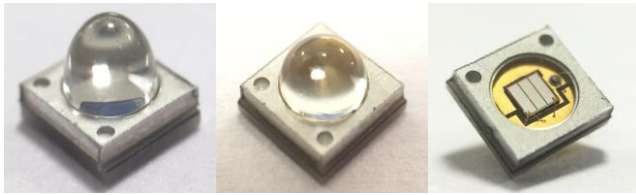


# 3939 HighPower UVC

## 3939 Quartz LED Series



(30D)

Quartz Lens

(60D)

Quartz Lens

(120D)

Quartz Lens

◆ Outline :

3 0° : 3.9\*3.9\*3.2mm

6 0° : 3.9\*3.9\*2.6mm

120° : 3.9\*3.9\*1.6mm

- ◆ UVC power output ~10mW
- ◆ Patent free
- ◆ Optional optical quartz lens
- ◆ Long operation lifetime

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### Features

- ROHS and REACH-compliant
- MSL 4 qualified according to J-STD 020
- ESD 2KV

### Applications

- Disinfection / Sterilization
- Bio-Analysis / Detection
- Fluorescent Spectroscopy, Sensor Light

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## ■ Maximum rating (Ta : 25°C)

Characteristics	Symbol	Min.	Typical	Max.	Unit
DC Forward Current <sup>1</sup>	I <sub>F</sub>	---	---	150	mA
Pulse Current(@1/10 duty) <sup>2</sup>	I <sub>p</sub>	---	---	TBD	mA
Forward Voltage	V <sub>F</sub>	5.0	---	9.0	V
Junction Temperature <sup>3</sup>	T <sub>j</sub>	---	--	65	°C
Storage Temperature Range	T <sub>sto</sub>	-40	-	80	°C
Soldering Temperature	T <sub>sol</sub>		---	245	°C
Thermal Resistance Junction / Solder Point	R <sub>th</sub>	---	15	---	°C/W
Beam Angle	2θ <sub>1/2</sub>	---	30 60 120	---	Deg

### ◇ Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. D=0.01s duty 1/10.
3. When driving at maximum current the T<sub>j</sub> must be kept below 65°C
4. Viewing angle(2θ<sub>1/2</sub>) ± 10°

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## ■ Product List

Peak Wavelength Range	Beam Angle	Part Number
270~285nm	30°	3939A27501C000
	60°	3939C27501C000
	120°	3939F27501C000

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## ■ Peak-Wavelength Binning

Peak Wavelength			unit: nm@150mA
Bin Code	Min	Max	
UVC	270	285	

◇ Notes:

1. Binning current is 150mA
2. Wavelength tolerance  $\pm 2$ nm

## ■ Voltage binning

Voltage				unit: V@150mA
Peak Wavelength	Bin Code	Min	Max	
270nm	V1	5.0	7.0	
	V2	7.0	9.0	

◇ Notes:

1. Binning current is 150mA

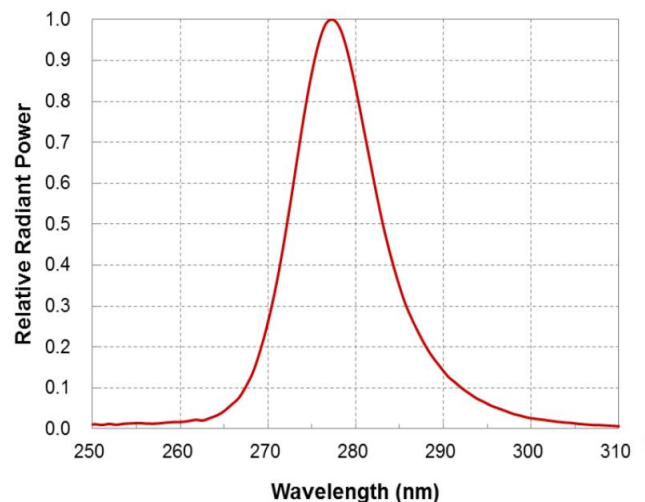
## ■ Radiant flux (Power) binning

Radiant flux (Power)				unit: mw@150mA
Peak Wavelength	Bin Code	Min	Max	
270~285nm	H1	8	16	

