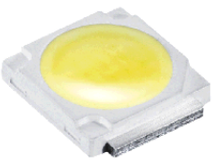
DATE OF ISSUE : **2011. 02. 07**

SPECIFICATION

MODEL : SPHWHTS8N103EBP0M3



Approved rank : V_F (E5, K7)
CIE (P1, P2, P3, P4, P5, P6, P7, P8),
Φ_V(M1, P1, R1)

Sunnix8 WHITE LED P0 RANK

SAMSUNG LED

CUSTOMER		
CHECKED	**CHECKED**	**APPROVED**

SAMSUNG LED			
DRAWN	**CHECKED(Sales)**	**CHECKED(Qual)**	**APPROVED**

SAMSUNG LED CO,.LTD.

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1. Product Outline

1) Features

Plastic Molded Lead Frame Type : 6.0 (L), 7.0 (W), 1.2 (T)

Beam View Angle(θ)* : 120 °

High Power / Brightness Chip & Long Time Reliability

2) Applications

General Lighting, Indoor Illumination, Refrigerator lighting etc.

View Angle describes the spatial intensity distribution and is the difference between the angles corresponding to 50% of the maximum intensity.

2. Absolute Maximum Rating

Operation Forward Current(1) 700

Peak Pulsed Forward Current 800

(Duty 1/10 and Pulse Width 10 msec)

Reverse Current(2) 20

Thermal Resistance ($R_{th\ j\text{-}s}$) ..... 5 /W

Operating Temperature Range (T_{OPR}) ..... -40 85

Storage Temperature Range (T_{STG}) ..... -40 110

LED Junction Temperature (T_j) 125

(1) Refer to derating curve in the page 6.

(2) Does not operate in the reverse direction.

3. Characteristics

1) Electrical properties (T_a = 25)

Parameter	Symbol	Condition	Rank		Min.	Typ.	Max.	Unit
Reverse Voltage	V_R	I_R = 10	-		0.5	0.8	2.0	V
Forward Voltage	V_F	I_F = 350	EB	E5	2.90		3.15	
				K7	3.15		3.50	

2) Color Rendering Index (T_a = 25)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Color Rendering	R_a	I_F = 350	70	73	-	-

3) Chromaticity Coordinates (T_a = 25)

Item	Condition	Rank		x				y			
Chromaticity Coordinate (*)	I_F = 350	P0	P1	0.3068	0.3144	0.3130	0.3048	0.3113	0.3186	0.3290	0.3207
			P2	0.3144	0.3221	0.3213	0.3130	0.3186	0.3261	0.3373	0.3290
			P3	0.3048	0.3130	0.3115	0.3028	0.3207	0.3290	0.3391	0.3304
			P4	0.3130	0.3213	0.3205	0.3115	0.3290	0.3373	0.3481	0.3391
			P5	0.3093	0.3161	0.3144	0.3068	0.2993	0.3059	0.3186	0.3113
			P6	0.3161	0.3231	0.3221	0.3144	0.3059	0.3120	0.3261	0.3186
			P7	0.3028	0.3115	0.3099	0.3005	0.3304	0.3391	0.3509	0.3415
			P8	0.3115	0.3205	0.3196	0.3099	0.3391	0.3481	0.3602	0.3509

4) Luminous Flux (T_a = 25)

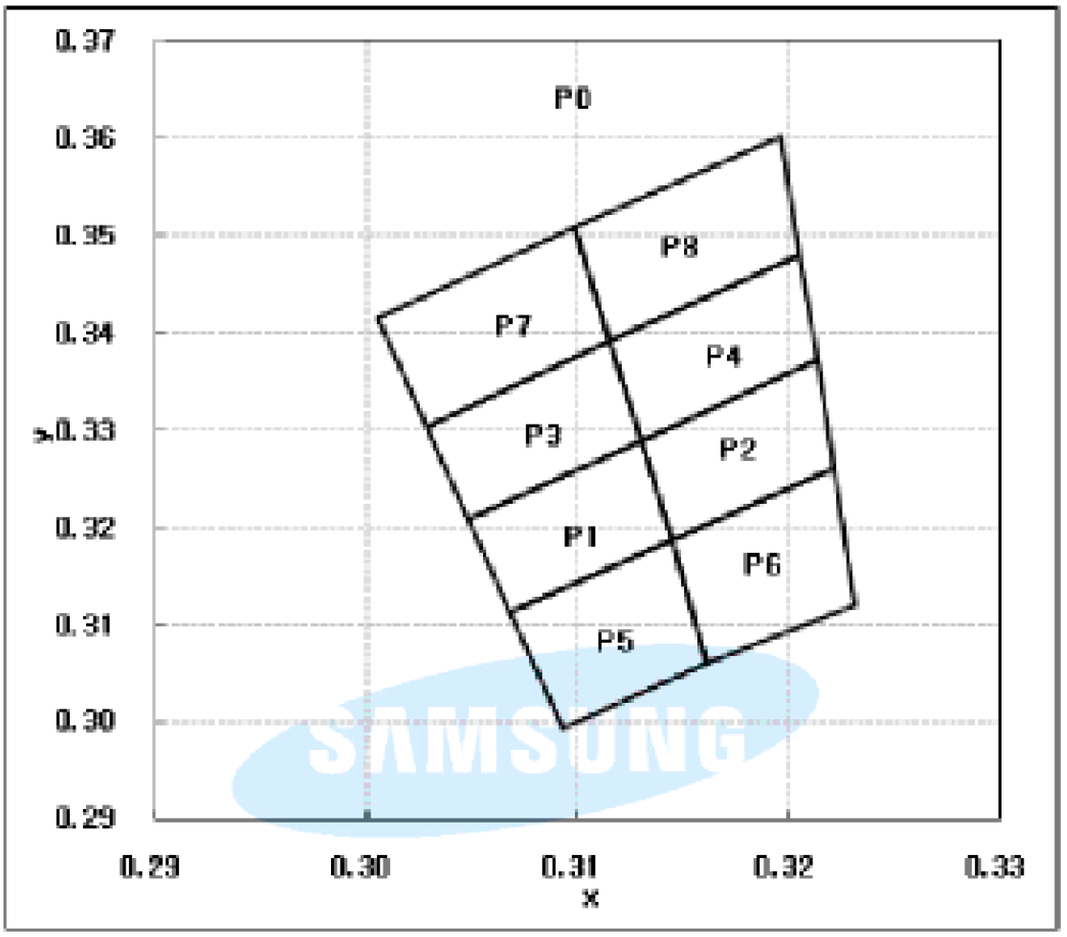
Parameter	Symbol	Condition	Rank		Min.	Typ.	Max.	Unit
Luminous Flux	Φ_V	I_F = 350	M3	M1	105		115	
				P1	115		125	
				R1	125		-	

