

## Technical Data Sheet

### Top View LED

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**67-21/R7SC-AR2T1BZ3/2T/AM**

#### Features

- Pb-free.
- Inner reflector.
- White package.
- Optical indicator.
- P-LCC-2 package.
- Wide viewing angle.
- Colorless clear resin.
- Precondition : According to JEDEC Level-2.
- ESD : Up to 2KV. (According to JESD22-A114-B)
- The product itself will remain within RoHS compliant version.
- Suitable for vapor-phase reflow, infrared reflow and wave solder processes.



#### Descriptions

- The 67-21 series is available for orange, green, blue and yellow or other color due to the different raw material.
- Base on the package design, the device result in wide view angle.

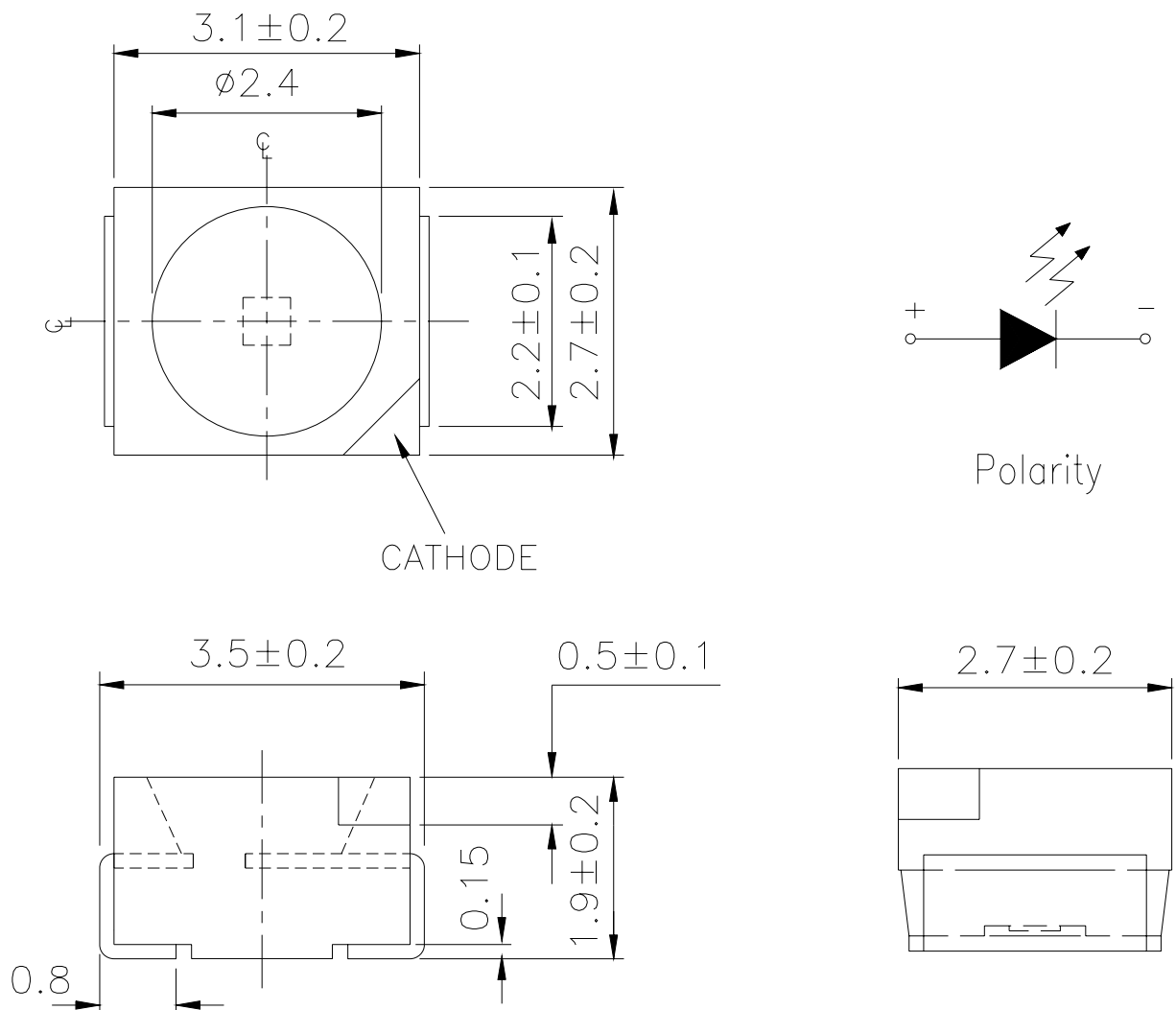
#### Applications

- Automotive backlighting or indicator : Dashboard, switch, audio and video equipments...etc.
- Backlight : LCD, switches, symbol, mobile phone and illuminated advertising.
- Display for indoor and outdoor application : Traffic...etc.
- Ideal for coupling into light guides.
- Substitution of traditional light
- Optical indicator
- General applications.

#### Device Selection Guide

Chip	Emitted Color	Resin Color
Material		
AlGaInP	Dark Red	Water Clear

**Package Dimensions**



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

**Absolute Maximum Ratings (Ta=25°C)**

<b>Parameter</b>	<b>Symbol</b>	<b>Rating</b>	<b>Unit</b>
Reverse Voltage	VR	12	V
Forward Current	IF	30	mA
