

SPECIFICATION FOR APPROVAL

Customer :

Customer Part No. :

Brightek Part No. : V51519V20CPN1

Time : 2022/05/30

Customer Confirmation	Approval	Checkedy	Prepared By
	Wilson	CB.Tan	GP.Liu

V51519V20CPN1

- ◆ Outline : 1.5*1.9*0.9mm
- ◆ High Power Output And High efficiency
- ◆ Good thermal dissipation & Optical uniformity

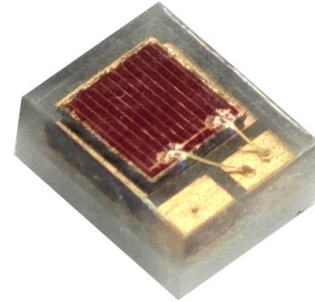


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Features

- RoHS and REACH-compliant
- MSL2 qualified according to JEDEC J-STD 020
- ESD 2KV (HBM: ANSI/JEDEC JS-001 Class 2)
- Reliability Test: AEC Q-102qualified

Applications

- Automotive Exterior Lighting

■ Product Code

V5 - 1519 - V20 - C - P - N1

① ② ③ ④ ⑤ ⑥

①	②	③	④	⑤	⑥
Process Type	Lead Frame Size	Dice wavelength	Cap Color	Spectral Condition Code	Flow Code
V5 : special product	1519: 1.5* 1.9mm	V20: red	C: water transparent	P:500mA	N: no zener 1: no expression above meaning for company

■ Typical Product Characteristics(Ta=25°C)

Item	Symbol	Value			Unite	Test Condition
		Min.	Typ.	Max.		
Forward Voltage	V _F	1.8		2.8	V	I _F =500mA
Reverse Current	I _R			10	μA	V _R =5V
Luminous Intensity	Φ	38		76	lm	I _F =500mA
Viewing Angle	2θ _{1/2}		120		deg	I _F =500mA
Dominant Wavelength	WLD	618		628	nm	I _F =500mA

Notes:

1. The above forward voltage measurement allowance tolerance is ±0.05V
2. The above luminous flux measurement allowance tolerance ±7%
3. The above Viewing angle (2θ_{1/2}) measurement allowance tolerance ±10°
4. IS standard test.

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

Characteristics	Symbol	Min.	Typ.	Max.	Unit
DC Forward Current ¹	I_F			1000	mA
Pulse Forward Current ²	I_{PF}			1500	mA
Reverse Voltage	V_R			5	V
Junction Temperature ³	T_J			150	$^\circ\text{C}$
Thermal Resistance Junction/ Solder Point	R_{THJ-S}		6		$^\circ\text{C}/\text{W}$
Operating Temperature Range	T_{OPR}	-40	–	125	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-40	–	125	$^\circ\text{C}$
Soldering Temperature	T_{SD}			260	$^\circ\text{C}$

Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. Duty 1/10, pulse width 10ms
3. When drive on maximum current , T_J must be kept below 125°C

■ Dominant Wavelength Binning (IF=500mA)

