

### SMD ■ Middle Power LED 67-22ST/NFR3C-P2050C1C41827Z15/2T(EMM)



#### Features

- PLCC-2 package
- Top view Deep Red LED
- Wide viewing angle
  - Pb-free
  - ANSI Binning
  - The product itself will remain within RoHS compliant version.
  - Compliance with EU REACH.
  - Compliance Halogen Free .(Br<900ppm,Cl<900ppm,Br+Cl<1500ppm)

#### Description

The Everlight 67-22ST package has high efficacy, Middle Power consumption, wide viewing angle and a compact form factor. These features make this package an ideal LED for all lighting applications.

#### Applications

- Decorative and Entertainment Lighting
- Agriculture Lighting
- General use

## Device Selection Guide

Chip Materials	Emitted Color	Resin Color
AlGaInP	Far Red	Water Clear

## Absolute Maximum Ratings (T<sub>Soldering</sub>=25°C)

Parameter	Symbol	Rating	Unit
Forward Current	I <sub>F</sub>	150	mA
Peak Forward Current (Duty 1/10 @10ms)	I <sub>FP</sub>	300	mA
Power Dissipation	P <sub>d</sub>	405	mW
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +100	°C
Thermal Resistance (Junction / Soldering point)	R <sub>th J-S</sub>	50	°C/W
Junction Temperature	T <sub>j</sub>	115	°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 (T<sub>Soldering</sub>=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Radiometric Power	mW	80	-----	160	mW	I <sub>F</sub> =150mA
Forward Voltage	V <sub>F</sub>	1.8	-----	2.7	V	I <sub>F</sub> =150mA
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =150mA
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =5V

Notes:

1. Tolerance of Radiometric Power: ±11%.
2. Tolerance of Forward Voltage: ±0.1V.

**Bin Range of Radiometric Power**

Bin Code	Min.	Max.	Unit	Condition
C1	80	100	mW	I <sub>F</sub> =150mA
C2	100	120		
C3	120	140		
C4	140	160		

Note:  
 Tolerance of Luminous flux: ±11%

**Bin Range of Forward Voltage**

Bin Code	Min.	Max.	Unit	Condition
25	1.8	1.9	V	I <sub>F</sub> =150mA
26	1.9	2.0		
27	2.0	2.1		
28	2.1	2.2		
29	2.2	2.3		
30	2.3	2.4		
31	2.4	2.5		
32	2.5	2.6		
33	2.6	2.7		

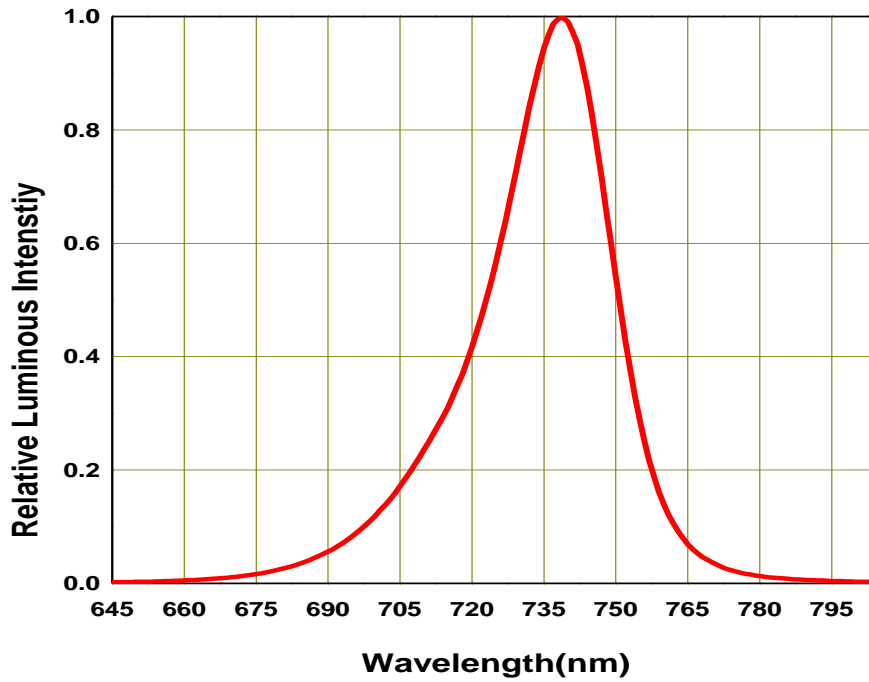
Note:  
 Tolerance of Forward Voltage: ±0.1V.