◇ Notes:

1. Binning current is 150mA
2. Power tolerance  $\pm 10\%$

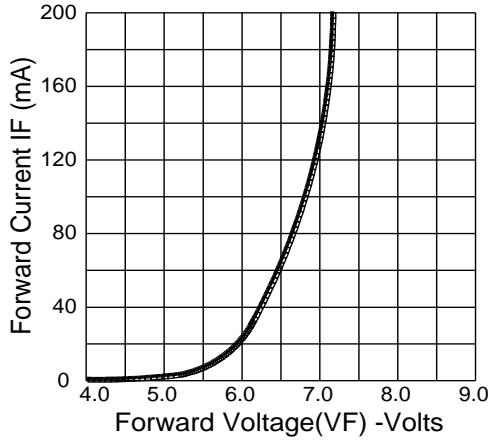
## ■ Relative spectral power distribution



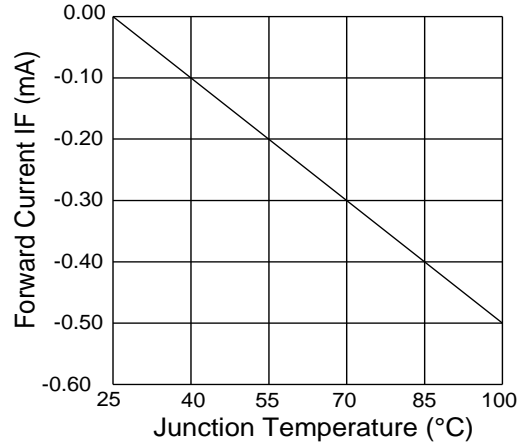
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## ■ Characteristics

