Soldering Pad Dimensions



Unit: mm
Tolerance: ± 0.10mm

Part No.	Chip Material	Lens Color	Source Color
R352819-FLCD-W-2500	InGaN	Yellow Diffused	White

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	Max.	Unit
Power Dissipation	PD	95	mW
Peak Forward Current (1/10 Duty Cycle, 0.1ms Pulse Width)	IFP	100	mA
Continuous Forward Current	IF	25	mA
Reverse Voltage	VR	5	V
Electrostatic Discharge (HBM)	ESD	400	V
Operating Temperature Range	Topr	-40℃ to +80℃	
Storage Temperature Range	Tstg	-40℃ to +85℃	
Soldering Temperature	Tsld	260℃ for 5 Seconds	

Electrical Optical Characteristics at Ta=25℃

Parameters	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Luminous Intensity *	IV	1800	2500	---	mcd	IF=20mA (Note 1)
Luminous Flux *	Φv	6	7.5	---	lm	
Viewing Angle *	2θ1/2	---	120	---	Deg	IF=20mA (Note 2)
Chromaticity Coordinates	X	---	0.31	---		IF=20mA (Note 3)
	Y	---	0.32	---		
Color Temperature	CCT	5000	6500	---	K	IF=20mA
Forward Voltage	VF	2.80	3.20	3.80	V	IF=20mA
Reverse Current	IR	---	---	10	μA	V_R=5V

Notes:

1. Luminous Intensity (Flux) Measurement allowance is ± 10%.
2. θ1/2 is the off-axis angle at which the luminous intensity is half the axial luminous intensity.
3. It use many parameters that correspond to the CIE 1931 2°. X, Y, and Z are CIE 1931 2° values of Red, Green and Blue content of the measurement.

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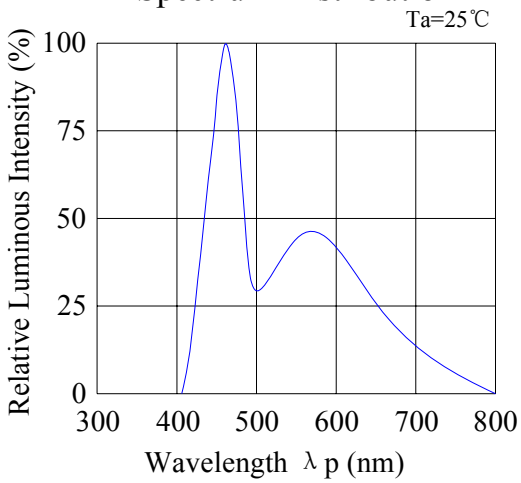
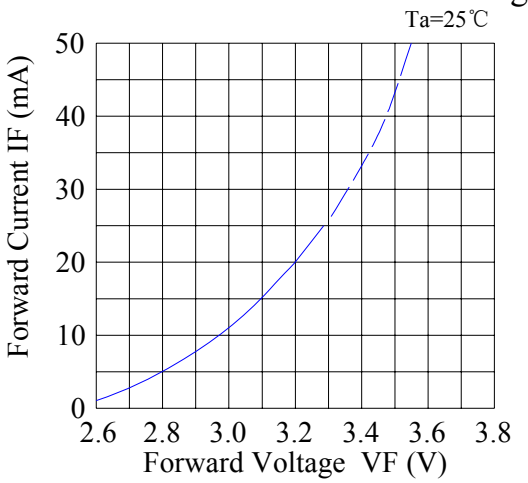
Typical Electrical / Optical Characteristics Curves
(25℃ Ambient Temperature Unless Otherwise Noted)

