



Specification SWBA07

CUSTOMER

Checked by	Approved by

SUPPLIER

Drawn by	Approved by

Contents

1. Description
2. Absolute Maximum Ratings
3. Electro-Optical Characteristics
4. Characteristic Diagram
5. Reliability Test
6. Rank of SWBA07
7. Material
8. Outline Dimension
9. Packing
10. Soldering
11. Precaution for use



Revision History

Revision No.	Date	Page.	Summary
1.00	May. 12 2010		The institution of New Spec

SWBA07

1. Description

This surface-mount LED comes in PLCC standard package dimension. It has a substrate made up of a molded plastic reflector sitting on top of a bent lead frame. The die is attached within the reflector cavity and the cavity is encapsulated by silicone.



SWBA07

Features

- Package: SMT Solderability
- Dimension: 3.8 × 1.05 × 0.6 (mm)
- Low Thermal Resistance
- RoHS Compliant, Lead Free
- Suitable for Small Applications
- High ESD Voltage
- Own Patent Reserved

Applications

- Flat Backlighting (LCD, Display)
- Mobile Phone, Camera, PDA, Notebook
- Coupling into Light Guide Panel
- AV Systems

2. Absolute maximum ratings

(T_a = 25°C)

Parameter	Symbol	Value	Unit
Power Dissipation	P_d^{*1}	120	Mw
Forward Current	I_F	30	mA
Peak Forward Current	I_{FM}^{*2}	100	mA
Reverse Voltage	V_R	5	V
Operating Temperature	T_{opr}	-30 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
Junction Temperature	Tj_{max}	125	°C

*1 Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.

*2 I_{FM} was measured at $T_W \leq 0.1$ msec of pulse width and $D \leq 1/10$ of duty ratio.

3. Electro-Optical characteristics

(T_a = 25°C)

Parameter		Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	Rank Z28	V_F	$I_F = 20\text{mA}$	2.8	-	3.0	V
	Rank Z30			3.0	-	3.2	
	Rank Z32			3.2	-	3.4	
	Rank z30			3.0	-	3.4	
Reverse Current		I_R	$V_R = 5\text{V}$	-	-	50	μA
Luminous Intensity ^{*1}	Rank S14H	I_V	$I_F = 20\text{mA}$	1400	-	1500	mcd
	Rank S15H			1500	-	1600	
	Rank S16H			1600	-	1700	
	Rank S17H			1700	-	1800	
	Rank S18H			1800	-	1900	
	Rank S19H			1900	-	2000	
	Rank S20H			2000	-	2100	
	Rank S21H			2100	-	2200	
	Rank S22H			2200	-	2300	
	Rank S23H			2300	-	2400	
Viewing Angle ^{*2}		$2\theta_{1/2}$	$I_F = 20\text{mA}$	120			deg.

*1 Luminous intensity I_V is measured at the peak of the spatial pattern which may not be aligned with the mechanical axis of the LED package.

Luminous Intensity Measurement allowance is ±10%.

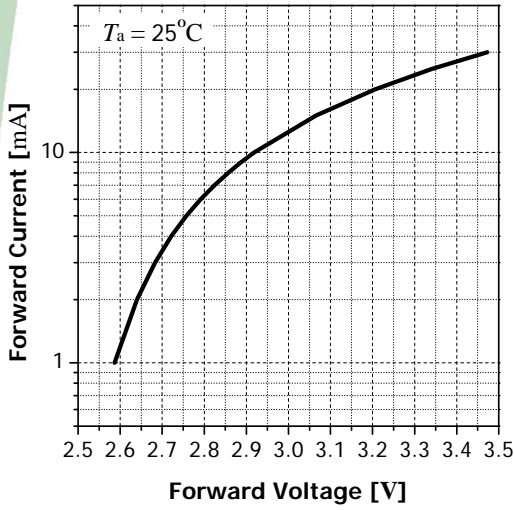
*2 $\theta_{1/2}$ is the off-axis where the luminous intensity is 1/2 of the peak intensity.

* Note : All products confirm to the listed minimum and maximum specifications for electric and optical characteristics, when operated at 20mA within the maximum ratings shown above.

