



**Technical Data Sheet (Preliminary)**

**Luminosity Full Color LED**

**61-136/REGHB7C-B01/ET**

**Features**

- Super-luminosity chip LED.
- White SMT package.
- Built in Red, Green, and Blue chips.
- Lead frame package with individual 6 pins.
- Wide viewing angle.
- Soldering methods: IR reflow soldering.
- Pb-free.
- The product itself will remain within RoHS compliant version.

**Descriptions**

- Due to the package design, 61-136 has wide viewing angle , low power consumption and adjusting each color is possible thanks to serial connection by 6 terminal connection (Individual driving by each terminal) in case of using several number of LED. And makes it ideal for light pipe application.

**Applications**

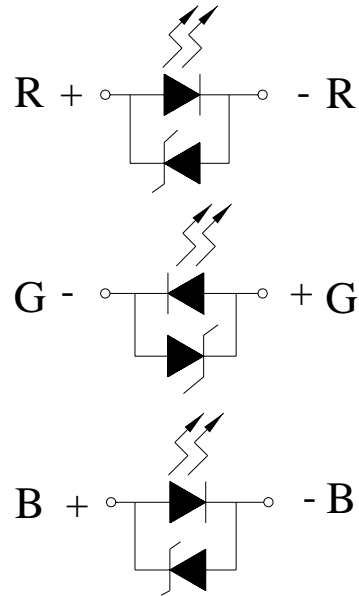
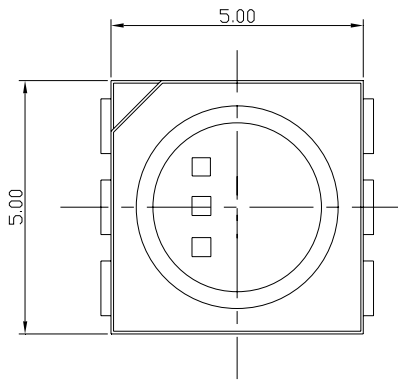
- Amusement equipment.
- Information boards.
- Flashlight for digital camera of cellular phone.

**Device Selection Guide**

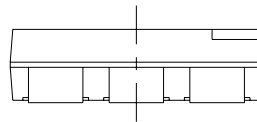
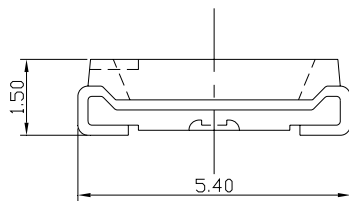
Chip			Lens Color
Type	Material	Emitted Color	
RE	AlGaInP	Brilliant Red	Water Clear
GH	InGaN	Brilliant Green	
B7	InGaN	Blue	

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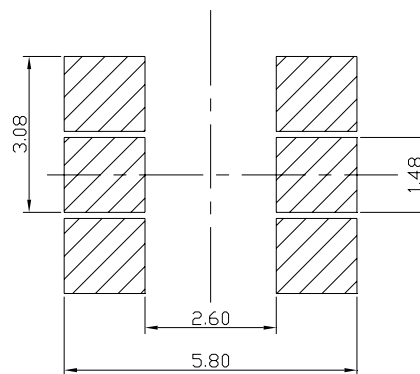
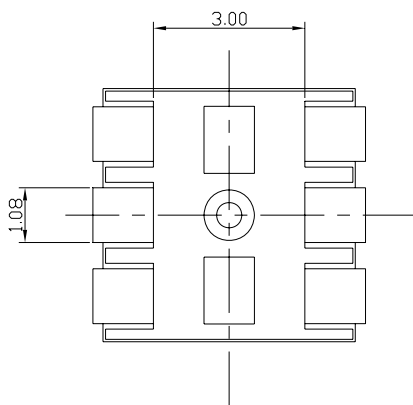
**Package Outline Dimensions**



