

<h1 style="margin: 0;">SPECIFICATION</h1> <p style="margin: 0;">MODEL : SLSNNWH421USEQNRBR</p>
--

[Rank : (M,N), (Y1,Y2,Y3,Y4,H1,H2,H3,H4), (O2,AF1,AF2,AG1,AG2,AH1)]

White Side View

CUSTOMER : SAMSUNG ELECTRONICS CO., LTD. (LCD Business)

SAMSUNG ELECTRO-MECHANICS		
DRAWN	CHECKED	APPROVED

SAMSUNG ELECTRO-MECHANICS CO.,LTD.
314. MAETAN3-DONG, YEONGTONG-KU,
SUWON-SI, KYUNGKI-DO, KOREA, 442-743

Contents

1. Product Outline-----	3
2. Absolute Maximum Rating-----	3
3. Characteristics -----	3
4. Chromaticity Diagram-----	5
5. Typical Characteristic Graph -----	6
6. Outline Drawing And Dimension -----	8
7. Package Structure -----	9
8. Reliability Test Items And Conditions -----	10
9. Solder Conditions -----	11
10. Taping Dimension -----	12
11. Reel Packing Structure -----	13
12. Label Structure -----	14
13. Aluminium Packing Bag -----	15
14. Precaution For use -----	16
15. Hazard Substance Analysis -----	17
16. Revision History -----	20

1. Product Outline

1) Product Name

Side View LED : WHITE Color

2) Feature

- 1. Mini-Mold type (3.4 * 1.2 * t 0.8mm),
- 2. Beam Angle ($\Delta\theta$: 115 °)
- 3. GaN/Al₂O₃ Chip & Long Time Reliability
(MTTF: >15,000hr at T_s ≤ 50°C, T_j ≤ 70°C)

3) Applications

- Mobile Phone, CLP, Back-light, Indicator.....

2. Absolute Maximum Rating

- Operation Forward Current 30mA
- Junction Temperature 120°C
- Peak Pulsed Forward Current 100mA
- Reverse Current 85mA
- Operating Temperature Range (Topr) -30°C ~ 85°C
- Storage Temperature Range (Tstg) -40°C ~ 100°C
- Soldering Temperature 260 °C for 10 s

3. Characteristics

Electrical properties

Ta : 25°C

	Symbol	Conditions	Rank	Min.	Typ.	Max.	Unit
Forward Voltage	V _F	I _F = 20 mA	M	3.0	-	3.2	V
			N	3.2	-	3.4	
	V _{F1}	I _F = 1 μA		2.2	-	2.8	
Reverse Voltage	V _R	I _R = 10 mA	-	0.6	-	2.0	

Chromaticity coordinate

Rank		X	Y
NR	Y1	0.282	0.2718
		0.285	0.267
		0.2892	0.2744
		0.2865	0.28
	Y2	0.285	0.267
		0.288	0.262
		0.292	0.269
		0.2892	0.2744
	Y3	0.2892	0.2744
		0.292	0.269
		0.296	0.276
		0.2933	0.2817
	Y4	0.2865	0.28
		0.2892	0.2744
		0.2933	0.2817
		0.2905	0.2874
	H1	0.2905	0.2874
		0.2933	0.2817
		0.2971	0.2883
		0.2946	0.2947
	H2	0.2933	0.2817
		0.296	0.276
		0.2995	0.282
		0.2971	0.2883
	H3	0.2971	0.2883
		0.2995	0.282
		0.303	0.2879
		0.3008	0.2948
	H4	0.2946	0.2947
		0.2971	0.2883
		0.3008	0.2948
		0.2986	0.302