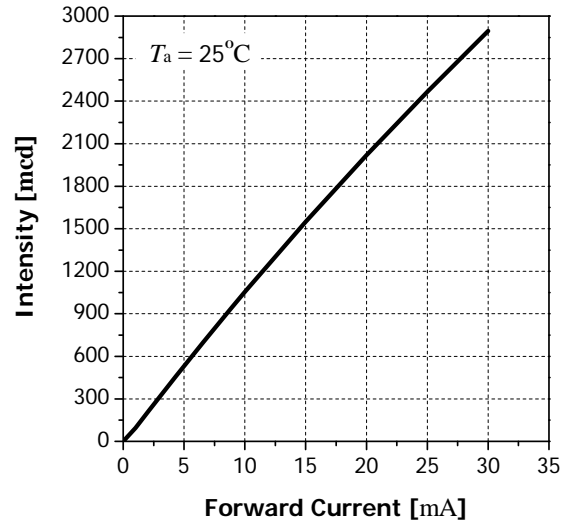
* All measurements were made under the standardized environment of Seoul Semiconductor.

4. Characteristic Diagram

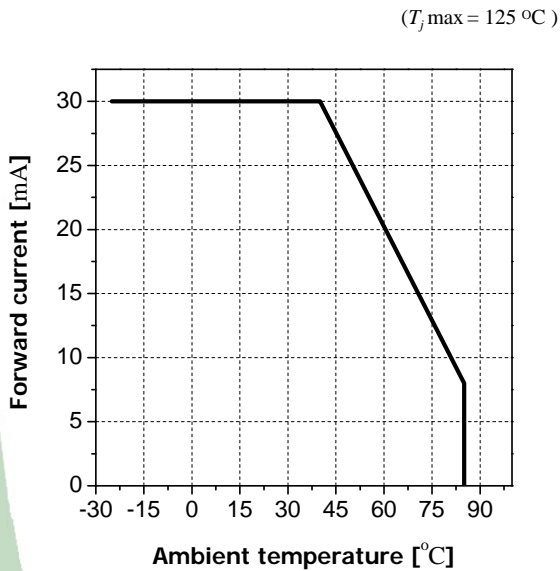
Forward Current vs. Forward Voltage



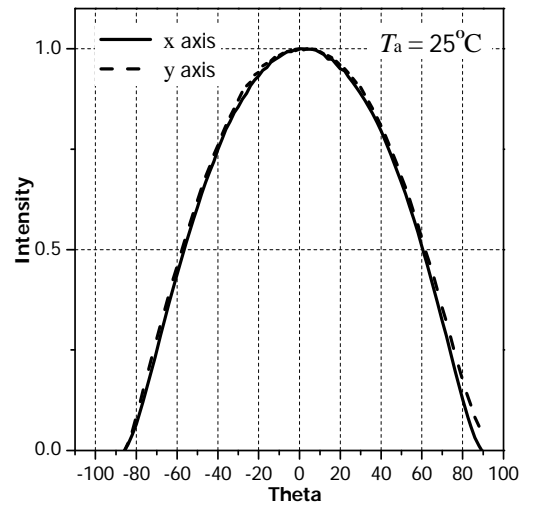
Intensity vs. Forward Current



Forward Current vs. Ambient Temperature

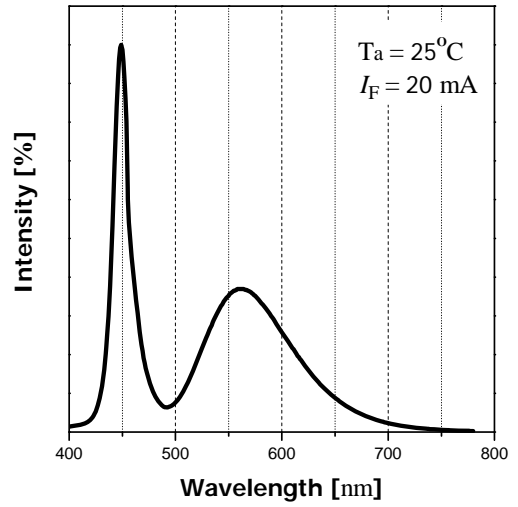
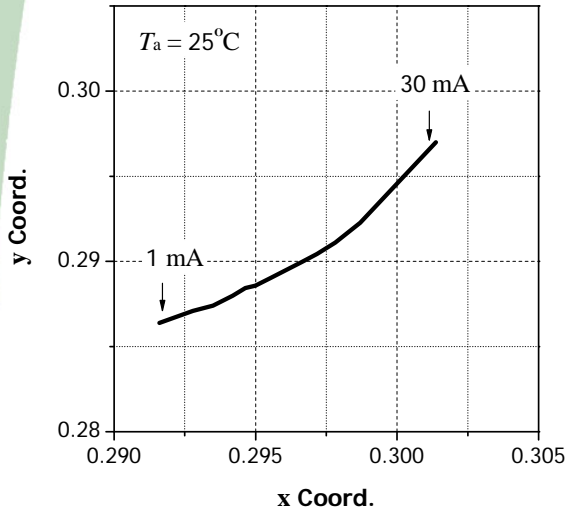


