



# DATA SHEET

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Date : 2007.6.27

Department : RD3

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<input type="checkbox"/>	MASS PRODUCTION
<input checked="" type="checkbox"/>	PRELIMINARY
<input type="checkbox"/>	CUSTOMER DESIGN
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Revised record		
REV.	DESCRIPTION	RELEASE DATE
1.2	修正波長和VF分bin.	2007.6.27

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## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

#### 61-23 /S3SGHBHC-B14/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, 61-23 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		Emitted Color	Resin Color
Type	Material		
S3	AlGaInP	Reddish Orange	Water Clear
GH	InGaN	Brilliant Green	
BH	InGaN	Blue	

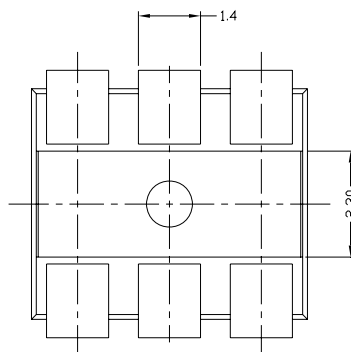
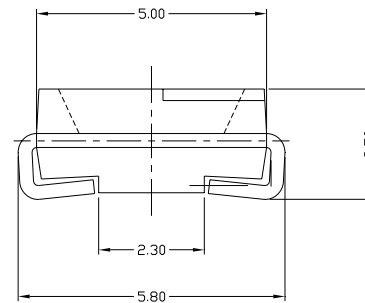
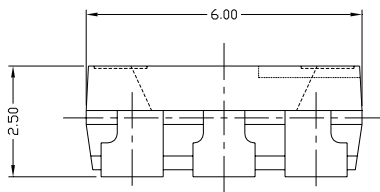
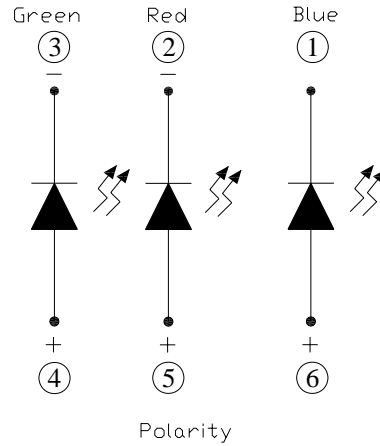
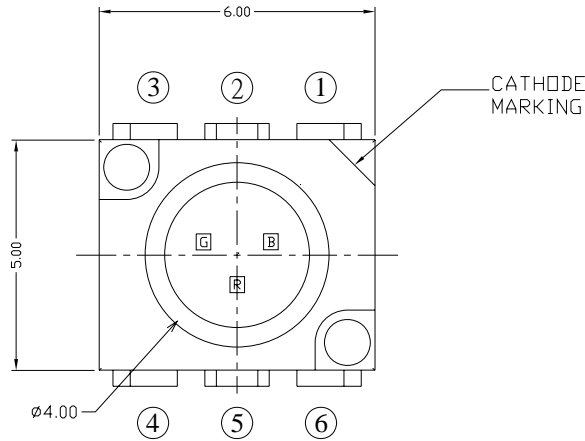


## Technical Data Sheet (Preliminary)

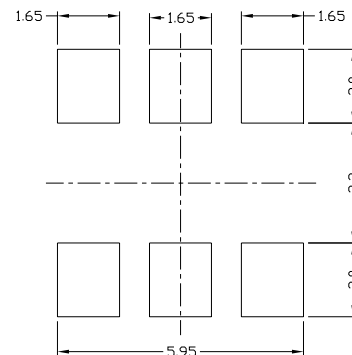
### Luminosity Full Color LED

**61-23 /S3SGHBHC-B14/ET**

#### Package Outline Dimensions



Recommended Soldering pad design



**Notes:** 1.All dimensions are in millimeters. 2.Tolerances unspecified are  $\pm 0.1$ mm.

**Technical Data Sheet (Preliminary)****Luminosity Full Color LED****61-23 /S3SGHBHC-B14/ET****Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Rating	Unit
Reverse Voltage	V <sub>R</sub>	5	V
Forward Current	I <sub>F</sub>	S3S	50
		GH	25
		BH	25
Peak Forward Current(Duty 1/10 @ 1KHZ)	I <sub>FP</sub>	S3S	100
		GH	100
		BH	100
Power Dissipation	Pd	S3S	120
		GH	110
		BH	110
Electrostatic Discharge(HBM)	ESD	S3S	2000
		GH	150
		BH	150
Operating Temperature	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-40~ +90	°C
Soldering Temperature	Tsol	Reflow Soldering : 260 °C for 10 sec. Hand Soldering : 350 °C for 3 sec.	

