

\*Customer:

# SPECIFICATION

<b>ITEM</b>	<b>TOP LED DEVICE</b>
<b>MODEL</b>	<b>SSC-KWT722</b>
<b>PART NO.</b>	<b>REV01</b>

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## CUSTOMER

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## 1. Features

- White colored SMT package.
- Material : InGaN/SiC
- Suitable for all SMT assembly methods ; Suitable for all soldering methods

## 2. Application

- Electric application
- Lightings

## 3. Absolute Maximum Ratings <sup>\*1</sup>

( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Value	Unit
Power Dissipation	$P_d$	350	mW
Forward Current	$I_F$	90	mA
Peak Forward Current	$I_{FM}^{*2}$	270	mA
Reverse Voltage	$V_R$	5	V
Operating Temperature	$T_{opr}$	-30 ~ +85	$^{\circ}\text{C}$
Storage Temperature	$T_{stg}$	-40 ~ +100	$^{\circ}\text{C}$

\*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  $T_w \leq 0.1\text{msec}$  of pulse width and  $D \leq 1/10$  of duty ratio.

## 4. Electro-Optical Characteristics

( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage (per die)	$V_F$	$I_F = 20\text{ mA}$	2.9		3.6	V
Reverse Current (per die)	$I_R$	$V_R = 5\text{V}$	-	-	50	$\mu\text{A}$
Luminous Intensity <sup>*1</sup>	$I_V$	$I_F = 60\text{ mA}$	3	-	6	cd
Viewing Angle <sup>*2</sup>	$2\theta_{1/2}$	$I_F = 60\text{ mA}$		120		deg.
Color Temperature		$I_F = 60\text{ mA}$		7000		K
Chromaticity Coordinates	$x$	$I_F = 60\text{ mA}$		0.31		
	$y$	$I_F = 60\text{ mA}$		0.31		-

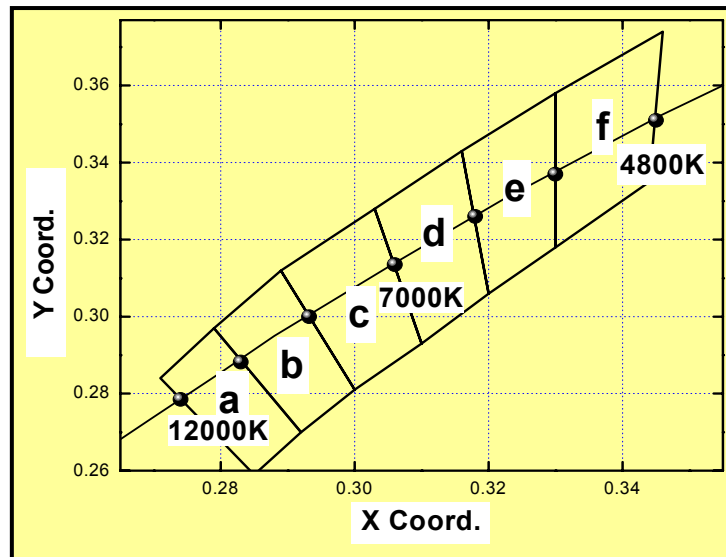
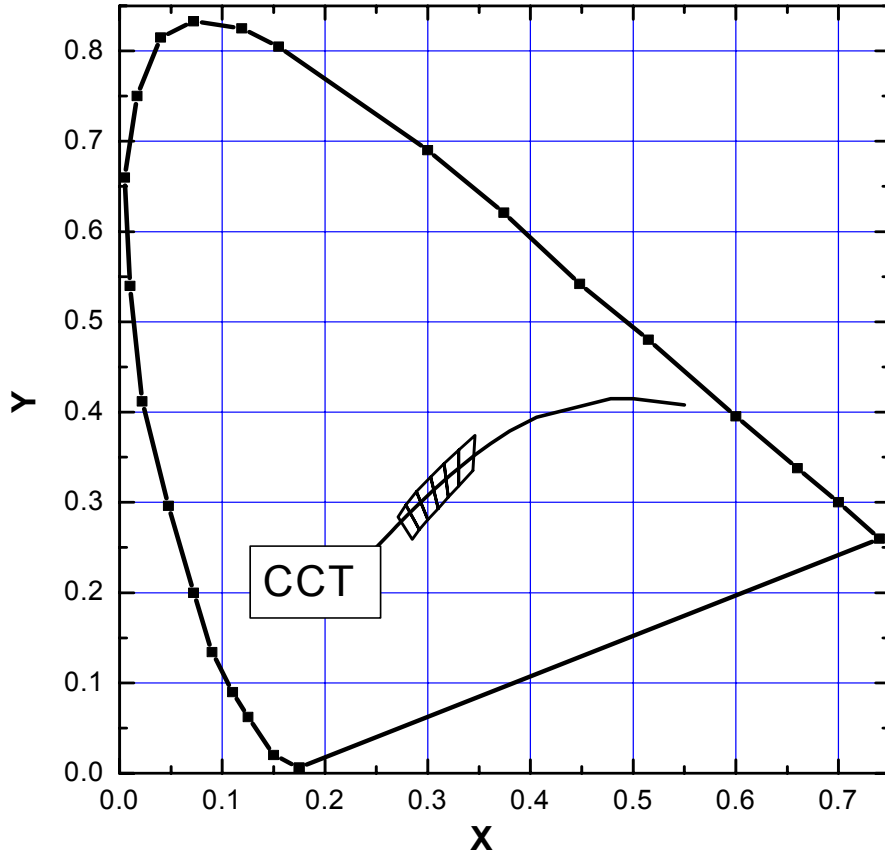
\*1 The luminous intensity  $I_V$  is measured at the peak of the spatial pattern which may not be aligned with the mechanical axis of the LED package. Luminous Intensity Measurement allowance is  $\pm 10\%$ .

