



Technical Data Sheet

White Chip LED With Right Angle Lens

48-213UTD/S523/TR8

Features

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Mono-color type.
- Pb-free.
- Extra Tin-plating added to ensure excellent solder ability.
- The product itself will remain within RoHS compliant version.



Descriptions

- The 48-213 SMD Taping is much smaller than lead frame type components, thus enable smaller board size, higher packing density, reduced storage space and finally smaller equipment to be obtained.
- Besides, lightweight makes them ideal for miniature applications. etc.

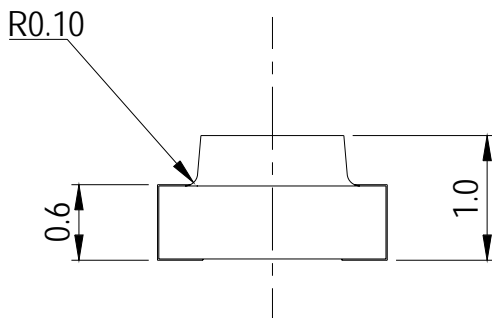
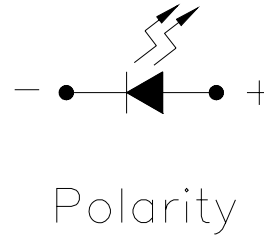
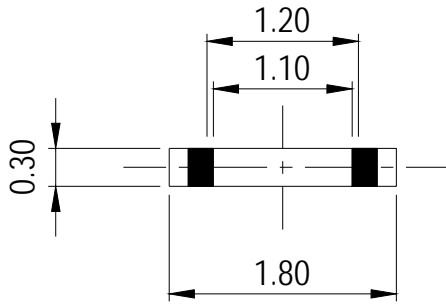
Applications

- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

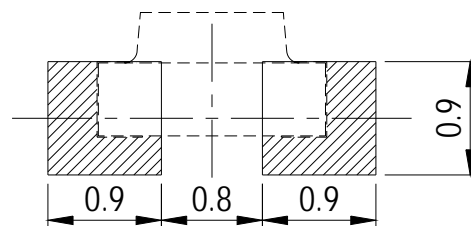
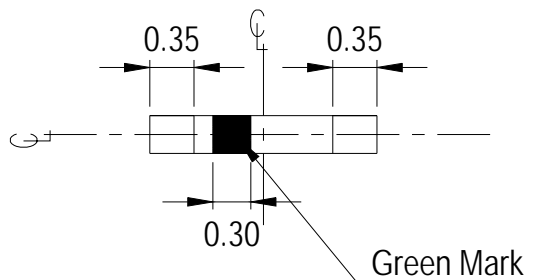
Device Selection Guide

Part No.	Chip	Emitted Color	Lens Color
	Material		
48-213UTD/S523/TR8	InGaN	Pure White	Yellow Diffused

Package Outline Dimensions



For reflow soldering (propose)



Weight : 1.2 mg

Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$,Unit = mm

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V _R	5	V
Forward Current	I _F	25	mA
Peak Forward Current (Duty 1/10 @1KHz)	I _{FP}	100	mA
Power Dissipation	P _d	110	mW
Electrostatic Discharge(HBM)	ESD	150	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.	

Notes:

*We only guarantee the ESD <2000V after customer to process.

Electro-Optical Characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	-----	70	-----	mcd	IF=3mA
		90	120	180		IF=5mA
		-----	225	-----		IF=10mA
Viewing Angle (X Direction)	2 θ 1/2	-----	130	-----	deg	IF=5mA
Viewing Angle (Y Direction)		-----	137	-----		
Forward Voltage	VF	-----	2.75	-----	V	IF=3mA
		2.70	-----	3.00		IF=5mA
		-----	3.00	-----		IF=10mA
TemperatureCoefficient of VF -10°C ≤ T ≤ 100°C	TCVF	-----	-3.3	-----	mV/K	IF=5mA
Reverse Current	IR	-----	-----	50	μ A	VR=5V

Notes:

- 1. Tolerance of Luminous Intensity ±10%**
- 2. Tolerance of Forward Voltage ±0.05V**
- 3. About information stated at 3mA resp. 10mA are for reference only.**

