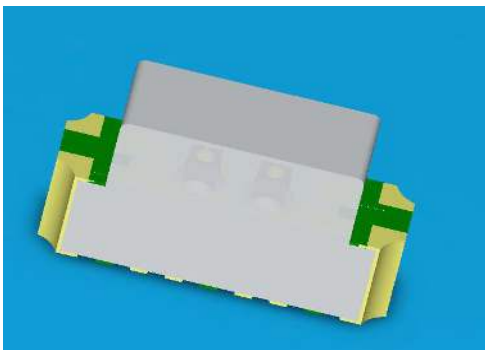# SMD ▪ B
EASV2010RWA0

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.
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).

Description
- The SMD LED 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
- Backlighting in dashboard and switch.
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD, switch and symbol.
- General use.

Device Selection Guide

Chip Type	Chip Materials	Emitted Color	Resin Color
R6	AlGaInP	Brilliant Red	Yellow Diffused
T1	InGaN	Pure White	Yellow Diffused

Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	5	V
Forward Current	I_F	R6：25 T1：10	mA
Peak Forward Current (Duty 1/10 @1KHz)	I_{FP}	R6：60 T1：100	mA
Power Dissipation	Pd	R6：95 T1：40	mW
Operating Temperature	T_{opr}	-40 ~ +85	℃
Storage Temperature	Tstg	-40 ~ +90	℃
Electrostatic Discharge	ESD_{HBM}	R6：2000 T1：150	V
Soldering Temperature	T_{sol}	Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

Electro-Optical Characteristics (Ta=25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	Iv	R6：18.0 T1： 45.0	----- -----	45.0 112.0	mcd	
Viewing Angle	$2\theta_{1/2}$	-----	140	-----	deg	
Peak Wavelength	λ p	R6：-----	632.0	-----	nm	I_F =5mA
Dominant Wavelength	λ d	R6：617.5	------	629.5	nm	
Spectrum Radiation Bandwidth	△λ	R6：-----	20	-----	nm	
Forward Voltage	V_F	R6：1.55. T1：2.50	----- -----	2.15 3.10	V	
Reverse Current	I_R	R6：----- T1：-----	----- -----	10 50	µA	V_R =5V

