

SMD ■ Side View LEDs

99-216UMC/3541B36/TR8-T

Features

- Side view white LED
- White SMT package
- Lead frame package with individual 2 pins
- Wide viewing angle
- Soldering methods: IR reflow soldering
- Pb-free
- The product itself will remain within RoHS compliant version.



Descriptions

- Due to the package design, 99-216 has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combing blue chip and special phosphor. This feature makes the LED ideal for light guide application.

Applications

- LCD Back Light
- Mobile phones
- Indicators
- Illuminations
- Switch Lights

Device Selection Guide

Chip	Emitted Color	Resin Color
Material		
InGaN	Pure White	Water Clear

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	5	V
Forward Current	I _F	30	mA
Peak Forward Current (Duty 1/10 @10ms)	I _{FP}	100	mA
Power Dissipation	P _d	110	mW
Electrostatic Discharge(HBM)* ¹	ESD	2000	V
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.	

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

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I _v	1850	-----	2200	mcd	I _F =20mA
Viewing Angle	2θ _{1/2}	-----	110	-----	deg	I _F =20mA
Forward Voltage	V _F	2.95	-----	3.45	V	I _F =20mA
Reverse Current	I _R	-----	-----	50	μA	V _R =5V

Notes:

- 1.Tolerance of Luminous Intensity: ±11%
- 2.Tolerance of Forward Voltage: ±0.05V

Bin Range of Luminous Intensity

Bin Code	Min.	Max.	Unit	Condition
35	1850	1900	mcd	If=20mA
36	1900	1950		
37	1950	2000		
38	2000	2050		
39	2050	2100		
40	2100	2150		
41	2150	2200		

Note: Tolerance of Luminous Intensity: $\pm 11\%$

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
6-1	2.95	3.05	V	I _F =20mA
6-2	3.05	3.15		
7-1	3.15	3.25		
7-2	3.25	3.35		
8-1	3.35	3.45		

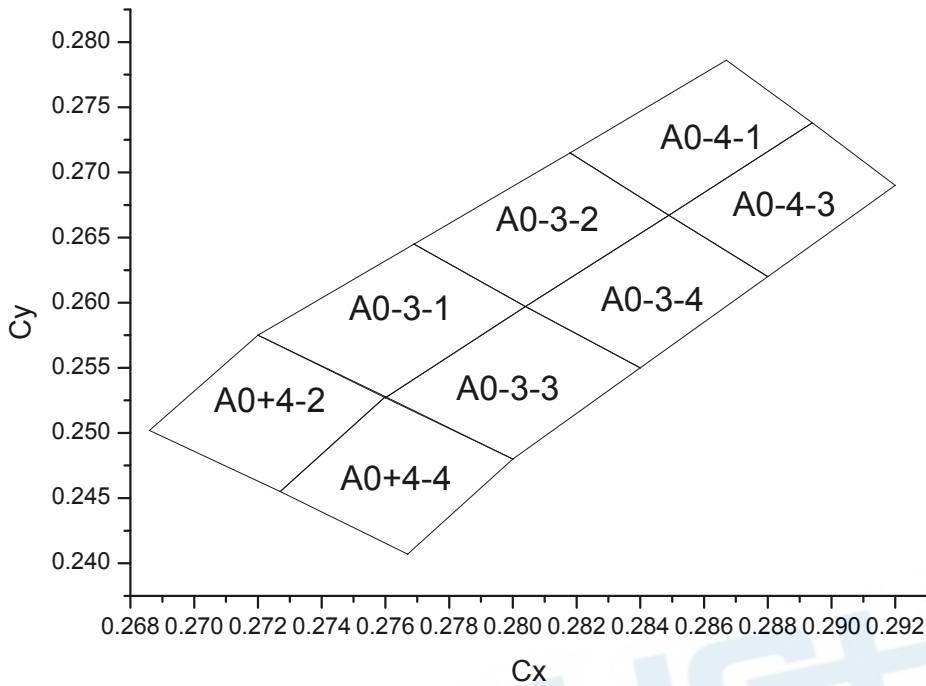
Note: Tolerance of Forward Voltage: $\pm 0.05V$