Tolerance : V_F : ±0.1, Φ_V : ±7 %, CCx CCy : ±0.02, R_a :±5.0

Luminous Intensity measuring equipment : CAS140CT

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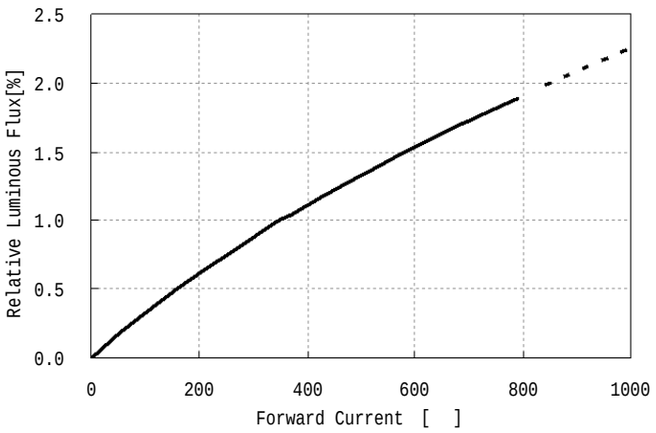
4. Chromaticity Diagram



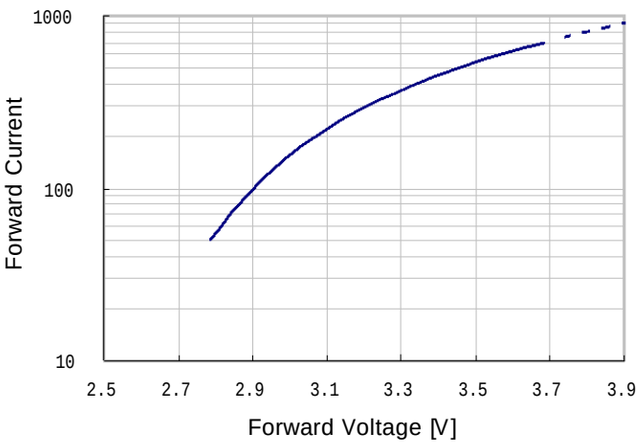
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5. Typical Characteristic Graphs

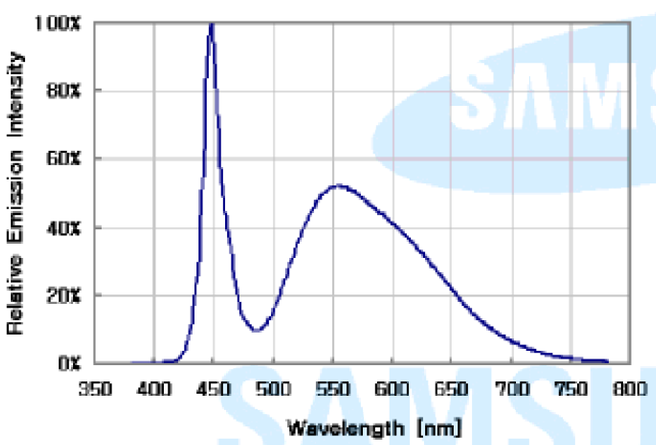
Relative Luminous Flux vs. Forward Current