**Peak Wavelength Bins**

Bin Code	Min.	Max.	Unit	Condition
FA3	720	730	nm	I <sub>F</sub> =150mA
FA4	730	740		
FA5	740	750		

Note:  
 Dominant / Peak wavelength measurement tolerance: ±1nm.

## Spectrum Distribution



## Typical Electro-Optical Characteristics Curves

Fig.1 – Forward Voltage Shift vs. Junction Temperature

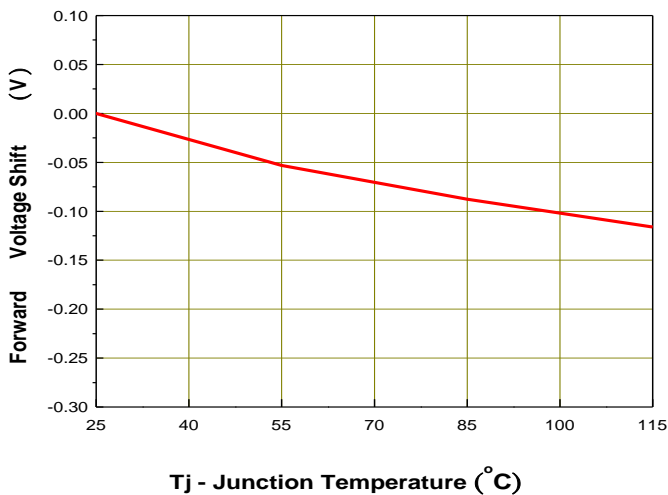
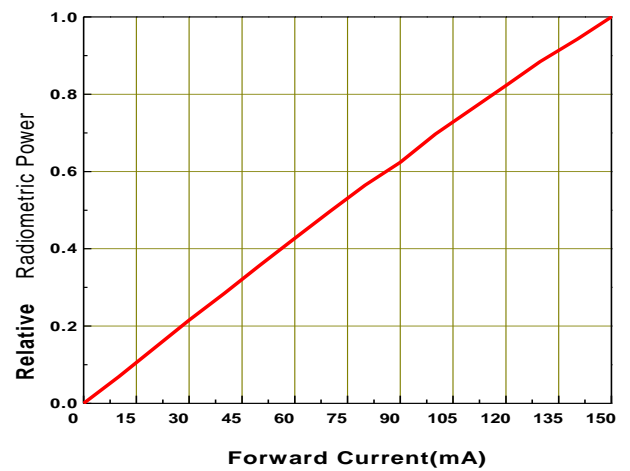