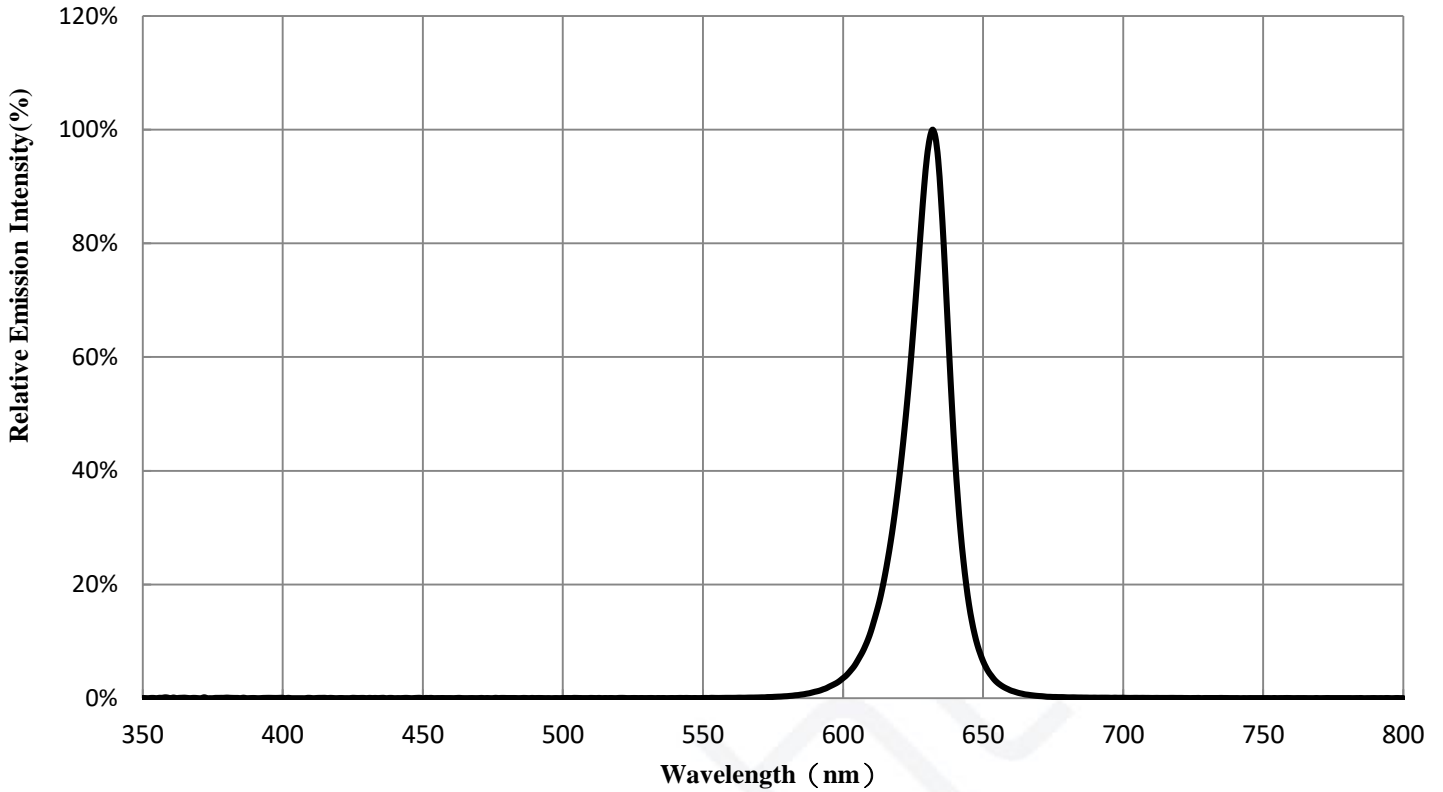
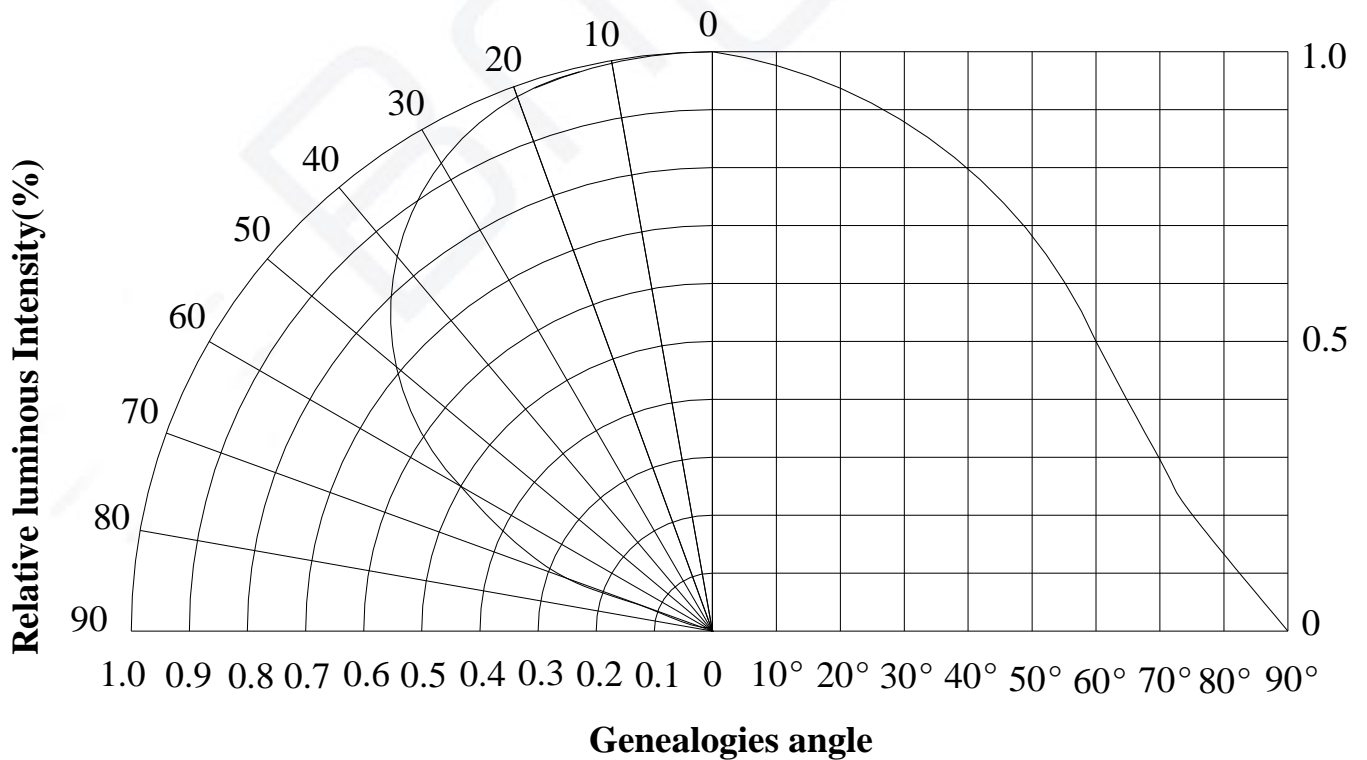
Bin Code	Min. λ_d (nm)	Max. λ_d (nm)
V1	618	623
V2	623	628