Peak Forward Current (Duty 1/10 @1KHz)	IFP	100	mA
Power Dissipation	Pd	120	mW
Junction Temperature	Tj	115	°C
Operating Temperature	Topr	-40 ~ +100	°C
Storage Temperature	Tstg	-40 ~ +110	°C
Thermal resistance	Rth J-A	400	K/W
	Rth J-S	180	K/W
Soldering Temperature	Tsol	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	140	-----	360	mcd	I <sub>F</sub> =30mA
Viewing Angle	2θ 1/2	-----	120	-----	deg	I <sub>F</sub> =30mA
Peak Wavelength	λ <sub>p</sub>	-----	639	-----	nm	I <sub>F</sub> =30mA
Dominant Wavelength	λ <sub>d</sub>	625.5	-----	637.5	nm	I <sub>F</sub> =30mA
Spectrum Radiation Bandwidth	Δλ	-----	20	-----	nm	I <sub>F</sub> =30mA
Forward Voltage	V <sub>F</sub>	1.75	-----	2.35	V	I <sub>F</sub> =30mA
Reverse Current	I <sub>R</sub>	-----	-----	10	μA	V <sub>R</sub> =12V
Temperature coefficient of λ <sub>p</sub>	TCλ <sub>p</sub>	-----	0.15	-----	nm/K	I <sub>F</sub> =30mA
Temperature coefficient of λ <sub>d</sub>	TCλ <sub>d</sub>	-----	0.07	-----	nm/K	I <sub>F</sub> =30mA
Temperature coefficient of V <sub>F</sub>	TC <sub>V</sub>	-----	-2.20	-----	mV/K	I <sub>F</sub> =30mA

**Notes:**

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

**Bin Range of Dominant Wavelength**

Group	Bin Code	Min.	Max.	Unit	Condition
A	E6	625.5	629.5	nm	I <sub>F</sub> =30mA
	E7	629.5	633.5		
	E8	633.5	637.5		

Notes :

Tolerance of Dominant Wavelength : ±1nm

**Bin Range of Luminous Intensity**

Bin	Min	Max	Unit	Condition
R2	140	180	mcd	I <sub>F</sub> =30mA
S1	180	225		
S2	225	285		
T1	285	360		

Notes :

