



# Technical Data Sheet

## Full Color Top View LEDs

### 67-23/R7SGHBHC-B14/2T

#### 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

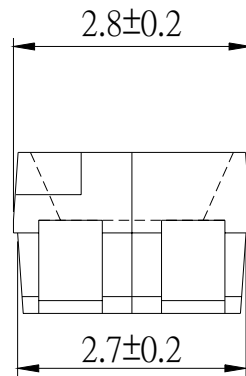
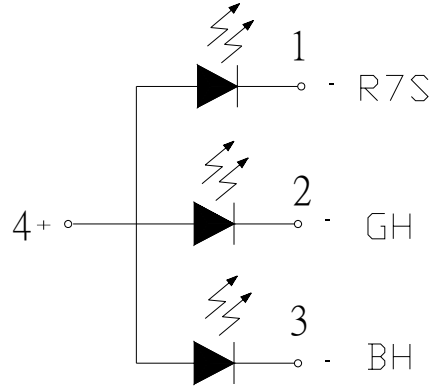
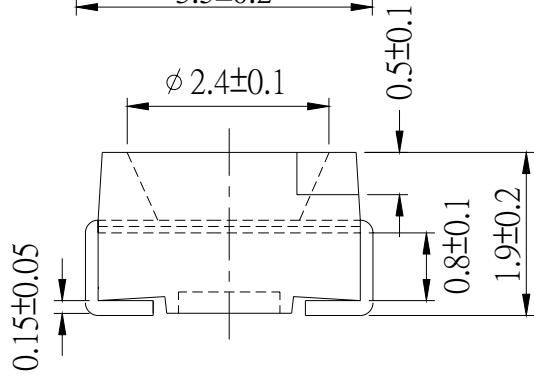
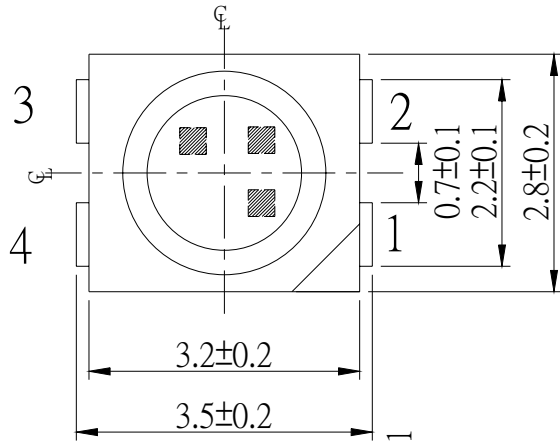
- Telecommunication: indicator and backlighting in telephone and fax.
- Flat backlight for LCD's, switches and symbols.
- Light pipe application.
- General use.

#### Device Selection Guide

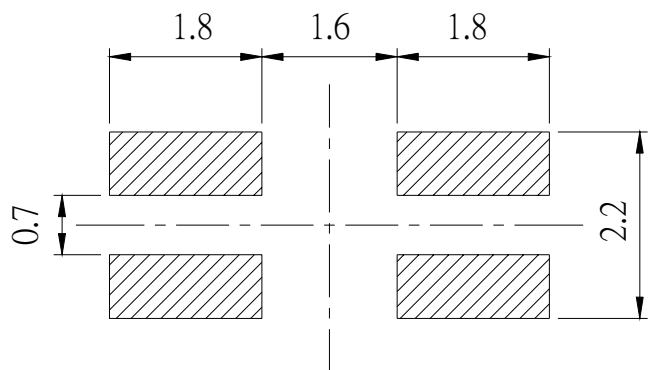
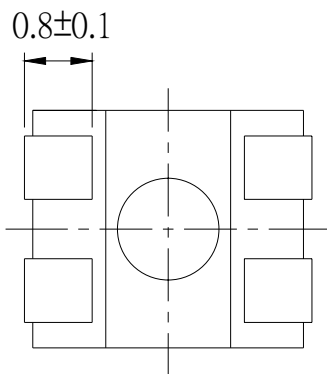
Chip			Lens Color
Type	Material	Emitted Color	
R7S	AlGaInP	Brilliant Red	Water Clear
GH	InGaN	Brilliant Green	
BH	InGaN	Blue	

**67-23/R7SGHBHC-B14/2T**

**Package Outline Dimensions**



For reflow soldering(propose)



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

**67-23/R7SGHBHC-B14/2T**
**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating		Unit
Reverse Voltage	V <sub>R</sub>	5		V
Forward Current	I <sub>F</sub>	R7S	50	mA
		GH	25	
		BH	25	
Peak Forward Current (Duty 1/10 @ 1KHz)	I <sub>FP</sub>	R7S	100	mA
		GH	100	
		BH	100	
Power Dissipation	P <sub>d</sub>	R7S	120	mW
		GH	110	
		BH	110	
Electrostatic Discharge(HBM)	ESD	R7S	2000	V
		GH	150	
		BH	150	
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.		

