Technical Data Sheet

SEOUL SEMICONDUCTOR

SPECIFICATION
[STWRX2S1E]

Rev. 00

September. 2012

서식번호 : SSC-QP-7-07-18 (Rev.00)

Technical Data Sheet

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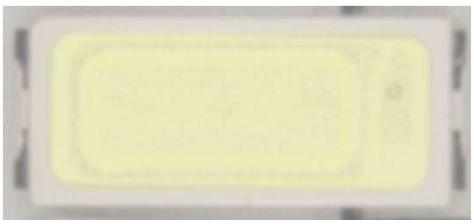

1. Description

This surface-mount LED comes in 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.

The package design coupled with careful selection of component materials allow these products to perform with high reliability.

Features

- 7.0mm x 3.0mm x 0.85mm
- White colored SMT package
- Suitable for all SMT assembly and soldering methods
- Pb-Free Reflow soldering application
- RoHS compliant

Applications

- White Back-light unit
- Electric Signs and Signals
- Interior automotive
- Office Automation, Electrical Appliances, Industrial Equipment

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2. Absolute Maximum Ratings*1

(T_a=25 °C)

Parameter	Symbol	Value	Unit
Power Dissipation	P_d	1870	mW
DC Forward Current	I_F	250	mA
Peak Forward Current	I_{FM} *2	550	mA
Operating Temperature	T_{opr}	-30 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +100	°C
ESD Sensitivity	-	5kV	HBM

*1 Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product.
*2 1/10 Duty Cycle @ 1kHz

3. Electro-optical Characteristics

(T_a=25 °C)

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage*1	V_F	I_F =150mA	6.0	6.5	7.0	V
Luminous Intensity*2	I_V	I_F =150mA	-	30	-	cd
Luminous Flux	Φ	I_F =150mA	-	90	-	lm
CIE x	-	I_F =150mA	-	0.255	-	-
CIE y	-	I_F =150mA	-	0.223	-	-

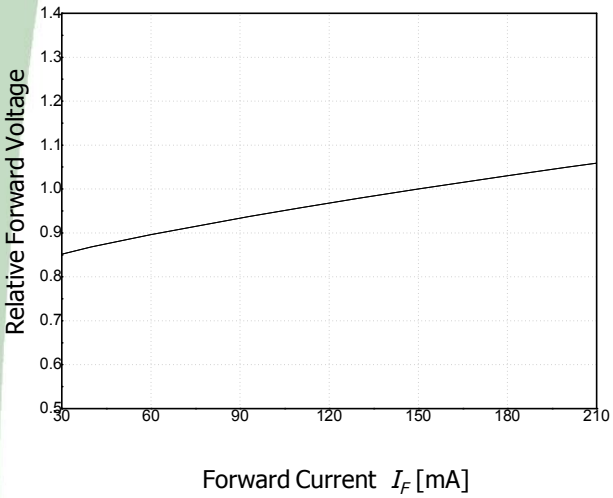
*1 Forward voltage measurement allowance is ±0.1V
*2 The luminous intensity IV was measured at the peak of the spatial pattern which may not be aligned with the mechanical axis of the LED package. Luminous intensity measurement allowance is ±7%

[Note] All measurements were made under the standardized environment of SSC.

4. Electro-optical characteristics graph

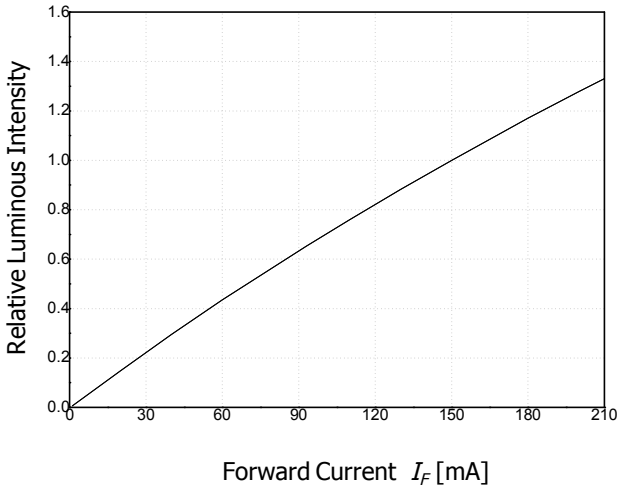
Forward Current vs. Forward Voltage

(T_a=25 ºC)



