

DATE OF ISSUE : 2007. 06. 12

# SPECIFICATION

MODEL : SLSRGBW722TS

SMD LED

CUSTOMER : \_\_\_\_\_

# Preliminary

*SAMSUNG ELECTRO-MECHANICS CO., LTD.*

314. MAETAN3-DONG, YEONGTONG-KU,  
SUWON-SI, KYUNGKI-DO, KOREA, 442-743

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## Product Outline

### 1) Product Name

Top View LED : Full Color LED

### 2) Feature

1. Mini-Mold type ( 1.6 × 2.1 × 0.45t mm),
2. Built in 3 LED Chips (RGB)
3. Beam Angle (  $\Delta\theta$  : 115 ° )
4. Pb Free

### 3) Applications

- Amusement Equipment, Back-light, Indicator.....

## Absolute Maximum Rating

<b>Operation Forward Current</b>	Red	20mA
	Green	20mA
	Blue	20mA
<b>Peak Pulsed Forward Current</b>	Red	100mA
	Green	100mA
	Blue	100mA
<b>Reverse Voltage</b>		5V
<b>Operating Temperature Range ( Topr )</b>		-20℃ ~ 80℃
<b>Storage Temperature Range ( Tstg )</b>		-40℃ ~ 85℃
<b>Soldering Temperature</b>		260 ℃ for 10 s

## Characteristics

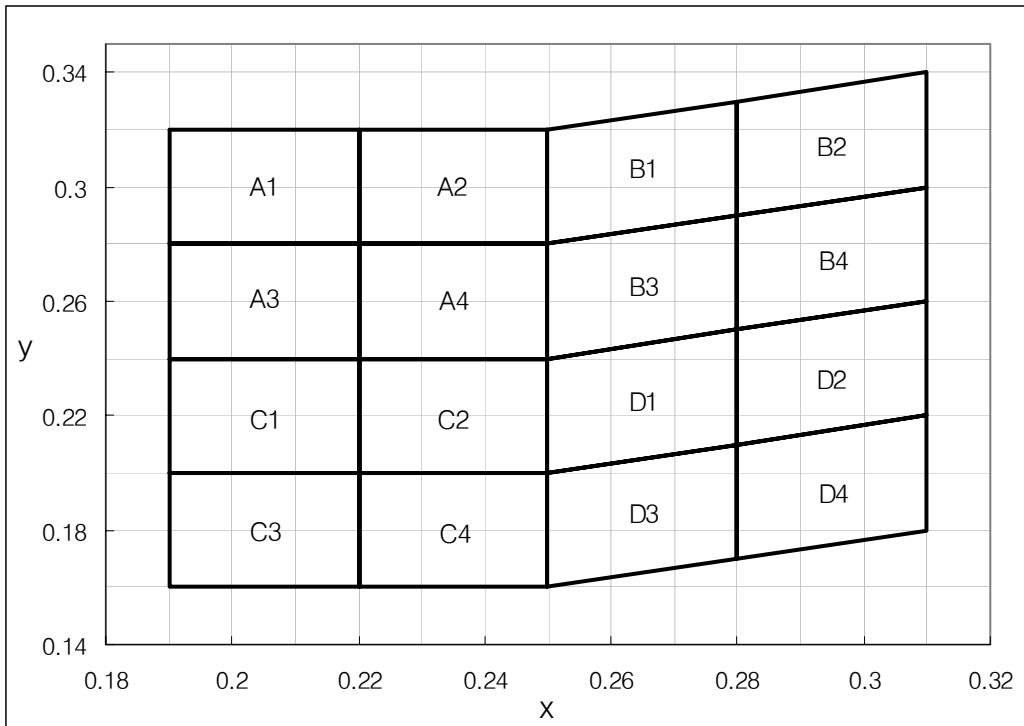
Ta : 25℃

Item	Symbol	Condition	Rank	Color	Min	Typ	Max	Unit
<b>Forward Current</b>	V <sub>F</sub>	I <sub>F</sub> =15mA	S	Red	1.6	2.1	2.6	V
				Green	2.6	3.2	3.8	
				Blue	2.6	3.2	3.8	
<b>Reverse Current</b>	I <sub>R</sub>	V <sub>R</sub> =5V	-	Red	-	-	100	μA
<b>Reverse Voltage</b>	V <sub>R</sub>	I <sub>R</sub> =10mA	-	Green	0.6	-	2.0	V
				Blue	0.6	-	2.0	
<b>Luminous Intensity*</b>	I <sub>V</sub>	I <sub>F</sub> =15mA	S	Red	35	70	110	mcd
				Green	130	270	500	
				Blue	50	120	200	
<b>Dominant Wavelength*</b>	λ <sub>D</sub>	I <sub>F</sub> =15mA	-	Red	600	625	640	nm
				Green	520	535	550	
				Blue	464	475	485	

