***Customer:**

SPECIFICATION

ITEM	TOP LED DEVICE
MODEL	SSC-MFT722N-S

[Contents]

CUSTOMER

Checked by	Approved by

SUPPLIER

Drawn by	Checked by	Approved by

SEOUL SEMICONDUCTOR CO., LTD.
148-29 Kasan-Dong, Keumchun-Gu, Seoul, 153-023, Korea
Phone : 82-2-2106-7305~6

1. Features

- ☐ Pb-free Reflow Soldering application
- ☐ RoHS Compliant
- ☐ Material : InGaN(Blue) / InGaN(Green) / AlGaInP(Red)
- ☐ 6-Pin (R,G,B separate) type
- ☐ Suitable for all SMT assembly methods ; Suitable for all soldering methods
- ☐ White colored SMT package and colorless clear window
- ☐ Encapsulating Resin : Silicon Resin

2. Application

- ☐ Indoor and outdoor displays
- ☐ LCD Backlights etc.
- ☐ R G B – displays
- ☐ Automotive
- ☐ Signage and Channel letter
- ☐ Indicator

3. Absolute Maximum Ratings *1

(T_a=25ºC)

Parameter	Symbol	Value			Unit
		Red	Green	Blue	
Forward Current	I_F	30	30	30	mA
Forward Peak Surge Current *2	I_{FM}	100	100	100	mA
Reverse Voltage (per die)	V_R	5			V
Power Dissipation	P_d	81*3	120*3	114*3	mW
		263*4			
Operating Temperature	T_{opr}	-40 ~ +100			ºC
Storage Temperature	T_{stg}	-40 ~ +100			ºC

*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 $T_W \leq$ 1msec of pulse width and D $\leq$ 1/10 of duty ratio.
*3 The value for one LED device.(Single color)
*4 The value for total power dissipation when two and more devices are lit simultaneously.

4. Electro-Optical Characteristics

(T_a=25ºC)

Parameter		Symbol	Condition	Min	Typ	Max	Unit
Forward Voltage	Red	V_F	I_F =20mA	1.5	2.2	2.7	V
	Green		I_F =20mA	2.8	3.3	4.0	
	Blue		I_F =20mA	2.8	3.3	3.9	
Reverse Current	Red	I_R	V_R=5V (per die)	-	-	10	μA
	Green			-	-	10	
	Blue			-	-	10	
Luminance Intensity *1	Red	I_V	I_F =20mA (per chip)	350	450	550	mcd
	Green			350	800	1200	
	Blue			100	195	350	
Luminance Flux	Red	Φ_V	I_F =20mA (per chip)	-	1.94	-	lm
	Green			-	2.3	-	
	Blue			-	0.6	-	
Peak Wavelength	Red	λ_P	I_F =20mA	-	634	-	nm
	Green		I_F =20mA	-	520	-	
	Blue		I_F =20mA	-	459	-	
Dominant Wavelength	Red	λ_d	I_F =20mA	619	625	631	nm
	Green		I_F =20mA	519	527	538	
	Blue		I_F =20mA	465	470	477	
Spectral Bandwidth	Red	$\Delta\lambda$	I_F =20mA	-	14	-	nm
	Green		I_F =20mA	-	39	-	
	Blue		I_F =20mA	-	23	-	
Viewing Angle *2	R, G, B	$2\theta_{1/2}$	I_F =20mA (per die)	-	120	-	deg.
Optical Efficiency	Red	η_{opt}	I_F =20mA (per chip)	-	44	-	lm/W
	Green			-	36	-	
	Blue			-	10	-	

*1 The luminous intensity I_V 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 ±10%

*2 $2\theta_{1/2}$ 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.