**Polarity**



Recommend soldering pad design



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

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

Parameter	Symbol	Rating		Unit
Reverse Voltage	V <sub>R</sub>	5		V
Forward Current	I <sub>F</sub>	RE	30	mA
		GH	30	
		B7	30	
Peak Forward Current (Duty 1/10 @ 1KHz)	I <sub>FP</sub>	RE	120	mA
		GH	110	
		B7	110	
Power Dissipation	P <sub>d</sub>	RE	80	mW
		GH	110	
		B7	110	
Thermal resistance (Junction-Air)	R <sub>thJ-A</sub>	RE	230	°C/W
		GH	240	
		B7	240	
Thermal resistance (Junction-Lead)	R <sub>thJ-L</sub>	RE	150	°C/W
		GH	160	
		B7	160	
Electrostatic Discharge(HBM)	ESD	150		V
Operating Temperature	T <sub>opr</sub>	-40 ~ +85		°C
Storage Temperature	T <sub>stg</sub>	-40~ +90		°C
Soldering Temperature	T <sub>sol</sub>	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>	RE	500	-----	700	mcd	I <sub>F</sub> =20mA
		GH	700	-----	1300		I <sub>F</sub> =20mA
		B7	110	-----	210		I <sub>F</sub> =20mA
Luminous Flux	Φ <sub>v</sub>	RE	-----	1.75	-----	lm	I <sub>F</sub> =20mA
		GH	-----	2.87	-----		
		B7	-----	0.58	-----		
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =20mA	
Peak Wavelength	λ <sub>p</sub>	RE	-----	632	-----	nm	I <sub>F</sub> =20mA
		GH	-----	518	-----		
		B7	-----	468	-----		
Dominant Wavelength	λ <sub>d</sub>	RE	619.5	-----	631.5	nm	I <sub>F</sub> =20mA
		GH	519.5	-----	530.5		
		B7	450.0	-----	460.5		
Spectrum Radiation Bandwidth	Δλ	RE	-----	20	-----	nm	I <sub>F</sub> =20mA
		GH	-----	35	-----		
		B7	-----	35	-----		
Forward Voltage	V <sub>F</sub>	RE	1.8	-----	2.2	V	I <sub>F</sub> =20mA
		GH	3.0	-----	3.4		
		B7	3.0	-----	3.4		
Reverse Current	I <sub>R</sub>	RE	-----	-----	10	μA	V <sub>R</sub> =5V
		GH	-----	-----	50		
		B7	-----	-----	50		

**Notes:**

1. Tolerance of Luminous Intensity ±10%
2. Tolerance of Dominant Wavelength ±1 nm
3. Tolerance of Forward Voltage ±0.1V

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**Bin Range Of Luminous Intensity**

Symbol		Bin Code	Min.	Max.	Unit	Condition
I <sub>v</sub>	RE	R1	500	600	mcd	I <sub>F</sub> =20mA
		R2	600	700		
	GH	G0	700	1000		
		G1	1000	1300		
	B7	B1	110	160		
		B2	160	210		

**Bin Range Of Dominant Wavelength**

Symbol		Bin Code	Min.	Max.	Unit	Condition
λ <sub>d</sub>	RE	R1	619.5	625.5	nm	I <sub>F</sub> =20mA
		R2	625.5	631.5		
	GH	G0	519.5	525.5		
		G1	525.5	530.5		
	B7	B0	450.0	455.0		
		B1	455.0	460.5		

**Notes:**

- 1.Tolerance of Luminous Intensity ±10%
- 2.Tolerance of Dominant Wavelength ±1 nm

**61-136/REGHB7C-B01/ET****Bin Range of Forward Voltage**

Symbol		Bin Code	Min.	Max.	Unit	Condition
V <sub>F</sub>	RE	VR0	1.80	2.00	V	I <sub>F</sub> =20mA
		VR1	2.00	2.20		
	GH	VG0	3.00	3.20		
		VG1	3.20	3.40		
		VG2	3.40	3.60		
	B7	VB1	3.00	3.20		
		VB2	3.20	3.40		