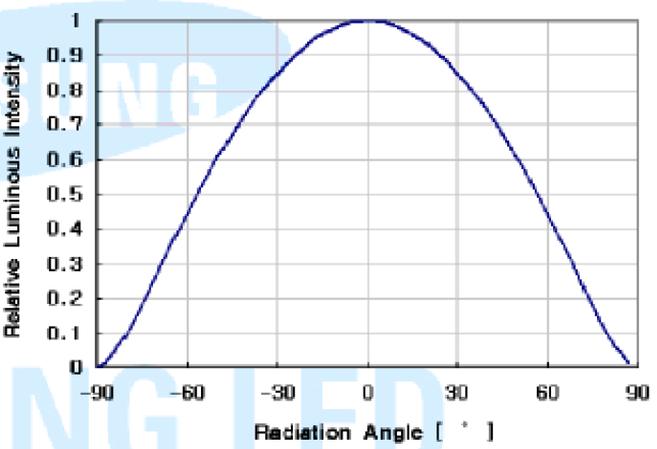
Forward Current vs. Forward Voltage



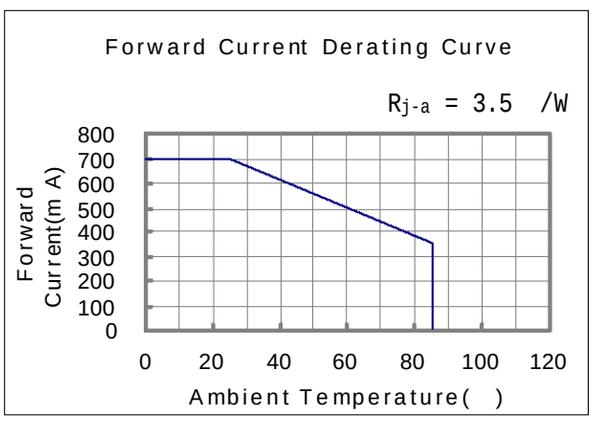
Spectrum DisTribution



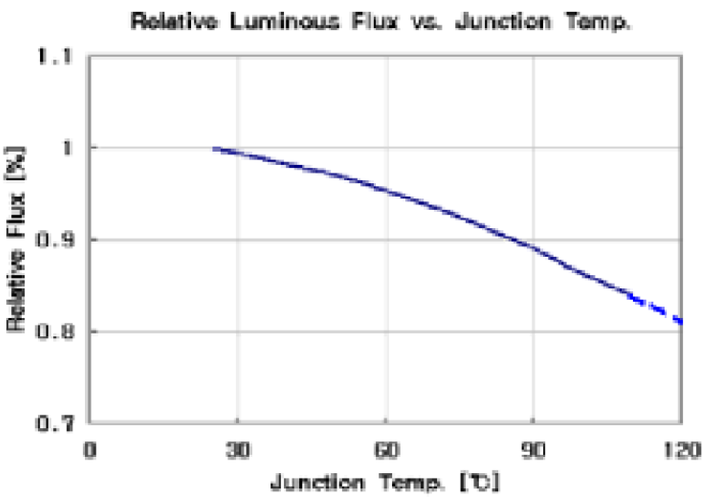
Radiation Diagram



Forward Current Derating Curve



Relative Luminous Flux vs. Junction Temp.

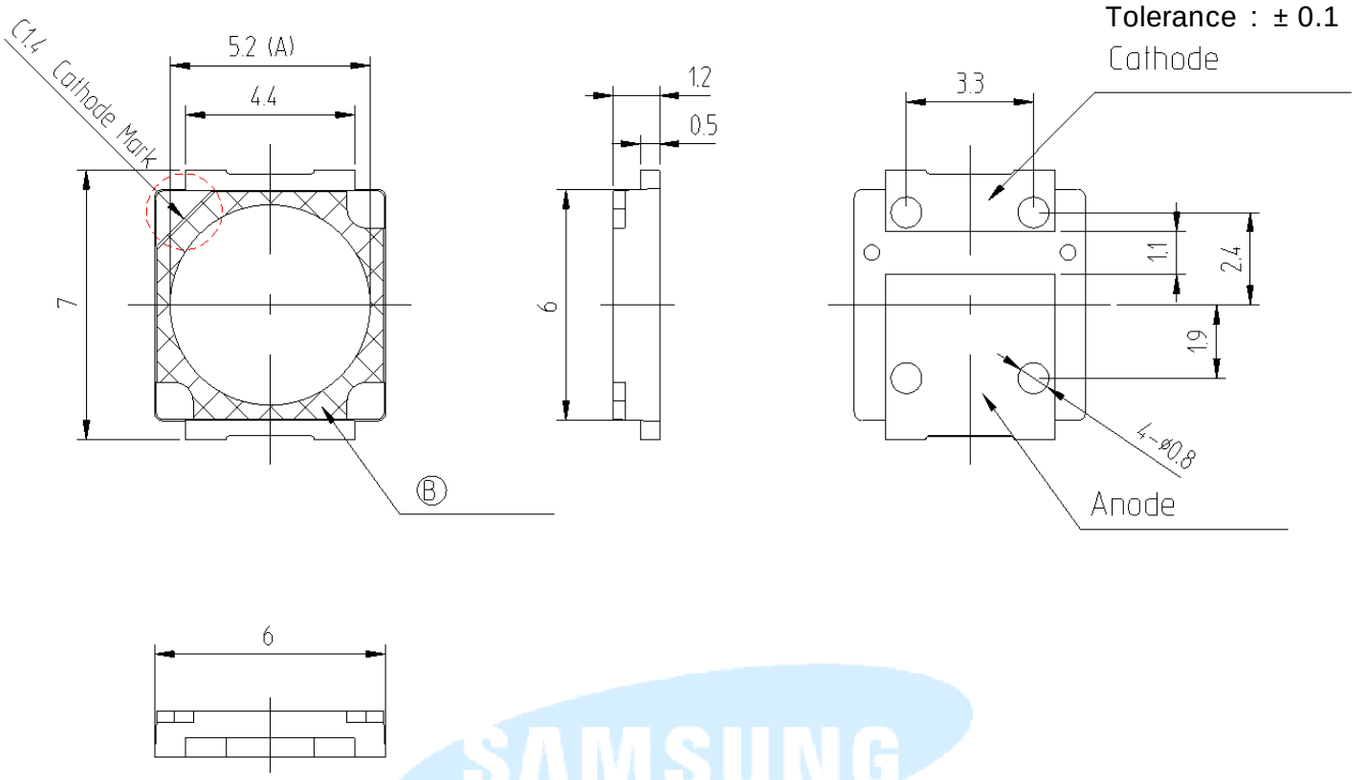


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6. Outline Drawing and Dimension

Unit :

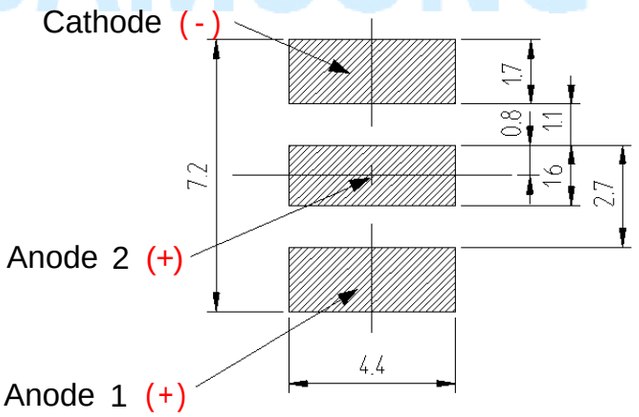
Tolerance : ± 0.1



Pick and Place

1. Do not place pressure on the encapsulating resin ("A")
   It is recommended to us a pick&place nozzle with inside diameter at 5.2mm
2. The maximum compressing force is 15N on the polymer ("B")

Solder Pattern for Surface Mount



* This LED has built-in ESD protection device(s) connected in parallel to LED chip(s).

