DATE OF ISSUE : 2011. 01. 06

SPECIFICATION

MODEL : SPHWWTS8N105EBW0H3

**[Rank : Vf (E5, K7),
CIE (W1, W2, W3, W4, W5, W6, W7, W8, W9, WA,
WB, WC, WD, WE, WF, WG),
lm (H1, M1)]**

HIGH POWER LED - SUNNIX8

CUSTOMER		
CHECKED	CHECKED	APPROVED

SAMSUNG LED			
DRAWN	CHECKED(Sales)	CHECKED(Quality)	APPROVED

SAMSUNG LED CO,.LTD.

Contents

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 ㎃	80	83	-	-

3) Chromaticity Coordinates (T_a = 25 ℃)

Item	Condition	Rank		x				y			
Chromaticity Coordinate (*)	I_F=350㎃	W0	W1	0.4373	0.4428	0.4475	0.4418	0.3893	0.3906	0.3994	0.3981
			W2	0.4428	0.4483	0.4532	0.4475	0.3906	0.3919	0.4008	0.3994
			W3	0.4483	0.4538	0.4589	0.4532	0.3919	0.3931	0.4021	0.4008
			W4	0.4538	0.4593	0.4646	0.4589	0.3931	0.3944	0.4034	0.4021
			W5	0.4418	0.4475	0.4523	0.4465	0.3981	0.3994	0.4085	0.4071
			W6	0.4475	0.4532	0.4582	0.4523	0.3994	0.4008	0.4099	0.4085
			W7	0.4532	0.4589	0.4641	0.4582	0.4008	0.4021	0.4112	0.4099
			W8	0.4589	0.4646	0.47	0.4641	0.4021	0.4034	0.4126	0.4112
			W9	0.4465	0.4523	0.4573	0.4513	0.4071	0.4085	0.4178	0.4164
			WA	0.4523	0.4582	0.4634	0.4573	0.4085	0.4099	0.4193	0.4178
			WB	0.4582	0.4641	0.4695	0.4634	0.4099	0.4112	0.4207	0.4193
			WC	0.4641	0.47	0.4756	0.4695	0.4112	0.4126	0.4221	0.4207
			WD	0.4513	0.4573	0.4624	0.4562	0.4164	0.4178	0.4274	0.426
			WE	0.4573	0.4634	0.4687	0.4624	0.4178	0.4193	0.4289	0.4272
			WF	0.4634	0.4695	0.475	0.4687	0.4193	0.4207	0.4304	0.4289
			WG	0.4695	0.4756	0.4813	0.475	0.4207	0.4221	0.4319	0.4304

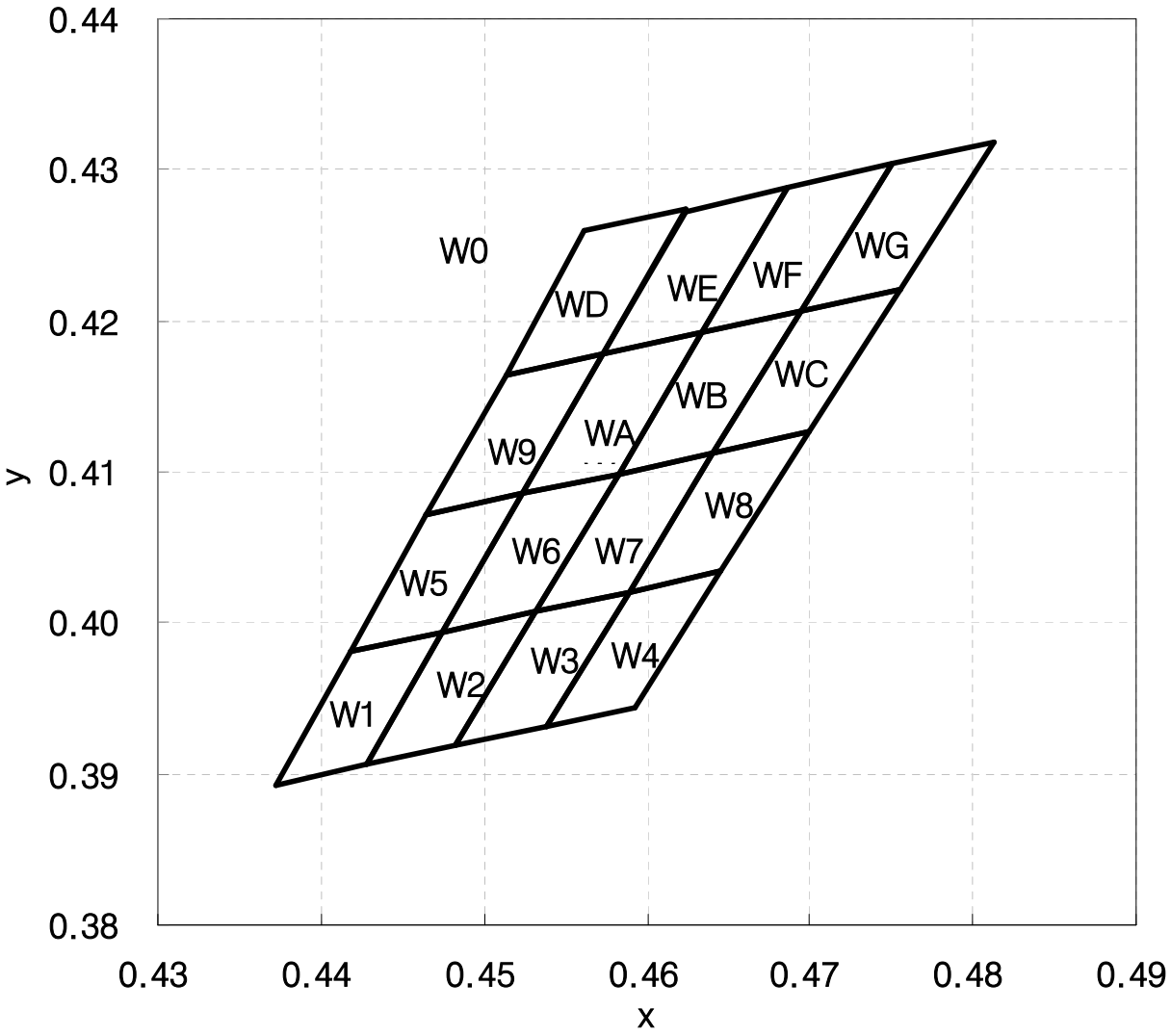
4) Luminous Flux (T_a = 25 ℃)

