

SPECIFICATION

MODEL : SLSRGBW812TSCSSP

[Approved Rank : V_r(S), CIE(S), I_v(AAA, AAB, AAC, ABA, ABB, ABC, BAA, BAB, BAC, BBA, BBB, BBC, CAA, CAB, CAC, CBA, CBB, CBC)]

RGBW TOP VIEW

CUSTOMER : [REDACTED]

CUSTOMER : [REDACTED]		
DRAWN	CHECKED	APPROVED
		[REDACTED]

SAMSUNG ELECTRO-MECHANICS		
DRAWN	CHECKED	APPROVED

SAMSUNG ELECTRO-MECHANICS CO., LTD.

314. MAETAN3-DONG, YEONGTONG-KU,
SUWON-SI, GYUNGKI-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 -----	7
7. Reliability Test Items and Conditions ---	8
8. Solder Conditions -----	9
9. Taping Dimension -----	10
10. Label Structure -----	11
11. Lot Number -----	11
12. Reel Packing Structure -----	12
13. Aluminum Vinyl Bag-----	13
14. Precaution for Use -----	14
15. Hazard Substance Analysis-----	15
16. Revision History -----	17

1. Product Outline

1) Feature

- . Lead Frame Type LED Package (3.2 * 2.8 * t 1.9mm)
- . Beam Angle ($\Delta\theta$: 120 °)
- . AlGaInP, GaN/Al₂O₃ Chip & Long Time Reliability

2) Applications

- . Indoor, Outdoor Display and etc.

2. Absolute Maximum Rating

Item	Symbol	Absolute Maximum Rating			Unit
		Red	Green	Blue	
Forward Current	I _F	30	20	20	mA
Pulse Forward Current	I _{FP}	100	80	80	mA
Reverse Voltage	V _r	10	10	10	V
Power Dissipation	PD	78	74	72	mW
Operating Temperature	T _{opr}	-30 ~ 85			°C
Storage Temperature Range	T _{stg}	-40 ~ 100			°C

-. I_{FP} Conditions : Duty 1/10 Pulse Width 10msec

3. Characteristics

Electrical properties

(Ta : 25°C)

Item	Symbol	Condition	Rank	Color	Min.	Typ.	Max.	Unit
Forward Voltage (*)	V _F	I _F = 20 mA	S	Red	1.8	2.1	2.6	V
				Green	2.9	3.2	3.7	
				Blue	2.9	3.2	3.6	
Reverse Current	I _R	V _R = 5V	-	Red	-	-	50	μA
				Green	-	-	50	
				Blue	-	-	50	

Chromaticity Coordinate

(Ta : 25°C)

Item	Condition	Rank	Color	x				y			
Chromaticity Coordinate (*)	IF=20mA	S	Red	0.696	0.707	0.683	0.667	0.284	0.304	0.332	0.313
			Green	0.155	0.195	0.165	0.115	0.660	0.660	0.740	0.740
			Blue	0.137	0.150	0.140	0.121	0.037	0.057	0.093	0.067

Luminous Intensity

(Ta : 25°C)

Item	Symbol	Condition	Color						Unit
			Red		Green		Blue		
			Rank	Value	Rank	Value	Rank	Value	
Luminous Intensity (*)	I _v	Red (I _F =20mA)	A	246~300	A	535~650	A	130~175	mcd
		G, B (I _F =10mA)	B	300~365	B	650~790	B	175~235	
		C	365~445	-	-	C	235~315		