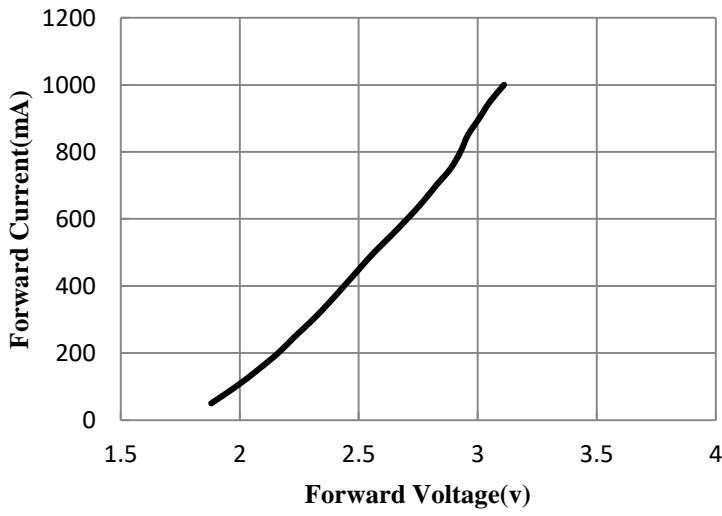
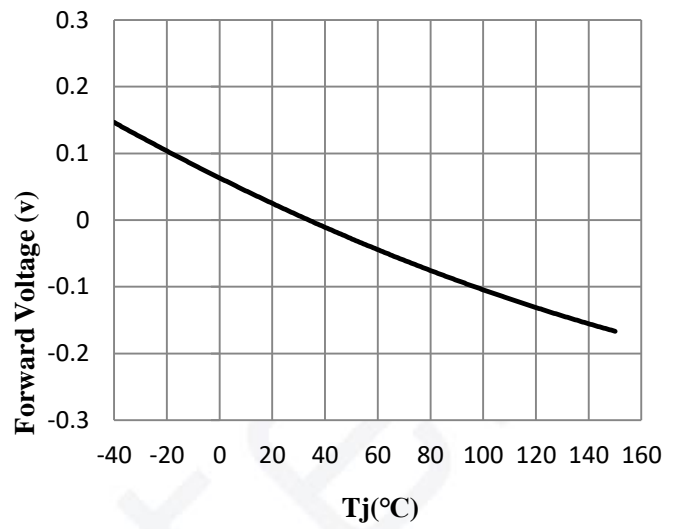
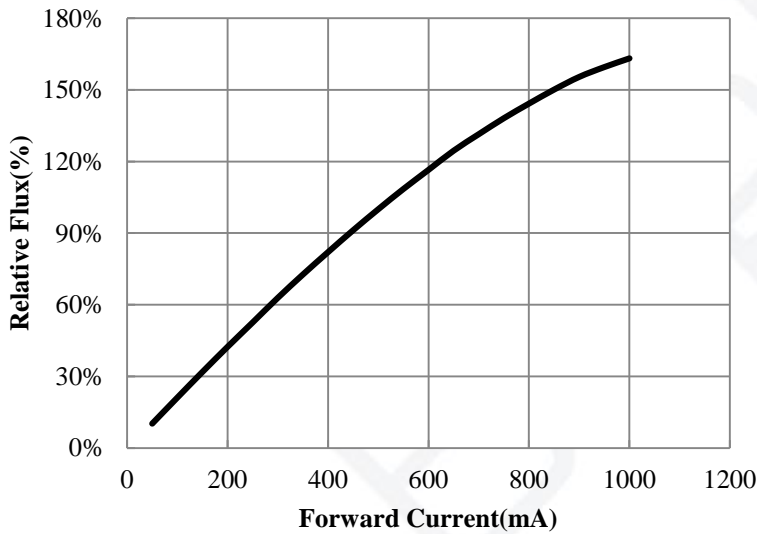
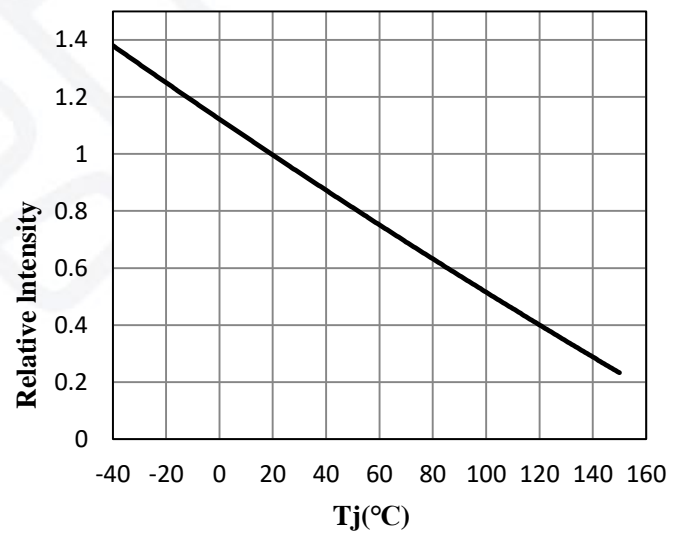
■ Luminous Intensity Binning (IF=500mA)

