

Feature

- Side view white LED
- White SMT package
- Lead frame package with individual 2 pins
- Wide viewing angle
- Soldering methods: IR reflow soldering
- Pb-free
- The product itself will remain within RoHS compliant version.
- Compliance with EU REACH.
- Compliance Halogen Free .(Br <900 ppm ,Cl <900 ppm , Br+Cl < 1500 ppm).



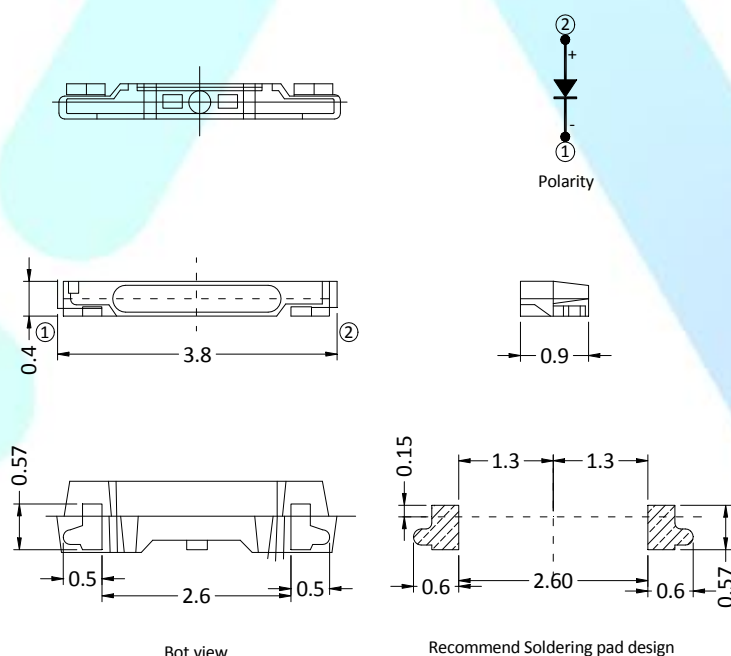
Description

- Due to the package design, 99-218G has wide viewing angle, low power consumption and white LEDs are devices that are materialized by combing blue chips and special phosphor. This feature makes the LED ideal for light guide application.

Applications

- LCD keyboard backlight
- Mobile Phones
- Indicators
- Illuminations
- Switch Light

Package Dimension



Note: A:Nick Mark All dimensions in mm Tolerances unless mentioned is $\pm 0.1\text{mm}$.

Rev	Date	Drawn by	Checked by	Approved by
A0	12-17-2019	Xavier	Eric	Sumeng

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Value (Blue)	Unit
Forward Current	I_F	30	mA
Reverse Voltage	V_R	5	mA
Power Dissipation	P_d	110	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +90	°C
Peak Forward Current ^[1]	I_{FP}	60	mA
Antistatic Ability	ESD	1000	V

*Note:

1. 1/10 Duty cycle, 0.1ms pulse width.
2. The above forward voltage measurement allowance tolerance is $\pm 0.1V$.
3. The above dominate wavelength measurement allowance tolerance is $\pm 1nm$.

Electro-optical Characteristics (Temperature=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
Forward Voltage	V_F	2.8	-	3.3	V	IF=20mA
Reverse Current	I_R	-	-	10	μA	VR = 5V
Luminous Flux	Φ	7.0	-	8.25	lm	IF=20mA
Luminous Intensity	Φ	2505	-	2955	mcd	IF=20mA
Viewing Angle	$2\theta_{1/2}$	-	120	-	-	deg

Notes:

1. Tolerance of Luminous Flux 、Luminous Intensity: $\pm 5\%$
2. Tolerance of Forward Voltage: $\pm 0.05V$

Bin Range of Luminous Flux

Bin Code	lm (Min.)	lm(Max.)	Unit	Condition	mcd(Min.)	mcd(Max.)
L70	7.0	7.25	lm	IF=20mA	2505	2595
L72	7.25	7.5	lm	IF=20mA	2595	2685
L75	7.5	7.75	lm	IF=20mA	2685	2775
L77	7.75	8.0	lm	IF=20mA	2775	2865
L80	8.0	8.25	lm	IF=20mA	2865	2955

Note:

Tolerance of Luminous Flux 、Luminous Intensity: $\pm 5\%$
The spec. for intensity is quantified in lm, mcd is for reference only.

