

DATA SHEET

MODEL NAME : 5056 SMD Type LED

PART NAME : NCS-VRI-LN5056-K3

놀코(Playcoding)

■ SMD LED : Infra Red / UltraViolet / Deep Red

1. Feature

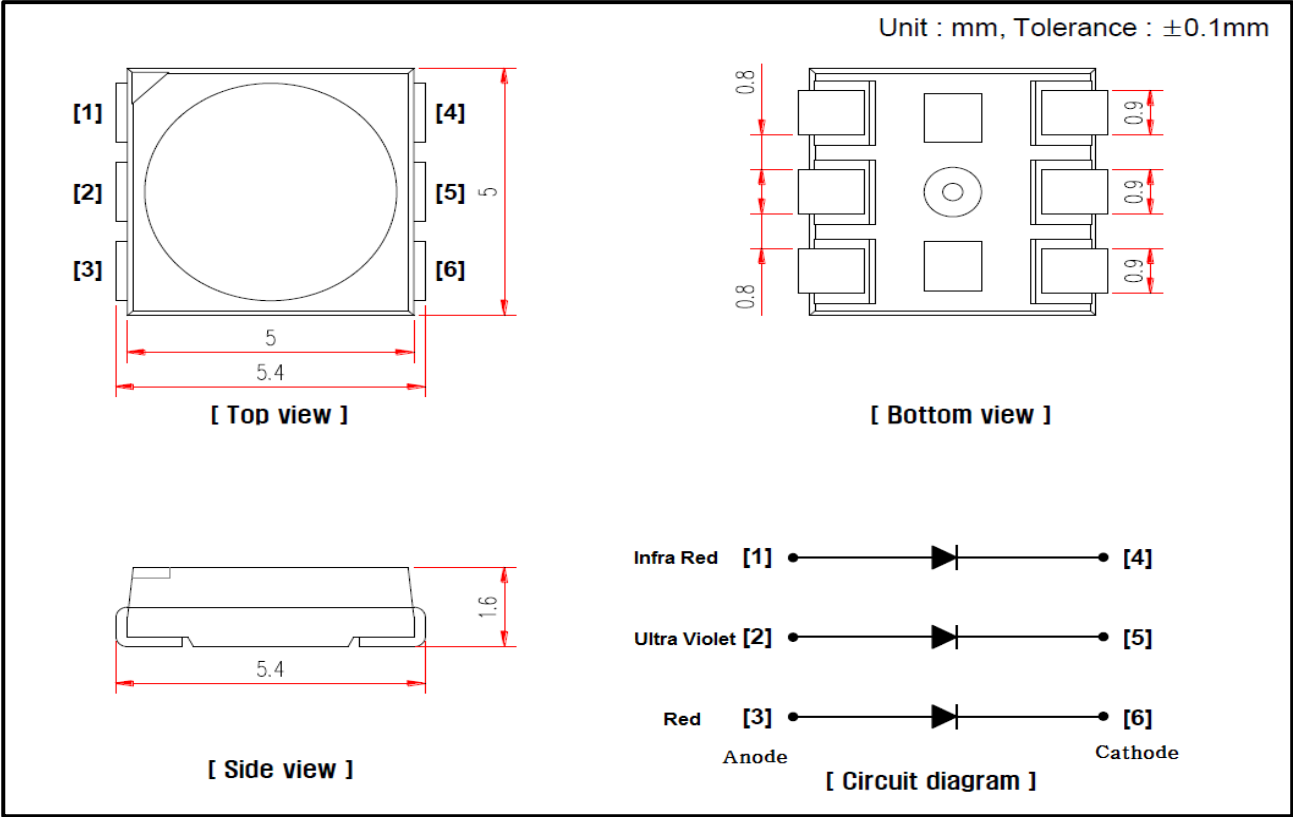
- 3 Chip High-Luminosity SMD LED
- 5.4 x 5.0 x 1.6 mm (L x W x H), 6-Pin, Small Size Surface Mount Type
- Wide Viewing Angle
- Long Operating Life
- MSL 3

