

# Technical Data Sheet

## Full Color Top View LEDs

### 67-23/R6GHBHC-B06/2T

#### Features

- P-LCC-4 package.
- White package.
- Optical indicator.
- Colorless clear window.
- Pb free
- The product itself will remain within RoHS compliant version..



#### Descriptions

- The 67-23 series is available in soft orange, green, blue and yellow. Due to the package design, the LED has wide viewing angle and optimized light coupling by inter reflector. This feature makes the ideal for light pipe application. The low current requirement makes this device ideal for portable equipment or any other application where power is at a premium.

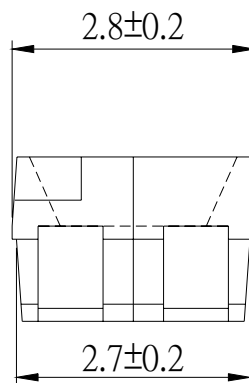
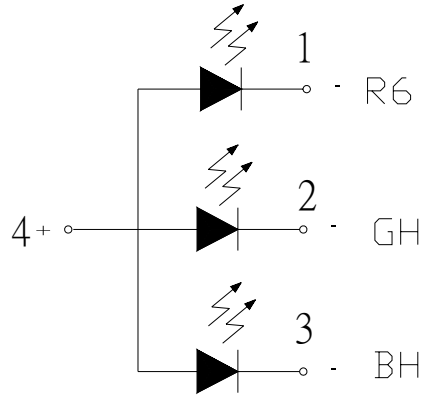
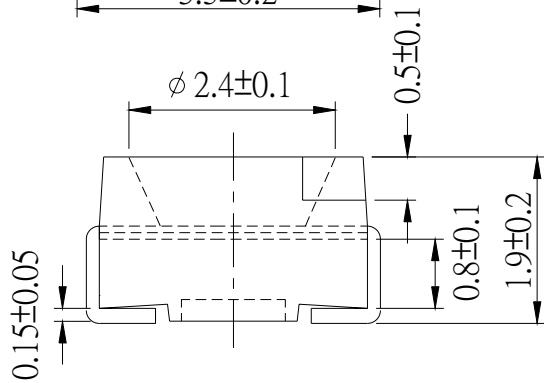
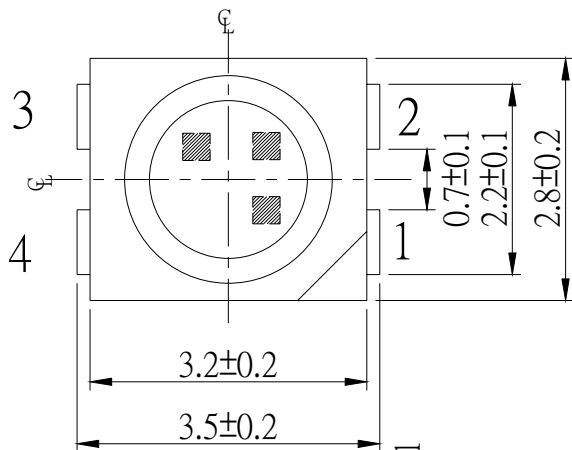
#### Applications

- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD's, switches and symbols.
- Light pipe application.
- General use.

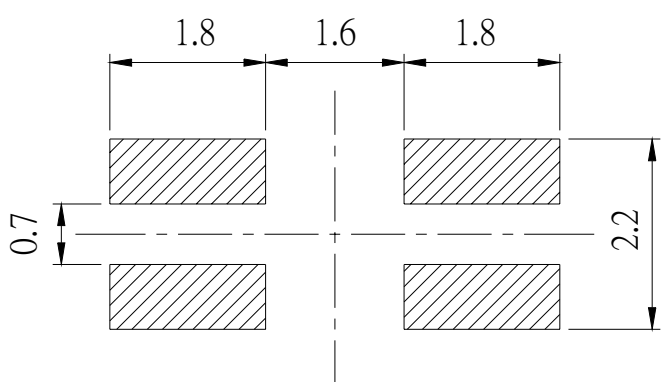
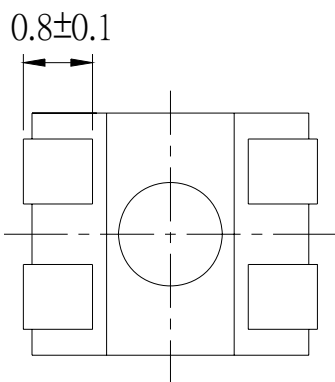
#### Device Selection Guide