Bin Range Of Luminous Intensity & Forward Voltage

Symbol	Bin Code	Min.	Max.	Unit	Condition
Iv	Q2	90	112	mcd	IF=5mA
	R1	112	140		
	R2	140	180		
VF	1	2.70	2.80	V	IF=5mA
	2	2.80	2.90		
	3	2.90	3.00		

Notes:

- 1.Tolerance of Luminous Intensity ±10%**
- 2.Tolerance of Forward Voltage ±0.05V**

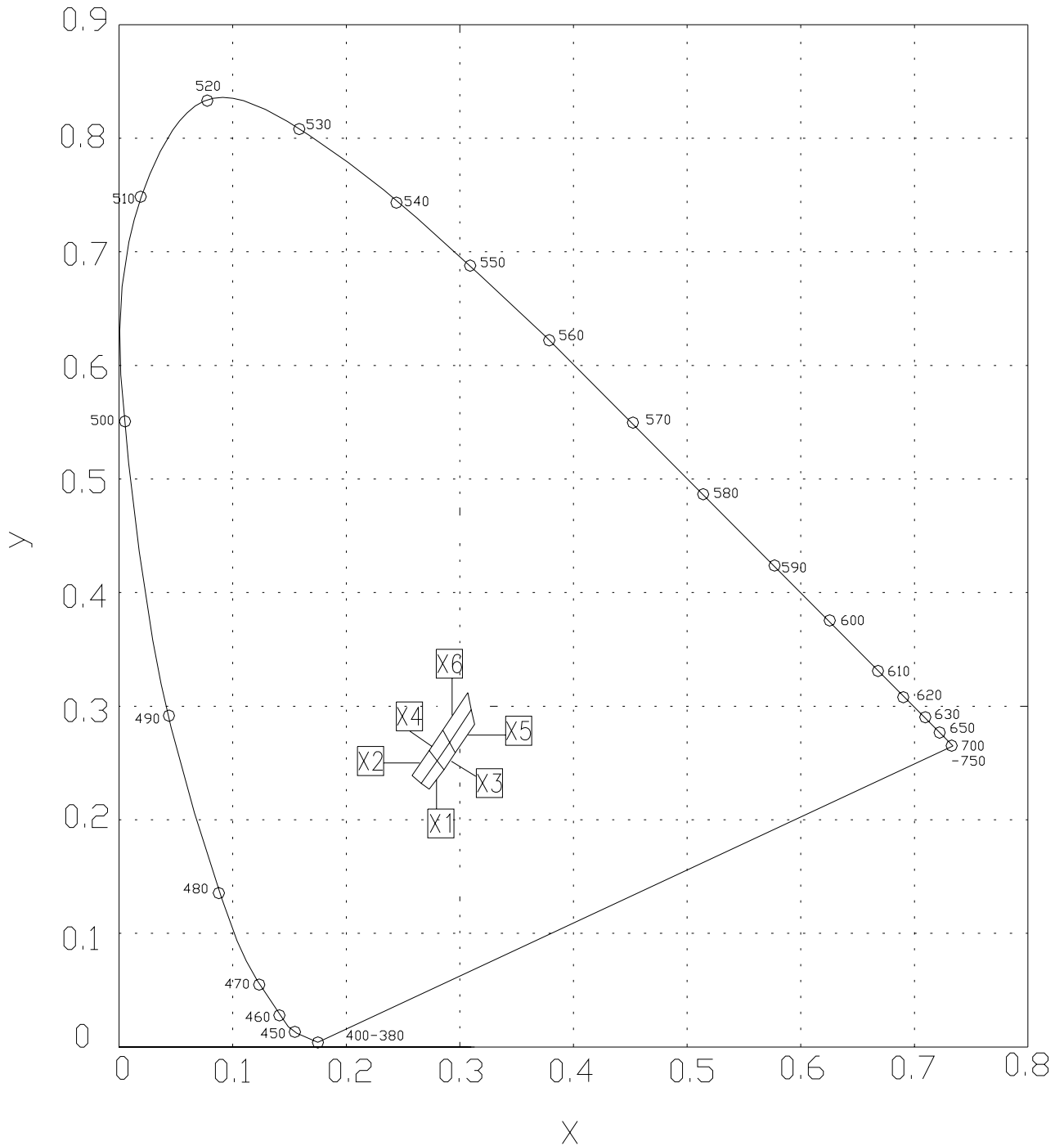
Chromaticity Coordinates Specifications for Bin Grading