Radiation Diagram



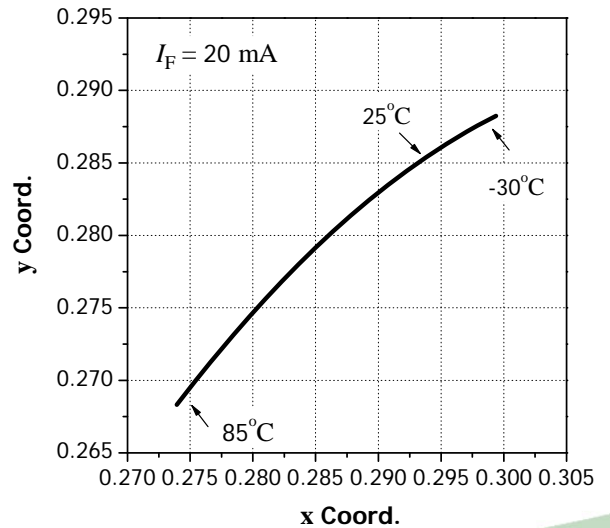
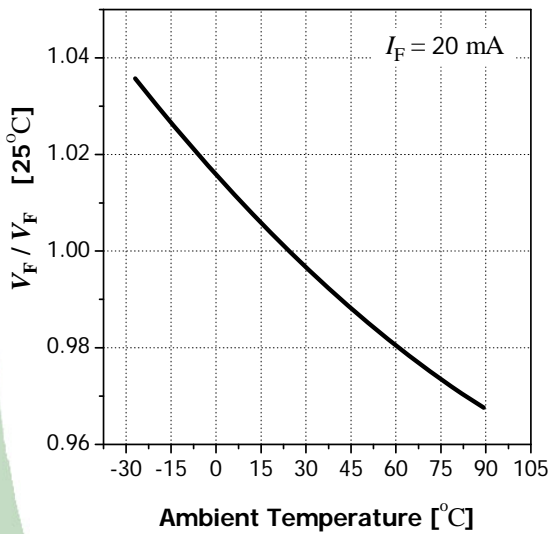
Color Coordinate vs. Forward Current

Spectrum

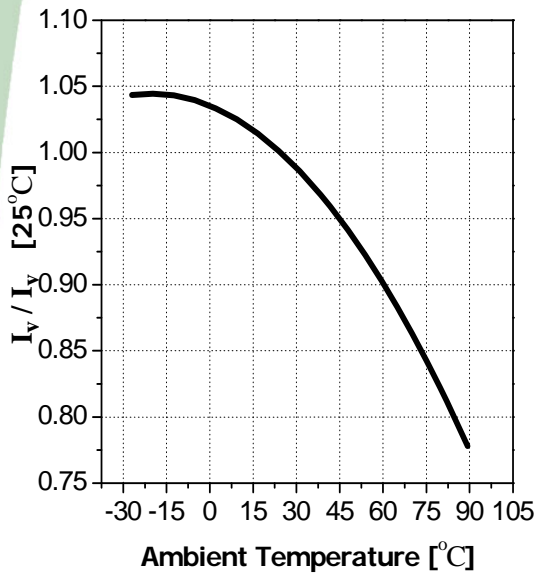


Forward Voltage vs. Ambient Temperature

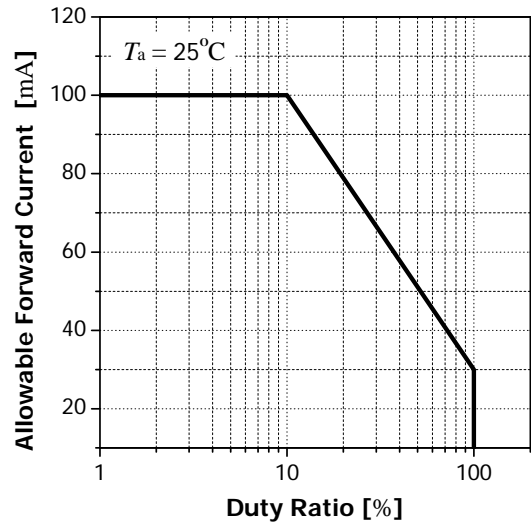
Color Coordinate vs. Ambient Temperature



