

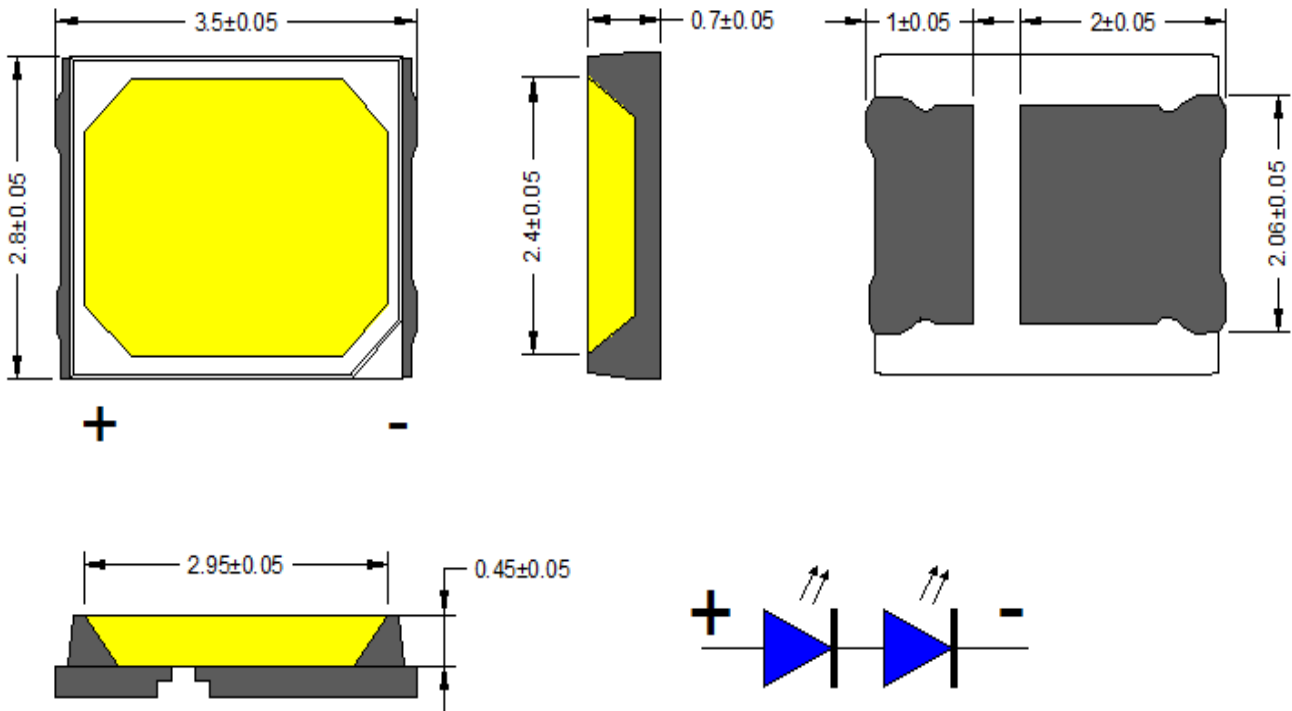


## Features

- External Dimensions : 3.5\*2.8\*0.7(L\*W\*H)
- 3.5\*2.8\*0.7
- Internal Structure: Chip on Copper Board
- Viewing Angle:120° -120
- Chip Material :GaN -
- RoHS Compliant



## Outline Dimensions



## Application

- Down Light, Spot Light, High Bay Light, Flood Light, Outdoor Light

# Performance

## Absolute Maximum Ratings

Items	Symbol	Rating	Unit
Forward Current	If	150	mA
Peak Pulsed Forward Current	I <sub>F(Peak)</sub>	150~180	mA
Storage Temperature	T <sub>stg</sub>	-40~+85	°C
Operating Temperature	T <sub>opr</sub>	-30~+85	°C
Soldering Temperature	T <sub>s</sub>	/	°C
Junction Temperature	T <sub>j</sub>	125	°C
ESD Sensitivity	ESD	2000V HBM	V
Lead Soldering Temperature	T <sub>sol</sub>	Max. 350°C for 5 sec	°C

\*①These or any other conditions beyond those indicated under recommended operating conditions may cause permanent damages to the device

\*②Duty 1/10, pulse width 10ms.

