

DATE OF ISSUE : 2006. 1. 25

SPECIFICATION

MODEL : SLSRGBW812TS

FULL COLOR 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) Feature

1. Mini-Mold type (3.2 * 2.8 * t 1.9mm),
2. Beam Angle ($\Delta\theta : 120^\circ$)
3. Long Time Reliability

2) Applications

- Indoor, Outdoor Display and etc.

■ 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	50	50	mA
Reverse Voltage	V_R	5			V
Operating Temperature	T_{opr}	-35 ~ 85			°C
Storage Temperature Range	T_{stg}	-40 ~ 100			°C

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

■ Characteristics

($T_a : 25^\circ\text{C}$)

Item	Symbol	Condition	Color	min.	typ.	MAX.	Unit
Forward Voltage*	V_F	R $I_F=20\text{mA}$ G,B $I_F=10\text{mA}$	Red	-	1.9	2.6	V
			Green	-	3.0	3.9	
			Blue	-	3.1	3.7	
Reverse Current	I_R	$V_R=5V$	R,G,B	-	-	100	μA
Luminous Intensity*	I_V	R $I_F=20\text{mA}$ G,B $I_F=10\text{mA}$	Red	150	260	-	mcd
			Green	400	580	-	
			Blue	90	140	-	
Dominant Wavelength*	λ_D	R $I_F=20\text{mA}$ G,B $I_F=10\text{mA}$	Red	612.5	-	632.5	nm
			Green	520	-	535	nm
			Blue	460	-	475	nm

* Tolerance : V_F ; $\pm 0.1V$, I_V ; $\pm 10\%$, λ_D ; $\pm 2\text{nm}$

* Luminous intensity measuring equipment : CAS140 B

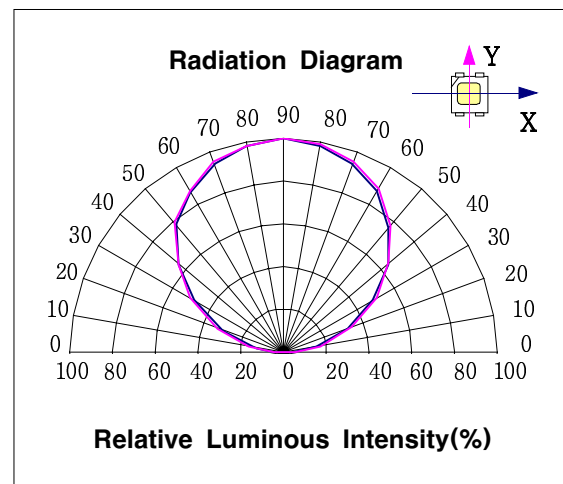
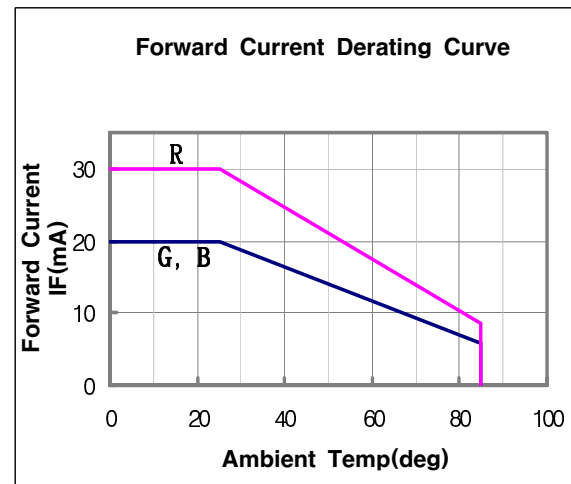
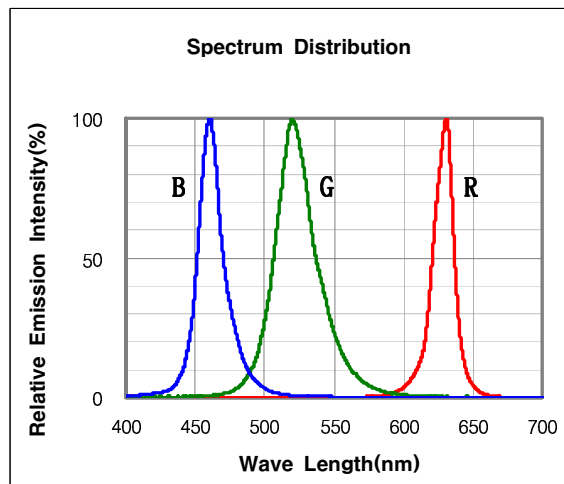
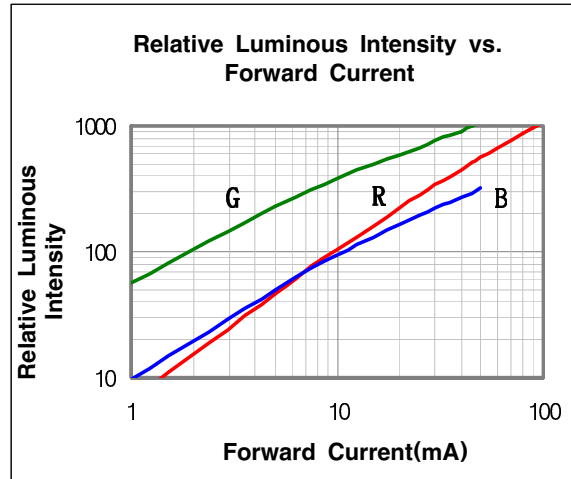
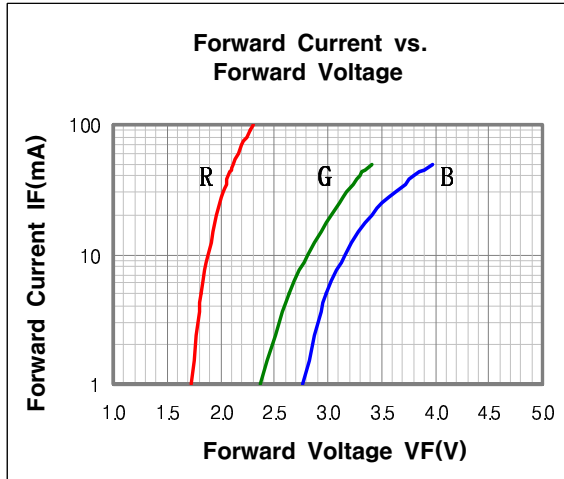
■ Standard Ranks

