

**Technical Data Sheet****Side View LEDs (Height 0.8mm)****99-213UMC/S1099-4/TR8****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, 99-213 has wide viewing angle, low power consumption and white LEDs are devices which are materialized by combing blue chips 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**

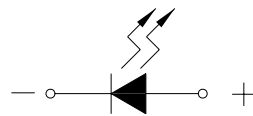
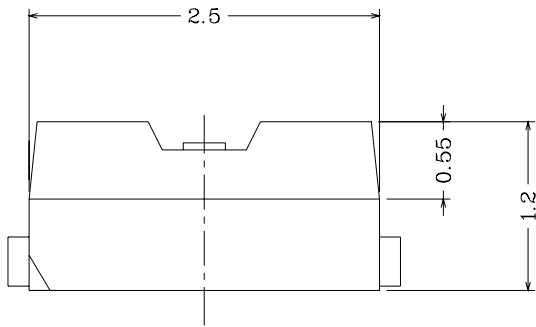
<b>Chip</b>	<b>Emitted Color</b>	<b>Resin Color</b>
<b>Material</b>		
InGaN	Pure White	Water Clear

**Technical Data Sheet**

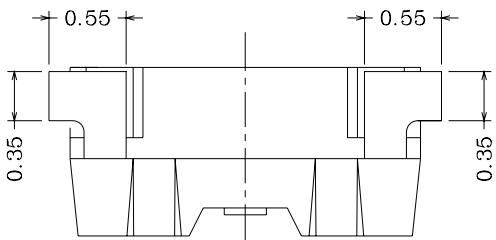
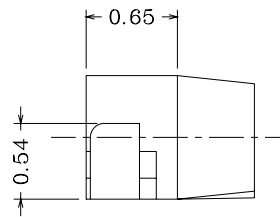
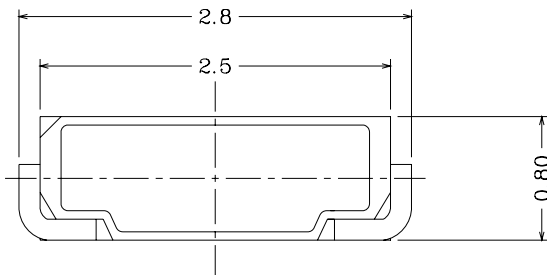
**Side View LEDs (Height 0.8mm)**

**99-213UMC/S1099-4/TR8**

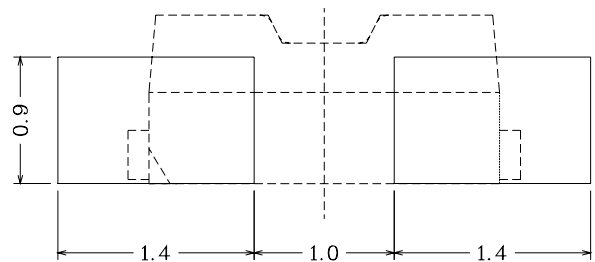
**Package Outline Dimensions**



Polarity



**Recommended soldering pad design**



**Note:** The tolerances unless mentioned are  $\pm 0.1$ mm, unit = mm.

**Technical Data Sheet**
**Side View LEDs (Height 0.8mm)**
**99-213UMC/S1099-4/TR8**
**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	30	mA
Peak Forward Current (Duty 1/10 @10ms)	I <sub>FP</sub>	100	mA
Power Dissipation	P <sub>d</sub>	110	mW
Electrostatic Discharge(HBM)* <sup>1</sup>	ESD	2000	V
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +90	°C
Soldering Temperature	T <sub>sol</sub>	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 <sub>v</sub>	1800	-----	2000	mcd	I <sub>F</sub> =20mA
Viewing Angle	2θ <sub>1/2</sub>	-----	110	-----	deg	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	2.95	-----	3.45	V	I <sub>F</sub> =20mA
Forward Voltage	V <sub>F</sub>	2.50	-----	3.20	V	I <sub>F</sub> =2mA
Reverse Current	I <sub>R</sub>	-----	-----	50	μA	V <sub>R</sub> =5V

