DATE OF ISSUE : **2008. 11.21**

SPECIFICATION

MODEL : SLHNNWH629T0

HIGH POWER LED PKG -SUNNIX6

CUSTOMER :

CUSTOMER		
CHECKED	CHECKED	APPROVED

SAMSUNG ELECTRO-MECHANICS			
DRAWN	CHCKED(Sales)	CHECKED(Quality)	APPROVED

SAMSUNG ELECTRO-MECHANICS CO,.LTD.
314, MAETAN3-DONG, YEONGTONG-GU,
SUWON, GYEONGGI-DO,KOREA,443-743

Contents

1. Product outline ····· 3
2. Rating and Characteristics ····· 3
3. Chromaticity Coordinate(CIE) ····· 4
4. Typical Characteristic Graph ····· 5
5. Package Outline Dimension ····· 6
6. Reliability Test Items and Conditions ····· 7
7. Solder Conditions ····· 8
8. Taping Dimension ····· 9
9. Reel Packing Structure ····· 10
10. Label Structure ····· 11
11. Lot Number ····· 11
12. Precaution for Use ····· 13
13. Hazard Substance Analysis ····· 14
14. Revision History ····· 18

■ Product Outline

□ Features

- Plastic Molded Lead Frame Type (8.0 × 8.0 × 3.9mm³)
- High Flux LED
- Built In 9 LED Chips
- Beam View Angle(△θ) : 120º
- Lead(Pb) Free Product - RoHS Compliant

□ Applications

- General Illumination
  Down Lighting
  Decorative Lighting

■ Rating and Characteristics

□ Absolute Maximum Rating(Ta=25℃)

Parameter	Symbol	Rating	Unit
Reverse Voltage	V_R	16.5	V
Operating Forward Current	I_F	180	mA
Peak Pulsed Forward Current (Duty 1/10 and Pulse Width 10msec)	I_{FP}	250	mA
Thermal Resistance	Rjc	8.5	℃/W
Operating Temperature	T_{opr}	-40 ~ 85	℃
Storage Temperature	T_{stg}	-40 ~ 110	℃
Soldering Temperature	T_{sol}	260(for 5 second)	℃
LED Jucntion Temperature	Tj	120	℃

□ Electro-Optical Characteristics(Ta=25℃)

Parameter	Symbol	Rank	Min.	Typ.	Max.	Unit	Conditions
Reverse Voltage	V_R	-	12.0	-	16.5	V	I_R=10㎃
Forward Voltage	V_F	S0	8.9	-	11.0	V	I_F=180㎃
Luminous Flux	Φ_V	S0	120	150	180	lm	
Color Temperature	CCT	-	5000	-	7000	K	

※ Luminous Flux(1W) : Typ. 97lm/W(@120mA)

