

DATE OF ISSUE : 2007. 01. 09

# SPECIFICATION

MODEL : SLSNNWH824TS

TOP VIEW WHITE LED

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

*SAMSUNG ELECTRO-MECHANICS CO, .LTD.*

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

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## ■ Product Outline

### 1) Feature

1. Mini-Mold type ( 3.0 \* 3.0 \* t 0.9mm ),
2. Beam Angle (  $\Delta\theta$  : 120 ° )
3. GaN/Al<sub>2</sub>O<sub>2</sub> Chip & Long Time Reliability

### 2) Applications

- Mobile Camera Phone, Flashlight for Camera.....
- Amusement

## ■ Absolute Maximum Rating

- Operation Forward Current Per Chip..... 30 mA
- Peak Pulsed Forward Current Per Chip..... 100 mA  
(Duty 1/10 Pulse Width 10msec)
- Reverse Voltage ..... 5V
- Operating Temperature Range ( T<sub>opr</sub> ) ..... -35°C ~ 85°C
- Storage Temperature Range ( T<sub>stg</sub> ) ..... -40°C ~ 100°C

## ■ Characteristics

( Ta : 25°C )

	Rank	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	S	V <sub>F</sub>	2.9	3.2	3.8	V	30mA/chip
Reverse Current		I <sub>R</sub>	-	-	100	μA	V <sub>R</sub> = 5V

### Chromaticity Coordinate

Rank	x				y				Condition
A	0.277	0.264	0.287	0.300	0.235	0.267	0.310	0.277	I <sub>F</sub> =60mA, 30mA/chip
B	0.300	0.287	0.320	0.324	0.277	0.310	0.360	0.311	
C	0.324	0.320	0.355	0.350	0.311	0.360	0.390	0.343	

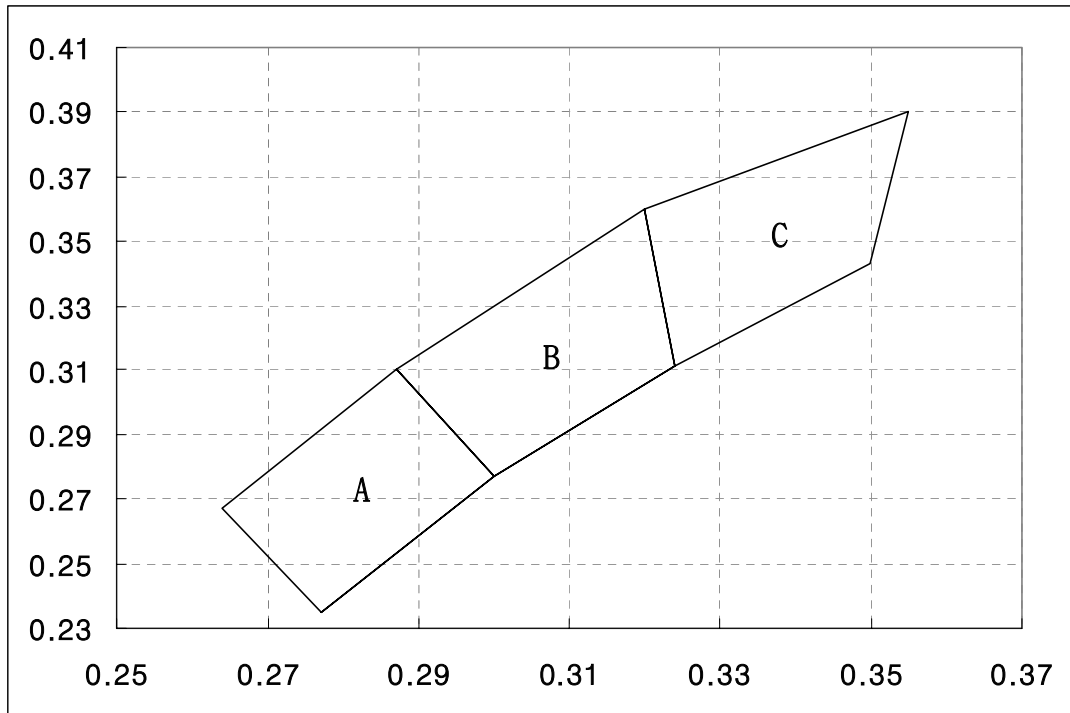
### Luminous Intensity

Rank	Symbol	Min.	Typ.	Max.	Unit	Conditions
S	I <sub>v</sub>	3	4	5	cd	I <sub>F</sub> =60mA, 30mA/chip