Bin Code	CIE_x	CIE_y	Condition
X1	0.280	0.252	IF=5mA
	0.266	0.232	
	0.273	0.227	
	0.286	0.244	
X2	0.273	0.261	
	0.258	0.239	
	0.266	0.232	
	0.280	0.252	
X3	0.291	0.268	
	0.280	0.252	
	0.286	0.244	
	0.296	0.259	
X4	0.285	0.279	
	0.273	0.261	
	0.280	0.252	
	0.291	0.268	
X5	0.310	0.297	
	0.291	0.268	
	0.296	0.259	
	0.313	0.284	
X6	0.307	0.312	
	0.285	0.279	
	0.291	0.268	
	0.310	0.297	

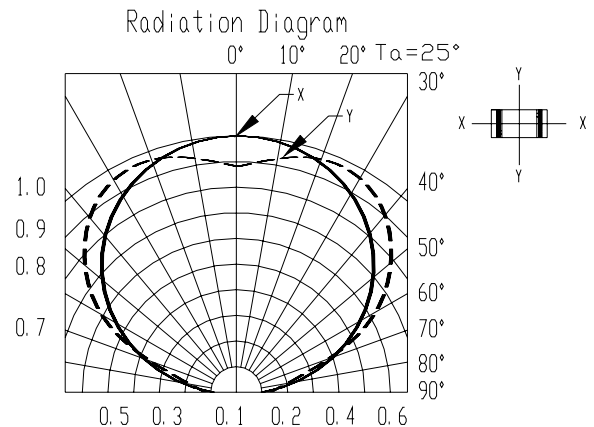
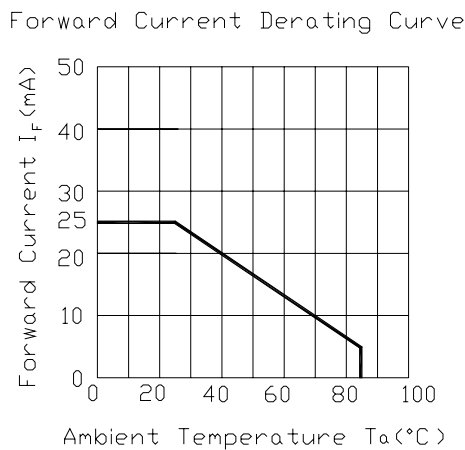
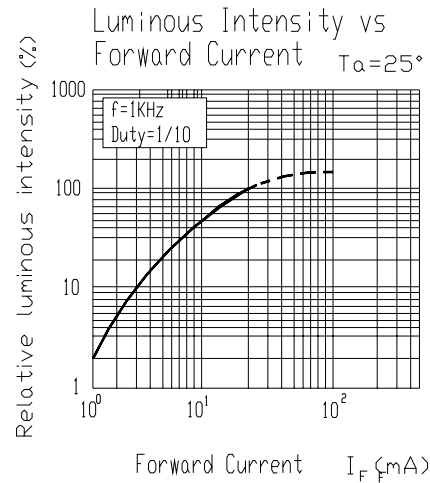
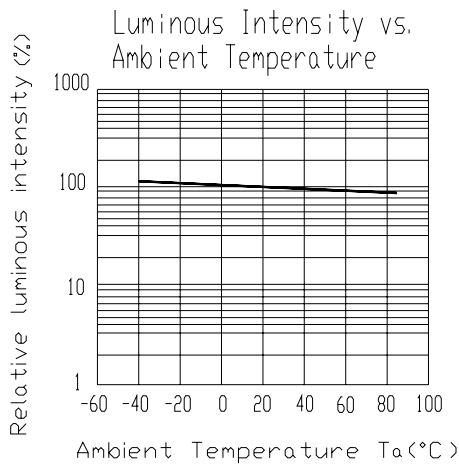
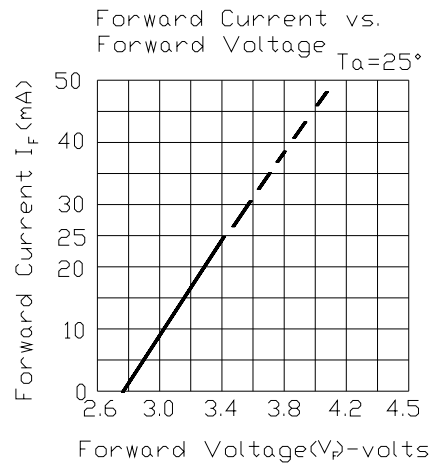
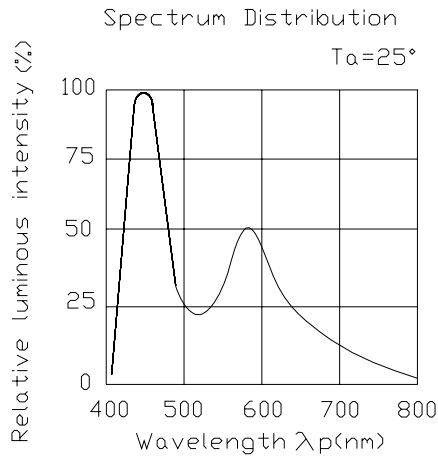
Notes:

- 1 .The C.I.E. 1931 chromaticity diagram (Tolerance ± 0.01).**
- 2. The products are sensitive to static electricity and care must be fully taken when handling products.**

CIE Chromaticity Diagram

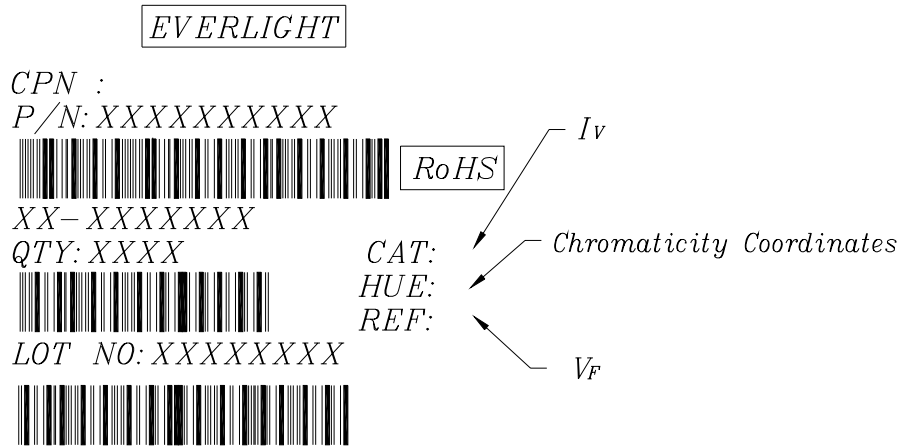


Typical Electro-Optical Characteristics Curves



Label explanation

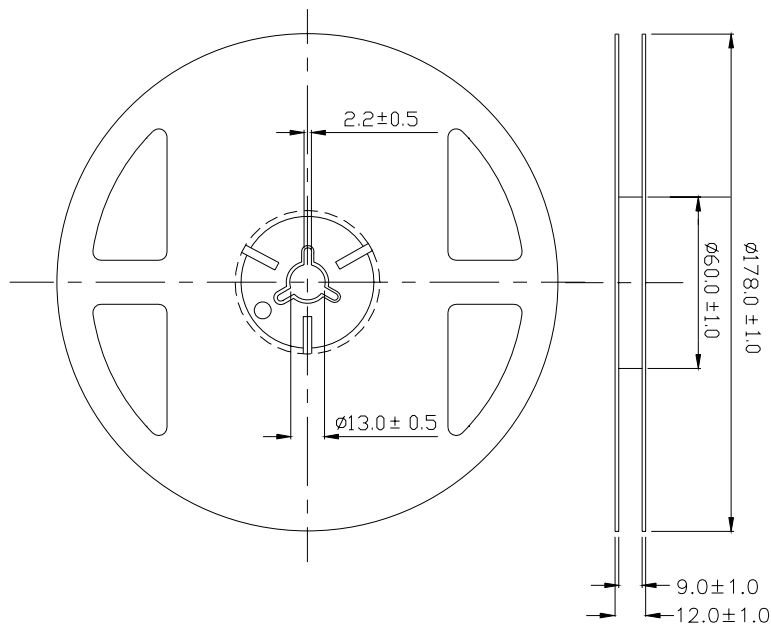
CAT: Luminous Intensity Rank HUE: Chromaticity Coordinates REF: Forward Voltage Rank