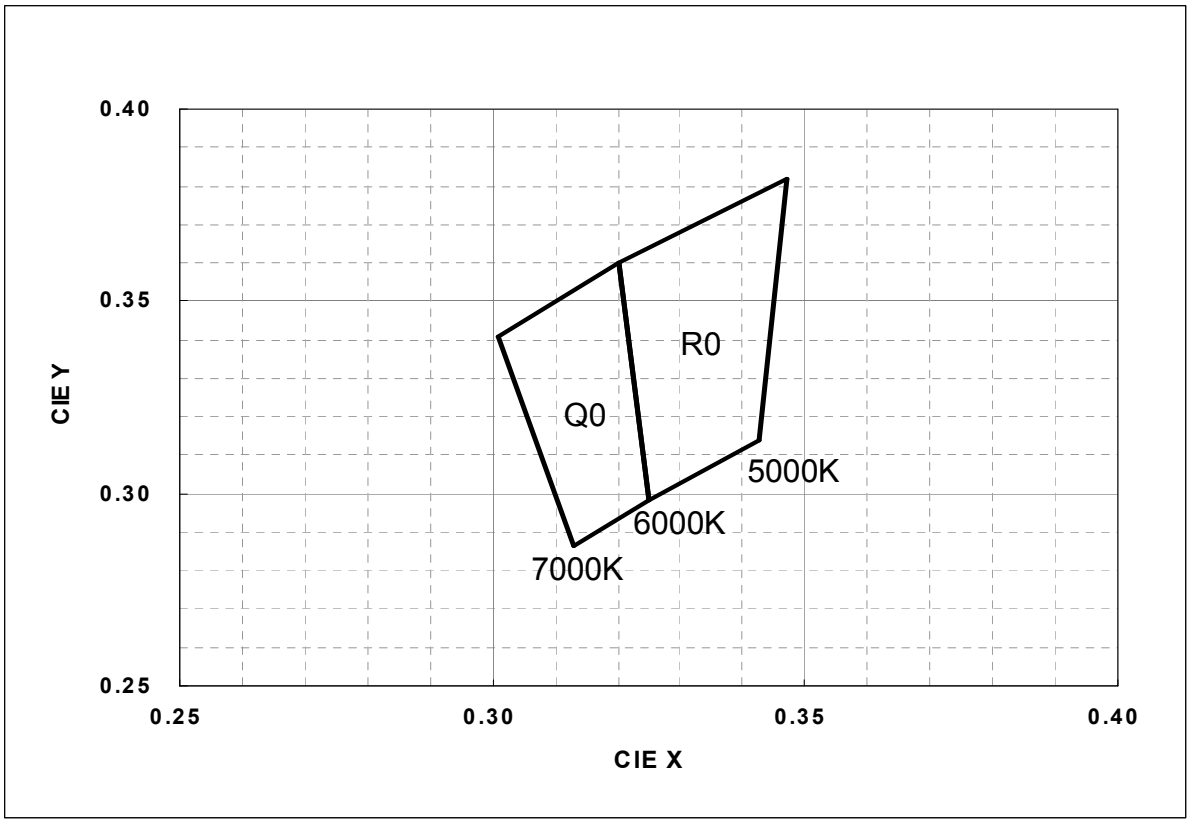
※ Tolerance : VF : ±0.1, Φv : ±10%

■ Chromaticity Coordinate(CIE)

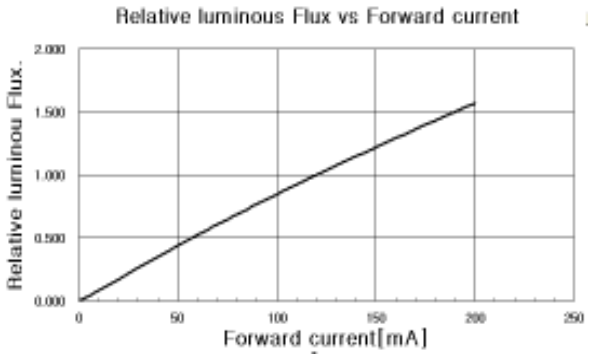
Chromaticity Coordinate(CIE)

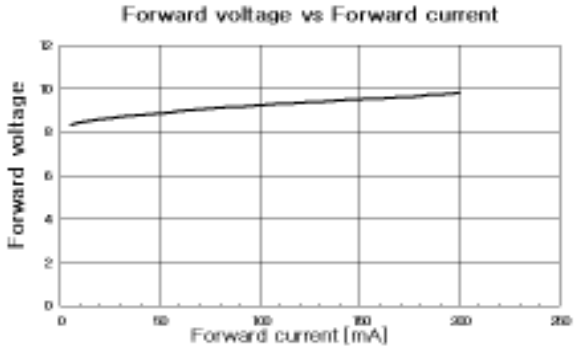
Rank	CCT(K)	x				y				Condition
Q0	6000~7000	0.3128	0.3250	0.3200	0.3011	0.2864	0.2981	0.3600	0.3407	I_F=180㎃
R0	5000~6000	0.3250	0.3428	0.3484	0.3200	0.2981	0.3138	0.3885	0.3600	