2. Applications

- Automotive: Backlight in Dashboard and Switch
- Lighting Device: Indicator, General Lighting
- Camera Flash, Hand Carrier Flash
- General Use

3. Outline Drawing and Dimension

(unit : mm)



4. Absolute Maximum Ratings

(Ta = 25°C)

Parameter	Symbol	Value			Unit
		IR	UV	DR	
Power Dissipation	Pd	85	99	66	mW
Continuous Forward Current	IF	50	30	30	mA
Peak Forward Current ※1	IFP	100	50	50	mA
Operating Temperature	Topr	-40~85			°C
Storage Temperature	Tstg	-40~100			°C
Soldering Temperature	Tsol	260 (5 Sec)			°C

※1 Pulse width = 0.1ms, 1 Duty ratio = 1/10

5. Electrical & Optical Characteristics

(Ta = 25°C)

ParameterF	Symbol	Conditions	Min.	Typ.	Max.	Unit.
Forward Voltage ※	VF	IF = 20mA /1-Chip	IR	1.3		1.7 V
			UV	2.7		3.3 V
			DR	1.8		2.2 V
Reverse Current	IR	VR = 5V /1-Chip	IR	-	-	10 uA
			UV	-	-	10 uA
			DR	-	-	10 uA
Peak Wavelength※	WD	IF = 20mA /1-Chip	IR	840	-	860 nm
			UV	415	-	425 nm
			DR	640	-	660 nm
Radiant Intensity※ Luminous Intensity※	IV	IF = 20mA /1-Chip	IR	1	-	5 mW/sr
			UV	5	-	8 mW/sr
			DR	250	-	350 mcd
View angle※	2θ1/2	IF= 20mA	-	-	120	deg

※ Forward Voltage has a teolerance of ±0.05V.

※ Radiant / Luminous is tested by a tester calibrated by CAS 140C(CIE LED_B) and has an accuracy of 10%

※ Peak Wavelength has an accuracy of ±2nm

※ Viewing Angle is the angle until 50% of brightness measured from the front part of LED.

5-1. VF Rank (V, IF = 20mA)

Rank	IR	UV	DR
1	1.3-1.5	2.7-2.9	1.8-2.0
2	1.5-1.7	2.9-3.1	2.0-2.2
3		3.1-3.3	

5-2. Radiant / Luminous Intensity Rank (mW, mcd, IF = 20mA)

Rank	IR (mW/sr)	UV (mW/sr)	DR (mcd)
a	1-3	5-8	250-350
b	3-5		

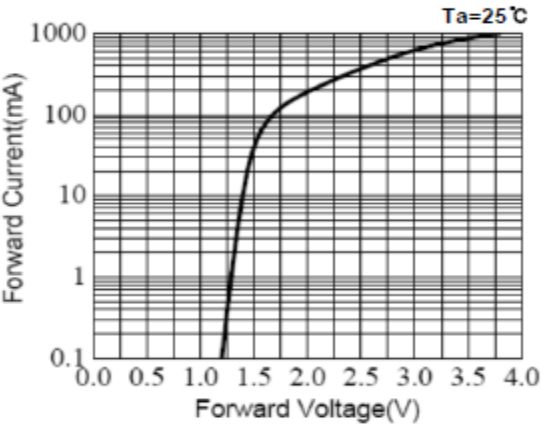
5-3. WP Rank (nm, IF = 20mA)

