



# Technical Data Sheet (Preliminary)

## Full Color Top View LEDs

**67-03/S3GHBHC-B03/1T**

### Features

- P-LCC-4 package.
- White package and black surface.
- Optical indicator.
- Colorless clear window.
- Ideal for backlight and light pipe application.
- Inter reflector.
- Wide viewing angle.
- Suitable for vapor-phase reflow, Infrared reflow and wave solder processes.
- Computable with automatic placement equipment.
- Available on tape and reel (8mm Tape).
- Pb-free.
- The product itself will remain with RoHS

compliant version

### Descriptions

- The 67-03 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 LED 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.

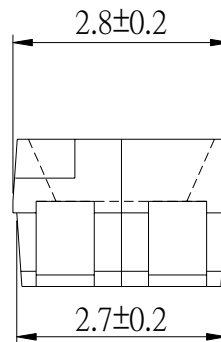
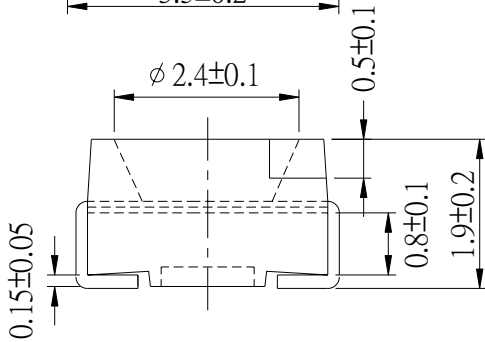
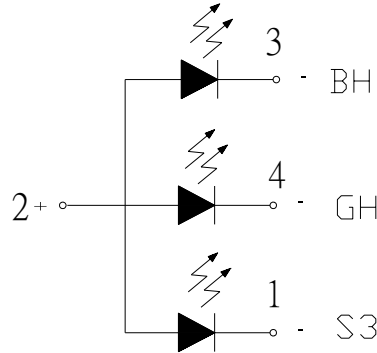
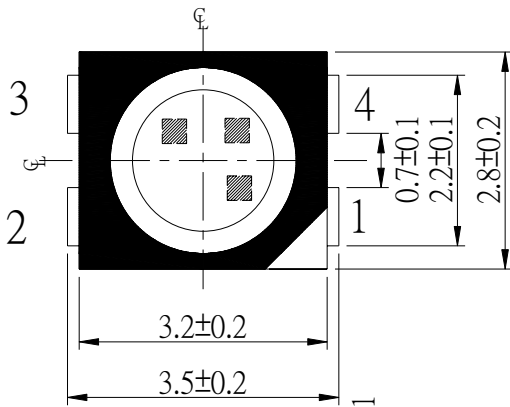
### Applications

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

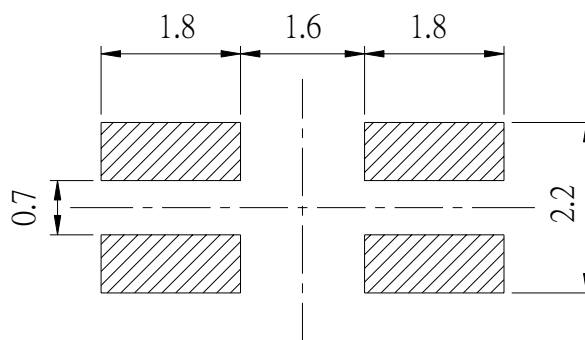
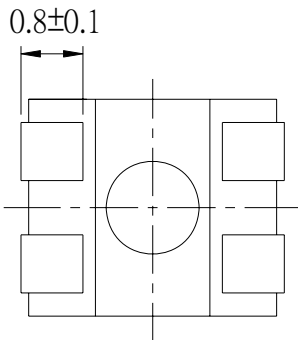
### Device Selection Guide

Chip			Lens Color
Type	Material	Emitted Color	
S3	AlGaInP	Reddish Orange	Water Clear
GH	InGaN/SiC	Brilliant Green	
BH	InGaN/SiC	Blue	