* Tolerance : V_F:±0.1, I_v:±5%, x,y:±0.01

* Luminous intensity measuring equipment : CAS140 B

Luminous Intensity Detail Ranks

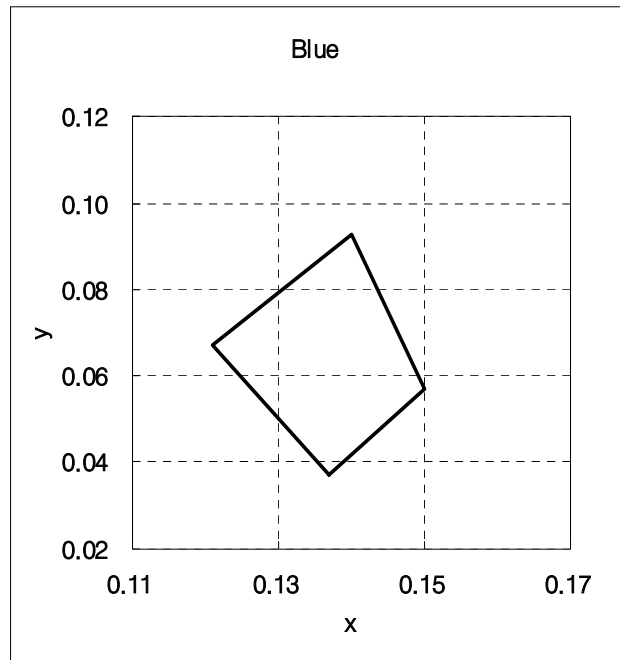
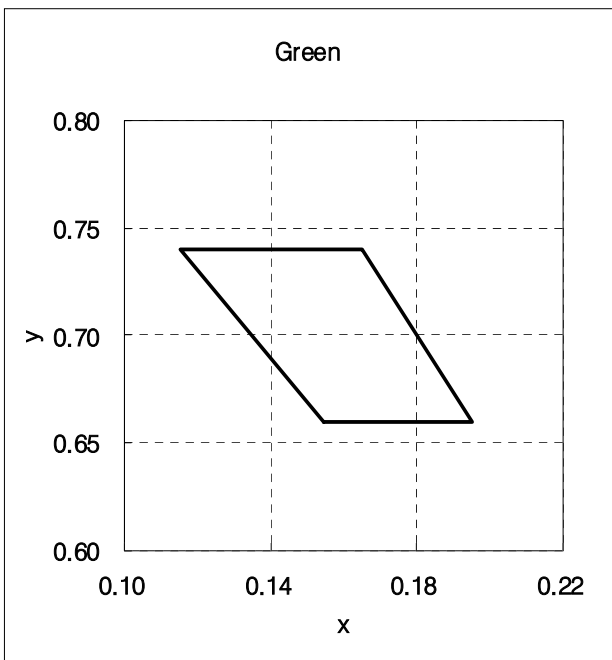
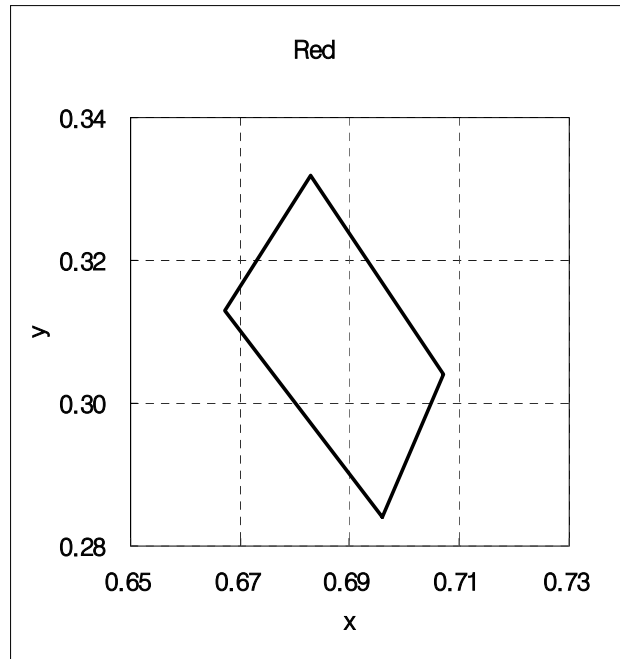
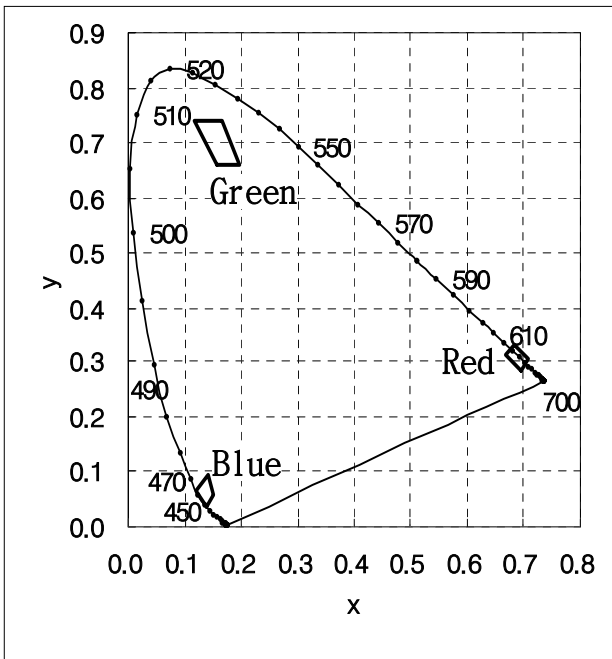
Item	Symbol	Condition	Rank	Red	Green	Blue	Unit	
Luminous Intensity (*)	I _v	Red (I _F =20mA) G, B (I _F =10mA)	P	AAA	246~300	535~650	130~175	mcd
				AAB	246~300	535~650	175~235	
				AAC	246~300	535~650	235~315	
				ABA	246~300	650~790	130~175	
				ABB	246~300	650~790	175~235	
				ABC	246~300	650~790	235~315	
				BAA	300~365	535~650	130~175	
				BAB	300~365	535~650	175~235	
				BAC	300~365	535~650	235~315	
				BBA	300~365	650~790	130~175	
				BBB	300~365	650~790	175~235	
				BBC	300~365	650~790	235~315	
				CAA	365~445	535~650	130~175	
				CAB	365~445	535~650	175~235	
				CAC	365~445	535~650	235~315	
				CBA	365~445	650~790	130~175	
				CBB	365~445	650~790	175~235	
				CBC	365~445	650~790	235~315	