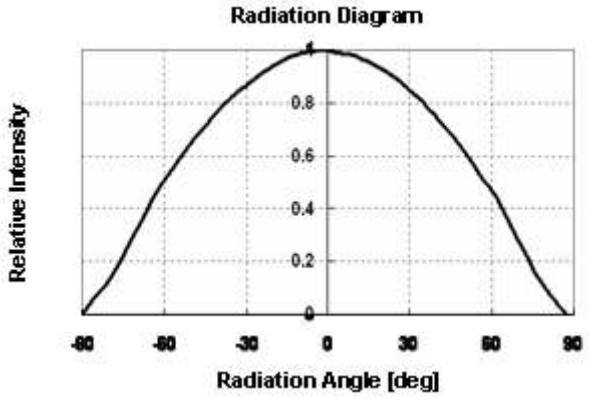
※ Tolerance : CCx CCy : ±0.02

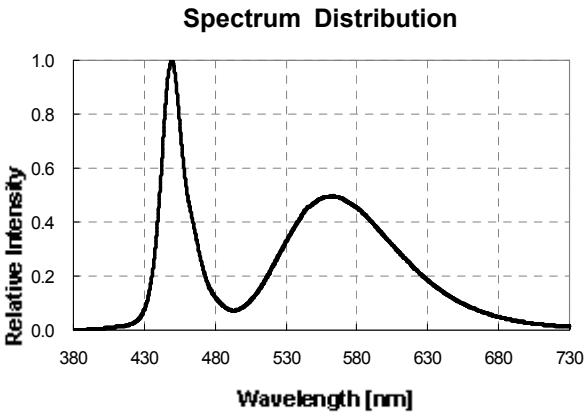


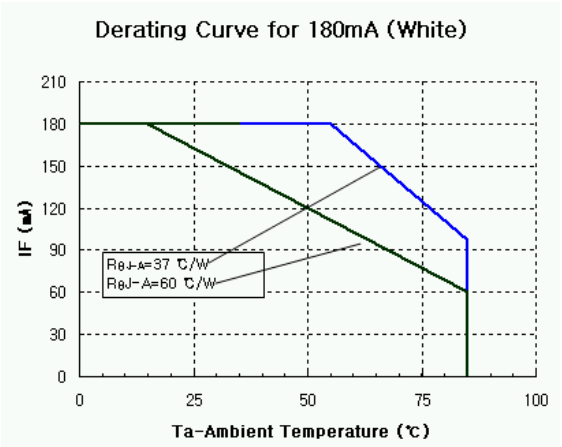
■ Typical Characteristics Graph

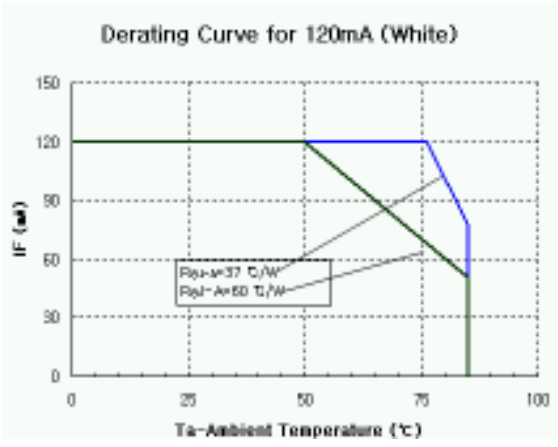












※ Thermal Resistance Test Environment

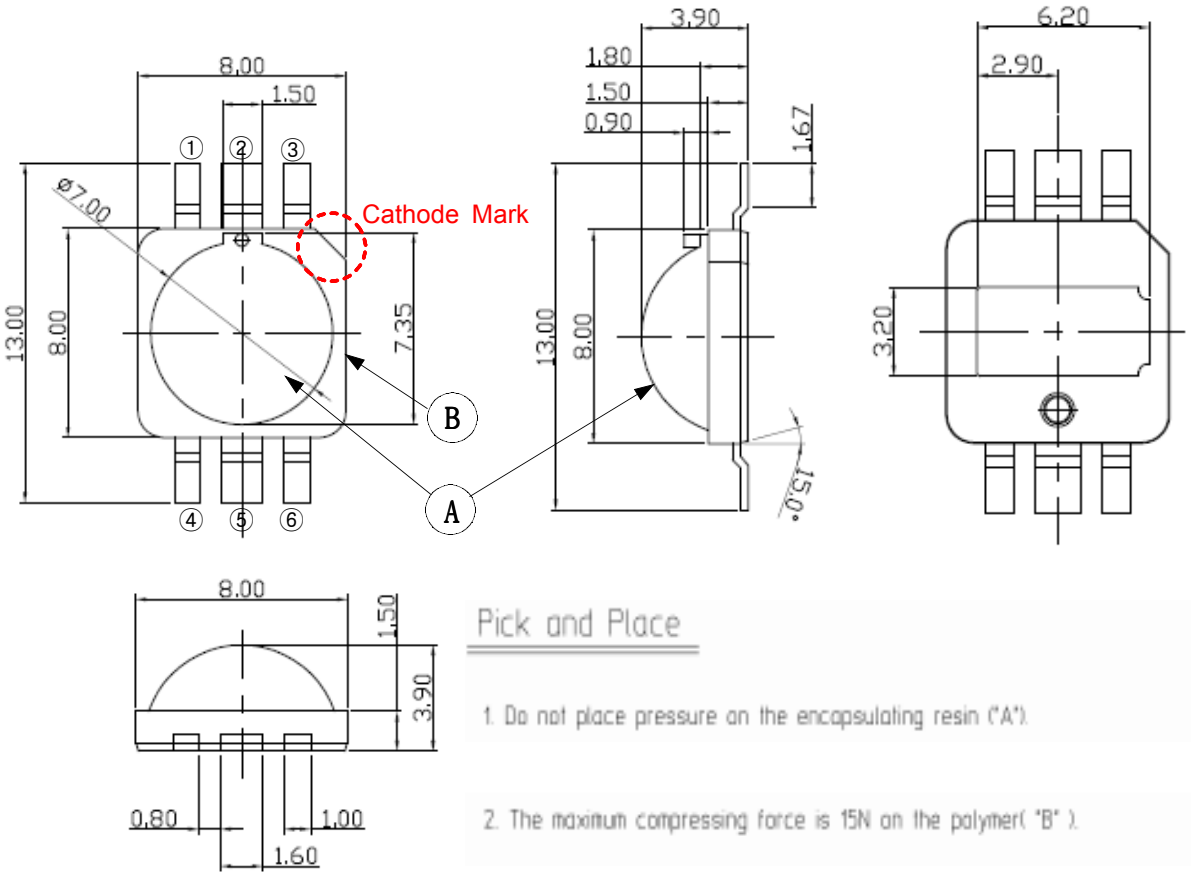
- Junction to ambient thermal resistance
- JEDEC Standard JESD 51-2,3

JESD 51-2 : Integrated Circuits Thermal Test Method Environmental Conditions - Natural Convection (Still Air)

JESD 51-3 : Low Effective Thermal Conductivity Test Board for Leaded Surface Mount Package

■ Package Outline Dimensions

Unit:mm
Tolerance:±0.2

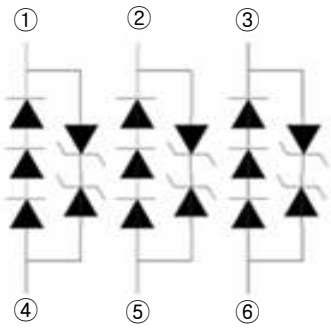


Pick and Place

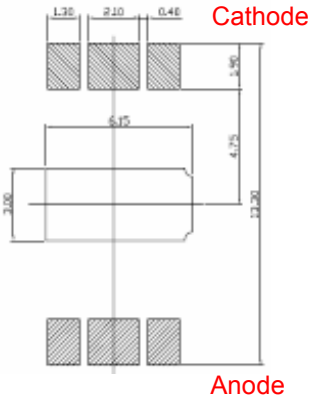
1. Do not place pressure on the encapsulating resin ("A").