Bin Range of Forward Voltage

Bin Code	Min.	Max.	Unit	Condition
U3	2.8	2.9	V	IF=20mA
U4	2.9	3.0	V	IF=20mA
U5	3.0	3.1	V	IF=20mA
U6	3.1	3.2	V	IF=20mA
U7	3.2	3.3	V	IF=20mA

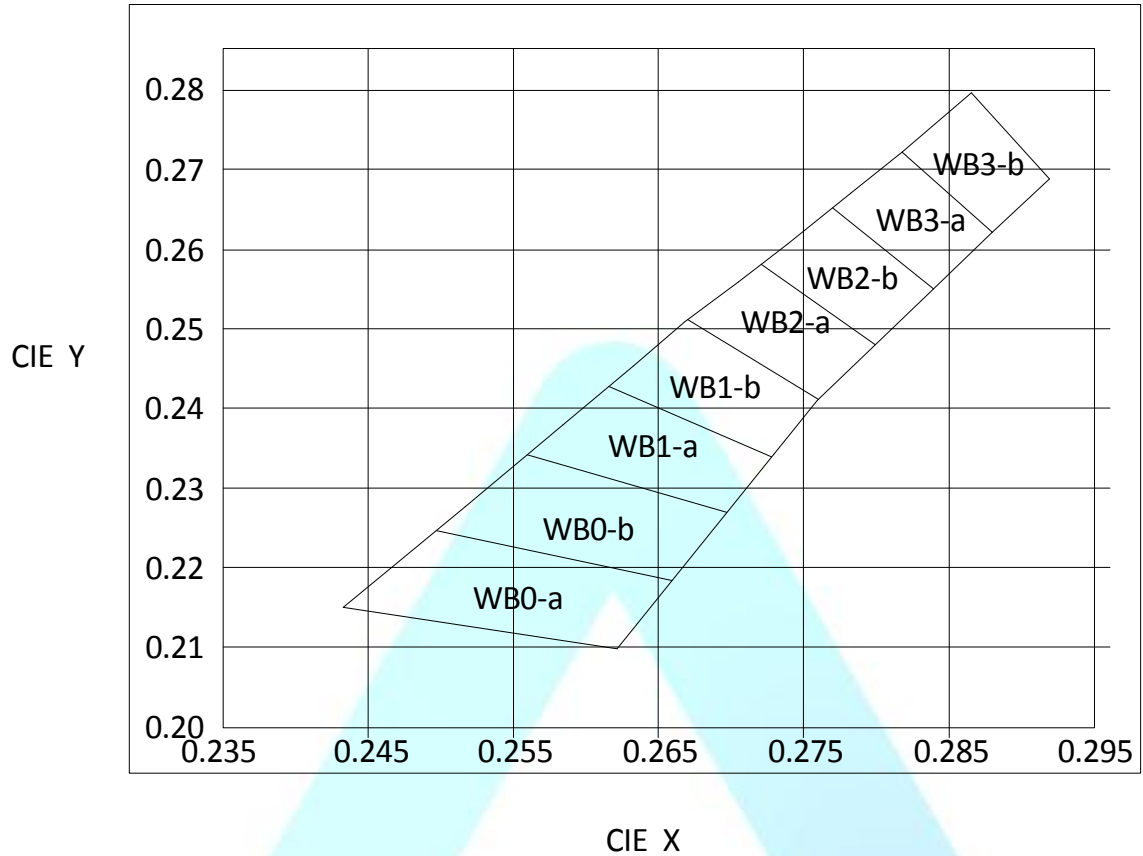
Note: Tolerance of Forward Voltage: $\pm 0.05V$

Chromaticity Coordinates of Bin Code

Bin Code	CIE_x	CIE_y	Bin Code	CIE_x	CIE_y
WB0-a	0.2621	0.2100	WB0-b	0.2659	0.2185
	0.2434	0.2150		0.2497	0.2245
	0.2497	0.2245		0.2559	0.2340
	0.2659	0.2185		0.2697	0.2270
WB1-a	0.2697	0.2270	WB1-b	0.2729	0.2340
	0.2559	0.2340		0.2615	0.2425
	0.2615	0.2425		0.2670	0.2510
	0.2729	0.2340		0.2760	0.2410
WB2-a	0.2760	0.2410	WB2-b	0.2800	0.2480
	0.2670	0.2510		0.2720	0.2580
	0.2720	0.2580		0.2770	0.2650
	0.2800	0.2480		0.2840	0.2550
WB3-a	0.2840	0.2550	WB3-b	0.2880	0.2620
	0.2770	0.2650		0.2818	0.2723
	0.2818	0.2723		0.2865	0.2795
	0.2880	0.2620		0.2920	0.2690