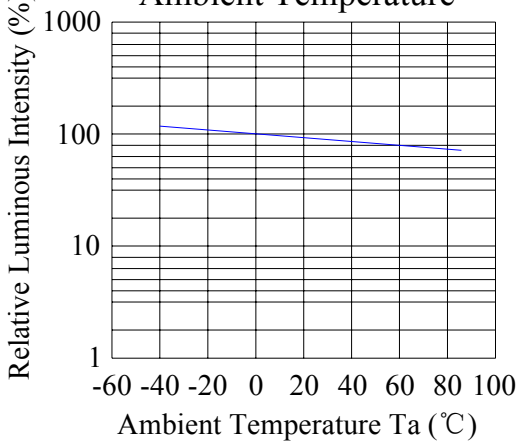
Spectrum Distribution



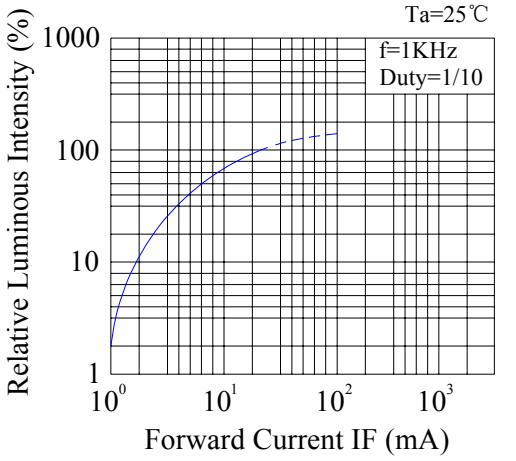
Forward Current & Forward Voltage



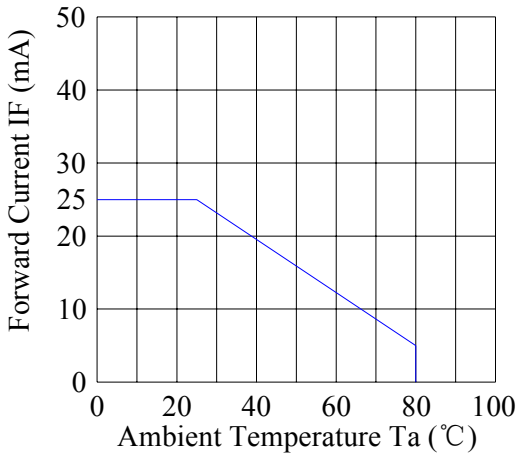
Luminous Intensity & Ambient Temperature