Rank	IR	UV	DR
A	840-860	415-420	640-660
B		420-425	

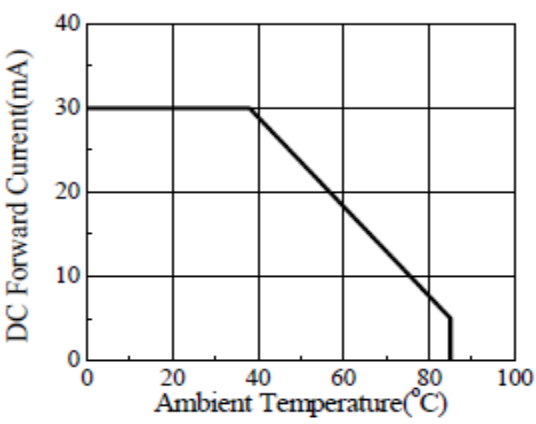
6. Typical Characteristic Curve

6.1 Infra Red

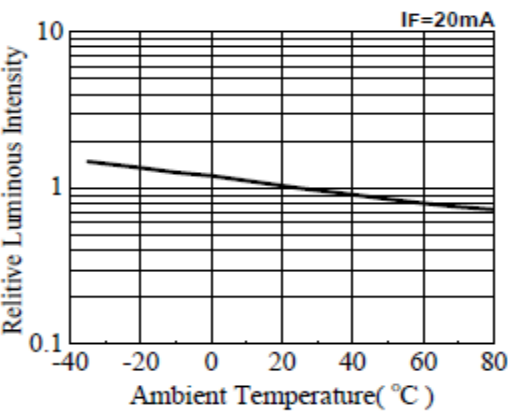
Forward Current vs. Forward Voltage



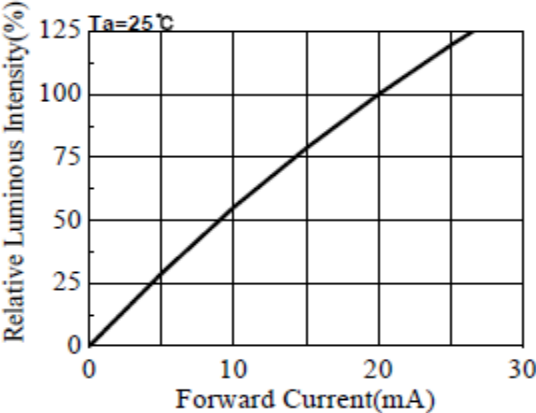
Forward Current vs. Ambient Temperature



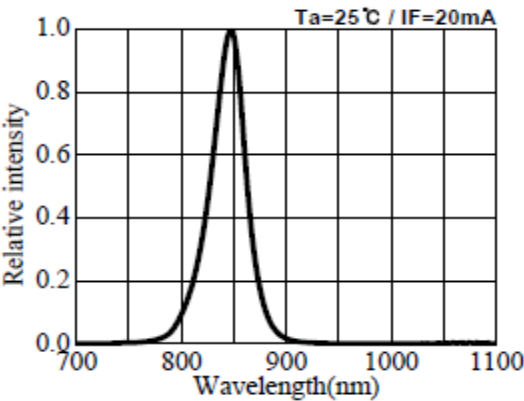
Relative Luminous Intensity vs. Ambient Temperature



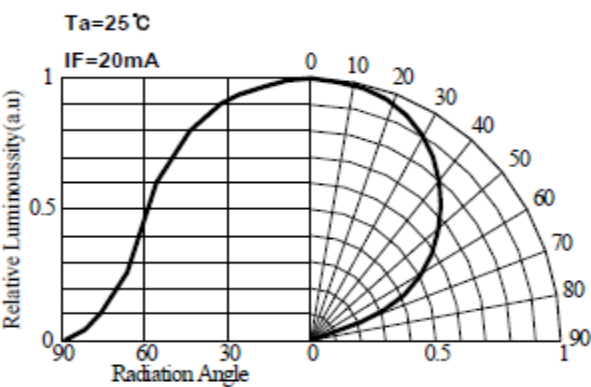
Relative Luminous Intensity vs. Forward Current