Relative Luminosity vs. Ambient Temperature



Allowable Forward Current vs. Duty Ratio



5. Reliability

1) TEST ITEMS AND RESULTS

TEST ITEM	Test conditions	Note	Number of Damaged	Reference
Life Test 1	$T_a = 25^\circ\text{C}, I_F = 20\text{mA}$	1,000 hr	0/20	JEITA ED-4701 100 101
Life Test 2	$T_a = 25^\circ\text{C}, I_F = 30\text{mA}$	500 hr	0/20	JEITA ED-4701 100 101
Thermal Shock	$T_a = -30^\circ\text{C}$ (30MIN) ~ 85°C (30MIN)	20 Cycle	0/50	JEITA ED-4701 300 307
High Temperature Life Test	$T_a = 85^\circ\text{C}, I_F = 5\text{mA}$	1,000 hr	0/20	-
Low Temperature Life Test	$T_a = -30^\circ\text{C}, I_F = 20\text{mA}$	1,000 hr	0/20	-
High Temperature Storage	$T_a = 100^\circ\text{C}$	1,000 hr	0/20	JEITA ED-4701 200 201
Low Temperature Storage	$T_a = -40^\circ\text{C}$	1,000 hr	0/20	JEITA ED-4701 200 202
High Humidity Heat Life Test	$T_a = 60^\circ\text{C}, \text{RH} = 90\%, I_F = 20\text{mA}$	500 hr	0/20	JEITA ED-4701 100 102
Humidity Heat Load	$T_a = 60^\circ\text{C}, \text{RH} = 90\%$	1,000 hr	0/20	JEITA ED-4701 100 103
Resistance to Soldering Heat	$T_{sld} = 260^\circ\text{C}, 10 \text{ sec}$ pre treatment ; $30^\circ\text{C}, 70\%, 168\text{hrs}$	2 times	0/50	JEITA ED-4701 301 302
Solder ability (Reflow Soldering)	$T_{sld} = 215 \pm 5^\circ\text{C}, 3 \text{ sec}$ (Lead Solder)	1 times over 95%	0/50	JEITA ED-4701 303
Temperature Cycle	$-40^\circ\text{C} \sim 25^\circ\text{C} \sim 100^\circ\text{C} \sim 25^\circ\text{C}$ (30min) (5min) (30min) (5min)	100 cycle	0/50	JEITA ED-4701 100 105
Moisture Resistance Cycle	$25^\circ\text{C} \sim 65^\circ\text{C} \sim -10^\circ\text{C}$ TH = 90%, 24 hr / 1 cycle	10 cycle	0/50	JEITA ED-4701 200 203

2) CRITERIA FOR JUDGING THE DAMAGE

Item	Symbol	Test Condition	Criteria for Judgment	
			Min.	Max.
Forward Voltage	V_F	$I_F = 20 \text{ mA}$	-	U.S.L \times 1.2
Reverse Current	I_R	$V_R = 5 \text{ V}$	-	U.S.L \times 2.0
Luminous Intensity	I_V	$I_F = 20 \text{ mA}$	L.S.L \times 0.5	-