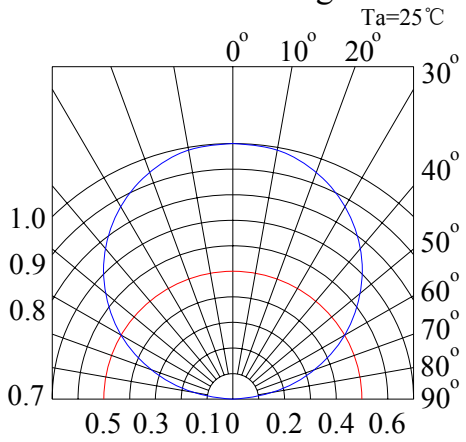
Luminous Intensity & Forward Current



Forward Current Derating Curve



Radiation Diagram



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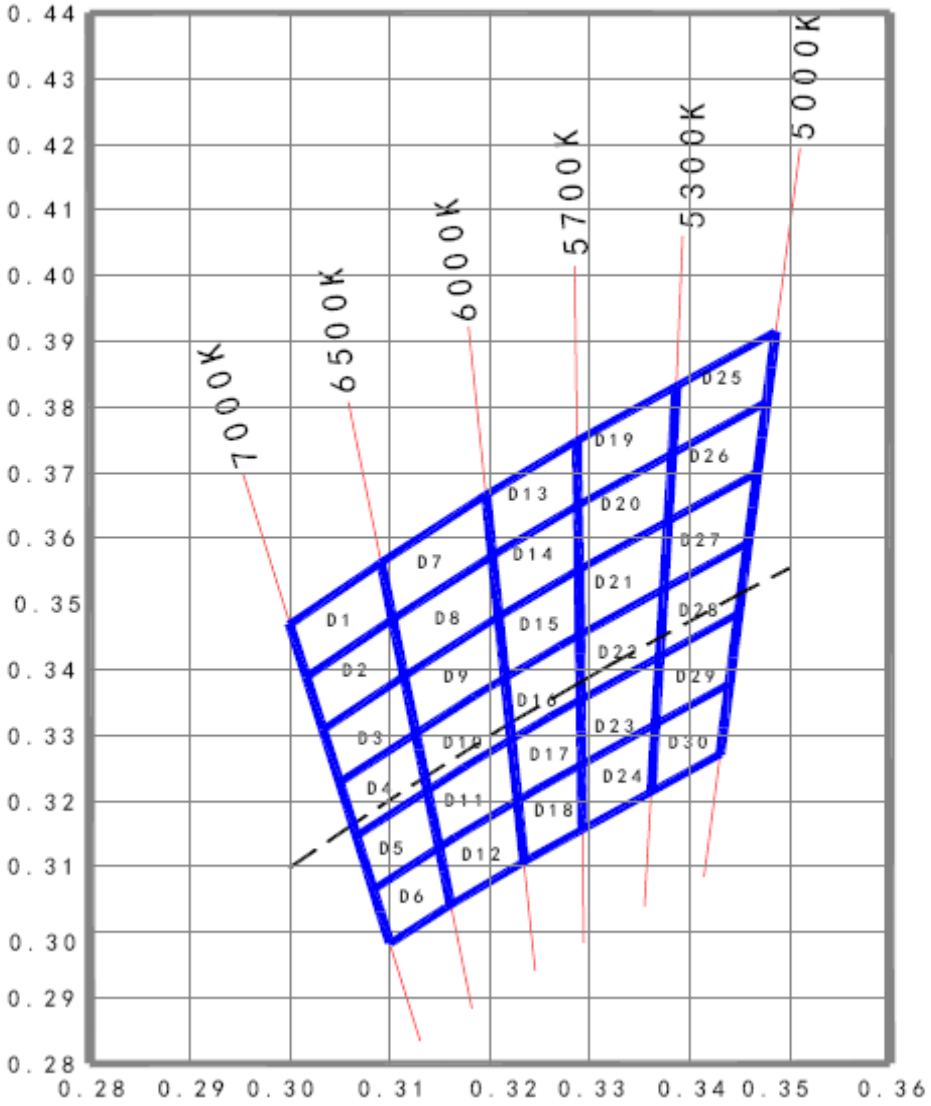
CIE Chromaticity Diagram:



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Chromaticity Coordinates Specifications for Bin Rank

(IF=20mA, Ta=25℃)

BIN Code	CCT (K)	CIE_X	CIE_Y	BIN Code	CCT (K)	CIE_X	CIE_Y
D25	5000-5300	0.3387	0.3832	D19	5300-7000	0.3287	0.3748
		0.3486	0.3915			0.3387	0.3832
		0.3477	0.3807			0.3382	0.3729
		0.3382	0.3729			0.3288	0.3650
D26	5000-5300	0.3382	0.3729	D20	5300-5700	0.3288	0.3650
		0.3477	0.3807			0.3382	0.3729
		0.3468	0.3700			0.3378	0.3626
		0.3378	0.3626			0.3289	0.3552
D27	5000-5300	0.3378	0.32626	D21	5300-5700	0.3289	0.3552
		0.3468	0.3700			0.3378	0.3626
		0.3458	0.3593			0.3374	0.3523
		0.3374	0.3523			0.3290	0.3453
D28	5000-5300	0.3374	0.3523	D22	5300-5700	0.3290	0.3453
		0.3458	0.3593			0.3374	0.3523
		0.3449	0.3485			0.3370	0.3420
		0.3370	0.3420			0.3291	0.3554
D29	5000-5300	0.3370	0.3420	D23	5300-5700	0.3291	0.3554
		0.3449	0.3485			0.3370	0.3240
		0.3440	0.3378			0.3366	0.3317
		0.3366	0.3317			0.3292	0.3255
D30	5000-5300	0.3366	0.3317	D24	5300-5700	0.3292	0.3255
		0.3440	0.3378			0.3366	0.3317
		0.3430	0.3271			0.3362	0.3214
		0.3362	0.3214			0.3293	0.3156
D13	5700-6000	0.3196	0.3666	D16	5700-6000	0.3215	0.3387
		0.3287	0.3748			0.3290	0.3453
		0.3288	0.3650			0.3291	0.3554
		0.3203	0.3574			0.3222	0.3294
D14	5700-6000	0.3203	0.3574	D17	5700-6000	0.3222	0.3294
		0.3288	0.3650			0.3291	0.3554
		0.3289	0.3552			0.3292	0.3255
		0.3209	0.3481			0.3228	0.3200