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5. Rank of MFT722-SN

▣ **Rank Name**

IF Condition RED=9mA, GREEN=20mA, BLUE19mA

1) Special binning (White balance)

X_1	X_2
Iv	**W-Color Rank**

▣ Luminous Intensity [Total Iv]

Rank Name	Total Iv	
	MIN	MAX
N	640	940
O	940	1330
P	1330	1950

▣ **Green wavelength [WD]**

Rank Name	Total Iv	
	MIN	MAX
L	519	524
M	524	531
H	531	538

▣ **Luminous Intensity [Iv]**

R		G		B	
MIN	MAX	MIN	MAX	MIN	MAX
140	440	350	1200	100	350

▣ **Dominant Wavelength [λd]**

R		G		B	
MIN	MAX	MIN	MAX	MIN	MAX
619	631	519	538	465	477

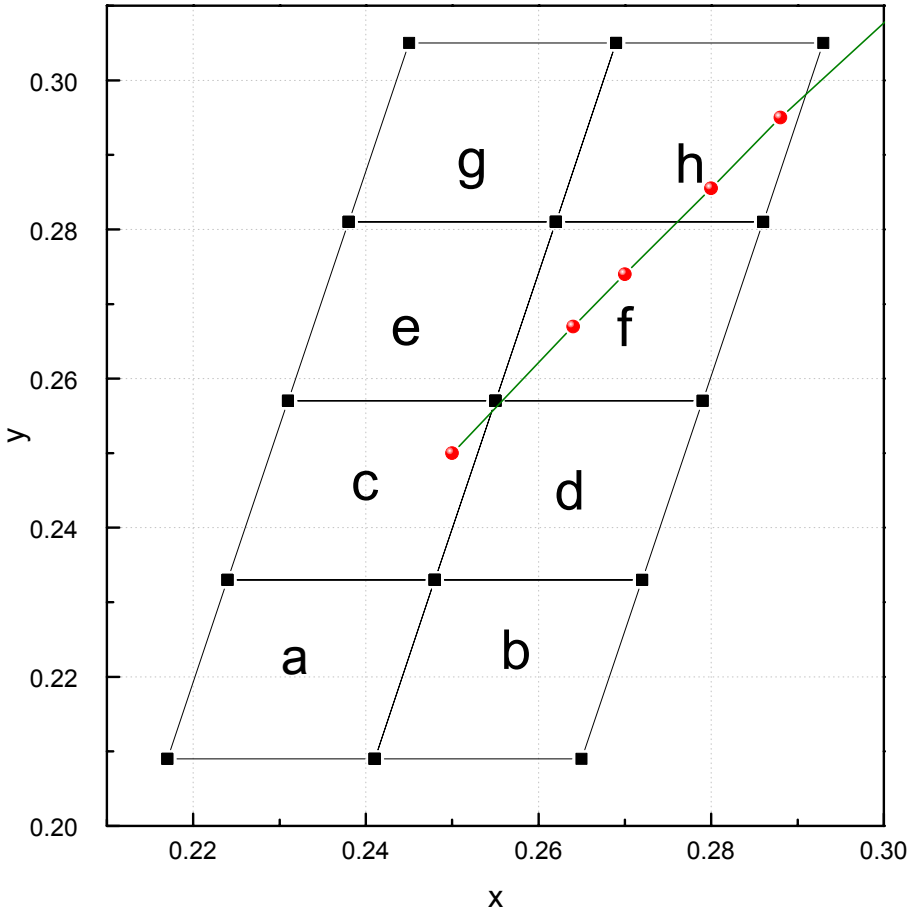
▣ **Forward Voltage**

R		G		B	
MIN	MAX	MIN	MAX	MIN	MAX
1.5	2.7	2.8	4.0	2.8	3.9

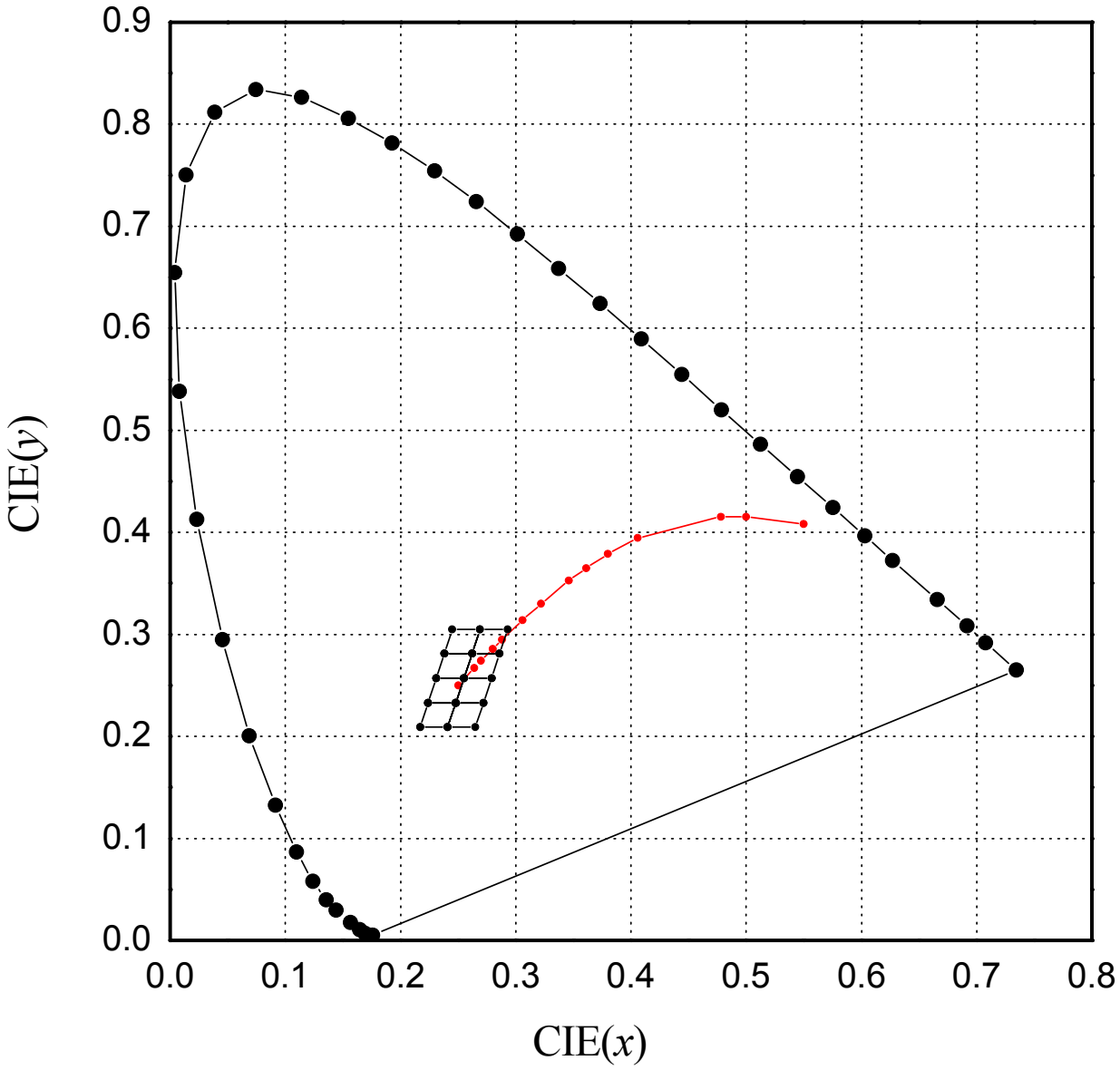
6. White balance Color Rank

◈ **Default Group (Select Group) : Bluish White**

- **Color Coordinates (typ.): x 0.255 , y 0.257**
- **IF Condition = 9mA for Red / 20mA for Green / 19mA for Blue**
- **Color Rank : a, b, c, d, e, f, g, h (8BIN)**
  - ***1Bin Cell Size : x0.031, y0.024**
  - ***8Bin Total Cell Size : x0.076, y0.096**