Parameter	Symbol	Condition	Rank		Min.	Typ.	Max.	Unit
Luminous Flux	Φ_V	I_F = 350 ㎃	H3	H1	90		105	lm
				M1	105		-	

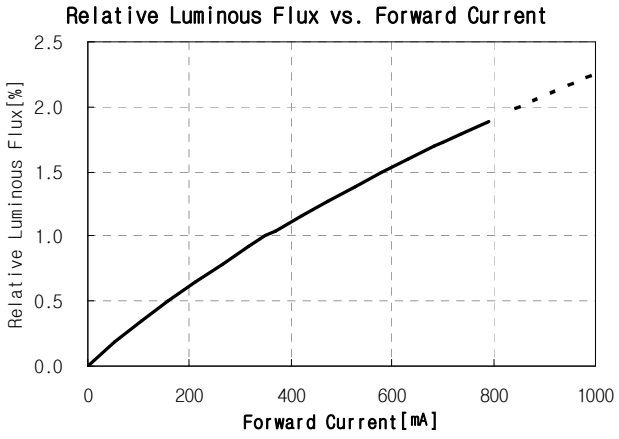
※ Tolerance : V_F : ±0.1, Φ_V : ±7 %, CCx CCy : ±0.02, R_a :±5.0

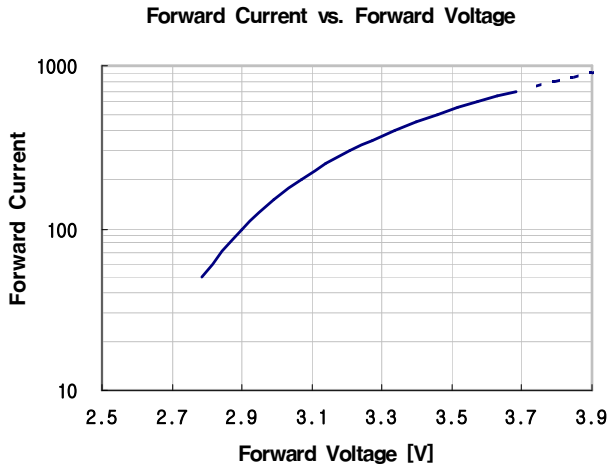
※ Luminous Intensity measuring equipment : CAS140CT