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

Note : All measurements were made under the standardized environment of SSC

## 5. Color Coordinates Diagram and Ranks of KWT722

### ICI Chromaticity Diagram



**\* Color Rank**

**( $I_f=20\text{mA}$ ,  $T_a=25$ )**

BIN	Chromaticity Coordinates				
a	x	0.279	0.292	0.285	0.271
	y	0.297	0.270	0.259	0.284
b	x	0.300	0.289	0.279	0.292
	y	0.281	0.312	0.297	0.270
c	x	0.310	0.303	0.289	0.300
	y	0.293	0.328	0.312	0.281
d	x	0.320	0.316	0.303	0.310
	y	0.306	0.343	0.328	0.293
e	x	0.320	0.316	0.330	0.330
	y	0.306	0.343	0.358	0.318
f	x	0.344	0.346	0.330	0.330
	y	0.335	0.374	0.358	0.318

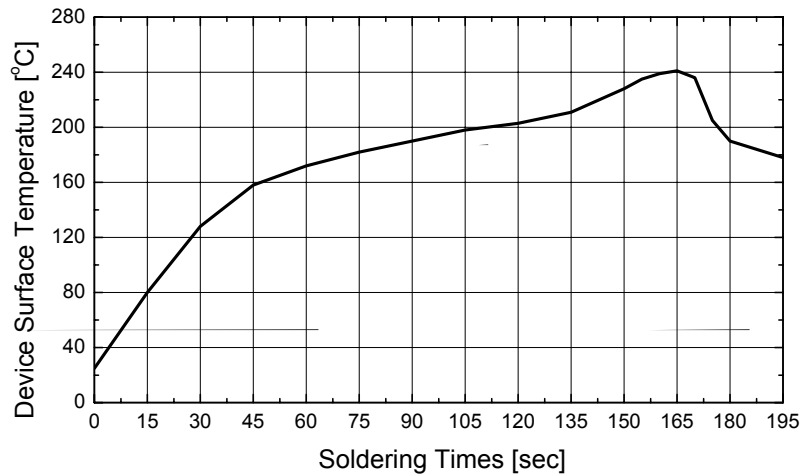
- Measurement Uncertainty of the Color Coordinates :  $\pm 0.01$

## 6. Soldering Profile

### (1) Lead solder

Preliminary heat to be at maximum 210°C for maximum 2 minutes.