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

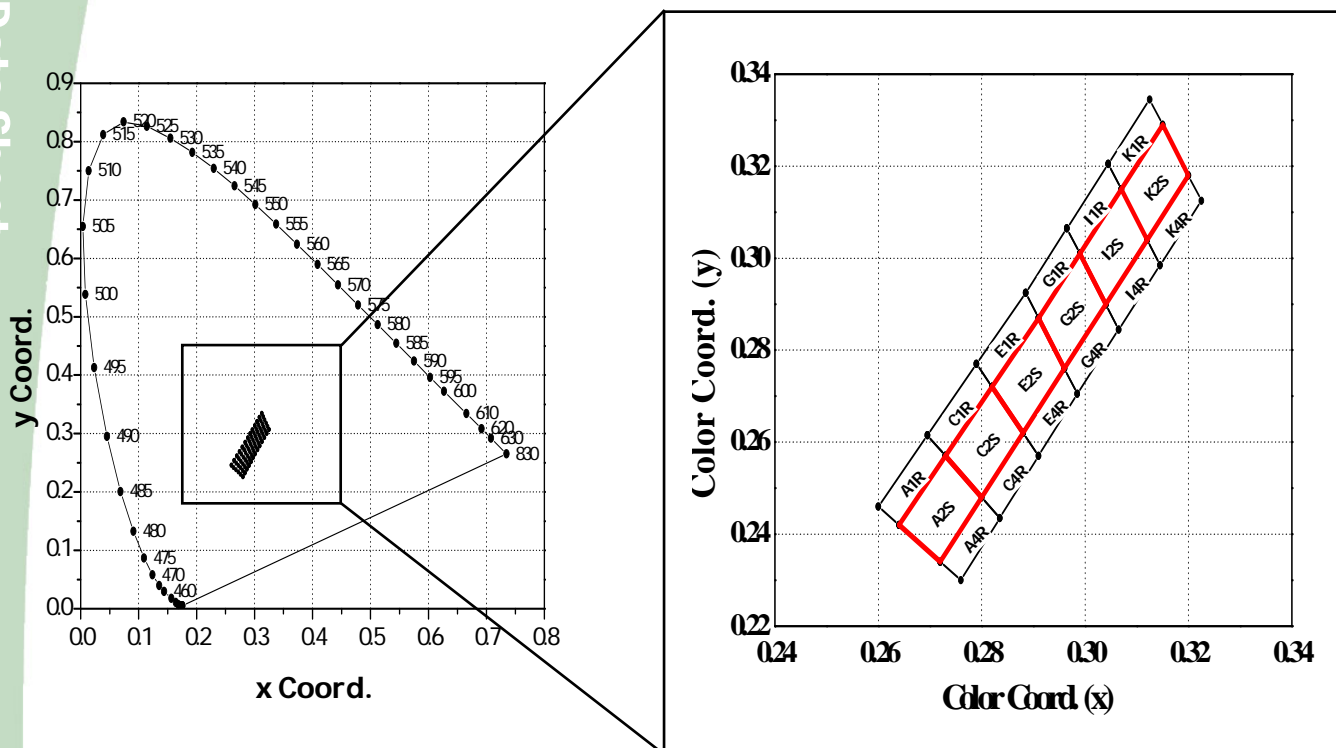
Rev 2.00

May, 2010

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서식번호 : SSC-QP-7-07-24 (Rev.00)

6. Rank of SWBA07



1) Color Rank

($I_F = 20 \text{ mA}$, $T_a = 25^\circ\text{C}$)

A2S		C2S		E2S	
x	y	x	y	x	y
0.264	0.242	0.273	0.257	0.282	0.272
0.273	0.257	0.282	0.272	0.291	0.287
0.280	0.248	0.288	0.262	0.296	0.276
0.272	0.234	0.280	0.248	0.288	0.262
G2S		I2S		K2S	
x	y	x	y	x	y
0.291	0.287	0.299	0.301	0.307	0.315
0.299	0.301	0.307	0.315	0.315	0.329
0.304	0.290	0.312	0.304	0.320	0.318
0.296	0.276	0.304	0.290	0.312	0.304

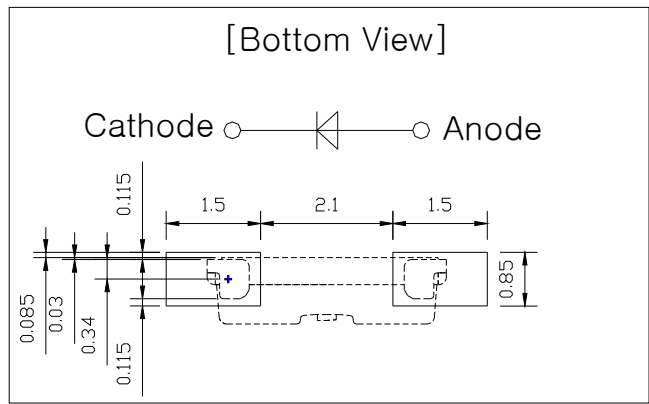
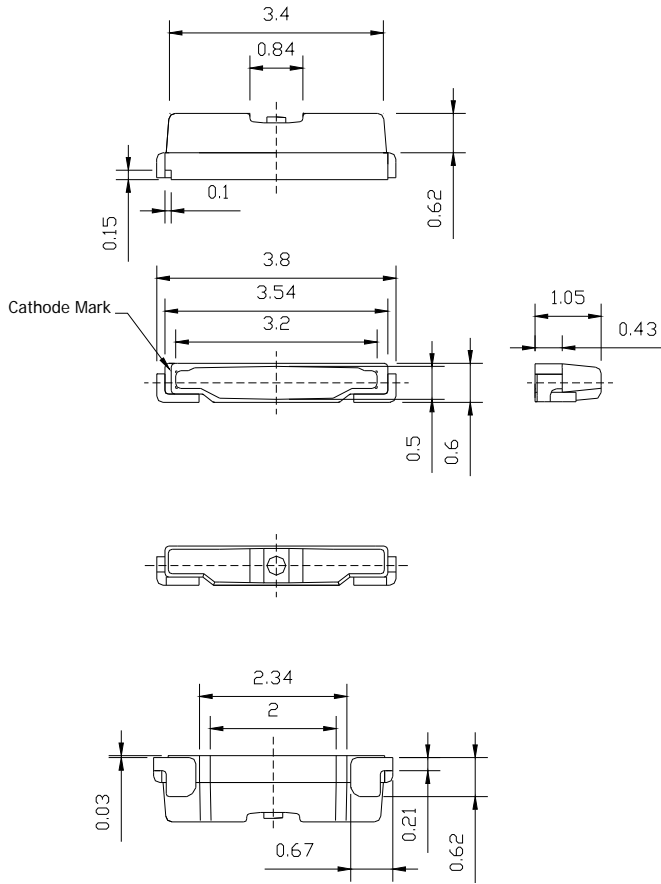
* Measurement Uncertainty of the Color Coordinates is ± 0.01