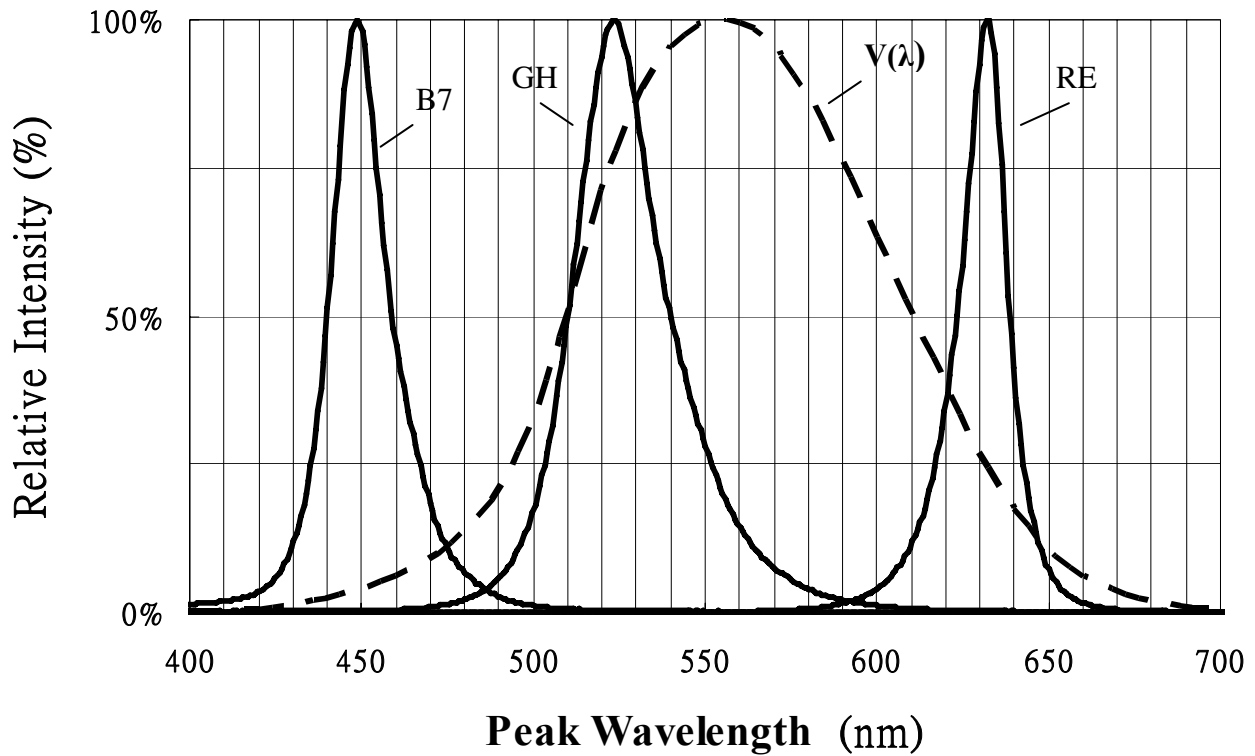
**Notes:**

1. Tolerance of Forward Voltage  $\pm 0.1V$

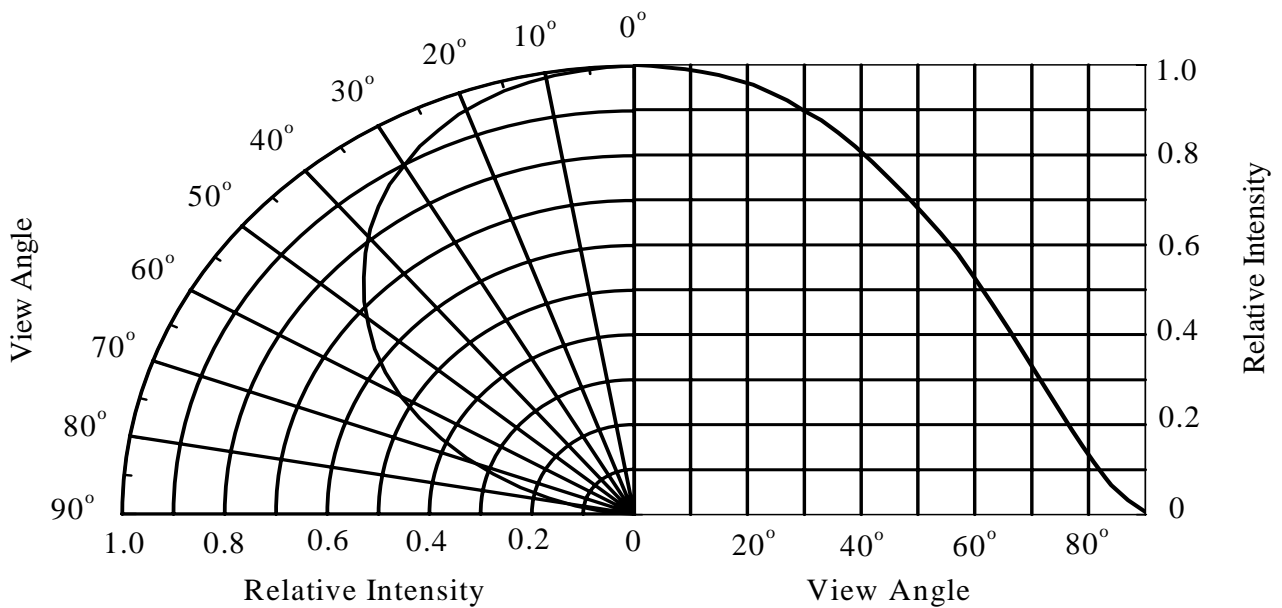
**Typical Electro-Optical Characteristics Curves**