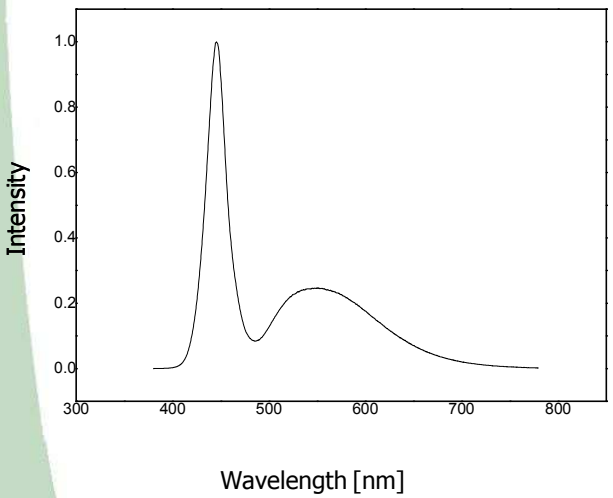
Relative Luminous Intensity vs. Forward Current

(T_a=25 ºC)



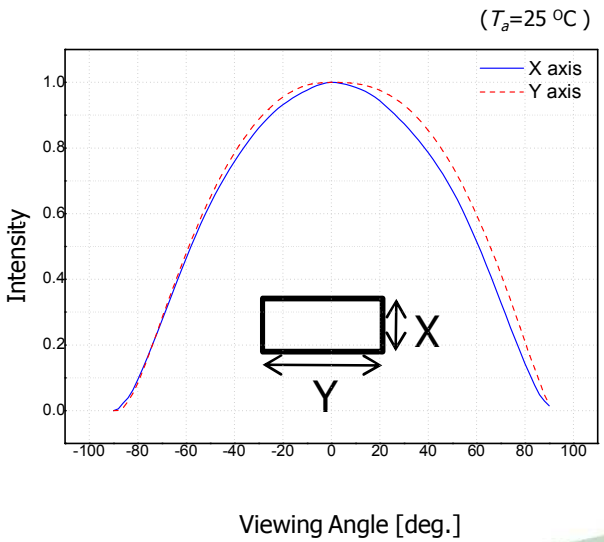
Spectrum

(T_a=25 ºC)



Radiation Diagram

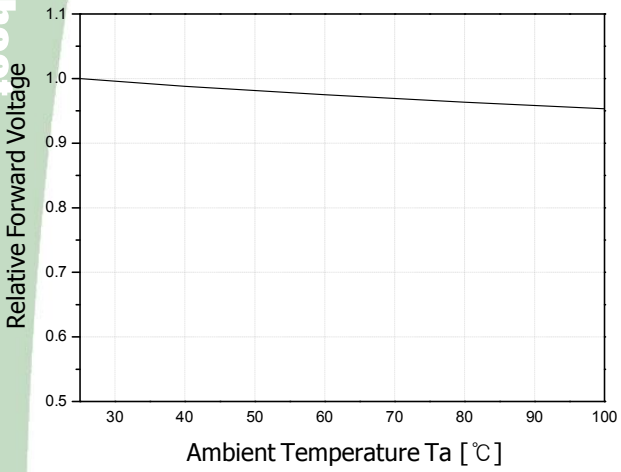
(T_a=25 ºC)



SEOUL SEMICONDUCTOR

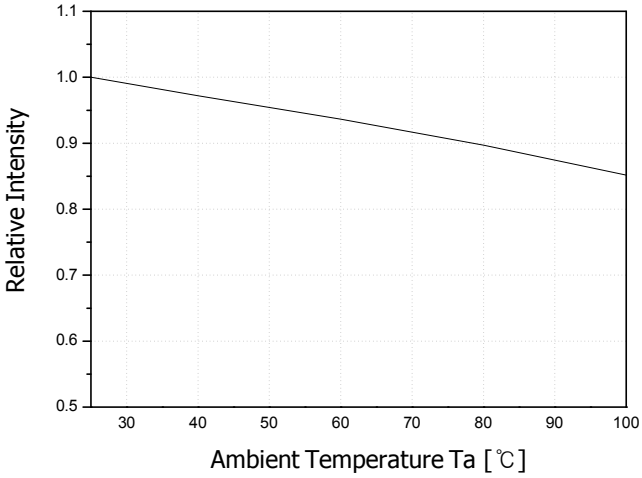
Relative Forward Voltage vs. Temperature