MADE IN TAIWAN

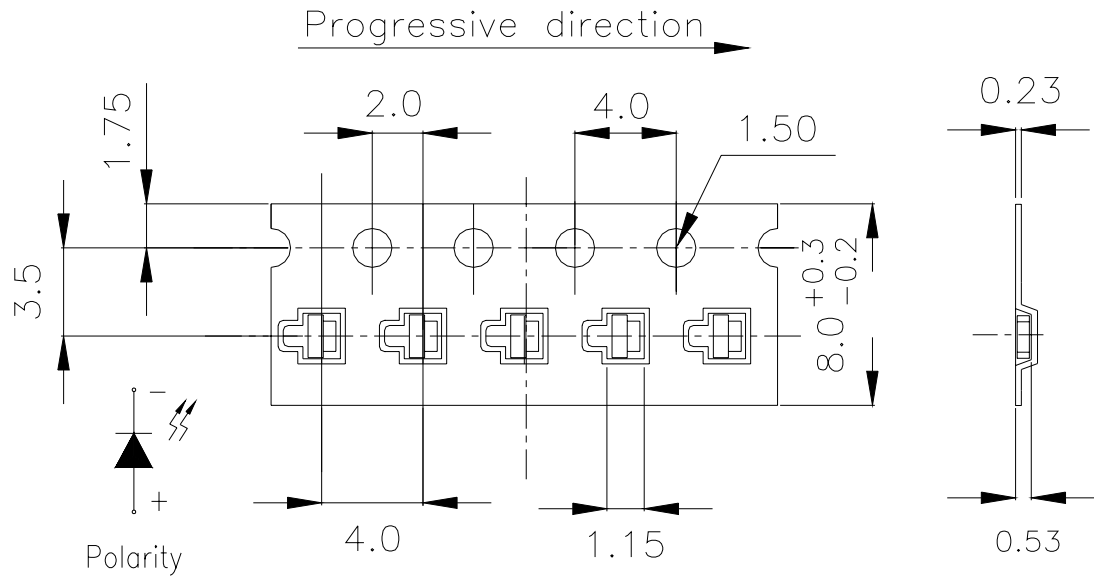
MSL-2

Reel Dimensions



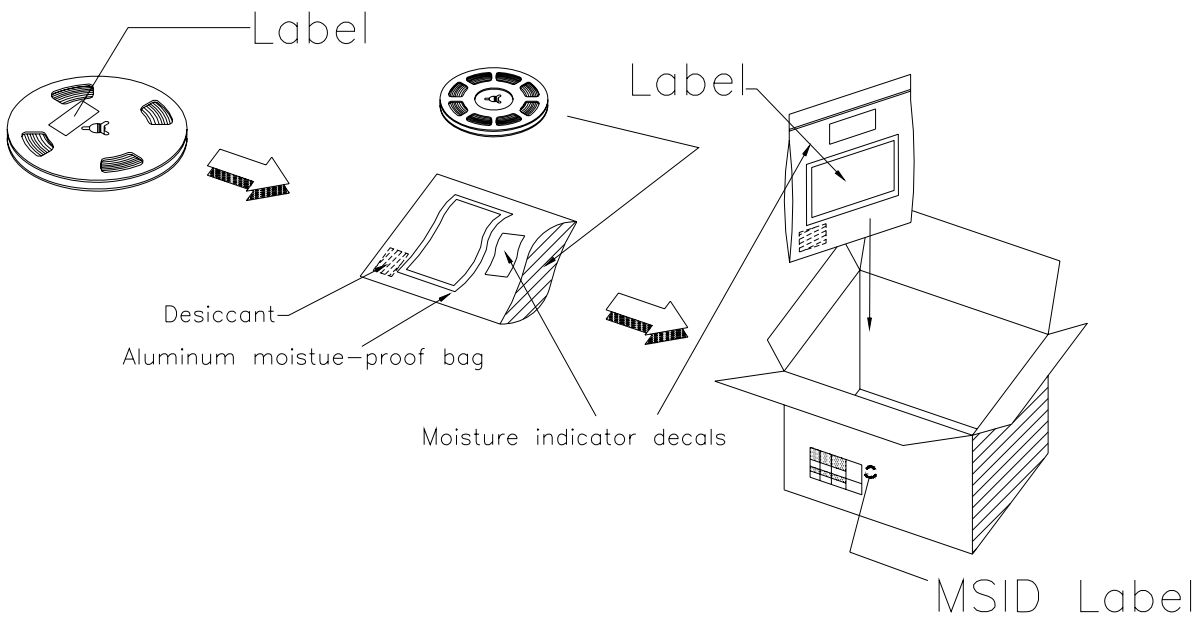
Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$, Unit = mm