**Package Outline Dimensions**



For reflow soldering(propose)



- Notes:** 1.All dimensions are in millimeters  
 2.Tolerances Unless Dimension =  $\pm 0.1\text{mm}$

**67-03/S3GHBHC-B03/1T****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating		Unit
Reverse Voltage	V <sub>R</sub>	5		V
Forward Current	I <sub>F</sub>	S3	50	mA
		GH	30	
		BH	30	
Operating Temperature	Topr	-40 ~ +85		°C
Storage Temperature	Tstg	-40~ +100		°C
Electrostatic Discharge(HBM)	ESD	S3	2000	V
		GH	1000	
		BH	1000	
Power Dissipation	Pd	S3	120	mW
		GH	110	
		BH	110	
Peak Forward Current(Duty 1/10 @ 1KHz)	I <sub>FP</sub>	S3	100	mA
		GH	100	
		BH	100	
Soldering Temperature	Tsol	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.		

**67-03/S3GHBHC-B03/1T**
**Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition	
Luminous Intensity	I <sub>v</sub>	S3	140	-----	285	mcd	I <sub>F</sub> =20mA
		GH	715	-----	1420		
		BH	180	-----	360		
Peak Wavelength	λ <sub>p</sub>	S3	-----	621	-----	nm	I <sub>F</sub> =20mA
		GH	-----	518	-----		
		BH	-----	468	-----		
Dominant Wavelength	λ <sub>d</sub>	S3	613.5	-----	625.5	nm	I <sub>F</sub> =20mA
		GH	515	-----	530		
		BH	465.0	-----	475.0		
Spectrum Radiation Bandwidth	Δλ	S3	-----	20	-----	nm	I <sub>F</sub> =20mA
		GH	-----	30	-----		
		BH	-----	26	-----		
Forward Voltage	V <sub>F</sub>	S3	-----	2.0	2.4	V	I <sub>F</sub> =20mA
		GH	-----	3.5	3.9		
		BH	-----	3.5	3.9		
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =20mA	
Reverse Current	I <sub>R</sub>	S3	-----	-----	10	μA	V <sub>R</sub> =5V
		GH	-----	-----	50		
		BH	-----	-----	50		

Note:

The luminous intensity data did not including ±10% testing tolerance.

The Dominant Wavelength data did not including ±1nm testing tolerance.

**67-03/S3GHBHC-B03/1T**
**Bin Range Of Luminous Intensity**

Symbol		Bin Code	Min.	Max.	Unit	Condition
Iv	S3	R2	140	180	mcd	IF =20mA
		S1	180	225		
		S2	225	285		
	GH	V1	715	900		
		V2	900	1120		
		W1	1120	1420		
	BH	S1	180	225		
		S2	225	285		
		T1	285	360		