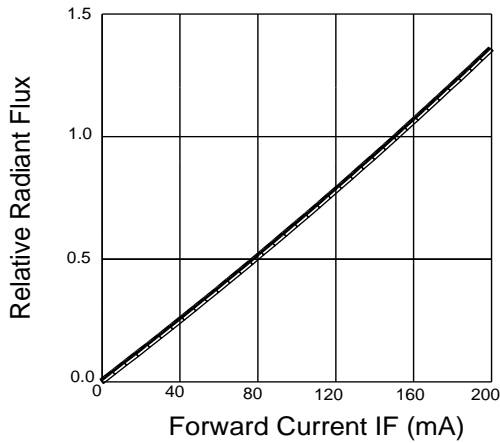
Forward Current VS. Forward Voltage



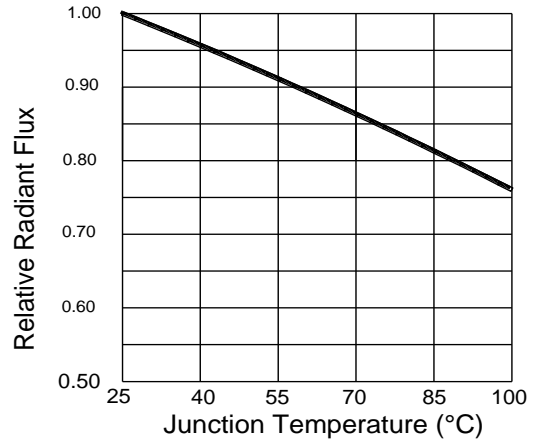
Forward Voltage Shift VS. Tj



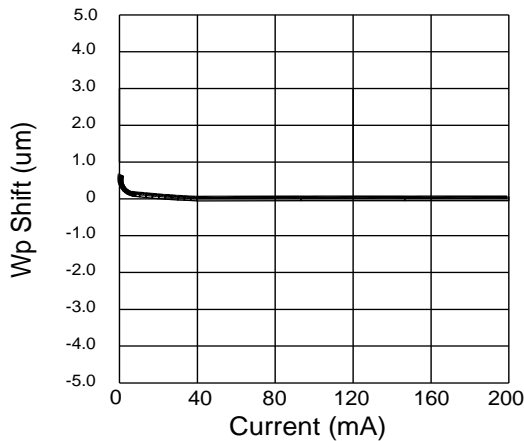
Relative Radiant Flux VS. Current



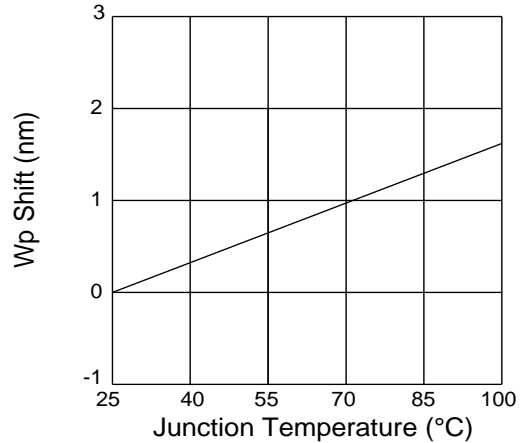
Relative Radiant Flux VS. Tj



Wp Shift VS. Current

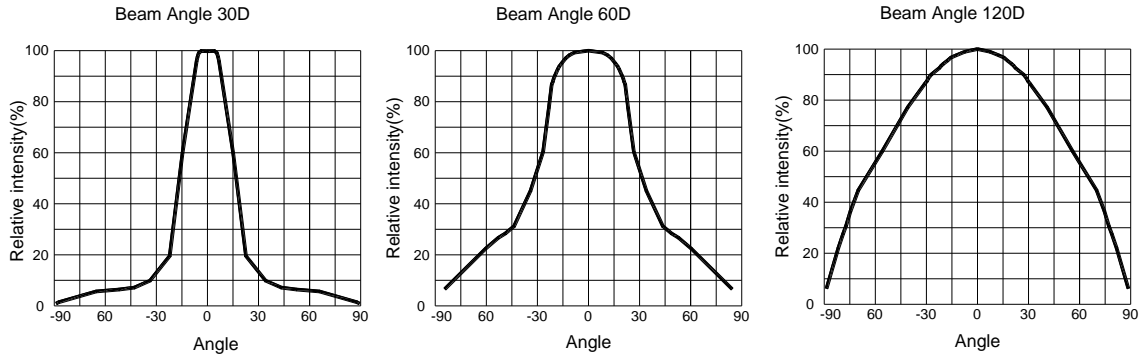


Wp Shift VS. Tj



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## ■ Typical spatial distribution ( $2\theta_{1/2}$ )



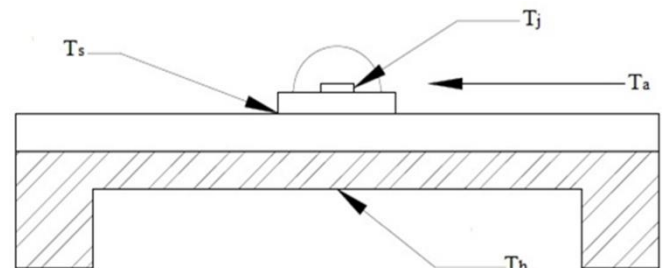
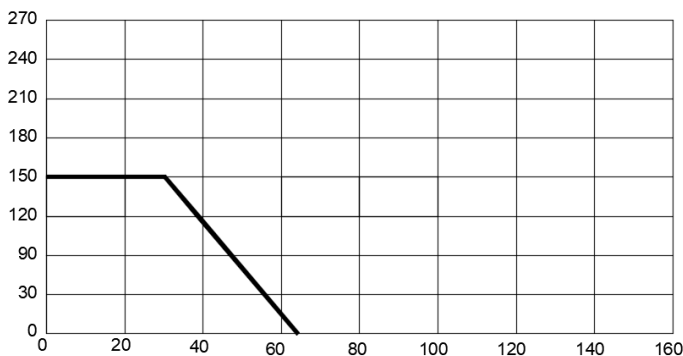
### ◇ Notes:

Viewing angle( $2\theta_{1/2}$ )  $\pm 10^\circ$

## ■ 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 junction to the solder point order to optimize LED life and optical characteristics.

