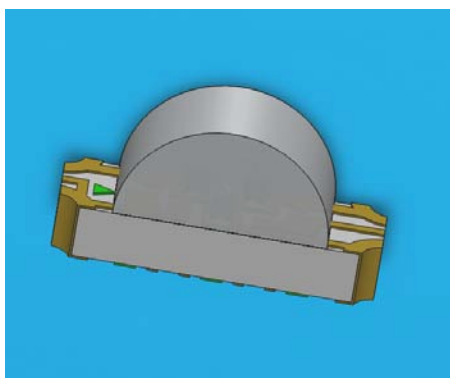


SMD ■ B

12-23C/R6GHBHC-A39/2C



### Features

- Package in 8mm tape on 7" diameter reel.
- Compatible with automatic placement equipment.
- Compatible with infrared and vapor phase reflow solder process.
- Multi-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 12-23C 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

Code	Chip Materials	Emitted Color	Resin Color
R6	AlGaInP	Brilliant Red	Water Clear
GH	InGaN	Brilliant Green	
BH	InGaN	Blue	

## Absolute Maximum Ratings (Ta=25℃)

Parameter	Symbol	Code	Rating	Unit
Reverse Voltage	$V_R$		5	V
Forward Current	$I_F$	R6	25	mA
		GH	25	
		BH	20	
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	R6	50	mA
		GH	50	
		BH	40	
Power Dissipation	$P_d$	R6	60	mW
		GH	95	
		BH	75	
Electrostatic Discharge	$ESD_{HBM}$	R6	2000	V
		GH	150	
		BH	150	
Operating Temperature	$T_{opr}$		-40 ~ +85	℃
Storage Temperature	$T_{stg}$		-40 ~ +90	℃
Soldering Temperature	$T_{sol}$		Reflow Soldering : 260 ℃ for 10 sec. Hand Soldering : 350 ℃ for 3 sec.	

**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Code	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	R6	360.0	-----	715.0	mcd	
		GH	565.0	-----	1120.0		
		BH	140.0	-----	285.0		
Viewing Angle	2θ <sub>1/2</sub>		-----	100	-----	deg	
Peak Wavelength	λ <sub>p</sub>	R6	-----	632	-----	nm	
		GH	-----	518	-----		
		BH	-----	468	-----		
Dominant Wavelength	λ <sub>d</sub>	R6	617.5	-----	629.5	nm	I <sub>F</sub> =20mA
		GH	520.0	-----	535.0		
		BH	464.5	-----	476.5		
Spectrum Radiation Bandwidth	Δλ	R6	-----	20	-----	nm	
		GH	-----	35	-----		
		BH	-----	25	-----		
Forward Voltage	V <sub>F</sub>	R6	1.75	-----	2.55	V	
		GH	2.55	-----	3.65		
		BH	2.55	-----	3.65		
Reverse Current	I <sub>R</sub>	R6	-----	-----	10	μA	V <sub>R</sub> =5V
		GH	-----	-----	50		
		BH	-----	-----	50		

Note:

1. Tolerance of Luminous Intensity: ±11%
2. Tolerance of Dominant Wavelength ±1nm
3. Tolerance of Forward Voltage: ±0.1V
4. Reverse voltage condition is test only. Do not reverse operation.
5. RA test @5mA

## Bin Range of Luminous Intensity R6

Bin Code	Min.	Max.	Unit	Condition
T2	360.0	450.0	mcd	I <sub>F</sub> =20mA
U1	450.0	565.0		
U2	565.0	715.0		

## Bin Range Of Dom. Wavelength

Bin Code	Min.	Max.	Unit	Condition
E4	617.5	621.5	nm	I <sub>F</sub> =20mA
E5	621.5	625.5		
E6	625.5	629.5		

## Bin Range of Luminous Intensity GH

Bin Code	Min.	Max.	Unit	Condition
U2	565.5	715.0	mcd	I <sub>F</sub> =20mA
V1	715.0	900.0		
V2	900.0	1120.0		

## Bin Range Of Dom. Wavelength

Bin Code	Min.	Max.	Unit	Condition
X	520.0	525.0	nm	I <sub>F</sub> =20mA
Y	525.0	530.0		
Z	530.0	535.0		

Note:

- 1.Tolerance of Luminous Intensity: ±11%
- 2.Tolerance of Dominant Wavelength ±1nm

## Bin Range of Luminous Intensity BH

Bin Code	Min.	Max.	Unit	Condition
R2	140.0	180.0	mcd	I <sub>F</sub> =20mA
S1	180.0	225.0		
S2	225.0	285.0		

## Bin Range Of Dom. Wavelength

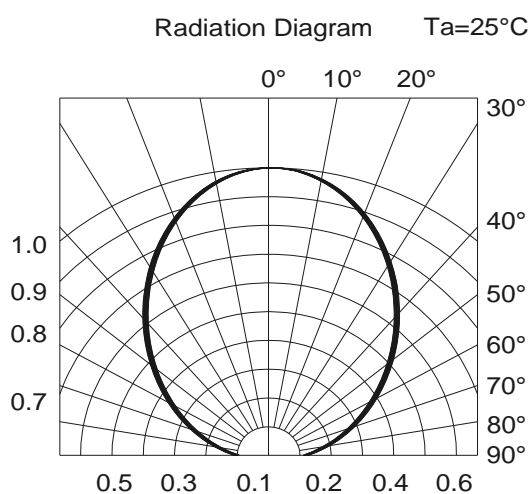
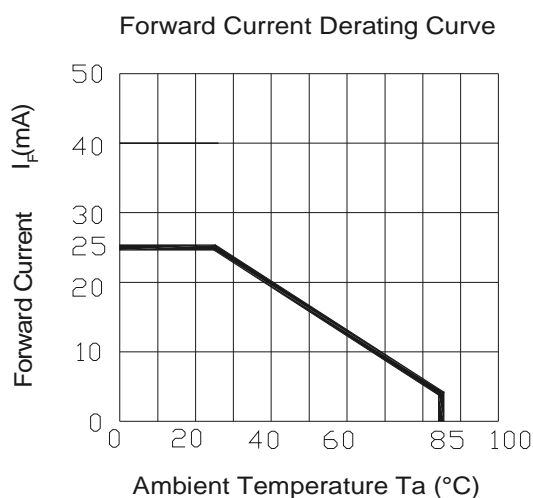
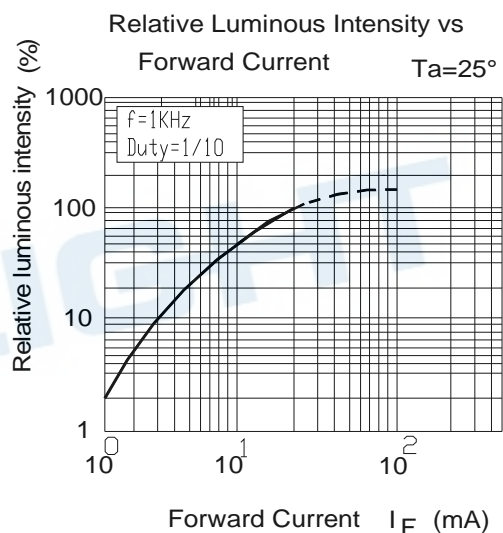
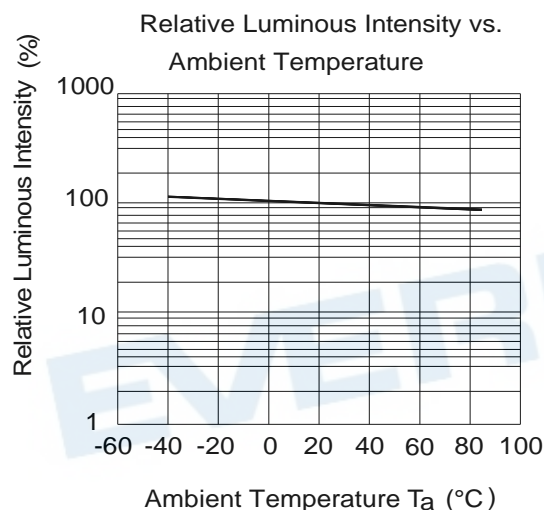
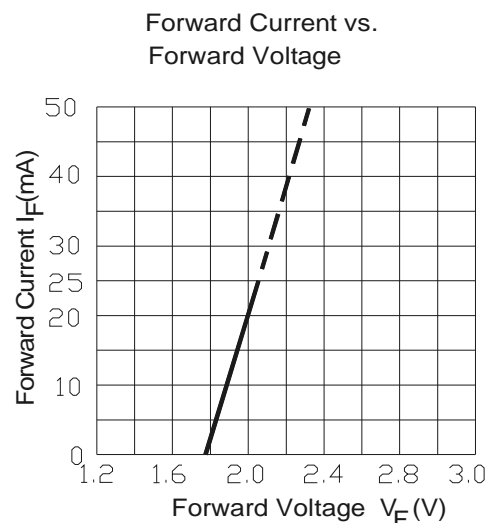
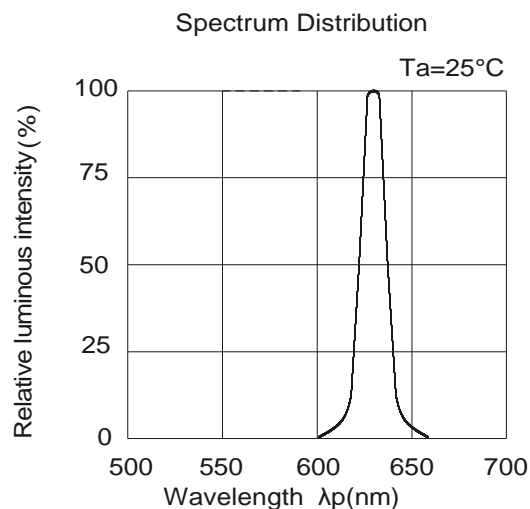
Bin Code	Min.	Max.	Unit	Condition
A9	464.5	467.5	nm	I <sub>F</sub> =20mA
A10	467.5	470.5		
A11	470.5	473.5		
A12	473.5	476.5		