7. Material

Item	Reflector	Wire	Encapsulate	Chip
Material	PPA	Gold	Silicone	GaN

8. Outline Dimension

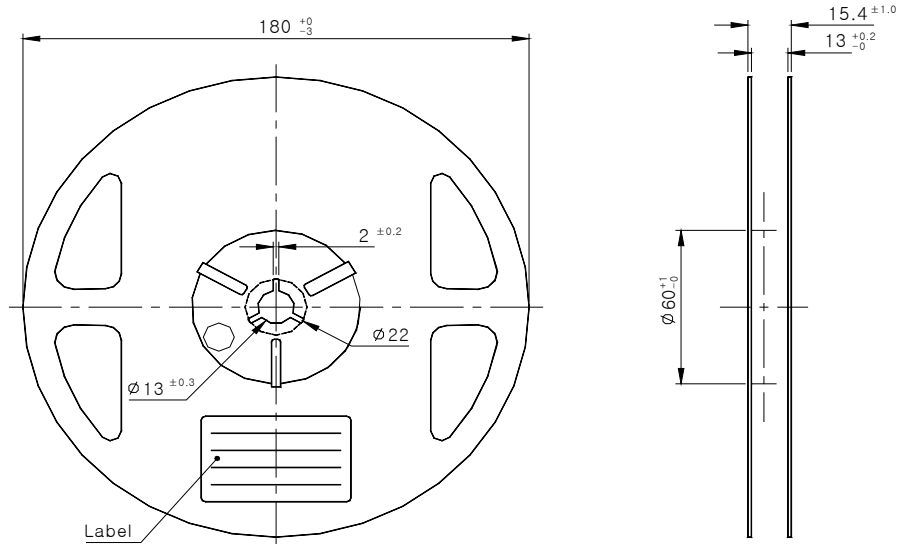
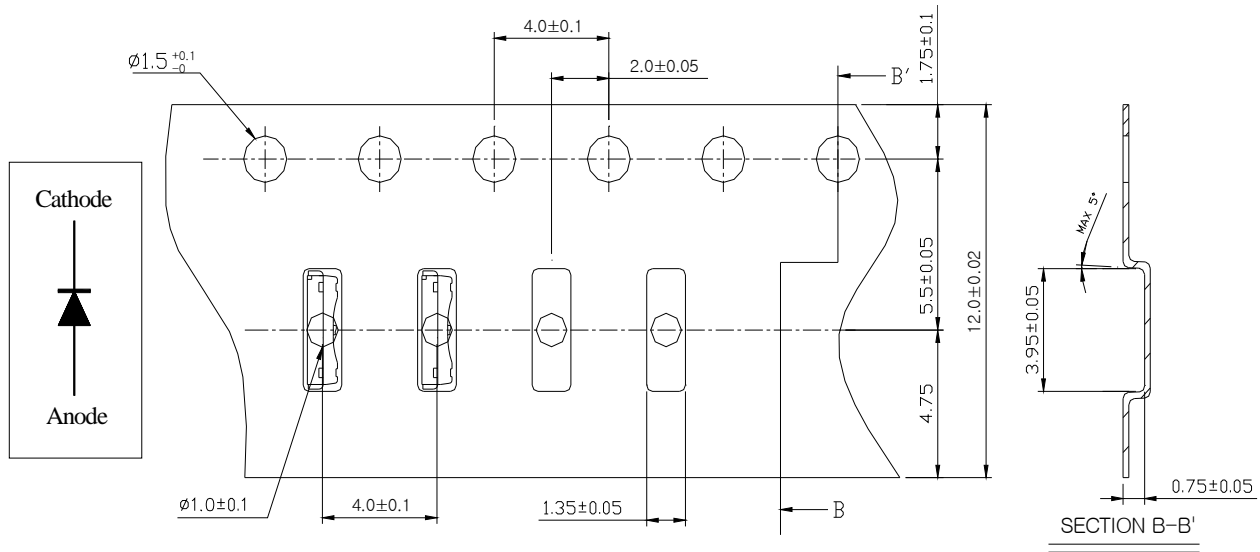
(Tolerance: ± 0.1 , Unit: mm)