**67-23/R7SGHBHC-B14/2T**
**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max	Unit	Condition	
Luminous Intensity	I <sub>v</sub>	R7S	140	-----	285	mcd	*I <sub>F</sub> =20mA
		GH	360	-----	715		
		BH	90	-----	180		
Peak Wavelength	λ <sub>p</sub>	R7S	-----	639	-----	nm	*I <sub>F</sub> =20mA
		GH	-----	518	-----		
		BH	-----	468	-----		
Dominant Wavelength	λ <sub>d</sub>	R7S	621.5	-----	633.5	nm	*I <sub>F</sub> =20mA
		GH	520.0	-----	530.0		
		BH	465.0	-----	475.0		
Spectrum Radiation Bandwidth	Δλ	R7S	-----	20	-----	nm	*I <sub>F</sub> =20mA
		GH	-----	35	-----		
		BH	-----	35	-----		
Forward Voltage	V <sub>F</sub>	R7S	1.75	-----	2.35	V	*I <sub>F</sub> =20mA
		GH	2.75	-----	3.95		
		BH	2.75	-----	3.95		
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =20mA	
Reverse Current	I <sub>R</sub>	R7S	-----	-----	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

**67-23/R7SGHBHC-B14/2T**
**Bin Range Of Dominant Wavelength**

Symbol		Bin Code	Min.	Max.	Unit	Condition
$\lambda_d$	R7S	E5	621.5	625.5	nm	$I_F = 20\text{mA}$
		E6	625.5	629.5		
		E7	629.5	633.5		
	BH	X	465	470		
		Y	470	475		
	GH	X	520	525		
Y		525	530			