\*③D. C. Current :  $T_j = T_c + R_{th\ j-s} \times P$ ;  $T_j = T_c + R_{th\ j-s} \times P$

## Electro-Optical Characteristics at T<sub>c</sub>=25°C

Items	Symbol	CCT	Min	Avg	Max	Unit
Luminous Flux	Φ <sub>v</sub>	2700-3500 (WW)	140	~	160	LM
		4000-6500 (NW/PW)	160	~	170	LM
Forward Voltage	V <sub>f</sub>	If= 150mA	5.8	~	6.4	V
Color Rendering Index	R <sub>a</sub>	If= 150mA	90	--	96	-
Viewing Angle	2θ <sub>1/2</sub>	If= 150mA	--	120	--	°
Thermal Resistance	R <sub>th j-s</sub>		\	15	\	°C/W
Reverse Leakage Current	I <sub>r</sub>	10V	\	\	5	μA

\*These values are measured by the GS Everfine Hass2000 optical spectrum analyzer within the following tolerances:

Luminous Flux (Φ<sub>v</sub>) : ±5%, Forward Voltage (V<sub>f</sub>) : ±0.1, X/Y : ±0.005, CRI Value : ±2

## Bin code

Color Bins (IF = 150 mA, Ts= 25°C)

CCT	Chip Level.	Color Rank	Flux(Lm)*④	VF(V)*④
2700K	B9	F27/A27	140-150	5.8-6.4
3000K	B9	F30/A30	150-160	5.8-6.4
3500K	B9	A35	150-160	5.8-6.4
4000K	B9	F40/A40	160-170	5.8-6.4
5000K	B9	F50/A50	160-170	5.8-6.4
5700K	B9	A57	160-170	5.8-6.4
6500K	B9	F65/A65	160-170	5.8-6.4

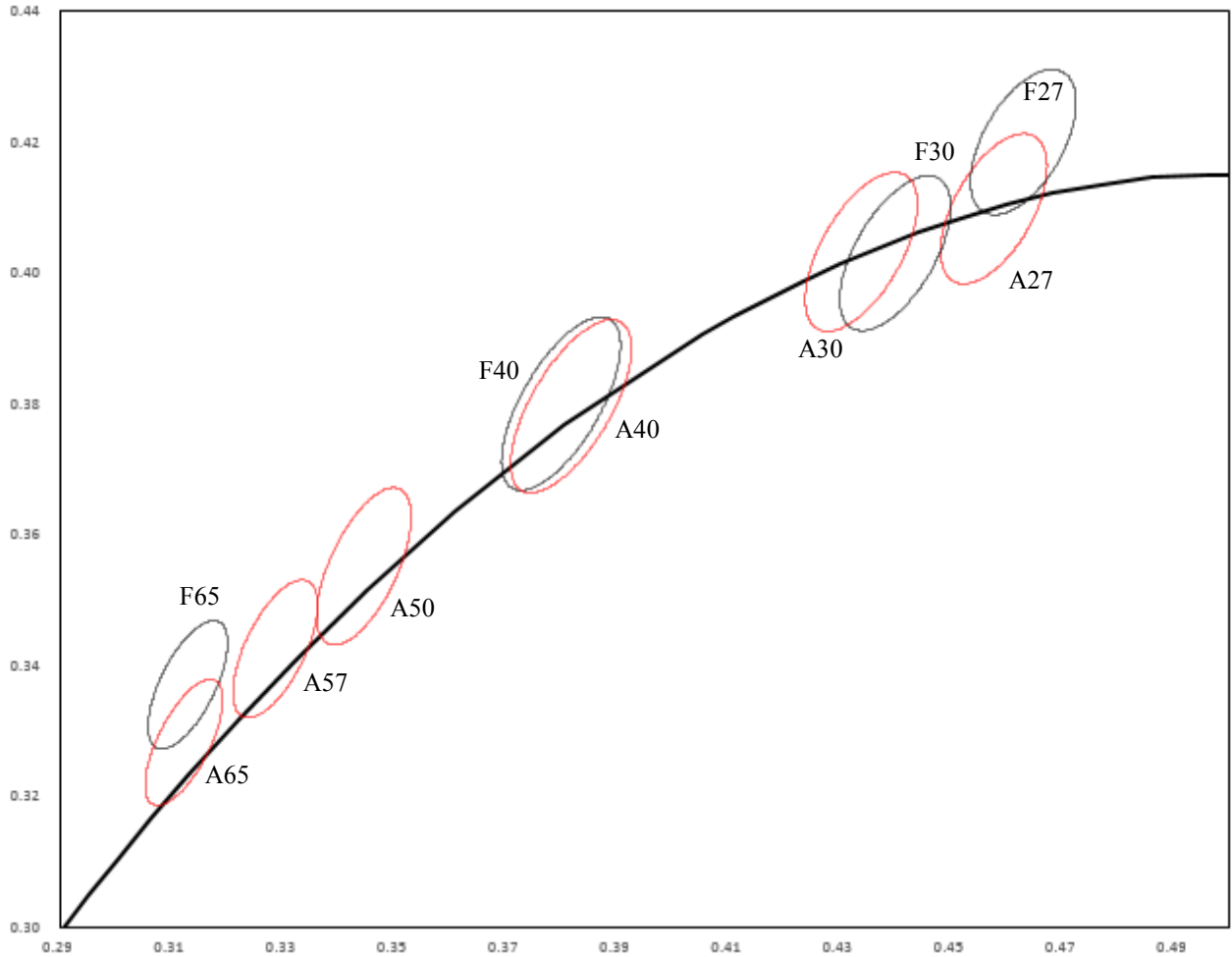
Forward Voltage Bins (IF = 150 mA, Ts= 25°C)