Note:
1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage ±0.1V

Bin Range of Luminous Intensity
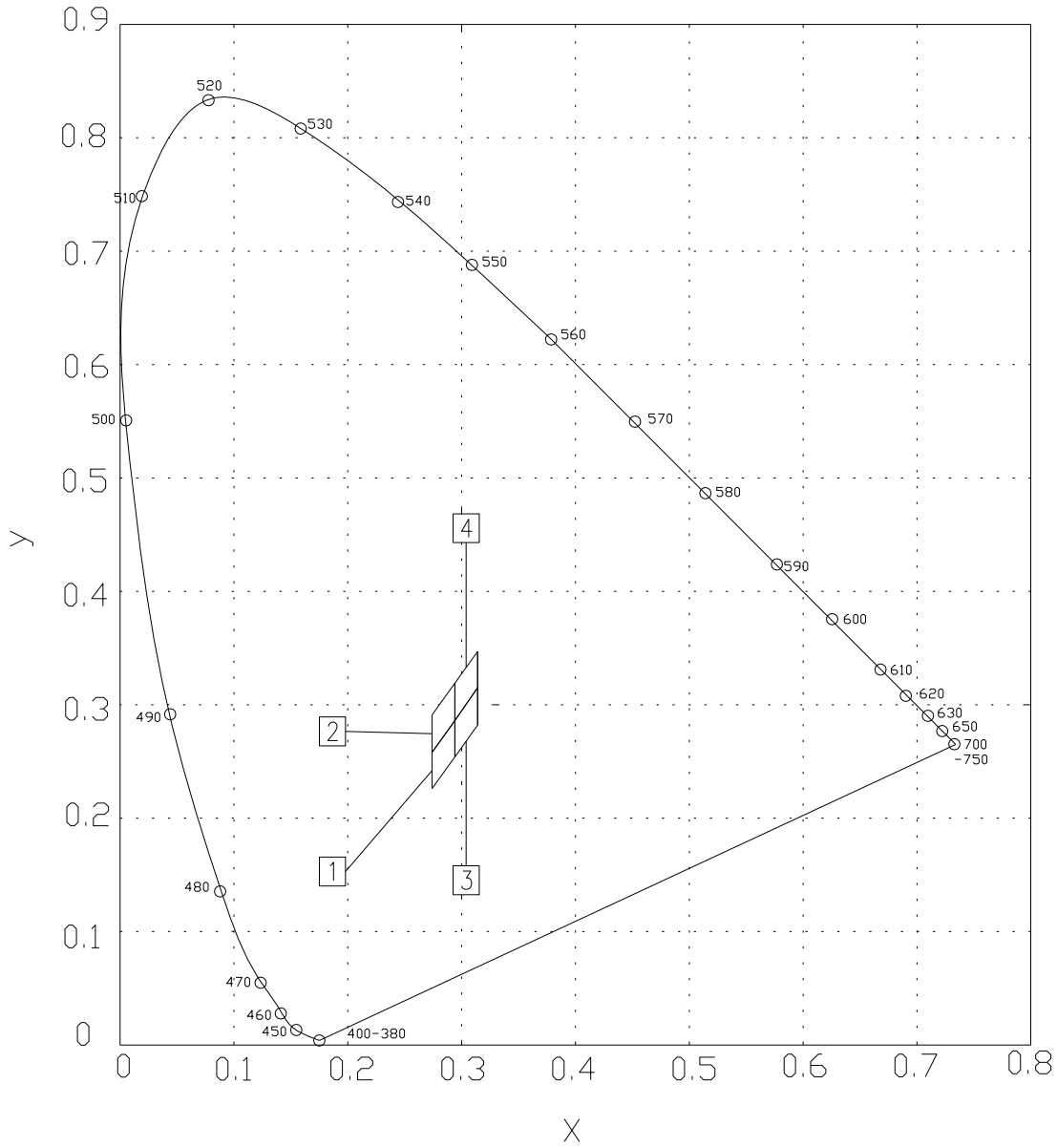
R6

Bin Code	Min.	Max.	Unit	Condition
M1	18.0	22.5		
M2	22.5	28.5	mcd	I_F =5mA
N1	28.5	36.0		
N2	36.0	45.0		

Bin Range of Luminous Intensity

T1

Bin Code	Min.	Max.	Unit	Condition
P1	45.0	57.0		
P2	57.0	72.0	mcd	I_F =5mA
Q1	72.0	90.0		
Q2	90.0	112.0		

Bin Range Of Dom. Wavelength

R6

Bin Code	Min.	Max.	Unit	Condition
E4	617.5	621.5		
E5	621.5	625.5	nm	I_F =5mA
E6	625.5	629.5		

Bin Range Of Forward Voltage

R6

Bin Code	Min.	Max.	Unit	Condition
00	1.55	1.75		
0	1.75	1.95	V	I_F =5mA
1	1.95	2.15		

Bin Range Of Forward Voltage

T1

Bin Code	Min.	Max.	Unit	Condition
9	2.50	2.70		
10	2.70	2.90	V	I_F =5mA
11	2.90	3.10		

Note:
1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength: ±1nm
3. Tolerance of Forward Voltage ±0.1V

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Chromaticity Coordinates Specifications for Bin Grading

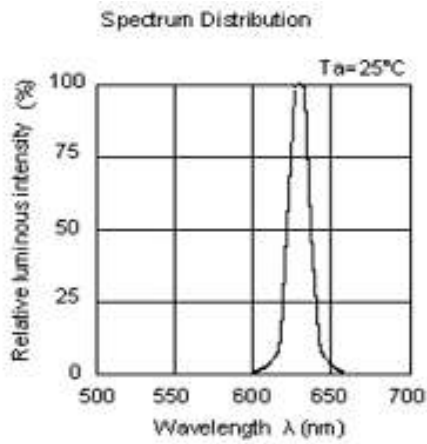| Bin Code	CIE_x	CIE_y	Condition
1	0.274	0.226	
	0.274	0.258	
	0.294	0.286	
	0.294	0.254	
2	0.274	0.258	
	0.274	0.291	
	0.294	0.319	
	0.294	0.286	
3	0.294	0.254	I_F =5mA
	0.294	0.286	
	0.314	0.315	
	0.314	0.282	
4	0.294	0.286	
	0.294	0.319	
	0.314	0.347	
	0.314	0.315	