\* Tolerance: V<sub>F</sub>:±0.1V, I<sub>V</sub>:±10%, , λ<sub>D</sub> ; ±2nm

\* Luminous intensity measuring equipment : CAS140B

# ■ Chromaticity Diagram

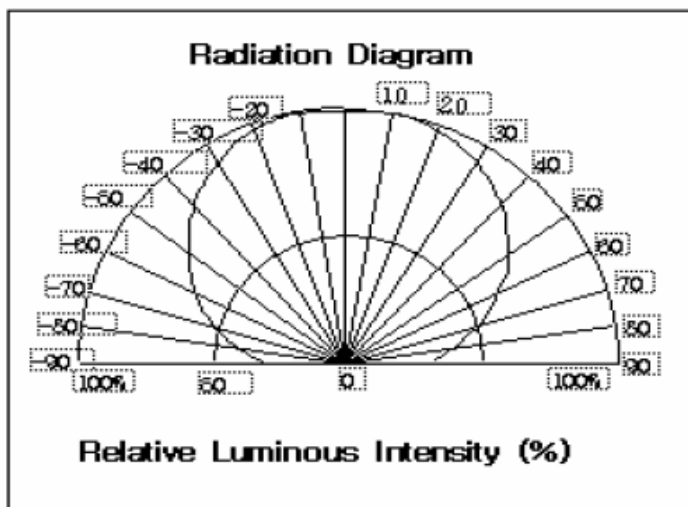
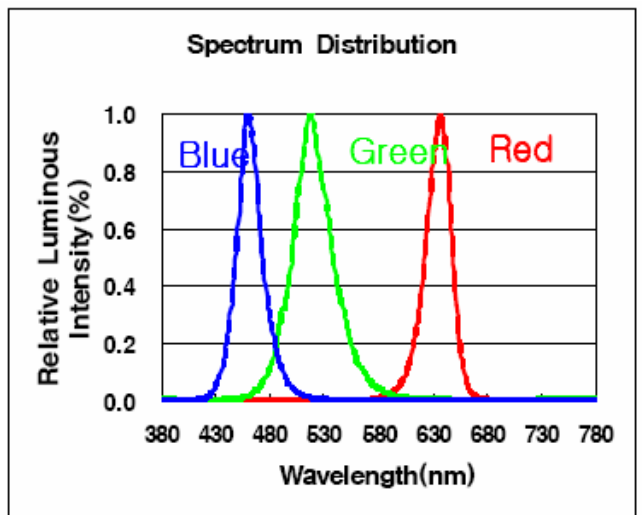
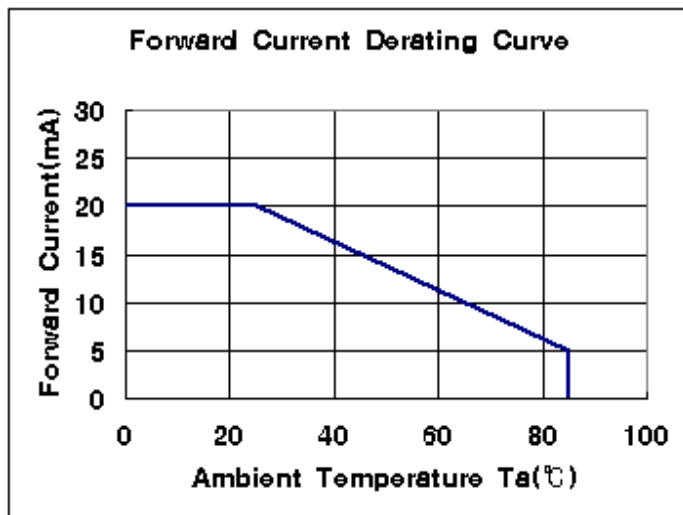
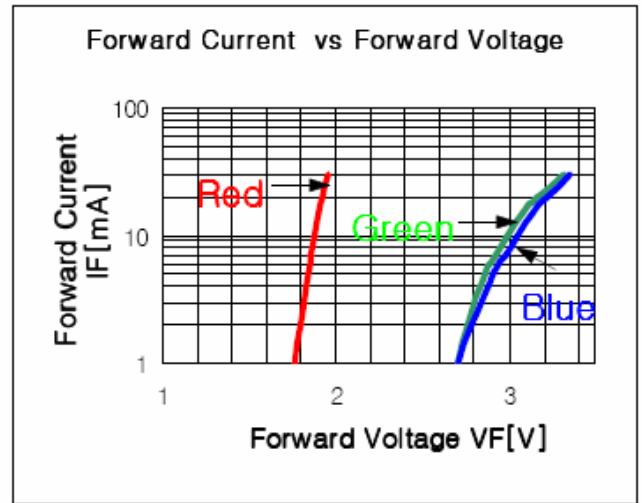
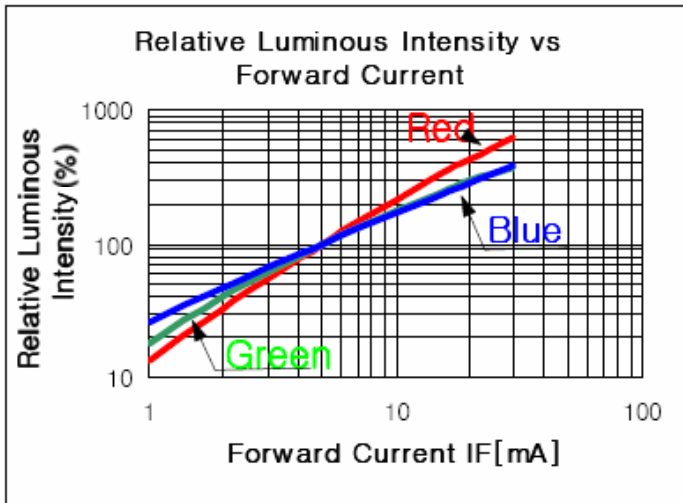