Chip			Lens Color
Type	Material	Emitted Color	
R6	AlGaInP	Brilliant Red	Water Clear
GH	InGaN	Brilliant Green	
BH	InGaN	Blue	

**Package Outline Dimensions**



For reflow soldering(propose)



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

**67-23/R6GHBHC-B06/2T**

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

Parameter	Symbol	Rating		Unit
Reverse Voltage	V <sub>R</sub>	5		V
Forward Current	I <sub>F</sub>	R6	25	mA
		GH	25	
		BH	25	
Operating Temperature	T <sub>opr</sub>	-40 ~ +85		°C
Storage Temperature	T <sub>stg</sub>	-40~ +100		°C
Electrostatic Discharge(HBM)	ESD	R6	2000	V
		GH	1000	
		BH	1000	
Power Dissipation	P <sub>d</sub>	R6	60	mW
		GH	110	
		BH	110	
Peak Forward Current(Duty 1/10 @ 1KHz)	I <sub>FP</sub>	R6	60	mA
		GH	100	
		BH	100	
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>	R6	180	-----	360	mcd	*I <sub>F</sub> =20mA
		GH	285	-----	565		
		BH	90	-----	180		
Peak Wavelength	λ <sub>p</sub>	R6	-----	632	-----	nm	I <sub>F</sub> =20mA
		GH	-----	518	-----		
		BH	-----	468	-----		
Dominant Wavelength	λ <sub>d</sub>	R6	621	-----	626	nm	I <sub>F</sub> =20mA
		GH	520	-----	525		
		BH	470	-----	475		
Spectrum Radiation Bandwidth	Δλ	R6	-----	20	-----	nm	I <sub>F</sub> =20mA
		GH	-----	35	-----		
		BH	-----	35	-----		
Forward Voltage	V <sub>F</sub>	R6	1.75	-----	2.35	V	I <sub>F</sub> =20mA
		GH	2.9	-----	3.5		
		BH	2.9	-----	3.5		
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =20mA	
Reverse Current	I <sub>R</sub>	R6	-----	-----	10	μA	V <sub>R</sub> =5V
		GH	-----	-----	50		
		BH	-----	-----	50		

\*For each die

**Notes:**

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

**Bin Range Of Luminous Intensity**

Chip	Bin	Min	Max	Unit	Condition
R6	S1	180	225	mcd	IF=20mA
	S2	225	285		
	T1	285	360		
GH	T1	285	360		
	T2	360	450		
	U1	450	565		
BH	Q2	90	112		
	R1	112	140		
	R2	140	180		