Tolerance of Luminous Intensity : ±11%

**Bin Range of Forward Voltage**

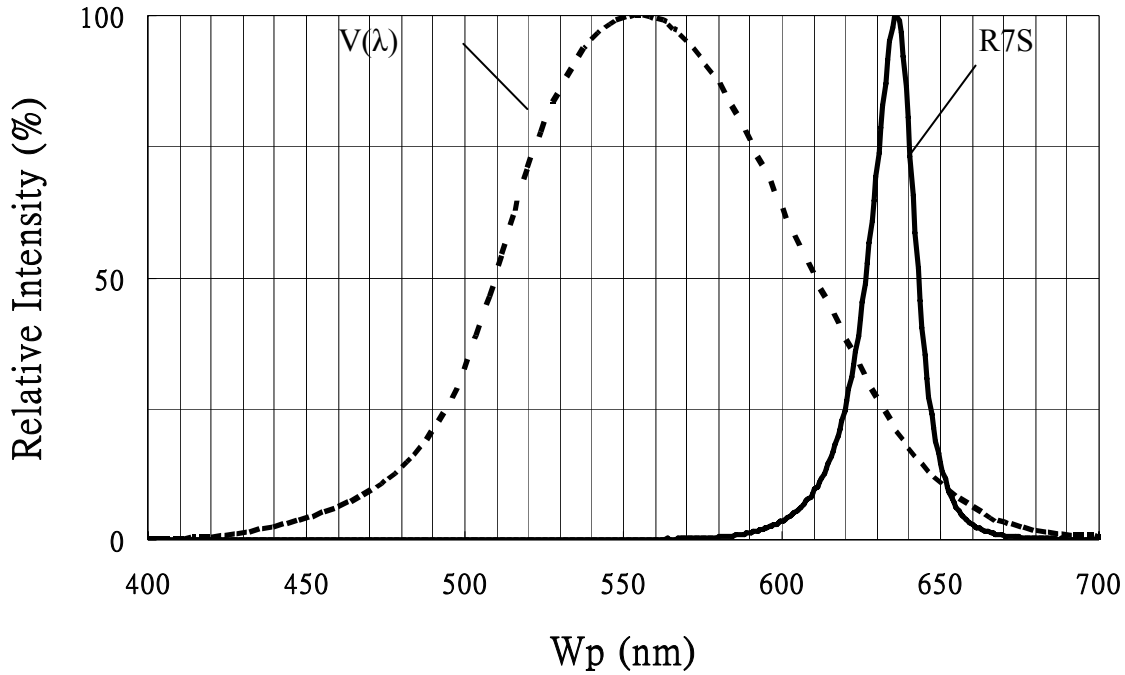
Group	Bin	Min	Max	Unit	Condition
B	0	1.75	1.95	V	I <sub>F</sub> =30mA
	1	1.95	2.15		
	2	2.15	2.35		

Notes :

Tolerance of Forward Voltage : ±0.1V

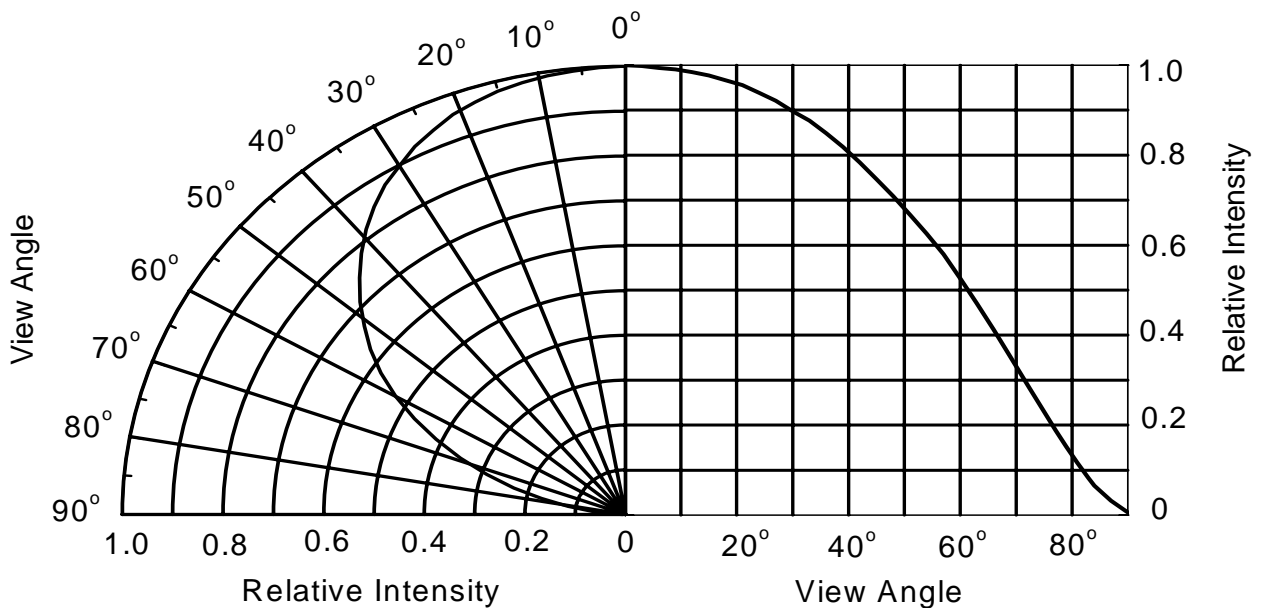
**Typical Electro-Optical Characteristics Curves (Ta=25°C)**