※ Approved Rank

V _F	CIE	I _v
S	S	AAA, AAB, AAC, ABA, ABB, ABC, BAA, BAB, BAC, BBA, BBB, BBC, CAA, CAB, CAC, CBA, CBB, CBC

* Each reel contains only one of the AAA, AAB, AAC, ABA, ABB, ABC, BAA, BAB, BAC, BBA, BBB, BBC, CAA, CAB, CAC, CBA, CBB, or CBC a segment (1/18) of the I_v rank.

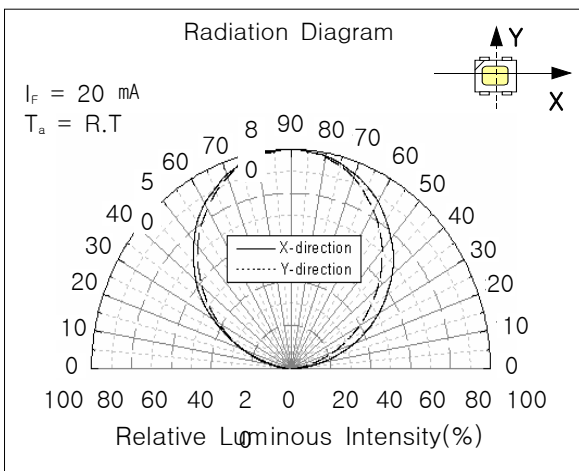
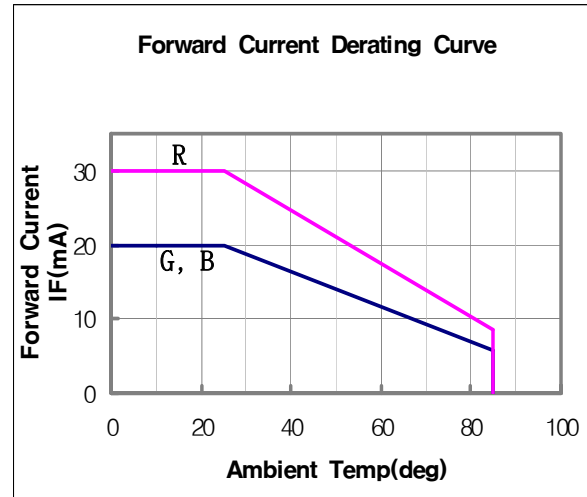
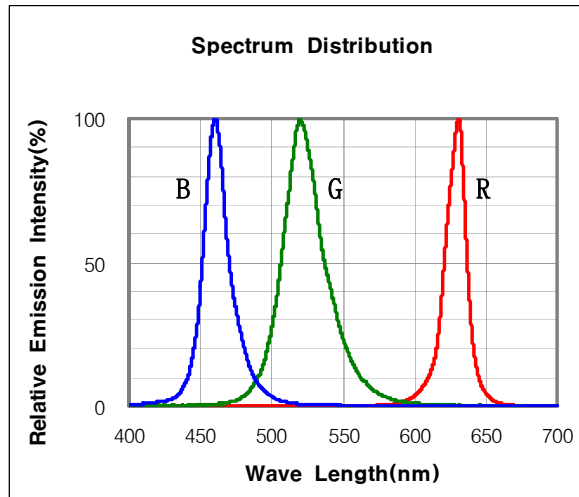
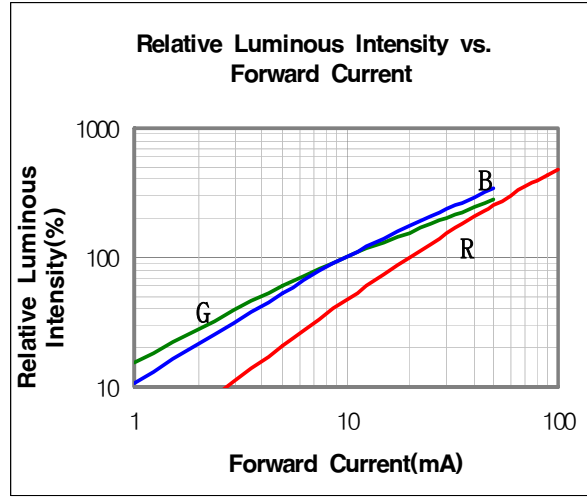
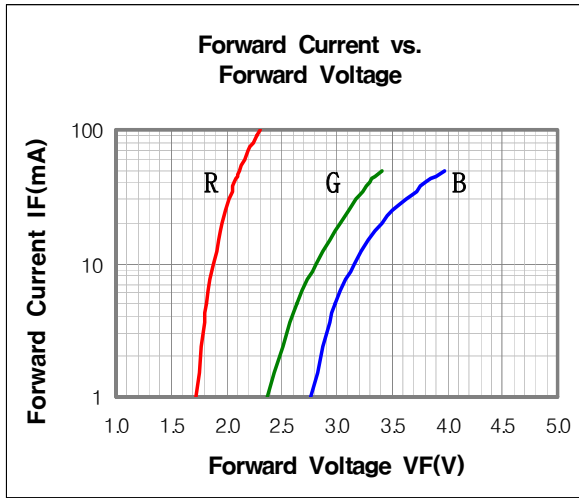
4. Chromaticity Diagram