Note:

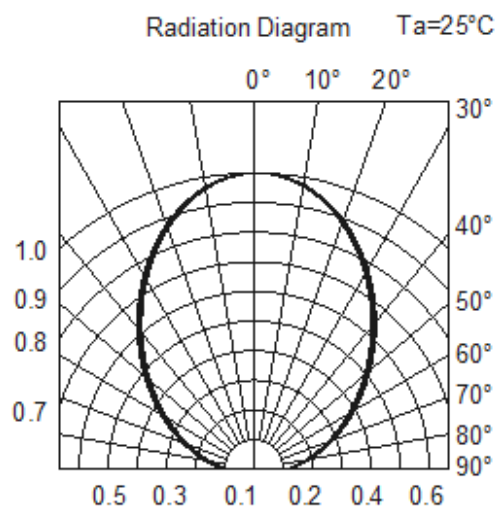
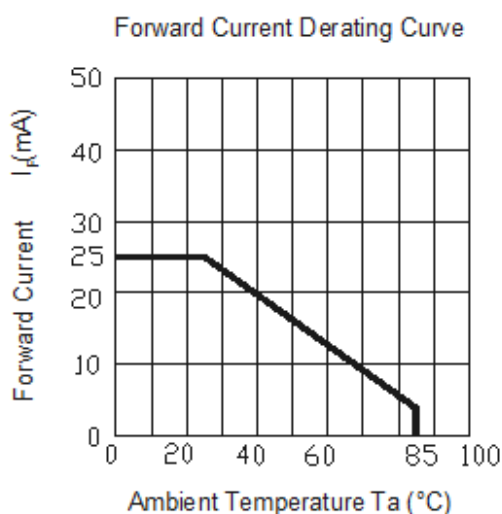
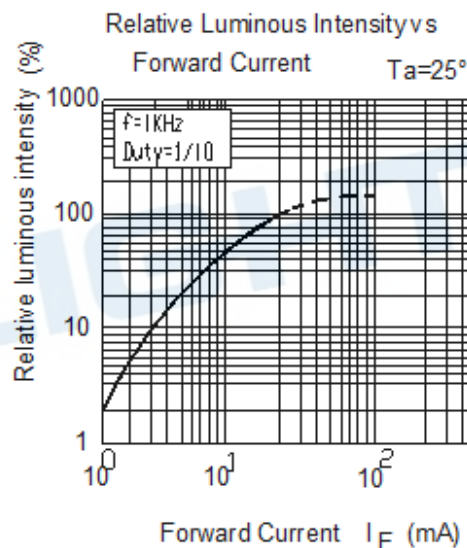
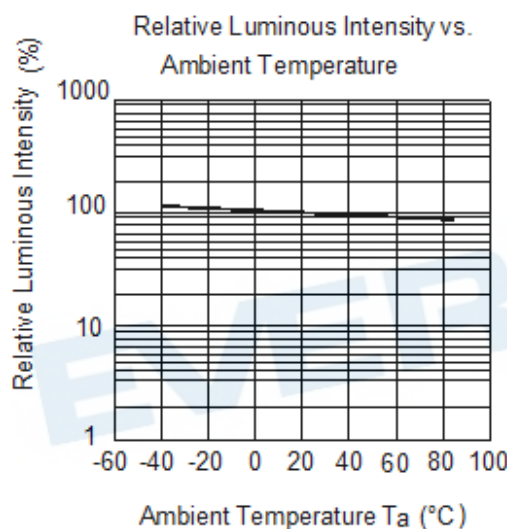
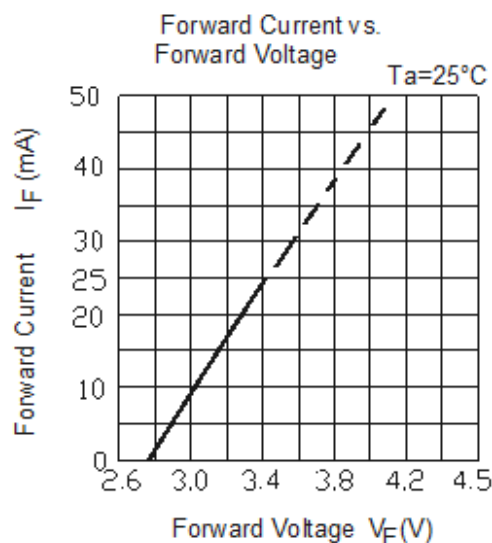
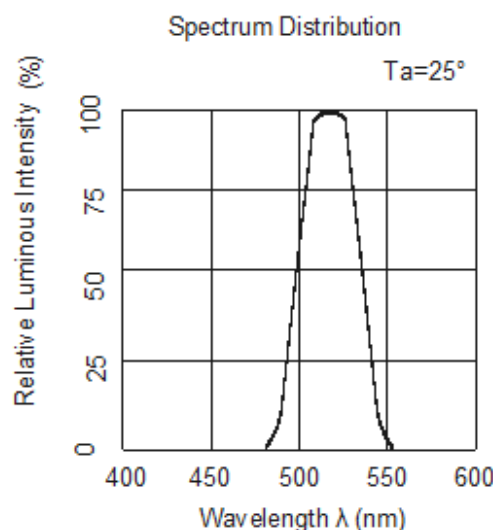
- 1.Tolerance of Luminous Intensity: ±11%
- 2.Tolerance of Dominant Wavelength ±1nm