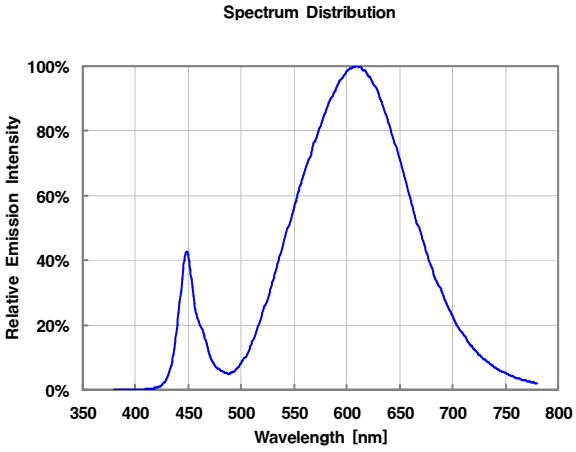
4. Chromaticity Diagram

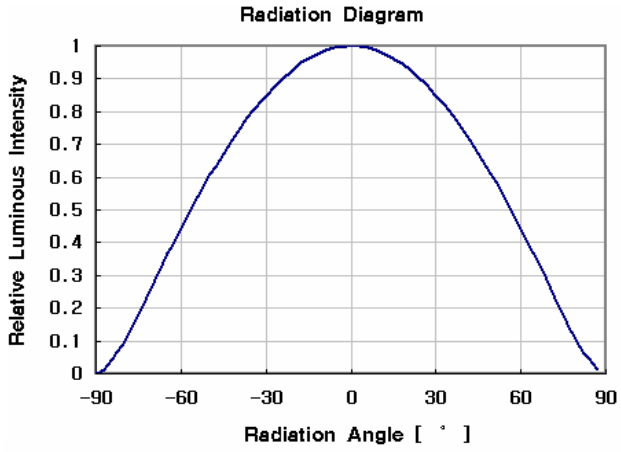


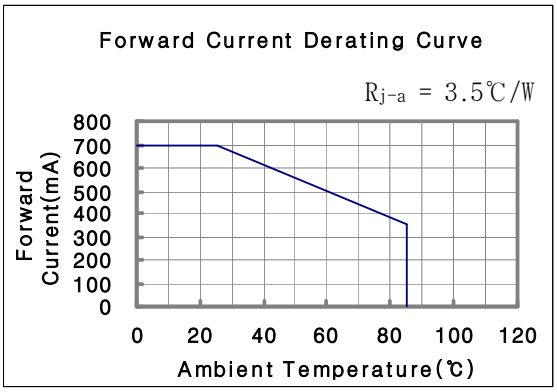
5. Typical Characteristic Graphs

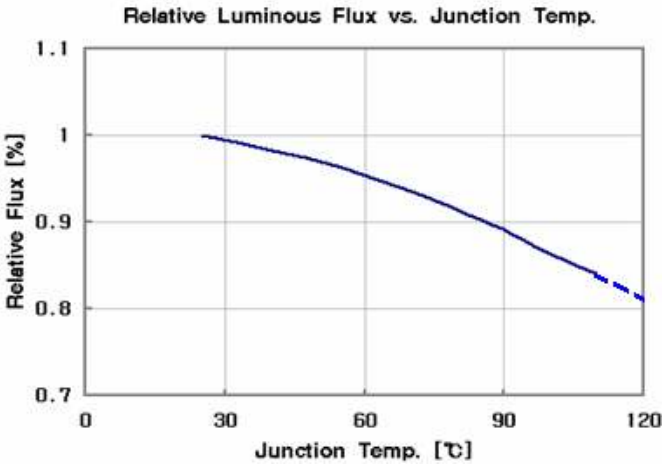




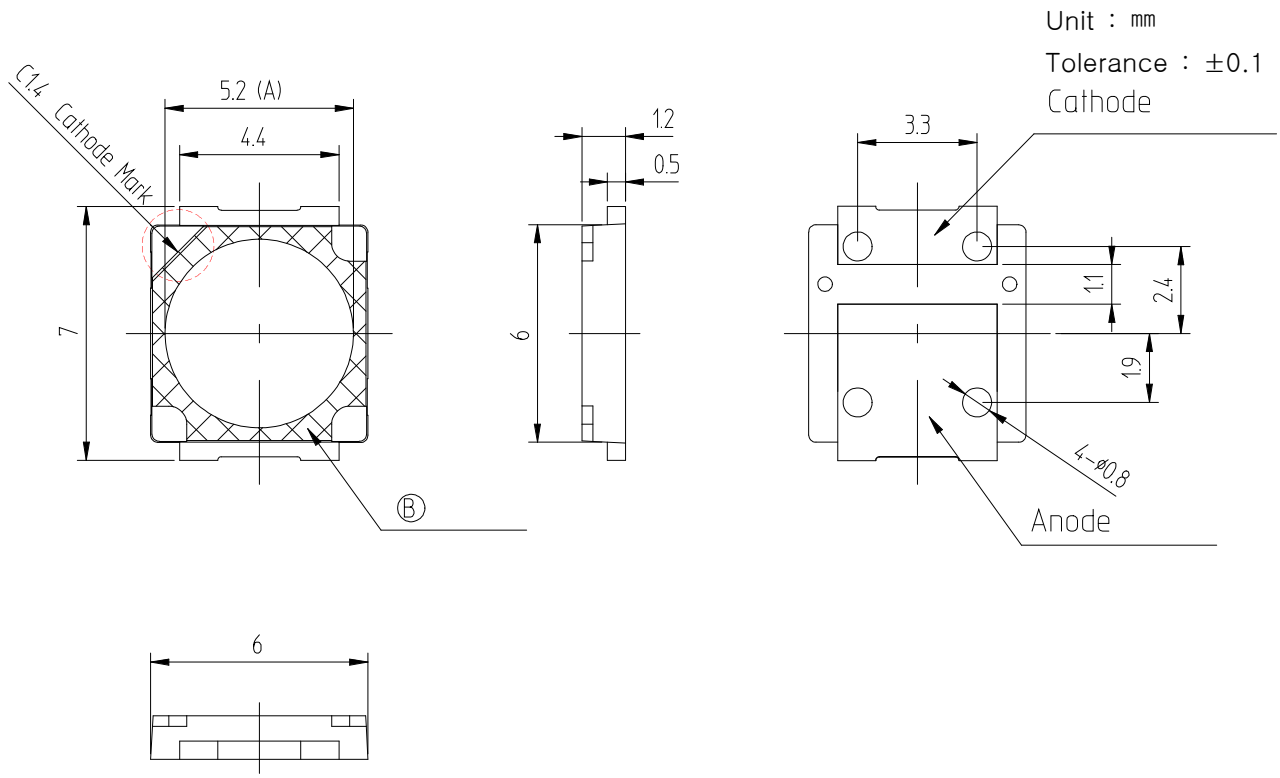