(I_F=150mA)



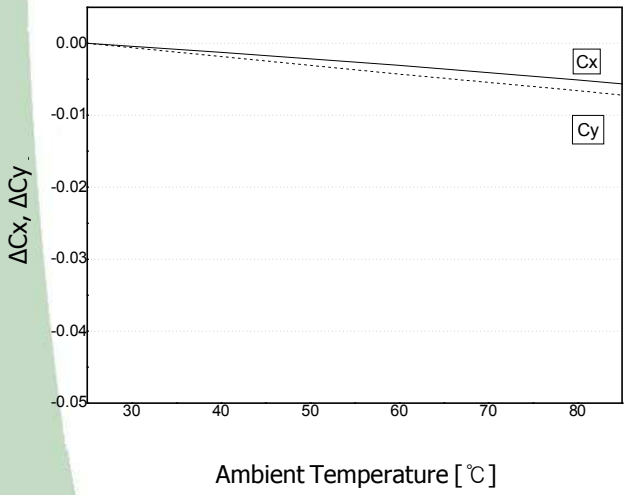
Relative Luminous Intensity vs. Temperature

(I_F=150mA)



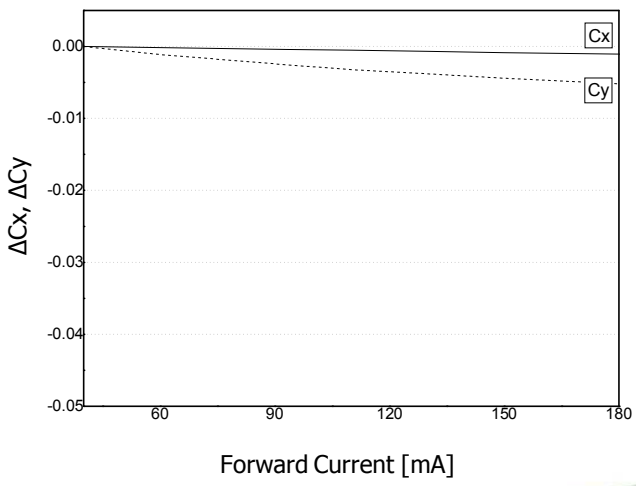
Chromaticity vs. Temperature

(I_F=150mA)



Chromaticity vs. Forward Current

(T_a=25 ºC)