**Technical Data Sheet (Preliminary)****Luminosity Full Color LED****61-23 /S3SGHBHC-B14/ET****Electro-Optical Characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	I <sub>v</sub>	S3S	112	-----	450	mcd I <sub>F</sub> =20mA
		GH	285	-----	1120	
		BH	112	-----	450	
Viewing Angle	2θ <sub>1/2</sub>	-----	120	-----	deg	I <sub>F</sub> =20mA
Peak Wavelength	λ <sub>p</sub>	S3S	-----	632	-----	nm I <sub>F</sub> =20mA
		GH	-----	518	-----	
		BH	-----	468	-----	
Dominant Wavelength	λ <sub>d</sub>	S3S	613.5	-----	621.5	nm I <sub>F</sub> =20mA
		GH	520	-----	530	
		BH	465	-----	470	
Spectrum Radiation Bandwidth	Δλ	S3S	-----	20	-----	nm I <sub>F</sub> =20mA
		GH	-----	35	-----	
		BH	-----	35	-----	
Forward Voltage	V <sub>F</sub>	S3S	1.8	-----	2.4	V I <sub>F</sub> =20mA
		GH	2.8	-----	3.7	
		BH	3.2	-----	3.6	
Reverse Current	I <sub>R</sub>	S3S	-----	-----	10	μA V <sub>R</sub> =5V
		GH	-----	-----	50	
		BH	-----	-----	50	

**Notes:**

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

**Technical Data Sheet (Preliminary)****Luminosity Full Color LED****61-23 /S3SGHBHC-B14/ET****Bin Range of Luminous Intensity**

Symbol		Bin Code	Min.	Max.	Unit	Condition
I <sub>v</sub>	S3S	R	112	180	mcd	I <sub>F</sub> =20mA
		S	180	285		
		T	285	450		
	GH	T	285	450		
		U	450	715		
		V	715	1120		
	BH	R	112	180		
		S	180	285		
		T	285	450		

**Bin Range of Dominant Wavelength**

Symbol		Bin Code	Min.	Max.	Unit	Condition
λ <sub>d</sub>	S3S	E3	613.5	617.5	nm	I <sub>F</sub> =20mA
		E4	617.5	621.5		
	GH	X	520	525		
		Y	525	530		
	BH	X	465	470		

**Notes:**

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

**Technical Data Sheet (Preliminary)****Luminosity Full Color LED****61-23 /S3SGHBHC-B14/ET****Bin Range of Forward Voltage**

Symbol		Bin Code	Min.	Max.	Unit	Condition
V <sub>F</sub>	S3S	0	1.75	1.95	V	I <sub>F</sub> =20mA
		1	1.95	2.15		
		2	2.15	2.35		
	GH	10	2.70	2.90		
		11	2.90	3.10		
		12	3.10	3.30		
		13	3.30	3.50		
	BH	10	2.70	2.90		
		11	2.90	3.10		
		12	3.10	3.30		
		13	3.30	3.50		