Luminous Intensity

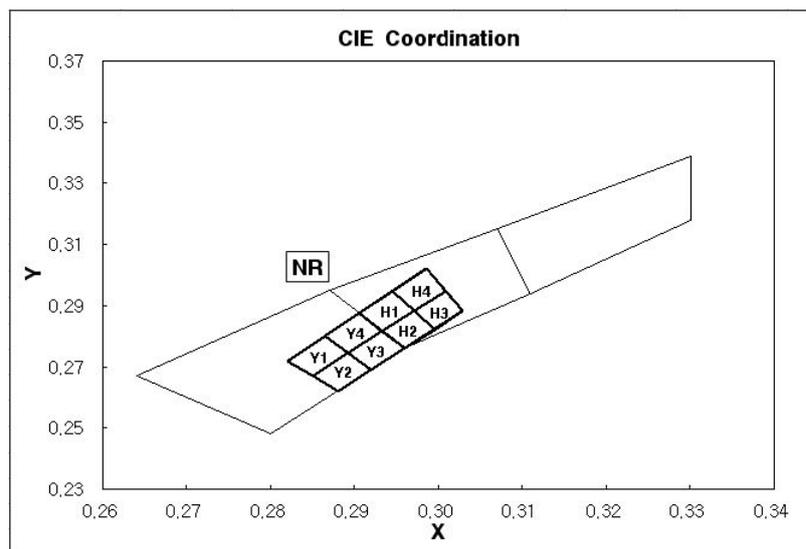
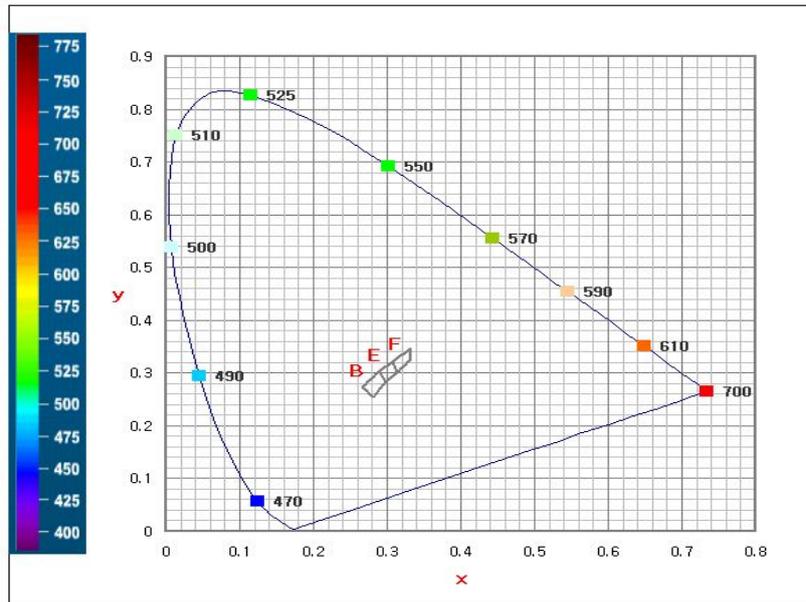
Ta : 25°C

Rank		Luminous Intensity(mcd)	Symbol	Conditions
BR (1950~2250)	O2	1950 ~ 2000	IV	I _F = 20 mA
	AF1	2000 ~ 2050		
	AF2	2050 ~ 2100		
	AG1	2100 ~ 2150		
	AG2	2150 ~ 2200		
	AH1	2200 ~ 2250		

* Tolerance: VF:±0.05V, IV:+7%, X,Y:±0.005

* Luminous intensity measuring equipment : CAS140B

4. Chromaticity Diagram



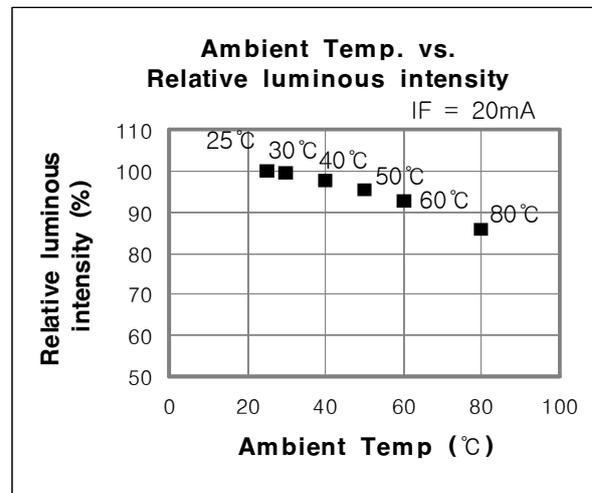
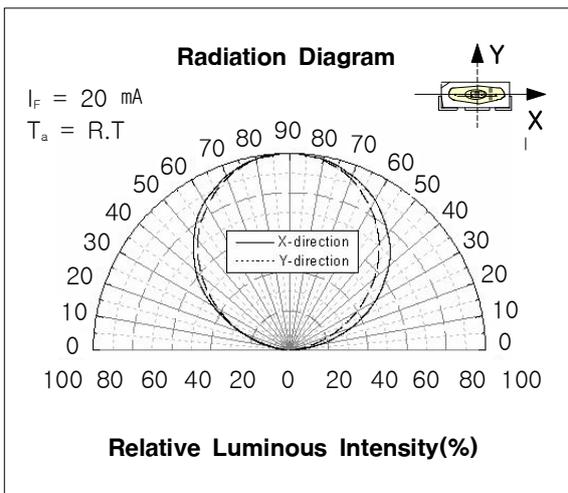
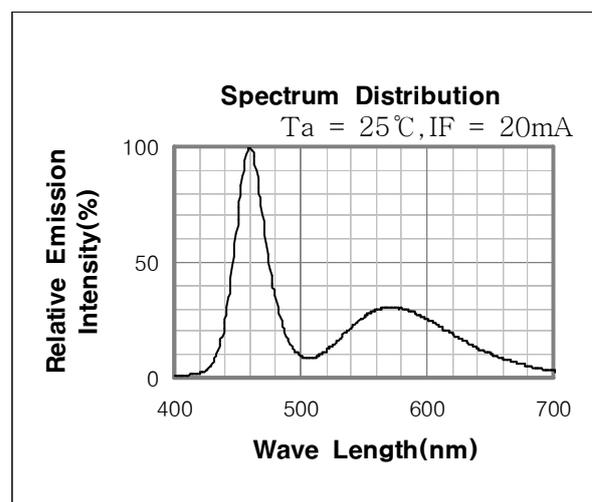
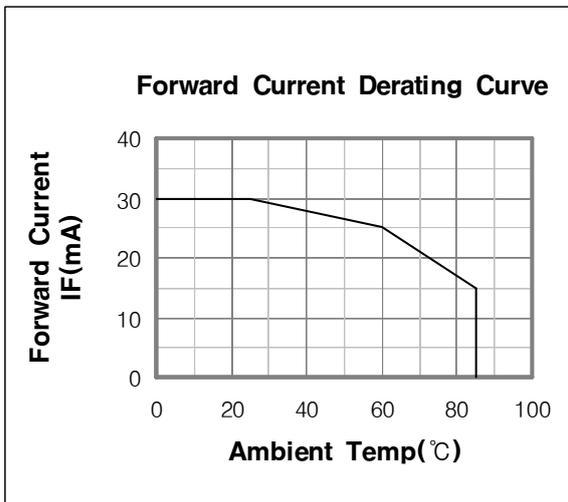
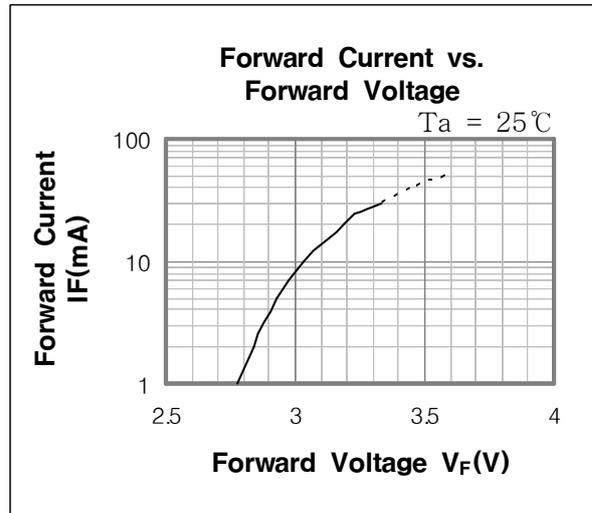
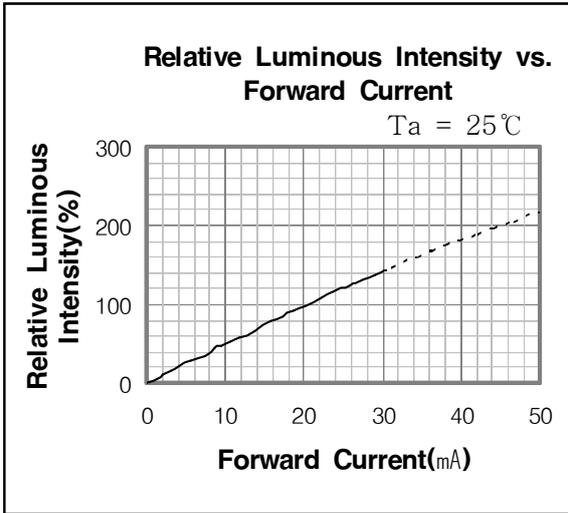
* $NR = Y1 + Y2 + Y3 + Y4 + H1 + H2 + H3 + H4$