5. Reliability Test

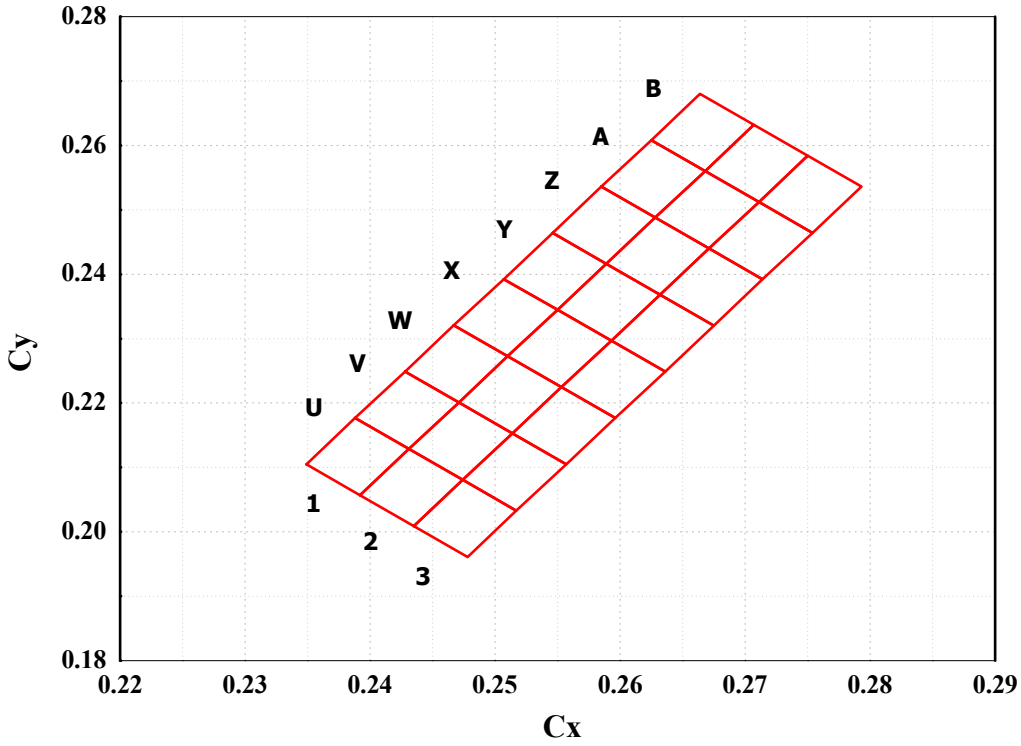
Item	Reference	Test Condition	Duration / Cycle	Number of Damage
Thermal Shock	Internal Reference	T_a =-40°C (30MIN) ~ 100°C (30MIN)	100 Cycle	0/22
Temperature Cycle	EIAJ ED-4701	T_a =-40°C (30MIN) ~ 25°C (5MIN) ~ 100°C (30MIN) ~ 25°C (5MIN)	100 Cycle	0/22
Operating Endurance Test	Internal Reference	T_a =25°C, I_F =150mA	1,000 Hours	0/22
High Temperature / Humidity Life	Internal Reference	T_a =60°C, RH=90%, I_F =150mA	1,000 Hours	0/22
High Temperature Life Test	Internal Reference	T_a =60°C, I_F =150mA	1,000 Hours	0/22

* Criteria for Judging the Damage

Item	Symbol	Condition	Criteria for Judgement	
			MIN	MAX
Forward Voltage	V_F	I_F =150mA	-	USL*1 × 1.1
Luminous Intensity	I_V	I_F =150mA	LSL*2 × 0.7	-

[Note] *1 USL : Upper Specification Level *2 LSL : Lower Specification Level

6. Color & Binning



● COLOR RANK

CIE(x)	x1	y1	x2	y2	CIE(x)	x1	y1	x2	y2
CIE(y)	x3	y3	x4	y4	CIE(y)	x3	y3	x4	y4
U1	0.2349	0.2105	0.2388	0.2177	Y1	0.2507	0.2392	0.2546	0.2464
	0.2431	0.2129	0.2392	0.2057		0.2589	0.2416	0.2550	0.2345
U2	0.2392	0.2057	0.2431	0.2129	Y2	0.2550	0.2345	0.2589	0.2416
	0.2474	0.2081	0.2435	0.2009		0.2632	0.2368	0.2593	0.2297