Bin Code of Chromaticity Coordinates

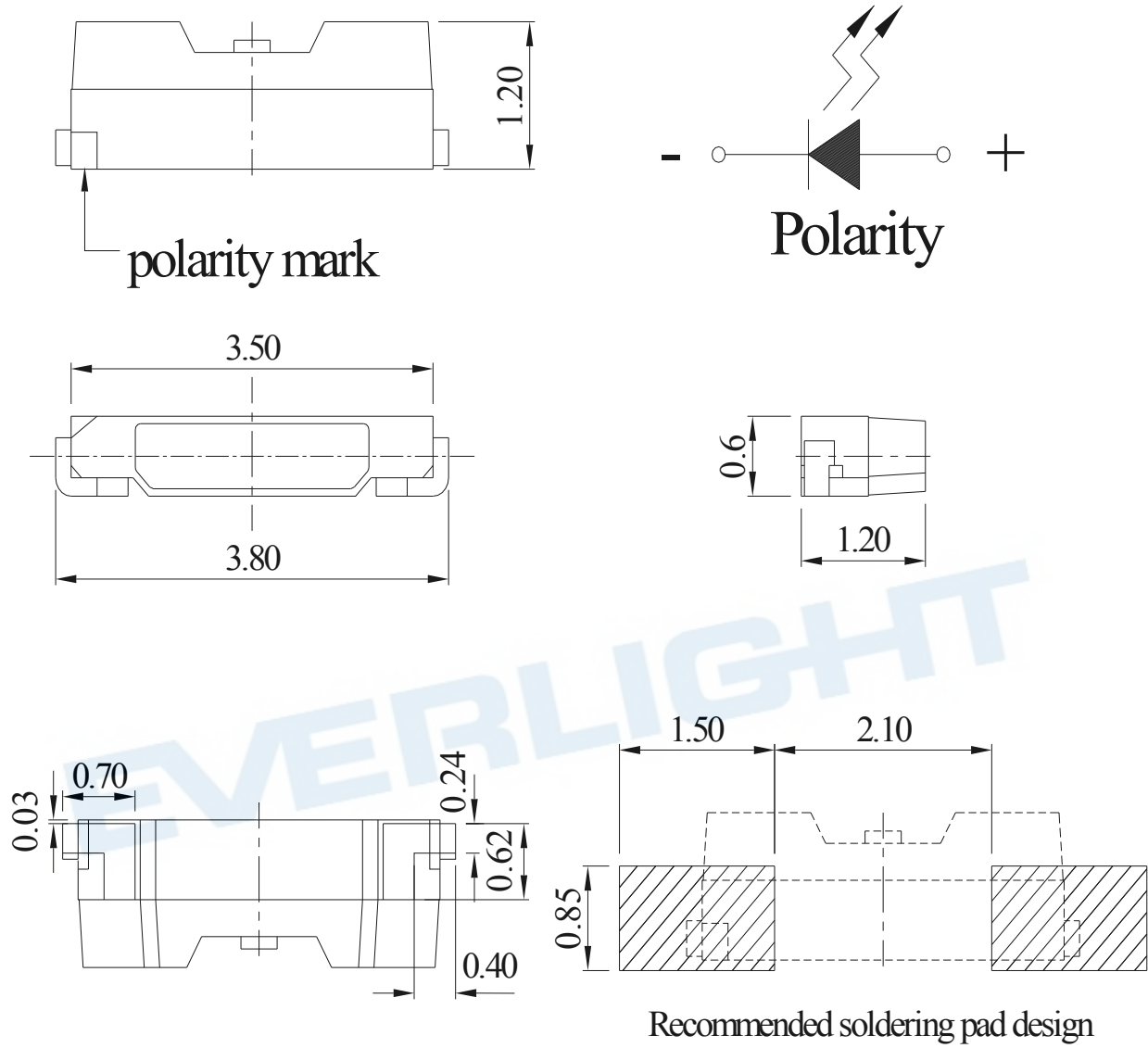
Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
A0+4-2	0.2727	0.2455	A0-4-1	0.2849	0.2667
	0.2686	0.2502		0.2818	0.2715
	0.2720	0.2575		0.2867	0.2786
	0.2760	0.2528		0.2894	0.2738
A0+4-4	0.2767	0.2407	A0-4-3	0.2880	0.2620
	0.2727	0.2455		0.2849	0.2667
	0.2760	0.2528		0.2894	0.2738
	0.2800	0.2480		0.2920	0.2690
A0-3-1	0.2760	0.2527	A0-3-2	0.2804	0.2597
	0.2720	0.2575		0.2769	0.2645
	0.2769	0.2645		0.2818	0.2715
	0.2804	0.2597		0.2849	0.2667
A0-3-3	0.2800	0.2480	A0-3-4	0.2840	0.255
	0.2760	0.2527		0.2804	0.2597
	0.2804	0.2597		0.2849	0.2667
	0.2840	0.2550		0.2880	0.2620