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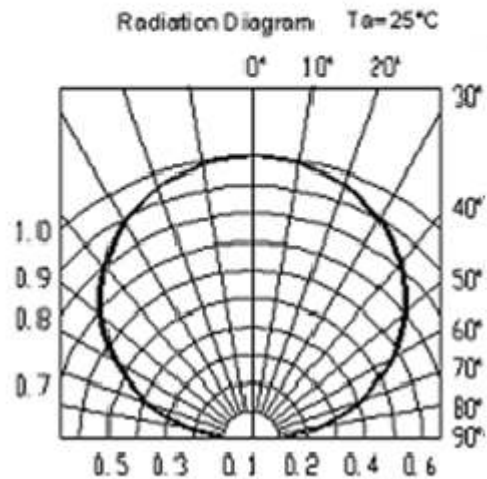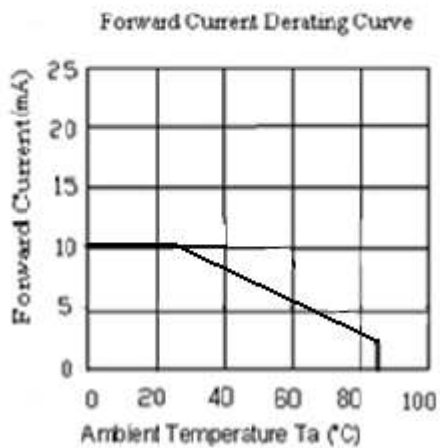2.The products are sensitive to static electricity and care must be fully taken when handling products.

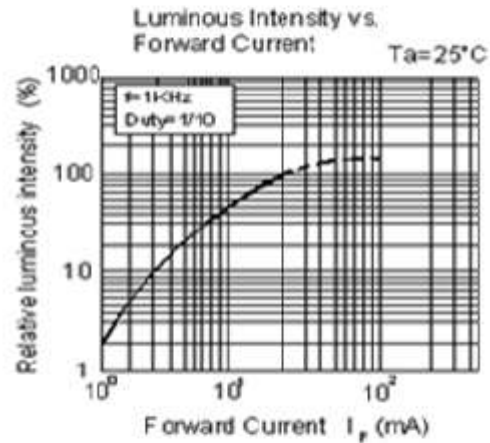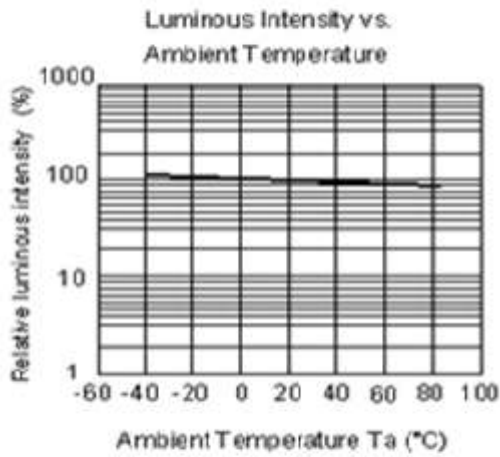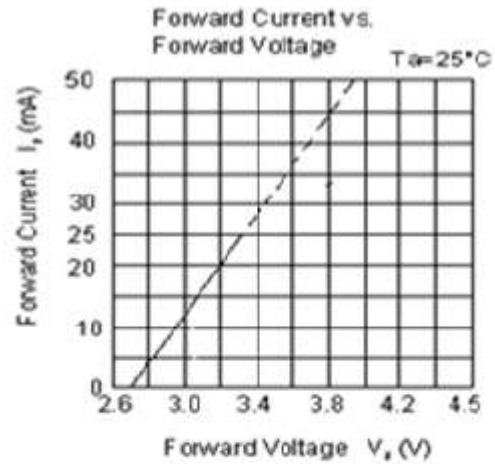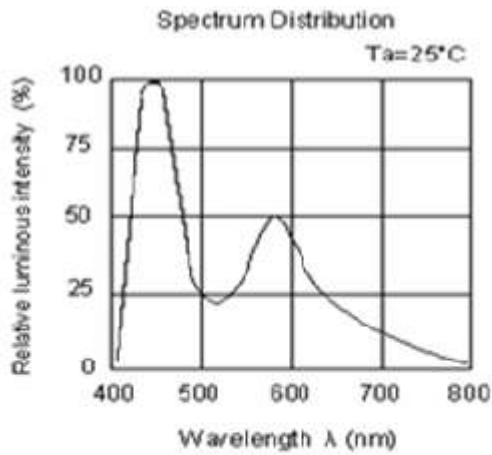## CIE Chromaticity Diagram