U3	0.2435	0.2009	0.2474	0.2081	Y3	0.2593	0.2297	0.2632	0.2368
	0.2517	0.2033	0.2478	0.1961		0.2675	0.2320	0.2636	0.2249
V1	0.2388	0.2177	0.2428	0.2249	Z1	0.2546	0.2464	0.2585	0.2536
	0.2471	0.2201	0.2431	0.2129		0.2628	0.2488	0.2589	0.2416
V2	0.2431	0.2129	0.2471	0.2201	Z2	0.2589	0.2416	0.2628	0.2488
	0.2514	0.2153	0.2474	0.2081		0.2671	0.2440	0.2632	0.2368
V3	0.2474	0.2081	0.2514	0.2153	Z3	0.2632	0.2368	0.2671	0.2440
	0.2557	0.2105	0.2517	0.2033		0.2714	0.2392	0.2675	0.2320
W1	0.2428	0.2249	0.2467	0.2321	A1	0.2585	0.2536	0.2625	0.2608
	0.2510	0.2273	0.2471	0.2201		0.2668	0.2560	0.2628	0.2488
W2	0.2471	0.2201	0.2510	0.2273	A2	0.2628	0.2488	0.2668	0.2560
	0.2553	0.2225	0.2514	0.2153		0.2711	0.2512	0.2671	0.2440
W3	0.2514	0.2153	0.2553	0.2225	A3	0.2671	0.2440	0.2711	0.2512
	0.2596	0.2177	0.2557	0.2105		0.2754	0.2464	0.2714	0.2392
X1	0.2467	0.2321	0.2507	0.2392	B1	0.2625	0.2608	0.2664	0.2680
	0.2550	0.2345	0.2510	0.2273		0.2707	0.2632	0.2668	0.2560
X2	0.2510	0.2273	0.2550	0.2345	B2	0.2668	0.2560	0.2707	0.2632
	0.2593	0.2297	0.2553	0.2225		0.2750	0.2584	0.2711	0.2512
X3	0.2553	0.2225	0.2593	0.2297	B3	0.2711	0.2512	0.2750	0.2584
	0.2636	0.2249	0.2596	0.2177		0.2793	0.2536	0.2754	0.2464