Note: Tolerance of Chromaticity Coordinates: ± 0.01

The C.I.E. 1931 Chromaticity Diagram

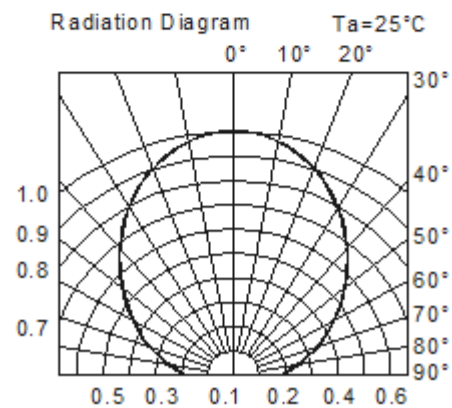
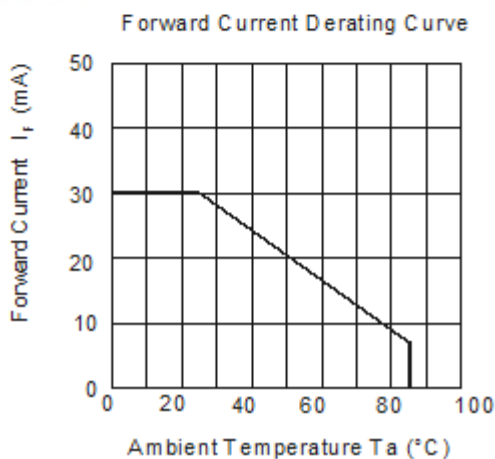
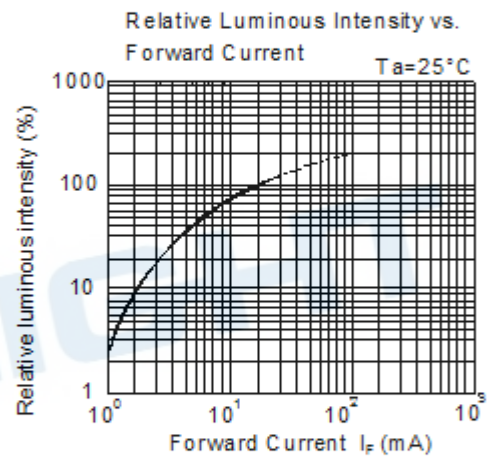
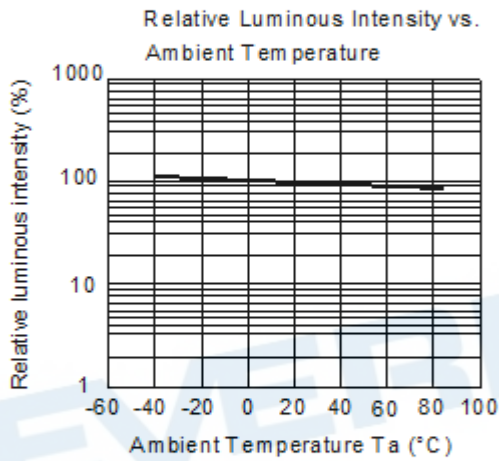
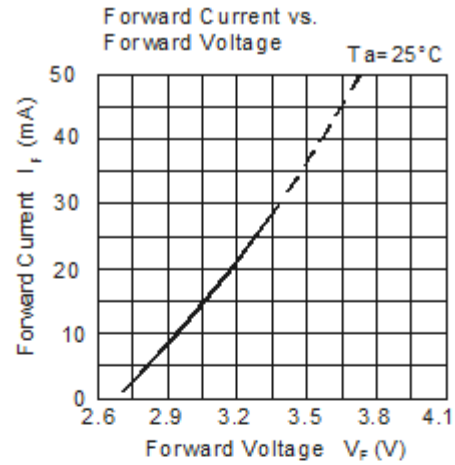
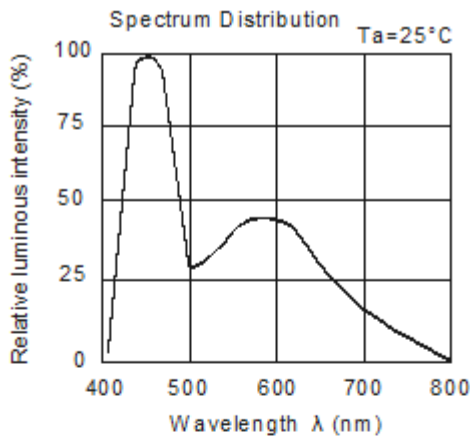