a		b		c		d	
X	y	x	y	x	y	x	y
0.217	0.209	0.241	0.209	0.224	0.233	0.248	0.233
0.241	0.209	0.265	0.209	0.248	0.233	0.272	0.233
0.248	0.233	0.272	0.233	0.255	0.257	0.279	0.257
0.224	0.233	0.248	0.233	0.231	0.257	0.255	0.257
e		**f**		**g**		**h**	
x	y	x	y	x	y	x	y
0.231	0.257	0.255	0.257	0.238	0.281	0.262	0.281
0.255	0.257	0.279	0.257	0.262	0.281	0.286	0.281
0.262	0.281	0.286	0.281	0.269	0.305	0.293	0.305
0.238	0.281	0.262	0.281	0.245	0.305	0.269	0.305

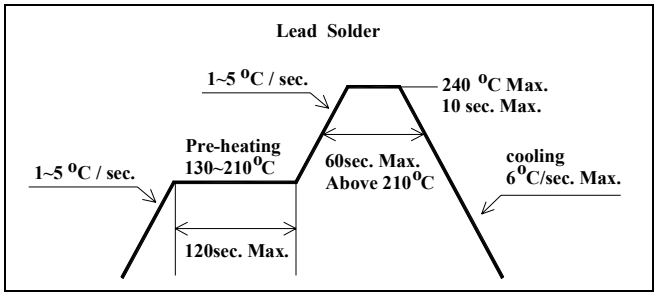

0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
CIE(y)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
CIE(x)

7. Soldering Profile

(1) Reflow Soldering Conditions / Profile

Lead Solder	
Pre-heat	**130~210℃**
Pre-heat time	**120 sec. Max.**
Peak-Temperature	**240℃ Max.**
Soldering time Condition	**10 sec. Max.**

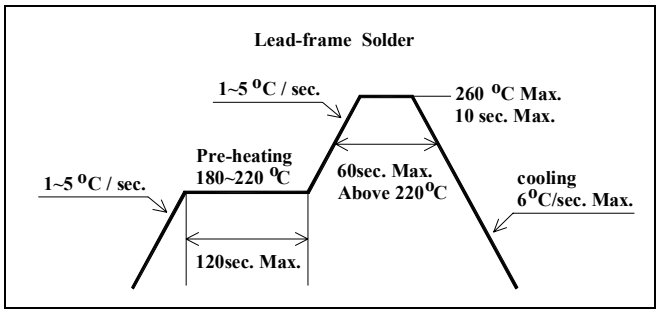
. * Condition



(2) Lead-free solder

Lead Free Solder	
Pre-heat	**180~200℃**
Pre-heat time	**120 sec. Max.**
Peak-Temperature	**260℃ Max.**
Soldering time Condition	**10 sec. Max.**

*** Condition**



(1) Hand Soldering conditions

Do not exceed 4 seconds at maximum 315ºC under soldering iron.