Thermal Design for De-rating



$R_{th(j-a)}$  : Thermal Resistance form Point "Tj" to Point "Ta"

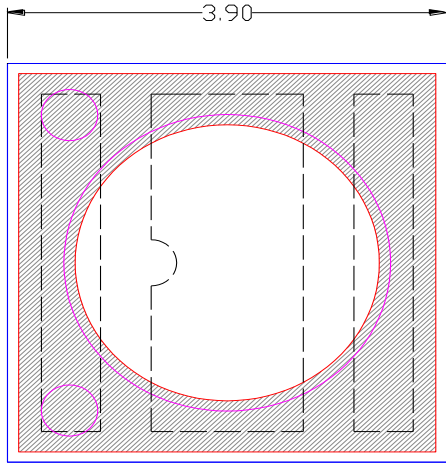
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## ■ Reliability Test

Test Item	Test Condition	Note	# Failed/ Tested
Room Temp. Operational life	Ta=25°C, IF=30mA	1000hrs	0/5
Thermal Shock	Ta max=100°C, Ta min=-40°C 30min dwell/ transfer time: 5 min, 1cycle =1hr	100 cycles	0/22
Resistance to Soldering	Temp=260±5°C, Time: 10±1sec	1 time	0/10
ESD	R=1.5Ω, C=100pF Voltage level=2kV	3times Negative/positive	0/22

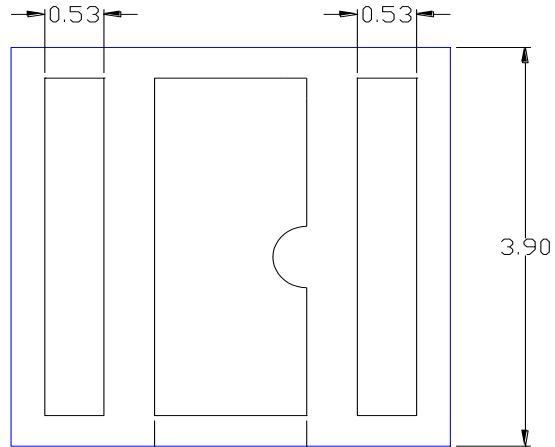
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## ■ Dimensions & Polarity



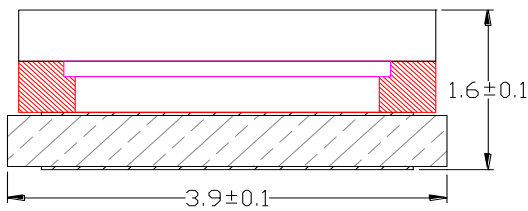
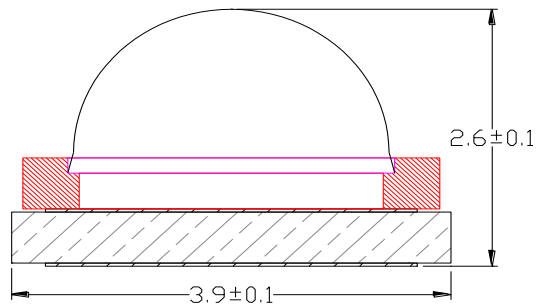
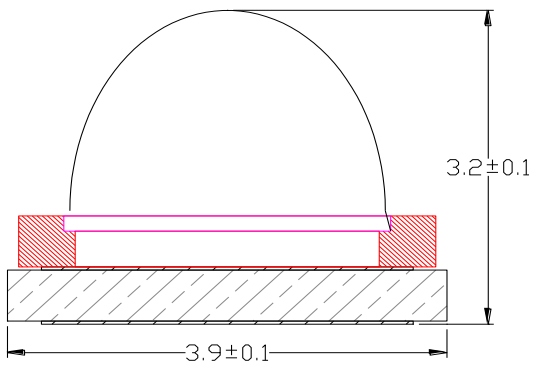
Q