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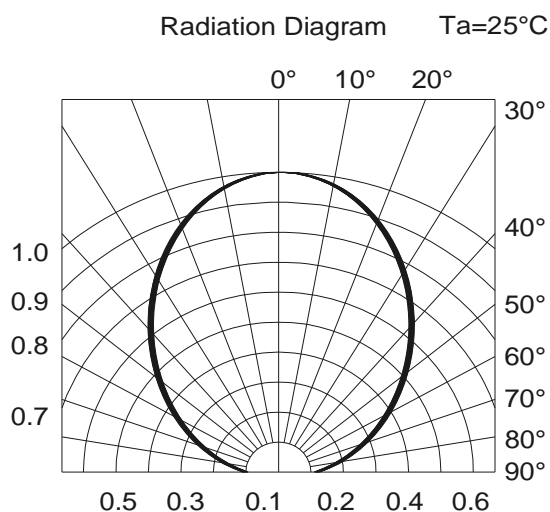
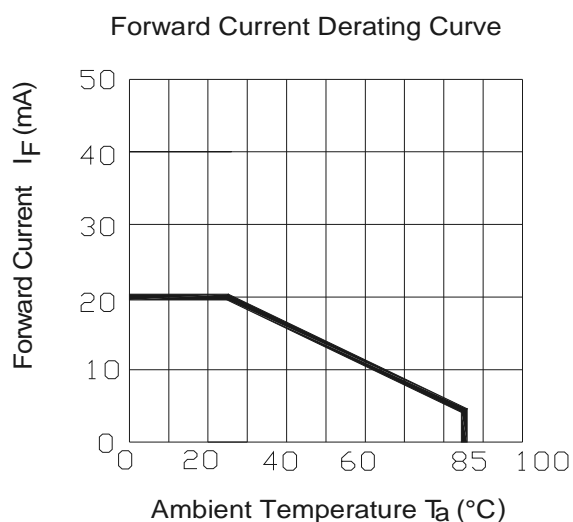
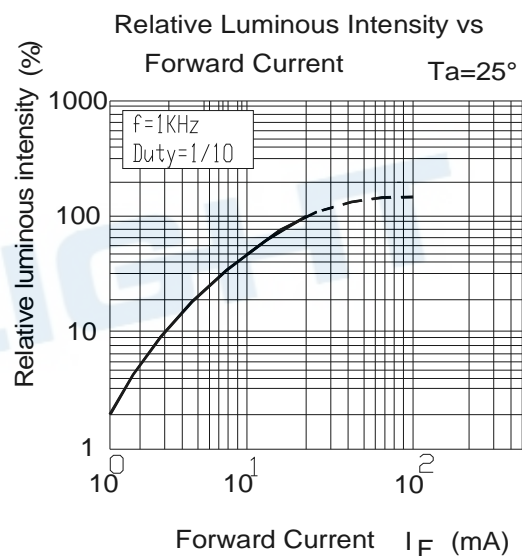