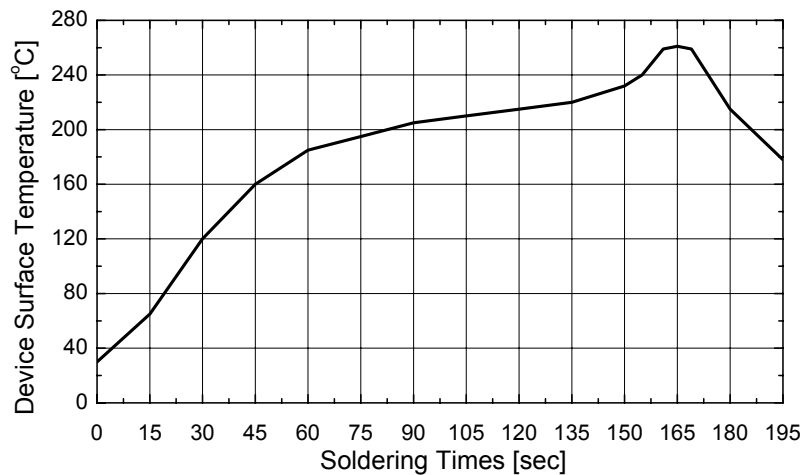
Soldering heat to be at maximum 240°C for maximum 5 seconds.



### (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.



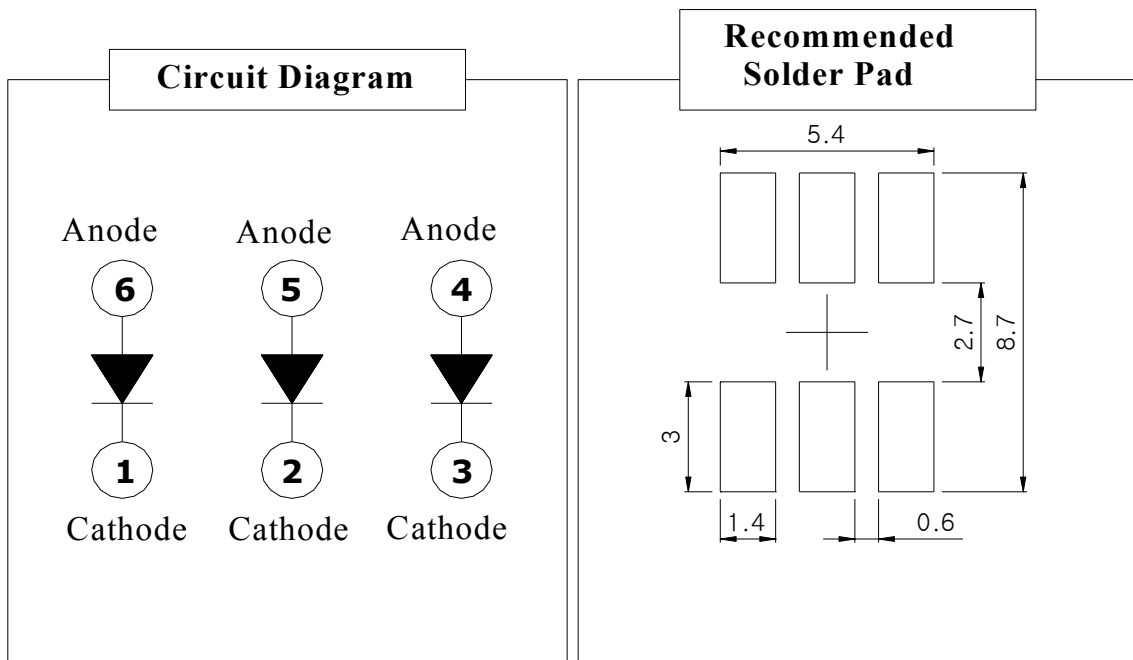
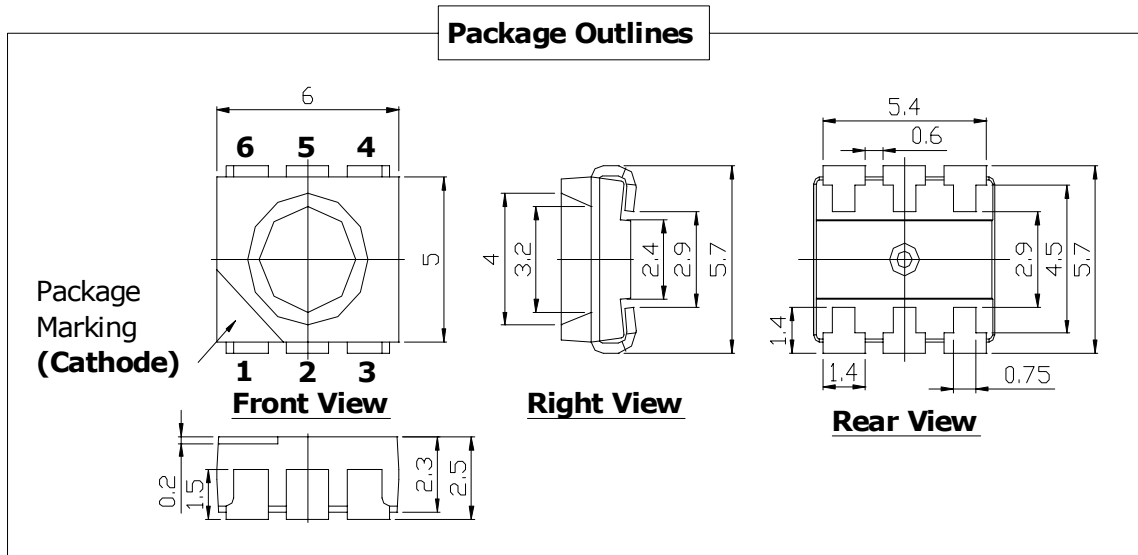
### (3) Hand Soldering conditions