Item	Symbol	Condition	Color	min.	max	Rank	Unit
Luminous Intensity	IV	R $I_f=20mA$ G,B $I_f=10mA$	Red	150	280	S	mcd
				280	380	T	
			Green	400	460	L	
				460	520	M	
				520	580	N	
				580	640	O	
				640	700	P	
				700	760	Q	
				760	820	R	
			Blue	90	200	B	

Typical Characteristics Graph

* These graphs show typical values.

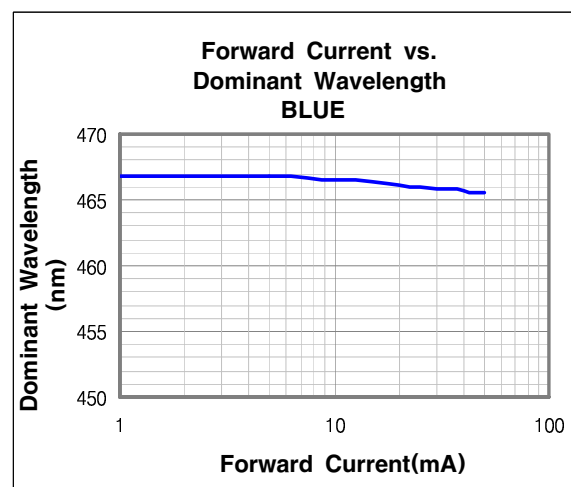
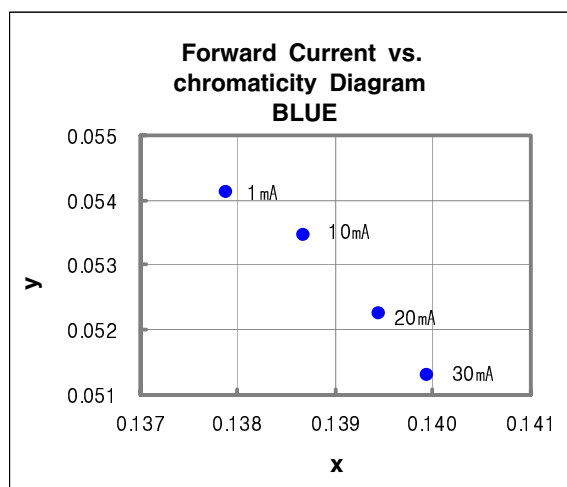
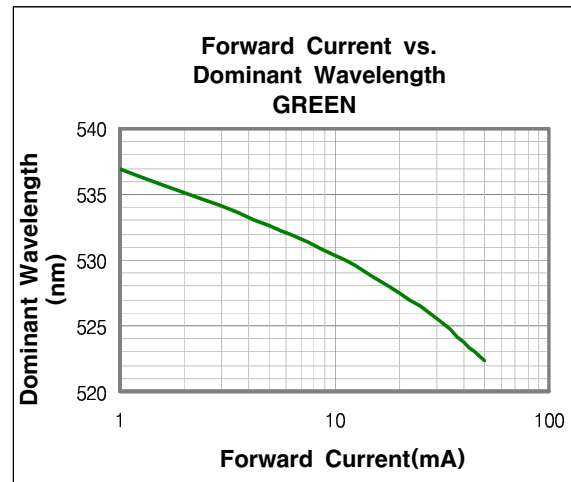
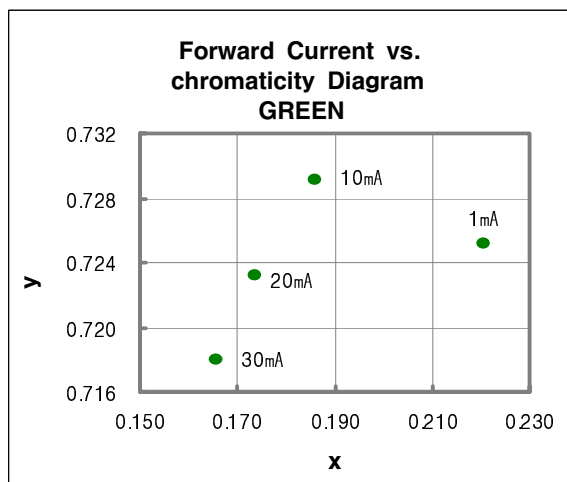
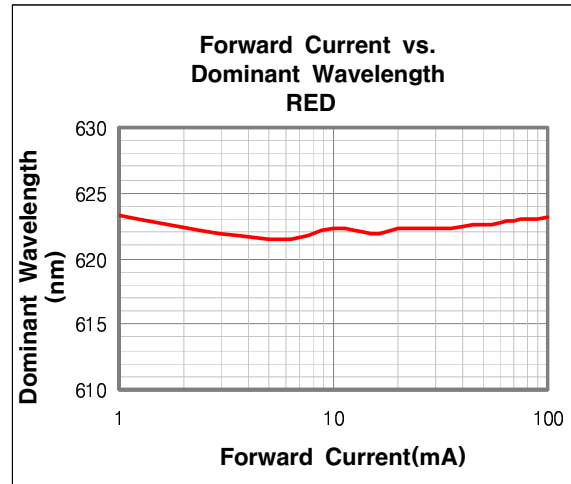
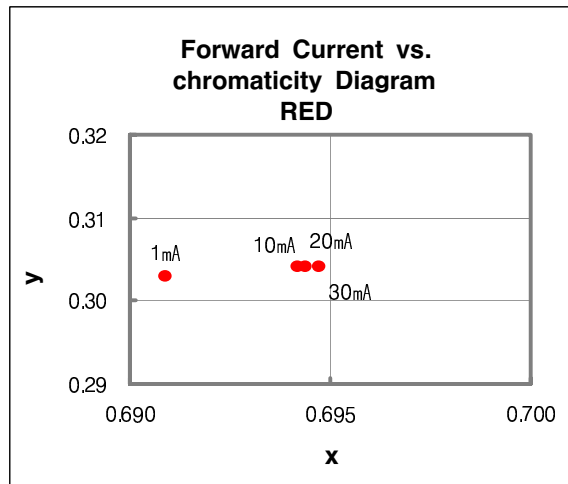
(Ta : 25°C)



■ Typical Characteristics Graph

* These graphs show typical values.