• Measurement Uncertainty of the Color Coordinates : ± 0.007

● Bin Code Description

Bin Code		
Luminous Intensity	**CIE**	**Forward Voltage**
M0	**Y2**	**Z64**

Luminous Intensity [cd] @ I_F = 150mA		
Bin Code	**Min.**	**Max.**
J0	26	27
K0	27	28
L0	28	29
M0	29	30
N0	30	31
O0	31	32
P0	32	33
Q0	33	34

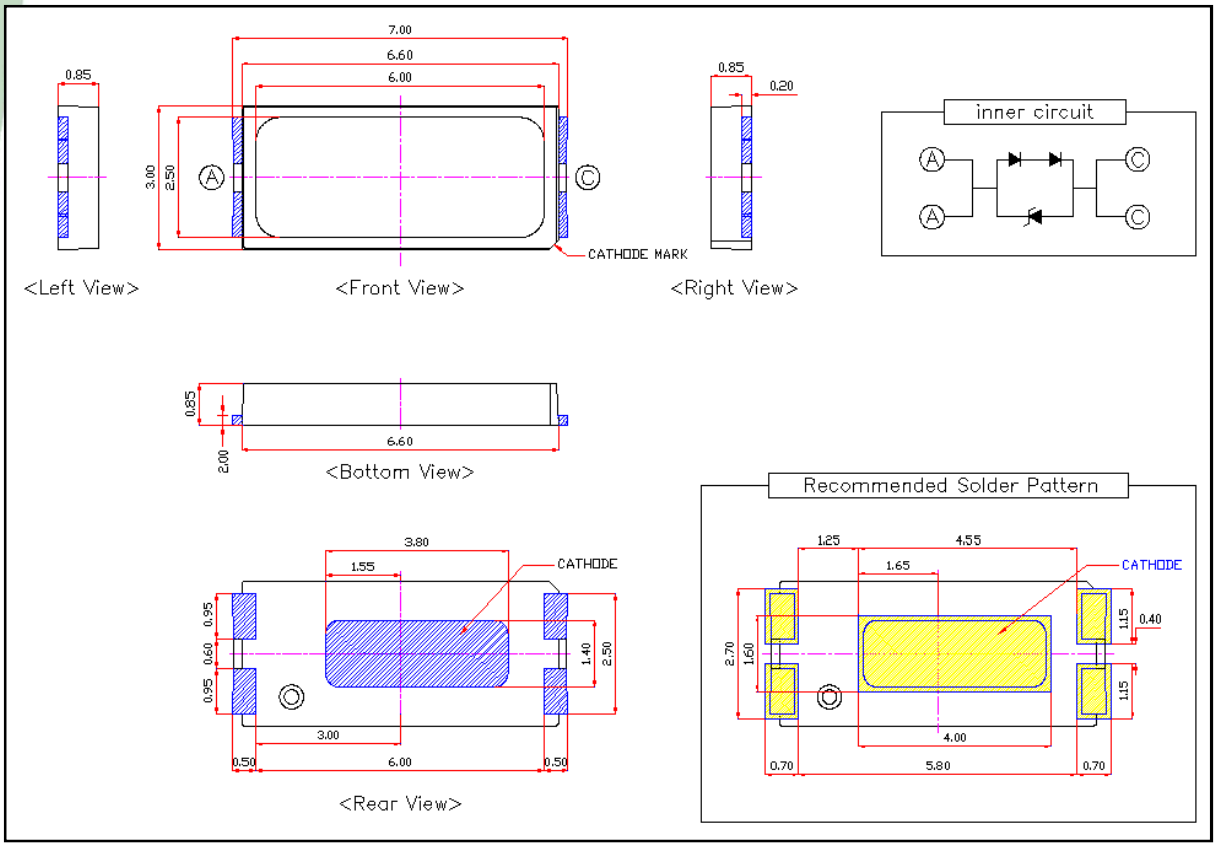
Color Rank @ I_F = 150mA
XX XX : Q2~D3

Forward Voltage [V] @ I_F = 150mA		
Bin Code	**Min.**	**Max.**
Z60	6.0	6.2
Z62	6.2	6.4
Z64	6.4	6.6
Z66	6.6	6.8
Z68	6.8	7.0