5.8-6.0
6.0-6.2
6.2-6.4

\*④We can meet customers' customized needs for Lm and voltage.

# Bin code

## Chromaticity Bins



	CCT	x	y	a	b	B
ERP						
1	F2700	0.4630	0.4200	0.00258	0.00137	53.17
2	F3000	0.4400	0.4030	0.00278	0.00136	53.1
4	F4000	0.3800	0.3800	0.00313	0.00134	54.0
5	F5000	0.3460	0.3590	0.00274	0.00118	59.37
6	F6500	0.3130	0.3370	0.00223	0.00095	58.23

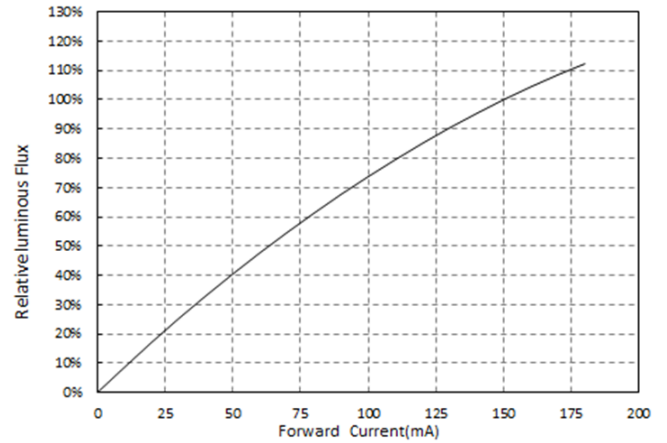
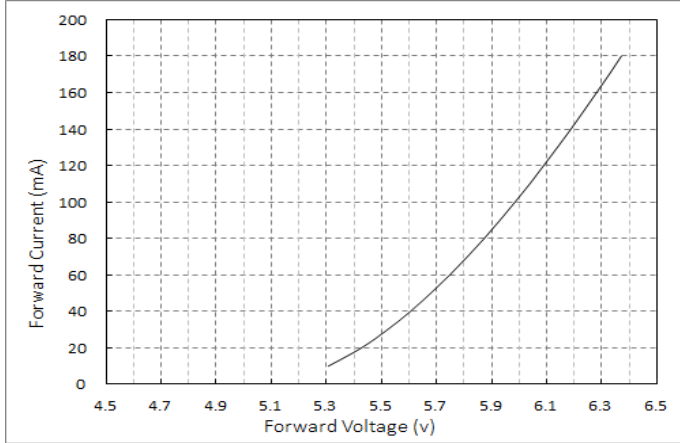
### ANSI