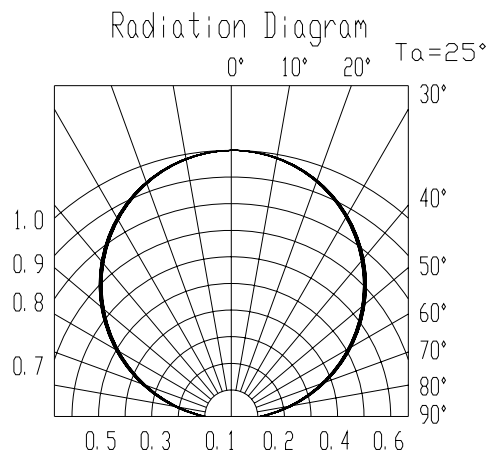
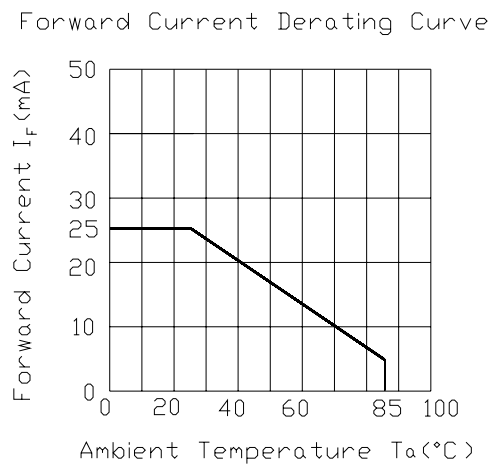
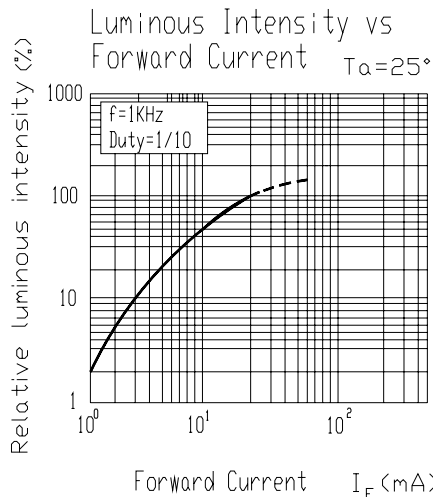
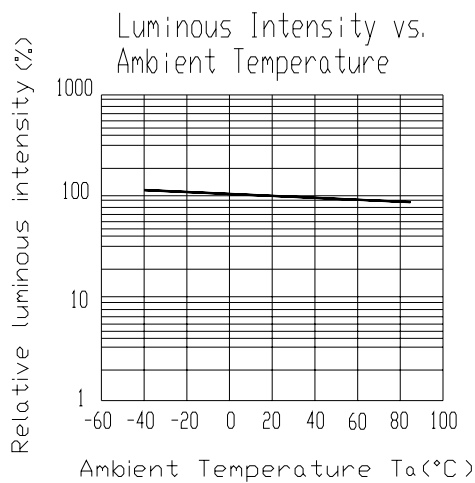
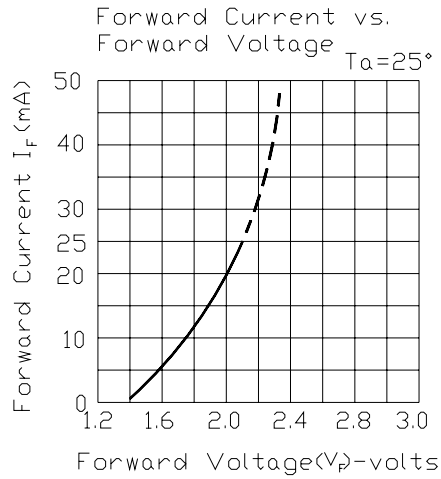
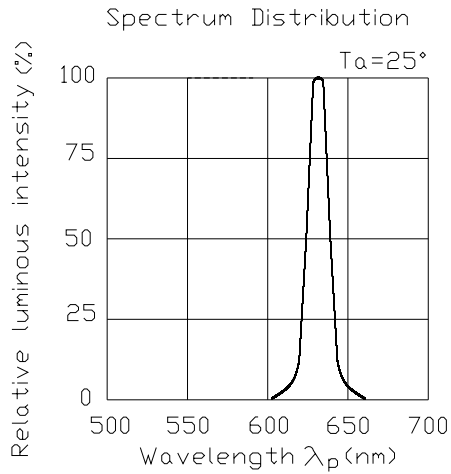
**Bin Range Of Forward Voltage**

Chip	Bin	Min	Max	Unit	Condition
R6	0	1.75	1.95	V	IF=20mA
	1	1.95	2.15		
	2	2.15	2.35		
GH	11	2.90	3.10		
	12	3.10	3.30		
	13	3.30	3.50		
BH	11	2.90	3.10		
	12	3.10	3.30		
	13	3.30	3.50		