**Typical curve of spectral distribution:**

$V(\lambda)$ =Standard eye response curve

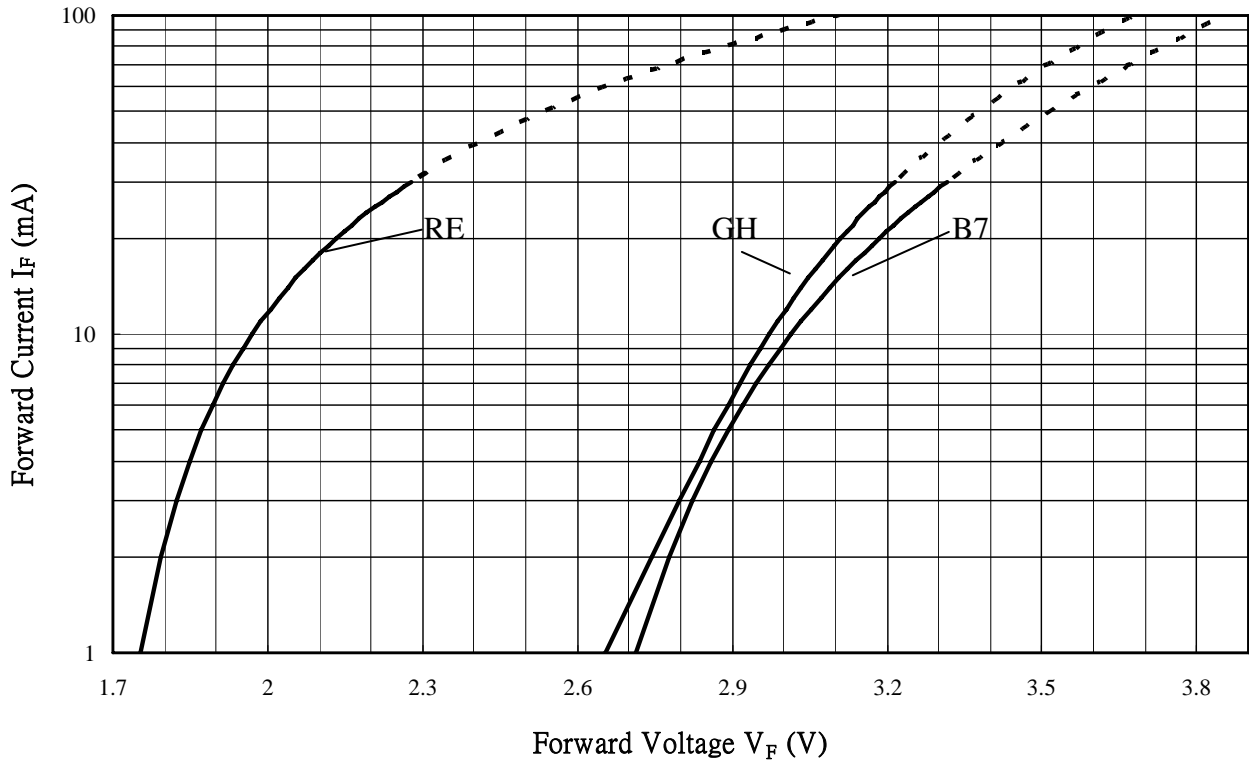


**Diagram characteristics of radiation:**

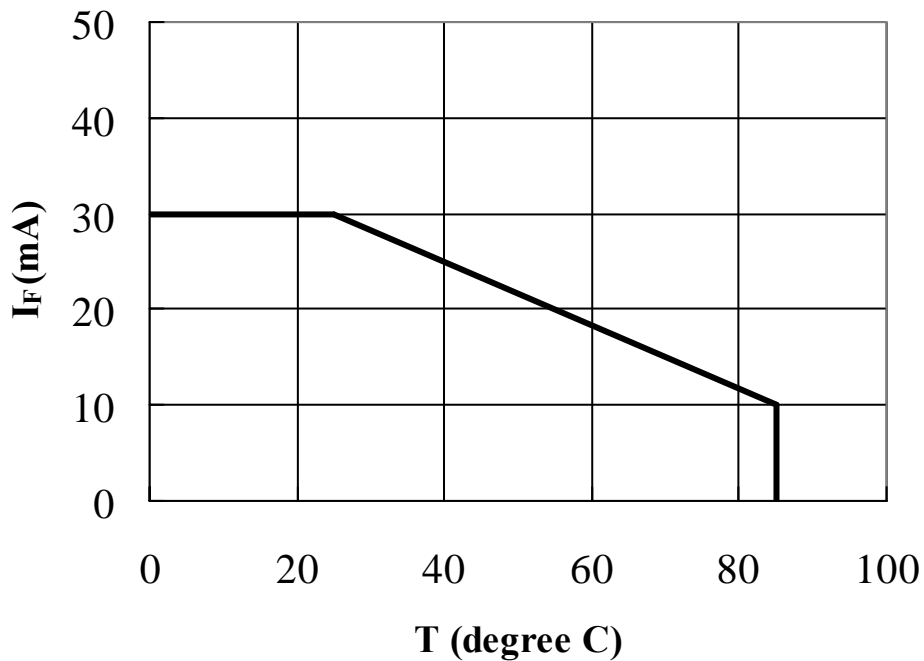


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**Forward Current vs. Forward Voltage  $T_a=25^\circ\text{C}$**