**Note:**

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

**Technical Data Sheet****Side View LEDs (Height 0.8mm)****99-213UMC/S1099-4/TR8****Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
34	1800	1850	mcd	I <sub>F</sub> =20mA
35	1850	1900		
36	1900	1950		
37	1950	2000		

**Note:** Tolerance of Luminous Intensity:  $\pm 11\%$ **Bin Range of Forward Voltage**

Group	Bin Code	Min.	Max.	Unit	Condition
6	6-1	2.95	3.05	V	I <sub>F</sub> =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:  $\pm 0.05V$

**Technical Data Sheet****Side View LEDs (Height 0.8mm)****99-213UMC/S1099-4/TR8****Bin Range of Forward Voltage**

Bin Code	Min.	Max.	Unit	Condition
0C	2.50	2.55	V	I <sub>F</sub> =2mA
0B	2.55	2.60		
0A	2.60	2.65		
00	2.65	2.70		
01	2.70	2.75		
02	2.75	2.80		
03	2.80	2.85		
04	2.85	2.90		
05	2.90	2.95		
06	2.95	3.00		
07	3.00	3.05		
08	3.05	3.10		
09	3.10	3.15		
10	3.15	3.20		

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

**Technical Data Sheet**
**Side View LEDs (Height 0.8mm)**
**99-213UMC/S1099-4/TR8**
**Bin Range of Chromaticity Coordinates**
 **$I_F=20mA$** 

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
A0-4-1	0.2849	0.2667	A0-3-2	0.2804	0.2597
	0.2818	0.2715		0.2769	0.2645
	0.2867	0.2786		0.2818	0.2715
	0.2894	0.2738		0.2849	0.2667
A0-4-2	0.2894	0.2738	A0-3-4	0.2840	0.2550
	0.2867	0.2786		0.2804	0.2597
	0.2917	0.2857		0.2849	0.2667
	0.2938	0.2808		0.2880	0.2620
A0-4-3	0.2880	0.2620	B5-3-1	0.2938	0.2808
	0.2849	0.2667		0.2917	0.2857
	0.2894	0.2738		0.2959	0.2903
	0.2920	0.2690		0.2978	0.2854
A0-4-4	0.2920	0.2690	B5-3-3	0.2960	0.2760
	0.2894	0.2738		0.2938	0.2808
	0.2938	0.2808		0.2978	0.2854
	0.2960	0.2760		0.2998	0.2805

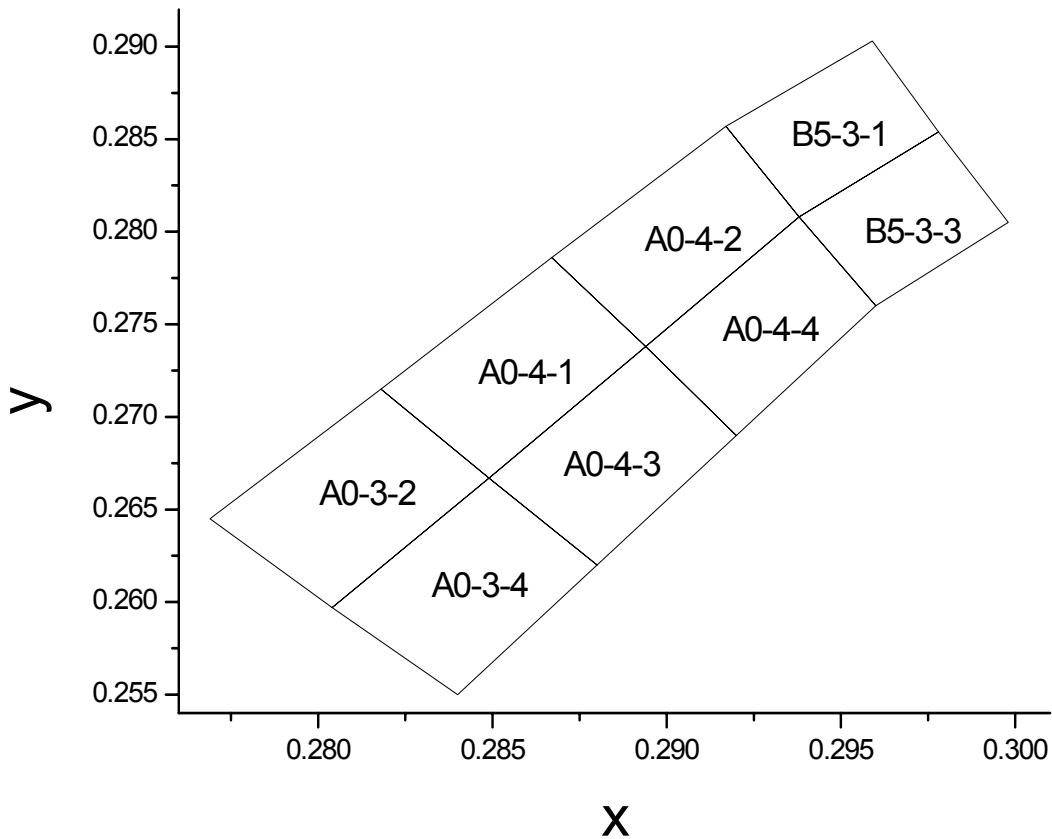
**Note:** Tolerance of Chromaticity Coordinates :  $\pm 0.01$