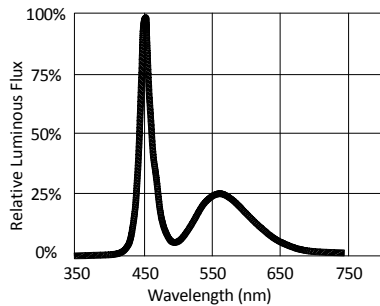
Note: Tolerance of Chromaticity Coordinates: ± 0.01

The C.I.E. 1931 Chromaticity Diagram

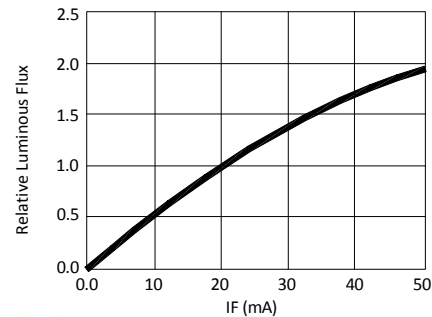


Typical Electro-optical Characteristics Curves

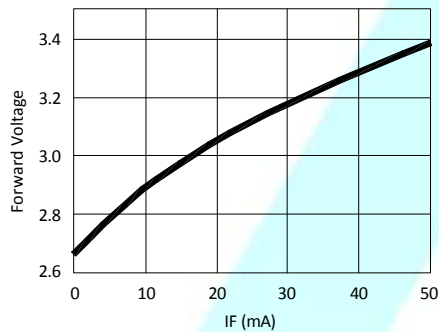
1、Spectrum Distribution Current
($T_a=25^{\circ}\text{C}$, $I_F=20\text{mA}$)



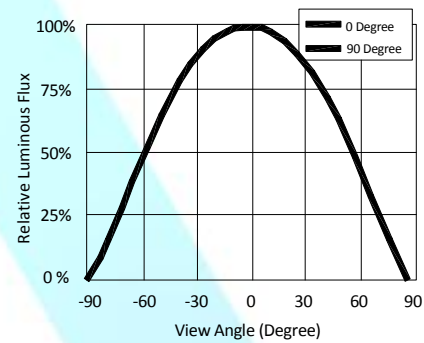
2、Relative Luminous Intensity vs. Forward
($T_a=25^{\circ}\text{C}$)



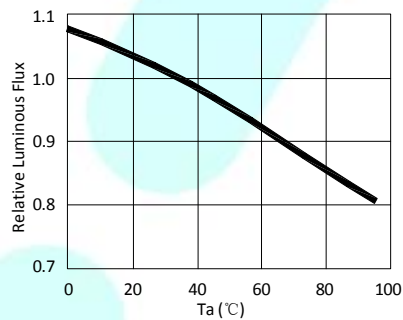
3、Relative Forward Voltage vs. Forward
Current ($T_a=25^{\circ}\text{C}$)



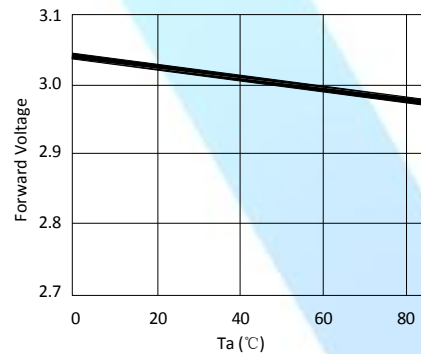
4、Radiation Diagram ($T_a=25^{\circ}\text{C}$, $I_F=20\text{mA}$)



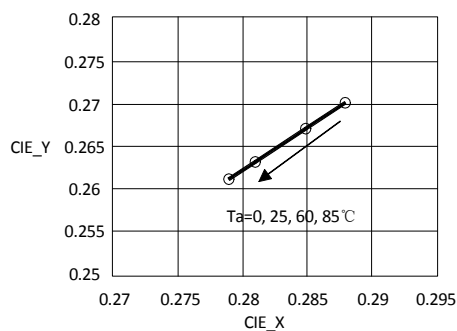
5、Relative Luminous Flux vs.
Temperature ($I_F=20\text{mA}$)