Fig.2 - Relative Radiometric Power vs. Forward Current



Typical Electro-Optical Characteristics Curves

Fig.3 - Relative Luminous Intensity vs. Junction Temperature

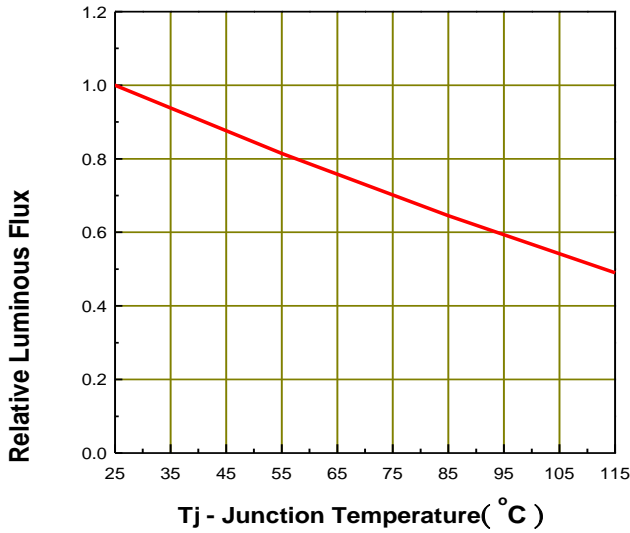


Fig.4 - Forward Current vs. Forward Voltage

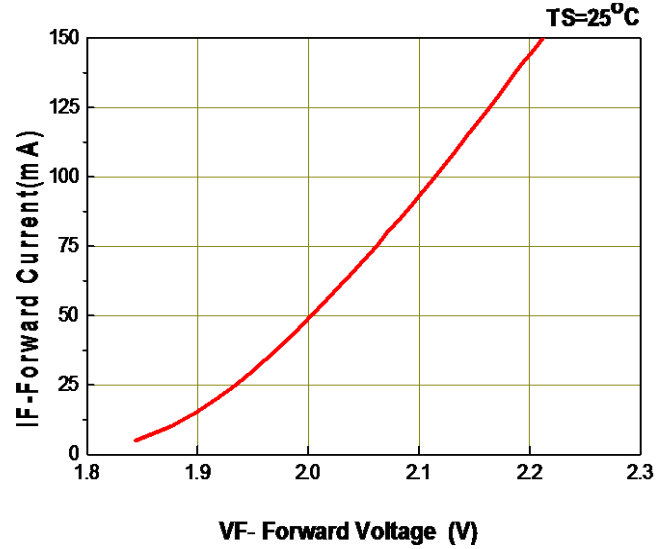


Fig.5 - Max. Driving Forward Current vs. Soldering Temperature

Rth j-s=50 °C/W

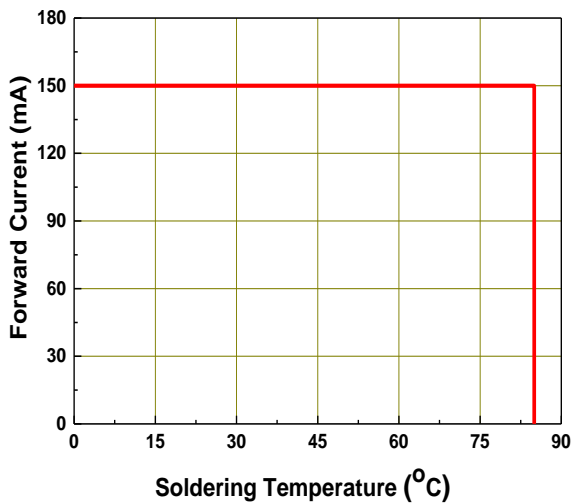
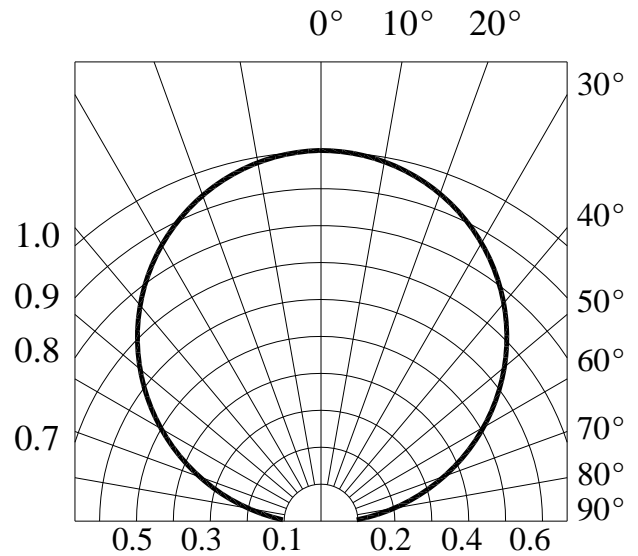
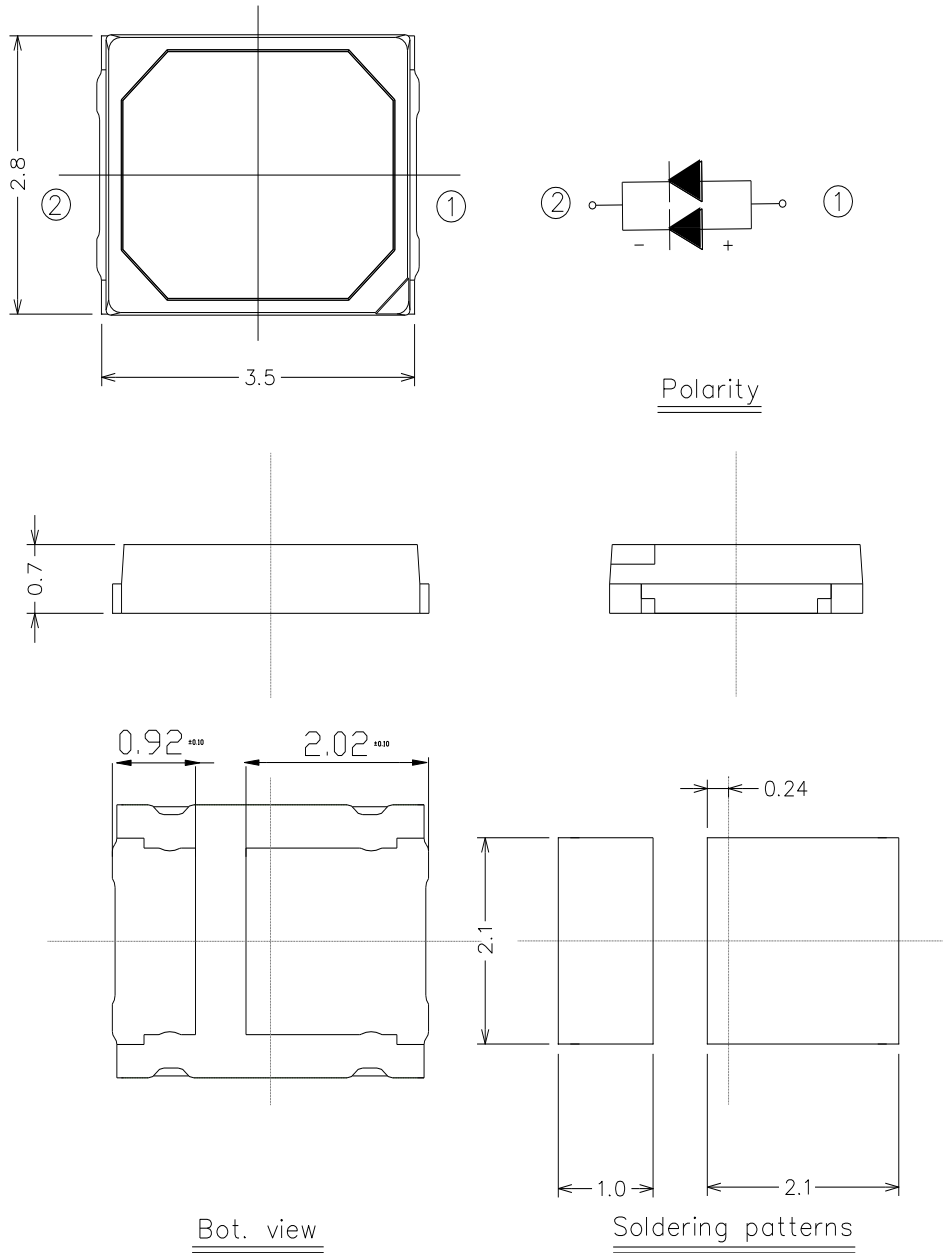