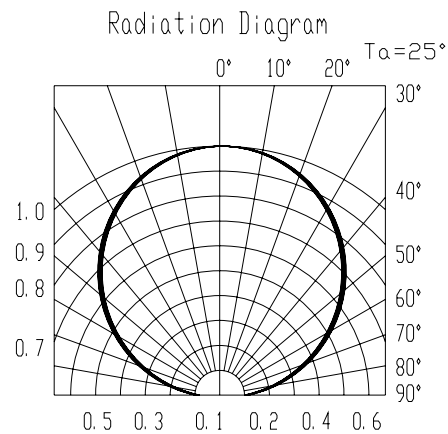
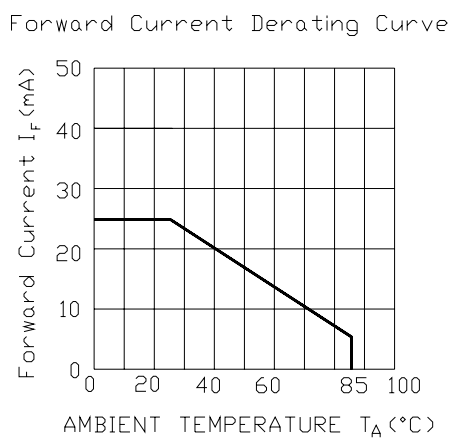
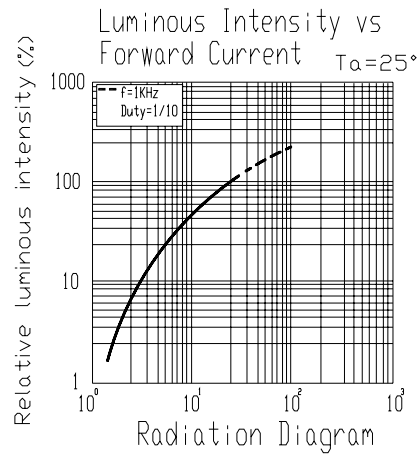
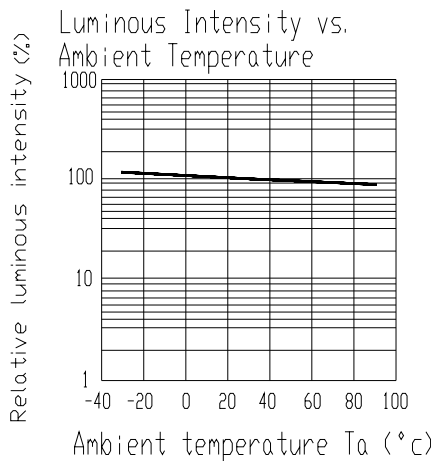
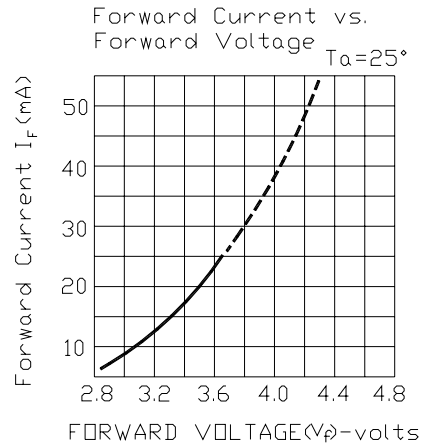
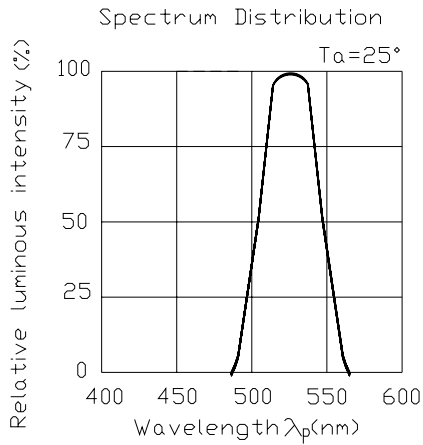
**Notes:**

- 1.Tolerance of Luminous Intensity  $\pm 11\%$
- 2.Tolerance of Forward Voltage  $\pm 0.1V$