	Rank	x				y				Condition
		x1	x2	x3	x4	y1	y2	y3	y4	
Z	A1	0.1900	0.2200	0.2200	0.1900	0.3200	0.3200	0.2800	0.2800	IF=15mA
	A2	0.2200	0.2500	0.2500	0.2200	0.3200	0.3200	0.2800	0.2800	
	A3	0.1900	0.2200	0.2200	0.1900	0.2800	0.2800	0.2400	0.2400	
	A4	0.2200	0.2500	0.2500	0.2200	0.2800	0.2800	0.2400	0.2400	
	B1	0.2500	0.2800	0.2800	0.2500	0.3200	0.3300	0.2900	0.2800	
	B2	0.2800	0.3100	0.3100	0.2800	0.3300	0.3400	0.3000	0.2900	
	B3	0.2500	0.2800	0.2800	0.2500	0.2800	0.2900	0.2500	0.2400	
	B4	0.2800	0.3100	0.3100	0.2800	0.2900	0.3000	0.2600	0.2500	
	C1	0.1900	0.2200	0.2200	0.1900	0.2400	0.2400	0.2000	0.2000	
	C2	0.2200	0.2500	0.2500	0.2200	0.2400	0.2400	0.2000	0.2000	
	C3	0.1900	0.2200	0.2200	0.1900	0.2000	0.2000	0.1600	0.1600	
	C4	0.2200	0.2500	0.2500	0.2200	0.2000	0.2000	0.1600	0.1600	
	D1	0.2500	0.2800	0.2800	0.2500	0.2400	0.2500	0.2100	0.2000	
	D2	0.2800	0.3100	0.3100	0.2800	0.2500	0.2600	0.2200	0.2100	
	D3	0.2500	0.2800	0.2800	0.2500	0.2000	0.2100	0.1700	0.1600	
	D4	0.2800	0.3100	0.3100	0.2800	0.2100	0.2200	0.1800	0.1700	

\* Tolerance : x,y:±0.02

## ■ Typical Characteristic Graph

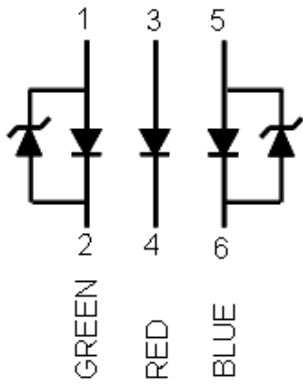
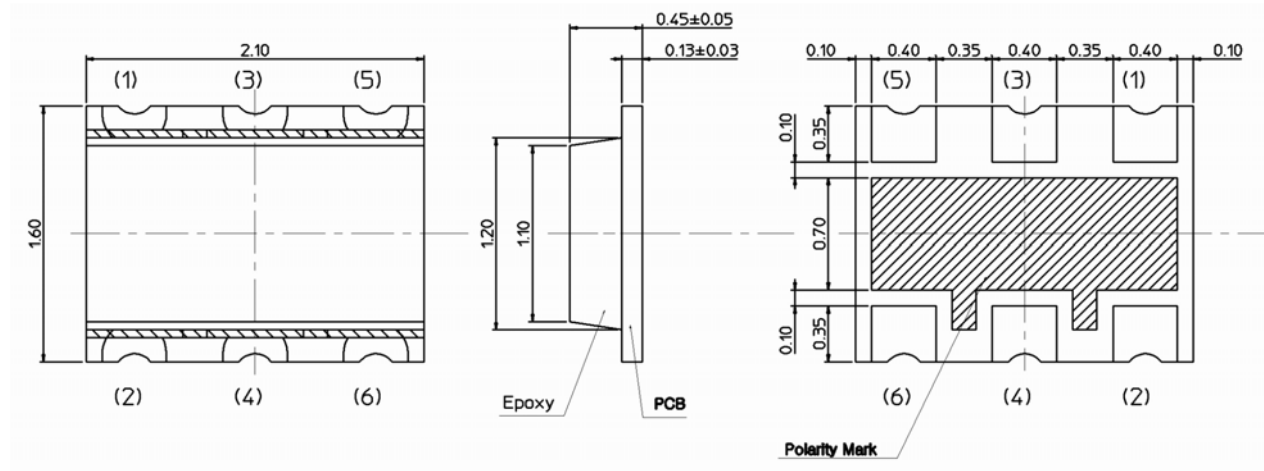
\* These graphs show typical values.