Typical Electro-Optical Characteristics Curves
R6

Spectrum Distribution

Forward Current vs. Forward Voltage

Luminous Intensity vs. Ambient Temperature

Luminous Intensity vs Forward Current

Forward Current Derating Curve

Radiation Diagram   Ta=25°C

Typical Electro-Optical Characteristics Curves
T1

Spectrum Distribution
Ta=25°C

Forward Current vs. Forward Voltage
Ta=25°C

Luminous Intensity vs. Ambient Temperature

Luminous Intensity vs. Forward Current
Ta=25°C

f=1KHz
Duty= 1/10

Forward Current Derating Curve

Radiation Diagram   Ta=25°C

Package Outline Dimensions

2±0.1

0.8±0.1

④ ③ ④ ① (bottom pins)

1.4±0.1

0.46±0.1   1.05±0.1

Side

④ − R6   ② − T1

③ +   ① +

Polarity

Recommend Sodering Pad

③ ④ ② ①
④ ②

Bottom

1.95±0.1

0.23±0.2   0.25±0.1   0.72±0.2

① ② ④ ③

0.66±0.1   0.38±0.2   0.45±0.2

0.63±0.1
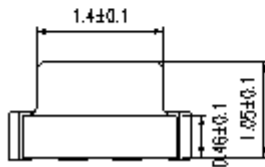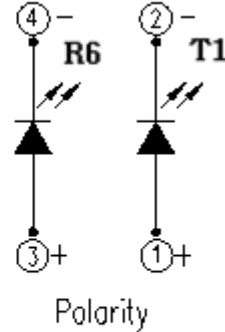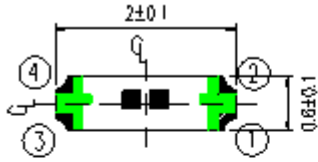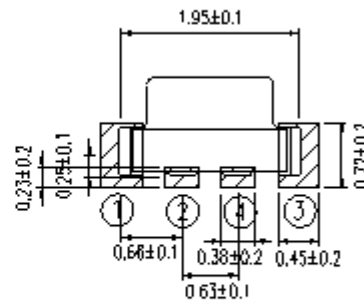
Suggested pad dimension is just for reference only.
Please modify the pad dimension based on individual need.

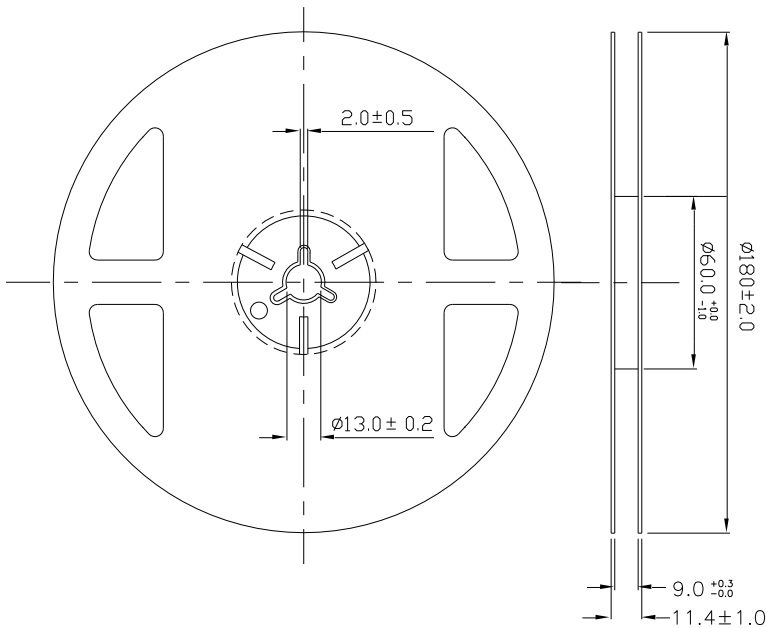Note: Tolerances unless mentioned ±0.1mm. Unit = mm