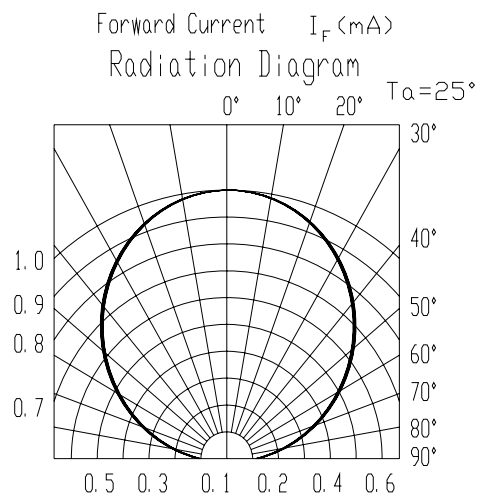
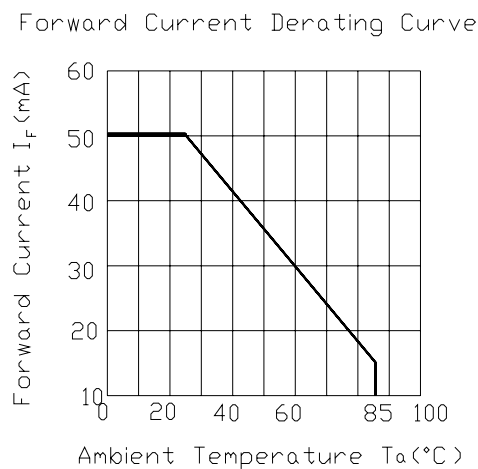
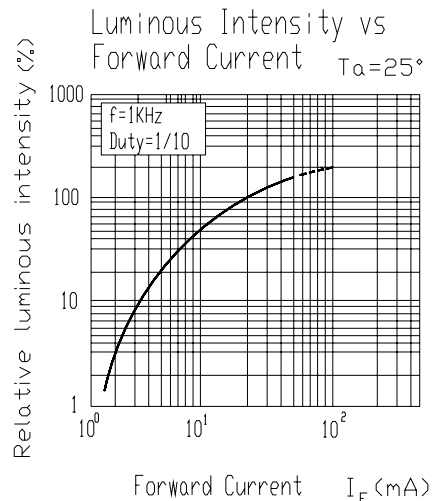
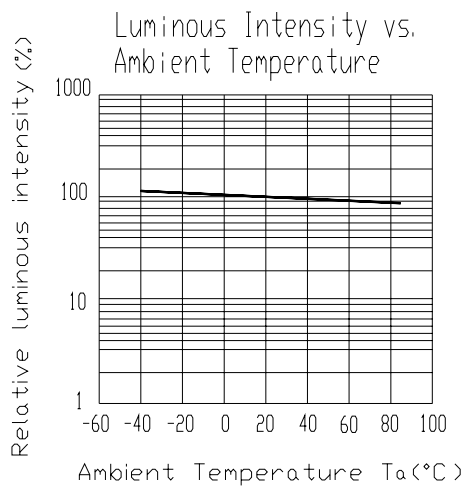
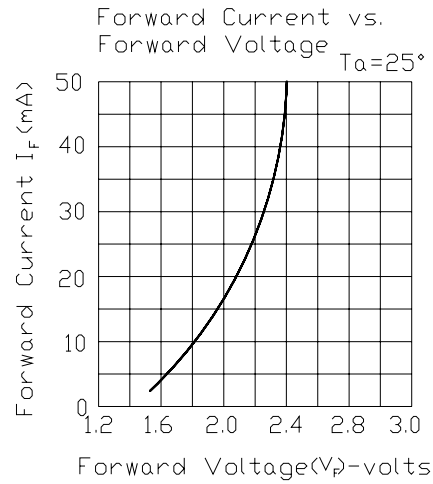
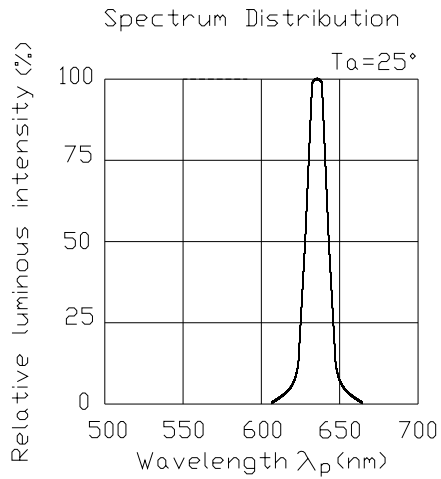
**Bin Range Of Luminous Intensity**

Chip	Bin	Min	Max	Unit	Condition
R7S	R2	140	180	mcd	$I_F = 20\text{mA}$
	S1	180	225		
	S2	225	285		
GH	T2	360	450		
	U1	450	565		
	U2	565	715		
BH	Q2	90	112		
	R1	112	140		
	R2	140	180		

- Notes:** 1.Tolerance of Luminous Intensity  $\pm 11\%$   
 2.Tolerance of Dominant Wavelength  $\pm 1\text{nm}$