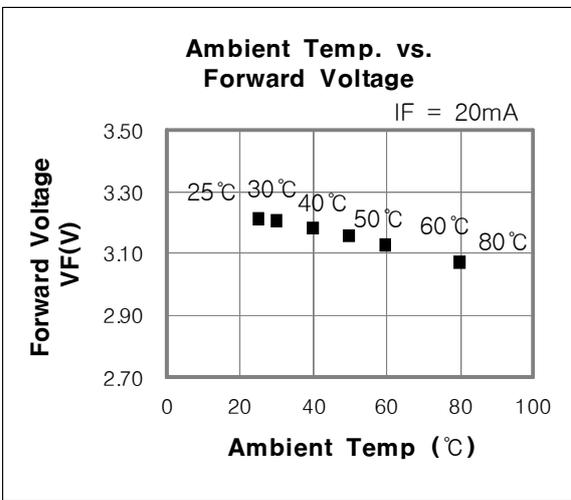
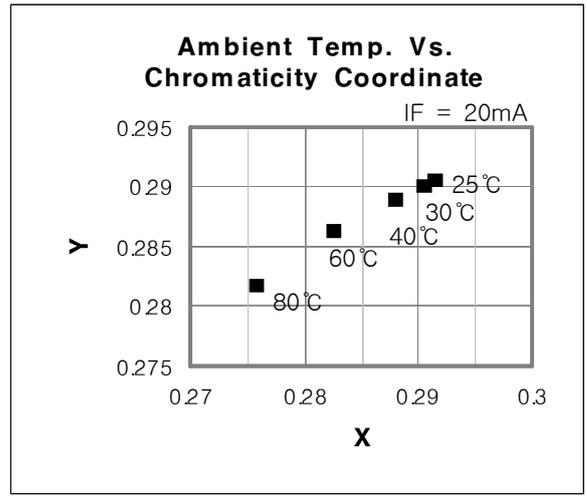
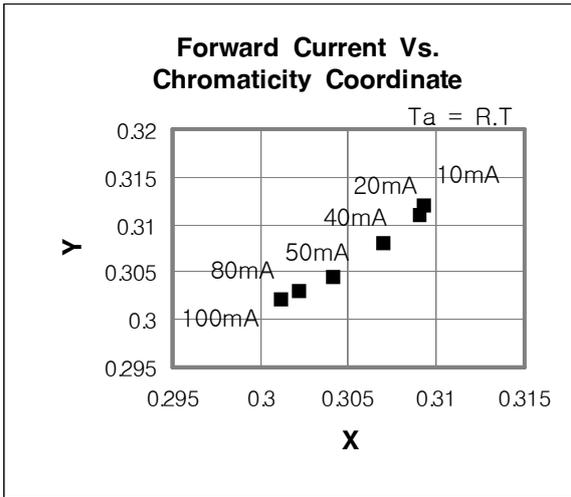
※ Approved Rank