Do not exceed 3 seconds at maximum 300°C under soldering iron.

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

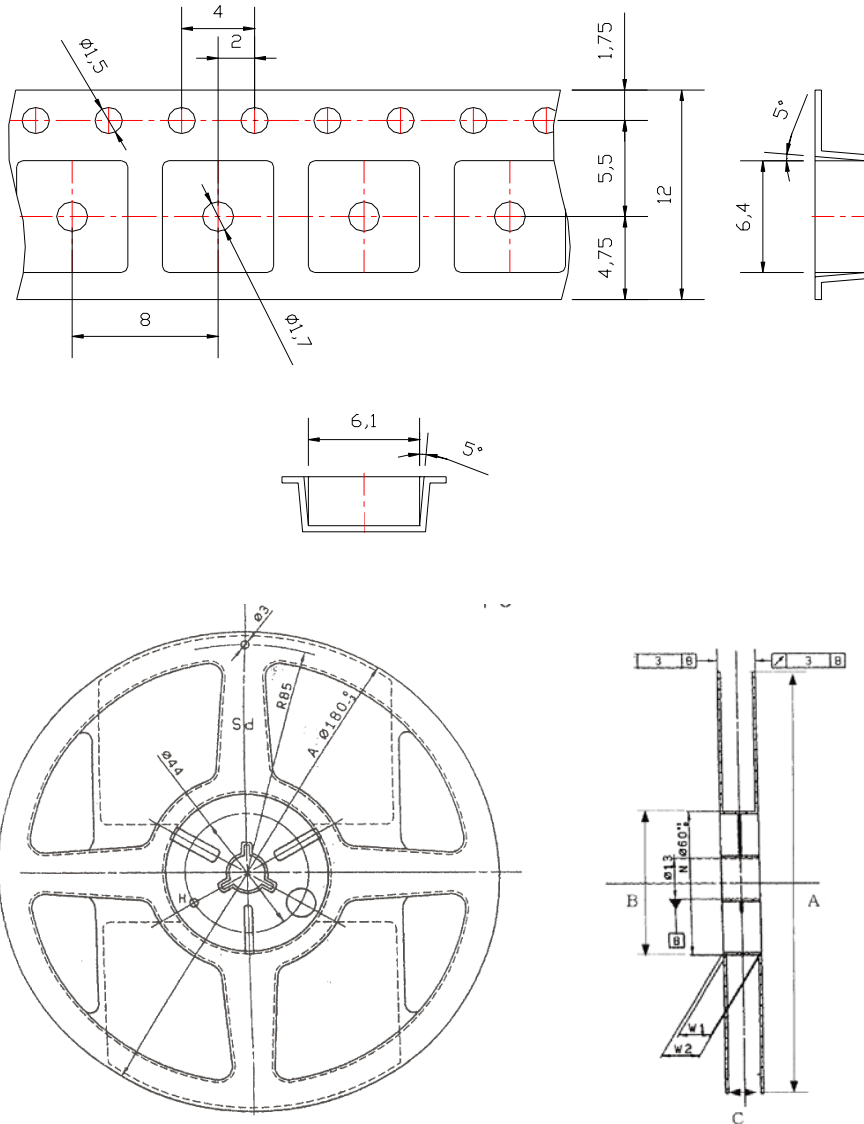
## 7. Outline Dimension

(Tolerance:  $\pm 0.2$ , Unit: mm)