Carrier Tape Dimensions: Loaded quantity 3000 PCS per reel



Note: The tolerances unless mentioned is $\pm 0.1\text{mm}$,Unit = mm

Moisture Resistant Packaging



Detail of MSID label



Detail of Moisture indicator decals

	<p>CAUTION This bag contains MOISTURE SENSITIVE DEVICES</p>	<p>LEVEL 2 <small>If blank, see adjacent bar code label</small></p>
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1.Shelf life in sealed bag:12 months at 5°C~30°C and <90% relative Humidity(RH).
2.Devices have to be mounted within 168 hours or stored at 70%RH after this bag is opened ; otherwise, the warranty of the devices will be voided immediately.
3.If baking is required , devices may be baked for 24 hours at 65±5°C.

Note:Level and body temperature define by IPC/JEDEC J-STD-020B

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 Min. 5sec.	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	IF = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C/ 85%RH	1000 Hrs.	22 PCS.	0/1

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 deg C or less and 60% RH or less.

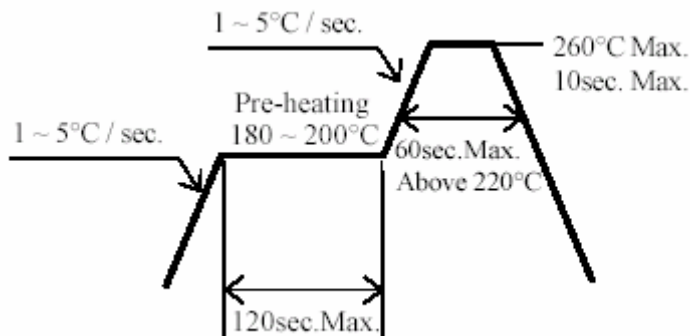
If unused LEDs remain, it should be stored in moisture proof packages.

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 : $60\pm 5^{\circ}\text{C}$ 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.

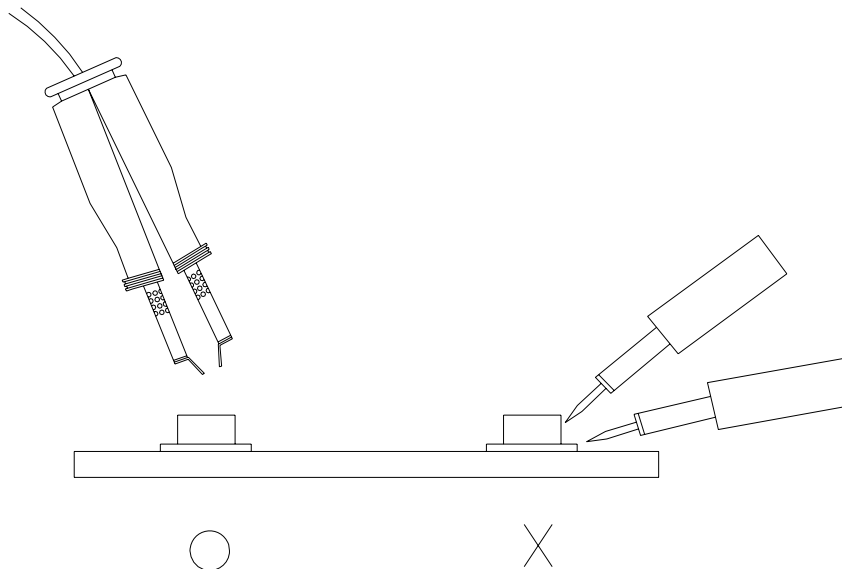
3.4 After soldering, do not warp the circuit board.

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.



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