5. Typical Characteristics Graph

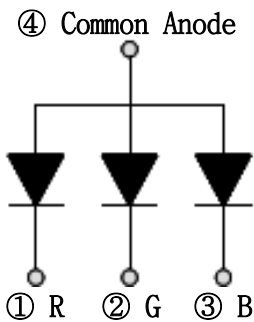
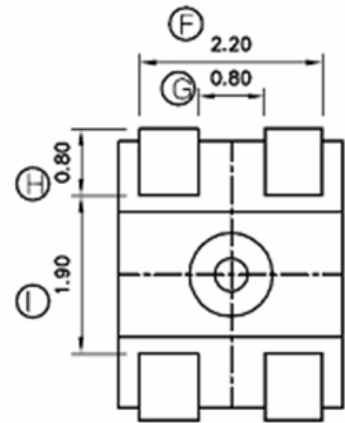
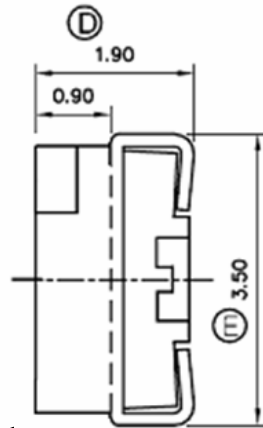
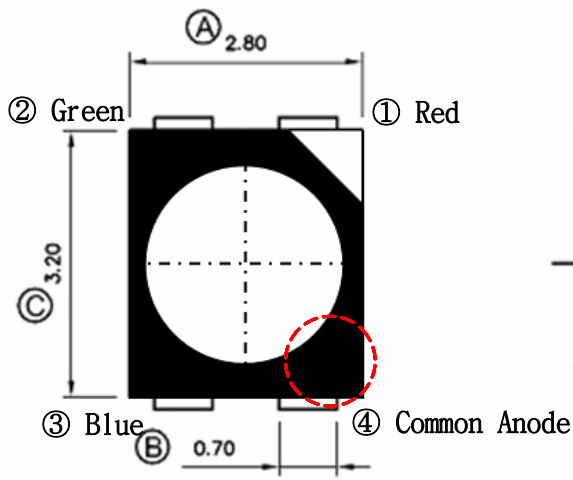
* These graphs show typical values.