Fig.6 - Radiation Diagram



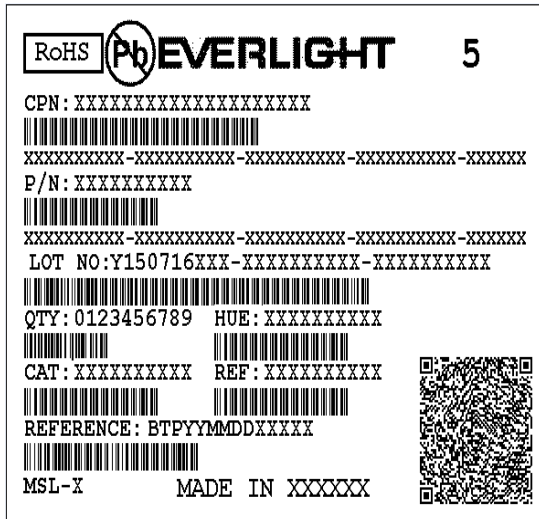
### Package Dimension



Note:  
Tolerance unless mentioned is  $\pm 0.1$  mm; Unit = mm

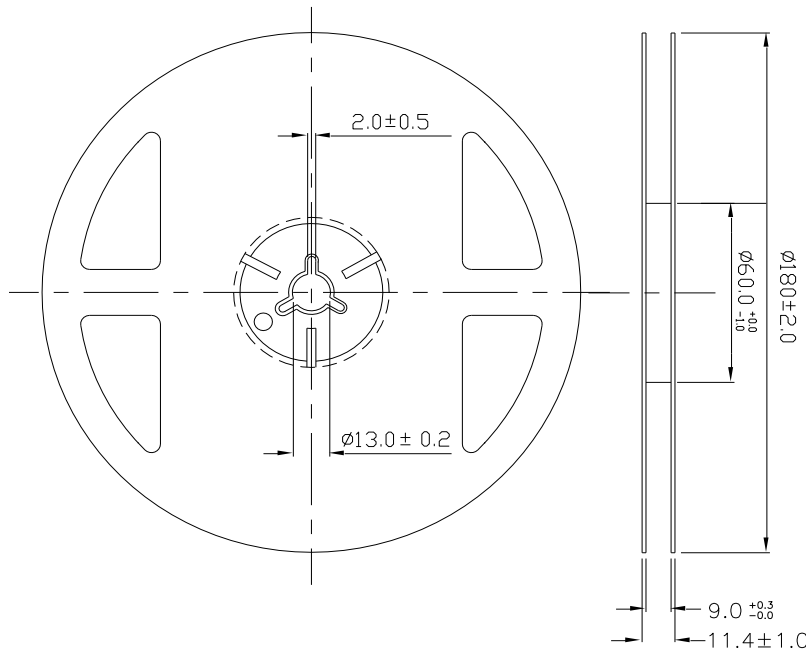
**Moisture Resistant Packing Materials**