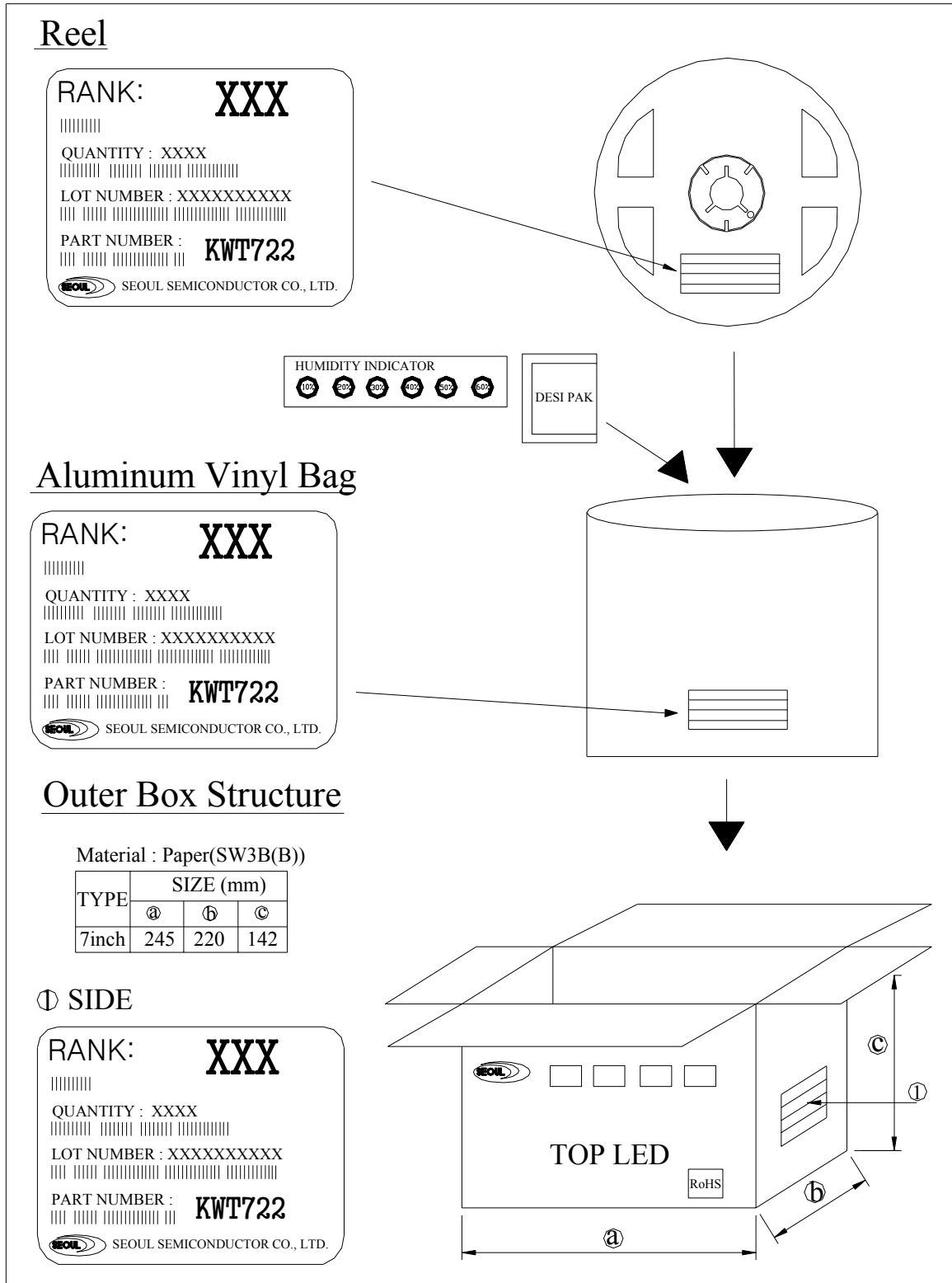
## 8. Packing

( Tolerance:  $\pm 0.2$ , Unit: mm )



- (1) Quantity : 700 pcs/Reel
- (2) Cumulative Tolerance: Cumulative Tolerance/10 pitches to be  $\pm 0.2$ 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 at  $10^\circ$  angle to be the carrier tape.
- (4) Package:P/N, Manufacturing data Code No. and quantity to be indicated on a damp proof Package.