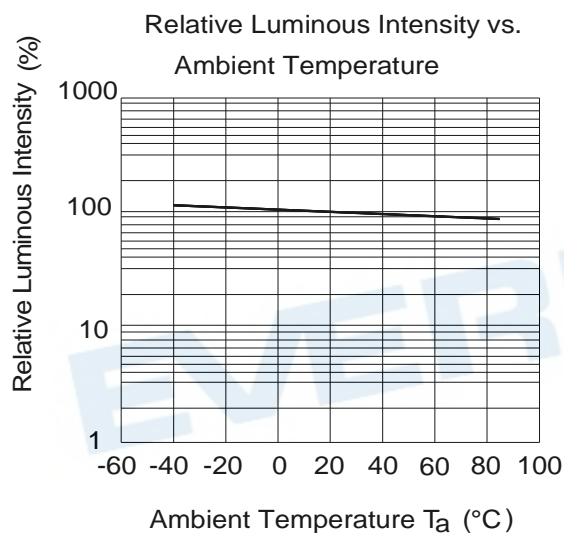
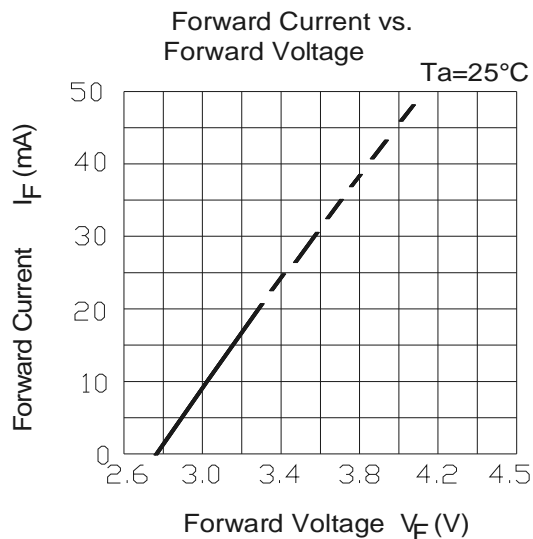
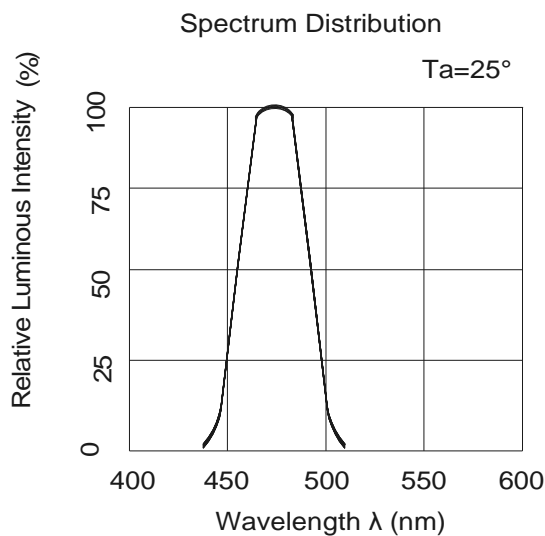
## Typical Electro-Optical Characteristics Curves R6