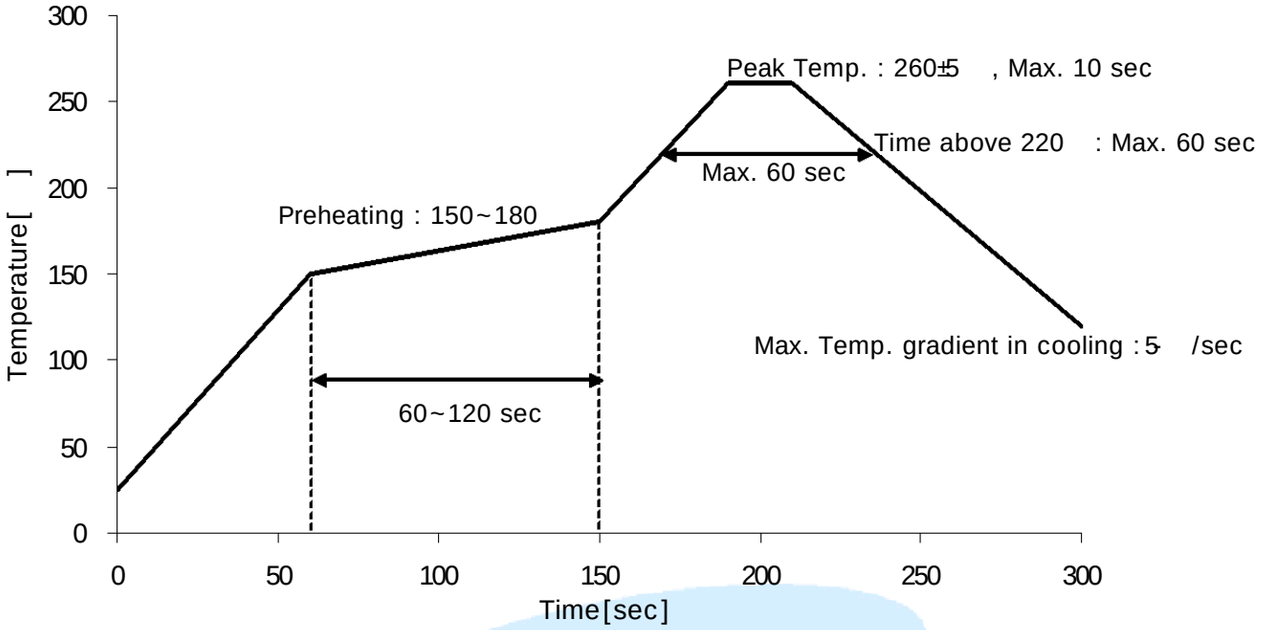
Remarks

Make sure that Anode 2 is electrically connected to the Anode 1.
Anode 2 is to be soldered, If not, use the heat conductive adhesive.

7. Solder Conditions

1) Reflow Conditions (Pb-Free)

Reflow Frequency : 2 time max.



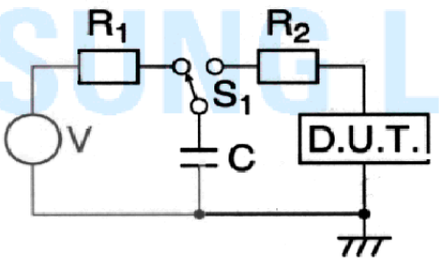
2) For Manual Soldering

Not more than 5 seconds @Max. 300 , under soldering iron.

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8. Reliability Test Items and Conditions

1) Test Items

Test Items	Test Conditions	Test Hours/Cycles
Room Temperature life test	25 , I_F = Max DC	1,000 h
High Temperature humidity life test	85 , 85 % RH, I_F = Max DC	1,000 h
High Temperature life test	85 , I_F = Max DC	1,000 h
Low Temperature life test	-40 , I_F = 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 350	100 cycles
Reflow (Pb-Free)	Peak 260± 5 for 10 sec	3 times
ESD(HBM)	 R1 : 10 , R2 : 1.5 , C : 100	3 times (± 5)