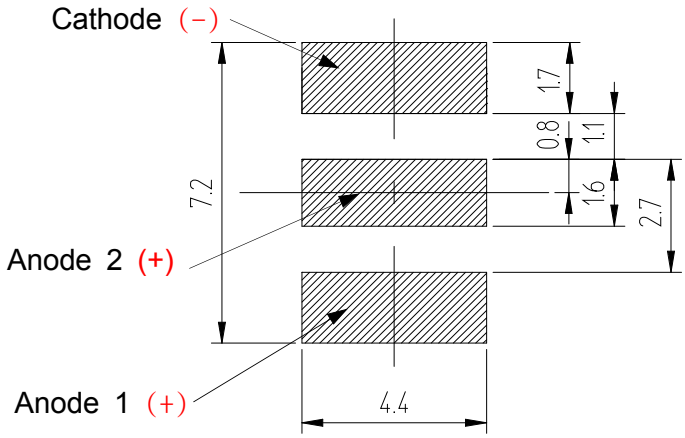
6. Outline Drawing and Dimension



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



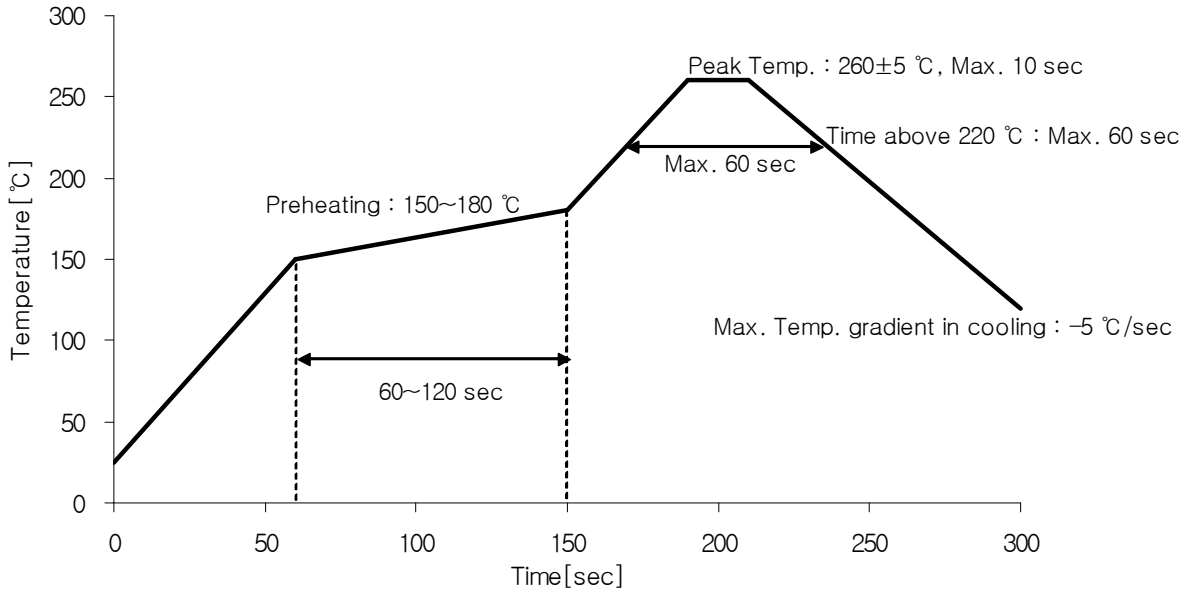
Remarks

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

7. Solder Conditions

1) Reflow Conditions (Pb-Free)

Reflow Frequency : 2 time max.