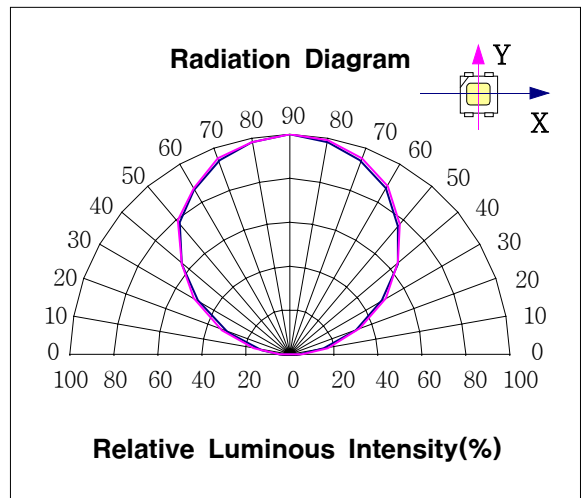
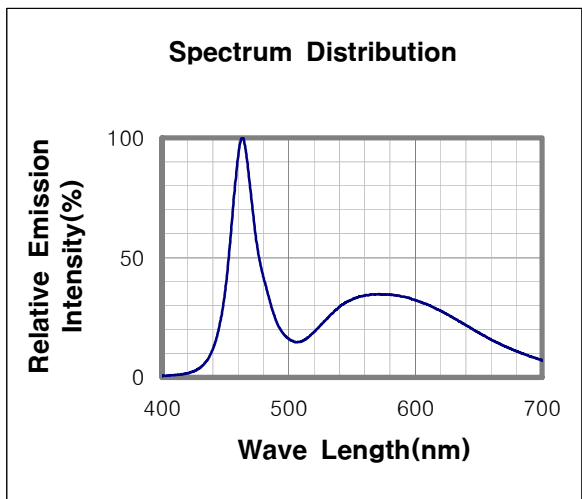
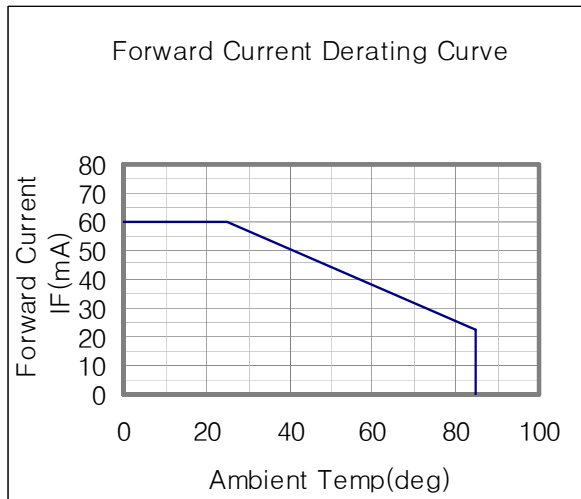
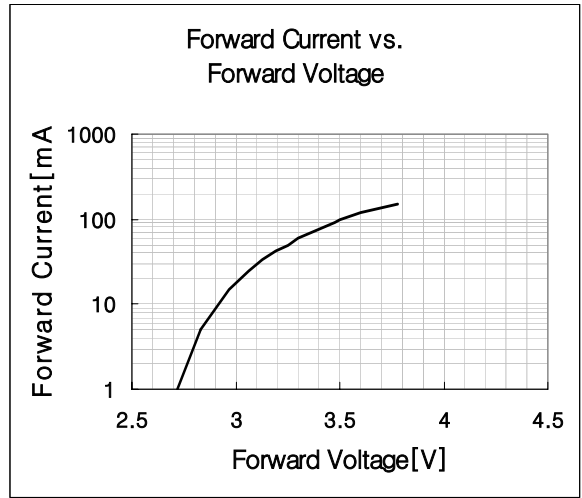
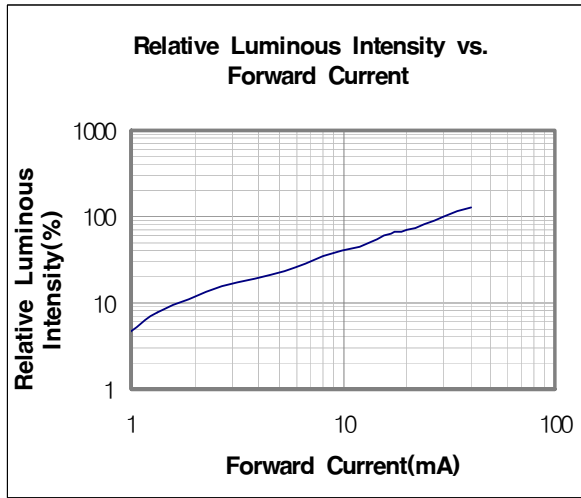
\* Tolerance : V<sub>F</sub>:±0.1, I<sub>v</sub>:±10%, x,y:±0.02