V_F	CIE	I_v
M,N	Y1,Y2,Y3,Y4,H1,H2,H3,H4	O2,AF1,AF2,AG1,AG2,AH1

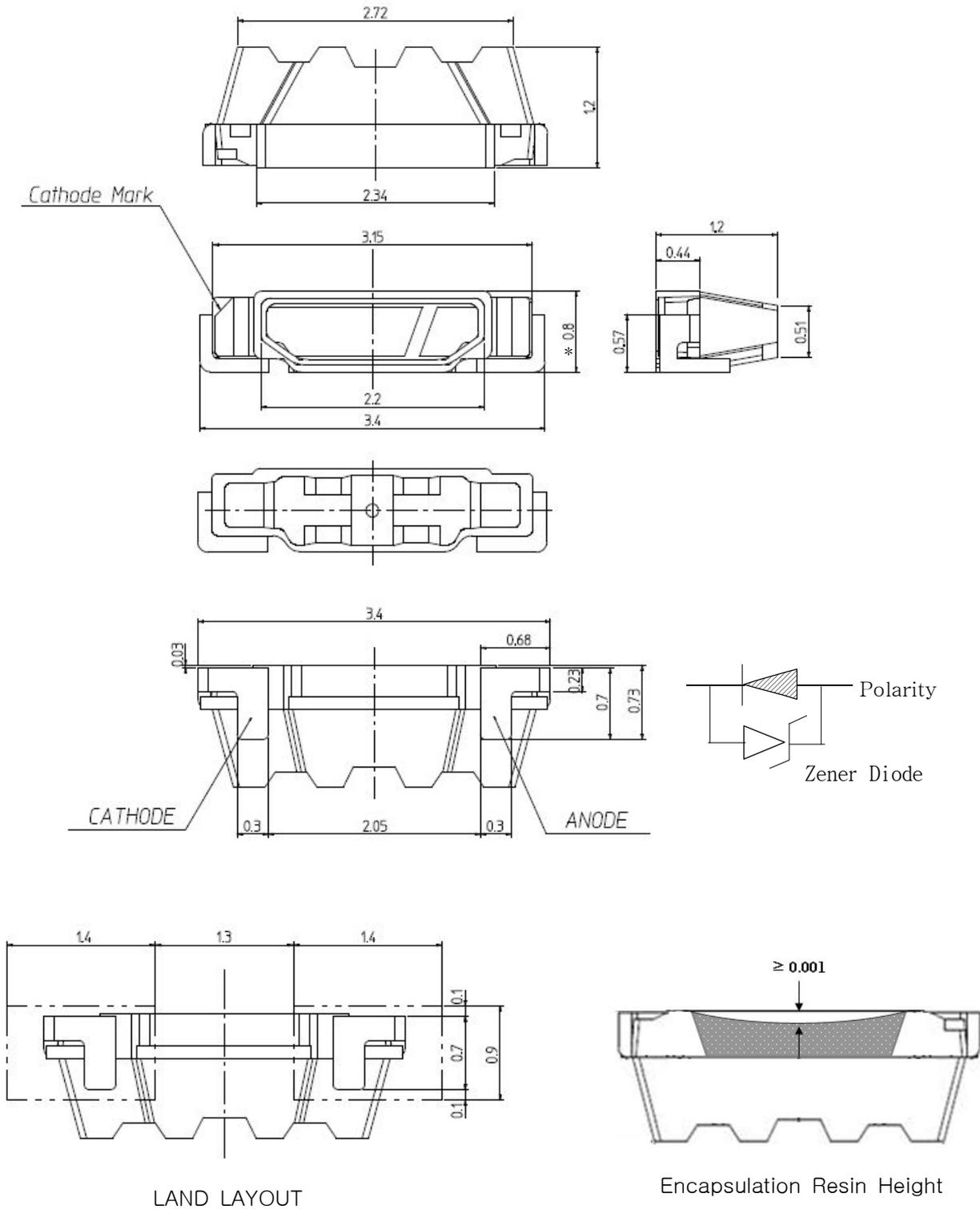
- * Each reel contains only one of the M or N, a segment(1/2) of the Q-rank.
- * Each reel contains only one of the Y1~H4, a segment(1/8) of the NR-rank.
- * Each reel contains only one of the O2, AF1, AF2, AG1, AG2 or AH1 a segment(1/6) of the BR-rank.