**Bin Range Of Dominant Wavelength**

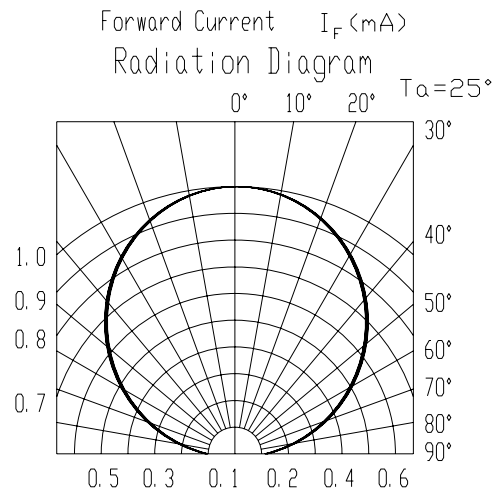
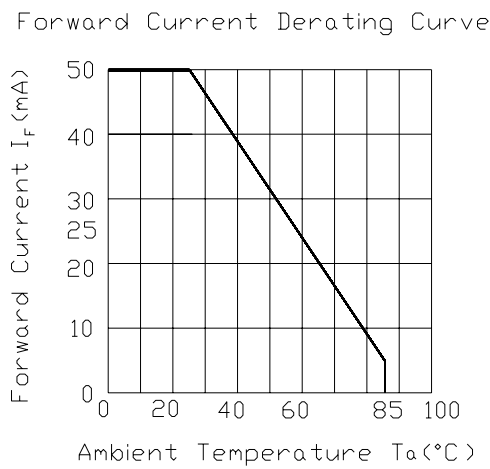
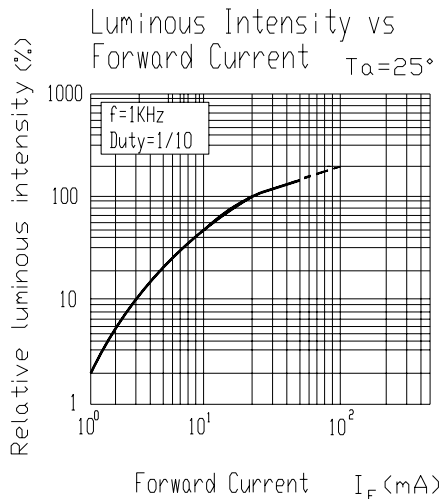
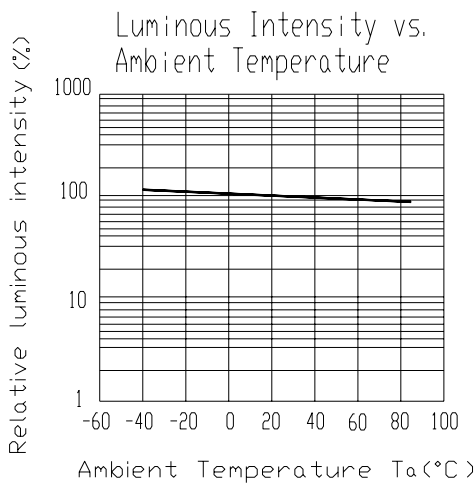
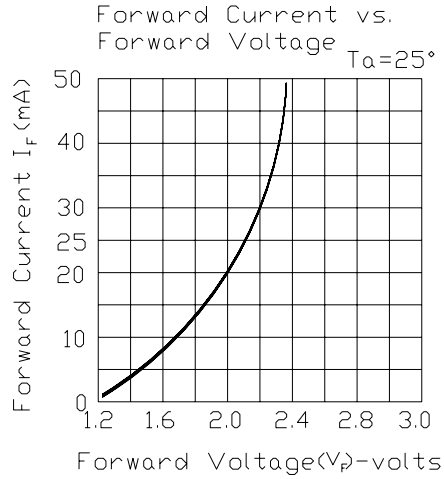
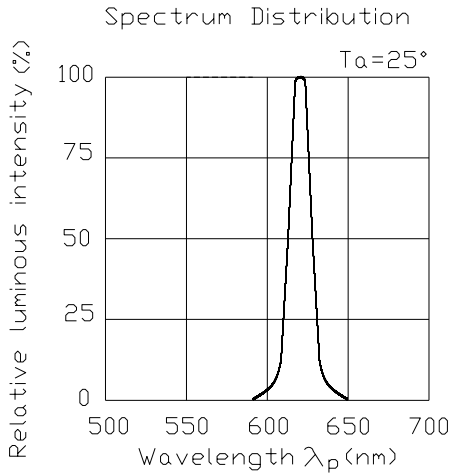
Symbol	Chip	Bin Code	Min.	Max.	Unit	Condition
$\lambda d$	S3	E3	613.5	617.5	mcd	IF =20mA
		E4	617.5	621.5		
		E5	621.5	625.5		

Note:

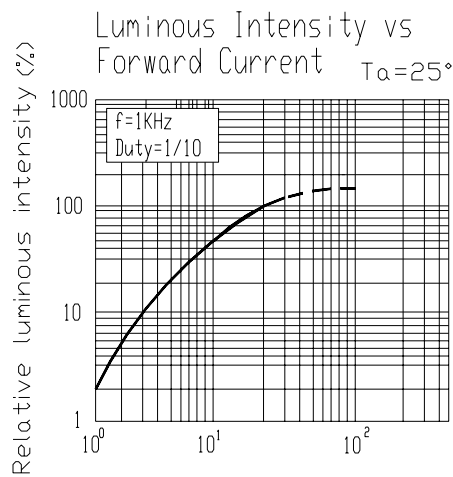
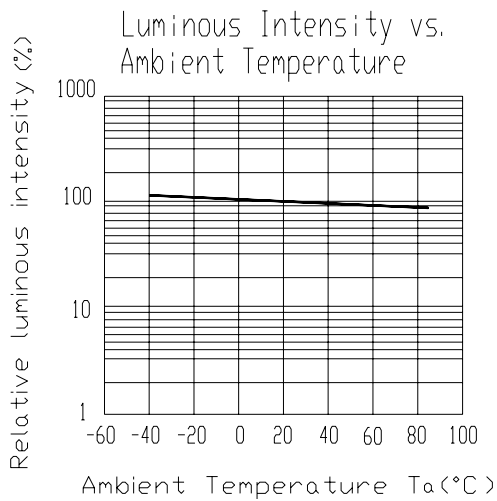
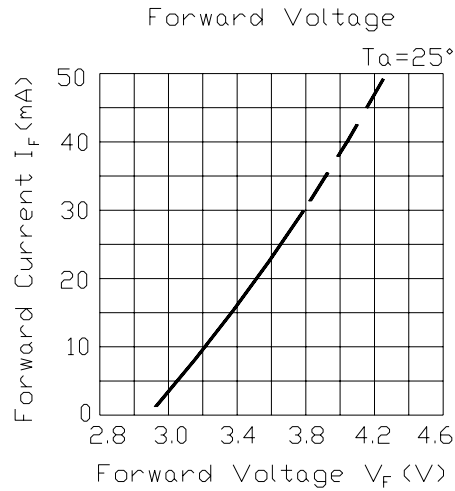
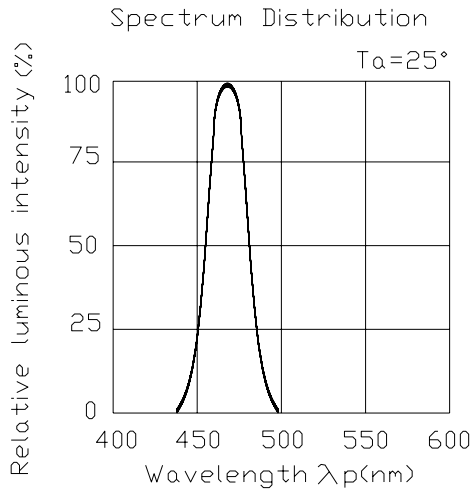
The luminous intensity data did not including  $\pm 10\%$  testing tolerance.

The Dominant Wavelength data did not including  $\pm 1\text{nm}$  testing tolerance.

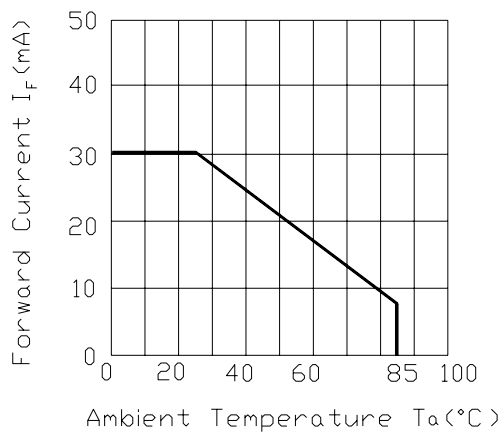
**Typical Electro-Optical Characteristics Curves(S3)**