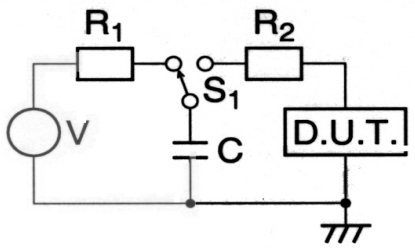


2) For Manual Soldering

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

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 ㎸)

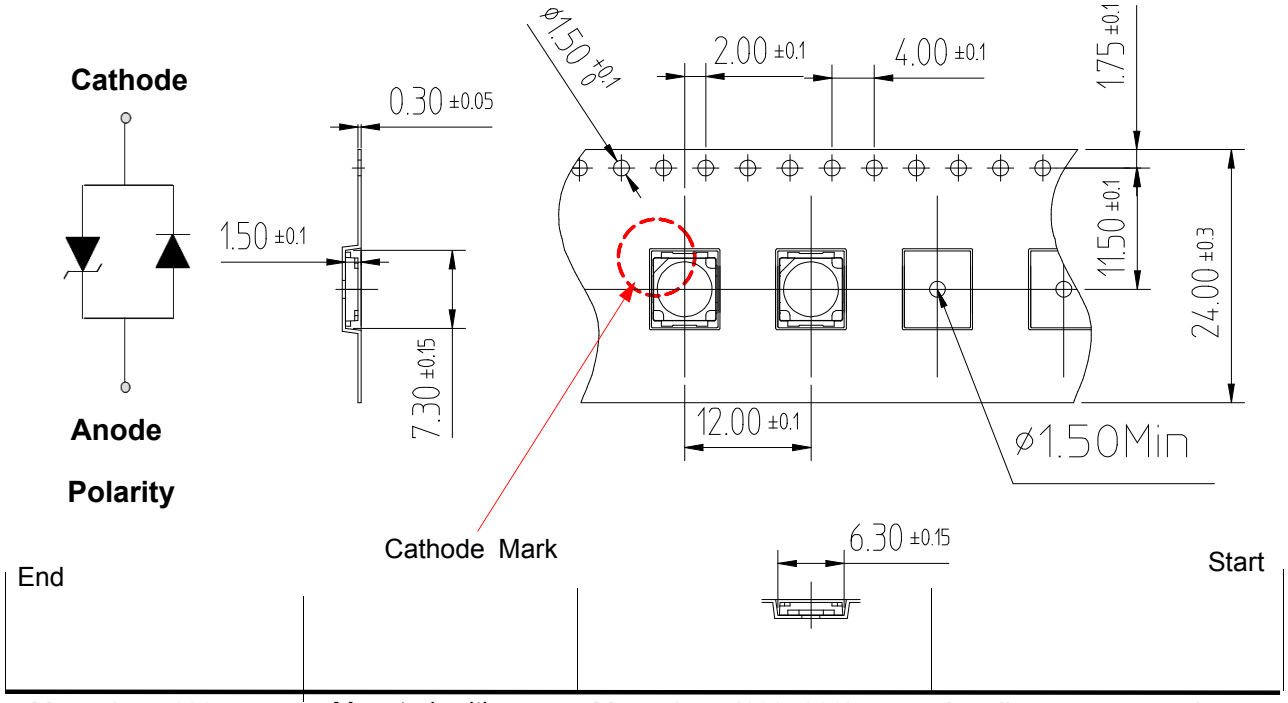
※ Max. DC current is depending on maximum current derating curve.