\* Luminous intensity measuring equipment : CAS140 B

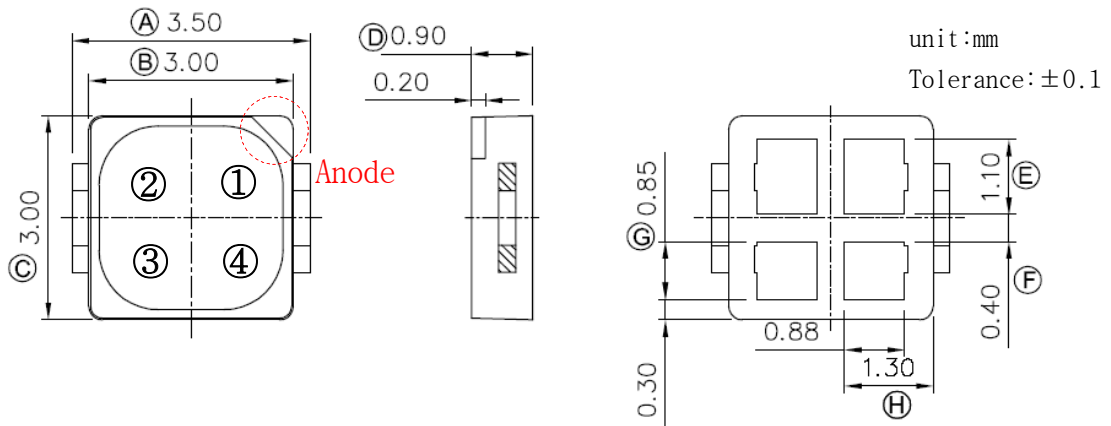
## ■ Chromaticity Diagram



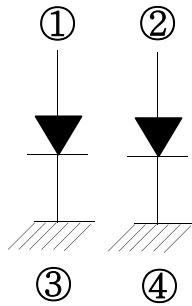
# ■ Typical Characteristics Graph



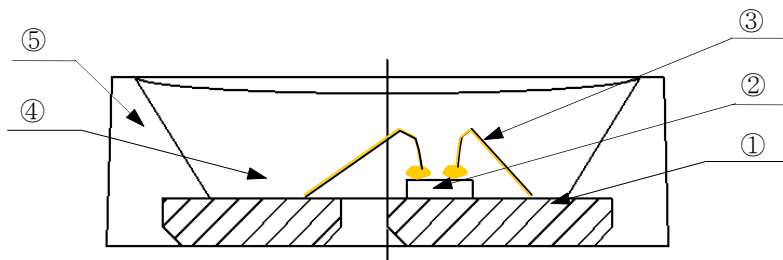
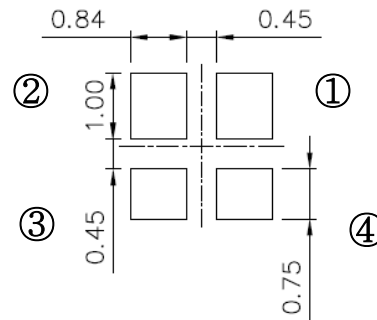
## Outline Drawing and Dimension