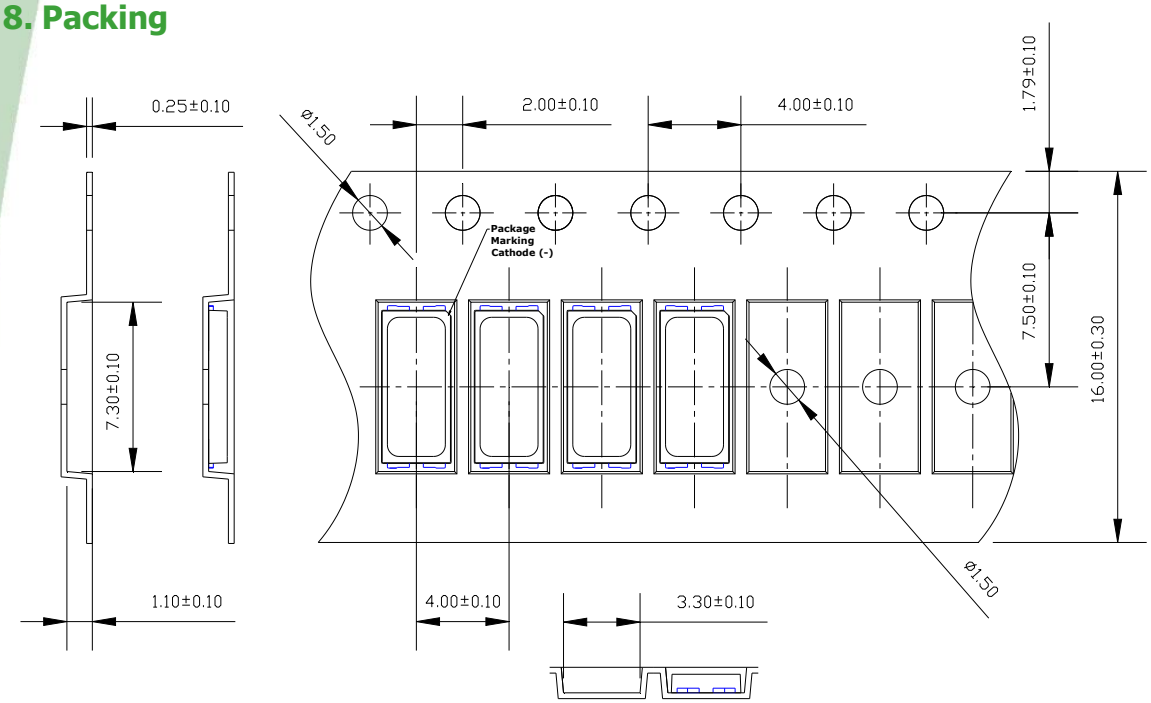
☐ **Available ranks**

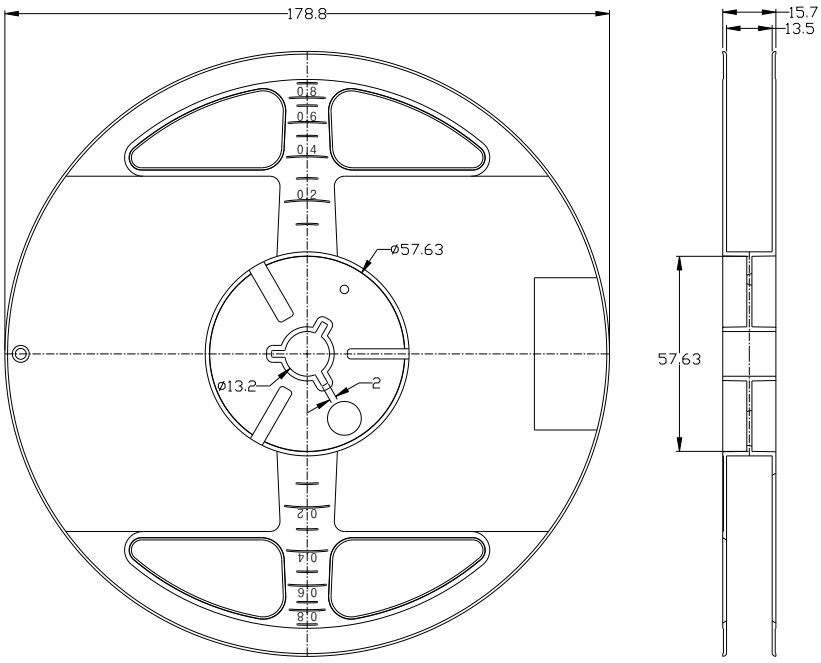
7. Outline Dimension

(Tolerance: ±0.1, Unit: mm)



8. Packing

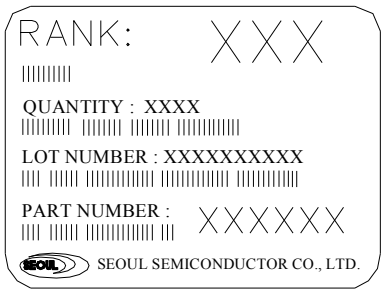


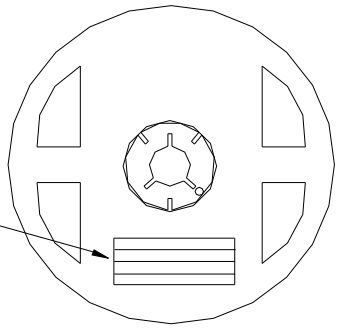


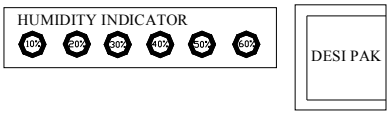
(1) Quantity : 3,500pcs/Reel
(2) Cumulative Tolerance : Cumulative Tolerance/10 pitches to be ±0.2mm
(3) Adhesion Strength of Cover Tape : Adhesion strength to be 0.1-0.7N when the cover tape is turned off from the carrier tape at the angle of 10º to the carrier tape
(4) Package : P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package