2) Criteria for Judging the Damage

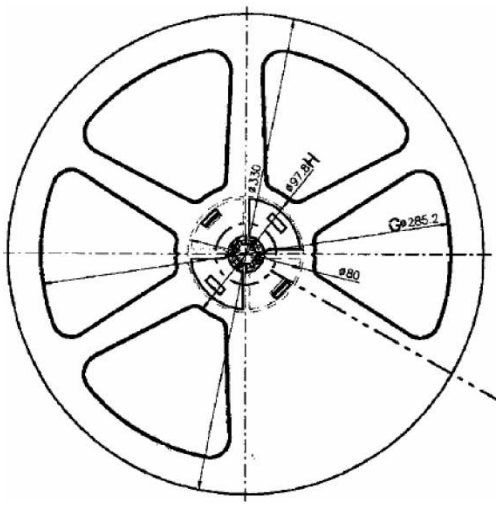
Item	Symbol	Test Condition	Limit	
			Min	Max
Forward Voltage	V_F	I_F = 350 ㎃	-	U.S.L.*1.1
Luminous Flux	Φ_V	I_F = 350 ㎃	L.S.L.*0.7	-

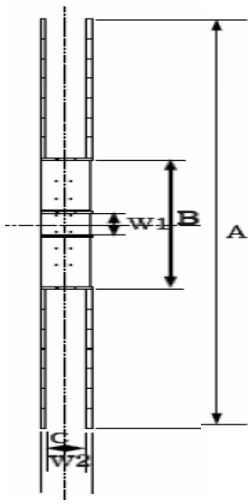
※ U.S.L : Upper Standard Level, L.S.L : Lower Standard Level

9. Taping Dimension



More than 100 ㎜ Unloaded tape	Mounted with LED	More than (100~200)㎜ Unloaded tape	Leading part more than (200~400)㎜





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

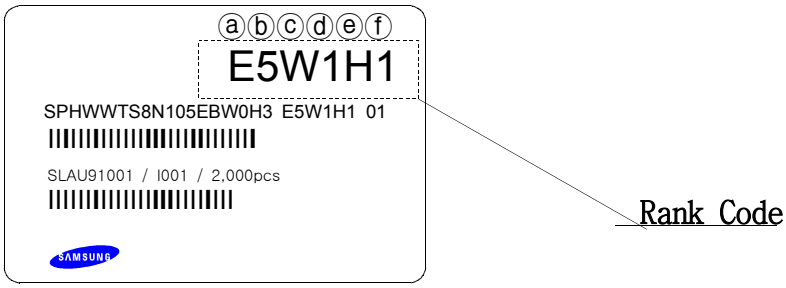
(1) Quantity : 2,000 Pcs / 13" Reel.

(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

●◎◇◆□■△△△ / 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)

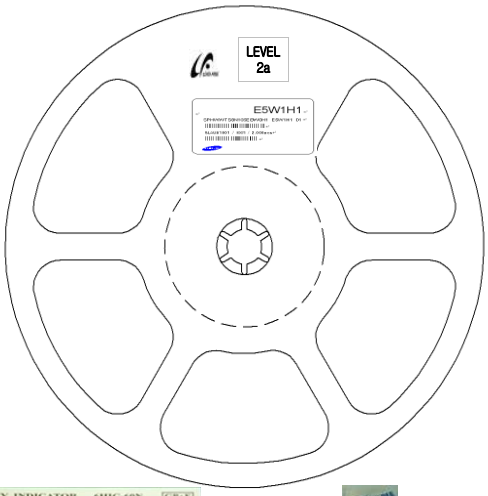
12. Reel Packing Structure

1) Reel

E5W1H1

SPHWWTS8N105EBW0H3 E5W1H1 01

SLAU91001 / I001 / 2,000pcs



2) Aluminum Bag

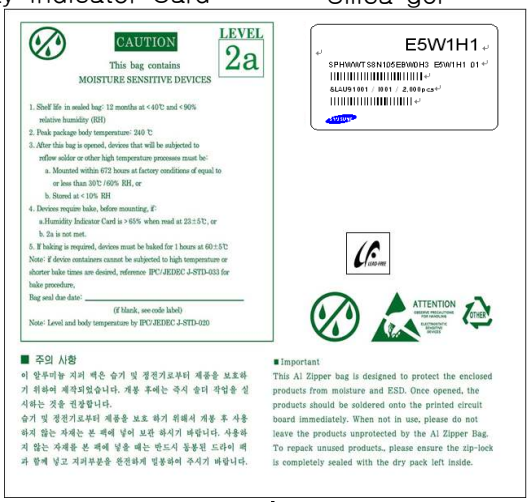
E5W1H1

SPHWWTS8N105EBW0H3 E5W1H1 01

SLAU91001 / I001 / 2,000pcs

Humidity Indicator Card

Silica gel



3) Inner Box

Material : Paper(SW3B(B))