Relative Intensity vs. Wavelength

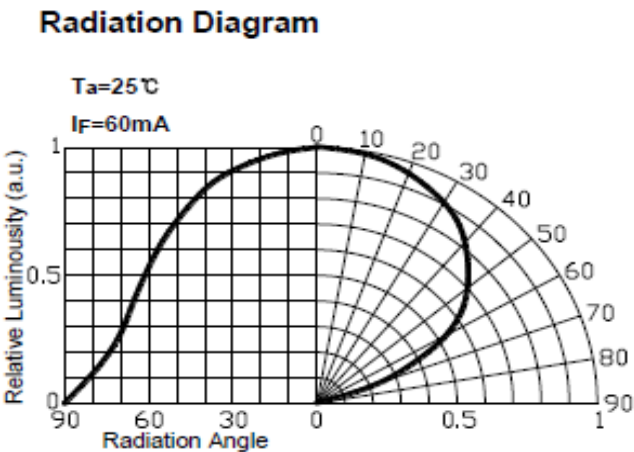
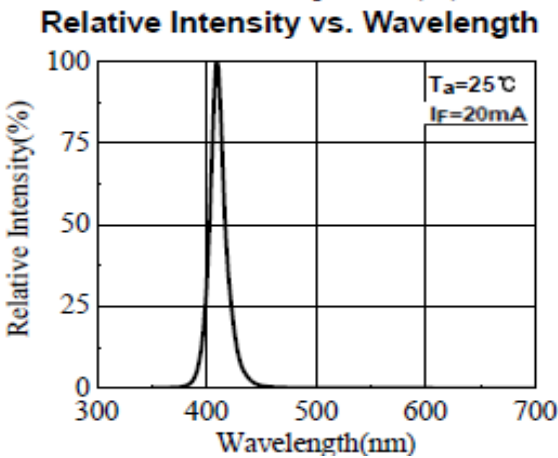
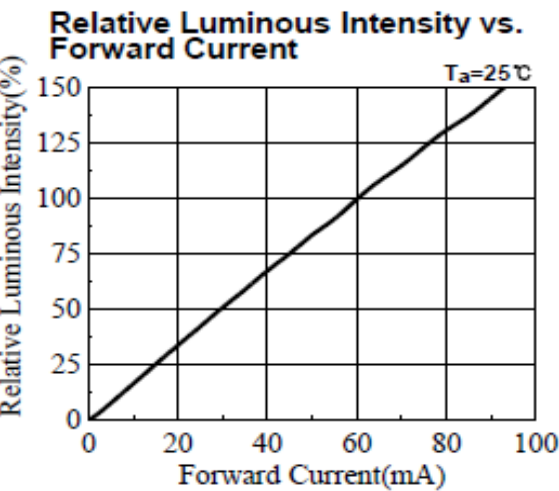