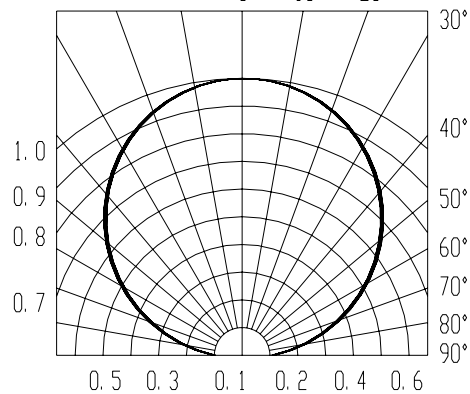
**Typical Electro-Optical Characteristics Curves(BH)**



Forward Current Derating Curve

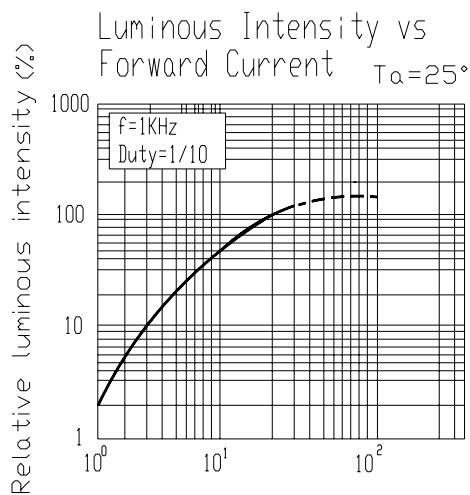
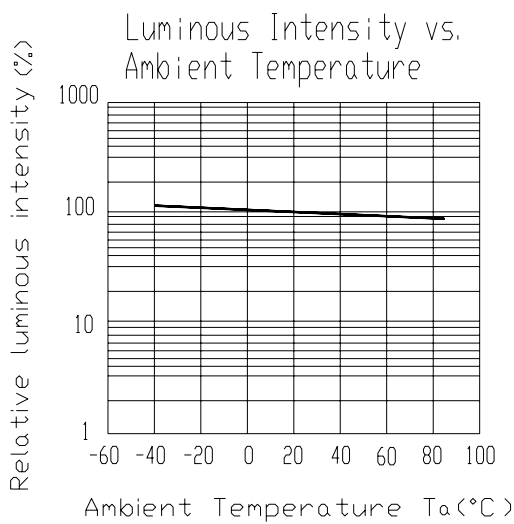
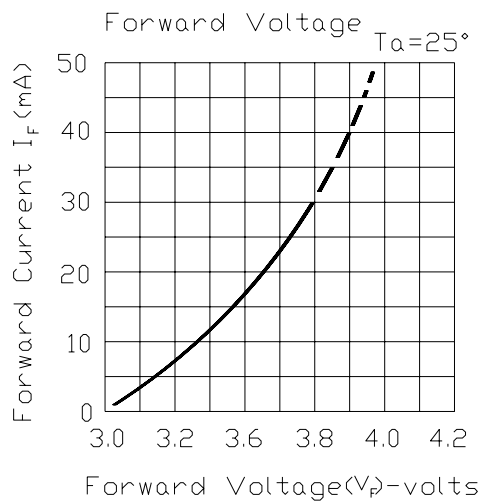
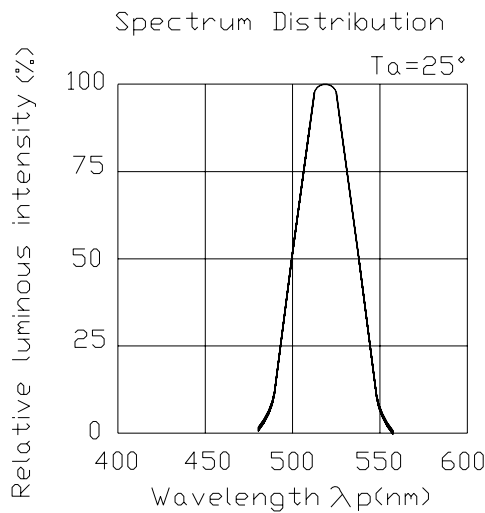