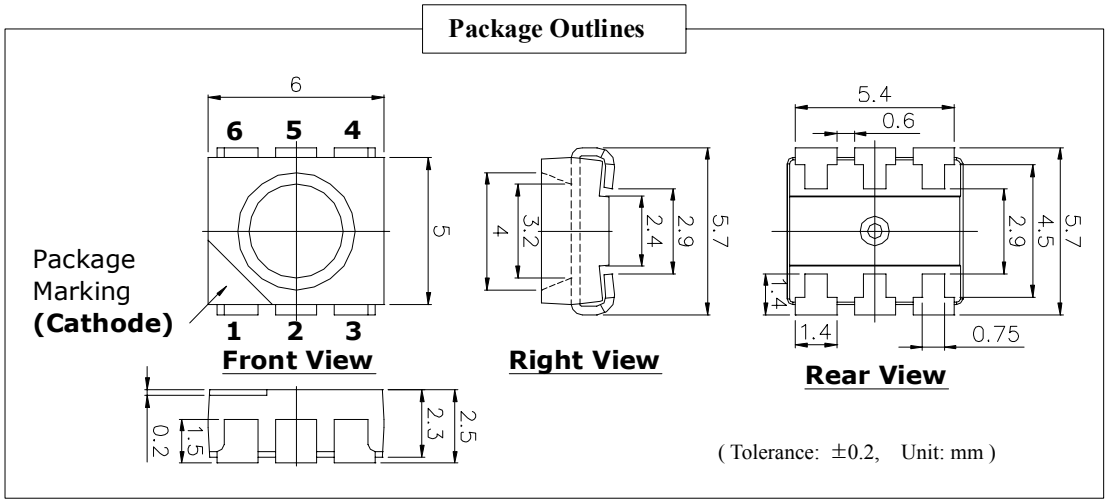
(2) The encapsulated material of the LEDs is silicone.

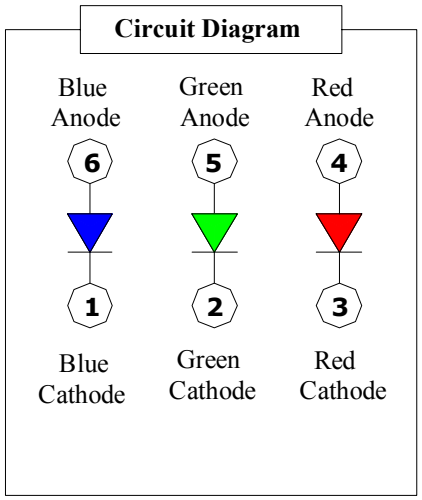
Precautions should be taken to avoid the strong pressure on the encapsulated part.

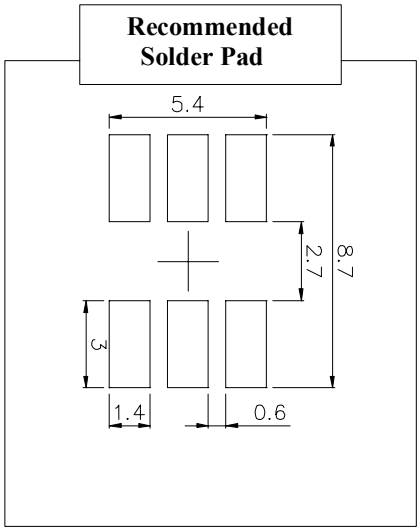
So when using the chip mounter, the picking up nozzle that does not affect the silicone resign should be used.