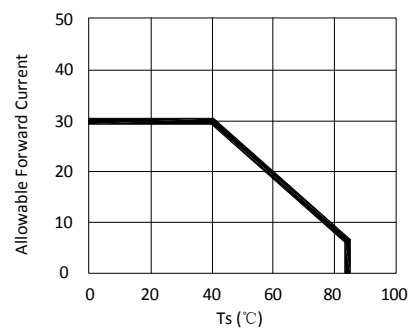
6、Forward Voltage vs. Ambient
Temperature ($I_F=20\text{mA}$)



7、Chromaticity Coordinates vs. Ambient
Temperature ($I_F=20\text{mA}$)



8、Forward Current De-rating Curve



Reliability Test Items and Conditions

Test Items	Ref. Standard	Test Conditions	Time	Quantity	Criterion
Reflow	JESD22-B106	Temp:260°C max T=10 sec	3 times.	22	22/22
Temperature Cycle	JESD22-A104	100°C±5°C 30 min. ↑↓5 min -40°C±5°C 30 min.	100 Cycles	22	22/22
High Temperature Storage	JESD22-A103	Temp:100°C±5°C	1000Hrs.	11	11/11
Low Temperature Storage	JESD22-A119	Temp:-40°C±5°C	1000Hrs.	11	11/11
Life Test	JESD22-A108	Ta=25°C±5°C IF=20mA	1000Hrs.	11	11/11
High Temperature High Humidity Life Test	JESD22-A101	85°C±5°C / 85%RH IF=20mA	1000Hrs.	11	11/11

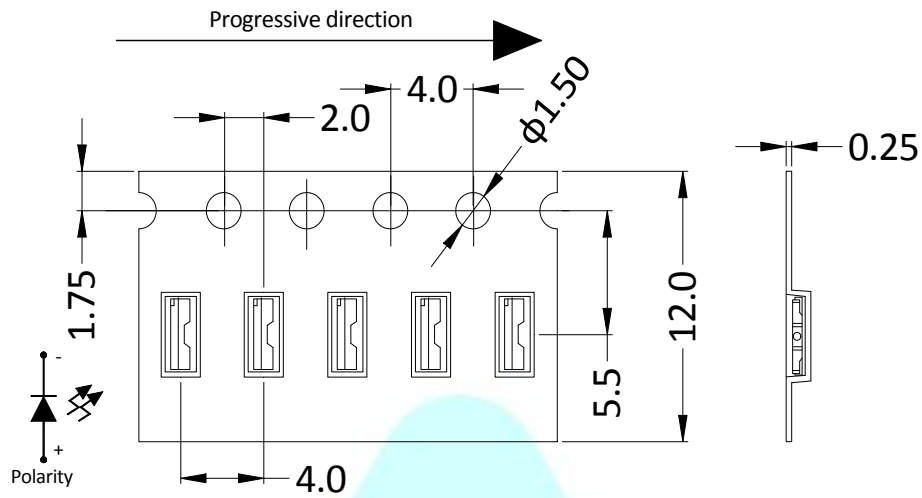
Failure Criteria

Test Items	Symbol	Test Conditions	Failure Criteria	
			Min	Max
Forward Voltage	V _F	IF=20mA	-	U.S.L*)x1.1
Reverse Current	I _R	VR=5V	-	10uA
Luminous Flux	Im	IF=20mA	L.S.L*)x0.7	-