Package Outline Dimensions



Note: The tolerance unless mentioned is ± 0.1 mm, unit = mm.

Typical Electro-Optical Characteristics Curves

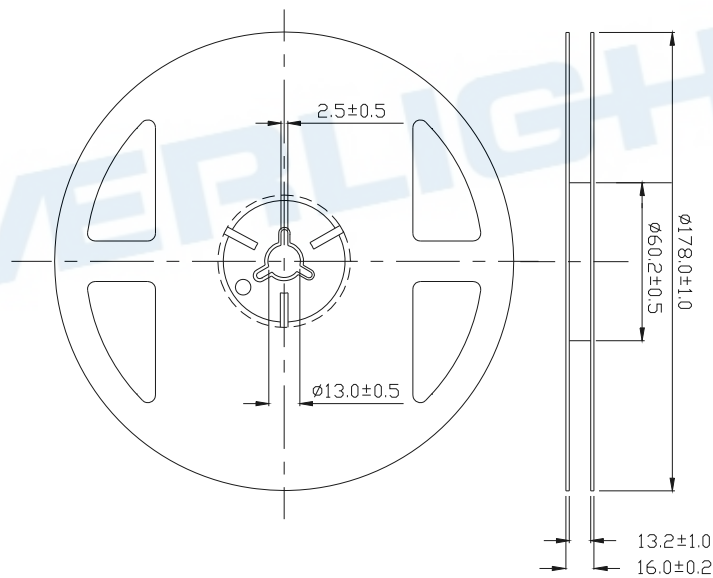


Label Explanation

CAT: Luminous Intensity Rank
 HUE: Chromaticity Coordinates
 REF: Forward Voltage Rank