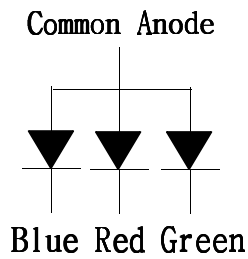
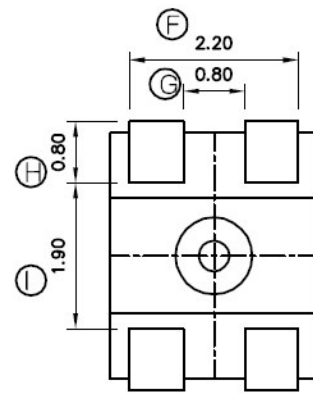
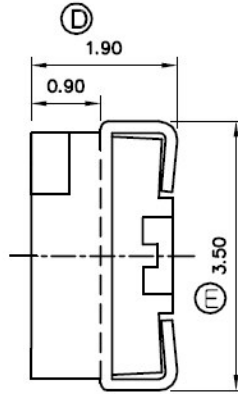
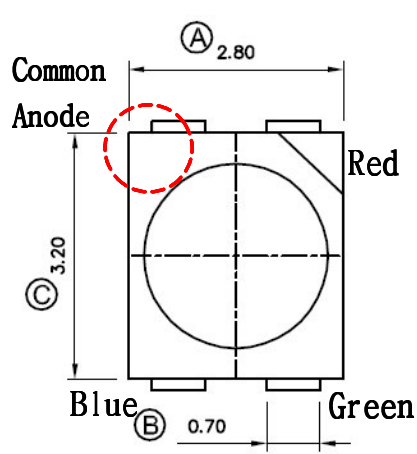
(Ta : 25°C)