Bin Code	Min. Φ_v (Lm)	Max. Φ_v (Lm)
19	38	44
20	44	50
21	50	58
22	58	66
23	66	76

■ Forward Voltage Binning (IF=500mA)

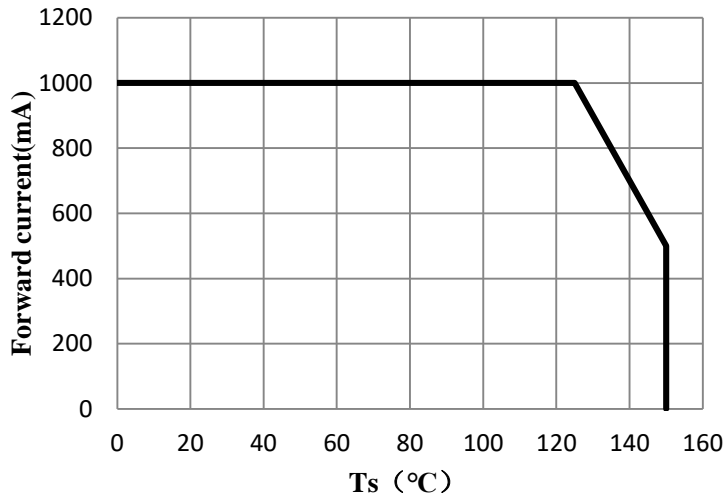
Bin Code	Min. V_F (V)	Max. V_F (V)
E	1.8	2.0
F	2.0	2.2
G	2.2	2.4
H	2.4	2.6
J	2.6	2.8

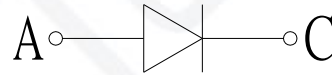
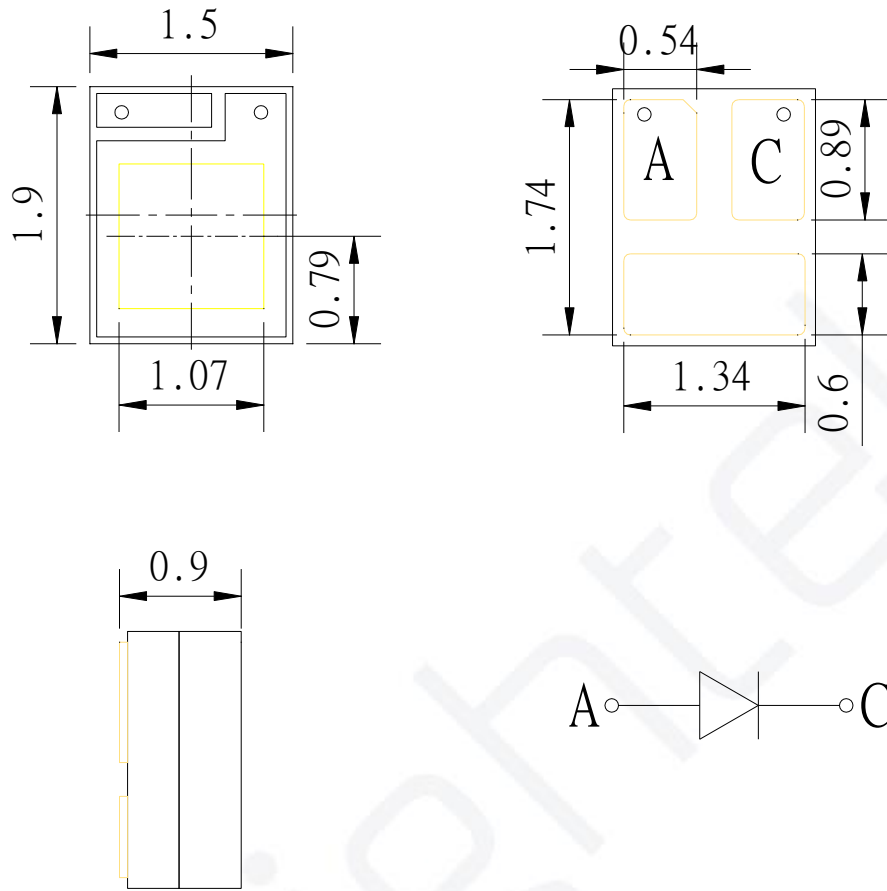
Relative Spectral Power Distribution