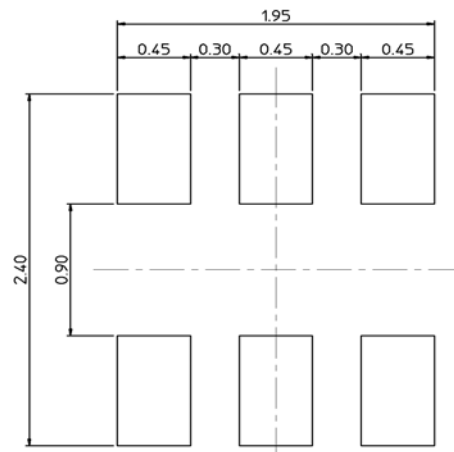
# Outline Drawing and Dimension

Unit : mm

Tolerance :  $\pm 0.1$

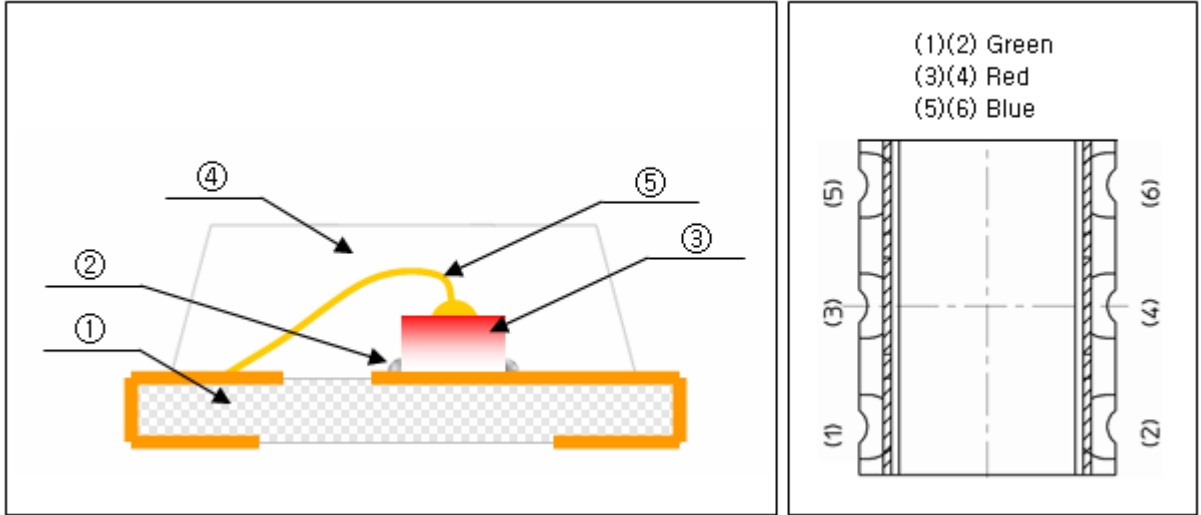


Pin connections



Land Pattern

## ■ Package Structure



번호	항목	재질
①	PCB	BT Resin
②	Adhesive	Ag Paste
③	Red Chip	AlGaInP/GaAs
④	Epoxy	Clear Epoxy
⑤	Wire	Gold Wire

## ■ Reliability Test Items and Conditions

### 1) Test Items and Results

Test Item	Test Conditions	Test Hours/Cycles	Sample No
Room Temperature Life Test	25°C±3°C, DC 15mA/Chip	500h	0/25
Soldering Heat	260±5°C	5 sec	0/25
Temperature Cycling	-40°C(30 min)~ 25°C(15 min) ~ 85°C(30 min)~ 25°C(15 min)	5 Cycle	0/25
High Temperature Humidity storage	60°C±2°C, RH=95%±5%	500h	0/25
High Temperature Storage	85°C±3°C	500h	0/25
Low Temperature Storage	-40°C±3°C	500h	0/25
Vibration Variable Frequency	98.1m/S2(10G), 100-2KHz Sweep For 20min XYZ each Direction	2h	0/10

### 2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	VF	IF= 15 mA	-	U.S.L.*1.2
Luminous Intensity	IV	IF= 15 mA	L.S.L.*0.5	-

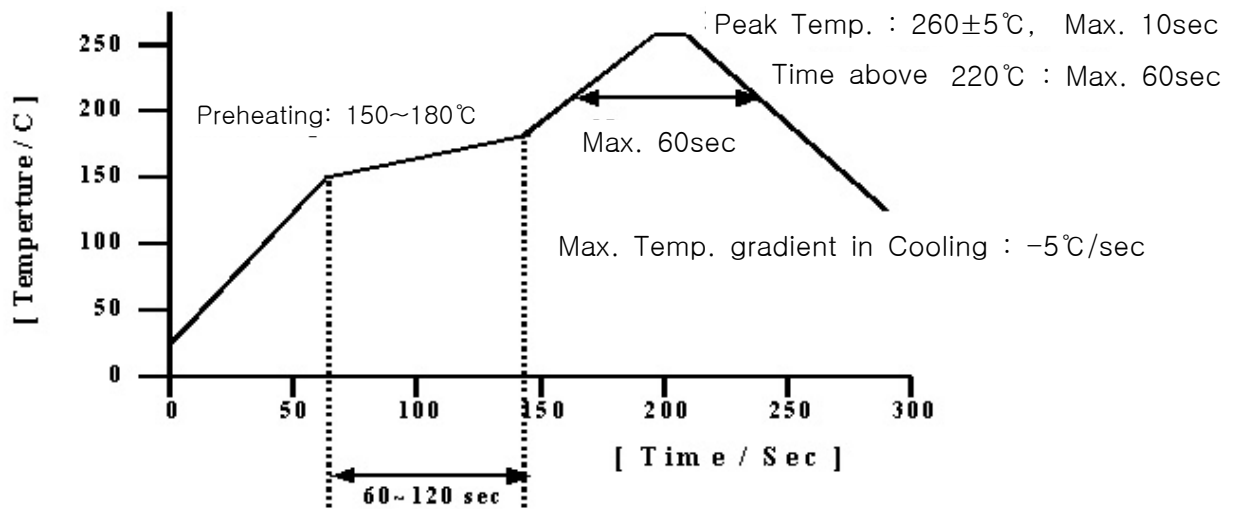
USL : Upper Standard Level      LSL : Lower Standard Level