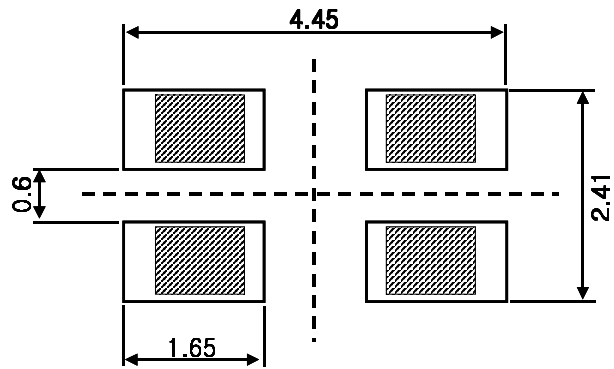
■ Outline Drawing and Dimension

unit:mm

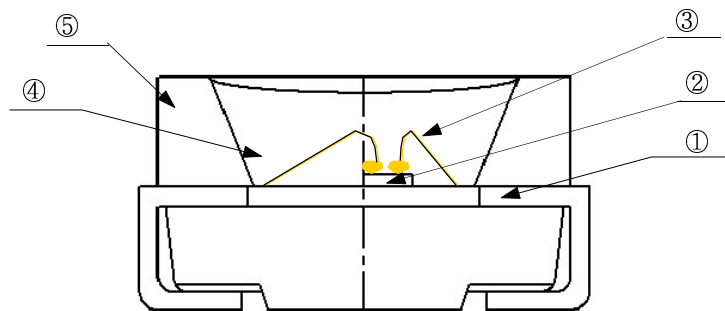
Tolerance: ±0.1



Circuit



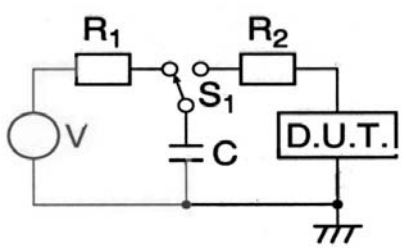
Land Layout



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

■ 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	0/50
High Temperature humidity life test	60°C±3°C, 95%±2%RH, Red;DC17 mA, Green;DC12 mA, Blue;DC12 mA	500 h	0/50
High Temperature life test	85°C±3°C, Red;DC8.5 mA, Green;DC5.5 mA, Blue;DC5.5 mA	500 h	0/50
Low Temperature life test	-30°C±3°C, Red;DC30 mA, Green;DC20 mA, Blue;DC20 mA	500 h	0/50
On/Off test	50°C±3°C, 95%±2%RH, On/2sec, Off/2sec Red;DC30 mA, Green;DC20 mA, Blue;DC20 mA	120h	0/50
Thermal Shock	-40°C ~ 100°C 0.5 h 0.5 h	100 cycles	0/50
High Temperature Storage	Ta=100°C±3°C	500 h	0/22
Low Temperature Storage	Ta=-40°C±3°C	500 h	0/22
High Temperature humidity Storage	60°C±3°C, 95%±2%RH	500 h	0/22
Temperature humidity Cycle	25°C ~ 65°C ~ -10°C 24hrs/1cycle, 95%RH	10 cycles	0/22
Reflow Soldeing (Pb-Free)	Peak 260±5°C for 10sec, 220°C over time 60sec max	3 times	0/22
ESD(HBM)	 <p style="text-align: center;">-R1:10MΩ , R2:1.5KΩ , C:100pF</p>	5 times (±2KV)	0/5

2) Criteria for Judging the Damage

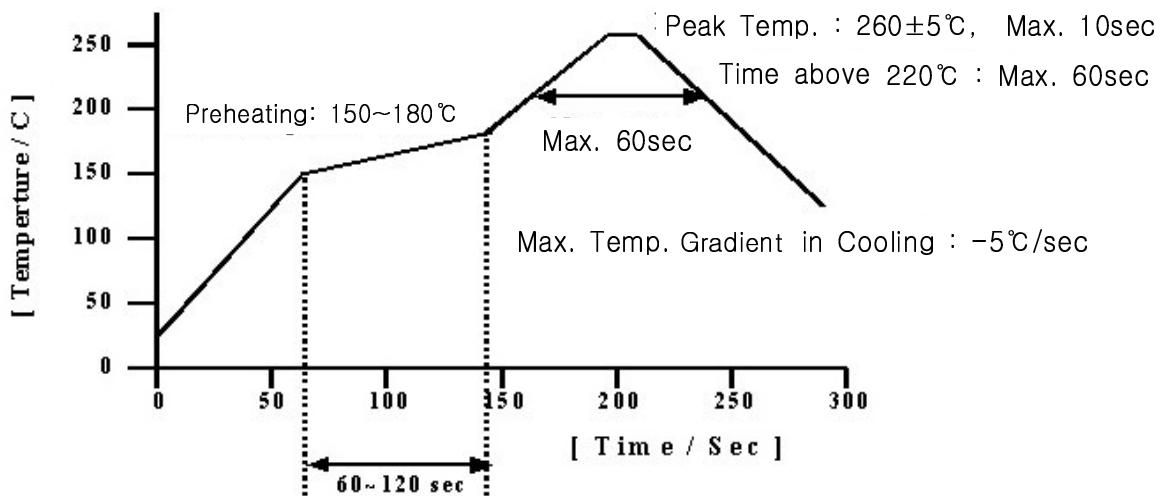
Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	R $I_F=20\text{ mA}$ G,B $I_F=10\text{ mA}$	-	U.S.L.*1.2
Luminous Intensity	IV	R $I_F=20\text{ mA}$ G,B $I_F=10\text{ mA}$	L.S.L.*0.5	-
Reverse Current	I_R	$V_R=5V$	-	U.S.L.*2.0

* USL : Upper Standard Level LSL : Lower Standard Level

■ Solder Conditions

1) Reflow Conditions (Pb Free)