2. The maximum compressing force is 15N on the polymer("B").

Circuit



Solder Pattern for Surface Mount



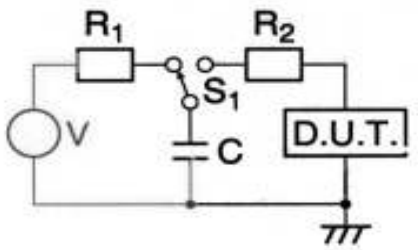
Remarks)

Make sure the heat sink is electrically connected to the Anode.

Heat sink is to be soldered, If not, use the heat conductive adhesive

■ Reliability Test Items and Conditions

1) Test Items

Test Item	Test Conditions	Test Hours/Cycles
Room Temperature life test	25℃, If=Max DC※	1,000 h
High Temperature humidity life test	85 ℃, 60 % RH, If=Max DC※	1,000 h
High Temperature life test	85 ℃, If=Max DC※	1,000 h
Low Temperature life test	-40℃, If=Max DC※	1,000 h
High Temperature Storage	110℃	1,000 h
Low Temperature Storage	-40℃	1,000 h
Thermal Shock	-40 / 120℃, each 30 min	200 cycles
Temperature humidity Cycle On/Off test	-40 / 85 ℃, each 20 min, 100 min transfer Power On/off each 5 min, DC 180 ㎃	100 cycles
Reflow (Pb-Free)	Peak 260±5℃ for 10sec	3 times
ESD(HBM)	 - R1:10MΩ , R2:1.5KΩ , C:100pF	3 times (± 5㎸)

※ Max. DC current depending on maximum current derating curve.

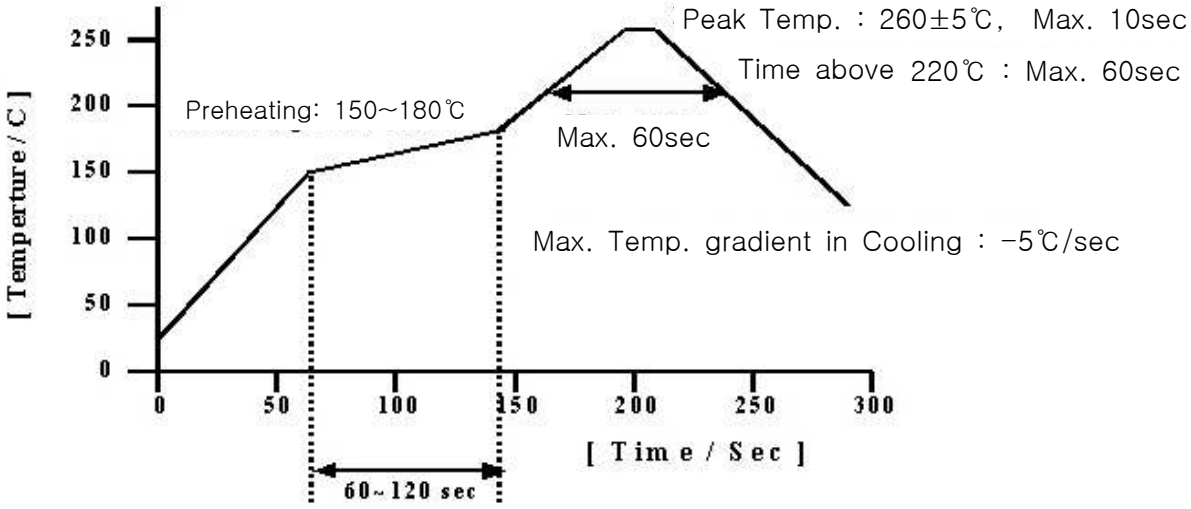
2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	I_F = 180 mA	-	U.S.L.*1.2
Luminous Flux	Φ_V	I_F = 180 mA	L.S.L.*0.5	-
Reverse Voltage	V_R	I_R = 5mA	-	U.S.L.*2.0

* USL : Upper Standard Level LSL : Lower Standard Level

■ Solder Conditions

1) Reflow Conditions (Pb-Free Solder, Sn-Ag-Cu Series recommended)