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

8. Outline Dimension





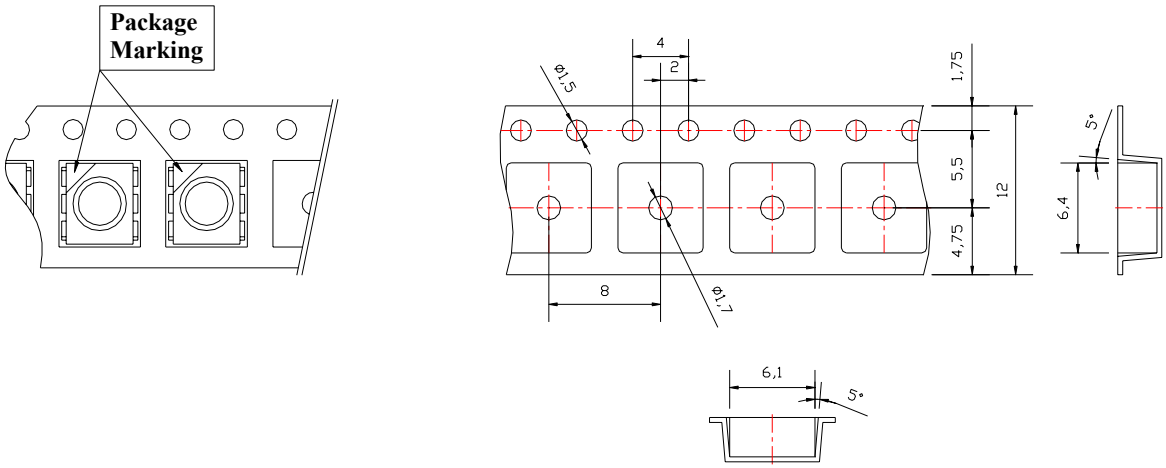


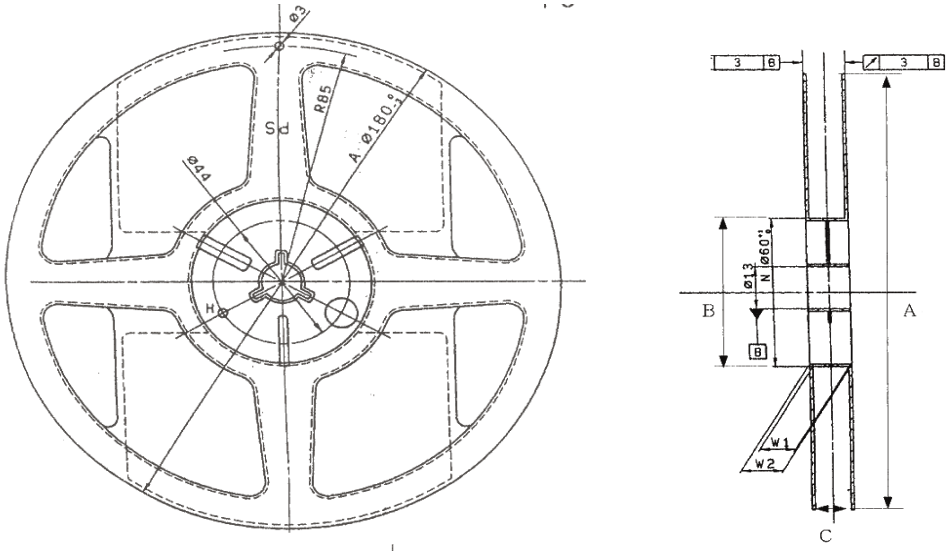
(Tolerance: ±0.2, Unit: mm)

* MATERIALS

PARTS	MATERIALS
Package	Heat-Resistant Polymer
Encapsulating Resin	Silicon Resin
Electrodes	Ag Plating Copper Alloy

9. Packing





(Tolerance: ±0.2, Unit: mm)