5. Typical Characteristic Graph





6. Outline Drawing and Dimension

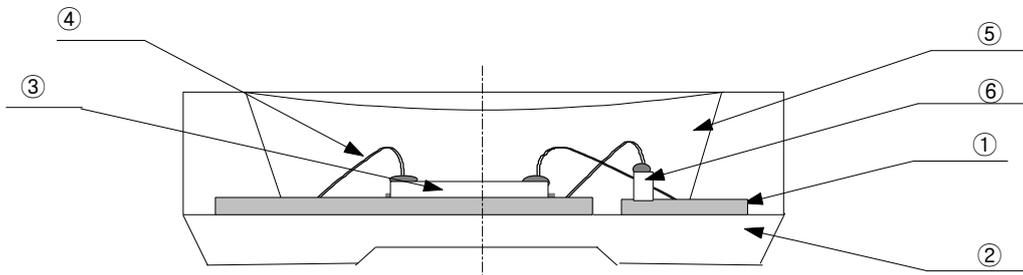


unit:mm

Tolerance: ± 0.1 , * : ± 0.05

(NOTE) The LED may have flash/flange which exceeds the tolerance of this print

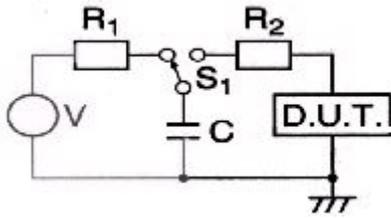
7. Package Structure



No	Item	Material
①	FRAME	Copper Frame(Silver plated)
②	PACKAGE	Heat-resistant Polymer
③	LED CHIP	GaN/Al ₂ O ₃
④	WIRE	Gold Wire
⑤	RESIN	Resin + Phosphor
⑥	ZENER DIODE	Si

8. Reliability Test Items and Conditions

1) Test Items and Results

Test Item	Test Conditions	Test Hours/Cycles	Sample No
Room Temperature Life Test 1	25°C±3°C, DC30 mA	500 h	0/50
Room Temperature Life Test 2	25°C±3°C, DC20 mA	1000 h	0/50
Room Temperature Life Test 3(MTTF test)	25°C±3°C, DC20 mA	15,000h	0/50
High Temperature humidity Life Test	60°C±3°C, 95%±2%RH, DC25 mA	500 h	0/50
High Temperature Life Test	85°C±3°C, DC15 mA	500 h	0/50
Low Temperature Life Test	-30°C±3°C, DC20 mA	1000 h	0/50
High Temperature Storage	Ta=100°C±3°C	1000 h	0/22
Low Temperature Storage	Ta=-40°C±3°C	1000 h	0/22
High Temperature Humidity Storage	60°C±3°C, 95%±2%RH	1000 h	0/22
Thermal Shock	-40°C ~ 100°C 30min ~ 30min	100 cycles	0/50
Temperature Humidity Cycle	25°C ~ 65°C ~ -10°C 95%RH, DC 20mA, 24hrs/1cycle	10 cycles	0/50
Reflow	Peak 260±5°C for 10sec, 220°C over time 60sec max	3 times	0/22
ESD(HBM)	 <p>- R1:10MΩ, R2:1.5kΩ, C:100pF</p>	3 times (±5kV)	0/5
On/Off test	50°C±3°C, 95%±2%RH, DC30mA, On/2sec, Off/2sec	108K cycles	0/50

2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	VF	IF= 20 mA		IVL × 1.1
		+ IF = 5 mA	IVL -0.05V	IVL +0.05V
Luminous Intensity	IV	IF = 20 mA	++ IVL × 0.8 +++ IVL × 0.5	-
		IF = 25 mA	**** IVL × 0.8	-

+ This criterion is used only ESD Test

++ This criterion is used only Room Temperature Life Test 2

+++ This criterion is used only Room Temperature Life Test 3 (MTTF; Mean Time to Failure)

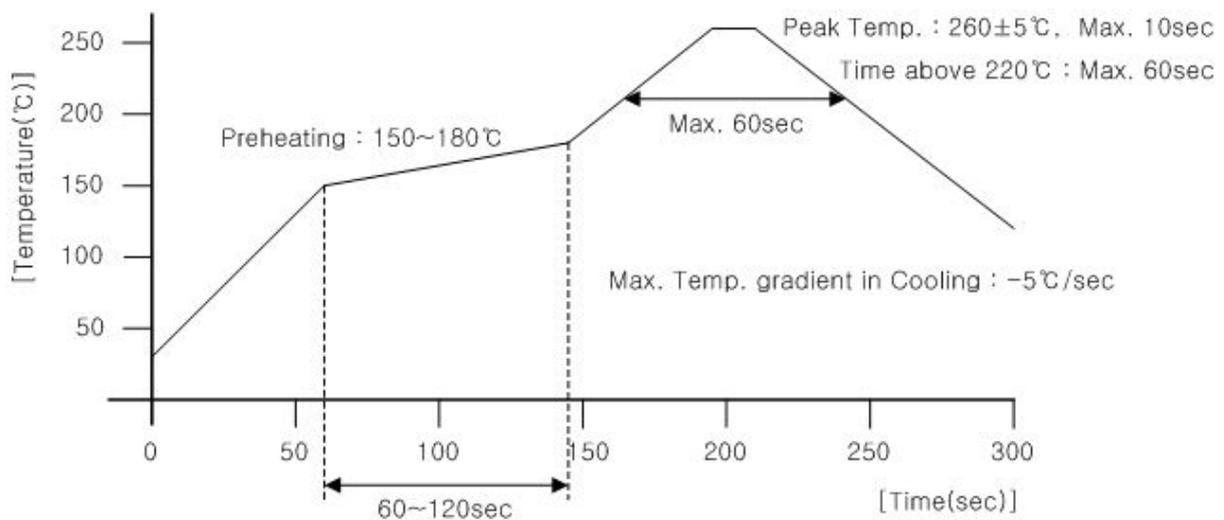
**** This criterion is used only High Temperature Humidity Life Test