9	A2700	0.4577	0.4098	0.00266	0.00136	54.1
10	A3000	0.4339	0.4032	0.00284	0.00138	53.7
12	A4000	0.3818	0.3796	0.00314	0.00136	53.4
14	A5000	0.3446	0.3551	0.0027	0.00118	59.8
15	A5700	0.3287	0.3425	0.00238	0.00104	58.8
16	A6500	0.3123	0.3282	0.0022	0.0009	58.1

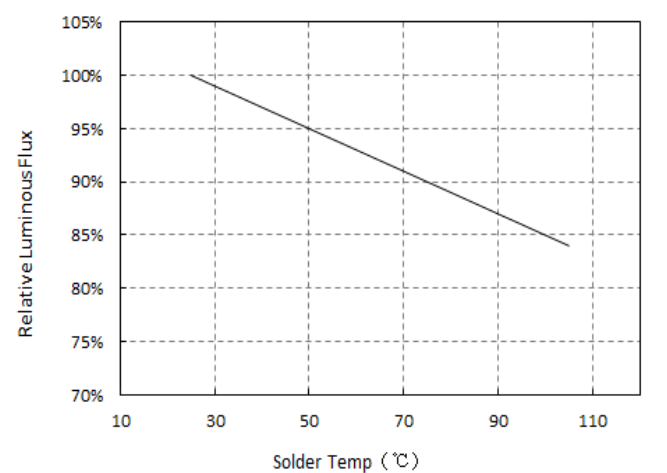
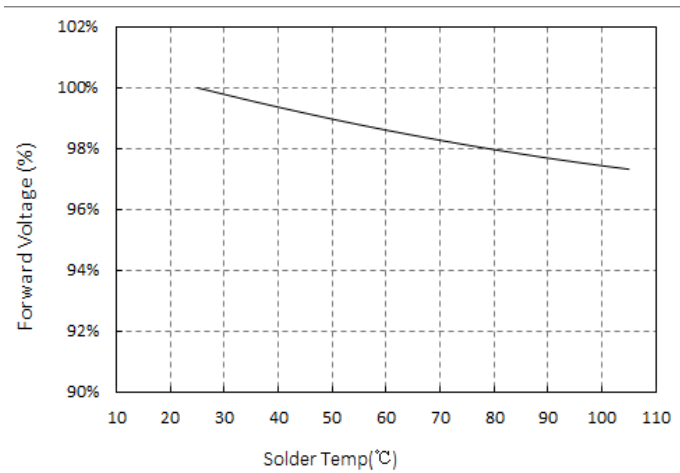
The above color temperature measurement allowance tolerance is  $\pm 150K$