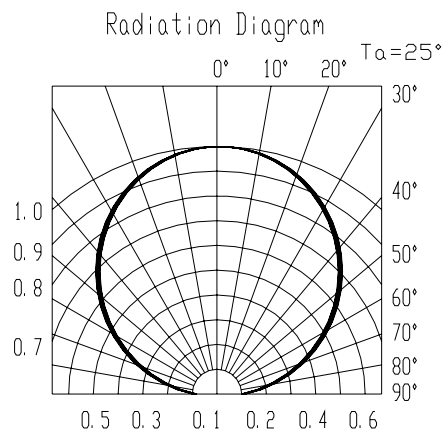
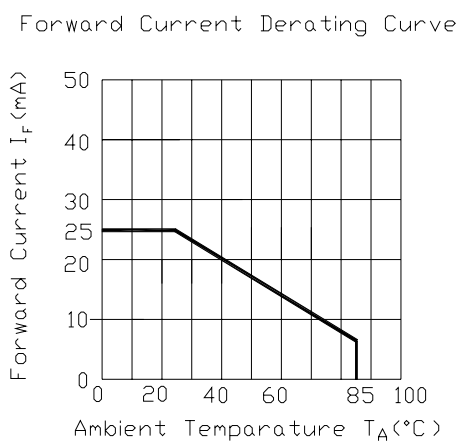
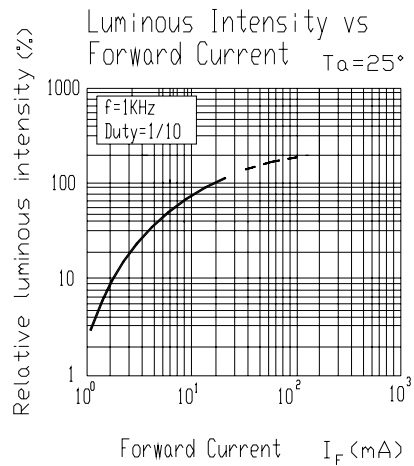
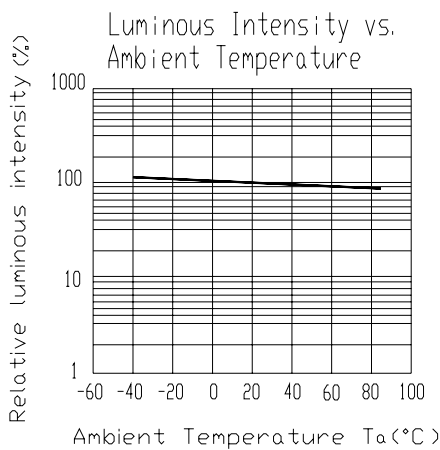
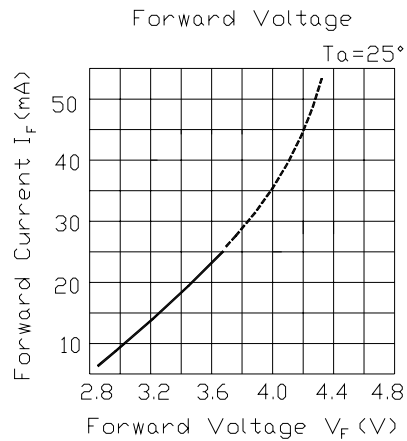
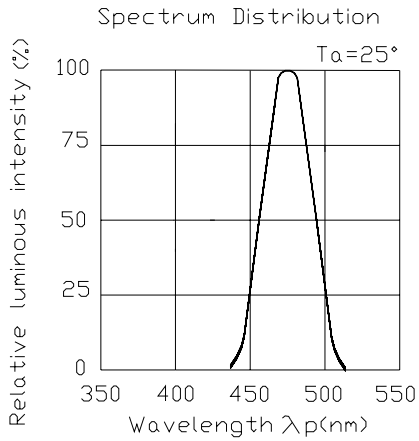
**Typical Electro-Optical Characteristics Curves (R6)**