**Label Explanation**



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

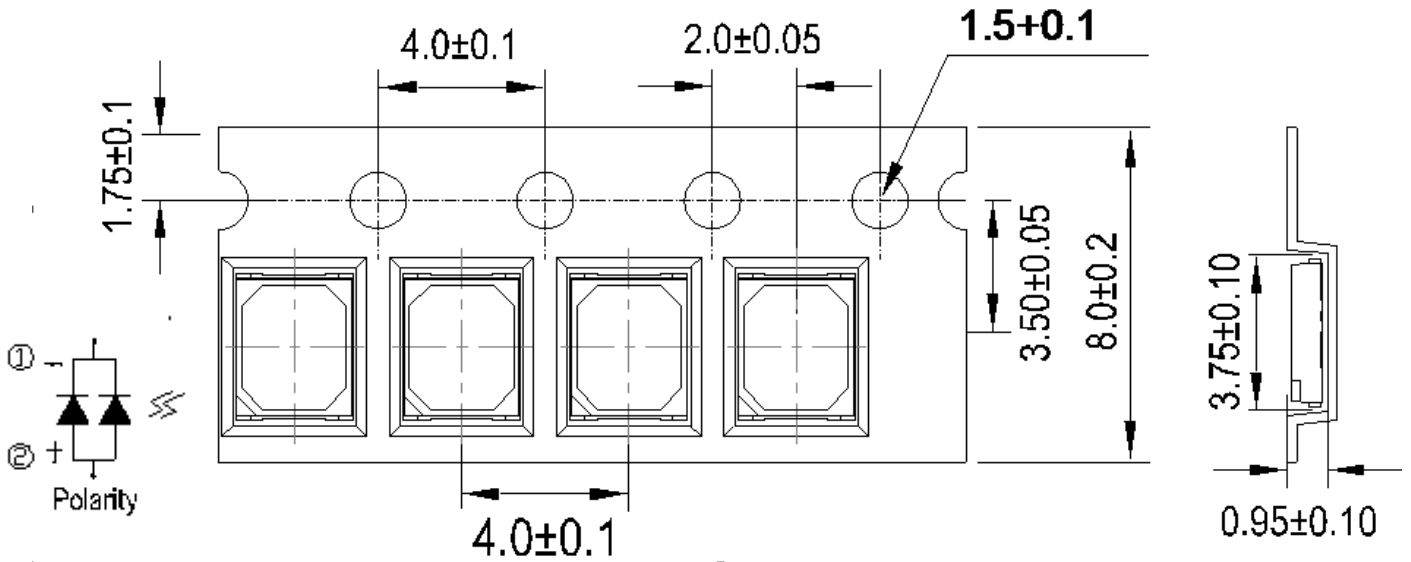
**Reel Dimensions**



Note:  
 Tolerances unless mentioned  $\pm 0.1$  mm. Unit = mm

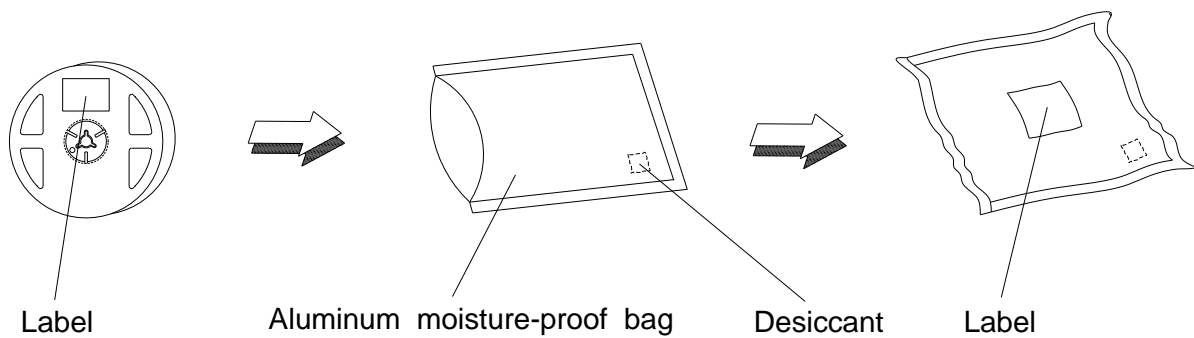
Carrier Tape Dimensions: Loaded Quantity 4000 pcs. Per Reel