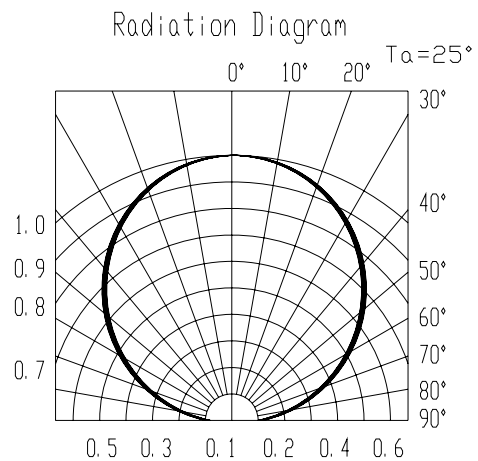
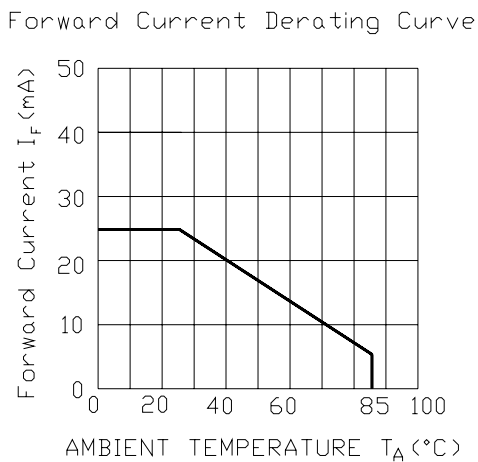
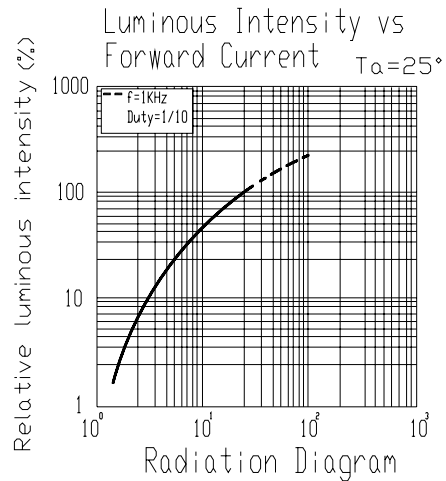
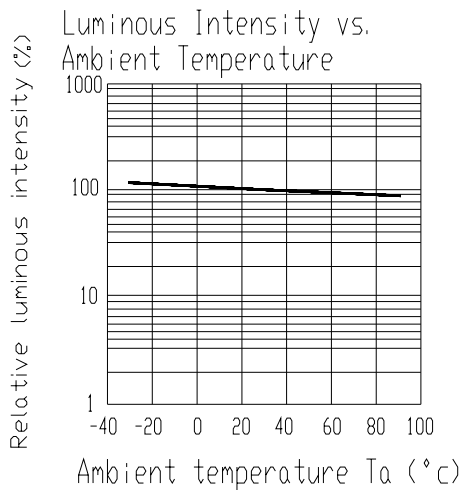
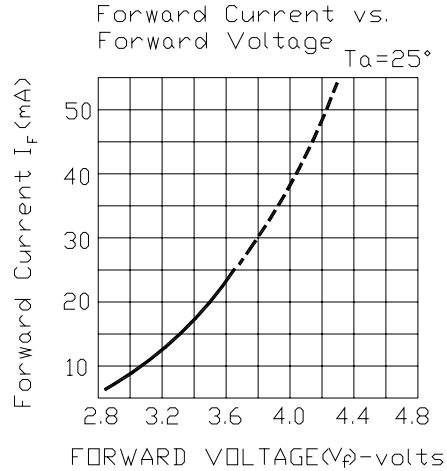
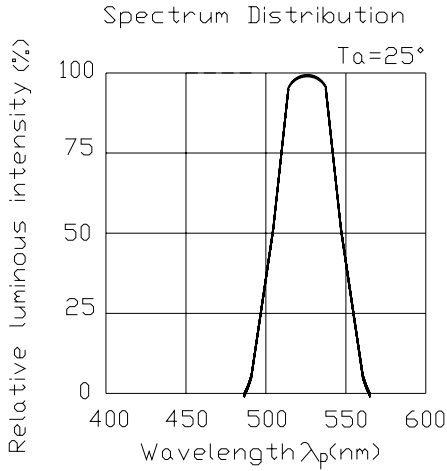
**67-23/R7SGHBHC-B14/2T**