Circuit



Land Layout

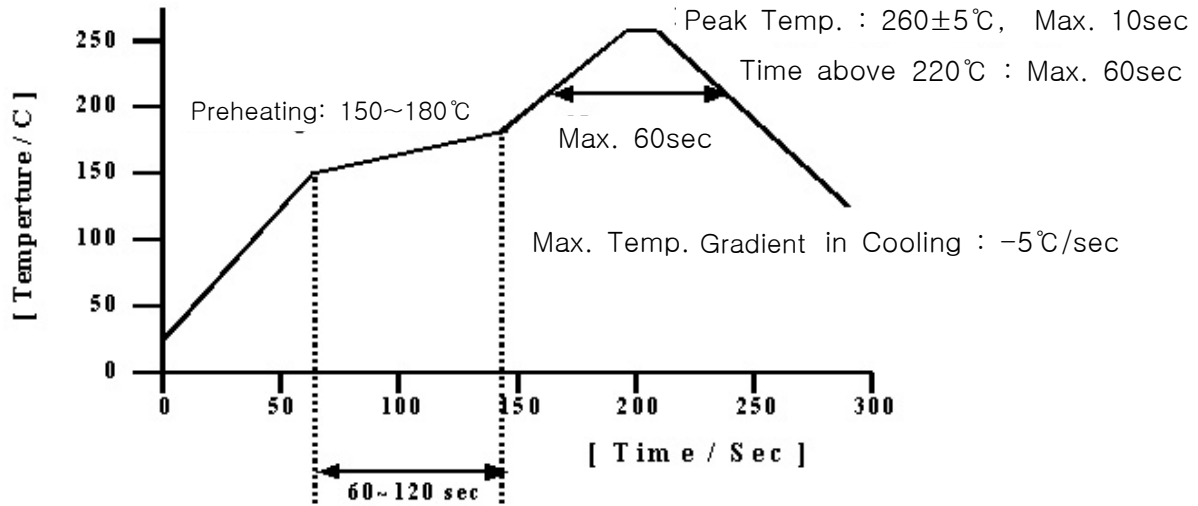


NUMBER	ITEM	MATERIAL
①	FRAME	Copper Frame(Silver Plated)
②	LED CHIP	GaN/Al <sub>2</sub> O <sub>3</sub>
③	WIRE	Gold Wire
④	RESIN	Resin + Phosphor
⑤	PACKAGE	Heat-resistant Polymer

## ■ Solder Conditions

### 1) Reflow Conditions ( Pb Free )

Reflow Frequency : 2 times max.

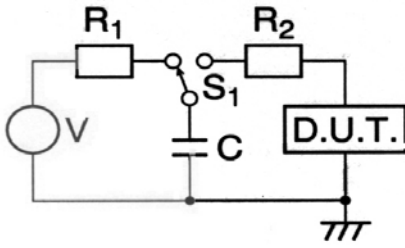


### 2) For Manual Soldering

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

## ■ Reliability Test Items and Conditions

### 1) Test Items

Test Item	Test Conditions	Test Hours/Cycles	Sample No
Room Temperature life test	25°C±3°C, DC60 mA	500 h	0/50
High Temperature humidity life test	60°C±3°C, 95%±2%RH, DC27.5 mA	500 h	0/50
High Temperature life test	85°C±3°C, DC12.5mA	500 h	0/50
Low Temperature life test	-30°C±3°C, DC60 mA	500 h	0/50
High Temperature Storage	Ta=100°C±3°C	500 h	0/50
Low Temperature Storage	Ta=-40°C±3°C	500 h	0/50
High Temperature humidity Storage	60°C±3°C, 95%±2%RH	500 h	0/50
Thermal Shock	-40°C ~ 100°C 0.5 h 0.5 h	100 cycles	0/50
Temperature humidity Cycle	25°C ~ 65°C ~ -10°C 24hrs/1cycle, 95%RH	10 cycles	0/22
Reflow (Pb-Free)	Peak 260±5°C for 10sec	3 times	0/22
ESD(HBM)	 <p>-R1:10MΩ , R2:1.5KΩ , C:100pF</p>	5 times	0/5
On/Off test	50°C±3°C, 95%±2%RH, DC60 mA, On/2sec, Off/2sec	108000 cycles	0/50