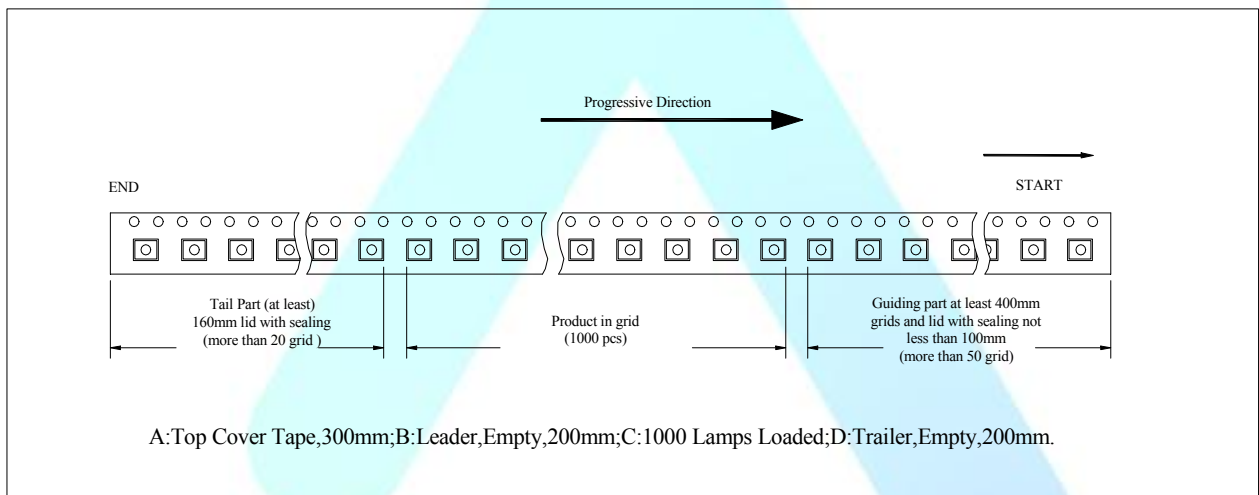
* Note:

- 1、 U.S.L: Upper Specification Limit
- 2、 L.S.L: Lower Specification Limit

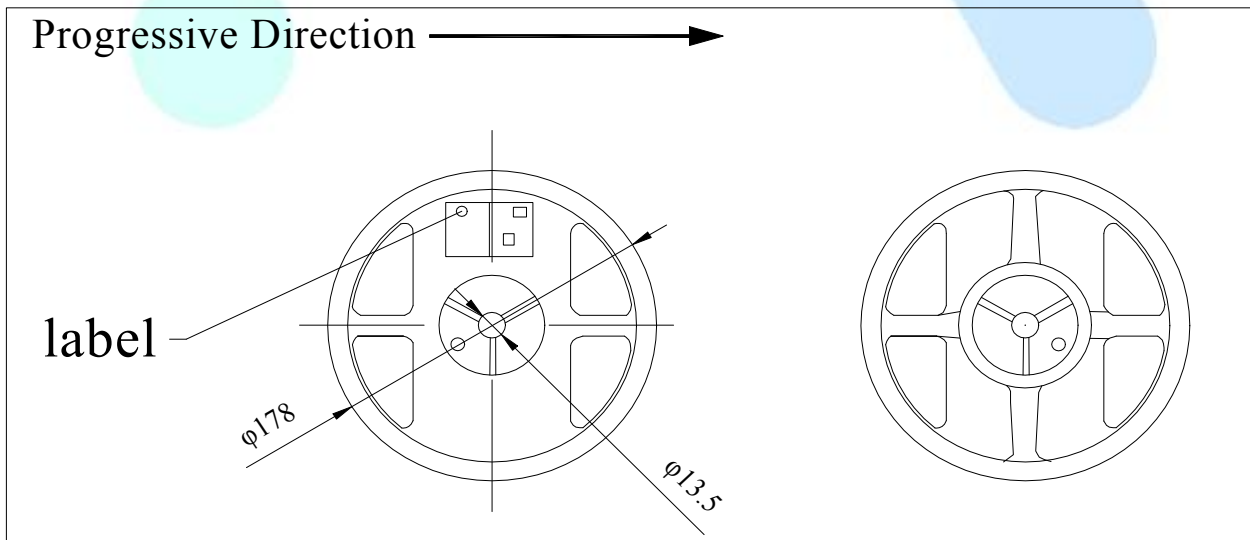
Packaging Carrier Tape



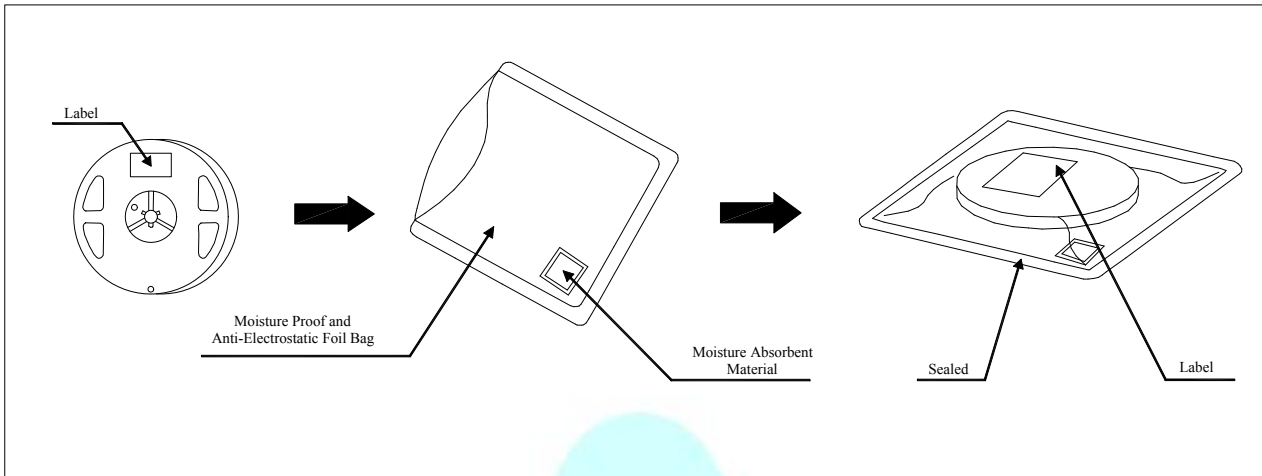
Details of Carrier Tape



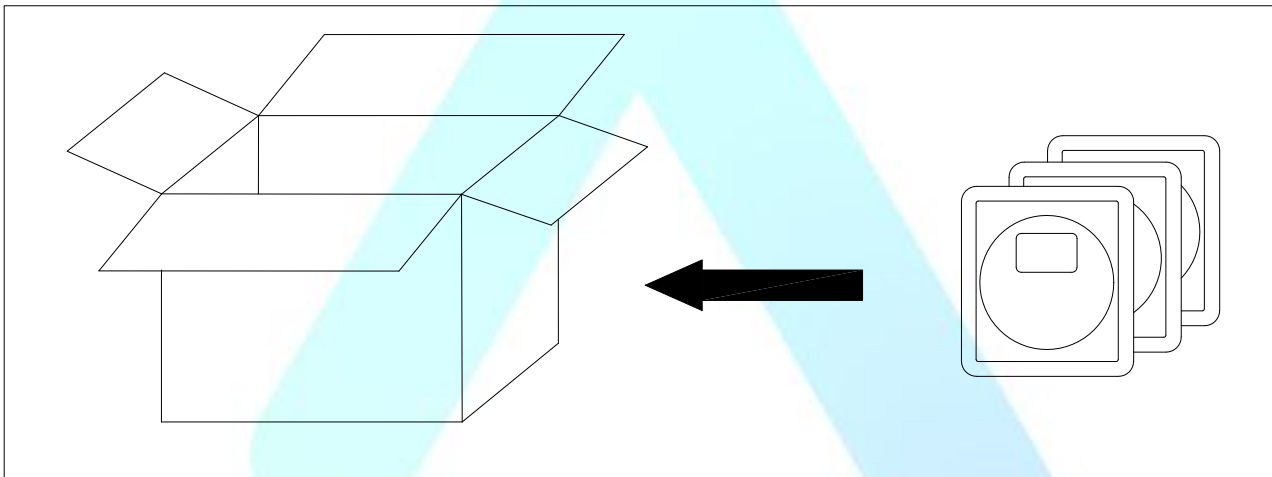
Reel Dimension



Moisture Proof and Anti-Electrostatic Foil Bag



Cardboard Box



Label explanation

CPN: Customer's Production Number

P/N: Production Number

QYY: Packing Quantity

CAT: Ranks

HUE: Peak Wavelength

REF: Reference

LOT No: Lot Number



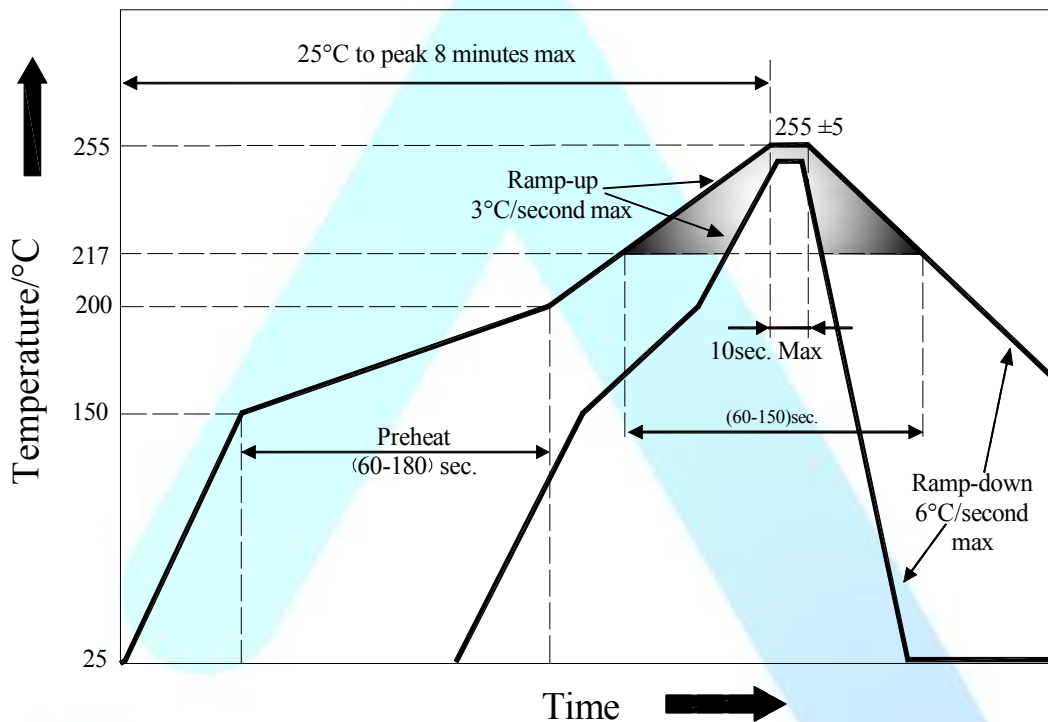
Guideline for Soldering

1.Hand Soldering

- A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the soldering iron under 360°C while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.
- Be careful because the damage of the product is often started at the time of the hand soldering

2.Reflow Soldering

- Use the conditions shown in the under Figure of Pb-Free Reflow Soldering.



- Reflow soldering should not be done more than two times.
- Stress on the LEDs should be avoided during heating in soldering process.
- After soldering, do not touch with the product before its temperature drop down to room temperature.

3.Cleaning

- It is recommended that alcohol be used as a solvent for cleaning after soldering. Cleaning is to go under 30°C for 3 minutes or 50°C for 30 seconds. When using other solvents, it should be confirmed before hand whether the solvents will dissolve the package and the resin or not.
- Ultrasonic cleaning is also an effective way for cleaning. But the influence of Ultrasonic cleaning on LED depends on factors such as ultrasonic power. Generally, the ultrasonic power should not be higher than 300W. Before cleaning, a pre-test should be done to confirm whether any damage to LEDs will occur.

Precautions**1. Storage**

1. Moisture proof and anti-electrostatic package with moisture absorbent material is used, to keep moisture to a minimum.
2. Before opening the package, the product should be kept at 30°C or less and humidity less than 80% RH, and be used within a year.
3. After opening the package, the product should be stored at 30°C or less and humidity less than 10% RH, and be soldered within 24 hours (1 day). It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60% RH.
4. If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (80±5)°C for 24 hours.

2. Static Electricity

- Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristic such as the forward voltage becomes lower, or the LEDs do not light at the low current even not light.
- All devices, equipment and machinery must be properly grounded. At the same time, it is recommended that wristbands or anti-electrostatic gloves, anti-electrostatic containers be used when dealing with the LEDs.