**Typical Electro-Optical Characteristics Curves (GH)**



**Typical Electro-Optical Characteristics Curves (BH)**





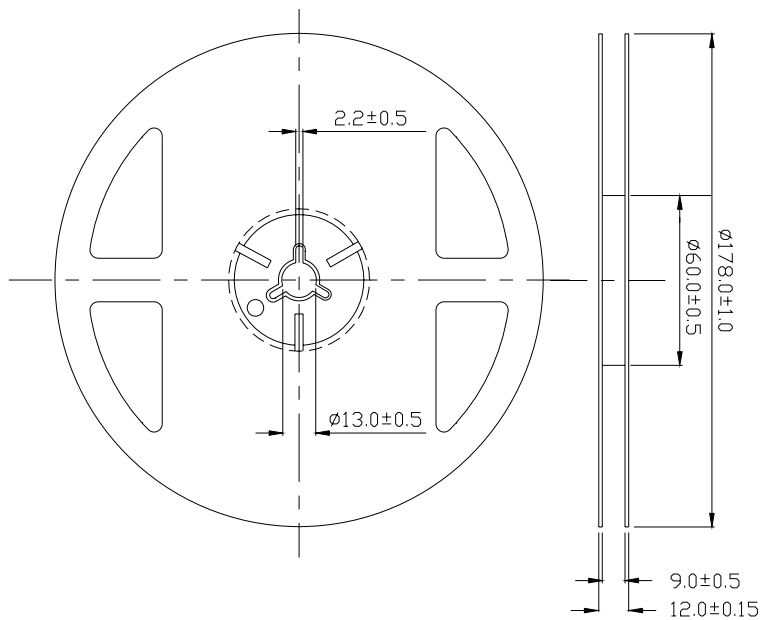
**67-23/R6GHBHC-B06/2T**

**Label Explanation**

CAT: Luminous Intensity Rank  
 HUE: Dom. Wavelength Rank  
 REF: Forward Voltage Rank