## ■ Solder Conditions

### 1) Reflow Conditions ( Pb Free )

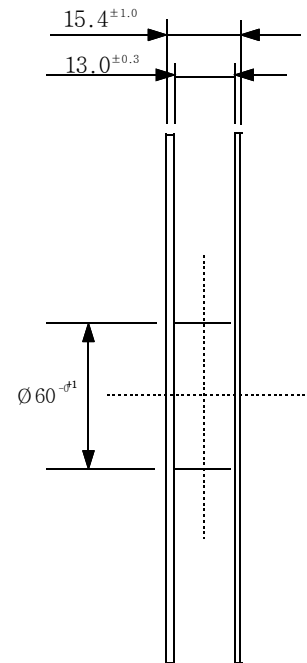
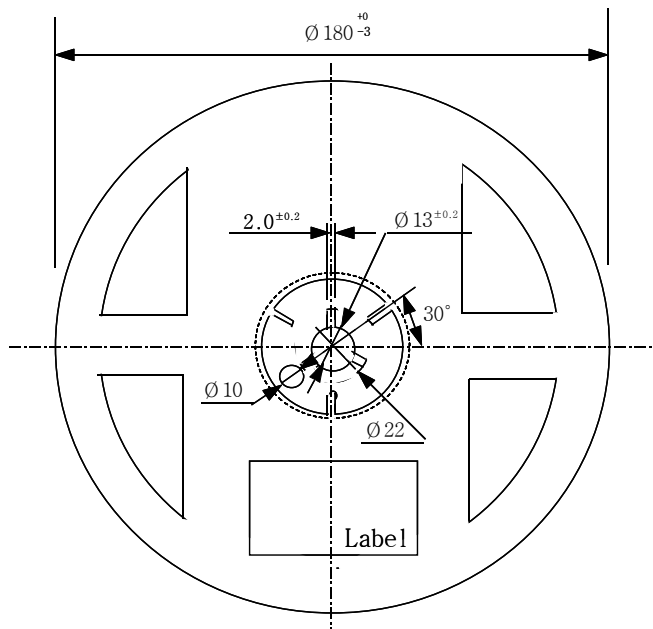
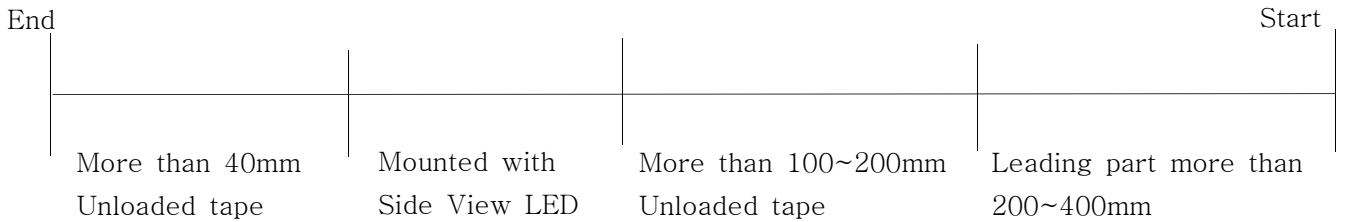
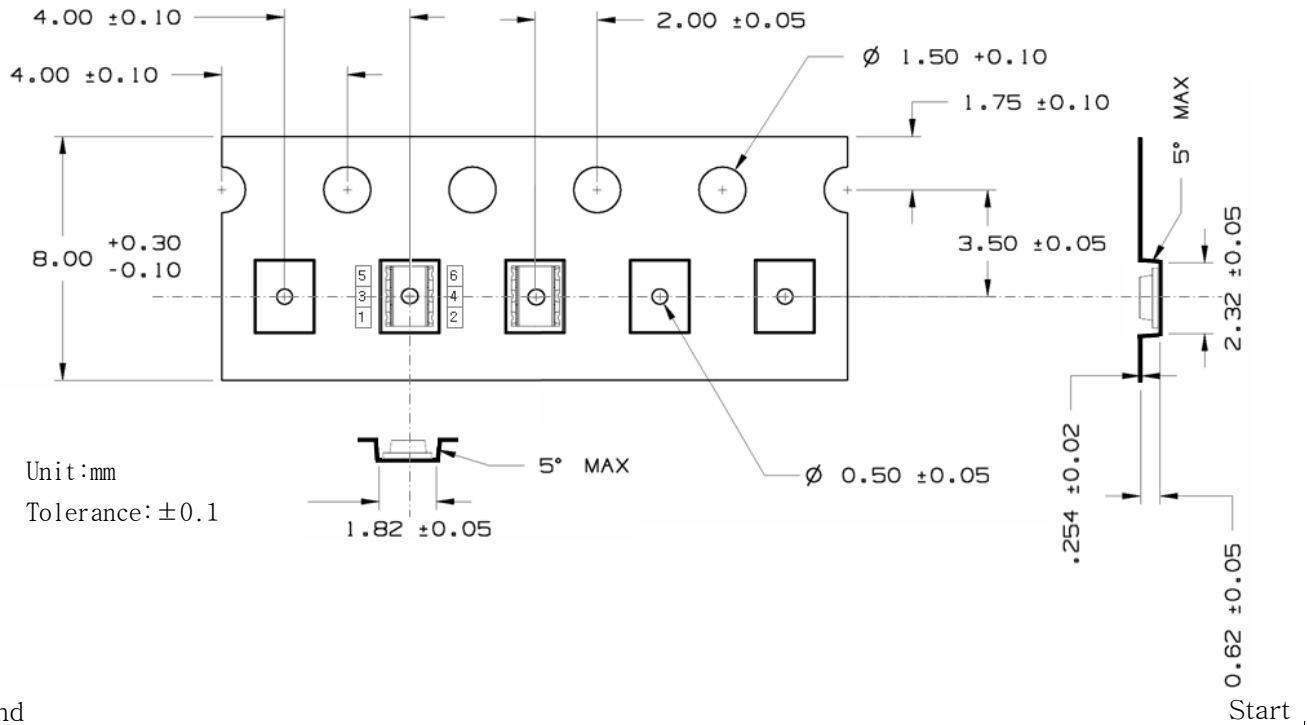
Reflow Frequency : 2 times max.