IVL : Initial Value Level

9. Solder Conditions

1) Reflow Conditions (Pb Free)

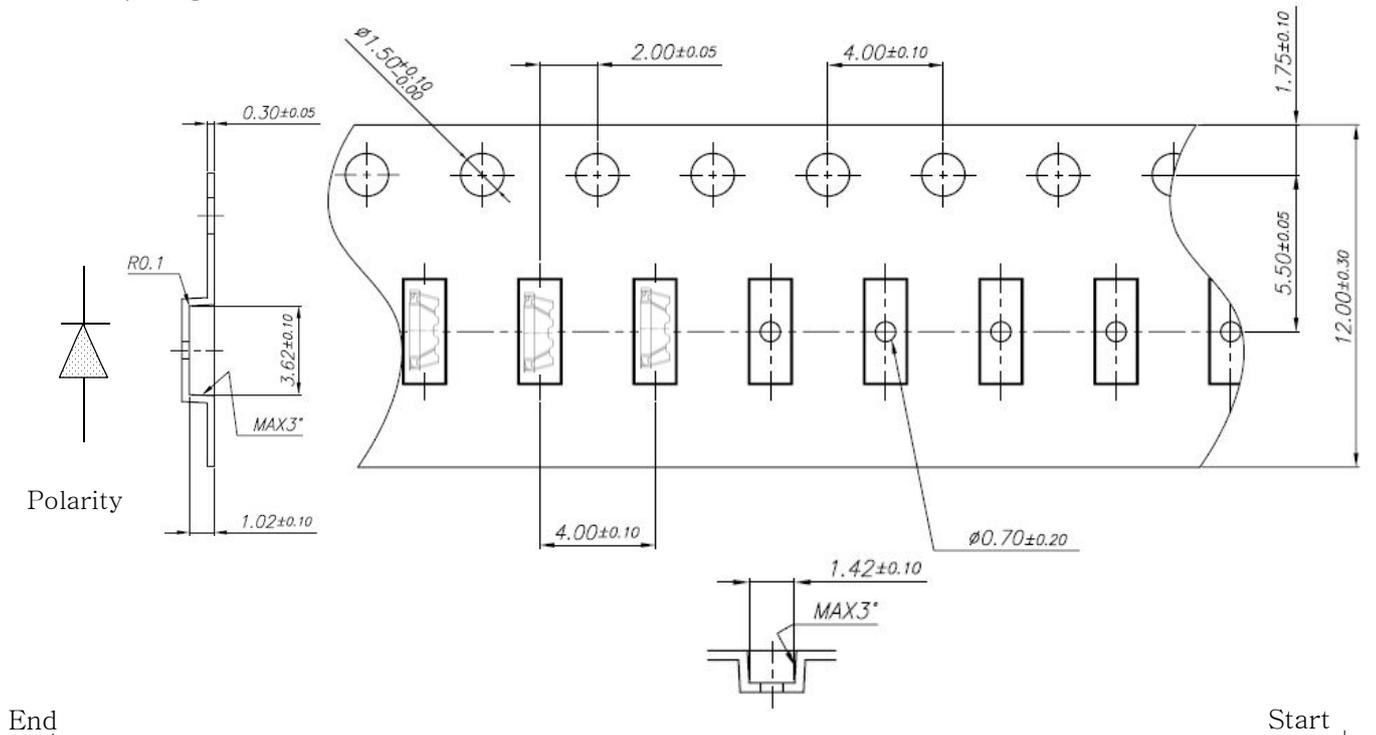
Reflow Frequency : 2 times max.