## 9. Reel Packing Structure





## 10. Precaution for use

### (1) Storage

In order to avoid the absorption of moisture, it is recommended to store in a dry box (or a desiccator) with a desiccant. Otherwise, to store them in the following environment is recommended.

Temperature : 5°C ~30°C Humidity : maximum 60%RH

\* The LED is classified to Class 3 by JEDEC (J-STD-020A and J-STD-033).

### (2) Attention after open.

LED is correspond to SMD, when LED be soldered dip, interfacial separation may affect the light transmission efficiency, causing the light intensity to drop. Attention in followed;

- a. After opened and mounted the soldering shall be quickly.
- b. Keeping of a fraction

Temperature : 5 ~ 40°C Humidity : less than 30%

(3) In the case of more than 1 week passed after opening or change color of indicator on desiccant, components shall be dried 10-12hr. at 60±5°C.

(4) Any mechanical force or any excess vibration shall not be accepted to apply during cooling process to normal temperature after soldering.

(5) Quick cooling shall be avoided.

(6) Components shall not be mounted on warped direction of PCB.

(7) Anti radioactive ray design is not considered for the products.

(8) This device should not be used in any type of fluid such as water, oil, organic solvent etc. When washing is required, IPA should be used.

(9) When the LEDs are illuminating, operating current should be decided after considering the ambient maximum temperature.

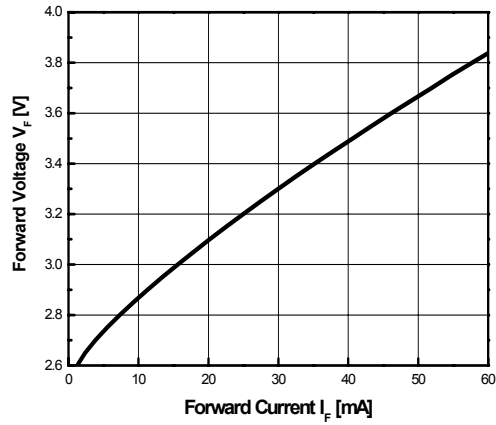
(10) LEDs must be stored to maintain a clean atmosphere. If the LEDs are stored for 3 months or more after being shipped from SSC, a sealed container with a nitrogen atmosphere should be used for storage.

(11) The LEDs must be soldered within seven days after opening the moisture-proof packing.

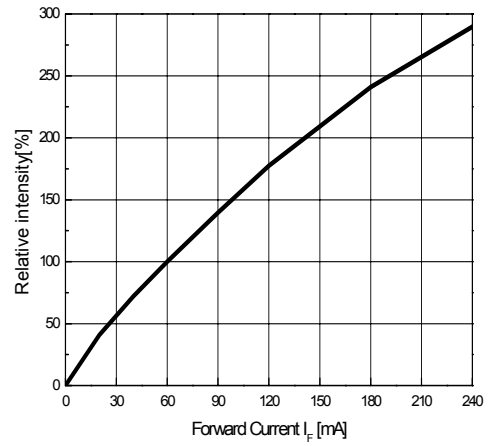
(12) Repack unused products with anti-moisture packing, fold to close any opening and then store in a dry place.

## 11. Characteristic Diagram

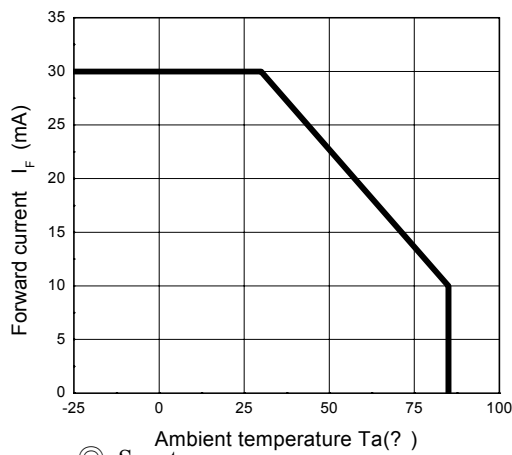
◎ Forward Voltage vs.  
Forward Current (per die)