**Notes:**

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

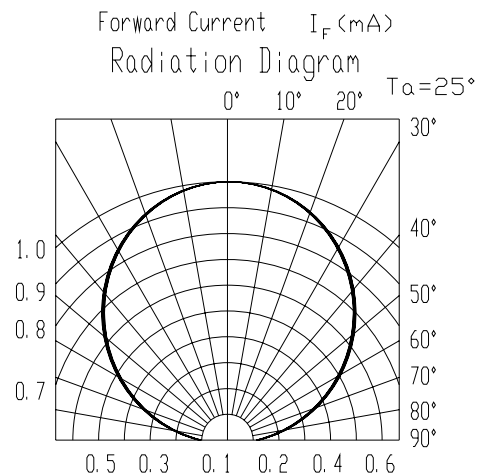
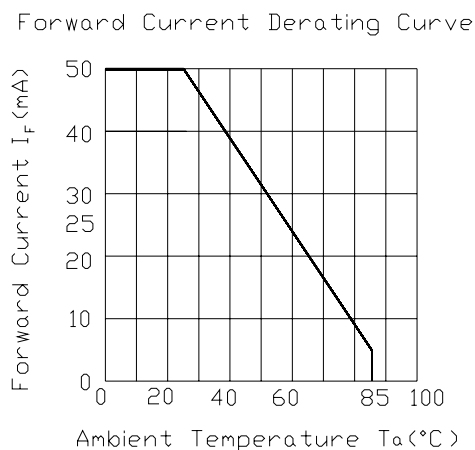
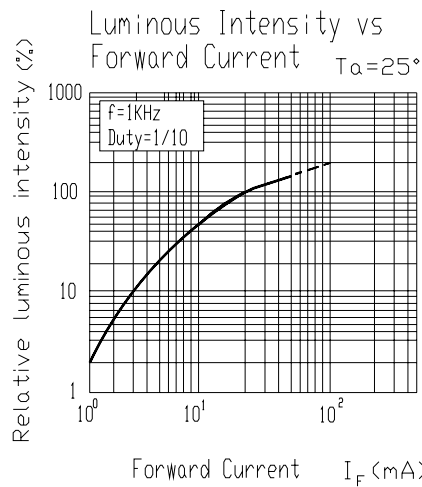
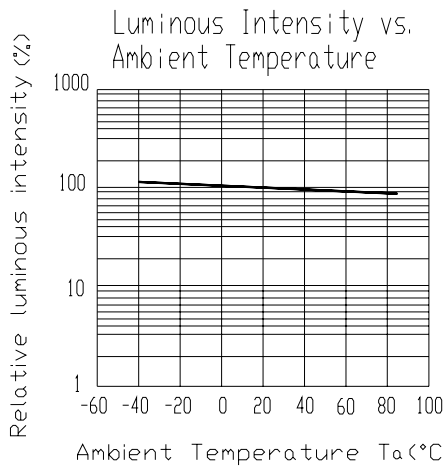
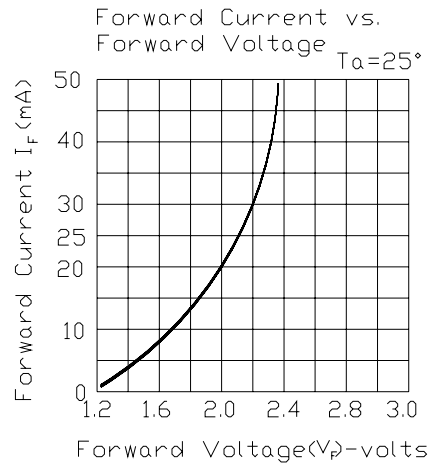
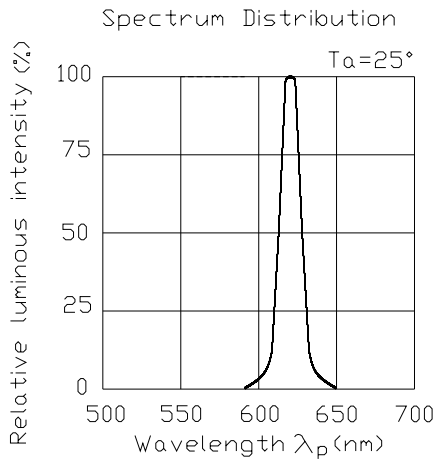


## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

### 61-23 /S3SGHBHC-B14/ET

#### Typical Electro-Optical Characteristics Curves (S3S)





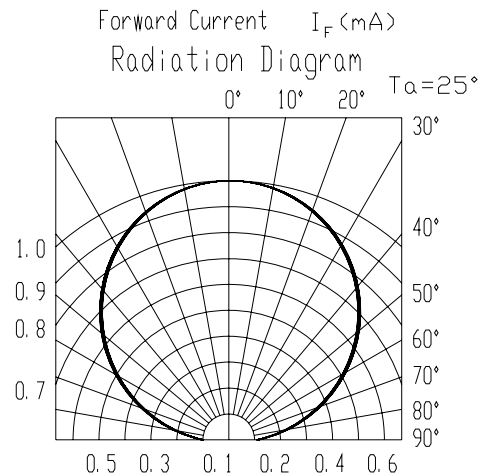
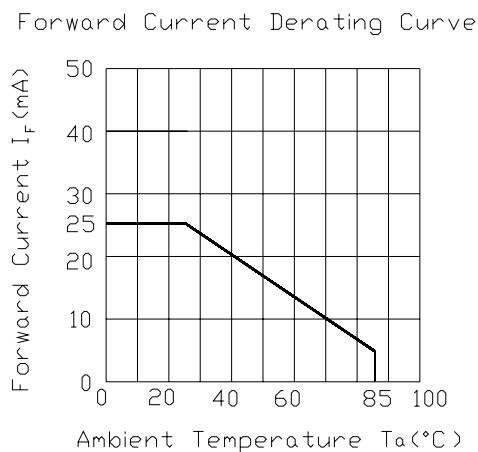
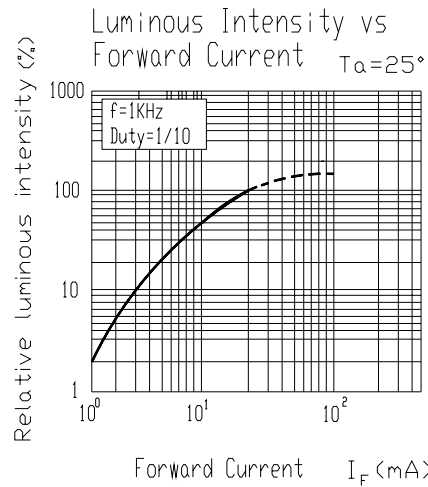
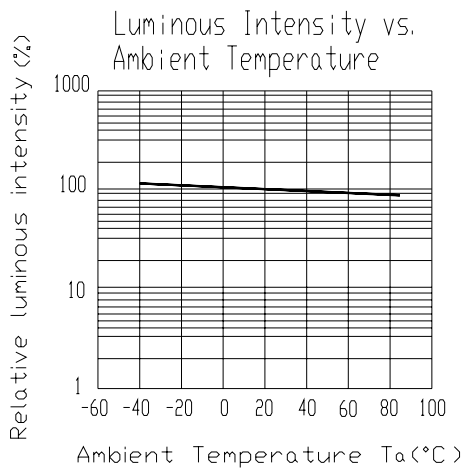
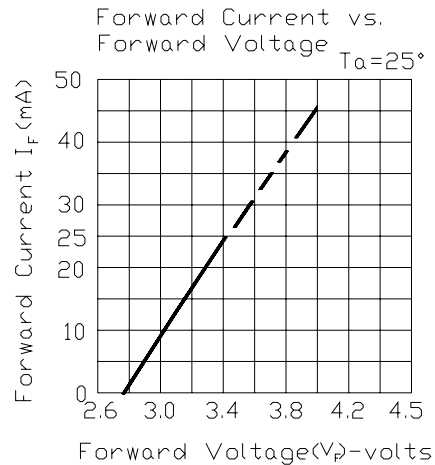
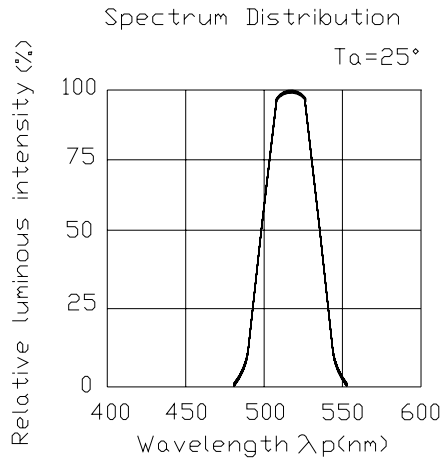


## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

**61-23 /S3SGHBHC-B14/ET**

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



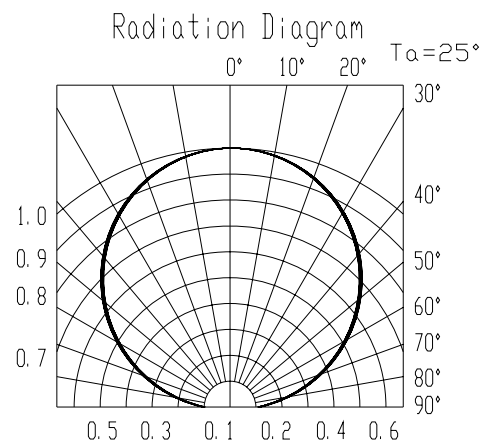
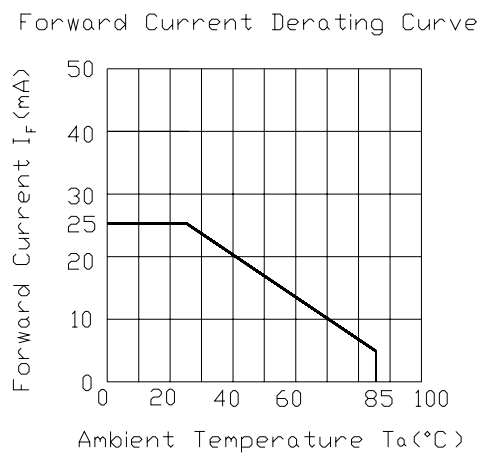
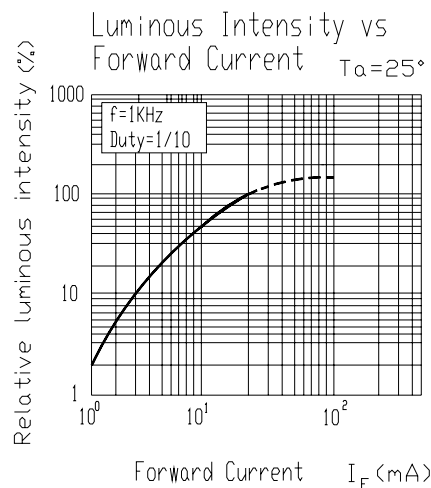
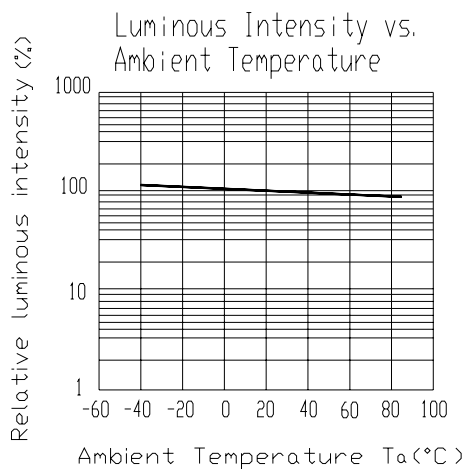
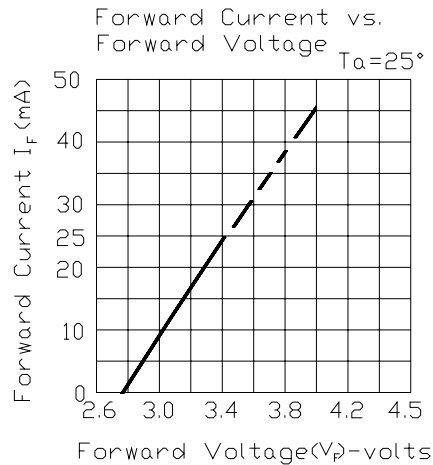
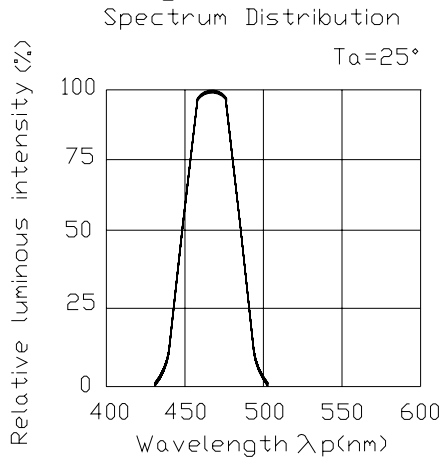


## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

**61-23 /S3SGHBHC-B14/ET**

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





# Technical Data Sheet (Preliminary)

## Luminosity Full Color LED

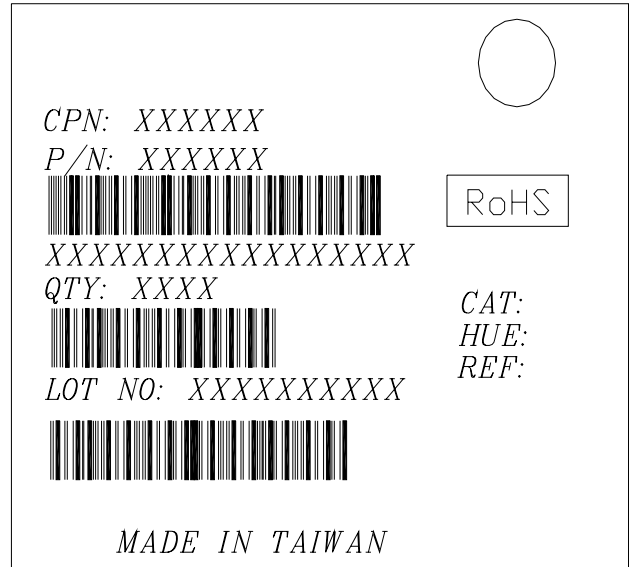
**61-23 /S3SGHBHC-B14/ET**

### Label explanation

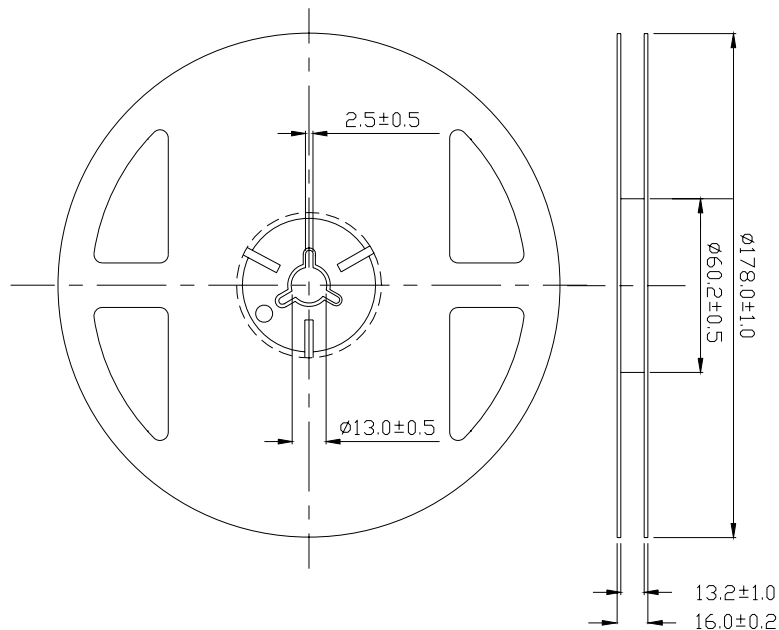
**CAT: Luminous Intensity Rank**

**HUE: Dom. Wavelength Rank**

**REF: Forward Voltage Rank**



### Reel Dimensions



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

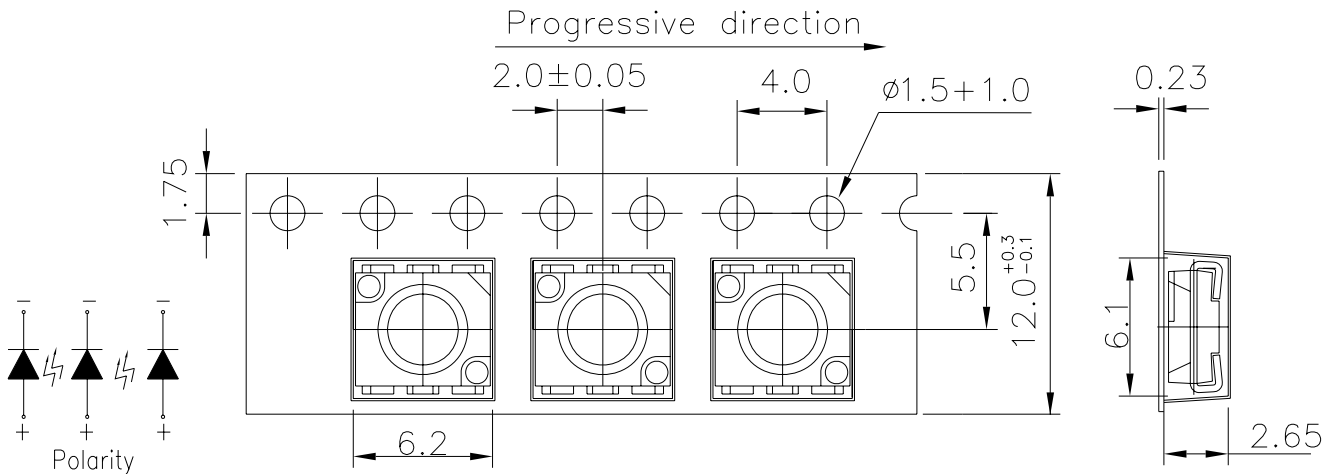


## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

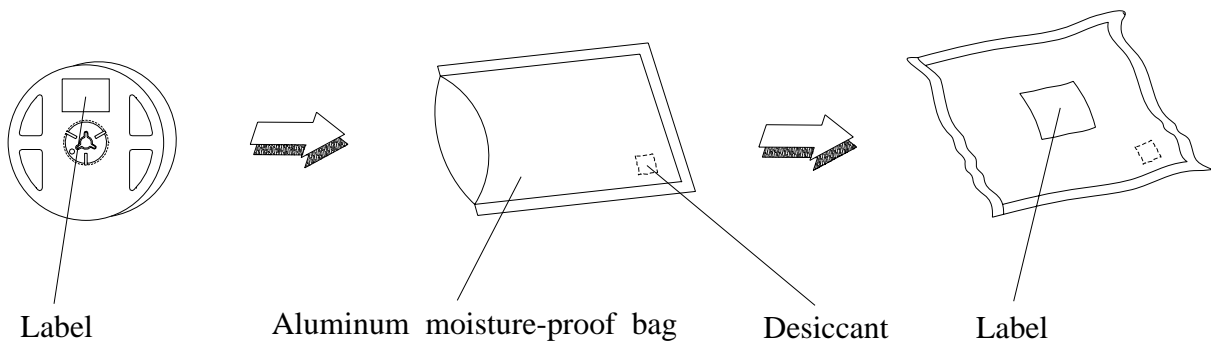
**61-23 /S3SGHBHC-B14/ET**

Loaded quantity per reel 800 PCS/reel



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

### Moisture Resistant Packaging





## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

**61-23 /S3SGHBHC-B14/ET**

#### 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

\* For each die

## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

**61-23 /S3SGHBHC-B14/ET**

#### 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.

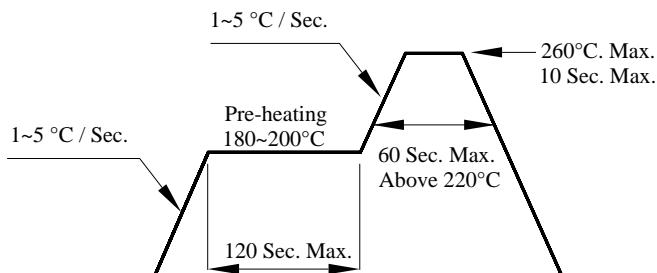
If unused LEDs remain, it should be stored in moisture proof packages.

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.

## Technical Data Sheet (Preliminary)

### Luminosity Full Color LED

**61-23 /S3SGHBHC-B14/ET**

#### 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.