Typical Diagram Characteristics of Radiation


Electronic-Optical Characteristics
Forward Current vs. Forward Voltage

Forward Voltage vs. Temperature

Relative Flux vs. Forward Current

Relative Luminous Flux vs. SoTemperature


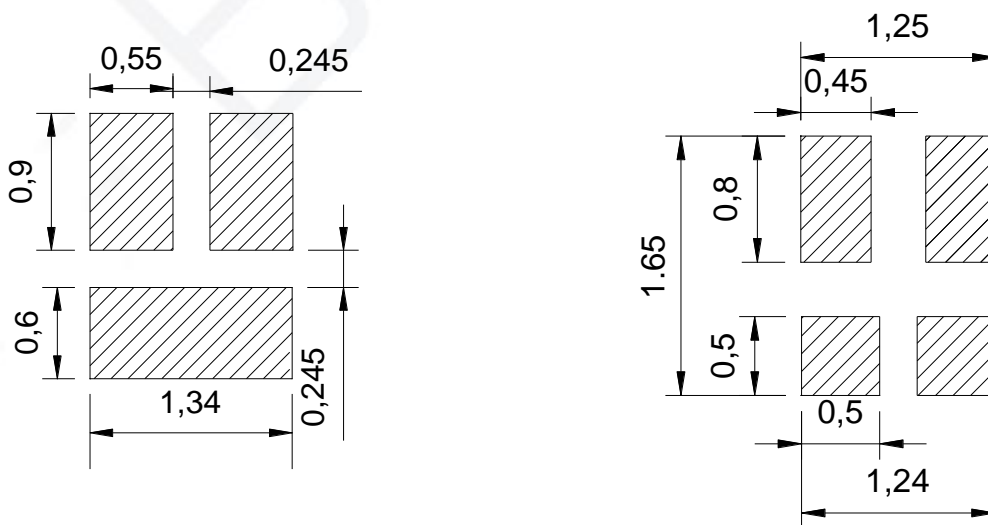
■ Thermal Design for De-rating

The maximum forward current is determined by the thermal resistance between the LED junction and solder point. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics. one chip on board



■ Dimensions


§ All dimensions are in millimeters.
 § Tolerance is $\pm 0.13\text{mm}$ unless other specified.

■ Suggest Stencil Pattern (Recommendations for reference)


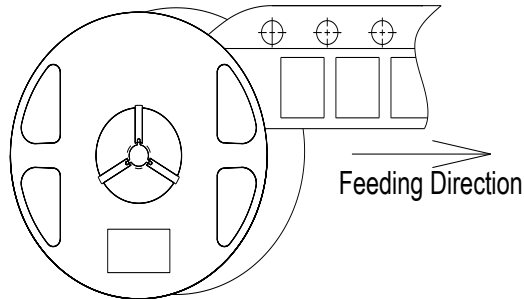
RECOMMENDED PCB SOLDER PAD

**RECOMMENDED STENCIL PATTERN
 (HATCHED AREA IS OPENING)**

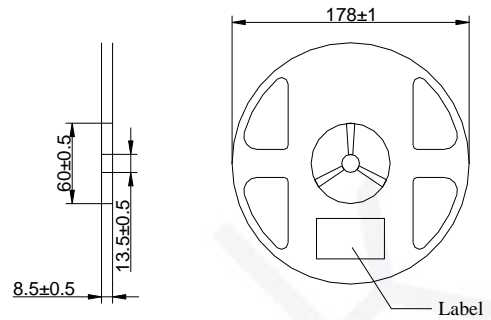
§ Suggest stencil $t = 0.12\text{ mm}$

■ Packaging

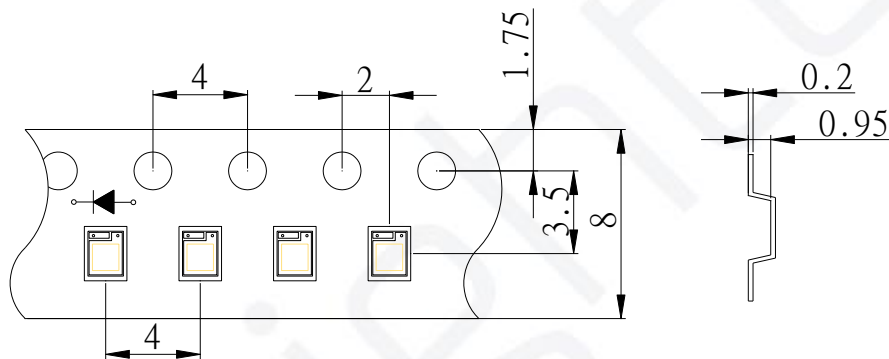
● Feeding Direction (Unit: mm)