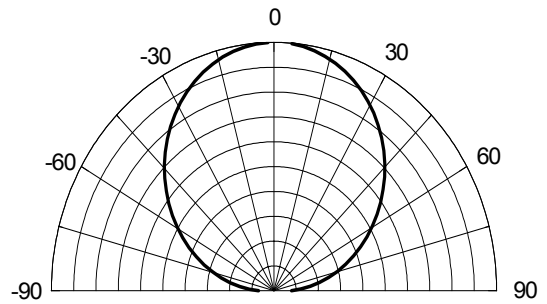
◎ Forward Current vs.  
Relative Intensity



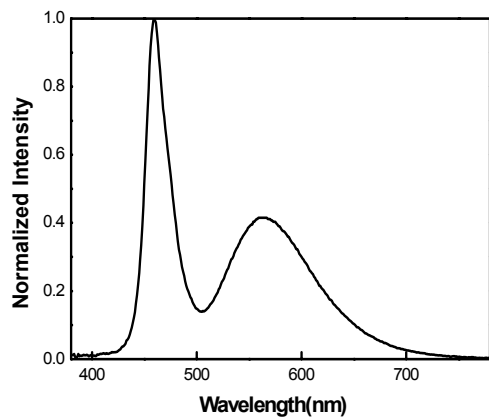
◎ Ambient Temperature vs.  
Allowable Forward Current



◎ Radiation Diagram



◎ Spectrum



## 12. Reliability Test Item and Condition

### (1) TEST ITEMS AND RESULTS

Item	Reference	Test Condition	Duration / Cycle	Number of Damage
Thermal Shock	EIAJ ED-4701	$T_a = -40^{\circ}\text{C}$ (30MIN) ~ $100^{\circ}\text{C}$ (30MIN)	20 Cycle	0/22
Temperature Cycle	EIAJ ED-4701	$T_a = -40^{\circ}\text{C}$ (30MIN) ~ $25^{\circ}\text{C}$ (5MIN) ~ $100^{\circ}\text{C}$ (30MIN) ~ $25^{\circ}\text{C}$ (5MIN)	100 Cycle	0/22
High Temperature Storage	EIAJ ED-4701	$T_a = 100^{\circ}\text{C}$	1000 Hours	0/22
High Temperature High Humidity Storage	EIAJ ED-4701	$T_a = 85^{\circ}\text{C}$ , RH=85%	1000 Hours	0/22
Low Temperature Storage	EIAJ ED-4701	$T_a = -40^{\circ}\text{C}$	1000 Hours	0/22
Operating Endurance Test	Internal Reference	$T_a = 25^{\circ}\text{C}$ , $I_F = 60\text{mA}$	1000 Hours	0/22
High Temperature High Humidity Life Test	Internal Reference	$T_a = 85^{\circ}\text{C}$ , RH=85%, $I_F = 45\text{mA}$	1000 Hours	0/22
High Temperature Life Test	Internal Reference	$T_a = 85^{\circ}\text{C}$ , $I_F = 45\text{mA}$	1000 Hours	0/22
Low Temperature Life Test	Internal Reference	$T_a = -30^{\circ}\text{C}$ , $I_F = 60\text{mA}$	1000 Hours	0/22
ESD(HBM)	MIL-STD-883D	1KV at $1.5\text{k}\Omega$ ; 100pF	3 Time	0/22

### (2) CRITERIA FOR JUDGING THE DAMAGE

Item	Symbol	Condition	Criteria for Judgement	
			MIN	MAX
Forward Voltage	$V_F$	$I_F = 20\text{mA}$	-	$\text{USL}^{*1} \times 1.2$
Reverse Current	$I_R$	$V_R = 5\text{V}$	-	$\text{USL}^{*1} \times 2.0$
Luminous Intensity	$I_V$	$I_F = 20\text{mA}$	$\text{LSL}^{*2} \times 0.5$	-

Note : \*1 USL : Upper Standard Level

\*2 LSL : Lower Standard Level

### (3)ESD guarantee condition

Item	Test Condition	Criteria for Judgement	Test Form
HBM	1000 V	$I_R = 50 \mu\text{A}$ and below	CONTACT