Typical Curve of Spectral Distribution :

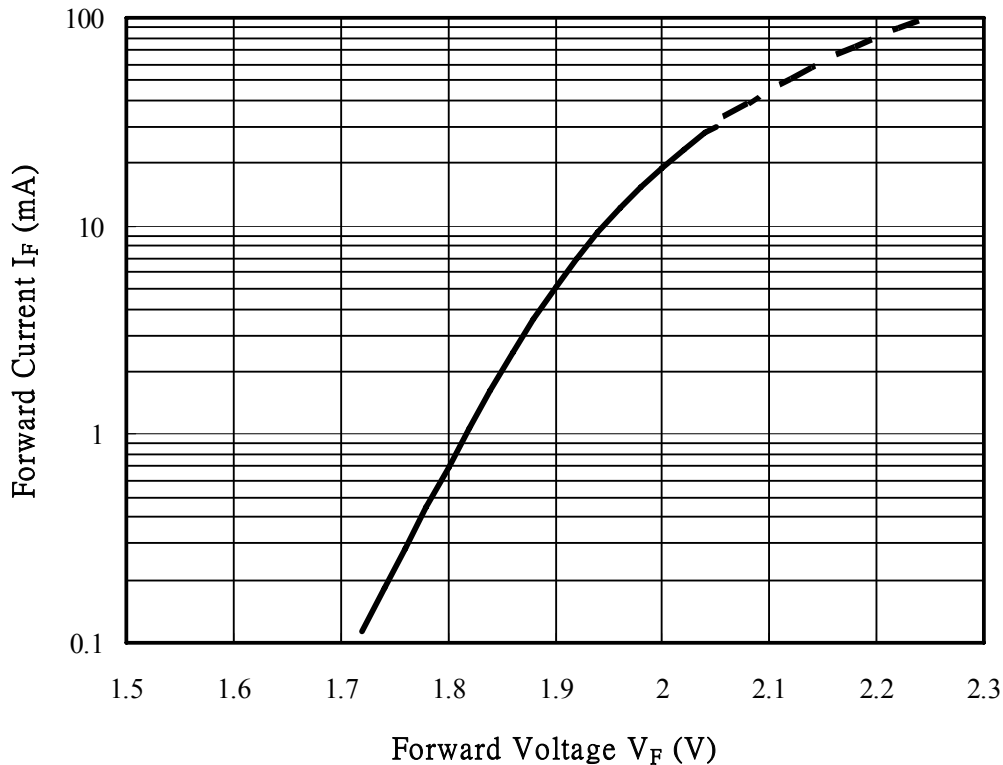


Note :  $V(\lambda)$  = Standard eye response curve ;  $I_F = 20 \text{ mA}$

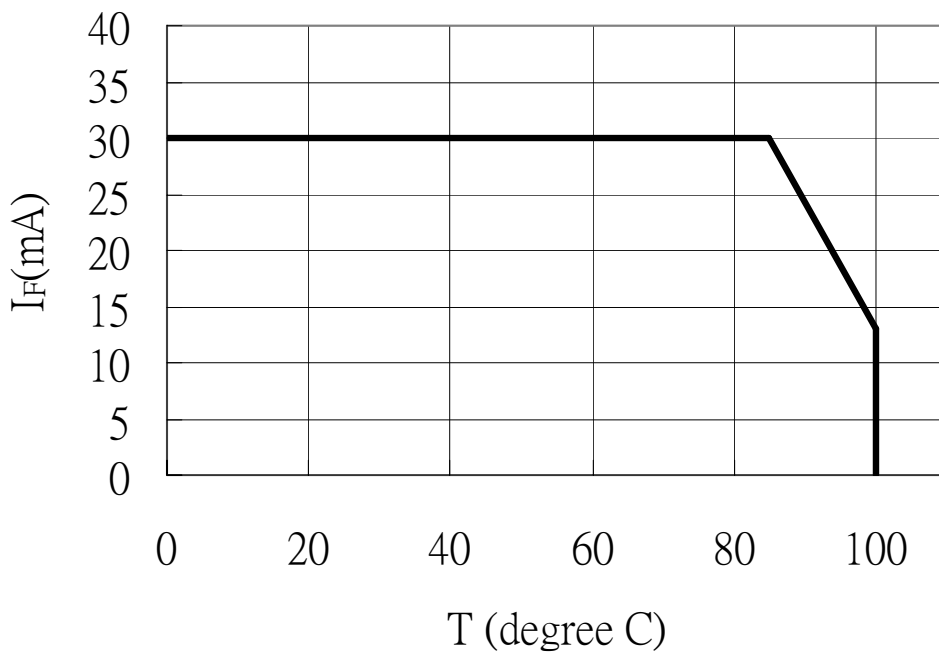
**Diagram characteristics of radiation**