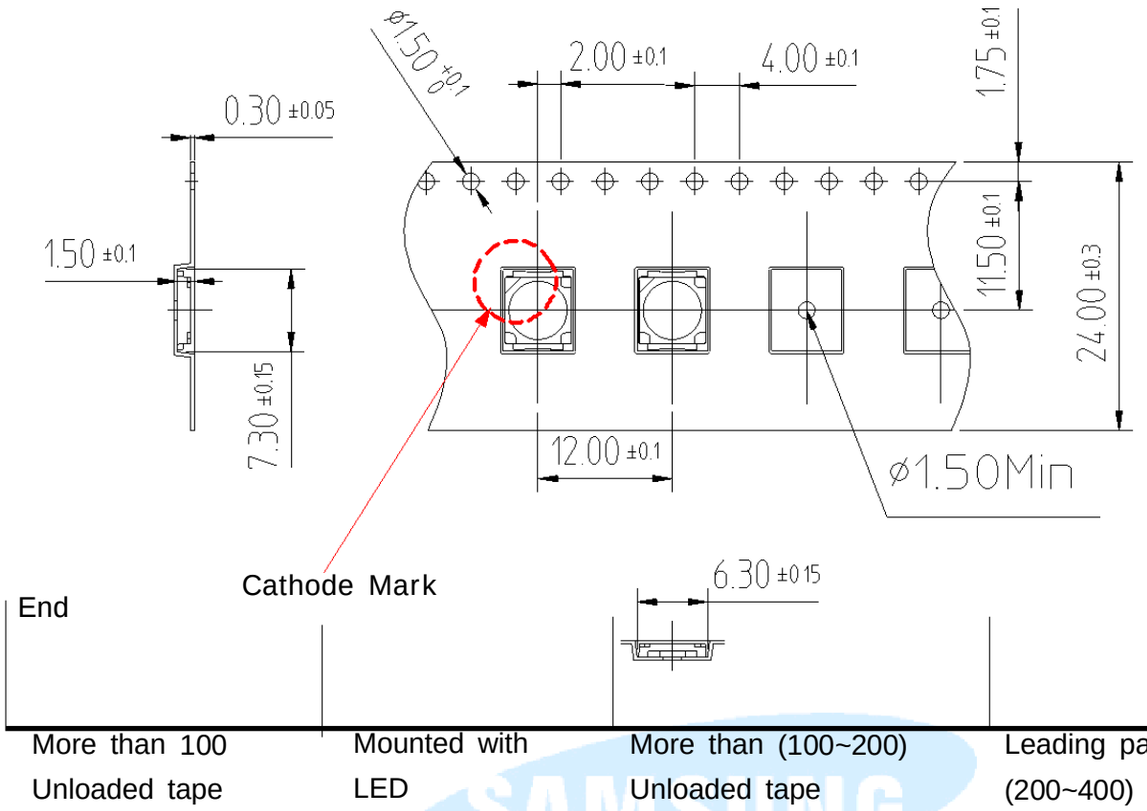
Max. DC current is depending on maximum current derating curve.

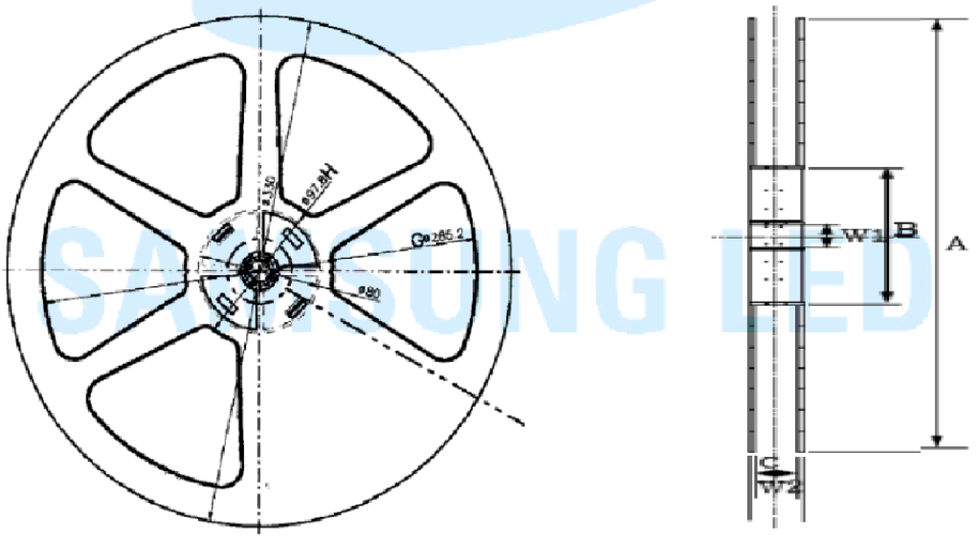
2) Criteria for Judging the Damage

Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	I_F = 350	-	U.S.L.*1.1
Luminous Flux	Φ_V	I_F = 350	L.S.L.*0.7	-

U.S.L : Upper Standard Level, L.S.L : Lower Standard Level

9. Taping Dimension





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

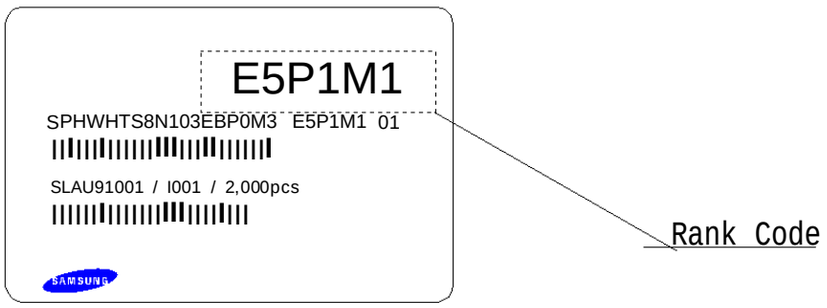
(1) Quantity : 2,000 Pcs / 13" Reel.

(2) Cumulative Tolerance : Cumulative Tolerance/10 pitches is less than ±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

10. Label Structure



Rank Code

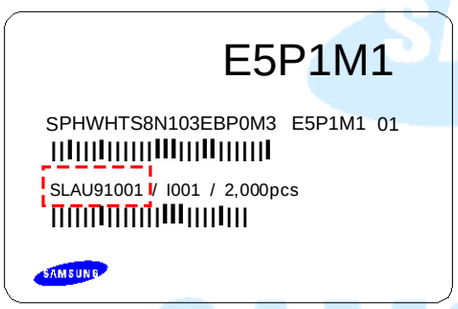
: VF Rank (refer to page 3)

: Chromaticity Coordinate Rank, CIE (refer to page 4)

: Luminous Flux (refer to page 4)

11. Lot Number

The Lot number is composed of the following characters



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● □■ / I▲▲▲ / 2000PCS

● : Production Site (S:SAMSUNG LED, G:Gosin China)

: L (LED)

: Product State (A:Normality, B:Bulk, C:First Production, R:Reproduction, S:Sample)

: Year (S:2008, T:2009, U:2010...)