# Typical Characteristic Curves

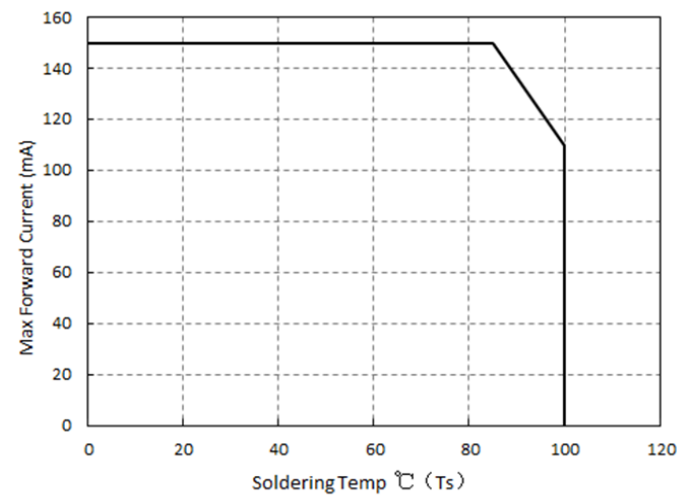
## Forward Current Characteristics



## Temperature Characteristics



## Derating Curve



## Reliability Test Item and Conditions

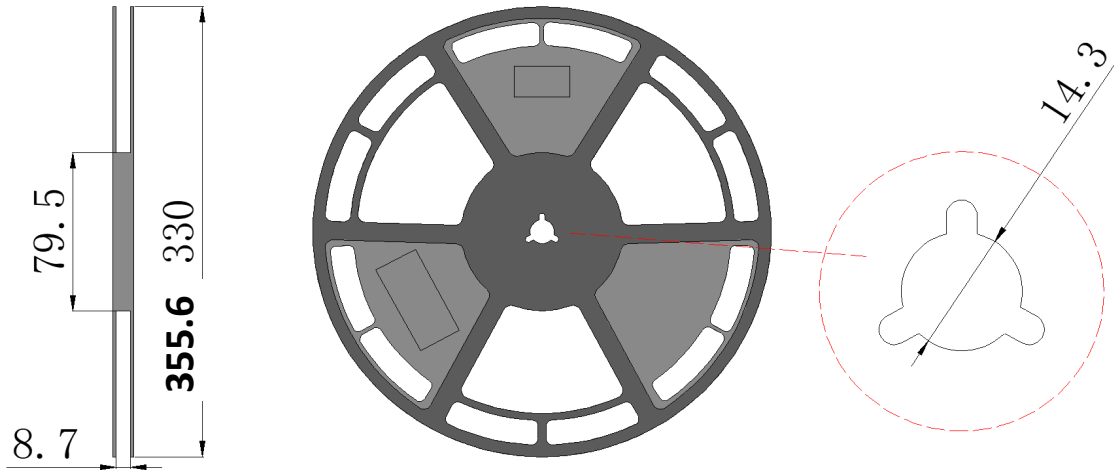
### Failure Criteria

Items	Symbols	Test Conditions	Min	Max
Forward Voltage	V <sub>f</sub>	I <sub>f</sub> =Typical Current	—	Initial Value*1.1
Luminous Flux	Φ <sub>v</sub>	I <sub>f</sub> =Typical Current	Initial Value*0.7	—

### Reliability Test

No	Items	Test Condition	Test Hours/Cycles	Sample Size	Ac/Re
1	Room Temperature Operating Life	Ta=25°C I <sub>f</sub> =Typical Current (DC)	1000hrs	22pcs	0/1
2	High Temperature Operating Life	Ta=85°C I <sub>f</sub> =Typical Current (DC)	1000hrs	22pcs	0/1
3	Wet High Temperature Operating Life	Ta=85°C & 85%RH I <sub>f</sub> =Typical Current (DC)	168hrs	22pcs	0/1
4	Low Temperature Operating Life	Ta=-30°C	1000hrs	22pcs	0/1
5	High Temperature Storage Life	Ta=85°C	1000hrs	22pcs	0/1
6	Low Temperature Storage Life	Ta=-40°C	1000hrs	22pcs	0/1
7	Temperature Cycle	H:+100°C 30min~5min~L:-40°C 30min	200cycles	22pcs	0/1
8	Thermal Shock	H:+100°C 15min~10sec~L:-40°C 15min	200cycles	22pcs	0/1
9	Reflow Soldering	260°C 10sec	3cycles	22pcs	0/1

## Packing Standard



(m)