**Technical Data Sheet**

**Side View LEDs (Height 0.8mm)**

**99-213UMC/S1099-4/TR8**

**The C.I.E. 1931 Chromaticity Diagram**

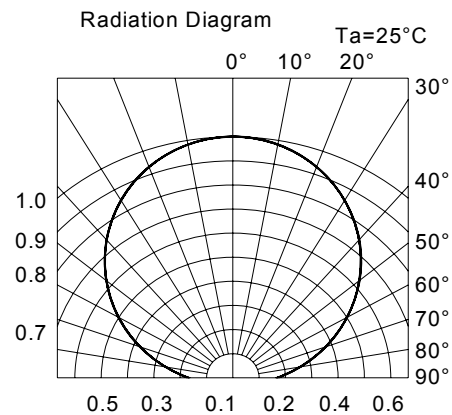
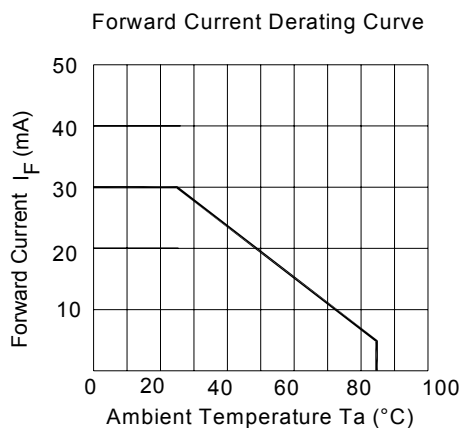
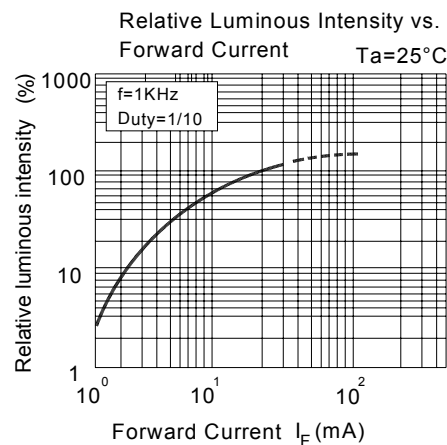
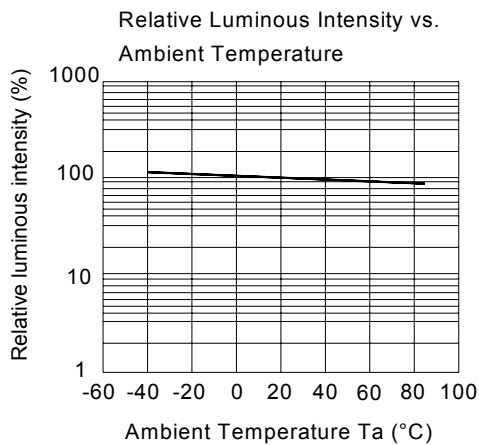
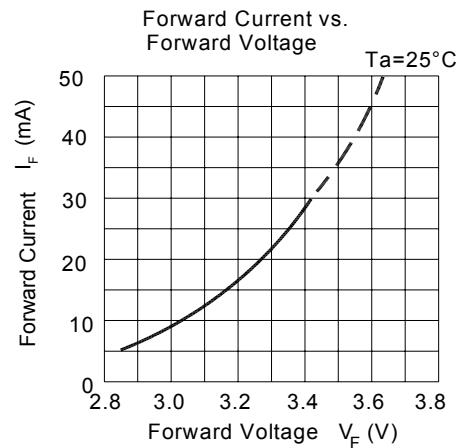
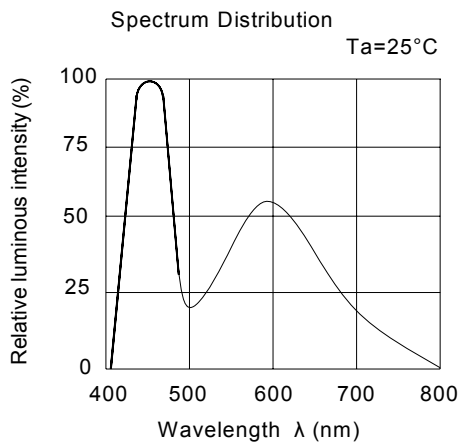


## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

**99-213UMC/S1099-4/TR8**

#### Typical Electro-Optical Characteristics Curves





## Technical Data Sheet

### Side View LEDs (Height 0.8mm)

**99-213UMC/S1099-4/TR8**

#### Label Explanation

CAT: Luminous Intensity Rank

HUE: Chromaticity Coordinates

REF: Forward Voltage Rank

CPN :  
P/N : XXXXXXXXXXXX  
XXXXXXXXXX

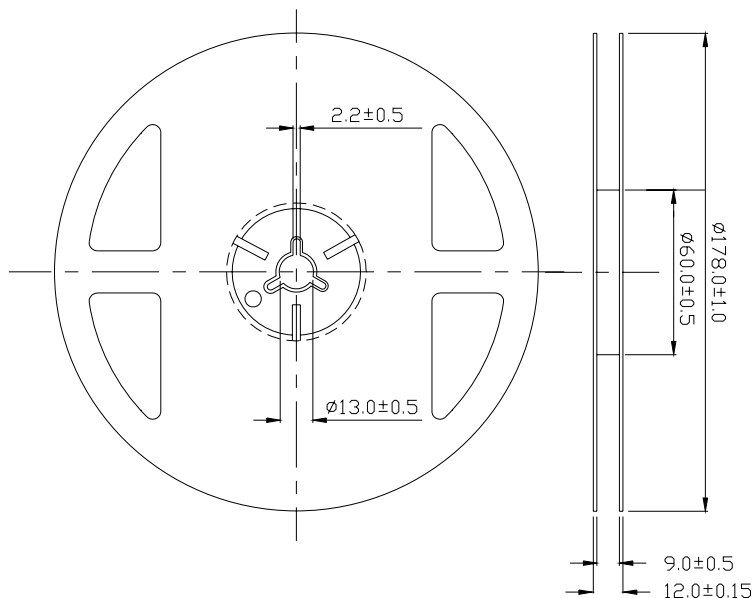
QTY : XXX  
XXXXXXXXXX

LOT NO : XXXXXXXXXXXX  
XXXXXXXXXX

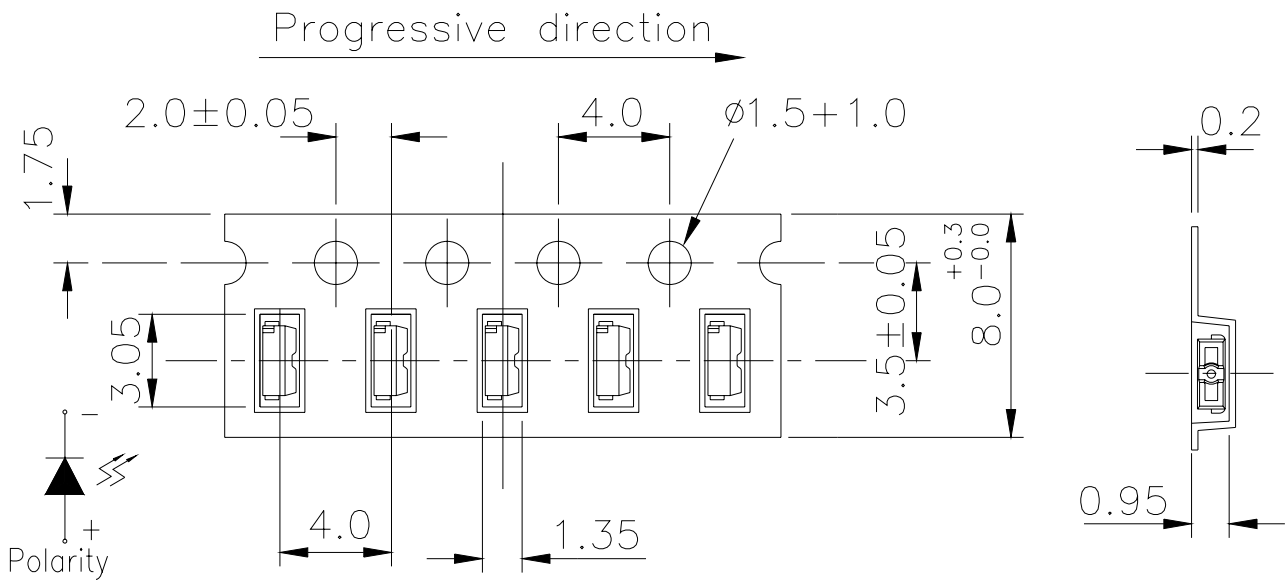
Reference : XXXXXXXXXXXX  