(Ta : 25°C)

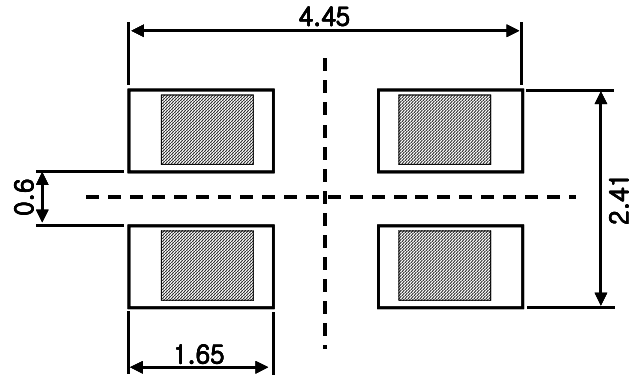


6. LED Package Outline Dimensions

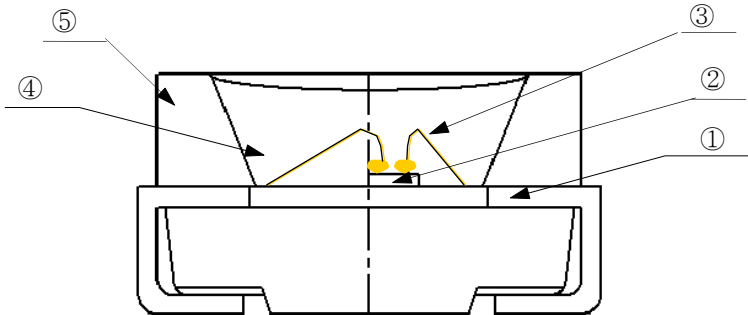
unit:mm
Tolerance:±0.1



Circuit



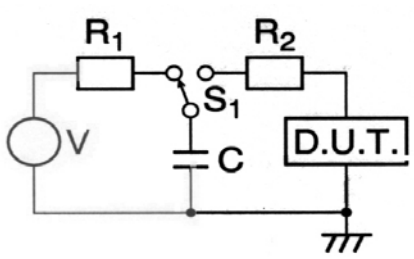
Land Layout



NUMBE	ITEM	MATERIAL
①	FRAME	Copper Frame(Silver Plated)
②	LED CHIP	AlGaInP, GaN/Al ₂ O ₃
③	WIRE	Gold Wire
④	RESIN	Resin
⑤	PACKAGE	Heat-resistant Polymer

7. 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, Red:DC30 mA, Green:DC20 mA, Blue:DC20 mA	500 h	50
High Temperature humidity life test	60°C±3°C, 95%±2%RH, Red:DC17 mA, Green:DC12 mA, Blue:DC12 mA	500 h	50
High Temperature life test	85°C±3°C, Red:DC9 mA, Green:DC6 mA, Blue:DC6 mA	500 h	50
Low Temperature life test	-30°C±3°C, Red:DC30 mA, Green:DC20 mA, Blue:DC20 mA	500 h	50
On/Off test	50°C±3°C, 95%±2%RH, On/2sec, Off/2sec Red:DC30 mA, Green:DC20 mA, Blue:DC20 mA	120h	50
Thermal Shock	-40°C ~ 100°C 0.5 h 0.5 h	100 cycles	50
High Temperature Storage	Ta=100°C±3°C	500 h	22
Low Temperature Storage	Ta=-40°C±3°C	500 h	22
High Temperature humidity Storage	60°C±3°C, 95%±2%RH	500 h	22
Temperature humidity Cycle	25°C ~ 65°C ~ -10°C 24hrs/1cycle, 95%RH	10 cycles	22
Reflow Soldeing (Pb-Free)	Peak 260±5°C for 10sec, 220°C over time 60sec max	3 times	22
ESD(HBM)	 <p>-R1:10MΩ , R2:1.5KΩ , C:100pF</p>	5 times (±2KV)	5