Forward Current  $I_F$ (mA)  
 Radiation Diagram  
 $T_a=25^\circ$

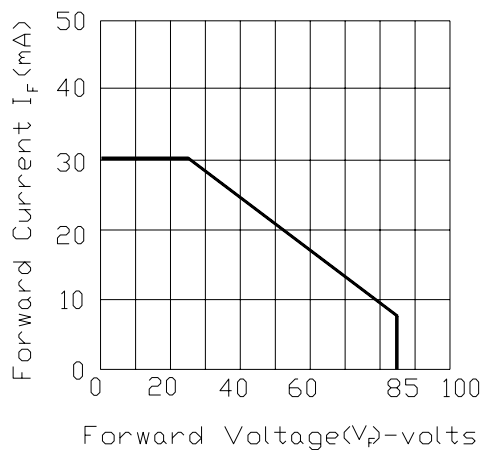


**67-03/S3GHBHC-B03/1T**

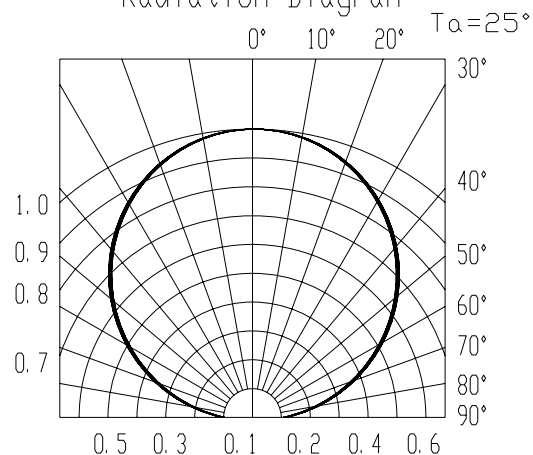
**Typical Electro-Optical Characteristics Curves(GH)**



Forward Current Derating Curve



Radiation Diagram  
 $T_a=25^\circ$





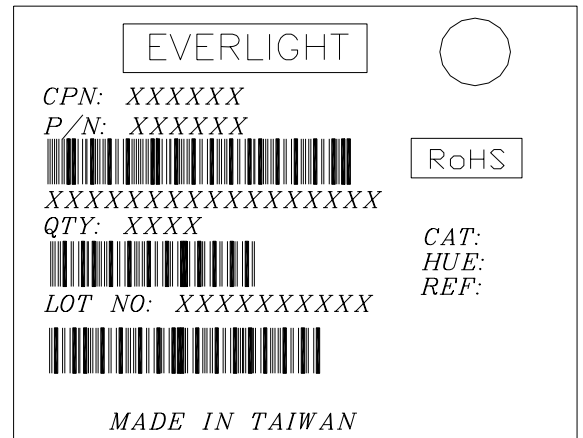
**67-03/S3GHBHC-B03/1T**

**Label explanation**

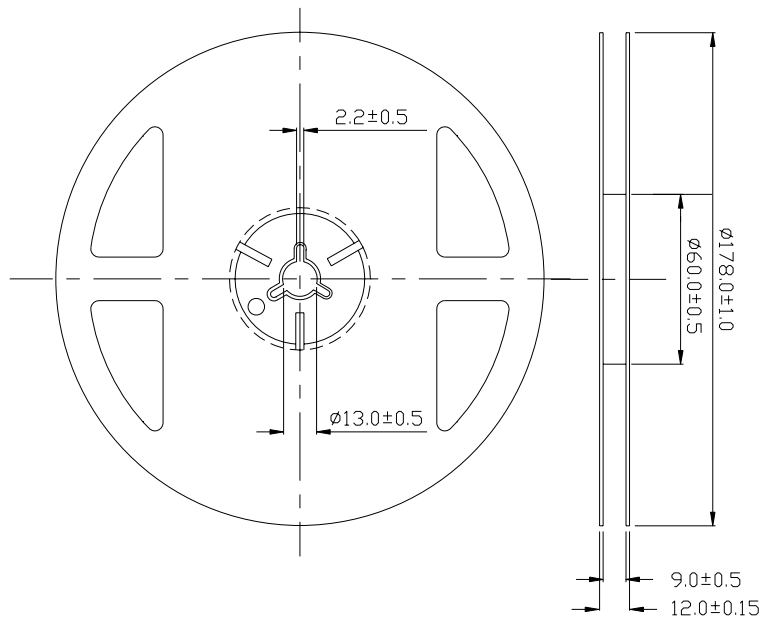
**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**