XXXXXXXXXX

MADE IN TAIWAN

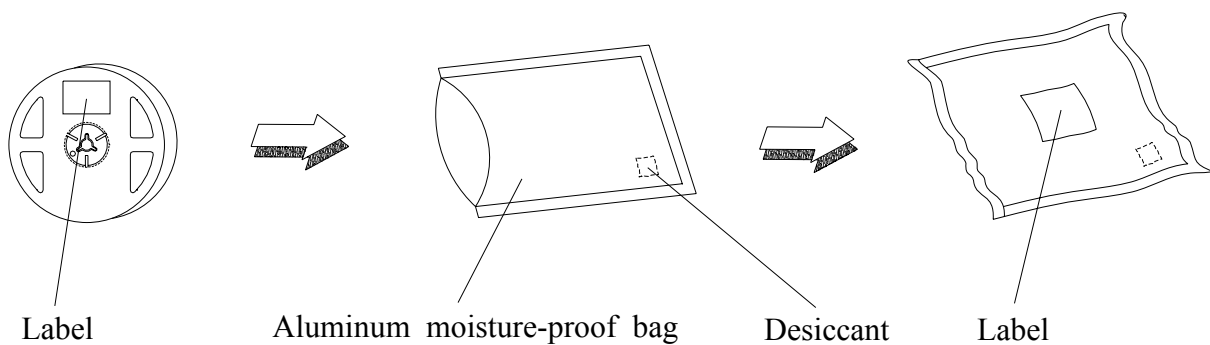
#### Reel Dimensions



**Note:** The tolerances unless mentioned are  $\pm 0.1$ mm, unit = mm.

**Technical Data Sheet**
**Side View LEDs (Height 0.8mm)**
**99-213UMC/S1099-4/TR8**
**Carrier Tape Dimensions: Loaded Quantity 2000 pcs. Per Reel**


**Note:** The tolerances unless mentioned are  $\pm 0.1$ mm, unit = mm.

**Moisture Resistant Packaging**


**Technical Data Sheet**
**Side View LEDs (Height 0.8mm)**
**99-213UMC/S1099-4/TR8**
**Reliability Test Items and Conditions**