● Reel Packing Structure

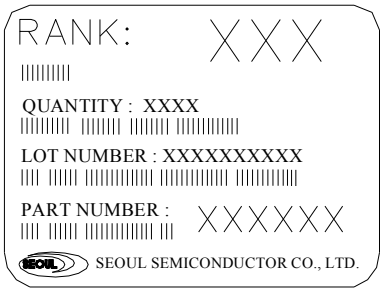
Reel

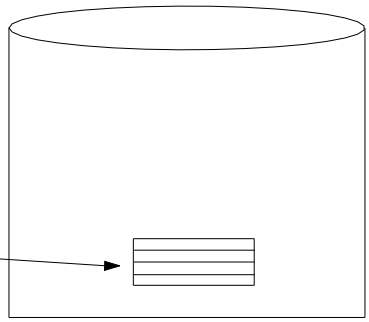






Aluminum Vinyl Bag



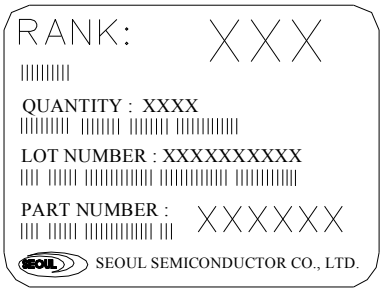


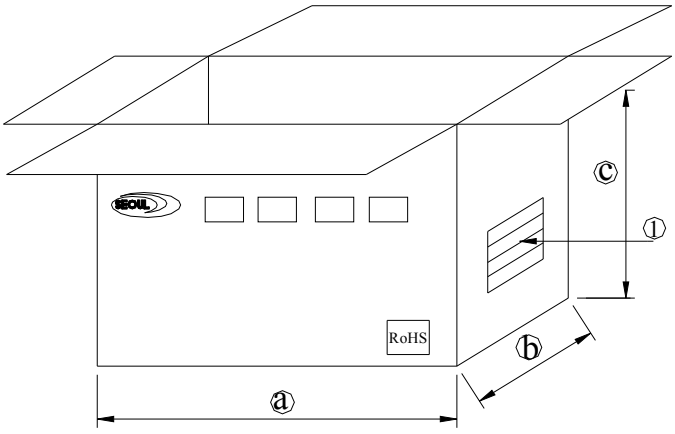
Outer Box Structure

Material : Paper(SW3B(B))

TYPE	SIZE (mm)		
	ⓐ	ⓑ	ⓒ
7inch	245	220	142

① SIDE

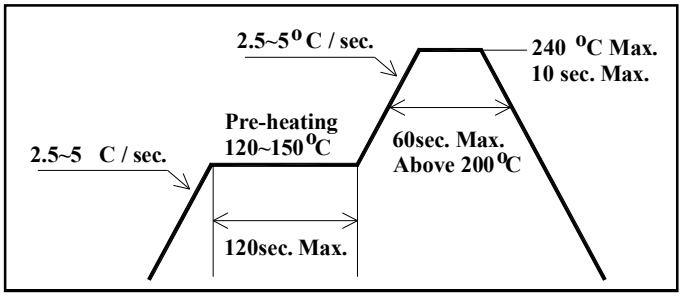




9. Soldering

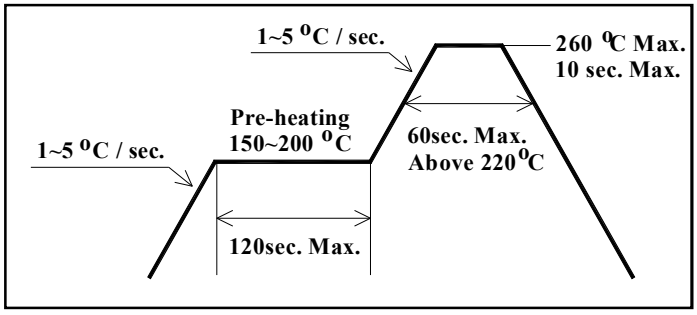
(1) Lead Solder

Lead Solder	
Pre-heat	120~150℃
Pre-heat time	120 sec. Max.
Peak-Temperature	240℃ Max.
Soldering time Condition	10 sec. Max.



(2) Lead-Free Solder

Lead Free Solder	
Pre-heat	150~200℃
Pre-heat time	120 sec. Max.
Peak-Temperature	260℃ Max.
Soldering time Condition	10 sec. Max.



(3) Hand Soldering conditions
Do not exceed 3 seconds at maximum 350°C under soldering iron.

(4) The encapsulated material of the LEDs is silicone.
Precautions should be taken to avoid the strong pressure on the encapsulated part.
So when using the chip mounter, the picking up nozzle that does not affect the silicone resign should be used.

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

10. 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.
- The product should be kept within a year.

(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 60%.
- 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 at a temperature between 65 ± 5°C for less than 24 hours.
- An unused and unsealed product should be repacked in a desiccant package and kept sealed in a dry atmosphere.
- Stored at a humidity of less than 10% RH.

(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.