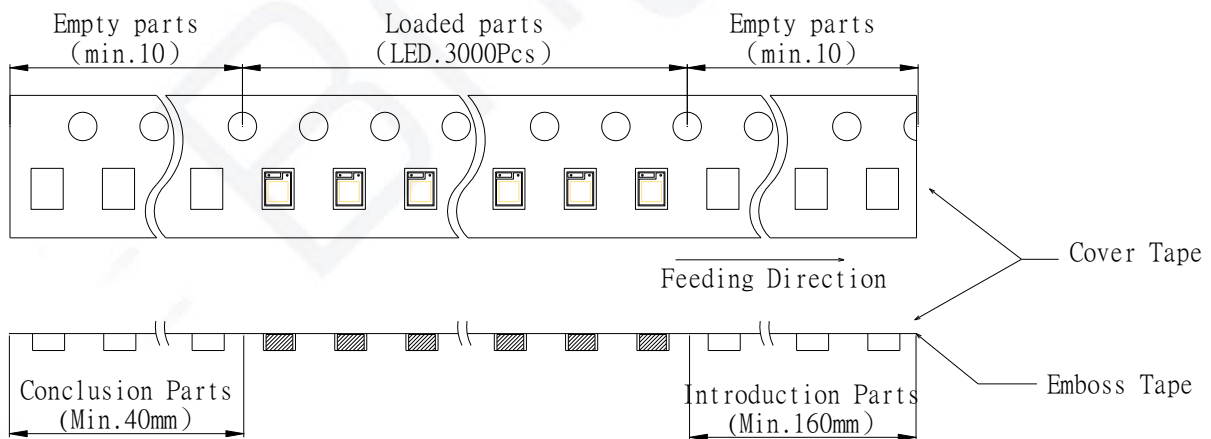
● Dimensions of Reel (Unit: mm)



● Dimensions of Tape (Unit: mm)



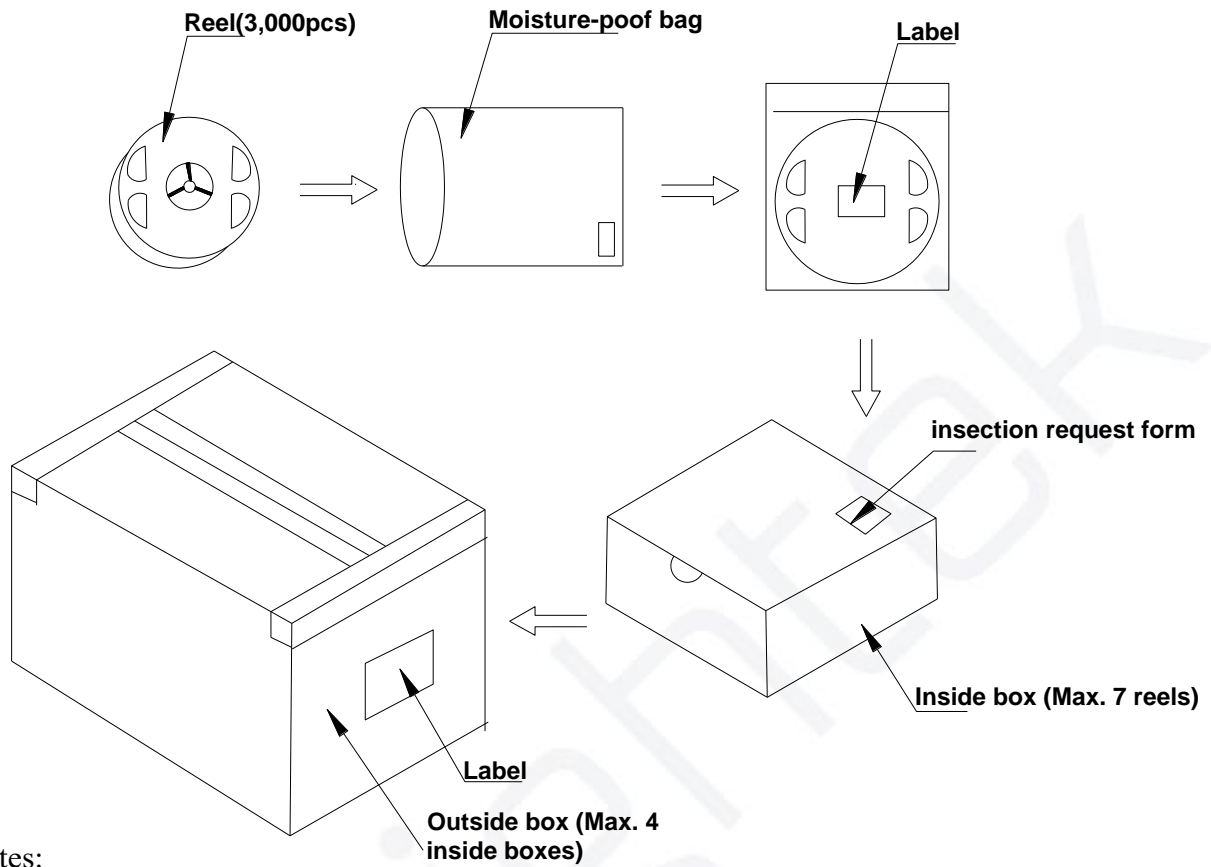
● Arrangement of Tape



Notes:

1. Empty component pockets are sealed with top cover tape
2. The max loss number of SMD is 2pcs;
3. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/EIA RS-481 specifications;
4. 3,000pcs per reel;
5. The remainder packing in multiples of 500pcs.