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

Confidence level : 90%

LTPD : 10%

No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Reflow Soldering	Temp. : 260°C±5°C Max. 10 sec.	6 Min.	22 pcs.	0/1
2	Temperature Cycle	H : +100°C 15min ∫ 5 min L : -40°C 15min	300 Cycles	22 pcs.	0/1
3	Thermal Shock	H : +100°C 5min ∫ 10 sec L : -10°C 5min	300 Cycles	22 pcs.	0/1
4	High Temperature Storage	Temp. : 100°C	1000 Hrs.	22 pcs.	0/1
5	Low Temperature Storage	Temp. : -40°C	1000 Hrs.	22 pcs.	0/1
6	DC Operating Life	I <sub>F</sub> = 20 mA / 25°C	1000 Hrs.	22 pcs.	0/1
7	High Temperature / High Humidity	85°C/85%RH	1000 Hrs.	22 pcs.	0/1

**Technical Data Sheet****Side View LEDs (Height 0.8mm)****99-213UMC/S1099-4/TR8****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 168 hours under 30°C or less and 60% RH or less.

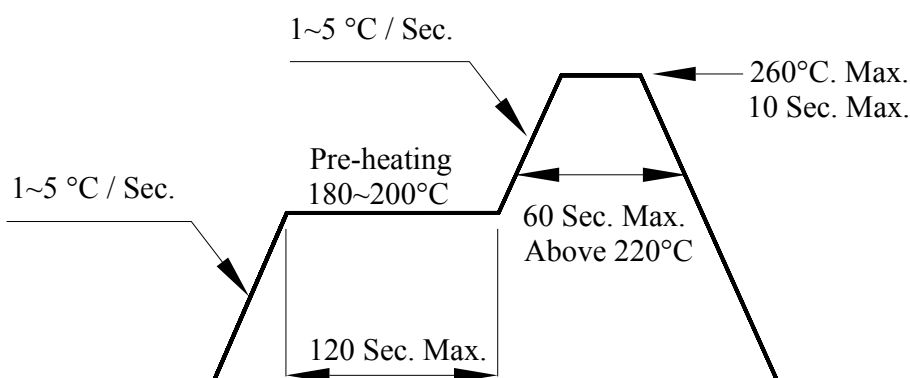
If unused LEDs remain, it should be stored in moisture proof packages.

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.

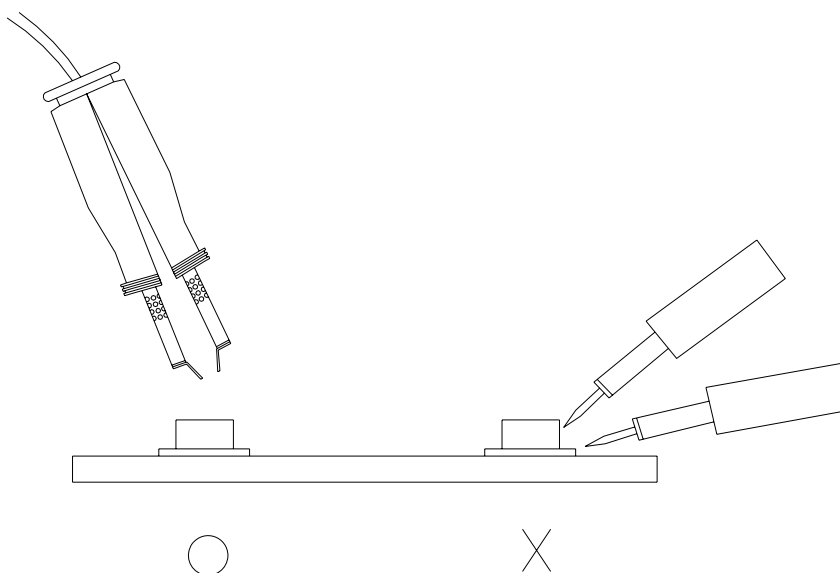
3.4 After soldering, do not warp the circuit board.

**Technical Data Sheet****Side View LEDs (Height 0.8mm)****99-213UMC/S1099-4/TR8****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

**EVERLIGHT ELECTRONICS CO., LTD.***Office: No 25, Lane 76, Sec 3, Chung Yang Rd,  
Tucheng, Taipei 236, Taiwan, R.O.C**Tel: 886-2-2267-2000, 2267-9936**Fax: 886-2267-6244, 2267-6189, 2267-6306**<http://www.everlight.com>*