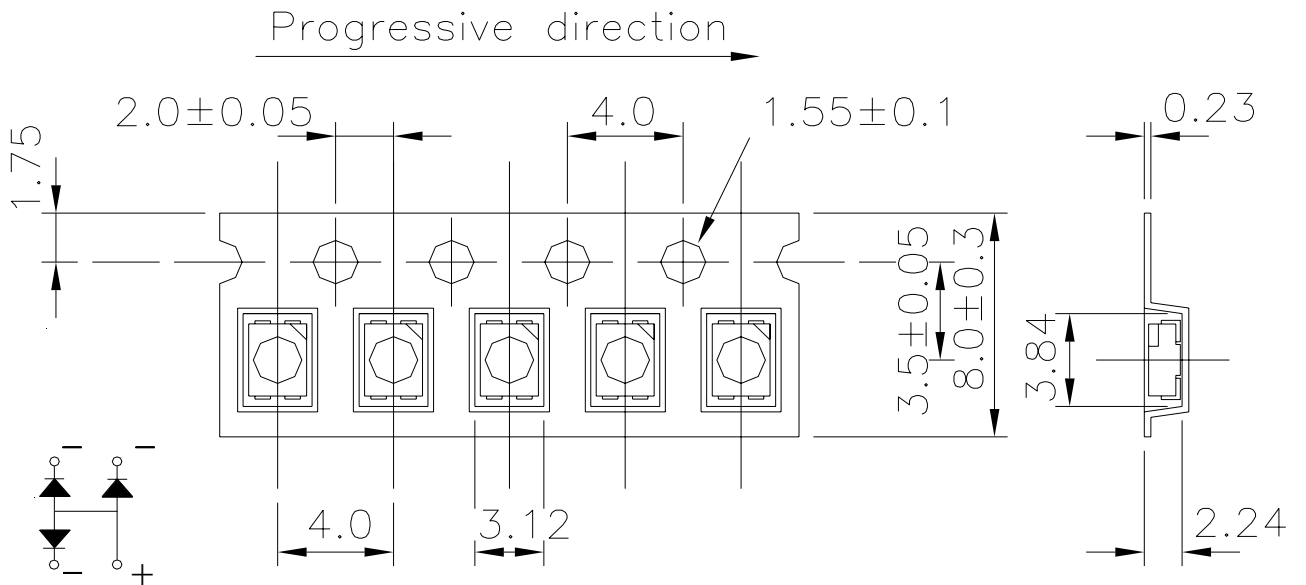
**Reel Dimensions**



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

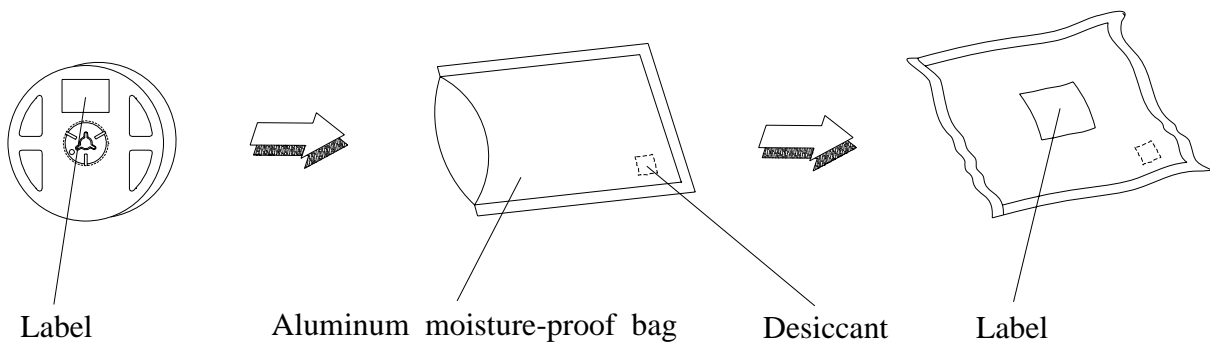
**67-03/S3GHBHC-B03/1T**

**Carrier Tape Dimensions: Loaded quantity 1000 PCS per reel.**



**Note:** Tolerances Unless Dimension  $\pm 0.1$ mm , Unit = mm

**Moisture Resistant Packaging**



**67-03/S3GHBHC-B03/1T****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

## 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.

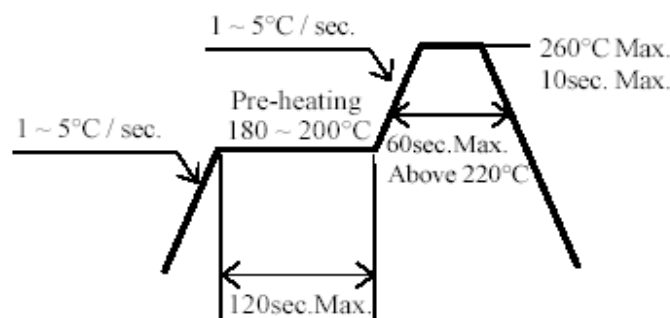