### 2) For Manual Soldering

Not more than 5 seconds @MAX300°C, under Soldering iron.

## Taping Dimension

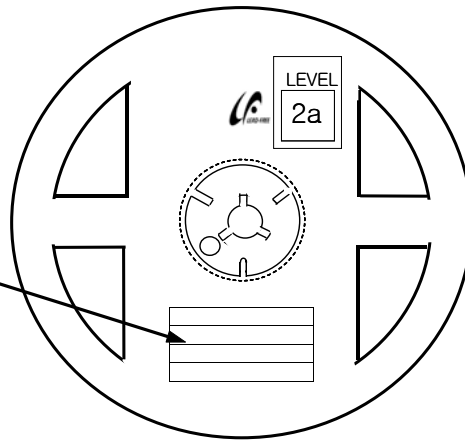
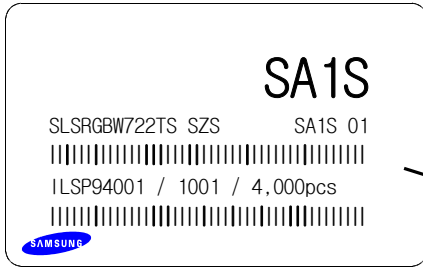


Tolerance ±0.2 , Unit: mm

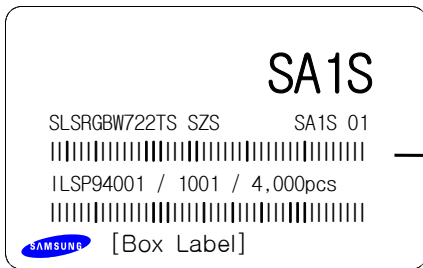
- (1) Quantity : The quantity/Reel to be 4000 pcs.
- (2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2 mm
- (3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1~0.7N when the cover tape is turned off from the carrier tape at 10°C angle to be the carrier tape.
- (4) Packaging : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package.

# Reel Packing Structure

## Reel



## Aluminum Vinyl Bag

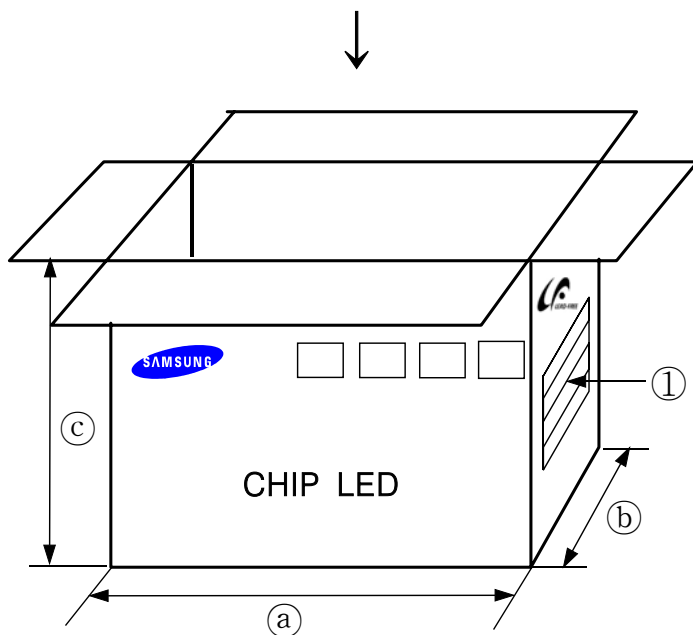
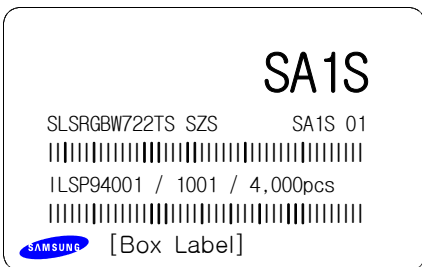