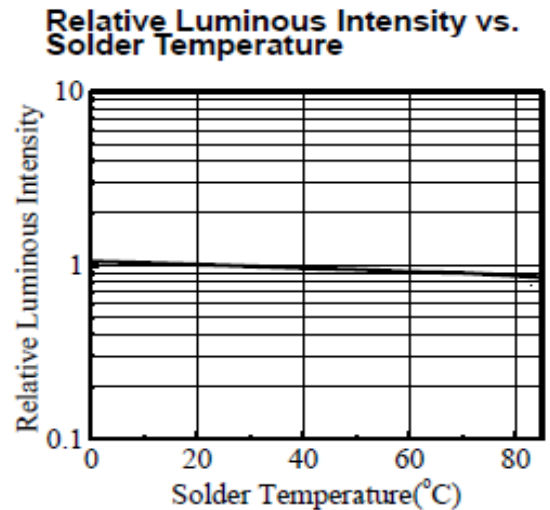
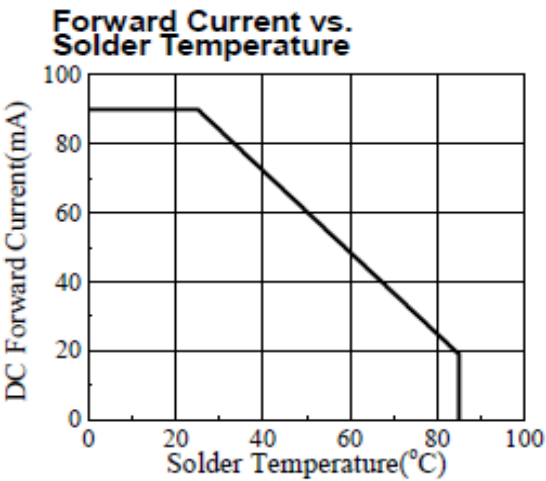
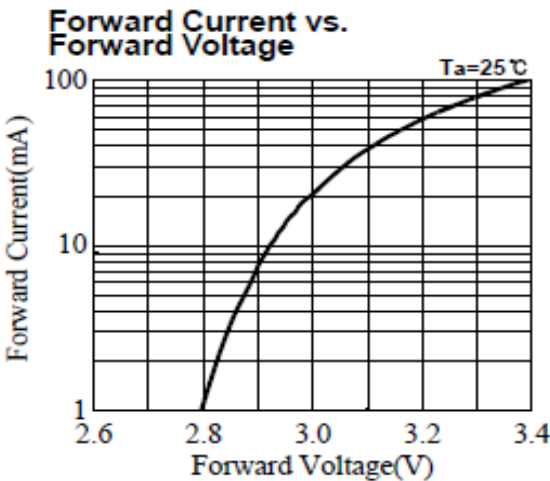