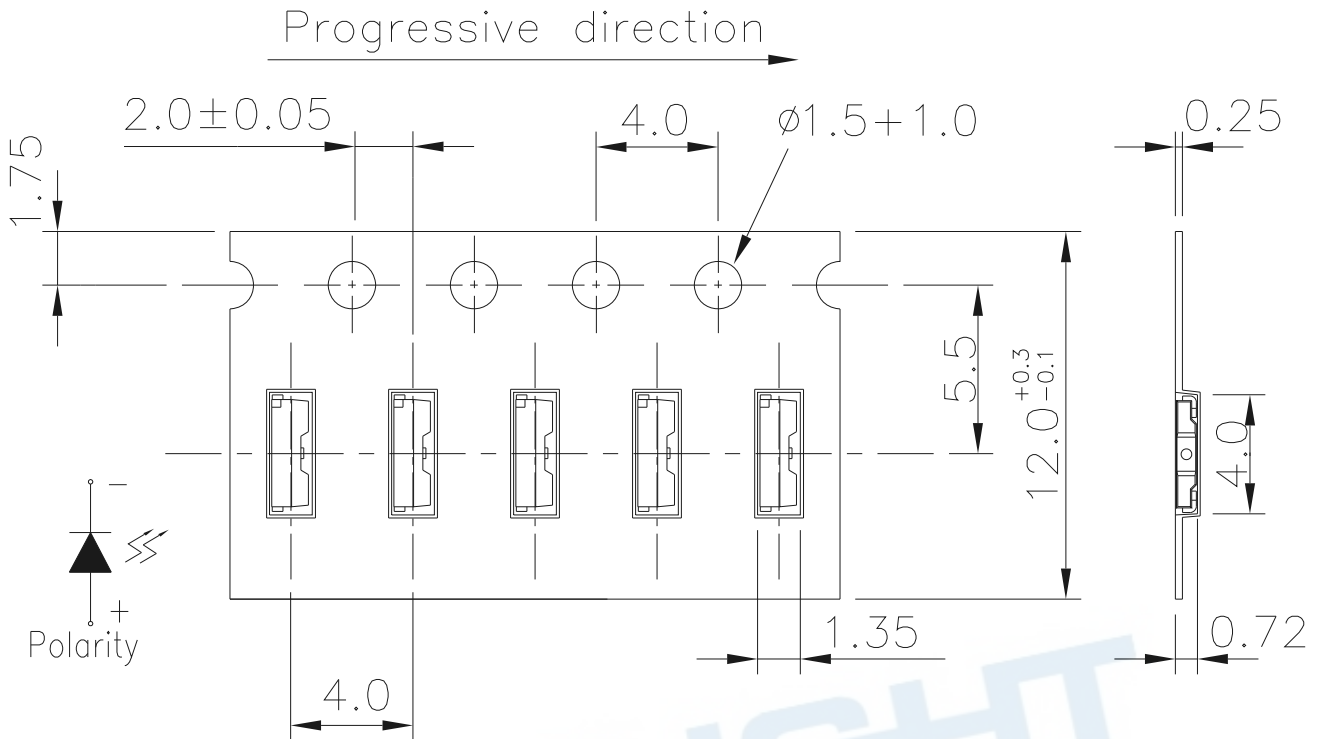


Reel Dimensions



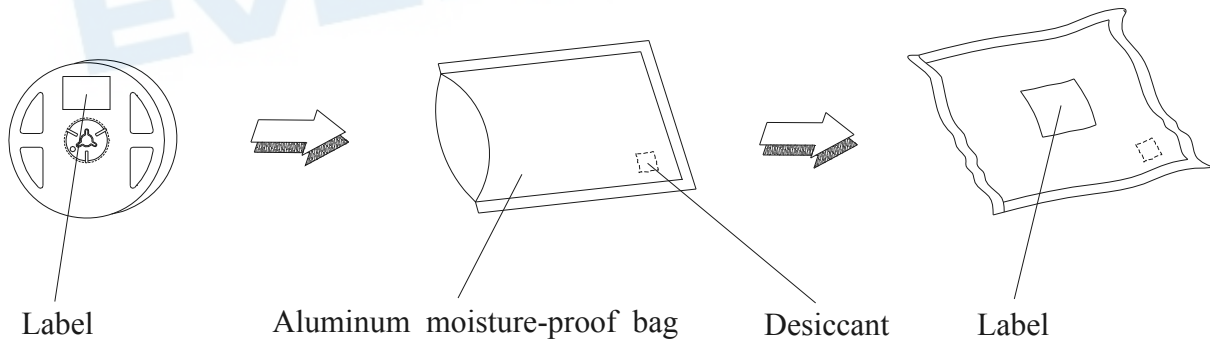
Note: The tolerance unless mentioned is ± 0.1 mm, unit = mm.

Carrier Tape Dimensions: Loaded Quantity 2000 pcs. Per Reel



Note: The tolerance unless mentioned is ± 0.1 mm, unit = mm.

Moisture Resistant Packaging



Reliability Test Items and Conditions

The reliability of products shall be satisfied with items listed below.