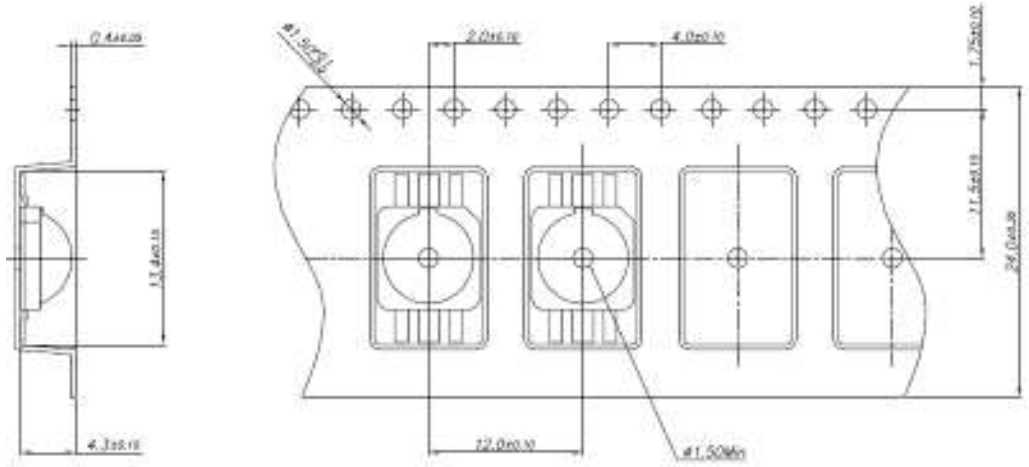
2) For Manual Soldering

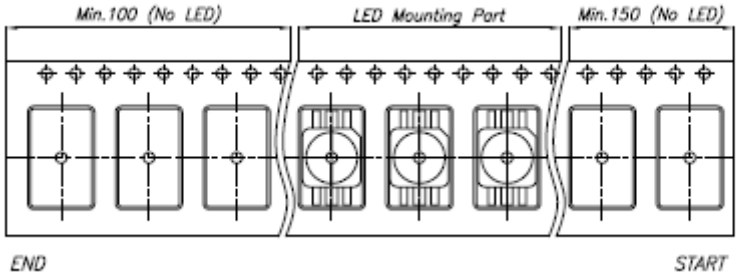
Not more than 5 seconds @MAX400℃, under soldering iron.

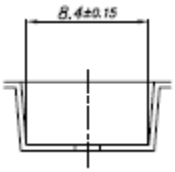
■ Taping Dimension

Cathode

Anode

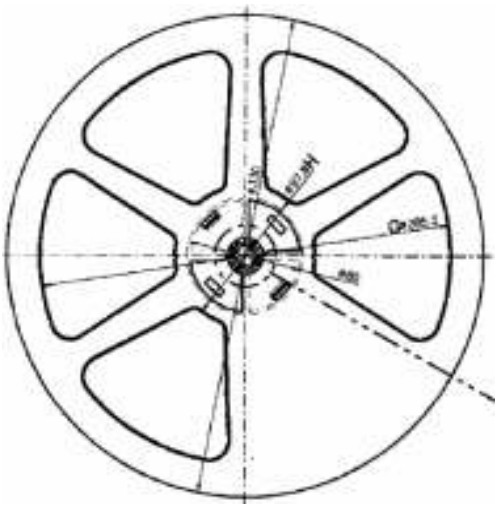


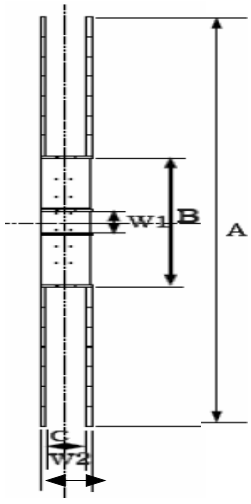




User Feed Direction

2. Reel





Symbol	A	B	C	W1	W2
Dimension(mm)	330 ± 1	80 ± 1	25 ± 0.5	13 ± 0.3	29.5 ± 1

(1) Quantity : 1,000 Pcs / 13" Reel.