**Typical Electro-Optical Characteristics Curves (R7S)**



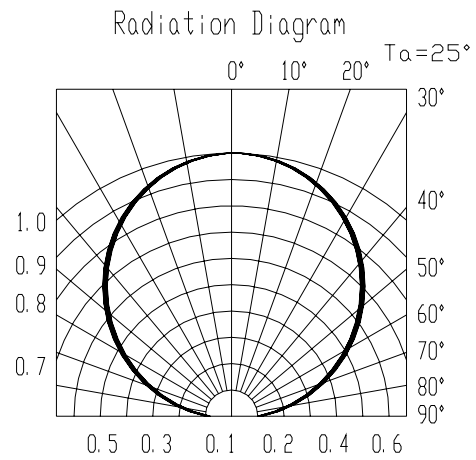
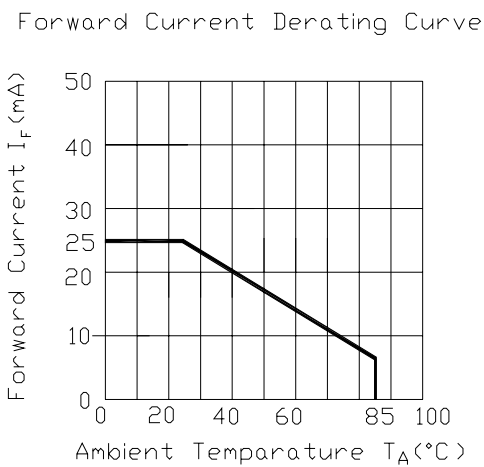
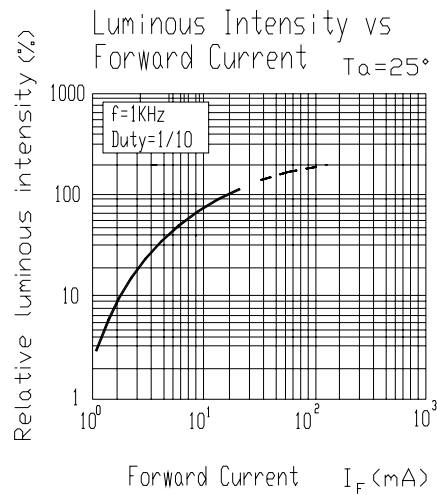
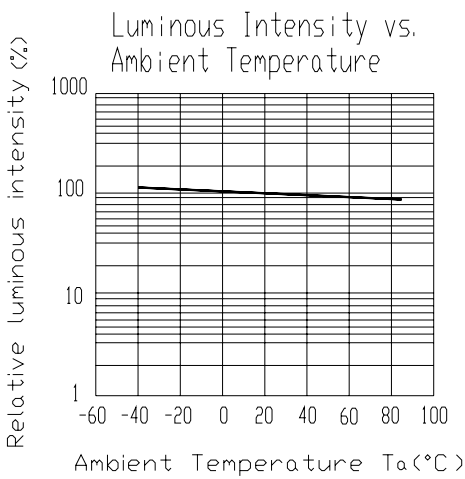
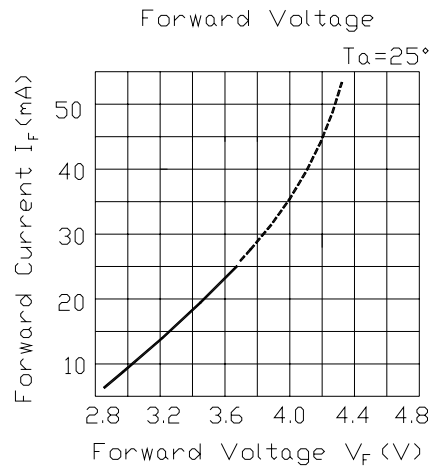
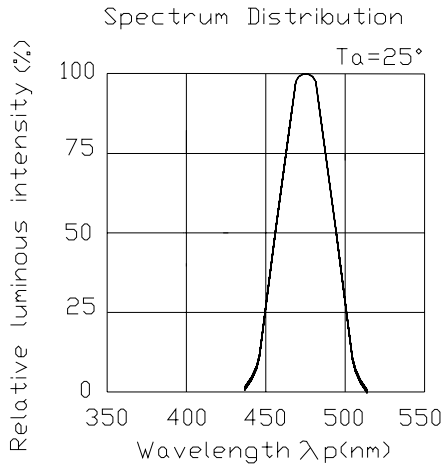
**67-23/R7SGHBHC-B14/2T**