<Recommended solder Pattern>

9. packing

1) Reel & Carrier



(Tolerance: ± 0.2 , Unit: mm)

- (1) Quantity : 3500pcs/Reel
- (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 the angle of 10° to the carrier tape
- (4) Package : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package

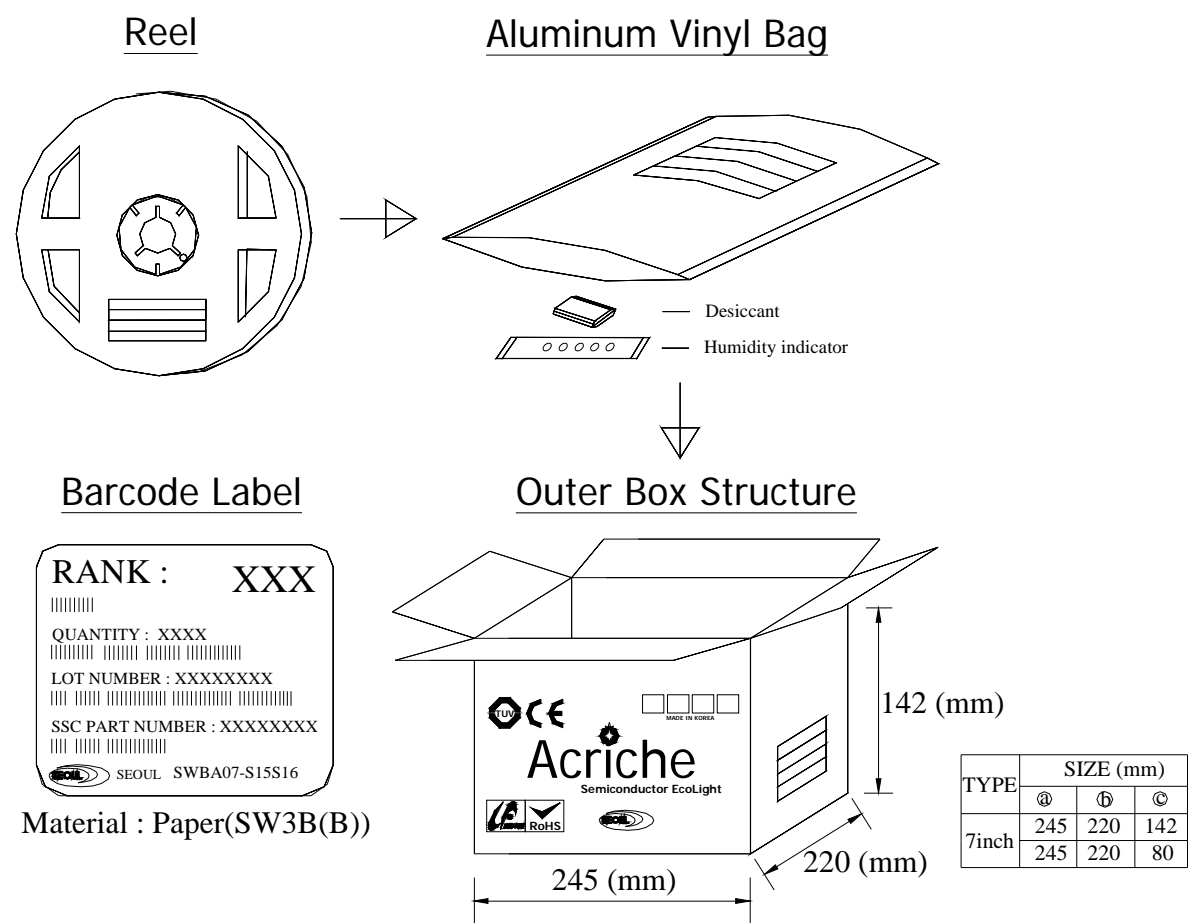
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2) Reel Packing Structure