□ : Month (1 ~ 9, A, B)

■ : Day (1 ~ 9, A, B ~ V)

: SAMSUNG LED Product Number (1 ~ 999)

▲ : Reel Number (1 ~ 999)

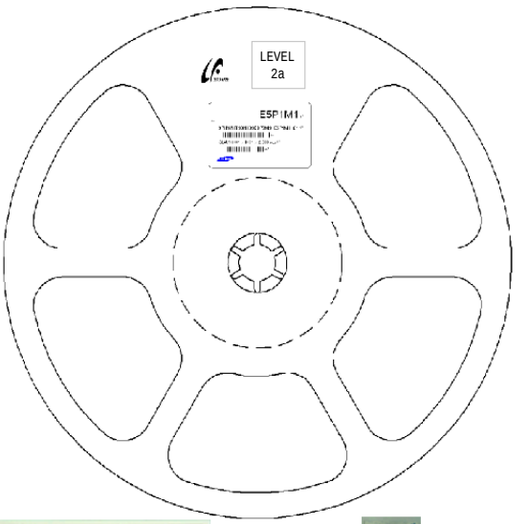
12. Reel Packing Structure

1) Reel

E5P1M1

SPHWHTS8N103EBP0M3 E5P1M1 01

SLAU91001 / I001 / 2,000pcs



2) Aluminum Bag

E5P1M1

SPHWHTS8N103EBP0M3 E5P1M1 011

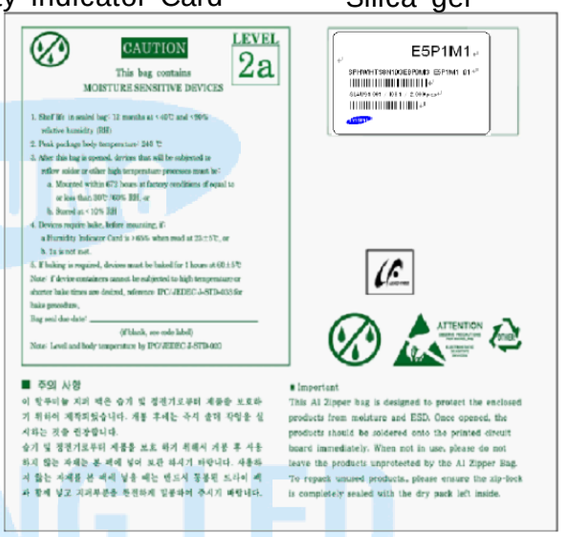
SLAU91001 / I001 / 2,000pcs



Humidity Indicator Card



Silica gel



3) Inner Box

Material : Paper(SW3B(B))

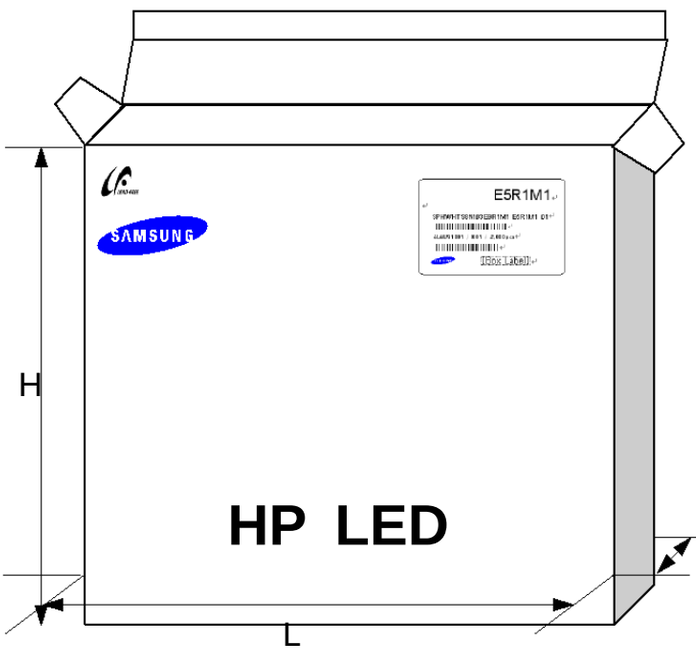
TYPE	SIZE( )		
	L	W	H
13inch	335	45	335

E5P1M1

SPHWHTS8N103EBP0M3 E5P1M1 01

SLAU91001 / I001 / 2,000pcs

[Box Label]