**Forward Current v.s. Ambient Temp.**





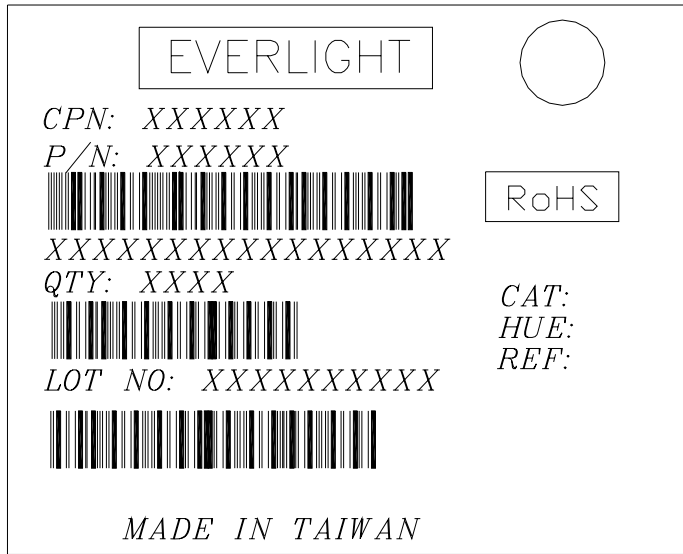
**61-136/REGHB7C-B01/ET**

**Label explanation**

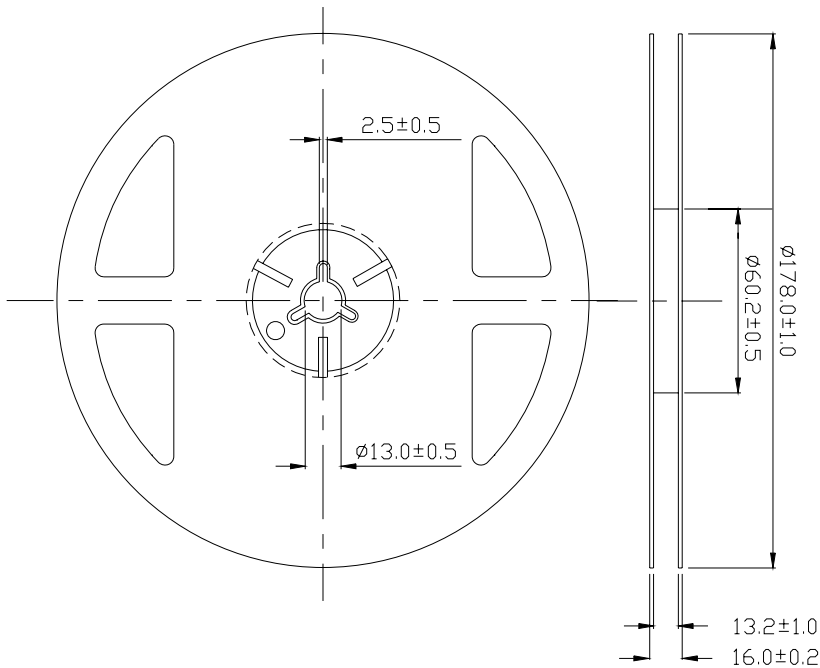
**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**