(2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2㎜

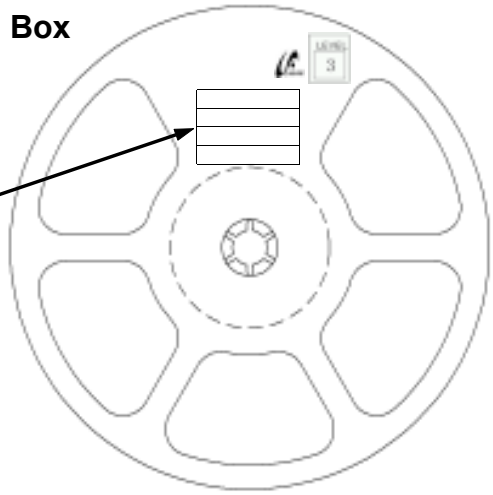
(3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at 10℃ angle to be the carrier tape.

(4) Packaging : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package

■ Reel Packing Structure

Packing Order : Reel → Al Bag → Carton Box

1) Reel

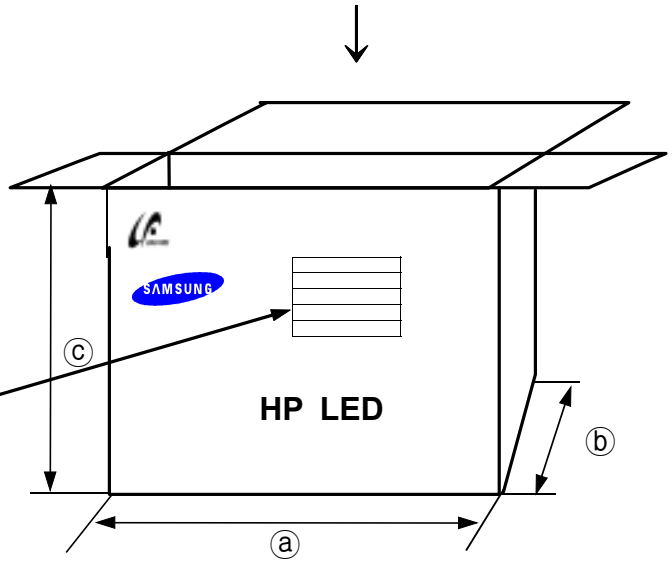


2) Aluminum Vinyl Bag

3) Inner Box

Material : Paper(SW3B(B))

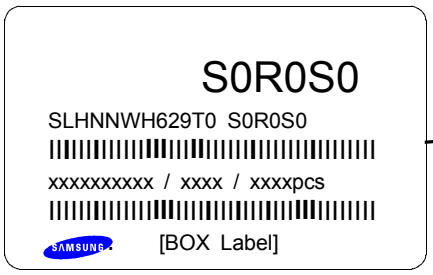
TYPE	SIZE(mm)		
	ⓐ	ⓑ	ⓒ
13inch	335	45	335