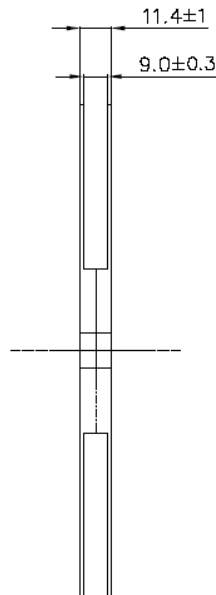
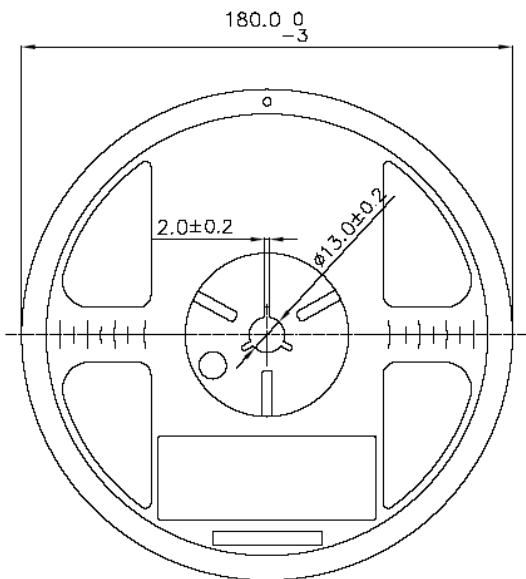
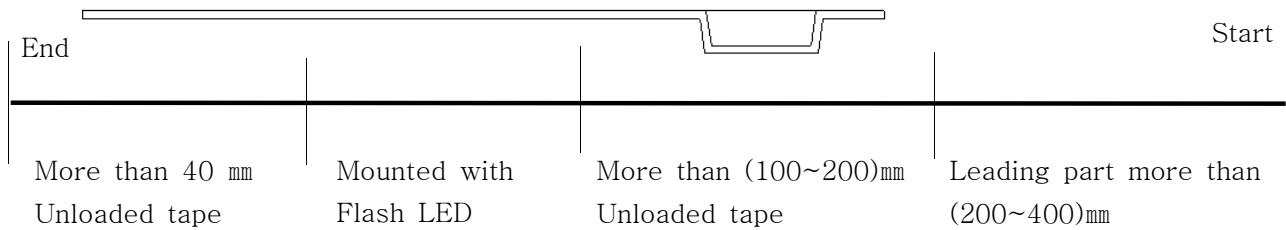
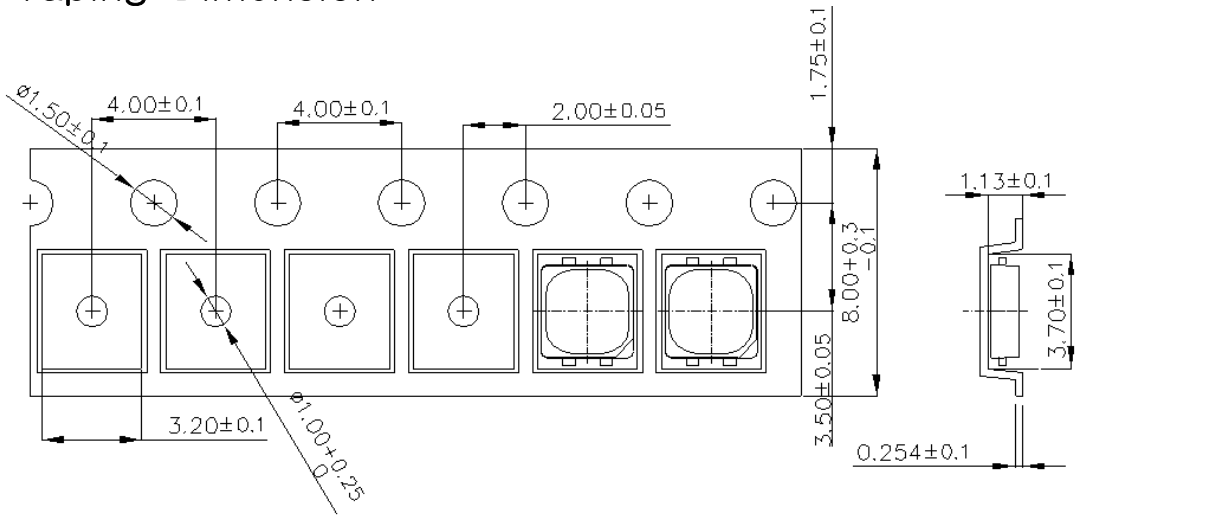
### 2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V <sub>F</sub>	30mA/die	-	U.S.L.*1.2
Luminous Intensity	IV	I <sub>F</sub> =60mA, 30mA/die	L.S.L.*0.5	-
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	U.S.L.*2.0