Radiation Diagram



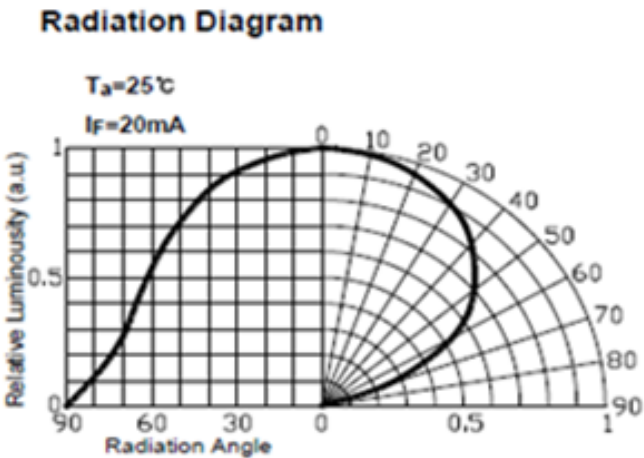
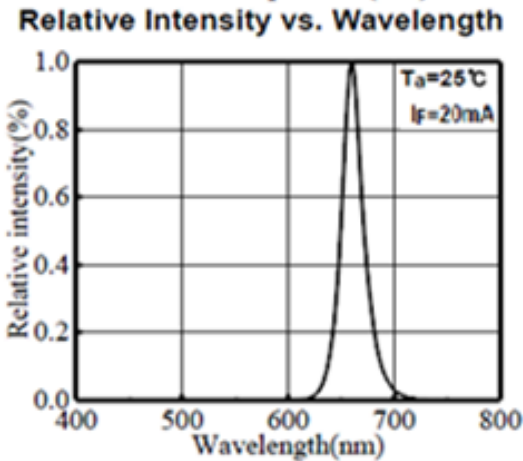
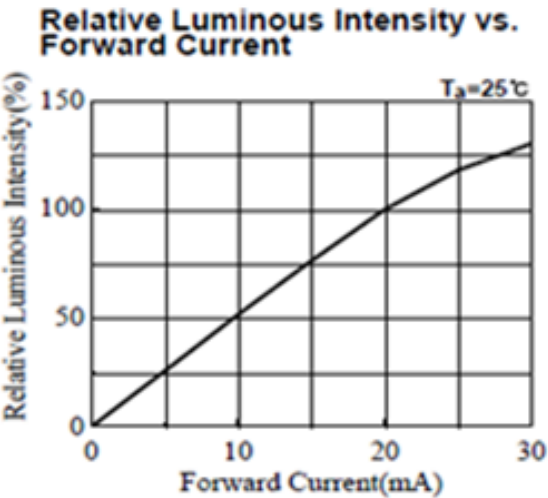
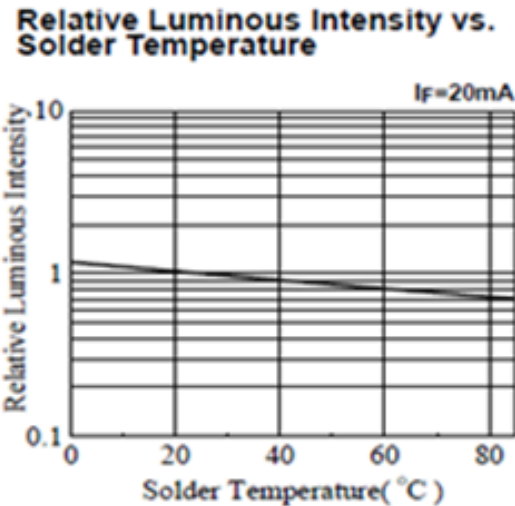
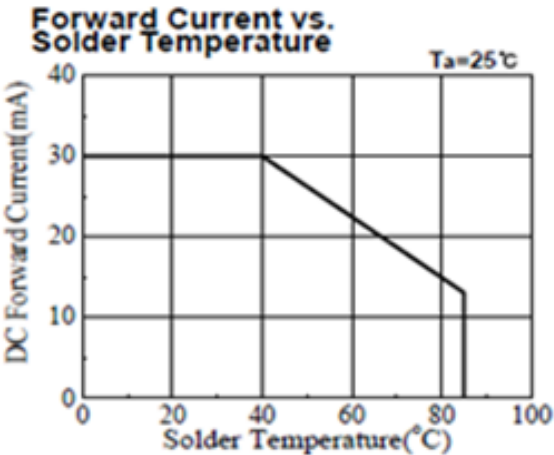
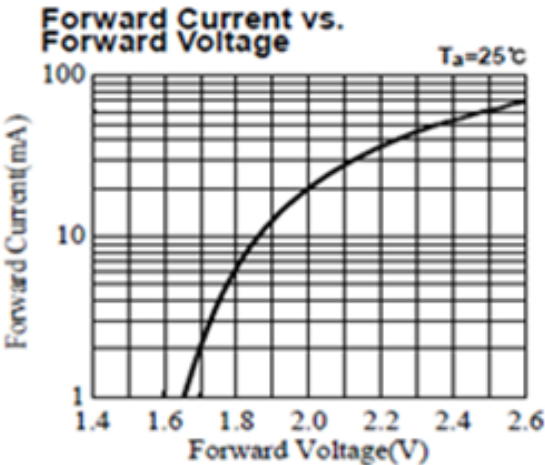
6. Typical Characteristic Curve