b

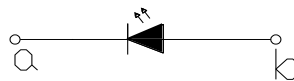


1

2



### Electrical Test Point:



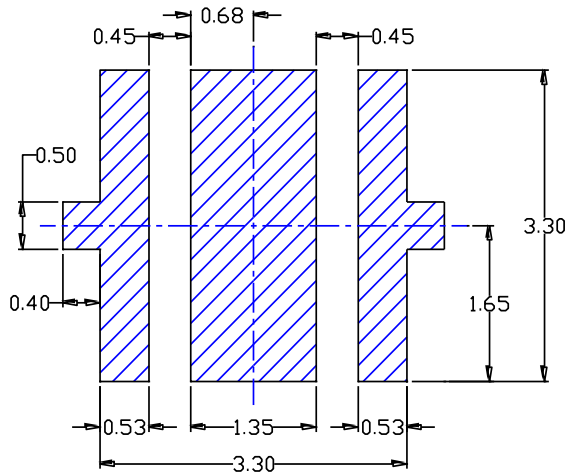
Test Point	1+	2-
a-	×	○
b+	○	×

X = Open  
O = Short

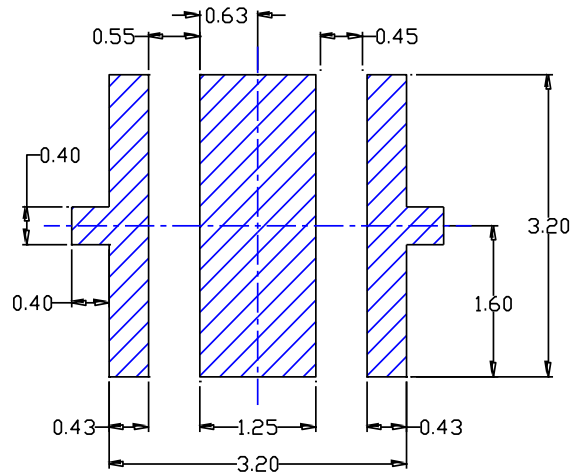


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## ■ Suggest stencil pattern (Recommendations for reference)



RECOMMENDED PCB SOLDER PAD



RECOMMENDED STENCIL PATTERN  
(HATCHED AREA IS OPENING)

§ Suggest stencil  $t = 0.12$  mm

◇ **Note:**

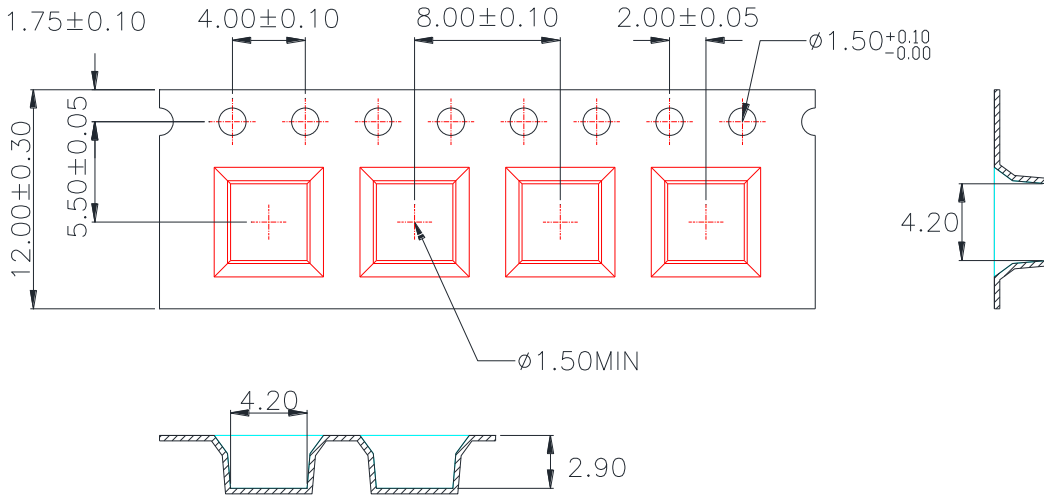
§ All dimensions are in millimeters.