3) Lot Number

The lot number is composed of the following characters

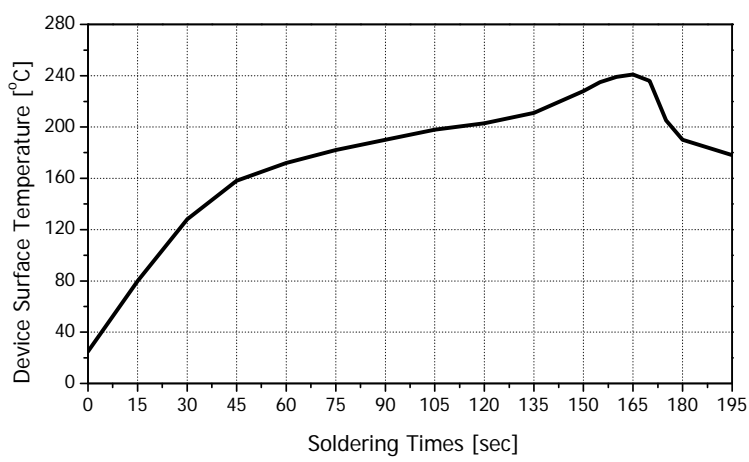
SWBA07 ○□□◎◇◇◇

Symbol	Meaning	Example
○	Year	9 for 2009, 10 for 2010, 11 for 2011....
□□	Month	01 for Jan, 02 for Feb, 12 for Dec.
◎◎	Day	01, 02, 03, 04, 05, 27, 28, 29, 30, 31
◇◇◇	Number	001, 002, 003, 004, 005, 006, 007

10. soldering

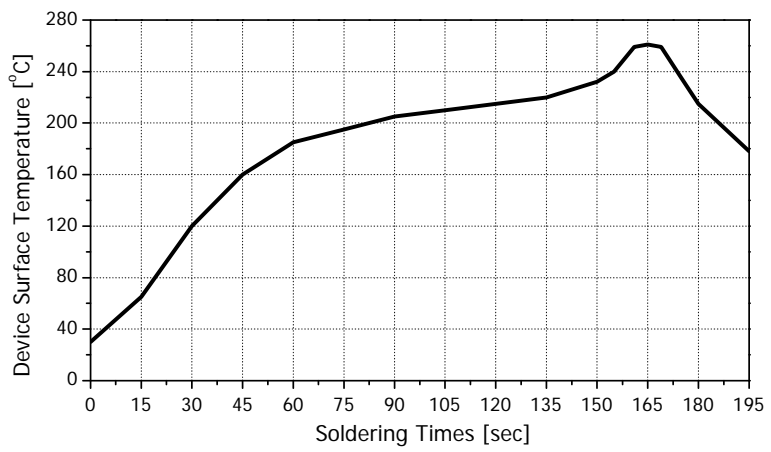
(1) Lead Solder

Preliminary heating to be at maximum 210°C for maximum 2 minutes.
 Soldering heat to be at maximum 240°C for maximum 10 seconds.



(2) Lead-Free Solder

Preliminary heating to be at maximum 220°C for maximum 2 minutes.
 Soldering heat to be at maximum 260°C for maximum 10 seconds.



(3) Hand Soldering conditions

Not more than 5 seconds @MAX 300°C, under Soldering iron.

Note : In case that the soldered products are reused in soldering process, we don't guarantee the products.
 Rev 2.00

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11. precaution for use

(1) Storage conditions

- Keep the product in a dry box or a desiccator with a desiccant in order to prevent moisture absorption.
 - a. Keep it at a temperature in the range from 5°C to 30°C and at a humidity of less than 50% RH.
- In case of being stored for more than 3 months, the product should be sealed with Nitrogen gas.

(2) After opening the package .

- When soldering, this could result in a decrease of the photoelectric effect or light intensity.
 - a. Soldering should be done right after mounting the product.
 - b. Keep the temperature in the range from 5°C to 30°C and the humidity at less than 30%.
- Soldering should be done within 7 days after opening the desiccant package. If the product has been exposed for more than 7 days after opening the package or the indicating color of the desiccator changes, the product must be baked for 10 to 24 hours at $65 \pm 5^\circ\text{C}$.
- An unused and unsealed product should be repacked in a desiccant package and kept sealed in a dry atmosphere.

(3) Precautions for use

- Any external mechanical force or excessive vibration should not be applied to the product during cooling after soldering, and it is preferable to avoid rapid cooling.
- The product should not be mounted on a distorted part of PCB.
- Gloves or wrist bands for ESD(Electric Static Discharge) should be wore in order to prevent ESD and surge damage, and all devices and equipments must be grounded to the earth.

(4) Miscellaneous

- Radiation resistance is not considered.
- When cleaning the product, any kind of fluid such as water, oil and organic solvent must not be used and IPA(Isopropyl Alcohol) must be used.
- When using the product, operating current should be settled in consideration of the maximum ambient temperature.
- Its appearance or specification for improvement is subject to change without notice.