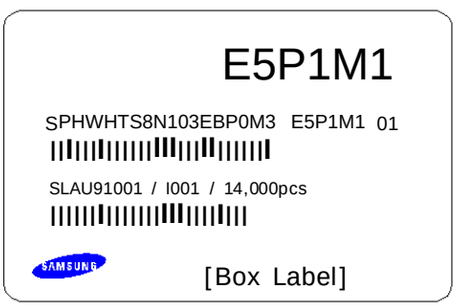


SAMSUNG LED

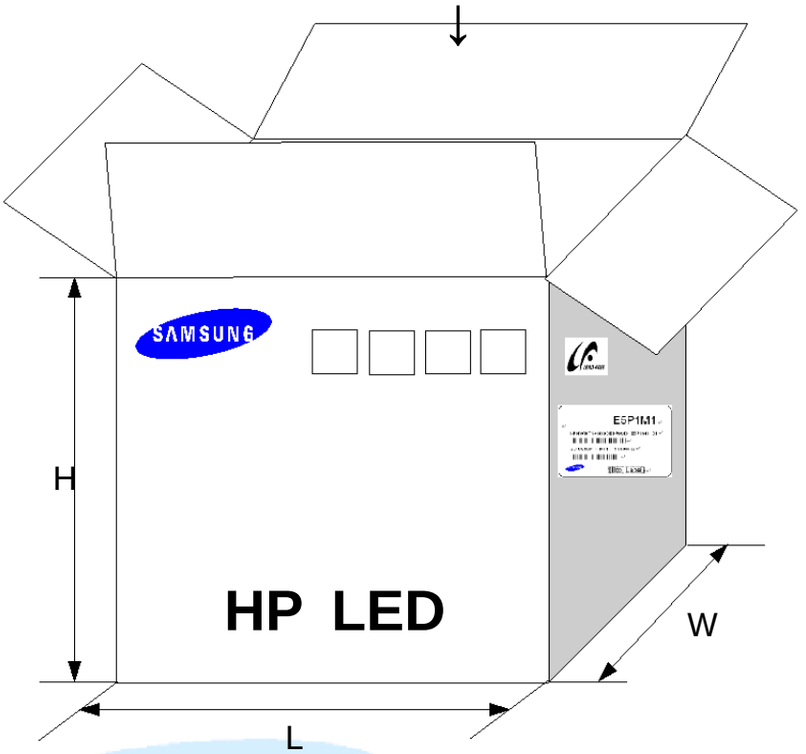
4) Carton Box

Material : Paper(SW3B(B))

TYPE	SIZE( )		
	L	W	H
13inch	350	350	350

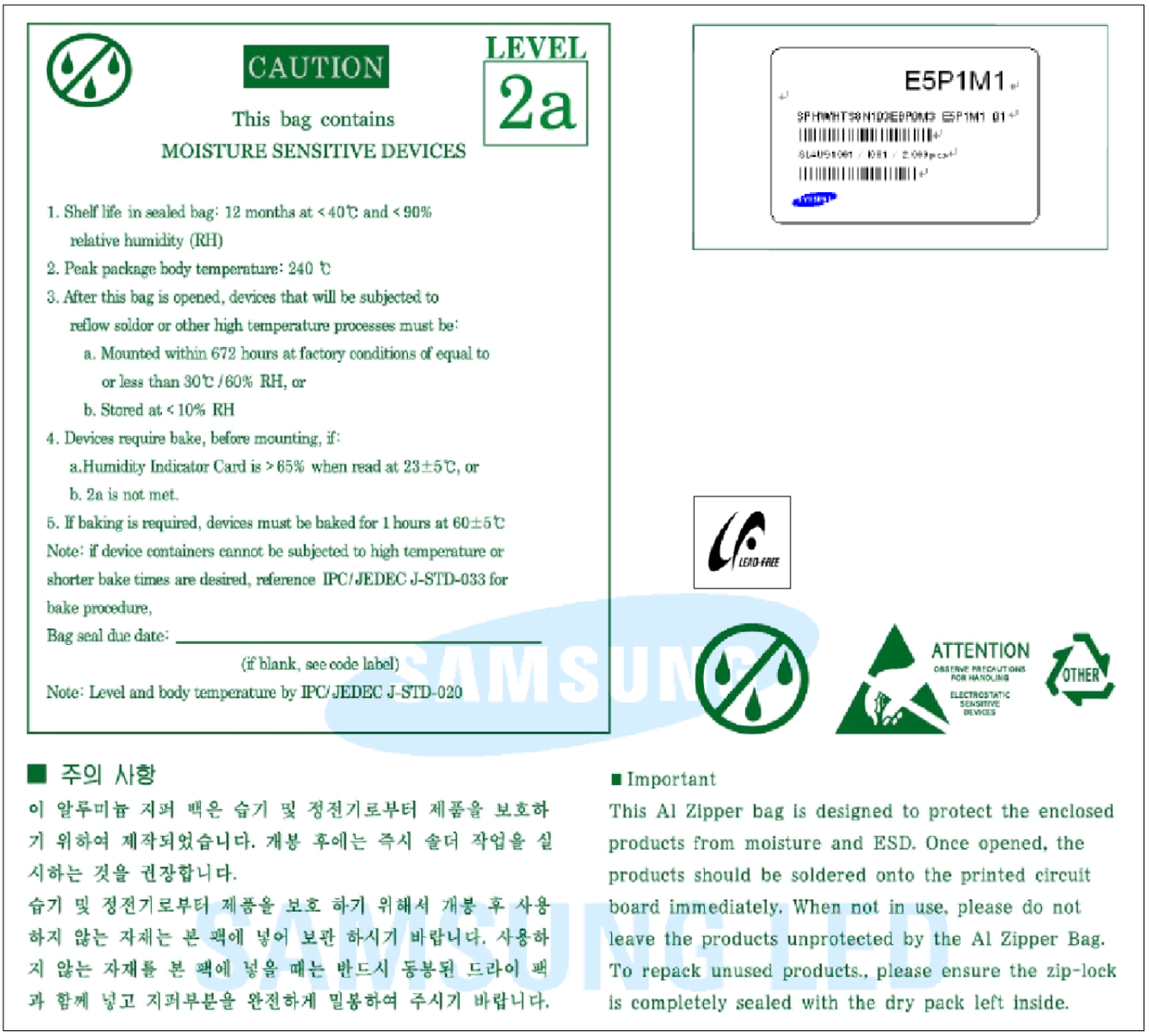


[Box Label]