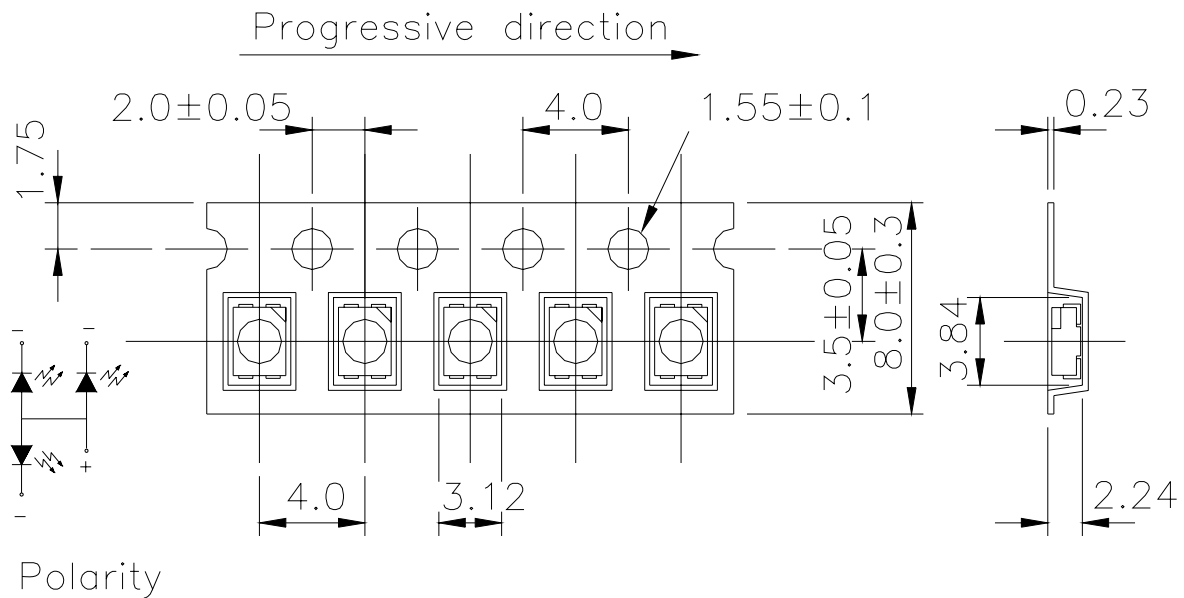
**Reel Dimensions**



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

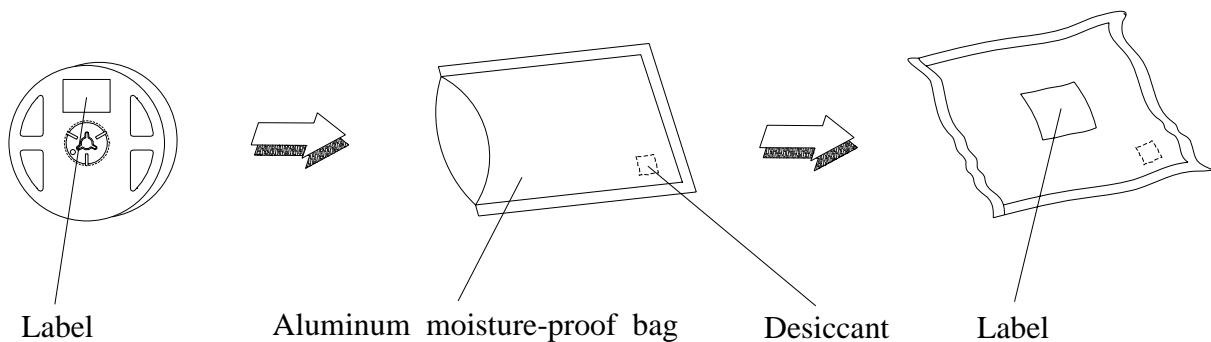
## 67-23/R6GHBHC-B06/2T

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



**Note:** Tolerances Unless Dimension  $\pm 0.1\text{mm}$  Unit = mm

### Moisture Resistant Packaging



**67-23/R6GHBHC-B06/2T**
**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

## 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.

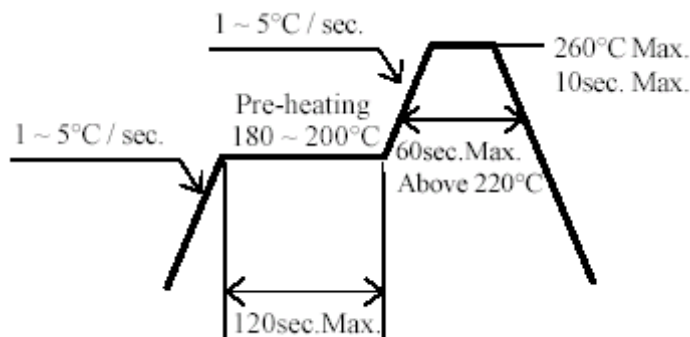
2.3 After opening the package: The LED's floor life are 72 hours under 30°C or less and 60% RH or less. If unused LEDs remain, it should be stored in moisture proof packages.

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.

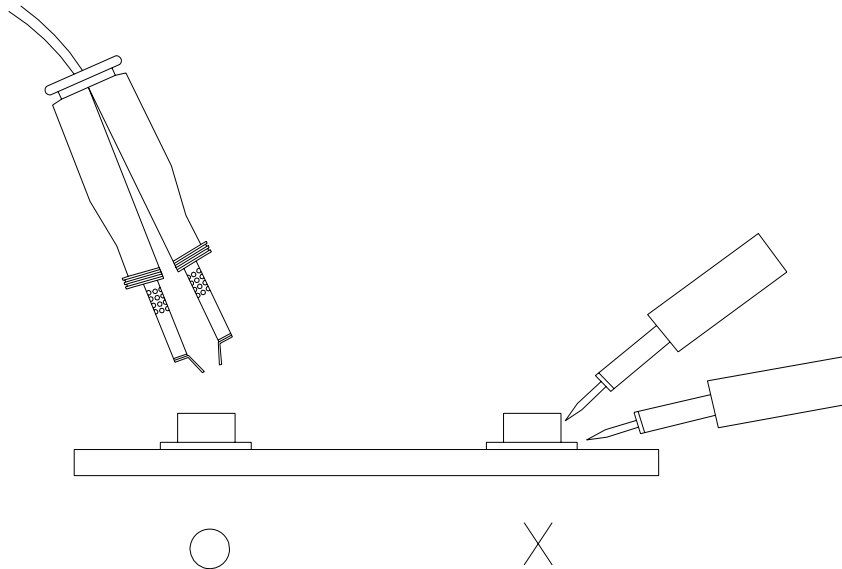
3.4 After soldering, do not warp the circuit board.

### 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.



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