§ Tolerance is  $\pm 0.13$ mm unless other specified.

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## ■ Packing

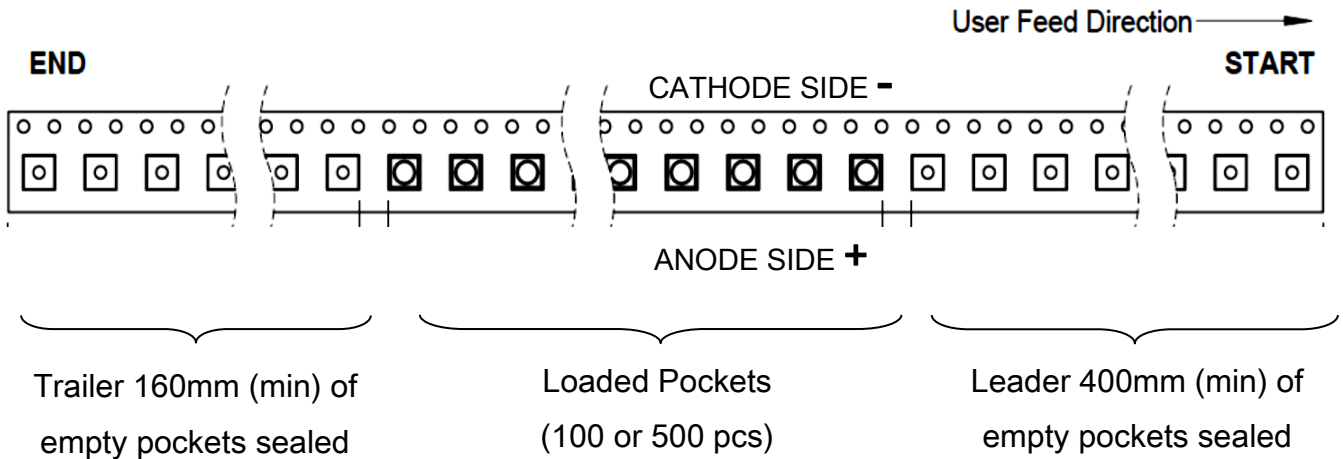
3939 120° / 60° / 30



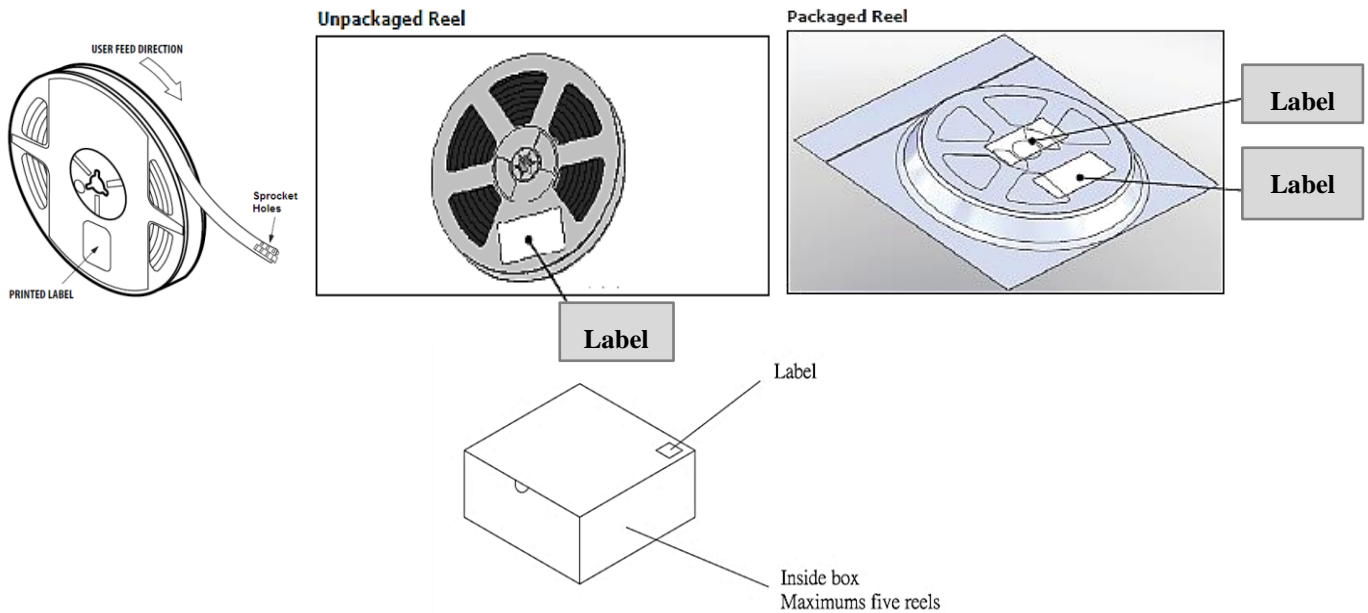
Taiwan Patent No : 157713  
China Patent No : 01224591.7