6.2 Ultra Violet



6. Typical Characteristic Curve

6.3 Deep Red



7. Reliability

Reliability Test Item

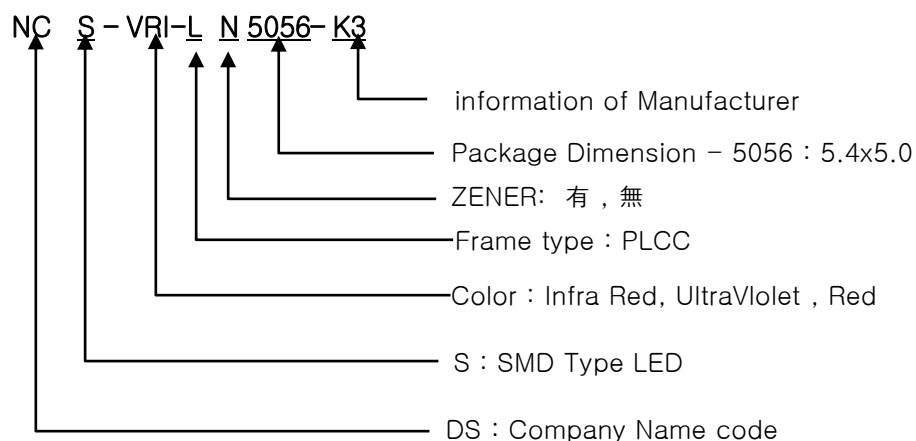
Test Items	Test Conditions	Notes
High Temperature Storage	100℃, 1,000hr.	0/25
Low Temperature Storage	-40℃, 1,000hr.	0/25
Temp. Humidity Storage	85℃, 85% RH, 1,000hr.	0/25
Steady State Operating life	25℃, 72mA, 1,000hr.	0/25
High Temperature Operating Life	85℃, 30mA, 1,000hr	0/25
Low Temperature Operating Life	-40℃, 60mA, 1,000hr.	0/25
Steady State Operating life Of High Humidity Heat	85℃, 85% RH, 45mA, 1,000hr.	0/25
Thermal Shock	40℃(30min)↔100℃(30min.), 100 cycle	0/20
ESD	HBM, 100 pF, 1.5 kohm, 3 times	0/20

Criteria for Judging the Damage

Parameters	Test Conditions	Criteria for judgment
Luminous Intensity (I_V)	$I_F = 20 \text{ mA}$ (1 Chip)	> 70% of S
Forward Voltage (V_F)	$I_F = 20 \text{ mA}$ (1 Chip)	Less than 110% of U

* U means the upper limit of specified characteristics, S means initial value.

8. Part Name Description

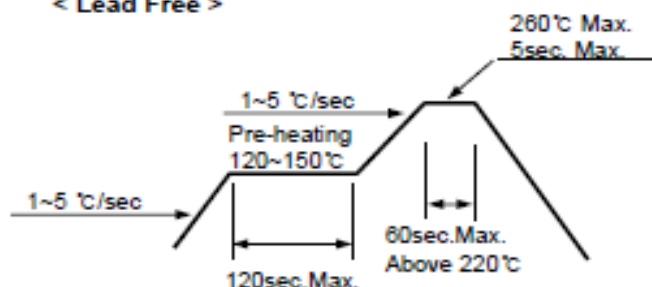


9. Cautions

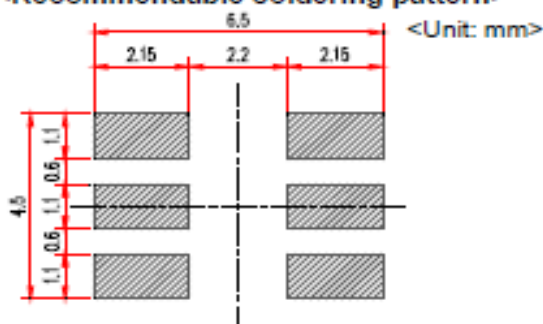
9.1 Soldering Conditions

- When soldering Power SMD, Heat may affect the electrical and optical characteristics of the LEDs.
- In soldering, do not stress the lead frame and the resin part under the high temperature.
- The silicone part should be protected from mechanical stress or vibration until the Power SMD return to room temperature after soldering.
- Preliminary heating to be at 120~150 °C max. for 120 Seconds max.
- Soldering heat to be at 260 °C max. for 5 sec. Max.
- For manual Soldering is Not more than 3 sec @MAX 350 °C, under soldering iron

< Lead Free >



<Recommendable soldering pattern>



9.2 Storage

- Before opening the package, the LEDs should be kept at 30 °C or less and 70%RH or less.
- The LEDs should be used within a year.
- After opening the package, the LEDs should be kept at 30 °C or less and 30%RH or less.
- The LEDs should be used within 168 hours (7 day) after opening the package.
- If the moisture absorbent material (silicagel) has faded away or the LED have exceeded the storage time, baking treatment should be performed using the following conditions.
Baking treatment: 60 °C ±5 for 48 hours.