Label Explanation

| RoHS | (Pb) | **EVERLIGHT** | **5** |

CPN: XXXXXXXXXXXXXXXXXXXX测試區

|||||||||||||||||||||||||||

XXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXXX

P/N: XXXXXXXXX

||||||||||||||||||

XXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXXXXXX-XXXXXX

LOT NO: Y150716XXX-XXXXXXXXX-XXXXXXXXX

|||||||||||||||||||||||||

QTY: 0123456789   HUE: XXXXXXXXX

|||||||||||| ||||||||||||

CAT: XXXXXXXXX   REF: XXXXXXXXX

|||||||||||| ||||||||||||

REFERENCE: BTPYYMMDDXXXXX

|||||||||||||

MSL-X   MADE IN TAIWAN

- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Chromaticity Coordinates & Dom. Wavelength Rank
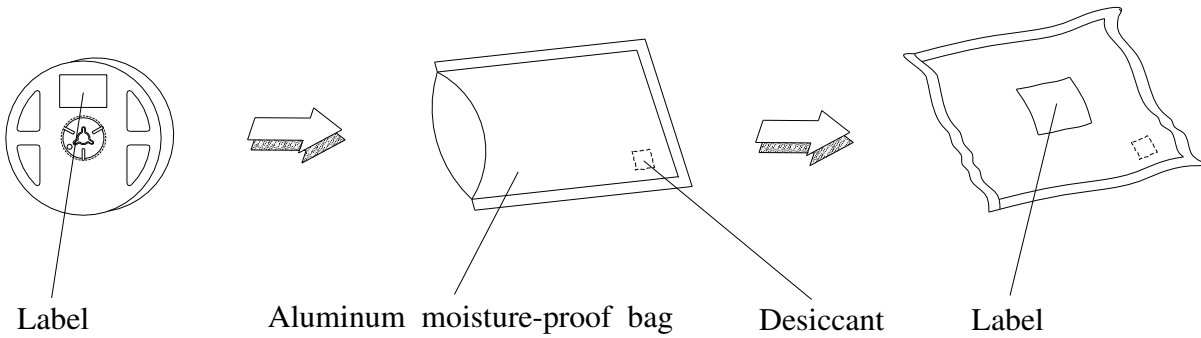- REF: Forward Voltage Rank
- LOT No: Lot Number