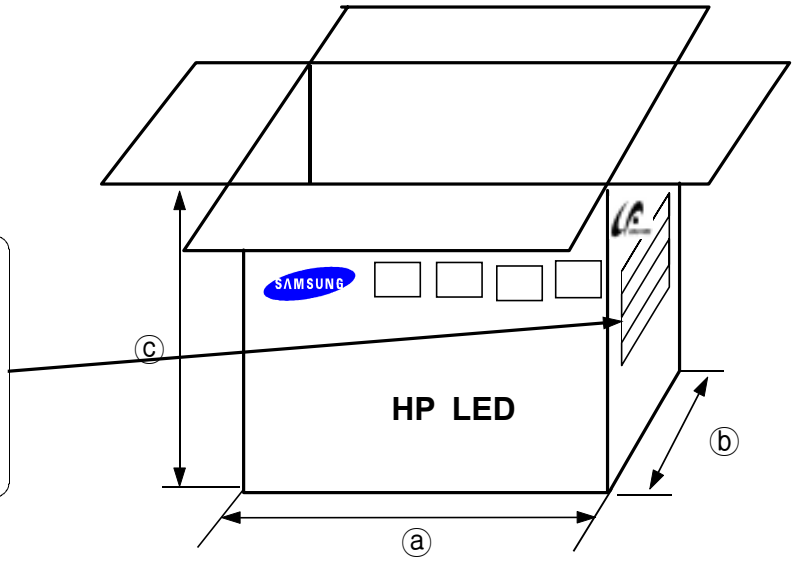


4) Carton Box

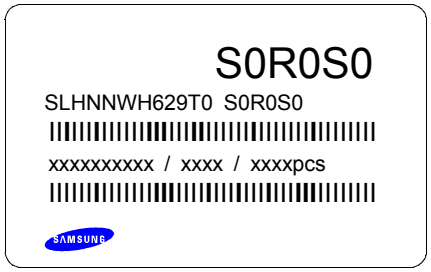
Material : Paper(SW3B(B))

TYPE	SIZE(mm)		
	ⓐ	ⓑ	ⓒ
13inch	350	350	350





■ Label Structure



* Rank Code
  (S0): VF Rank
  (R0): Chromaticity Coordinate Rank(CIE)
  (S0): Luminous Flux

■ Lot Number

The Lot number is composed of the following characters

●◎◇◆□■△△△ / I▲▲▲ / 1000PCS

● : 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)

Silica gel & Humidity Indicator Card in Aluminum Vinyl Bag

■ 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℃, 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 72 hours (3days) at an assembly line with a condition of no more than 30℃/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 >60% at 23±5℃.

8) Devices must be baked for 24hours at 60±5℃, 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.

■ Hazard Substance Analysis

SGS

Test Report No. F690501/LF-CTSAYAA08-28494R1 Issued Date: October 27, 2008 Page 1 of 4

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	: LED
SGS File No.	: AYAA08-28494R1
Received Date	: October 20, 2008
Test Performing Date	: October 21, 2008
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	: By the applicant's specific request, the sampling and testing was performed only for the part indicated in the photo without disassembly. This Report supersedes the Report No.F690501/LF-CTSAYAA08-28494 dated October 27,2008 issued by SGS Testing Korea Co.,Ltd. The item/part no. is changed from SLHNNWW629T0 to SLHNNWW629T0 (SLHNNWW629T1) by customer's request.The test result of (PBB/PBDE) are extracted from the test report number F690501/LF-CTSAYAA08-29674 where the sample is claimed to be identical.

SGS Testing Korea Co. Ltd.

Jeff Jang

Jeff Jang / Chemical Lab Mgr

Pluto Kim
Monet Jeong
Billy Oh / Testing Person

SGS Testing Korea Co.,Ltd.
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SGS

Test Report No. F690501/LF-CTSAYAA08-28494R1 Issued Date: October 27, 2008 Page 2 of 4

Sample No. : AYAA08-28494R1.001

Sample Description : LED

Item No./Part No. : SLHNNWW629T0 (SLHNNWH629T0)

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	US EPA 3052(1996), US EPA 6010B(1996), ICP	0.5	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) 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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SGS

Test Report No. F690501/LF-CTSAYAA08-28494R1 Issued Date: October 27, 2008 Page 3 of 4

Sample No. : AYAA08-28494R1.001

Sample Description : LED

Item No./Part No. : SLHNNWW629T0 (SLHNNWH629T0)

Halogen Contents

Test Items	Unit	Test Method	MDL	Results
Bromine(Br)	mg/kg	EN 14582:2007 , IC	30	N.D.
Chlorine(Cl)	mg/kg	EN 14582:2007 , IC	30	N.D.
Fluorine(F)	mg/kg	EN 14582:2007 , IC	30	N.D.
Iodine(I)	mg/kg	EN 14582:2007 , IC	30	N.D.

Other(s)

Test Items	Unit	Test Method	MDL	Results
PFOS(Perfluorooctane Sulfonates-Acid/Metal Salt/Amide)	mg/kg	US EPA 3540C, LC/MS	1	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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SGS

Test Report No. F690501/LF-CTSAYAA08-28494R1 Issued Date: October 27, 2008 Page 4 of 4

Picture of Sample as Received:

*** End ***

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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Revision History
(Model:SLHNNWH629T0)

Date	Revision History	Author	
		Drawn	Approved
2008.11.21	Initial Edition - Preliminary	S.B.Hong	D.Y.Lee