9.3 Static Electricity

- Static electricity or surge voltage damages the Power SMD. It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs.
- A tip soldering iron is requested to be grounded. An ionizer should also be installed where risk of static.
- All devices, equipment and machinery must be properly grounded (via 1MΩ). It is recommended that measures be taken against surge voltage to the equipment that mounts the Power SMD.

9.4 Cleaning

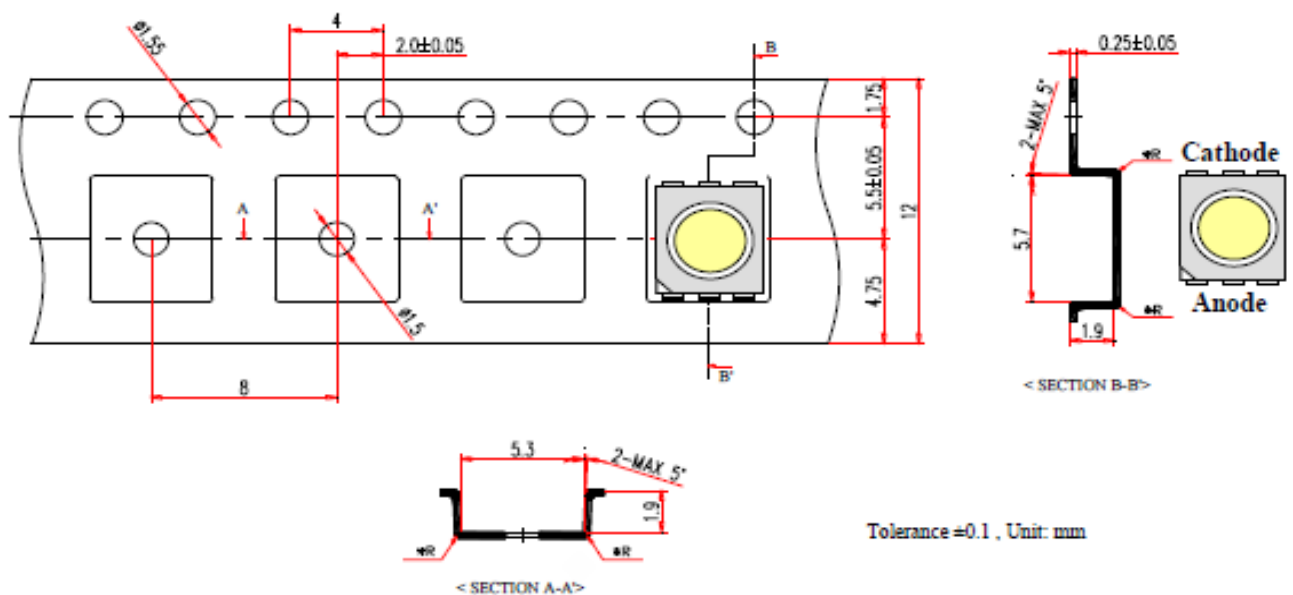
- Isopropyl Alcohol or Ethylene Alcohol is recommended in 5 minutes at room temperature.
Don't use unspecified chemical may cause crack or haze on the surface of the epoxy resin.
- Before cleaning, a pre-test should be done to confirm whether any damage to the LED will occur.
- Freon solvents should not be used to clean the LEDs because of worldwide regulations.

9.5 Heat Generation

- When the LEDs are illuminating, operating current should be decided after being considering the ambient maximum temperature.
- Please consider the heat generation of the LED when it is designed the PCB.

10. Dimension of Tape / Reel

1) Tape Dimension



2) Reel Dimension