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



**67-23/R7SGHBHC-B14/2T**

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





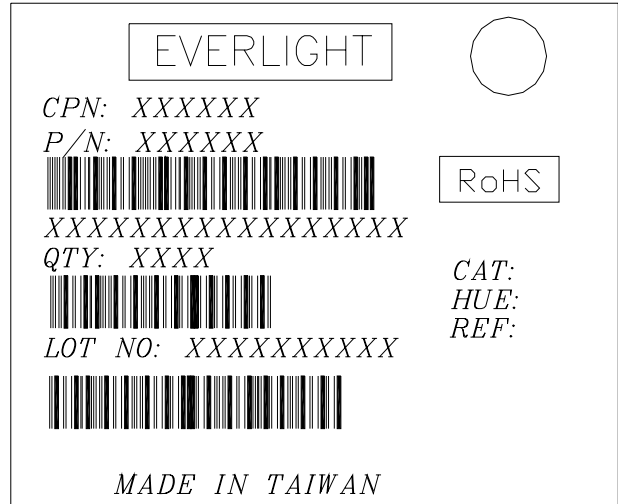
**67-23/R7SGHBHC-B14/2T**

**Label explanation**

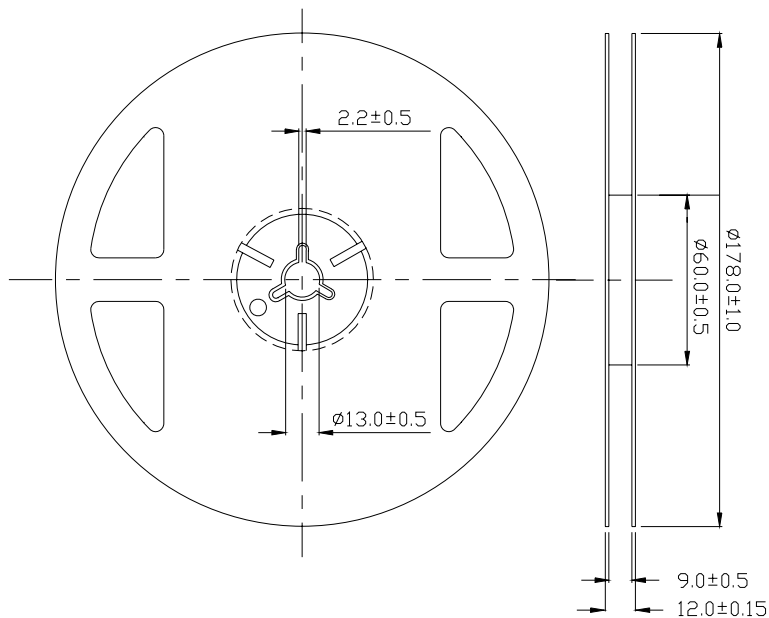
**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**