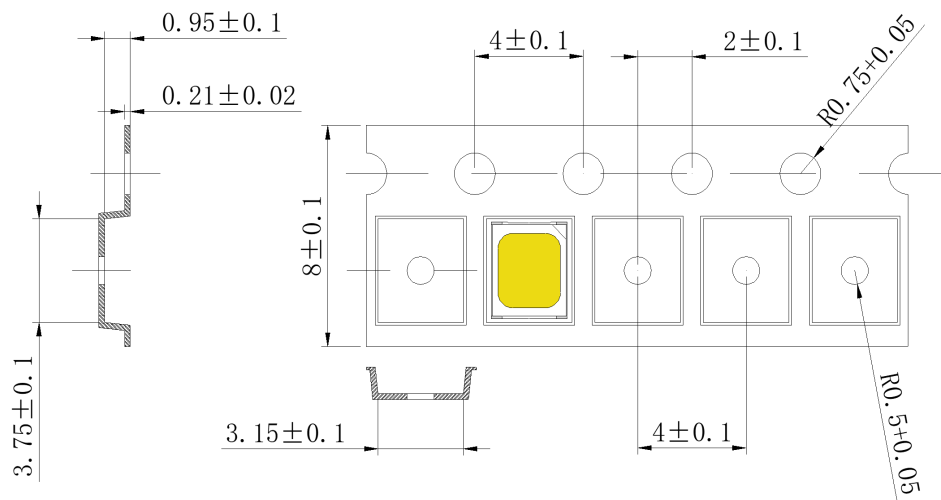
Reel  
Tape

Polarity  
Direction

Cathode



Anode



## Caution on Use

Notice: Light-emitting diode (LED) is a device which combines blue-light chips with special phosphors to achieve light output. The current used in this product is less than or equal to the rated current. It is not recommended that customers use larger current drive.

### (1) Package

After water is absorbed by the surface of LED devices, it will penetrate into the bracket and evaporate and diffuse during welding. The difference of thermal expansion coefficient between the encapsulated colloid and the bracket interface may lead to the breaking of the gold wire and cause the dead lamp. For this reason, the product packaging needs to be wrapped in a roll and wrapped in an aluminum foil bag with water-proof vapor.

### (1) Storage Condition:

Condition		Temperature	Humidity	Age
Storage	Before Open	≤30℃	≤60%RH	≤1 Year
	After Open	≤30℃	≤60%RH	24hour
Baking conditions		65±5℃	≤5%RH	≥12小时

Please refer to IPC/JEDEC J-STD-033B.1。

### (3) Soldering Iron

A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 300℃ while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.

#### Repairing

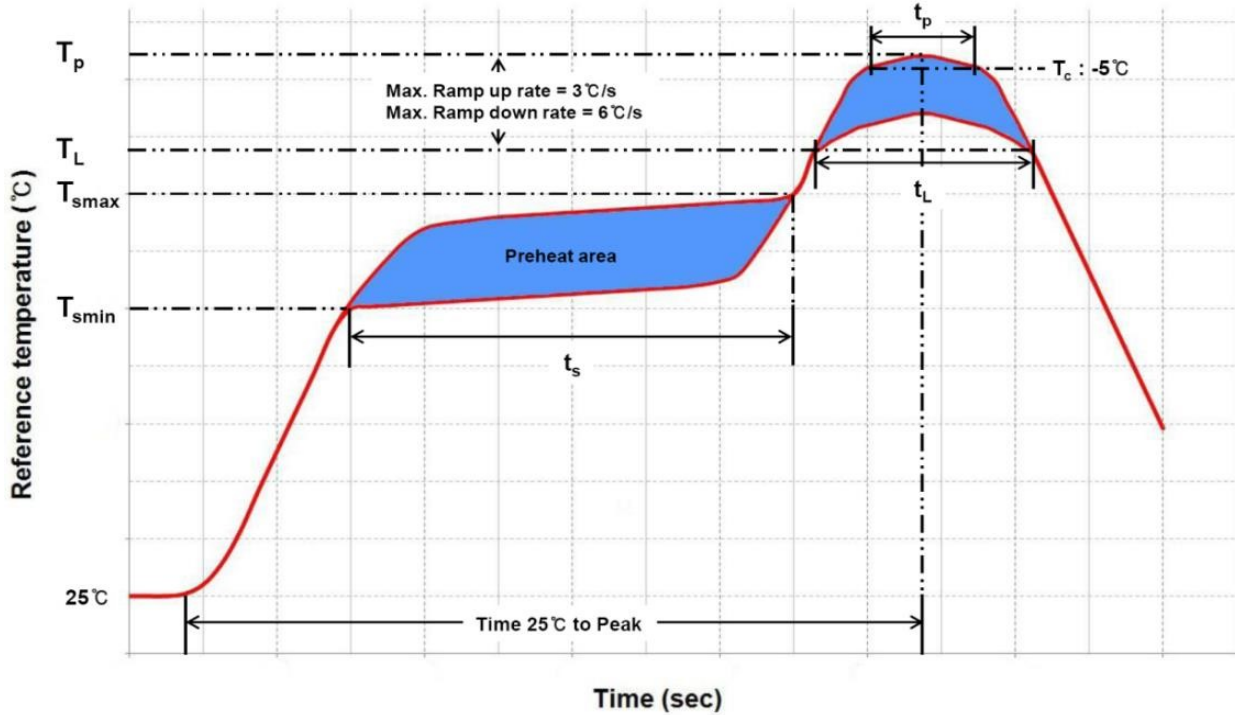
Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or will not be damaged by repairing.