\* USL : Upper Standard Level    LSL : Lower Standard Level



## ■ Taping Dimension

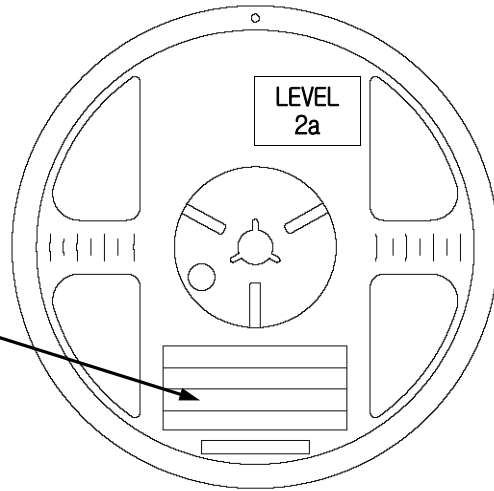
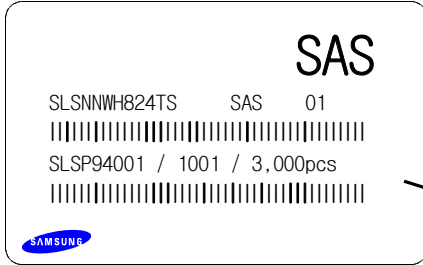


Tolerance :  $\pm 0.2$  , Unit:mm

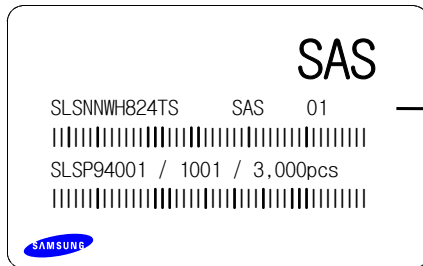
- (1) Quantity : The quantity/reel to be 3000pcs.
- (2) Cumulative Tolerance : Cumulative tolerance/10 pitches to be  $\pm 0.2$  mm
- (3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1–0.7N when the cover tape is turned off from the carrier tape at 10°C angle to be the carrier tape.
- (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