2) For Manual Soldering

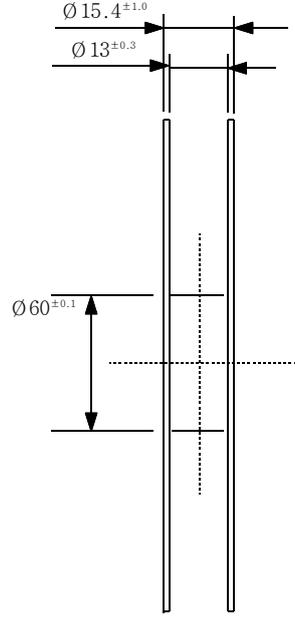
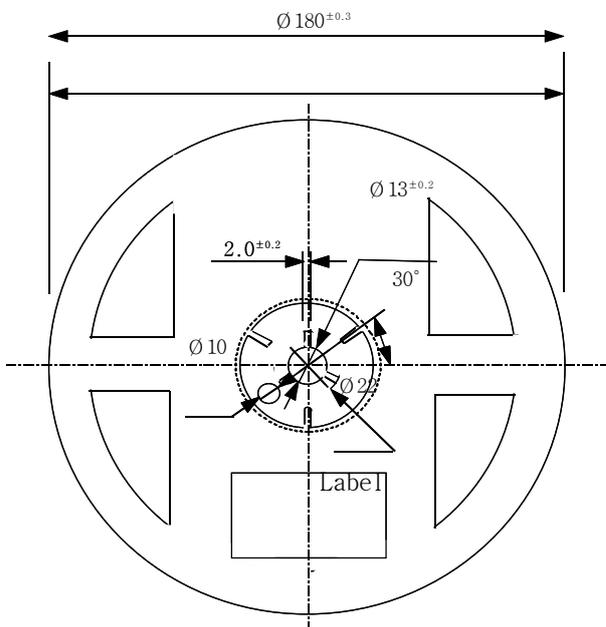
Not more than 5 seconds @MAX300°C, under Soldering iron.

10. Taping Dimension



End Start

More than 40mm Unloaded tape Mounted with Side View LED More than 100~200mm Unloaded tape Leading part more than 200~400mm

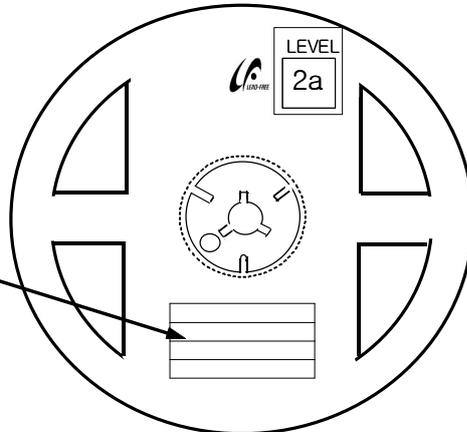
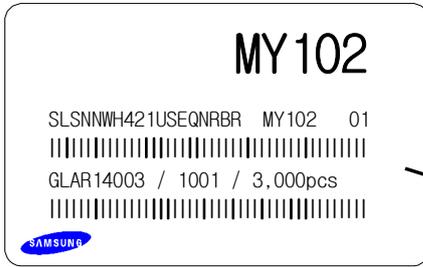


Tolerance ±0.2 , Unit:mm

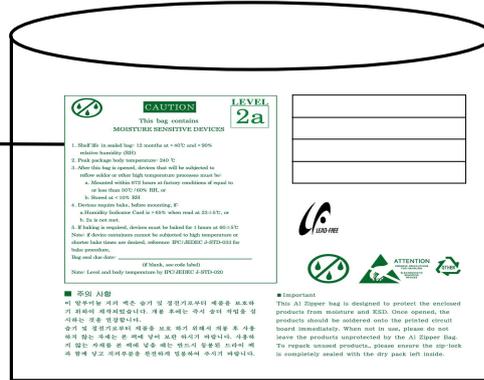
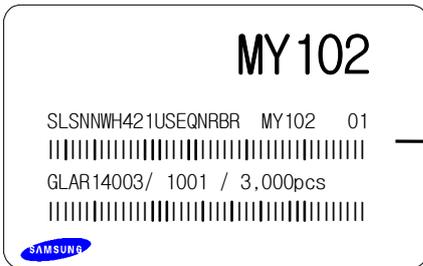
- 1) Quantity : The quantity/Reel is to be 3000pcs.
- 2) Cumulative Tolerance : Cumulative tolerance/10 pitches is less than ±0.2 mm
- 3) Adhesion Strength of Cover Tape : Adhesion strength is to be 0.1-0.7N when the cover tape is taken off from the carrier tape at 10° angle of the carrier tape.
- 4) Packaging : P/N, manufacturing data code No. and quantity are indicated on a damp proof package.

11. Reel Packing Structure

Reel



Aluminum Bag

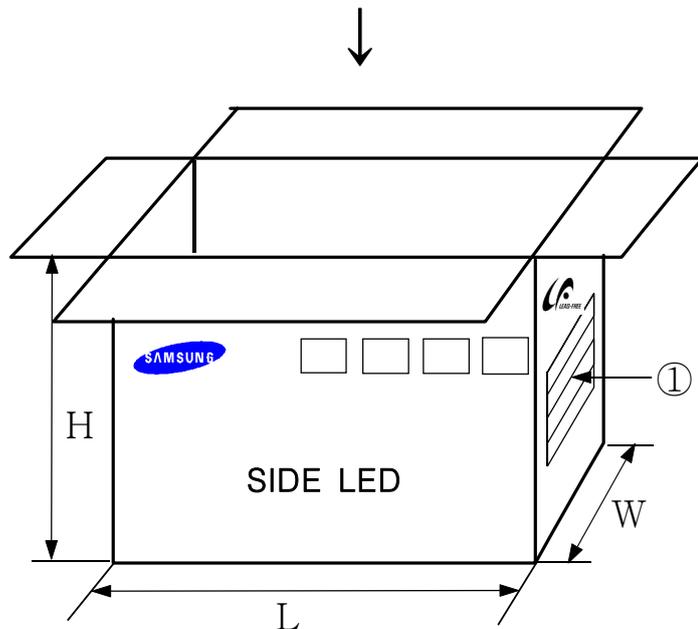
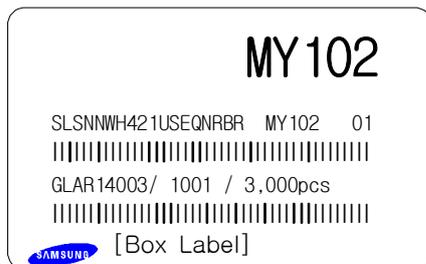