3. Vulcanization

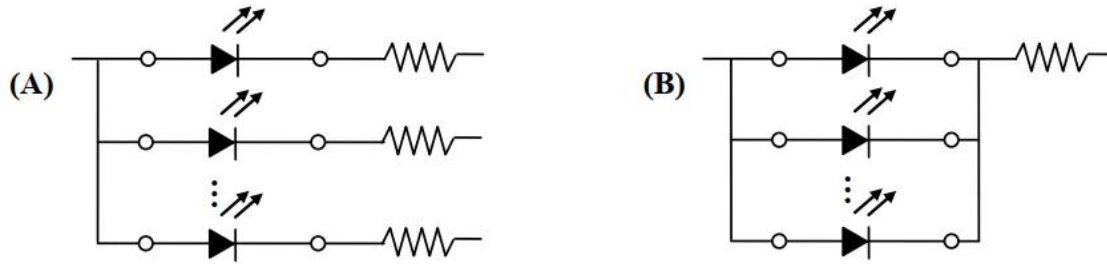
- LED curing is due to sulfur being in bracket and the +1 price of silver in the chemical reaction generated Ag₂S in the process. It will lead to the capacity of reflecting of silver layer reducing, light color temperature drift and serious decline, seriously affecting the performance of the product. So we should take corresponding measures to avoid vulcanization, such as to avoid using sulphur volatile substance and keeping away from high sulphur content of the material.

4. Safety Advice For Human Eyes

- Viewing direct to the light emitting center of the LEDs, especially those of great Luminous Intensity will cause great hazard to human eyes. Please be careful.

5. Design Consideration

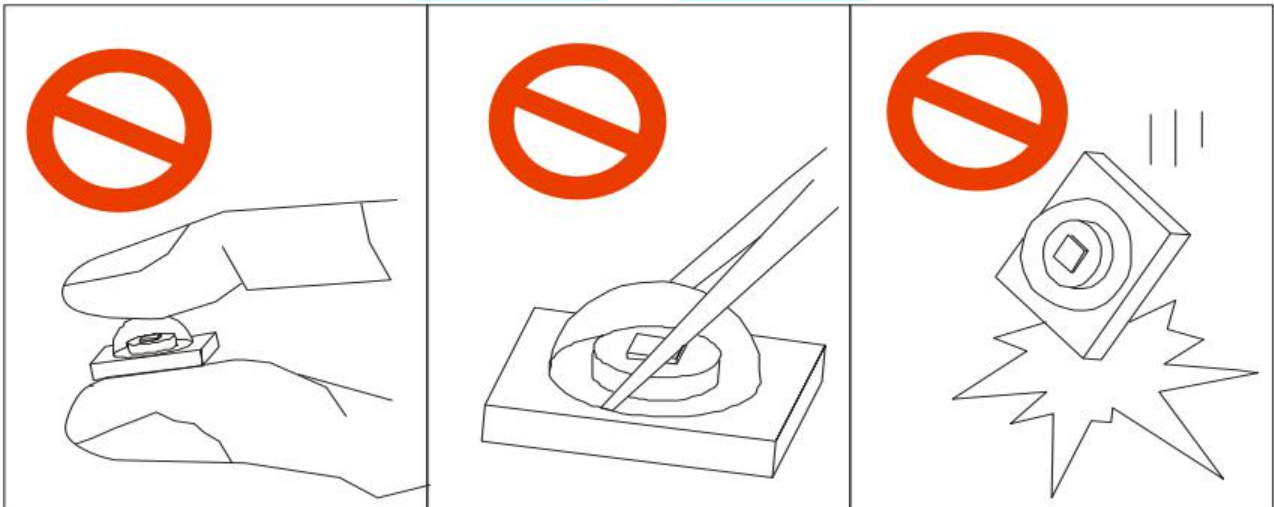
- In designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen.
- It is recommended to use Circuit A which regulates the current flowing through each LED rather than Circuit B. When driving LEDs with a constant voltage in Circuit B, the current through the LEDs may vary due to the variation in Forward Voltage (VF) of the LEDs. In the worst case, some LED may be subjected to stresses in excess of the Absolute Maximum Rating.



- Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color changed and so on. Please consider the heat generation of the LEDs when making the system design.

6. Others

- When handling the product, touching the encapsulate with bare hands will not only contaminate its surface, but also affect on its optical characteristic. Excessive force to the encapsulate might result in catastrophic failure of the LEDs due to die breakage or wire deformation. For this reason, please do not put excessive stress on LEDs, especially when the LEDs are heated such as during Reflow Soldering.



- The silicon resin of encapsulate is fragile, so please avoid scratch or friction over the silicon resin surface. While handling the product with tweezers, do not hold by the silicon resin, be careful.