2) Criteria for Judging the Damage

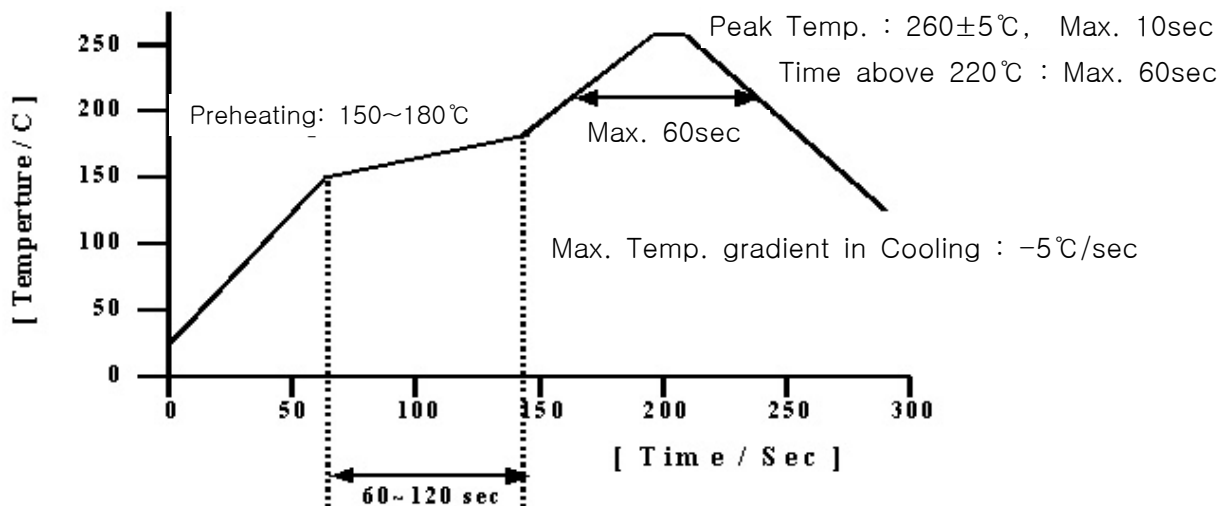
Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	R $I_F=20$ mA G,B $I_F=10$ mA	-	U.S.L.*1.2
Luminous Intensity	IV	R $I_F=20$ mA G,B $I_F=10$ mA	L.S.L.*0.5	-

* USL : Upper Standard Level LSL : Lower Standard Level

8. Solder Conditions

1) Reflow Conditions (Pb Free)

Reflow Frequency : 2 times max.

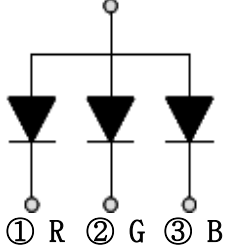


2) For Manual Soldering

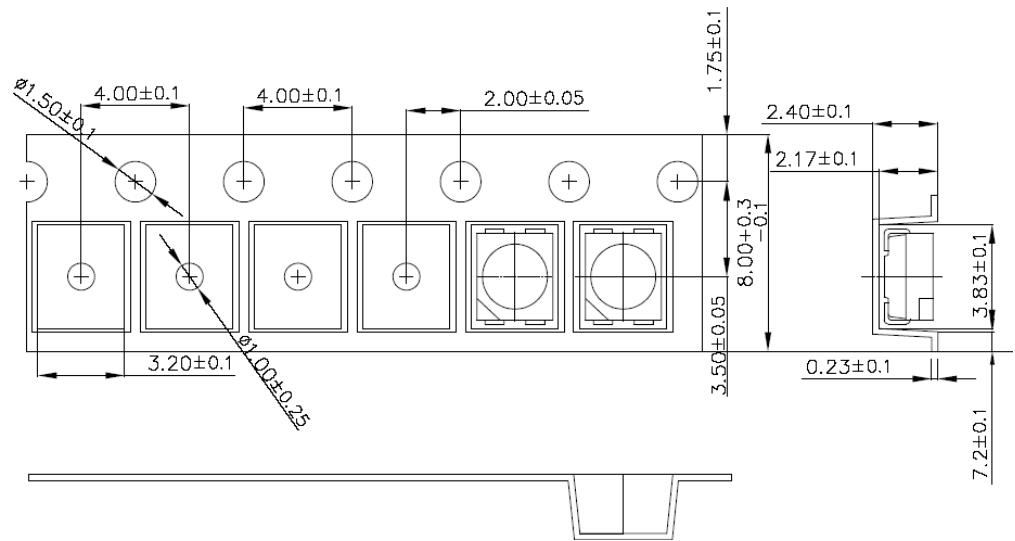
Not more than 5 seconds @MAX300°C, under soldering iron.(one time only)