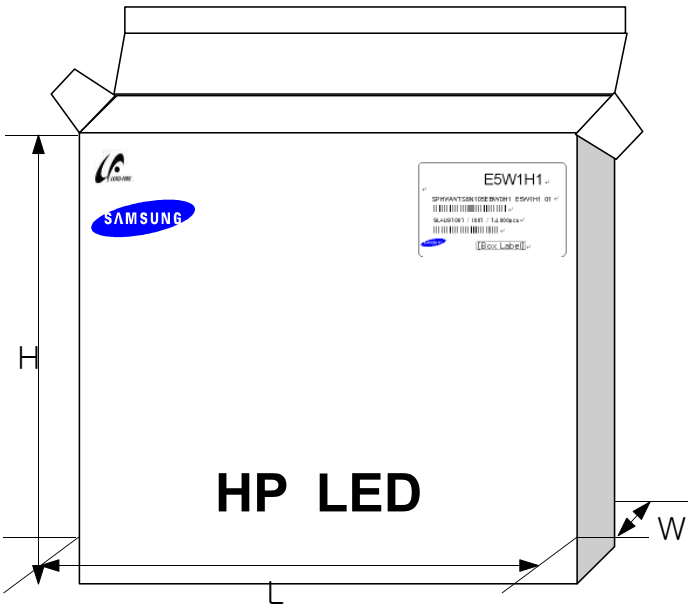
TYPE	SIZE(㎜)		
	L	W	H
13inch	335	45	335

E5W1H1

SPHWWTS8N105EBW0H3 E5W1H1 01

SLAU91001 / I001 / 2,000pcs

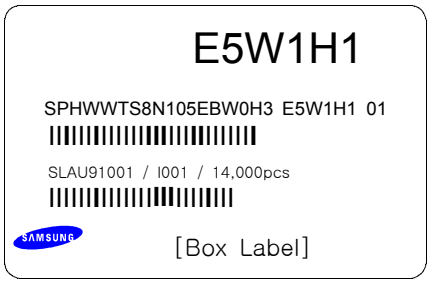
[Box Label]



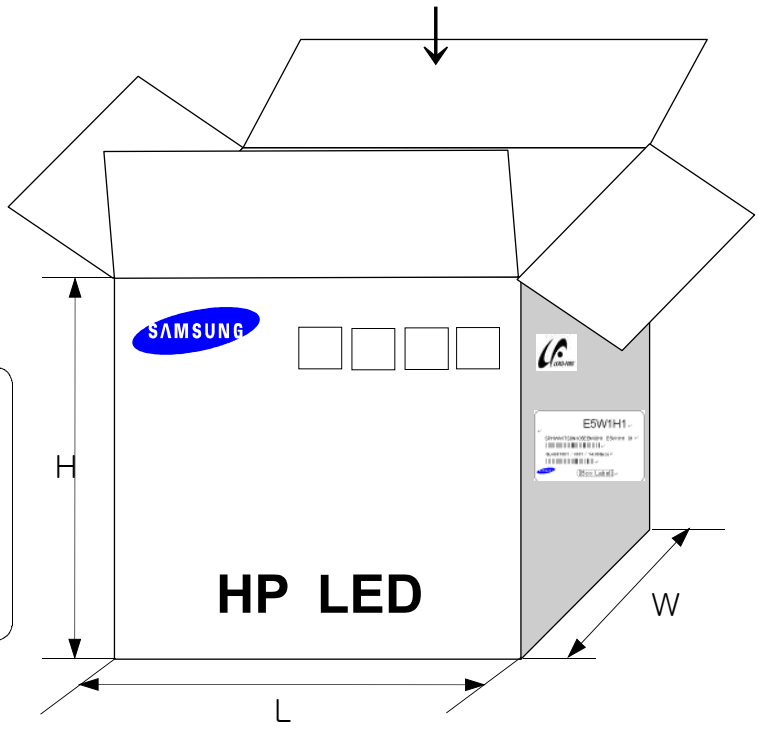
4) Carton Box

Material : Paper(SW3B(B))