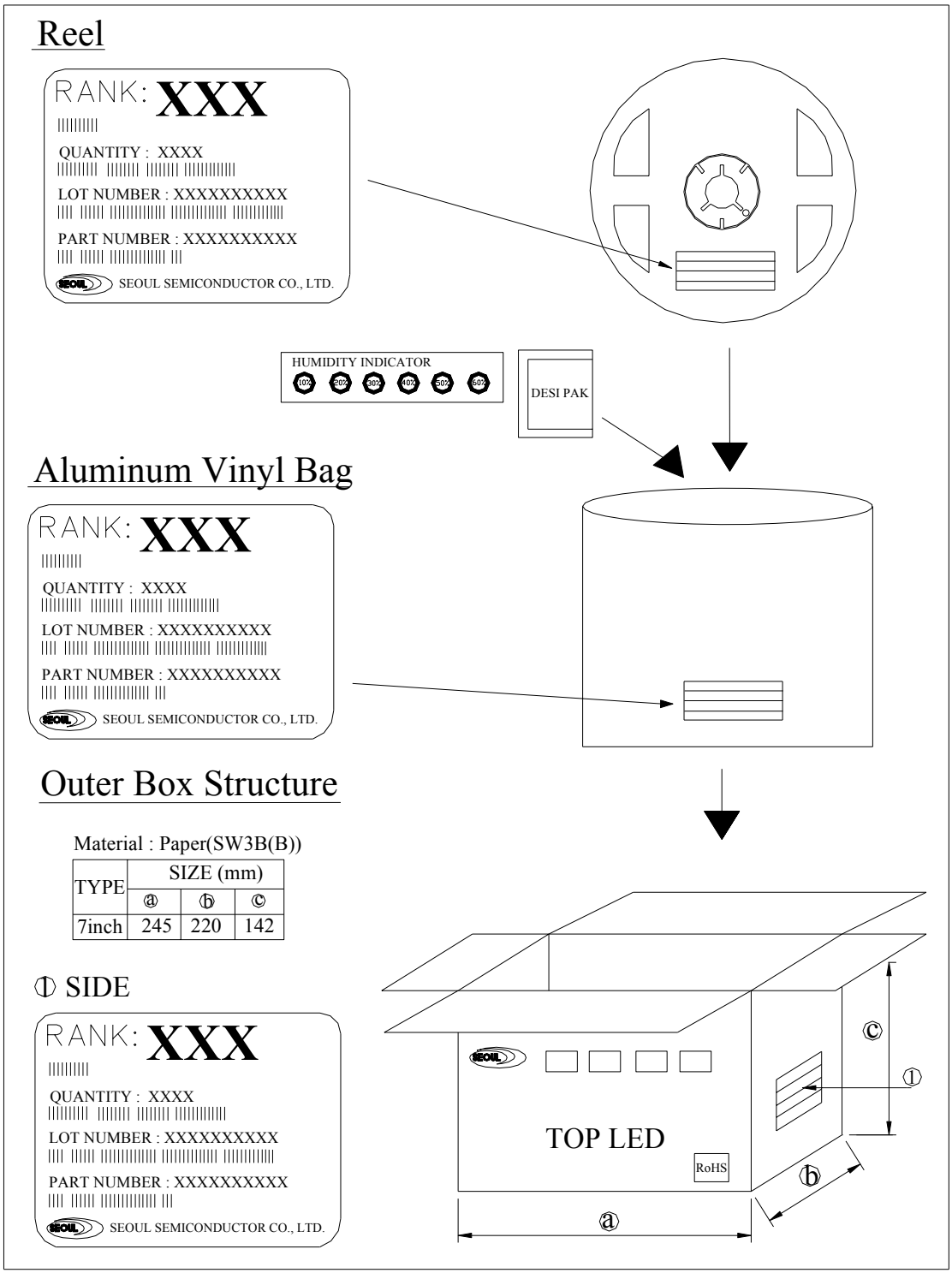
(1) Quantity : 700pcs/Reel

(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

10. Reel Packing Structure



11. Lot Number

The lot number is composed of the following characters;

MFT○□□◎◎ #~#

MFT	**First Part Name**
○	**Year (6 for 2006, 7 for 2007, 8 for 2008)**
□□	**Month (01 for Jan., 02 for Feb.,·····11 for Nov., 12 for Dec.)**
◎◎	**Day (01, 02, 03, 04, ···········28, 29, 30, 31.)**
# ~#	The number of the internal quality control

12. 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 : 5ºC ~30ºC Humidity : maximum 70%RH

(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;

Keeping of a fraction

Temperature : 5 ~ 40ºC Humidity : less than 10%

(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±5ºC.

(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.