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BIN Code	CCT (K)	CIE_X	CIE_Y	BIN Code	CCT (K)	CIE_X	CIE_Y
D15	5700-6000	0.3209	0.3481	D18	5700-6000	0.3228	0.3200
		0.3289	0.3552			0.3292	0.3255
		0.3290	0.3453			0.3293	0.3156
		0.3215	0.3387			0.3234	0.3107
D7	6000-6500	0.3091	0.3563	D1	6500-7000	0.3000	0.3469
		0.3196	0.3666			0.3091	0.3563
		0.3203	0.3574			0.3103	0.3476
		0.3103	0.3476			0.3017	0.3389
D8	6000-6500	0.3103	0.3476	D2	6500-7000	0.3017	0.3389
		0.3203	0.3574			0.3103	0.3476
		0.3209	0.3481			0.3114	0.3390
		0.3114	0.3390			0.3033	0.3308
D9	6000-6500	0.3114	0.3390	D3	6500-7000	0.3033	0.3308
		0.3209	0.3481			0.3114	0.3390
		0.3215	0.3387			0.3126	0.3303
		0.3126	0.3303			0.3050	0.3227
D10	6000-6500	0.3126	0.3303	D4	6500-7000	0.3050	0.3227
		0.3215	0.3387			0.3126	0.3303
		0.3222	0.3294			0.3138	0.3216
		0.3138	0.3216			0.3067	0.3146
D11	6000-6500	0.3138	0.3216	D5	6500-7000	0.3067	0.3146
		0.3222	0.3294			0.3138	0.3216
		0.3228	0.3200			0.3149	0.3129
		0.3149	0.3129			0.3083	0.3065
D12	6000-6500	0.3149	0.3129	D6	6500-7000	0.3083	0.3065
		0.3228	0.3200			0.3149	0.3129
		0.3234	0.3107			0.3161	0.3041
		0.3161	0.3041			0.3100	0.2983

Notes:

1. Color coordinates measurement allowance is ± 0.01.

2. One delivery will include up to two consecutive color ranks and three luminous intensity ranks of the products the quantity-ratio of the ranks is decided by Ever-led.