Outer Box Structure

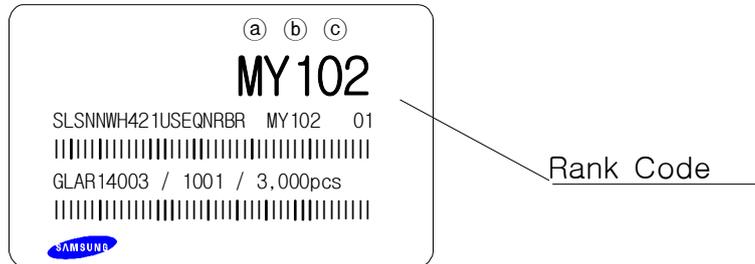
Material : Paper(SW3B(B))

TYPE	SIZE(mm)		
	L	W	H
7inch	250	225	190

① SIDE



12. Label Structure



- Ⓐ : V_F Rank (refer to page. 3)
- Ⓑ : Chromaticity Coordinate Rank (refer to page. 4)
- Ⓒ : I_V Rank (refer to page. 4)

※ Lot Number

The Lot number is composed of the following characters

●◎◇◆□■△△△ / |▲▲▲ / 3000PCS

- : Production Site (S:SEMCO, G:Gosin China)
- ◎ : 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)

13. Aluminium Packing Bag



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 $23 \pm 5^{\circ}\text{C}$, or
 - b. 2a is not met.
5. If baking is required, devices must be baked for 1 hours at $60 \pm 5^{\circ}\text{C}$

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

MY102

SLSNNWH421USEQNRBR MY102 01

|||||

GLAR14003/ 1001 / 3,000pcs

|||||





주의 사항

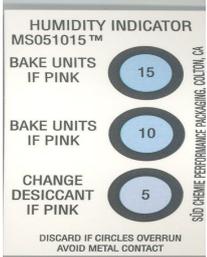
이 알루미늄 지퍼 백은 습기 및 정전기로부터 제품을 보호하기 위하여 제작되었습니다. 개봉 후에는 즉시 솔더 작업을 실시하는 것을 권장합니다.

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.

Silical gel & Humidity Indicator Card in Aluminum Vinyl Bag



14. Precaution for Use

- 1) For over-current-proof function, customers are recommended to apply resistors to prevent sudden change of the current caused by slight shift of the voltage.
- 2) This device should not be used in any type of fluid such as water, oil, organic solvent, etc. When washing is required, IPA is recommended to use.
- 3) When the LEDs illuminate, operating current should be decided after considering the ambient maximum temperature.
- 4) LEDs must be stored in a clean environment.
If the LEDs are to be stored for 3 months or more after being shipped from SEMCO, they should be packed by a sealed container with nitrogen gas injected.
(Shelf life of sealed bags : 12 months, temp. 0~40°C, 20~70%RH)
- 5) After storage bag is open, device subjected to soldering, solder reflow, or other high temperature processes must be:
 - a. Mounted within 168 hours (7 days) at an assembly line with a condition of no more than 30°C/60%RH,
 - b. Stored at <10% RH.
- 6) Repack unused Products with anti-moisture packing, fold to close any opening and then store in a dry place.
- 7) Devices require baking before mounting, if humidity card reading is >65% at 23±5°C.
- 8) Devices must be baked for 24hours at 65±5°C, if baking is required.
- 9) The LEDs are sensitive to the static electricity and surge. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs.

If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices.

Damaged LEDs may show some unusual characteristics such as increase in leak current, lowered turn-on voltage, or abnormal lighting of LEDs at low current.

15. Hazard Substance Analysis



Test Report No. F690501/LF-CT8AYU07-11003

Date: May 11, 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 : 0.8t Side View LED(421us)
SGS File No. : AYU07-11003
Received Date : May 04, 2007
Test Performing Date : May 07, 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.

SGS Testing Korea Co. Ltd. / Ulsan Laboratory

Sharpless Park /Testing Person

Thomas Hwang / Ulsan Lab. Mgr

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Test Report No. F690501/LF-CT9AYU07-11003

Date: May 11, 2007

Page 2 of 3

Sample No. : AYU07-11003.001
Sample Description : 0.8t Side View LED(421us)
Item No./Part No. : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	1	N.D.
Lead (Pb)	mg/kg	US EPA 3052(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) 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 : White



*** End ***

- 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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