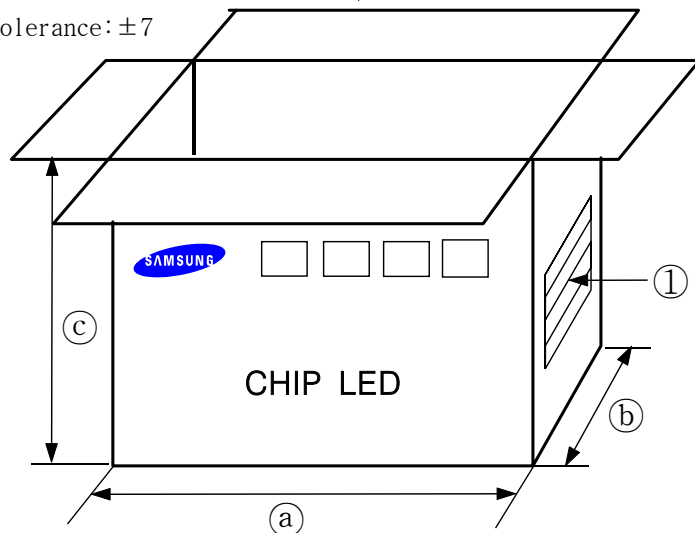
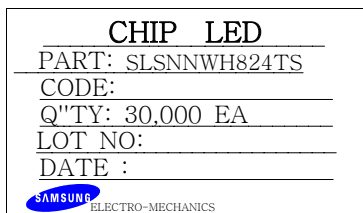


Material : Paper(SW3B(B)) Unit:mm

Tolerance: ±7

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

### ① SIDE



구분	알루미늄 팩	겉박스	Reel
표면저항	10 <sup>9</sup> Ω	10 <sup>10</sup> Ω	10 <sup>7</sup> Ω 이하
재질	Al 제전 봉투	종이	PS
정전기발생량 @23℃, 50%RH	0.00kV	0.00kV	0.00kV



**CAUTION**

This bag contains  
**MOISTURE SENSITIVE DEVICES**

**LEVEL**  
**2a**

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: 240 °C
  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 30°C / 60% 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     - b. 2a is not met.
  5. If baking is required, devices must be baked for 1 hours at
- 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

**SAS**

SLSNNWH824TS SAS 01

|||||

SLSP94001 / 1001 / 3,000pcs

|||||



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



■ 주의 사항

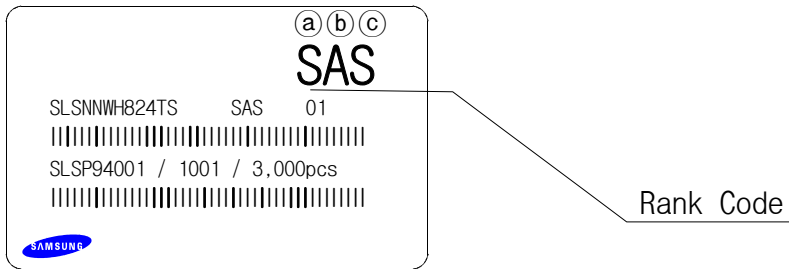
이 알루미늄 지퍼 백은 습기 및 정전기로부터 제품을 보호하기 위하여 제작되었습니다. 개봉 후에는 즉시 솔더 작업을 실시하는 것을 권장합니다.

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.

## ■ Label Structure



- Ⓐ : VF Rank
- Ⓑ : Chromaticity Coordinate Rank
- Ⓒ : IV Rank

## ■ 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 Samsung Electro-Mechanics, a sealed container with a nitrogen atmosphere should be used for storage.
4. 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.



**Test Report No.** F690501/LF-CTSAYA07-01751

Date: January 24, 2007

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

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

Product Name : Top View LED  
SGS File No. : AYA07-01751  
Received Date : January 18, 2007  
Test Performing Date : January 19, 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)

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-CTSAYA07-01751

**Date:** January 24, 2007

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**Sample No.** : AYA07-01751.001

**Sample Description** : Top View LED

**Item No./Part No.** : 3030PKG LED

**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.
Tri bromobiphenyl	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.
Tri bromodiphenyl 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) ppm = mg/kg  
(3) MDL = Method Detection Limit  
(4) - = No regulation  
(5) \*\* = Qualitative analysis (No Unit)  
(6) Negative = Undetectable / Positive = Detectable

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Picture of Sample as Received:

Sample Color : Yellow



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

- NOTE:
- (1) N.D. = Not detected.(<MDL)
  - (2) ppm = mg/kg
  - (3) MDL = Method Detection Limit
  - (4) - = No regulation
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**Revision History  
(Model:SLSNNWH824TS)**

Date	Revision History	Writer	
		Drawn	Approved
2007.01.24	New Version	R.S.Park	J.M.Park