## Typical Electro-Optical Characteristics Curves GH

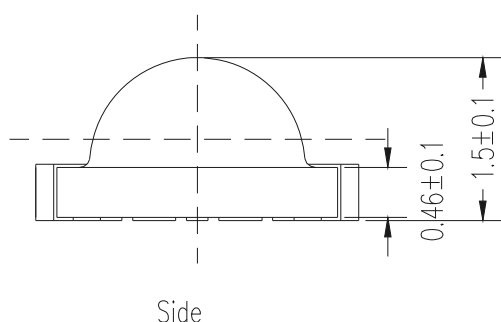
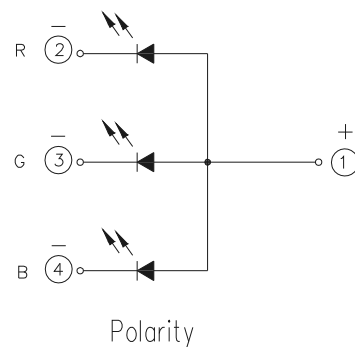
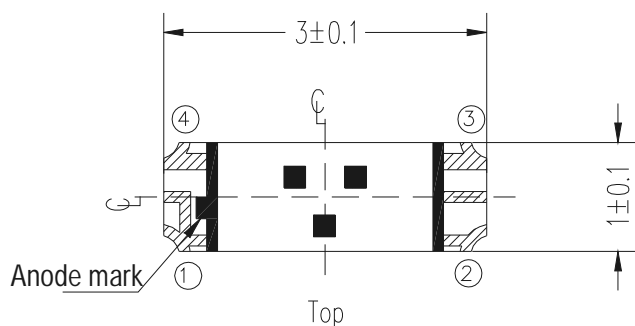


## Typical Electro-Optical Characteristics Curves BH

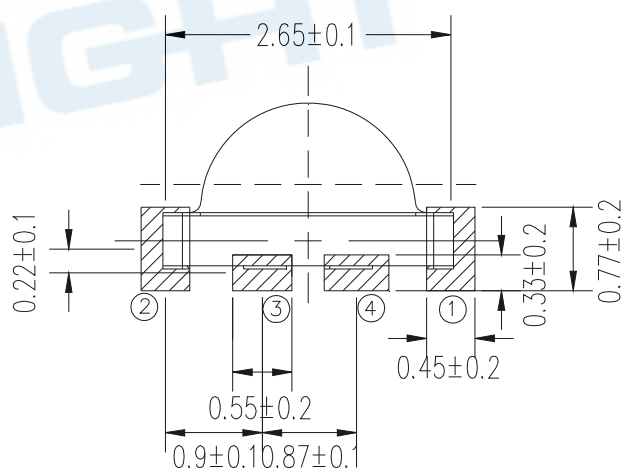
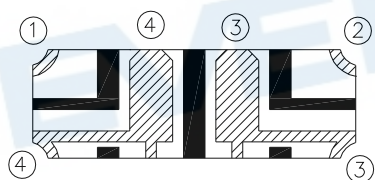