If unused LEDs remain, it should be stored in moisture proof packages.

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 :  $60\pm 5^{\circ}\text{C}$  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.

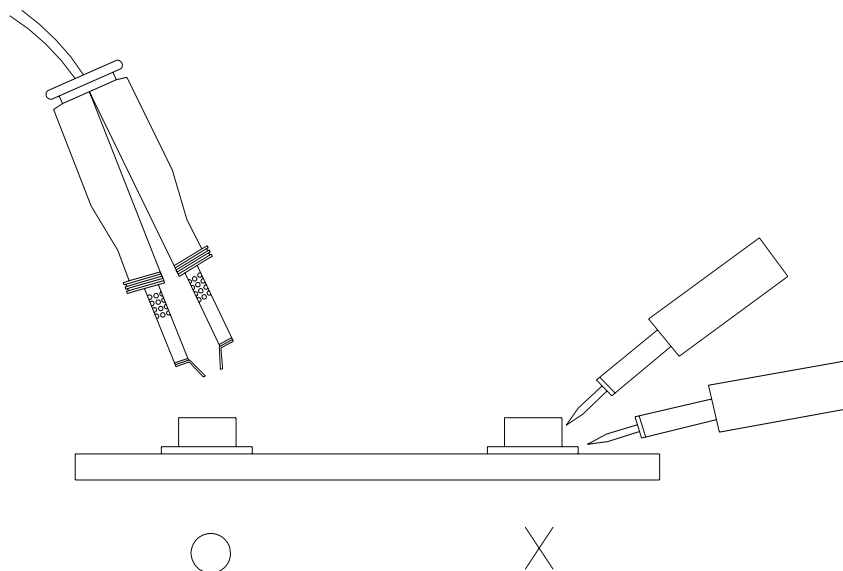
3.4 After soldering, do not warp the circuit board.

#### 4.Soldering Iron

Each terminal is to go to the tip of soldering iron temperature less than 280°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.

**67-03/S3GHBHC-B03/1T****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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