9. Taping Dimension

④ Common Anode



Polarity



End

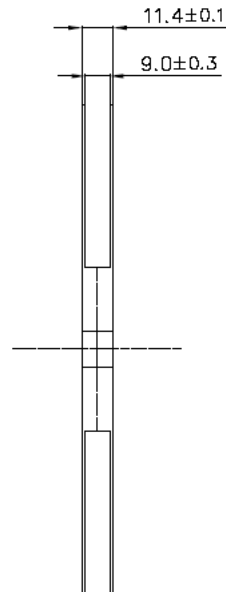
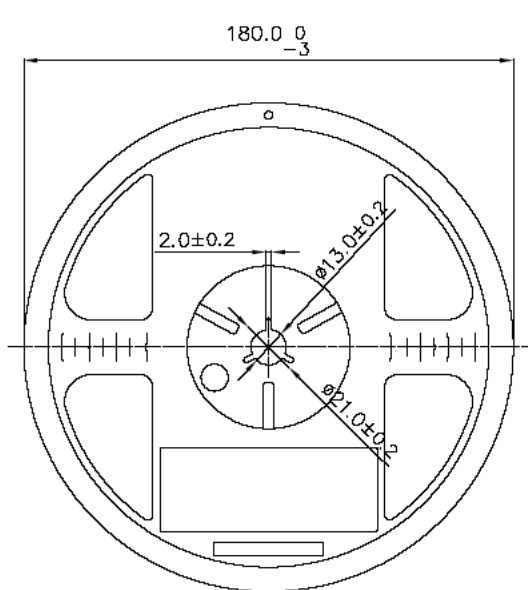
Start

More than 40 mm
Unloaded tape

Mounted with
Flash LED

More than (100~200)mm
Unloaded tape

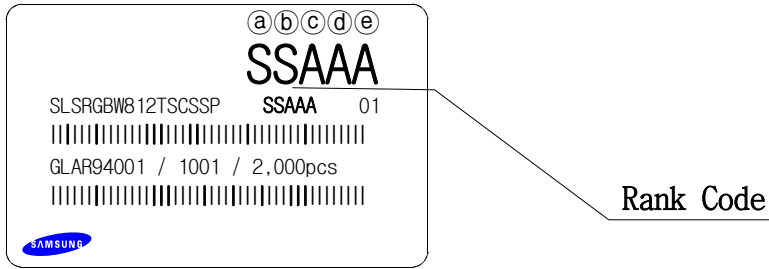
Leading part more than
(200~400)mm



Tolerance ± 0.2 , Unit:mm

- (1) Quantity : The quantity/Reel to be 2000pcs.
- (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.

10. Label Structure



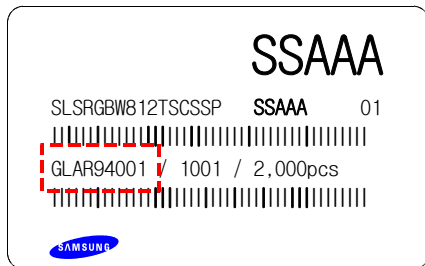
N.B) Denoted rank is the only example.

Rank Code

- Ⓐ : Forward Voltage(V_f) Rank (refer to page. 3)
- Ⓑ : Chromaticity Coordinate Rank (refer to page. 3)
- ⒸⒹⒺ : Luminous Intensity(I_v) Rank (refer to page. 4)

11. Lot Number

The Lot number is composed of the following characters



●◎◇◆□■△△△ / |▲▲▲ / 2000PCS

● : 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)

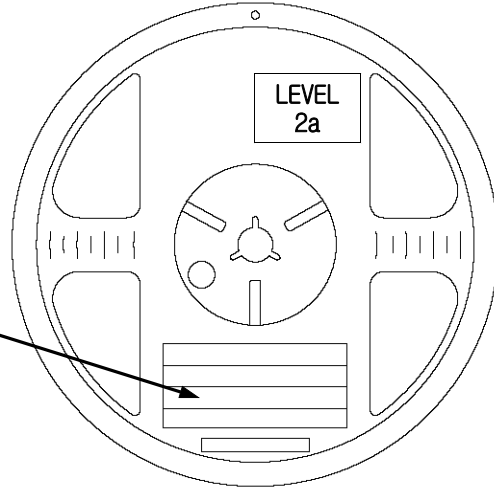
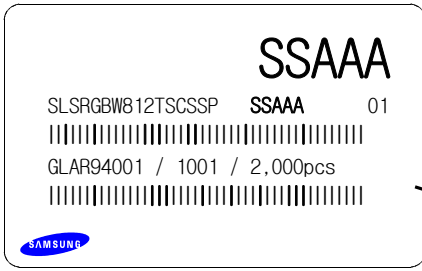
■ : Day (1 ~ 9, A, B ~ V)

△ : SEMCO. Product number (1 ~ 999)