## Outer Box Structure

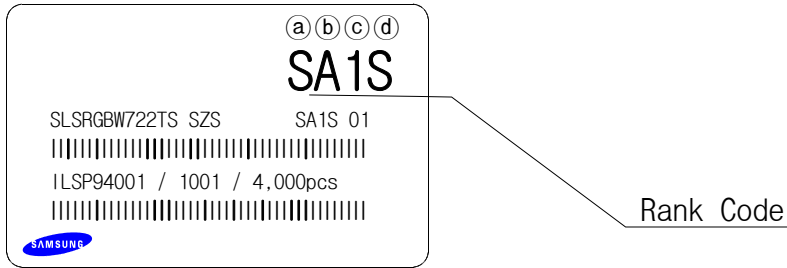
Material : Paper(SW3B(B))

TYPE	SIZE(mm)		
	Ⓐ	Ⓑ	Ⓒ
7inch	245	220	142

### ① SIDE



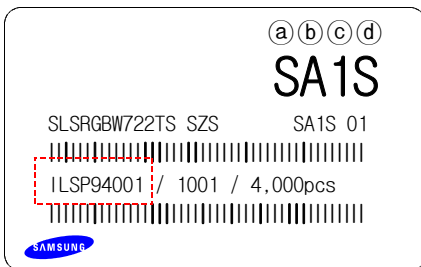
## Label Structure



- (a) : VF Rank
- (b)(c) : Chromaticity Coordinate Rank
- (d) : IV Rank

## Lot Number

The Lot number is composed of the following characters



● ◎ ◇ ◆ □ ■ △ △ △ / | ▲ ▲ ▲ / 4000PCS

- : Production Site (S:SEMCO, G:Gosin China, I:Mediana)
- ◎ : L (LED)
- ◇ : Product State (A:Normality, B: Bulk, C:First Production, R:reproduction, S:Sample)
- ◆ : Year (Q:2006, R:2007, S:2008...)
- : Month (1 ~ 9, A, B)
- : Day (1 ~ 9, A, B ~ V)
- △ : SEMCo. Product number (1 ~ 999)
- ▲ : Reel Number (1 ~ 999)

# Aluminium Packing Bag



**CAUTION**

**LEVEL**  
**2a**

This bag contains  
**MOISTURE SENSITIVE DEVICES**

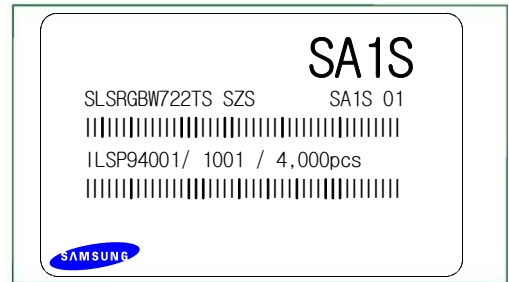
1. Shelf life in sealed bag: 12 months at <math>< 40^{\circ}\text{C}</math> and <math>< 90\%</math> relative humidity (RH)
2. Peak package body temperature: <math>240^{\circ}\text{C}</math>
3. After this bag is opened, devices that will be subjected to reflow solder or other high temperature processes must be:
  - a. Mounted within 672 hours at factory conditions of equal to or less than <math>30^{\circ}\text{C}</math> / <math>60\%</math> RH, or
  - b. Stored at <math>< 10\%</math> RH
4. Devices require bake, before mounting, if:
  - a. Humidity Indicator Card is > 65% when read at <math>23 \pm 5^{\circ}\text{C}</math>, or
  - b. 2a is not met.
5. If baking is required, devices must be baked for 1 hours at <math>60 \pm 5^{\circ}\text{C}</math>

Note: if device containers cannot be subjected to high temperature or shorter bake times are desired, reference IPC/JEDEC J-STD-033 for bake procedure,

Bag seal due date: \_\_\_\_\_

(if blank, see code label)

Note: Level and body temperature by IPC/JEDEC J-STD-020



**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
SENSITIVE  
DEVICES



## 주의 사항

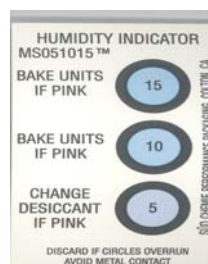
이 알루미늄 지퍼 백은 습기 및 정전기로부터 제품을 보호하기 위하여 제작되었습니다. 개봉 후에는 즉시 솔더 작업을 실시하는 것을 권장합니다.

습기 및 정전기로부터 제품을 보호 하기 위해서 개봉 후 사용하지 않는 자재는 본 팩에 넣어 보관 하시기 바랍니다. 사용하지 않는 자재를 본 팩에 넣을 때는 반드시 동봉된 드라이 팩과 함께 넣고 지퍼부분을 완전하게 밀봉하여 주시기 바랍니다.

## Important

This Al Zipper bag is designed to protect the enclosed products from moisture and ESD. Once opened, the products should be soldered onto the printed circuit board immediately. When not in use, please do not leave the products unprotected by the Al Zipper Bag. To repack unused products., please ensure the zip-lock is completely sealed with the dry pack left inside.