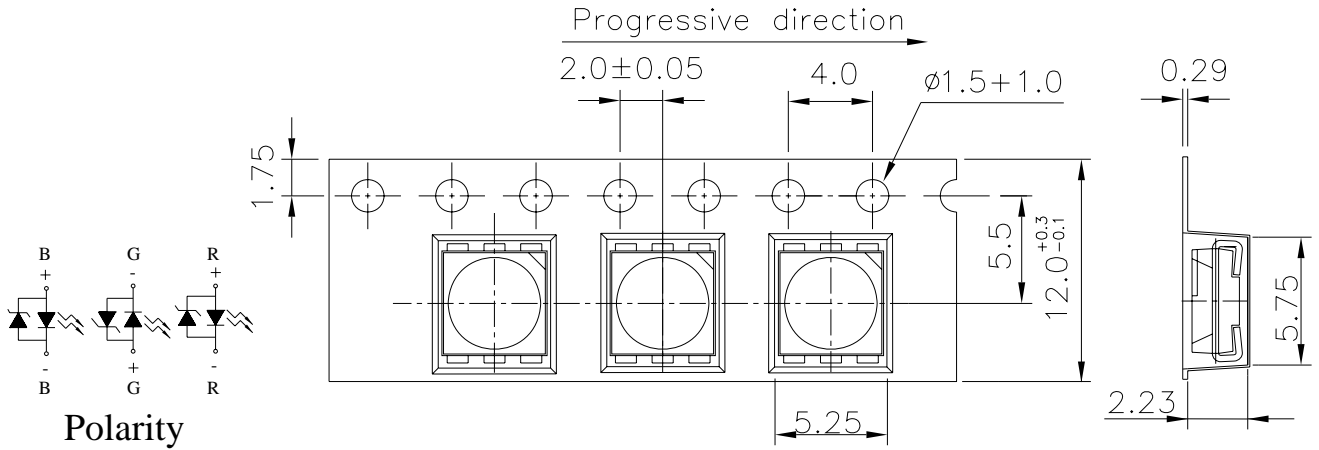
**Reel Dimensions**



**Note:** The tolerances unless mentioned is  $\pm 0.1$ mm ,Unit = mm

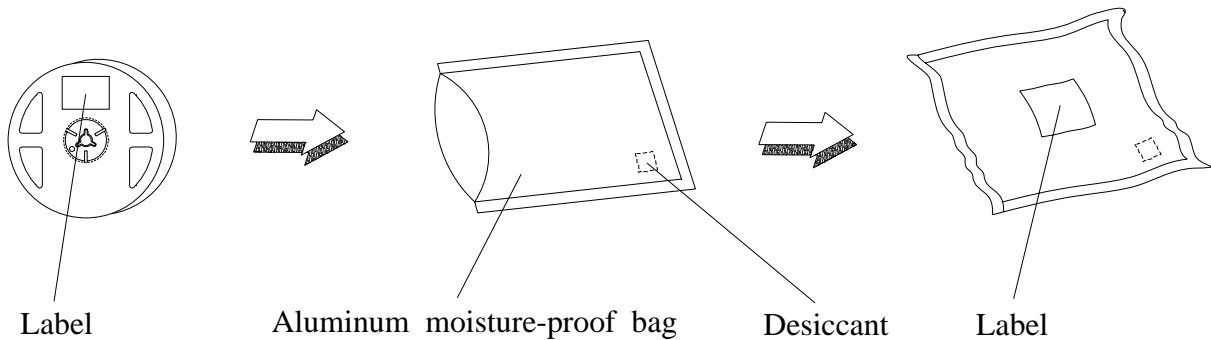
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**Carrier Tape Dimensions; Loaded quantity per reel 800 PCS/reel**



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

**Moisture Resistant Packaging**