■ Packaging

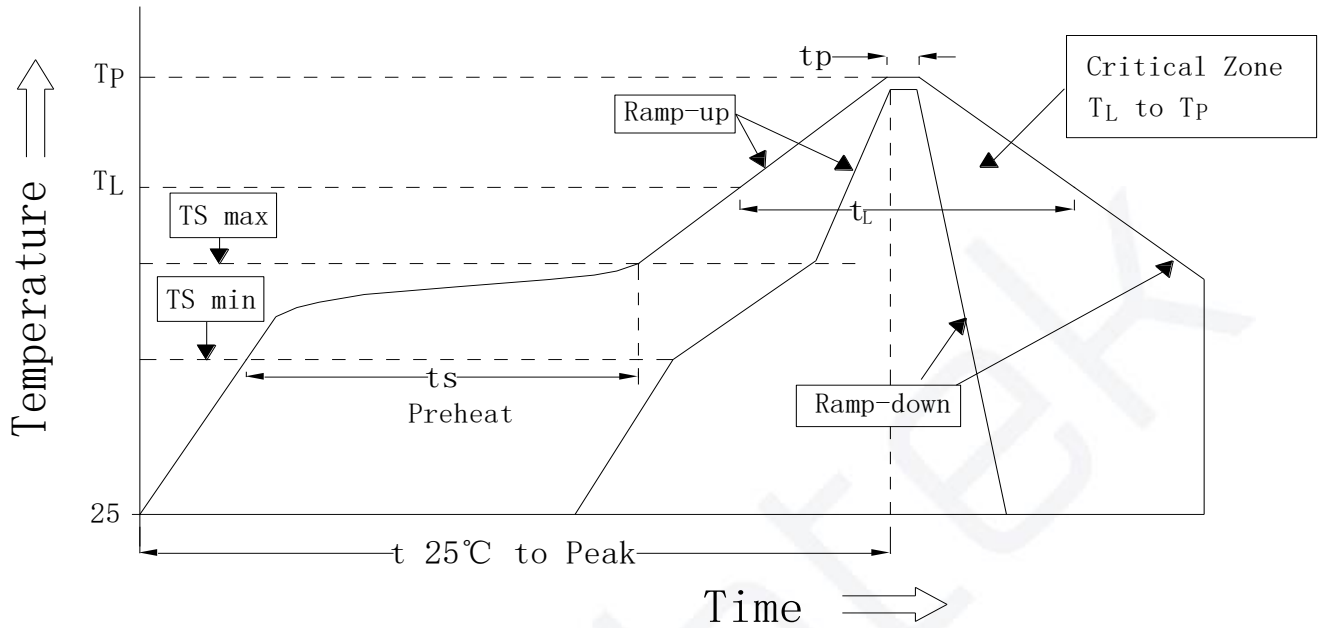


Notes:

Reeled product (max.3,000) is packed in a sealed moisture-proof bag. Seven bags are packed in an inner box (size: about 260 X 230 X 100 mm) and four inner boxes are in an outer box (size: about 480 X 275 X 215 mm). On the label of moisture-proof bag, there should be the information of Part No., Lot No. and quantity number; also the total quantity number should be on inspection request form on outer box.

■ Reflow Profile

SMT Reflow Soldering Profile



Profile Feature	Symbol	Pb-Free (SnAgCu) Assembly			Unit
		Min.	Recommendation	Max.	
Ramp-up rate to preheat (25°C to 150°C)			2	3	K/s
Time t_s ($T_{S\ min}$ to $T_{S\ max}$)	t_s	60	100	120	s
Ramp-up rate to peak ($T_{S\ max}$ to T_P)			2	3	K/s
Liquidus temperature	T_L		217		°C
Time above liquidus temperature	t_L		80	100	s
Peak temperature	T_P		245	260	°C
Time within 5 °C of the specified peak temperature $T_P - 5\ K$	t_p	10	20	30	s
Ramp-down Rate (T_P to 100 °C)			3	4	K/s
Time 25 °C to T_P				480	s

Notes:

1. Do not stress the silicone resin while it is exposed to high temperature.
2. The reflow process should not exceed 2 times.