Confidence level : 90%

LTPD : 10%

No.	Item	Test Conition		Test Hours/ Times	Criteria (at std. IF)
		Temp./ Humidity	IF (mA)		
1	Reflow Soldering	Temp.: 260°C±5°C Max. 10 sec.		2 times	△Iv < ±5% △VF < ±5%
2	Thermal Cycle	-40°C ~ 100°C 30min. (5min.) 30min.		200 cycles	Iv > 70%, VF < 110%, △Cx < 0.02, △Cy < 0.02
3	Thermal Shock	-10°C ~ 100°C 20min. (<15sec.) 20min.		200 cycles	
4	Low Temp. Storage	TA=-40°C	--	1000 hrs	
5	High Temp. Storage	TA=100°C	--	1000 hrs	
6	Temp. Humidity Storage	TA=60°C/ 90%RH	--	1000 hrs	
7	Steady State Operating Life of Low Temp.	TA=-40°C	20	1000 hrs	
8	Steady State Operating Life Condition 1	TA=25°C/ Room Hum.	20	1000 hrs	
9	Steady State Operating Life Condition 2	TA=60°C	20	1000 hrs	
10	Steady State Operating Life of High Temp.	TA=85°C	5	1000 hrs	
11	Steady State Operating Life of High Humidity Heat	TA=60°C/ 90%RH	20	1000 hrs	

※ Sampling for each test item: 22 (pcs.)

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 1 year under 30°C or less and 60% RH or less.

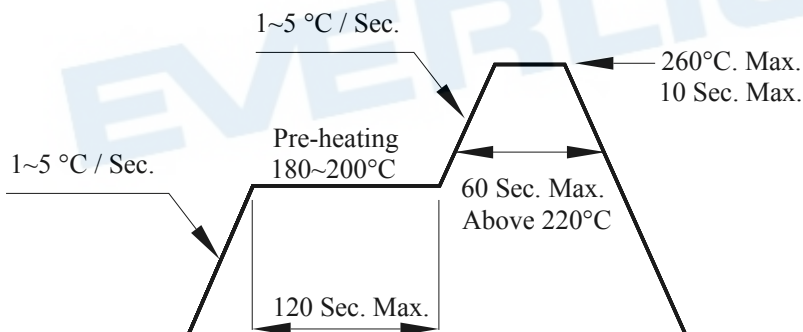
If unused LEDs remain, it should be stored in moisture proof packages.

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.

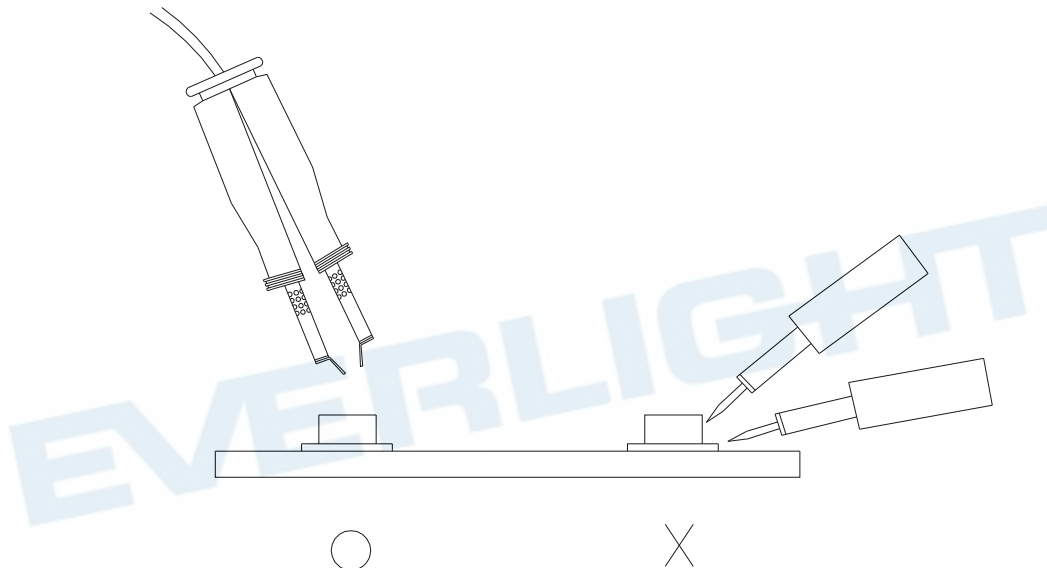
3.4 After soldering, do not warp the circuit board.

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. Handling Indications

During processing, mechanical stress on the surface should be minimized as much as possible. Sharp objects of all types should not be used to pierce the sealing compound

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