#### LED

Be careful because the damage of the product is often started at the time of the hand soldering.

**(4) Reflow Soldering**

Recommended reflow soldering condition (Lead-free solder)



Profile Feature	Pb-Free Assembly	Pb-Based Assembly
Preheat / Soak		
Temperature Min ( $T_{smin}$ )	150°C	100°C
Temperature Max ( $T_{smax}$ )	200°C	150°C
Maximum time( $t_s$ ) from $T_{smin}$ to $T_{smax}$	60~120 seconds	60~120 seconds
Ramp-up rate ( $T_L$ to $T_p$ )	3°C/ second max.	3°C/ second max.
Liquidus temperature ( $T_L$ )	217°C	183°C
Time ( $t_L$ ) maintained above $T_L$	60~150 seconds	60~150 seconds
Maximum peak package body temperature ( $T_p$ )	260°C	235°C
Time( $t_p$ ) within 5°C of the specified temperature ( $T_c$ )	30 seconds	20 seconds
Ramp-down rate ( $T_p$ to $T_L$ )	6°C/second max.	6°C/second max.
Maximum Time 25°C to peak temperature	8 minutes max.	6 minutes max.

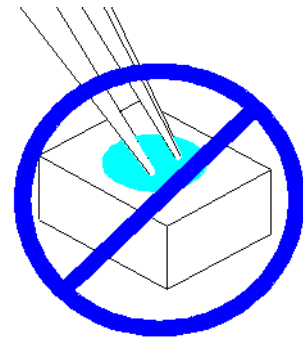
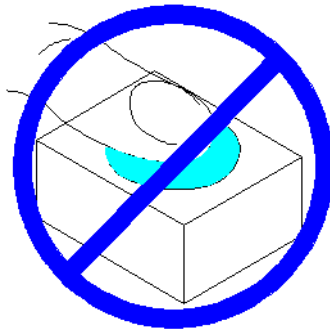
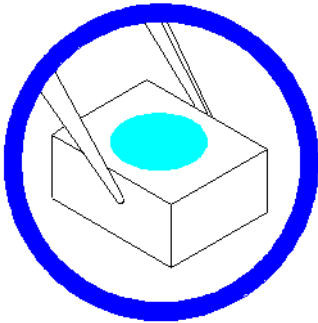
**Note:** 1. Reflow soldering should not be done more than two times.

2. When soldering, do not put stress on the LEDs during heating.

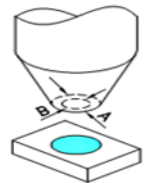
## (5) Handling Precautions

4.1. Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more prone to damage by external mechanical force. As a result, Special handling precautions must be observed during assembling using silicone encapsulated LED products, Failure to comply might leads to damage and premature failure of the LED.

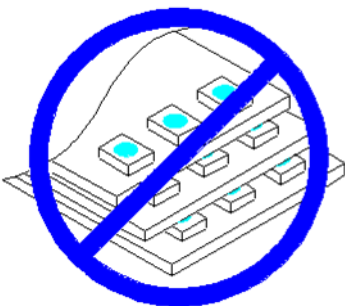
4.2. Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.



4.3. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks. The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.



4.4. Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage the internal circuitry.





## Innovative Lighting Solutions by the IINNO Group

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