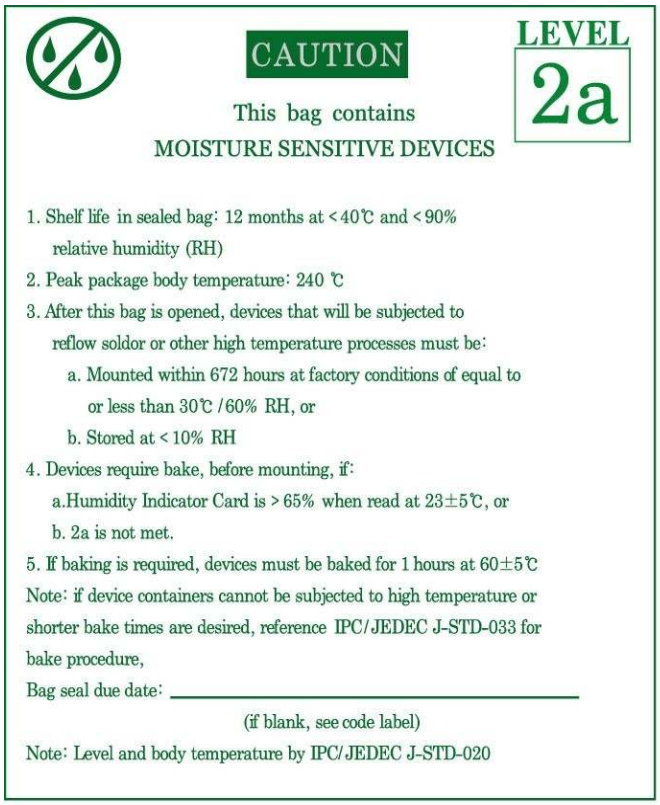
TYPE	SIZE(㎜)		
	L	W	H
13inch	350	350	350

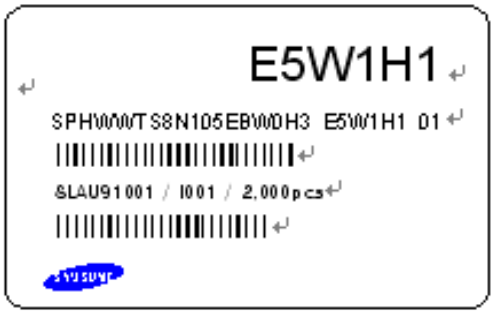


[Box Label]



13. Aluminum Vinyl Bag





■ 주의 사항

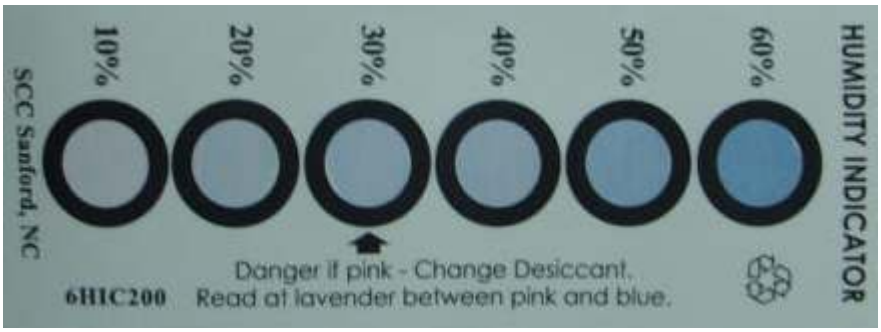
이 알루미늄 지퍼 백은 습기 및 정전기로부터 제품을 보호하기 위하여 제작되었습니다. 개봉 후에는 즉시 솔더 작업을 실시하는 것을 권장합니다.

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) 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.

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 $\geq$ 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.

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.	: Sunnix8 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

SGS Testing Korea Co.,Ltd.
322, The O valley, 555-9, Hogye-dong, Dongan-gu, Anyang-si, Gyeonggi-do, Korea 431-080
t +82 (0)31 4808 000 f +82 (0)31 4808 059 http://www.sgslab.co.kr ,www.kr.sgs.com/greenlab

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	0.5	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 CrVI coating
Positive = Presence of CrVI 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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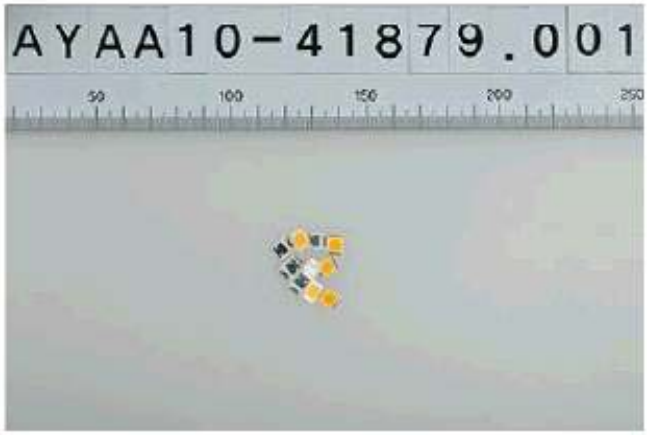
Sample No. : AYAA10-41879.001
Sample Description : LED PKG
Item No./Part No. : Sunnix8 PKG(White)

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)
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Revision History
(Model : SPHWWTS8N105EBW0H3)

Date	Revision History	Author	
		Drawn	Approved
2011.01.06	Initial Edition	H.J. Park	K.T. Kim