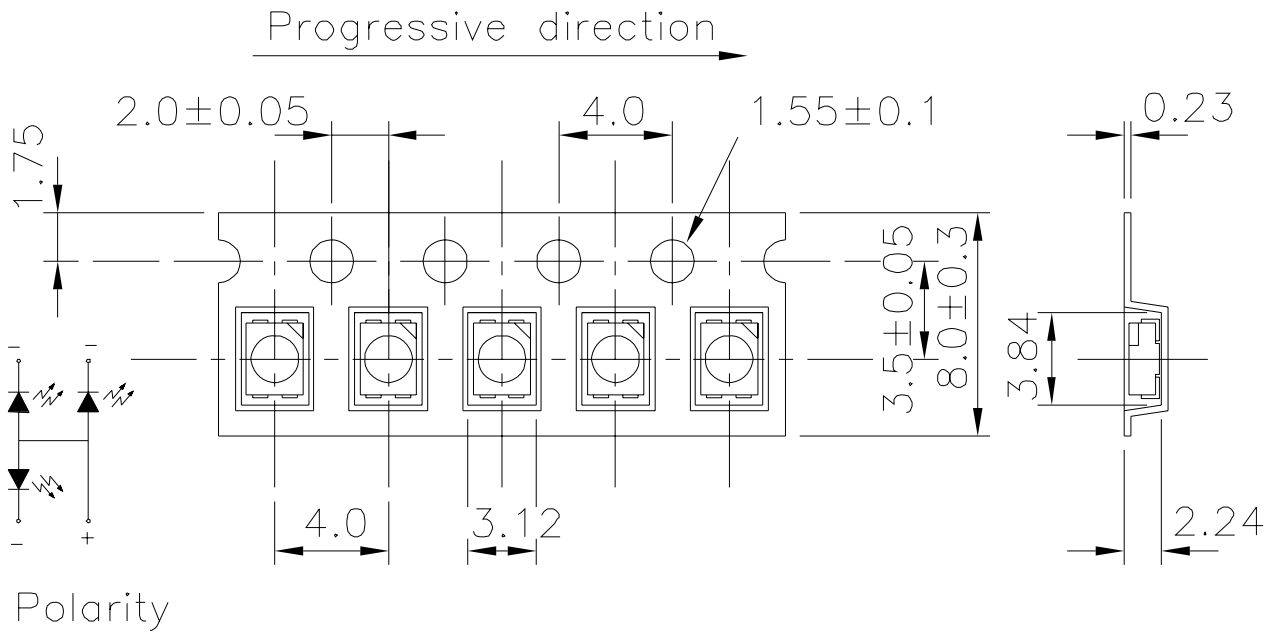
**Reel Dimensions**



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

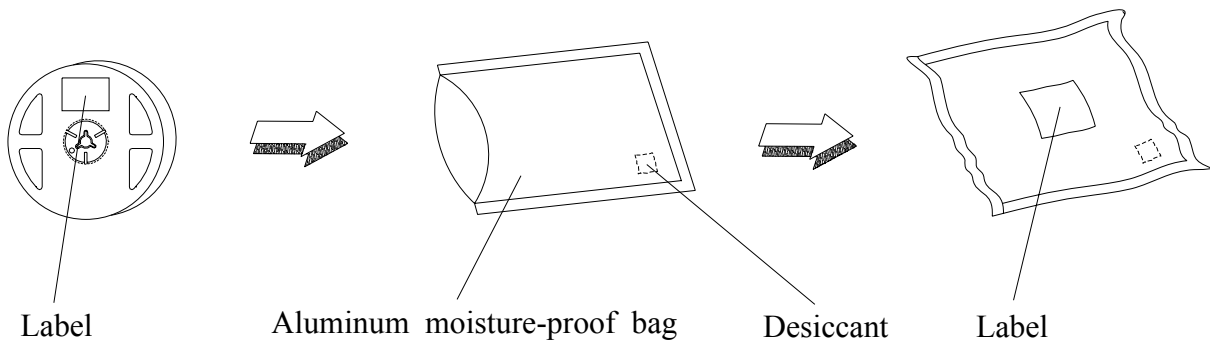
**67-23/R7SGHBHC-B14/2T**

**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/R7SGHBHC-B14/2T****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	I <sub>F</sub> = 20 mA	1000 Hrs.	22 PCS.	0/1
7	High Temperature / High Humidity	85°C/ 85%RH	1000 Hrs.	22 PCS.	0/1

**67-23/R7SGHBHC-B14/2T**

**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°C or less and 60% RH or less.

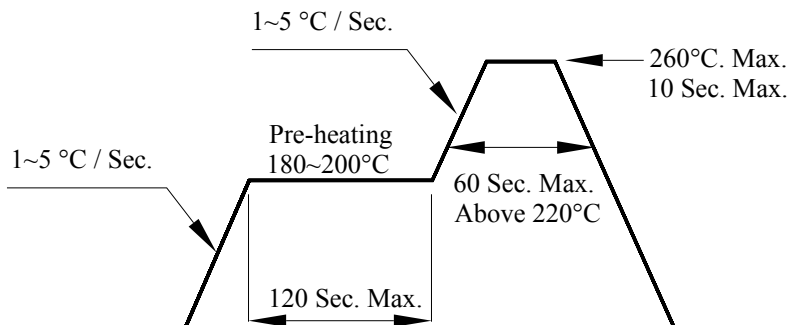
If unused LEDs remain, it should be stored in moisture proof packages.

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.

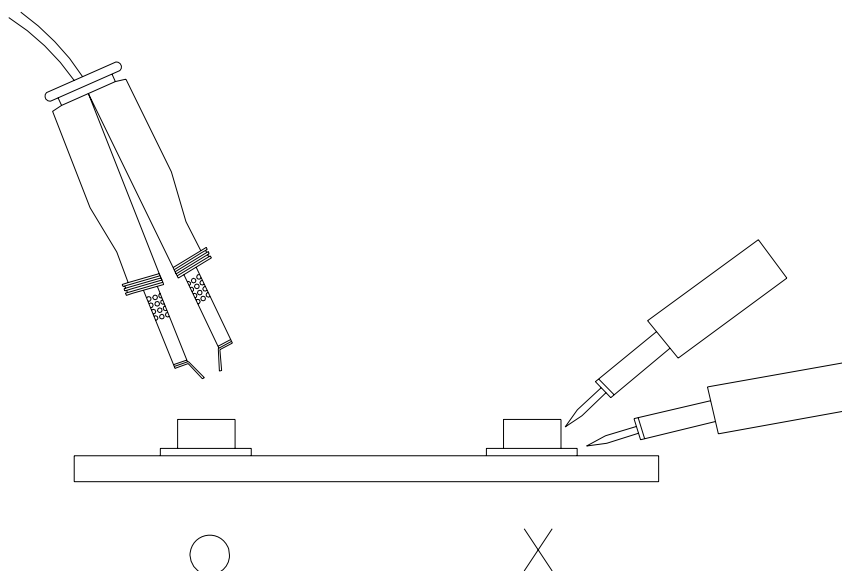
3.4 After soldering, do not warp the circuit board.

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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