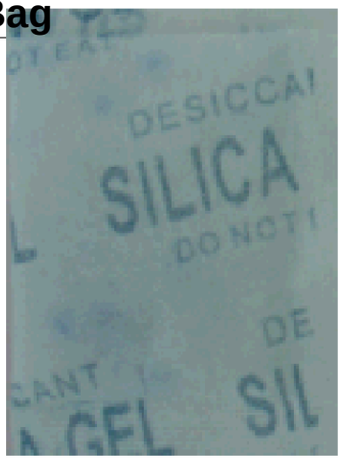


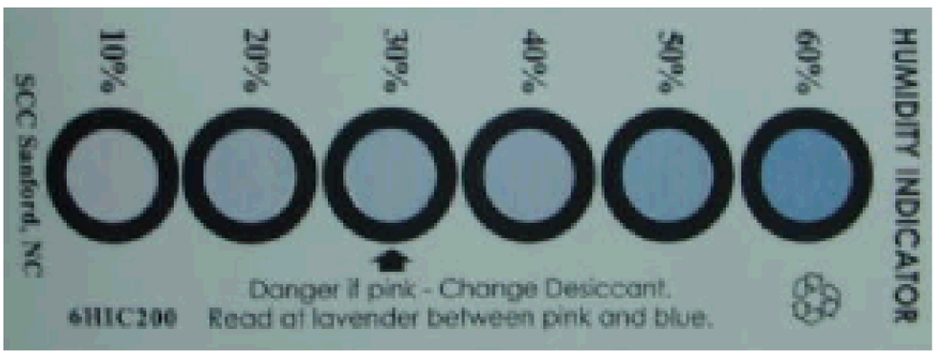
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13. Aluminum Vinyl Bag



Silica 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 SAMSUNG LED, 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 168 hours (7days) 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 65±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.

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10) When handling LED with tweezers, the LED Should only be held by the polymer body, not by the encapsulant or LENS.

11) The use of appropriate nozzle for the LED recommended. For the recommended nozzle size, refer to the figure at the below.
Inner diameter of nozzle ≥ Φ6.1mm

12) Do not stack assembled PCBs together. Since silicone is a soft material, abrasion between two PCB assembled with silicone encapsulated LED might cause catastrophic failure of the LEDs due to damage to encapsulant and wire and LED detachment.

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15. Hazard Substance Analysis

SGS

Test Report No. F690501/LF-CTSAYAA10-41879 Issued Date: December 22, 2010 Page 1 of 5

To: SAMSUNG LED CO.,LTD.
314,Maetan-dong
Yeongtong-gu
Suwon-city
GYEONGGI-DO 443-370
Korea

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

SGS File No.	: AYAA10-41879
Product Name	: LED PKG
Item No./Part No.	: Sunnic8 PKG(White)
Received Date	: Dec 17, 2010
Test Period	: Dec 20, 2010 to Dec 22, 2010
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.

SGS Testing Korea Co. Ltd.

Timothy Jeon
Jinhee Kim
Cindy Park
Jerry Jung/ Testing Person

Jeff Jang / Chemical Lab Mgr

SAMSUNG LED

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

SGS Testing Korea Co.,Ltd.
222, Bau D-valley, 555-5, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-060
t +82 (0)31 4008 000 f +82 (0)31 4008 099 http://www.sgsgilib.co.kr www.kr.sgsgroup.kr/emails

Member of the SGS Group (Société Générale de Surveillance)

Sample No. : AYAA10-41879.001

Sample Description : LED PKG

Item No./Part No. : Sunnix8 PKG(White)

Heavy Metals

Test Items	Unit	Test Method	MDL	Results
Cadmium (Cd)	mg/kg	With reference to IEC 62321:2008, ICP	0.8	N.D.
Lead (Pb)	mg/kg	With reference to IEC 62321:2008, ICP	5	N.D.
Mercury (Hg)	mg/kg	With reference to IEC 62321:2008, ICP	2	N.D.
Hexavalent Chromium (Cr VI)	mg/kg	With reference to IEC 62321:2008, UV-VIS	1	N.D.

Flame Retardants-PBBs/PBDEs

Test Items	Unit	Test Method	MDL	Results
Monobromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromobiphenyl	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Monobromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Dibromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tribromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Tetrabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Pentabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Hexabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Heptabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Octabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Nonabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, GC-MS	5	N.D.
Decabromodiphenyl ether	mg/kg	With reference to IEC 62321:2008, 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) * = Boiling-water-extraction:
Negative = Absence of Cr(VI) coating
Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

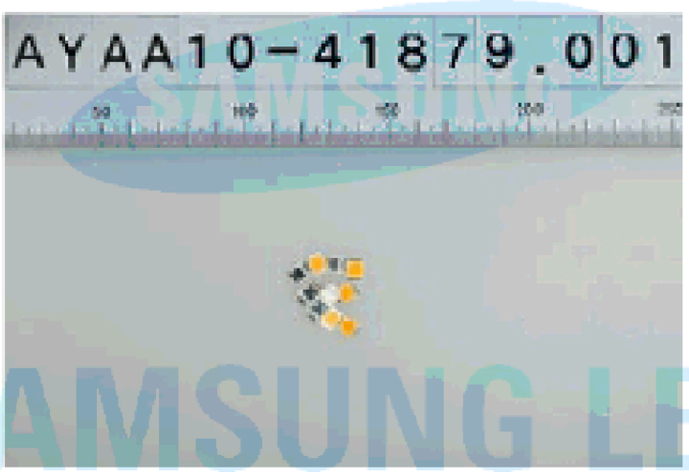
SAMSUNG LED

Sample No. : AYAA10-41879.001
Sample Description : LED PKG
Item No./Part No. : Sunnis8 PKG(White)

Halogen Contents

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

Picture of Sample as Received:



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) ' = Boiling-water-extraction:
Negative = Absence of Cr(VI) coating
Positive = Presence of Cr(VI) coating; the detected concentration in boiling-water-extraction solution is equal or greater than 0.02 mg/kg with 50 cm2 sample surface area.

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Unless otherwise stated the results shown in this report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

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Revision History
(Model : SPHWHTS8N103EBP0M3)

Date	Revision History	Author	
		Drawn	Approved
2011.02.07	Initial Edition	H.J. Park	K.T. Kim

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