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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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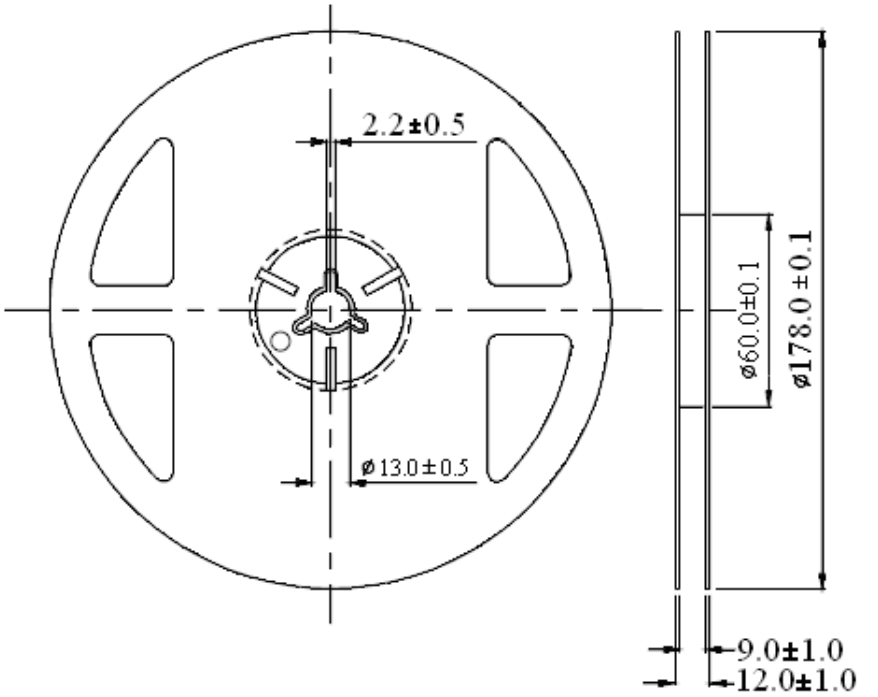
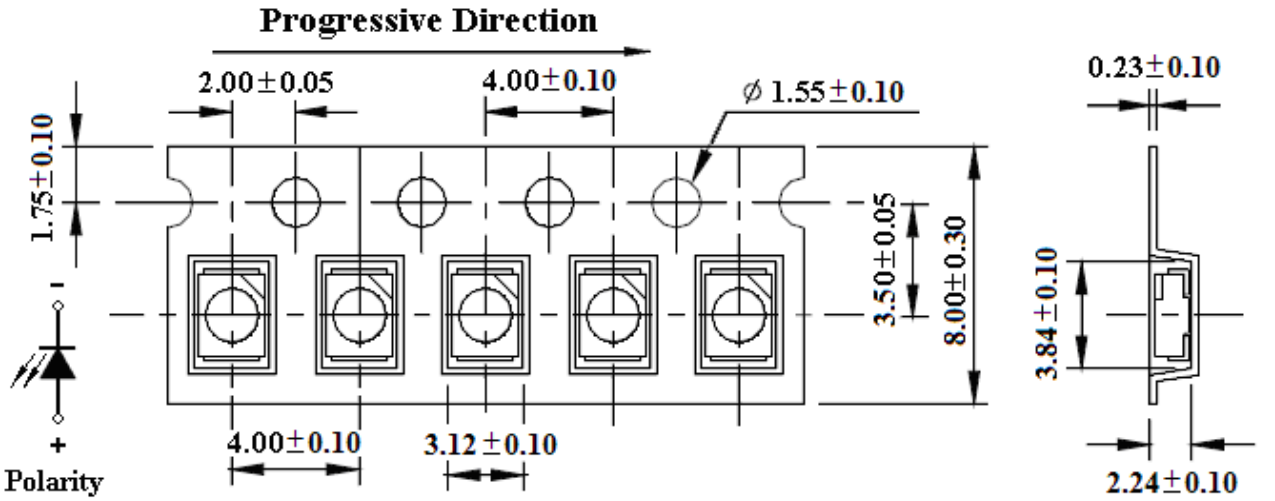
Reel Dimensions:



Unit: mm
Tolerance: ±0.25mm

Carrier Tape Dimensions:

Loaded quantity 2000PCS per reel.



Unit: mm
Tolerance: ±0.10mm

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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.

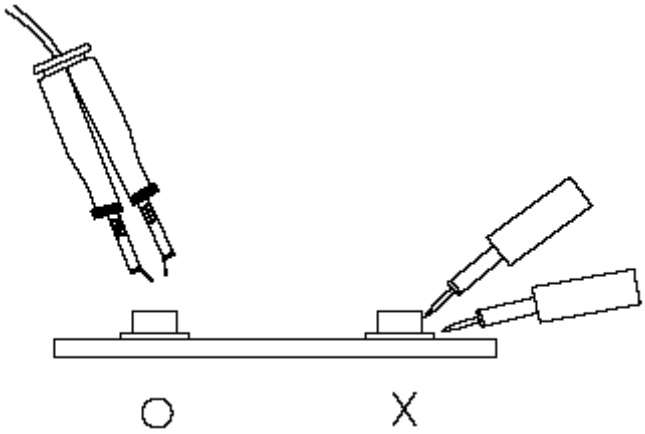
Note: Excessive soldering temperature and / or time might result in deformation of the LED lens or catastrophic failure of the LED.

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.