There are Silica Gel and Humidity Indicator Card in the Aluminum Bag



## ■ Precaution for Use

1. This device should not be used in any type of fluid such as water, oil, organic solvent, etc.  
When washing is required, IPA should be used.
2. When the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.
3. LEDs must be stored to maintain a clean atmosphere.  
If the LEDs are stored for 3 months or more after being shipped from SEMCO, a sealed container with a nitrogen atmosphere should be used for storage.
4. The LEDs should be used within a year.  
The LEDs must be used within seven days after opening the moisture proof packing.  
Repack unused Products with anti-moisture packing, fold to close any opening and then store in a dry place.
5. The appearance and specifications of the product may be modified for improvement without notice.
6. This LEDs is sensitive to the static electricity and surge. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

If over voltage which exceeds the absolute maximum rating is applied to LEDs, it will cause damage LEDs and result in destruction.

Damaged LEDs will show some unusual characteristics such as leak current remarkably increase, turn-on voltage becomes lower and the LEDs get unlighted at low current.

# ■ Hazard Substance Analysis



**Test Report No.** F690501/LF-CTSAYA07-12090

**Issued Date:** May 23, 2007

**Page** 1 of 3

**To:** SAMSUNG ELECTRO-MECHANICS CO., LTD.  
314, Maetan3-dong  
Yeongtong-gu  
Suwon-city  
KYUNGGI-DO 442-373  
Korea

The following merchandise was submitted and identified by the client as :

---

**Product Name** : 2116 Top View LED  
**SGS File No.** : AYA07-12090  
**Received Date** : May 21, 2007  
**Test Performing Date** : May 22, 2007  
**Test Performed** : SGS Testing Korea tested the sample(s) selected by applicant with following results  
**Test Results** : For further details, please refer to following page(s)  
**Comments** : The sampling and testing was performed only for the part indicated in the photo without disassembly by the applicant's specific request.

Pluto Kim  
Monet Jeong  
Jully Oh  
Jerry Jung  
/Testing Person

SGS Testing Korea Co. Ltd.

Jeff Jang / Chemical Lab Mgr

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**Test Report No. F690501/LF-CTSAYA07-12090**

Issued Date: May 23, 2007

Page 2 of 3

Sample No. : AYA07-12090.001  
 Sample Description : 2116 Top View LED  
 Item No./Part No. : SLSNNRGBW722TS

**Heavy Metals**

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	0.5	N.D.
Lead (Pb)	mg/kg	US EPA 3050B(1996), US EPA 6010B(1996), ICP	5	N.D.
Mercury (Hg)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	US EPA 3060A(1996), US EPA 7196A(1992), UV	1	N.D.

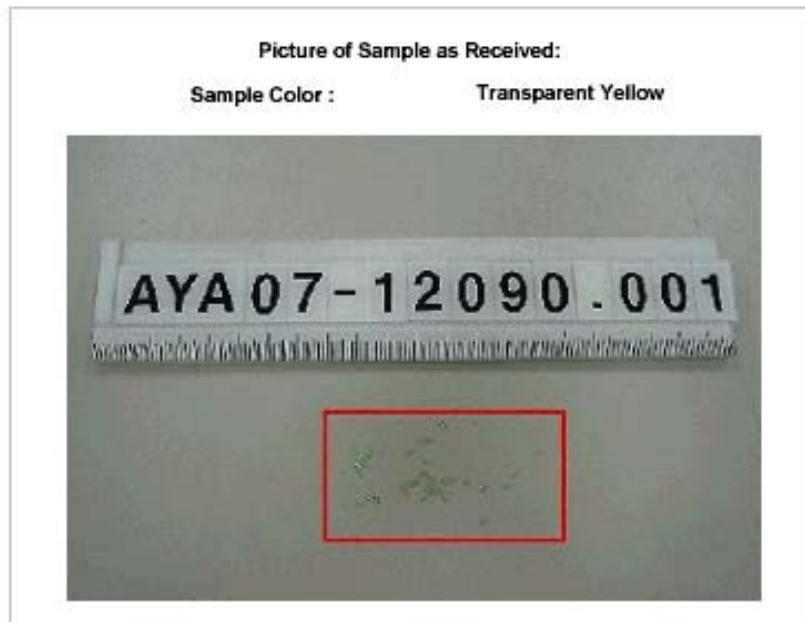
**Flame Retardants-PBBs/PBDEs**

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Monobromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Dibromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tribromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Octabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.
Decabromodiphenyl ether	mg/kg	US EPA 3540C, GC/MS	5	N.D.

- NOTE: (1) N.D. = Not detected (<MDL)  
 (2) mg/kg = ppm  
 (3) MDL = Method Detection Limit  
 (4) - = No regulation  
 (5) \*\* = Qualitative analysis (No Unit)  
 (6) Negative = Undetectable / Positive = Detectable

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\*\*\* End \*\*\*

- NOTE:
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**Revision History  
(Model:SLSRGBW722TS)**

Date	Revision History	Writer	
		Drawn	Approved
2007.06.12	NEW Version	C.W Kim	Y.C Kim