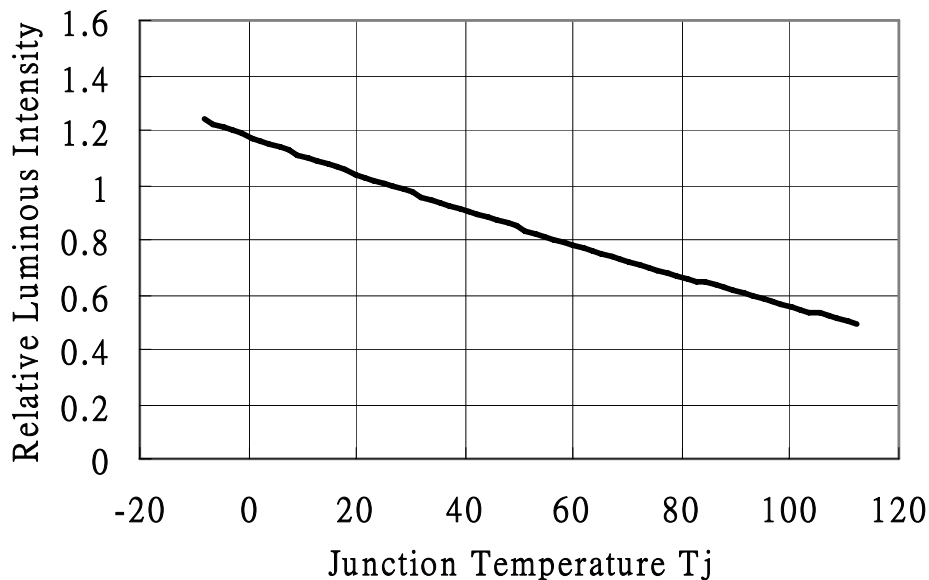
**Forward Current vs. Forward Voltage**



**Forward Current vs. Ambient Temperature.**

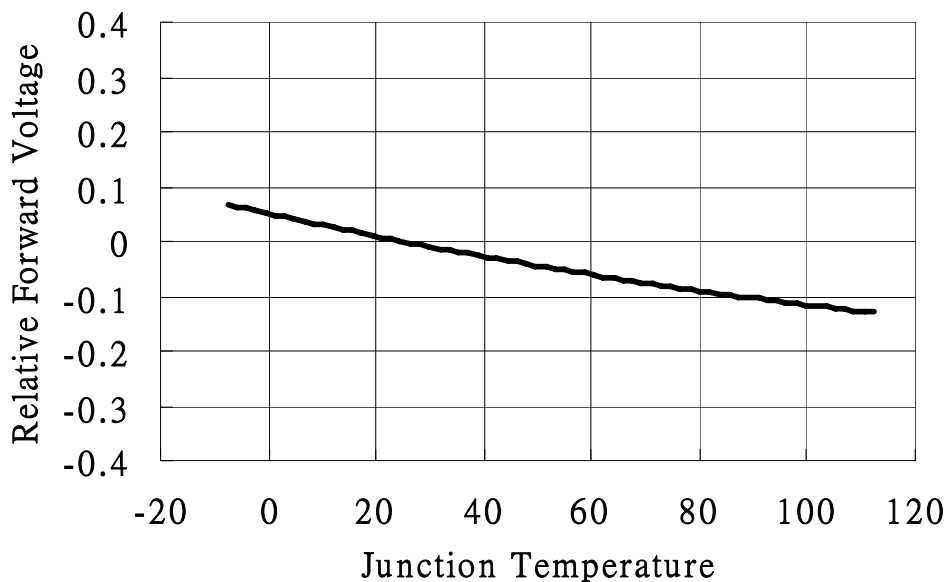


**Relative Luminous Intensity vs. Junction Temperature.**



Note :  $f(T_j) = I_v / I_v(25^\circ\text{C}) ; I_F=20\text{mA}$

**Relative Forward Voltage vs. Junction Temperature.**

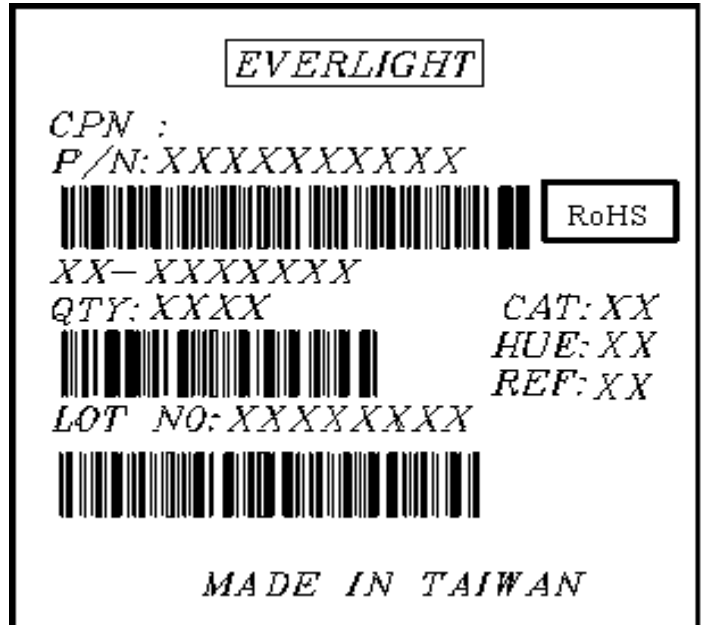


Note :  $\Delta V_F = V_F - V_F(25^\circ\text{C}) = f(T_j) ; I_F=20\text{mA}$

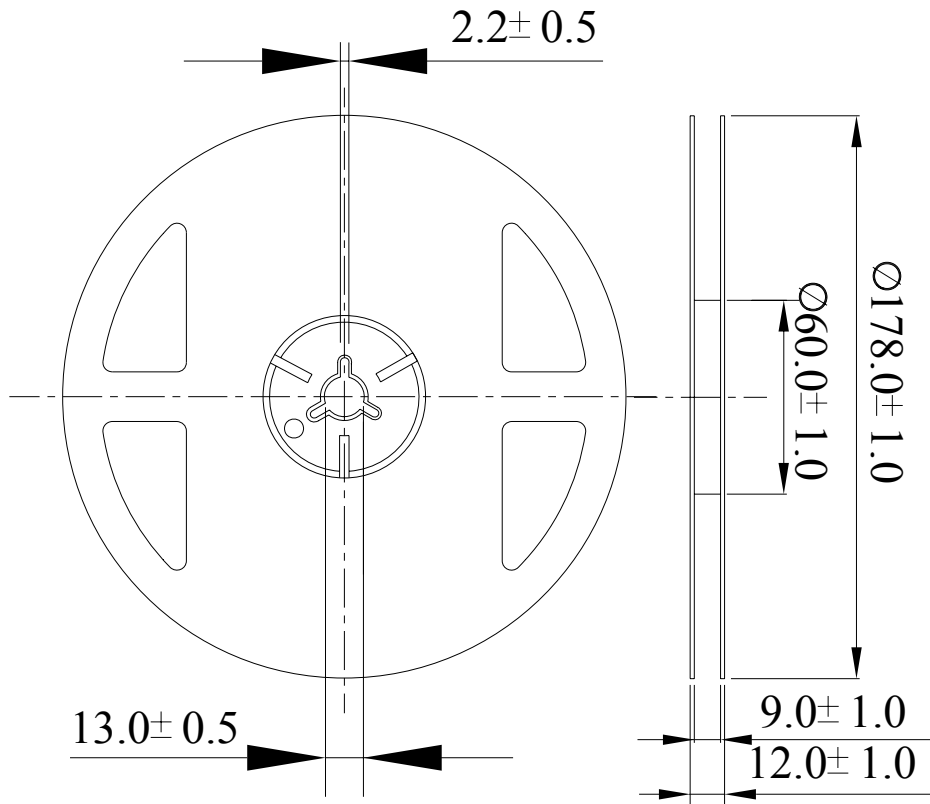