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**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

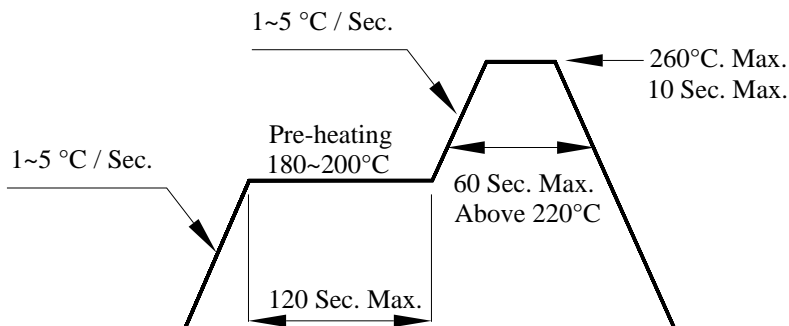
\* For each die

**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±5°C for 24 hours.

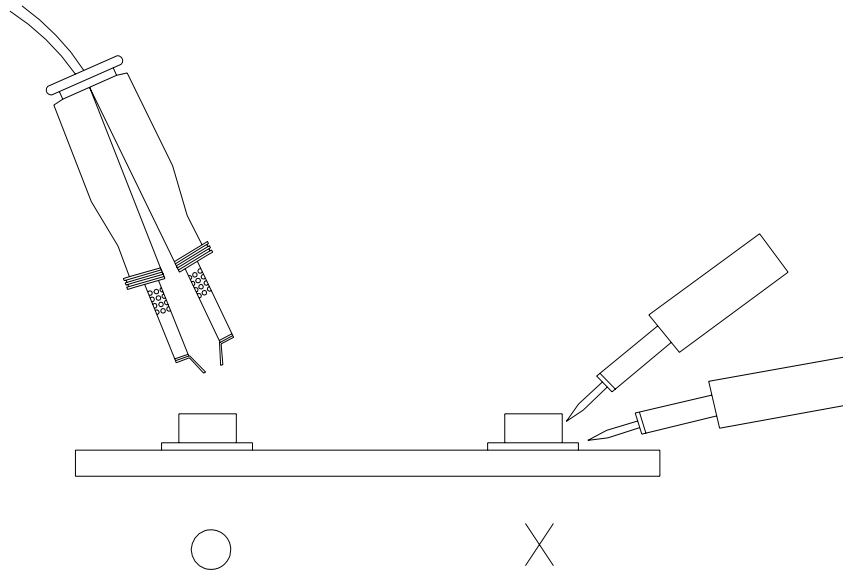
**3. Soldering Condition****3.1 Pb-free solder temperature profile**

- 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.



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