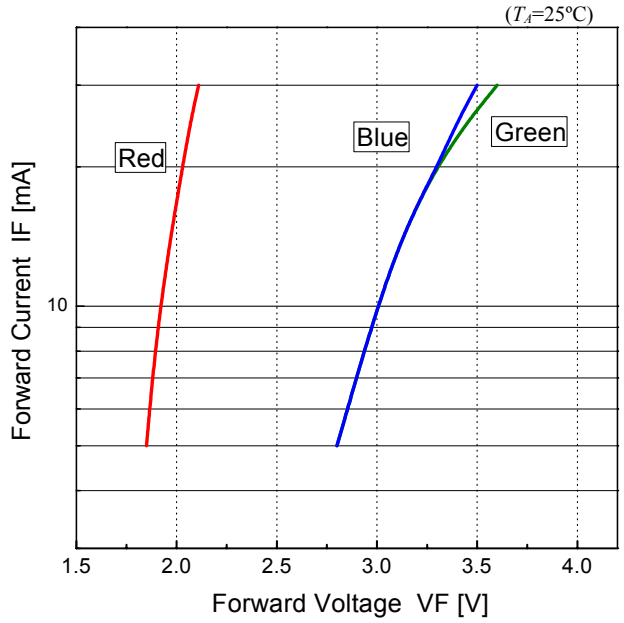
(10) The LEDs must be soldered within seven days after opening the moisture-proof packing.

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

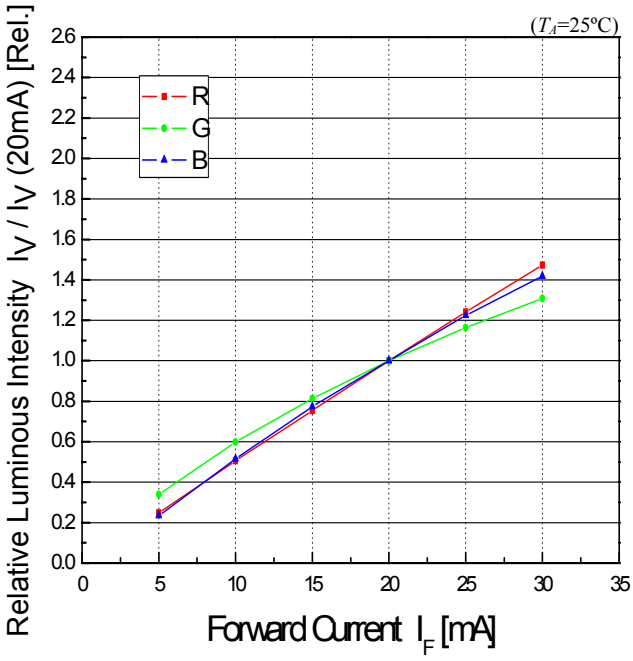
(12) The appearance and specifications of the product may be modified for improvement without notice.

13. Characteristic Diagram

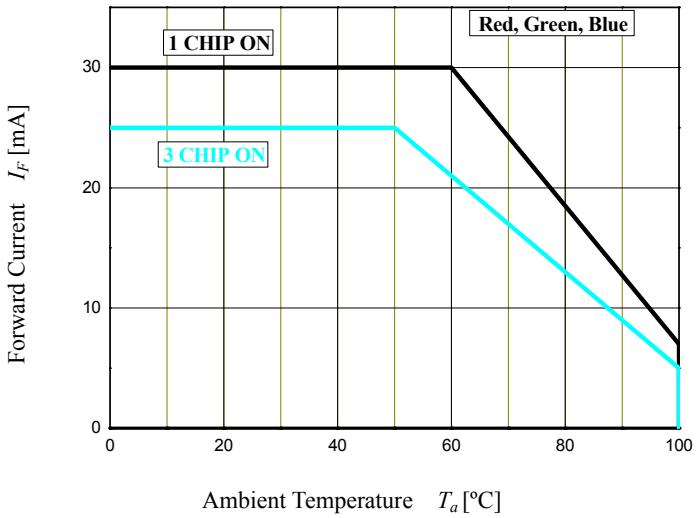
Forward Current vs. Forward Voltage



Relative Luminous Intensity vs. Forward Current



Forward Current Derating Curve



Radiation Diagram