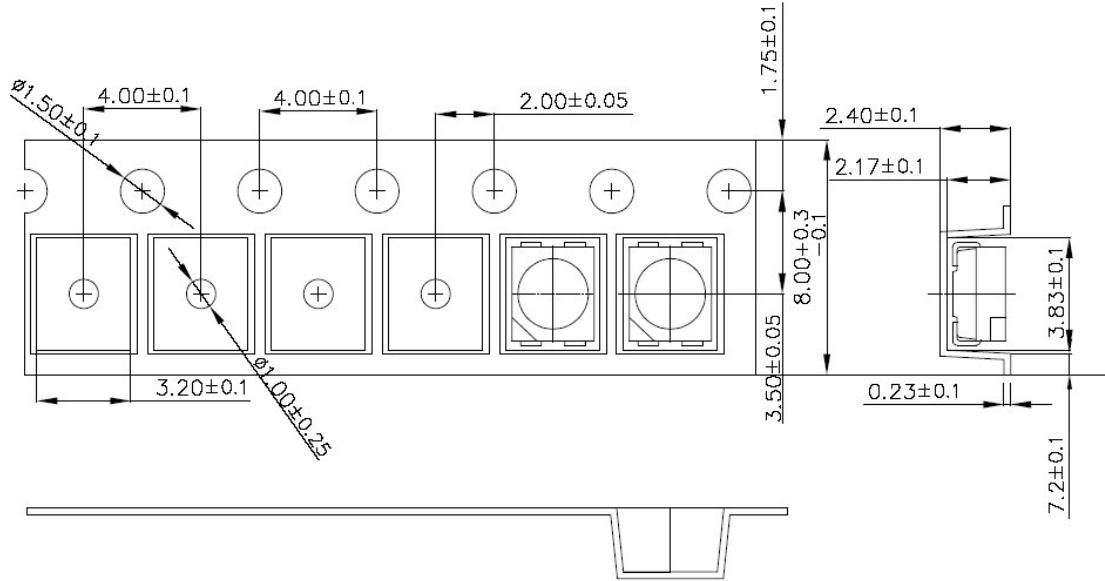
Reflow Frequency : 2 times max.



2) For Manual Soldering

Not more than 5 seconds @MAX 300°C , under soldering iron.(one time only)

■ Taping Dimension



End

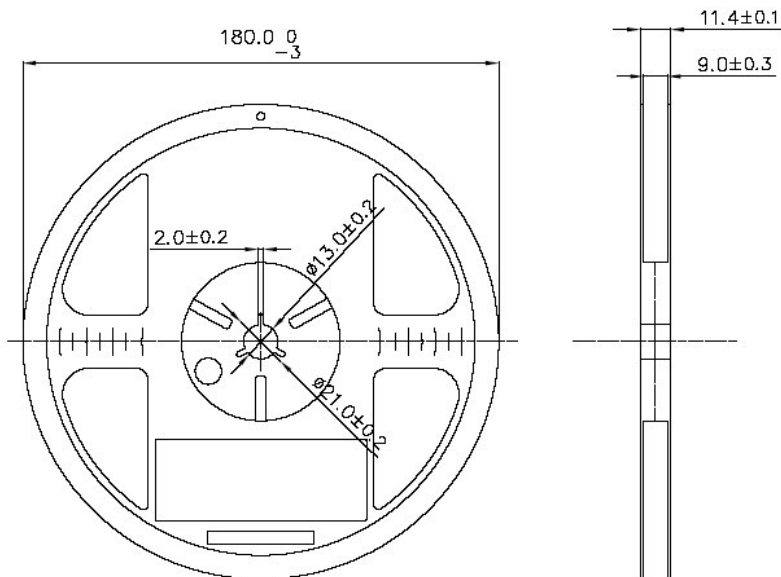
Start

More than 40 mm
Unloaded tape

Mounted with
Flash LED

More than (100~200)mm
Unloaded tape

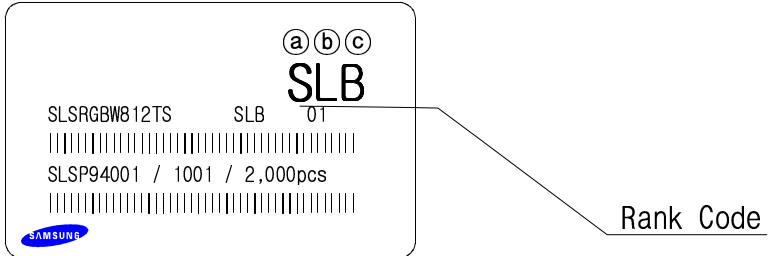
Leading part more than
(200~400)mm



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.

■ Label Structure



- Ⓐ : Red IV Rank
- Ⓑ : Green IV Rank
- Ⓒ : Blue 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.

■ 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)

SGS Testing Korea Co. Ltd.

A handwritten signature in black ink that reads "Jae S. Han".

Jason Han/Lab Director

Jeff Jang/Technical Mgr

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Test Report No. F690501/LF-CTSGP05-2640

Date: November 22, 2005

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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 3080A, 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

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