**Label explanation**

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

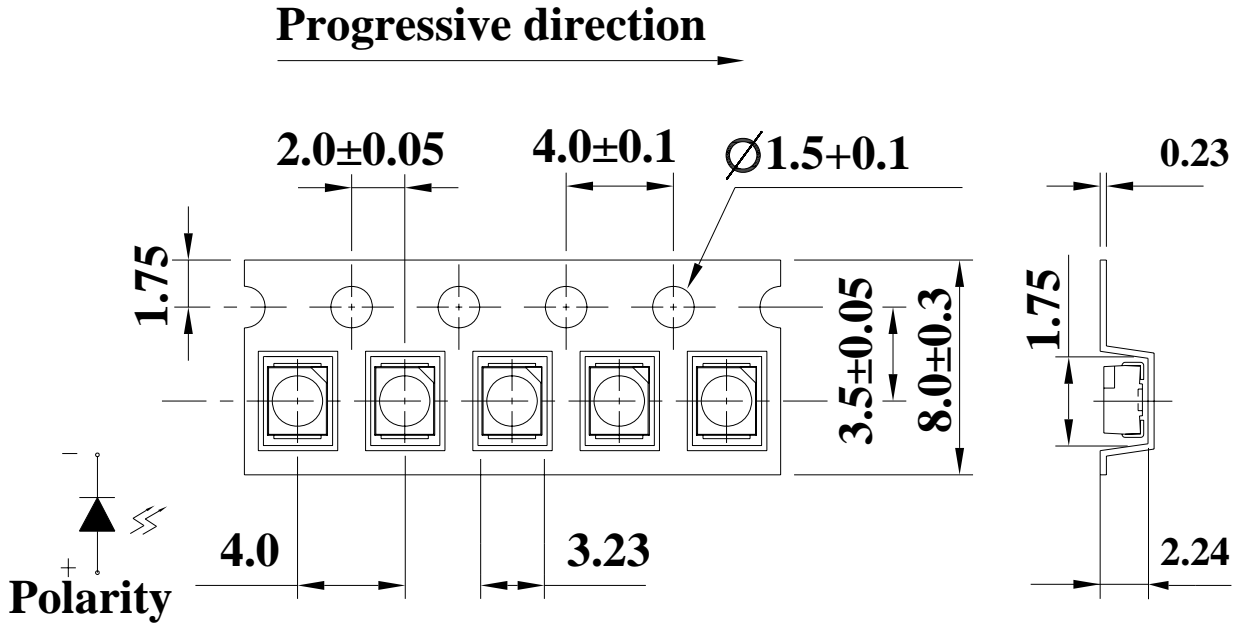


**Reel Dimensions**



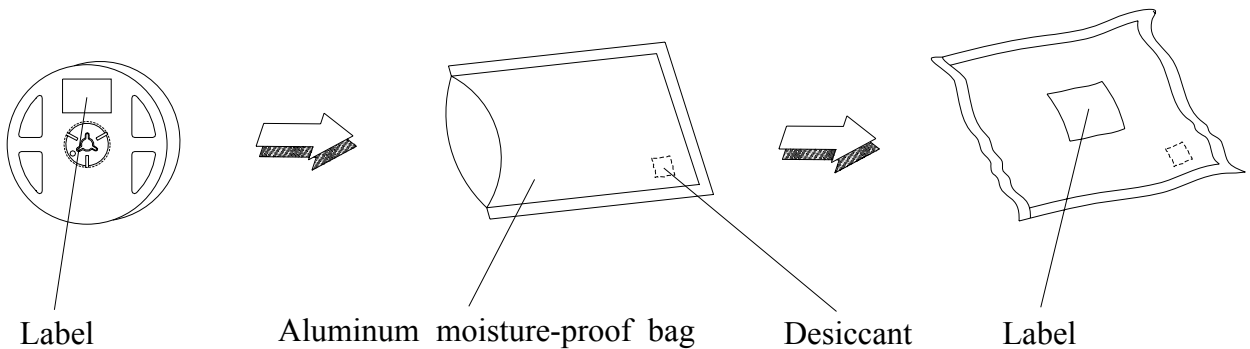
Note : Unit = mm

**Carrier Tape Dimensions: Loaded quantity 2000 PCS per reel**



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

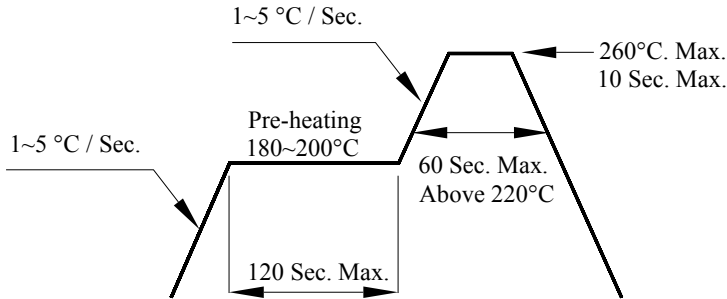
**Moisture Resistant Packaging Process and Materials**



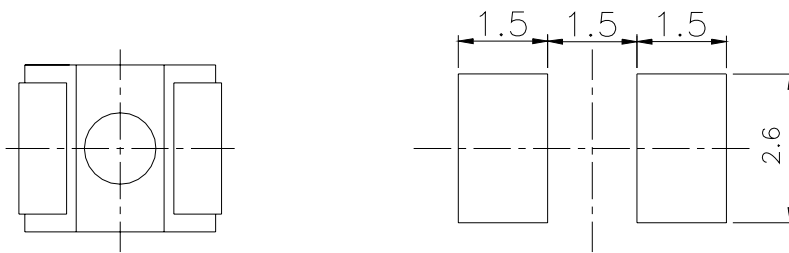
**Precautions for Use**

1. Soldering Condition

1.1 (A) Pb-free solder temperature profile



(B) Recommend soldering pad



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

1.2 Reflow soldering should not be done more than two times.

1.3 When soldering, do not put stress on the LED during heating.

1.4 After soldering, do not warp the circuit board.

2. Over-current-proof

Customer must apply resistors for protection, otherwise slight voltage shift will cause big current change ( Burn out will happen ).

3. Storage

3.1 Do not open moisture proof bag before the products are ready to use.

3.2 Before opening the package: The LED should be kept at 30°C or less and 90%RH or less.

3.3 After opening the package: The LED floor life is 1 year under 30°C or less and 60% RH or less. If unused LED remain, it should be stored in moisture proof packages.

3.4 If the moisture absorbent material (silica gel) has faded away or the LED 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.

#### 4.Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than  $350^{\circ}\text{C}$  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.