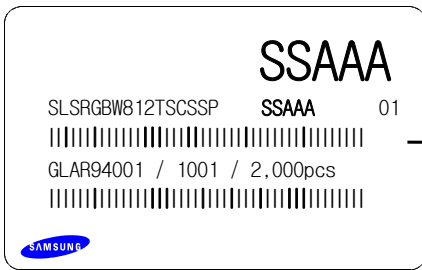
▲ : Reel Number (1 ~ 999)

12. Reel Packing Structure

Reel



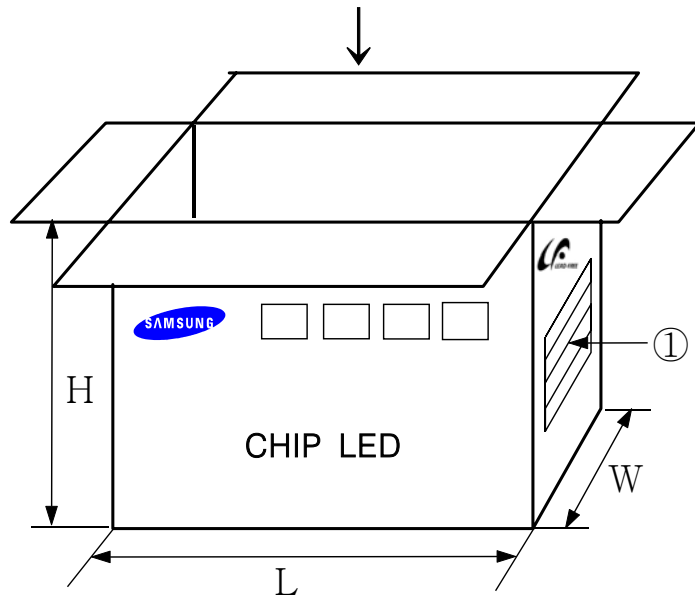
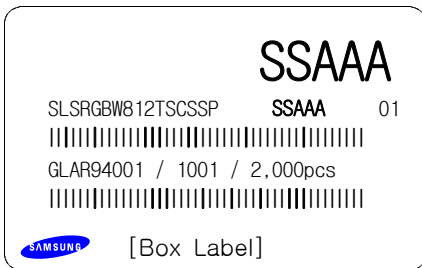
Aluminum Vinyl Bag




Material : Paper(SW3B(B))

TYPE	SIZE(mm)		
	L	W	H
7inch	245	220	182

① SIDE



13. Aluminum Vinyl Bag



CAUTION

This bag contains
MOISTURE SENSITIVE DEVICES

LEVEL

2a

1. Shelf life in sealed bag: 12 months at 40°C and 90% 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 10% 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

SSAAA

SLSRGBW812TSCSSP SSAAA 01

|||||

GLAR94001 / 1001 / 2,000pcs

|||||

SAMSUNG



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.

Silica gel & Humidity Indicator Card in Aluminum Vinyl Bag



14. 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.

15. Hazard Substance Analysis



Test Report No. F690501/LF-CTSGP05-2640

Date: November 22, 2005

Page 1 of 2

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 :

Commodity : SLSRGBW812TS
SGS File No. : GP05-2640
Received Date : November 15, 2005
Test Performing Date : November 16, 2005
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)

Jeff Jang/Technical Mgr

SGS Testing Korea Co. Ltd.

A handwritten signature in black ink, appearing to read 'Jae S. Han'.

Jason Han/Lab Director

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company.



Test Report No. F690501/LF-CTSGP05-2640

Date: November 22, 2005

Page 2 of 2

Sample No. : GP05-2640.001
Sample Description : SLSRGBW812TS
Style/Item No. : N/A

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium(Cd)	mg/kg	USEPA 3050B, ICP-AES	0.5	N.D.
Lead (Pb)	mg/kg	USEPA 3050B, ICP-AES	5	N.D.
Mercury (Hg)	mg/kg	USEPA 3052, ICP-AES	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	USEPA 3060A, UV-vis	1	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Monobromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Dibromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Tribromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Tetrabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Heptabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Hexabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Pentabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Octabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Nonabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.
Decabromobiphenyl ether	mg/kg	USEPA 3540C, GC/MS	5	N.D.

*** End ***

NOTE: N.D. = Not detected.(<MDL)
ppm = mg/kg
MDL = Method Detection Limit
"- " = No Regulation
** = Qualitative analysis (No Unit)
Negative = Undetectable / Positive = Detectable

This Test Report is issued by the Company subject to its General Conditions of Service printed overleaf. Attention is drawn to the limitations of liability, indemnification and jurisdictional issues defined therein. The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full, without prior written permission of the Company.