**Progressive direction**



Note:  
 Tolerance unless mentioned is  $\pm 0.1$ mm; Unit = mm

**Moisture Resistant Packing Process**





## Reliability Test Items and Conditions

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

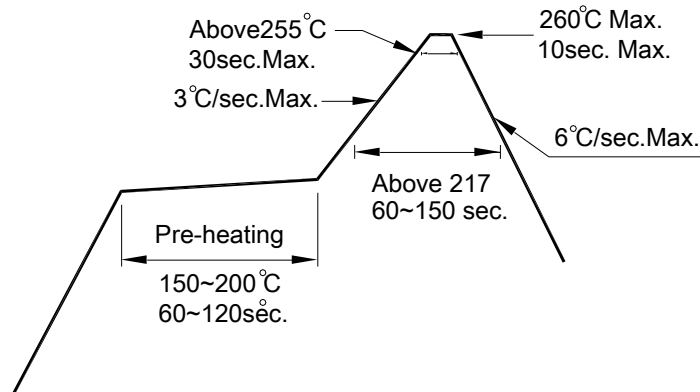
Confidence level : 90%

LTPD : 10%

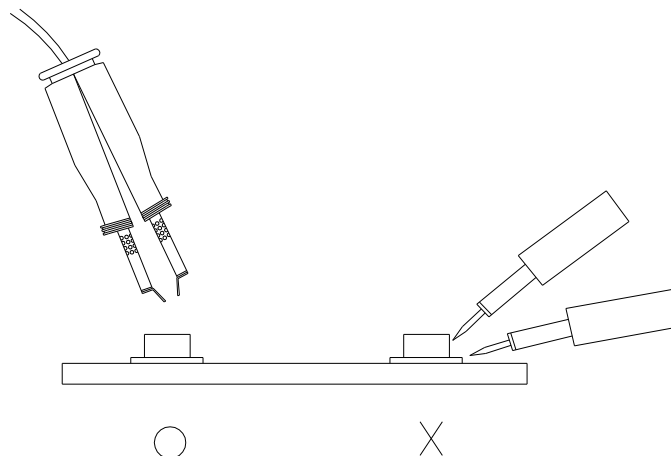
No.	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Resistance to Solder Heat	Temp. : 260°C/10sec.	3 Times.	8 PCS.	0/1
2	Temperature Cycle	-40°C~100°C / Dwell time 30min	200 Cycles	8 PCS.	0/1
3	High Temperature/Humidity Life	Ta=85°C,85%RH, I <sub>F</sub> = 150mA	1000 Hrs.	8 PCS.	0/1
4	Low Temperature Life	Ta=-40°C, I <sub>F</sub> = 150 mA	1000 Hrs.	8 PCS.	0/1
5	High Temperature Life	Ta=60°C, I <sub>F</sub> =150mA	3000 Hrs.	8 PCS.	0/1
6	High Temperature Life	Ta=85°C, I <sub>F</sub> =150 mA	3000 Hrs.	8 PCS.	0/1
7	Pulse	ON 30ms / OFF 2500ms	30000 CYCLES	8 PCS.	0/1
8	Thermal Shock	H : +100°C 20min ∫ 10 sec L : -40°C 20min	200 Cycles	8 PCS.	0/1
9	Power Temperature Cycle	H : +100°C 15min ∫ 5 min L : -40°C 15min I <sub>F</sub> = 100 mA	200 Cycles	8 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 168 Hrs 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.



## **DISCLAIMER**

1. EVERLIGHT reserves the right(s) on the adjustment of product material mix for the specification.
2. The product meets EVERLIGHT published specification for a period of twelve (12) months from date of shipment.
3. The graphs shown in this datasheet are representing typical data only and do not show guaranteed values.
4. When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. EVERLIGHT assumes no responsibility for any damage resulting from the use of the product which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.
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6. This product is not intended to be used for military, aircraft, automotive, medical,

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