Reel Dimensions

2.0±0.5

$\varnothing$13.0 ± 0.2

$\varnothing$6.0 $^{+0.0}_{-1.0}$

$\varnothing$180±2.0

9.0 $^{+0.3}_{-0.0}$

11.4±1.0

Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm

Carrier Tape Dimensions: Loaded quantity 3000 PCS per reel
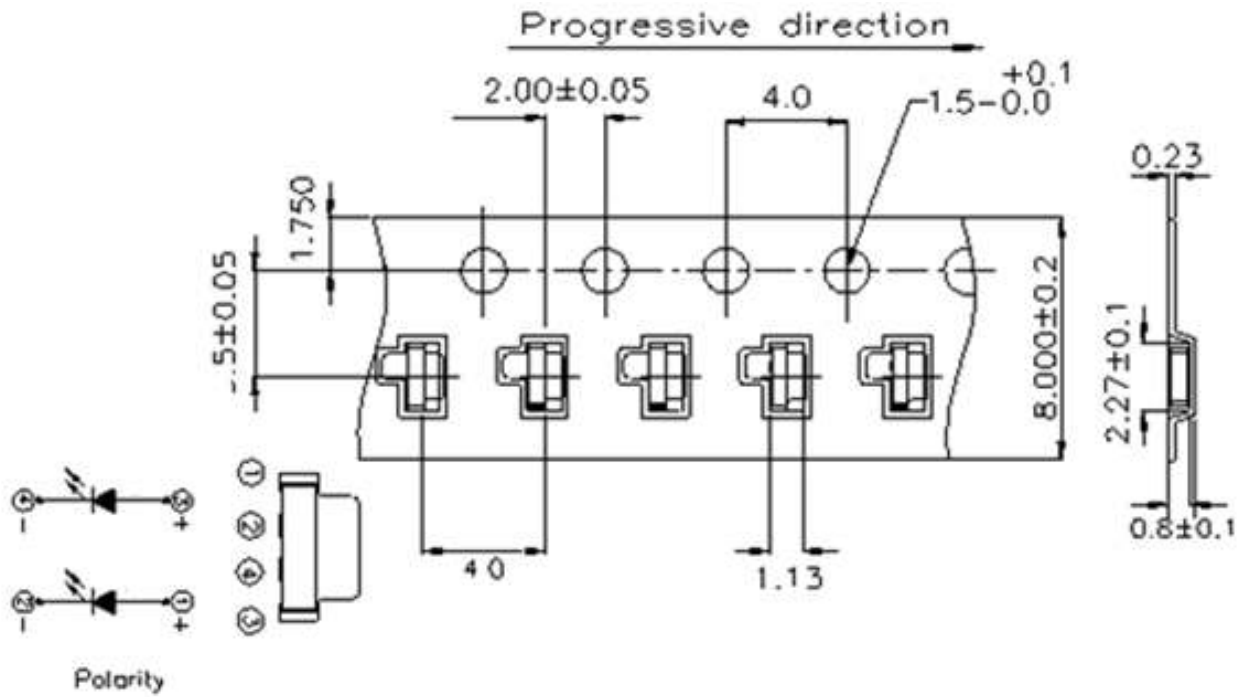
Note: The tolerances unless mentioned is ±0.1mm ,Unit = mm

Moisture Resistant Packaging

Label   Aluminum moisture-proof bag   Desiccant   Label

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
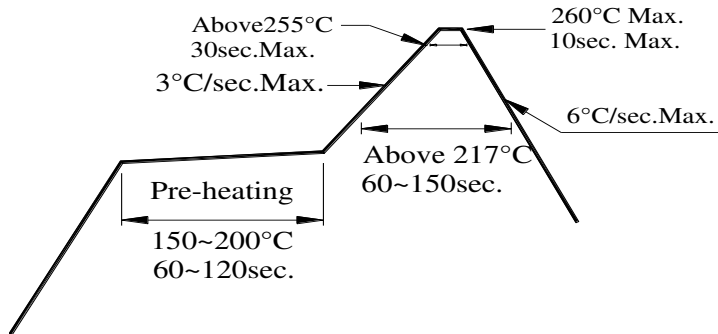   2.1 Do not open moisture proof bag before the products are ready to use.
   2.2 Before opening the package: The LEDs should be kept at 30℃ or less and 90%RH or less.
   2.3 After opening the package :The LED´s floor life is 1 year under 30℃ or less and 60%RH or less.
       If unused LEDs remain, it 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℃ for 24 hours.

3. Soldering Condition
   3.1 Pb-free solder temperature profile

Above255°C
30sec.Max.

3°C/sec.Max.

260°C Max.
10sec. Max.

6°C/sec.Max.

Above 217°C
60~150sec.

Pre-heating

150~200°C
60~120sec.

   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℃ 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.

○   X

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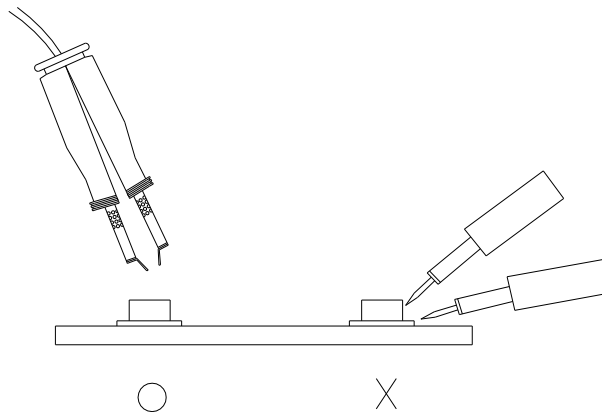
Application Restrictions

High reliability applications such as military/aerospace, automotive safety/security systems,
and medical equipment may require different product. If you have any concerns, please contact
everlightamericas before using this product in your application. This specification guarantees the quality
and performance of the product as an individual component. Do not use this product beyond the
specification described in this document.