## Package Dimension



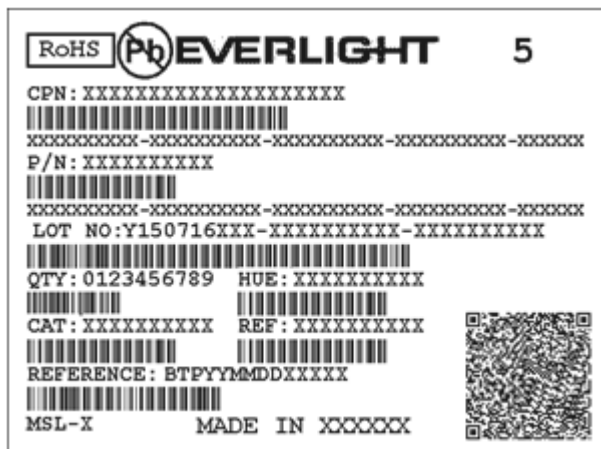
## Recommend Soldering Pad



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

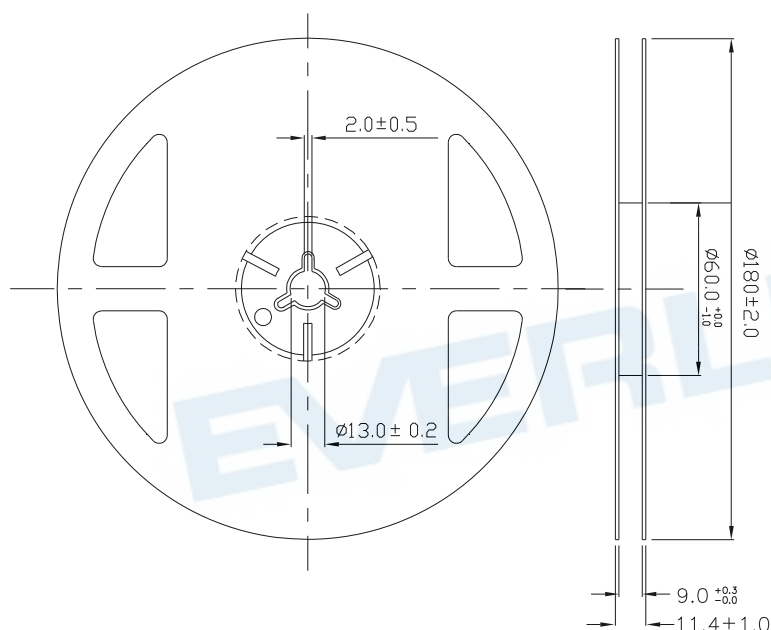
Note: Tolerances unless mentioned  $\pm 0.1$  mm. Unit = mm

## Moisture Resistant Packing Materials Label Explanation



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

## Reel Dimensions



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

Progressive direction



Diagram illustrating the steps for packaging a product in a moisture-proof bag:

- Product with a central label and four side labels.
- Product is placed inside an aluminum moisture-proof bag.
- The bag is sealed, and a desiccant packet is added.
- The sealed bag is labeled with a 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 After opening the package: The LEDs should be kept at 30°C or less and 60%RH or less.

2.3 The LEDs should be used within 168 hours (7days) after opening the package .

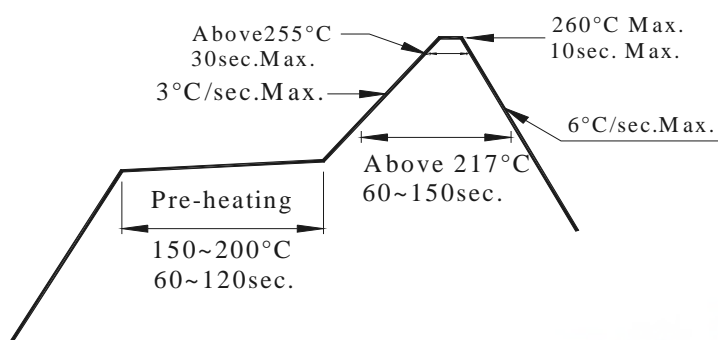
If unused LEDs remain, it should be stored in moisture proof packages.

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.

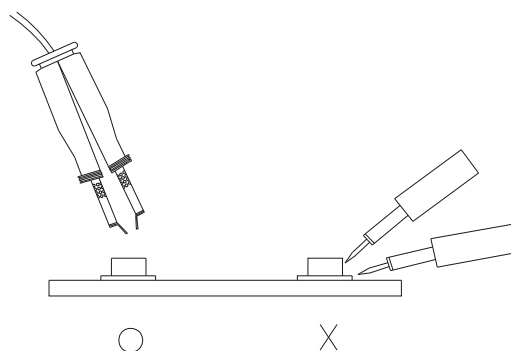
3.4 After soldering, do not warp the circuit board.

### 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.



### 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 Everlight 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.

### DISCLAIMER

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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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