■ **Precautions**

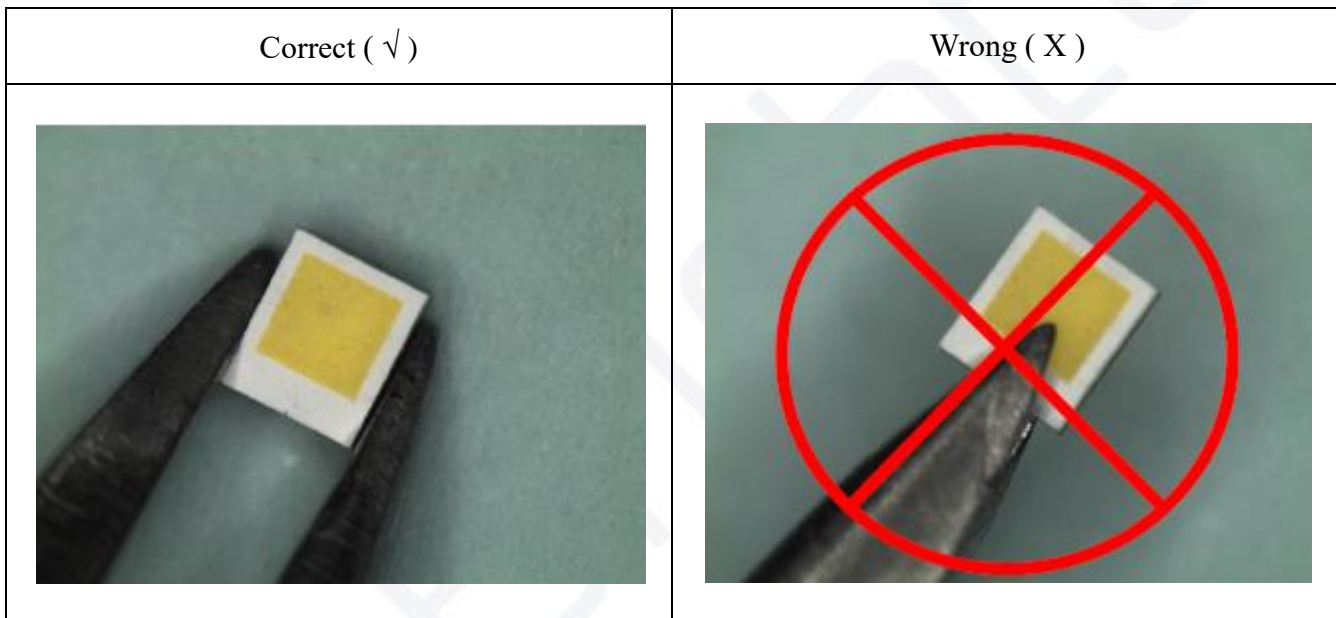
1. Recommendation for using LEDs

- 1.1 The lens of LEDs should not be exposed to dust or debris. Excessive dust and debris may cause a drastic decrease in the luminosity.
- 1.2 Avoid mechanical stress on LED lens.
- 1.3 Do not touch the LED lens surface. It would affect the optical performance of the LED due to the LED lens' damage.
- 1.4 Pick & place tools are recommended for the remove of LEDs from the factory tape & reel packaging

2. Lens handling

Please follow the guideline to pick LEDs.

- 2.1 Use tweezers to pick LEDs.
- 2.2 Do not touch the lens by using tweezers.
- 2.3 Do not touch lens with fingers.
- 2.4 Do not apply more than 4N (400gw) directly onto the lens.



3. Lens cleaning

In the case which a small amount of dirt and dust particles remain on the lens surface, a suitable cleaning solution can be applied.

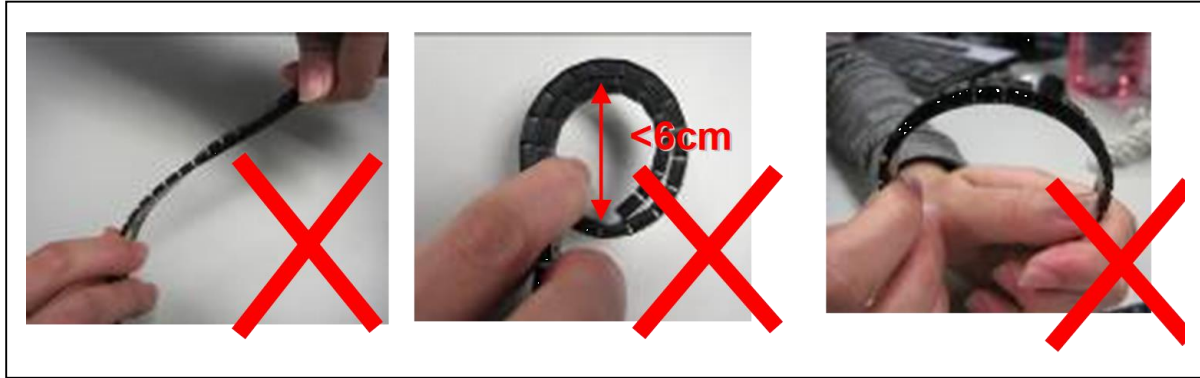
- 3.1 Try a gentle wiping with dust-free cloth.
- 3.2 If needed, use dust-free cloth and isopropyl alcohol to gently clean the dirt from the lens surface.
- 3.3 Do not use other solvents as they may directly react with the LED assembly.
- 3.4 Do not use ultrasonic cleaning which will damage the LEDs.

4. Carrier tape handling

The following items are recommended when handling the carrier tape of LEDs.

- 4.1 Do not twist the carrier tape.
- 4.2 The inward bending diameter should not be smaller than 6cm for each carrier tape.

4.3 Do not bend the tape outward.



5. Storage

5.1 The moisture-proof bag is sealed :

The LEDs should be stored at 30°C or less and 90%RH or less. And the LEDs are limited to use within one year, while the LEDs is packed in moisture-proof package with the desiccants inside.

5.2 The moisture-proof bag is opened :

The LEDs should be stored at 30°C or less and 60%RH or less. Moreover, the LEDs are limited to solder process within 168hrs. If the humidity indicator card shows the pink color in 10% even higher or exceed the storage limiting time since opened, that we recommended to baking LEDs at 60°C at least 24hrs. To seal the remainder LEDs return to the moisture-proof bag, it's recommended to be with workable desiccants.