1. 10 sprocket hole pitch cumulative tolerance  $\pm 0.20$ .
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness :  $0.30 \pm 0.05\text{mm}$ .
6. Packing length per 22" reel : 62.5 Meters(1:3).
7. Component load per 13" reel : 2500 pcs.

W	12.00±0.30
A0	4.20±0.10
B0	4.20±0.10
K0	2.90±0.10



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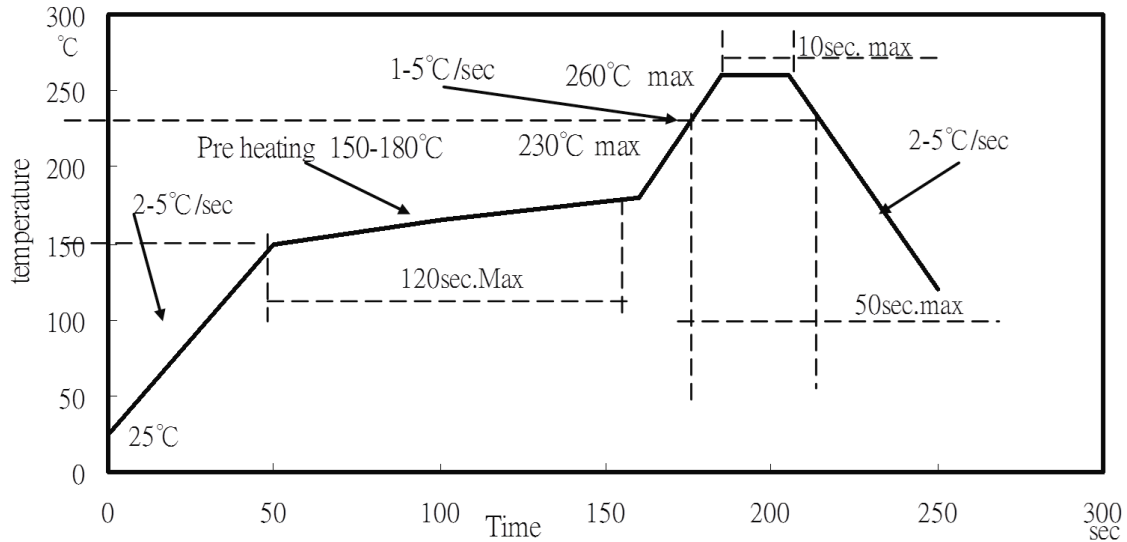
## Notes:

1. Each Reel (minimum number of pieces is 100 and maximum is 500 is packed in a moisture-proof bag along with 1 packs of desiccant and a humidity indicator card;
2. A maximum of 6 moisture-proof bags are packed in an inner box (size: 240mm x 200mm x 105mm  $\pm$ 5mm)
3. A maximum of 4 inner boxes are put in an outer box (size: 410mm x 255mm x 230mm  $\pm$  5mm)
4. Part No., Lot No., quantity should be indicated on the label of the moisture-proof bag and the cardboard box.

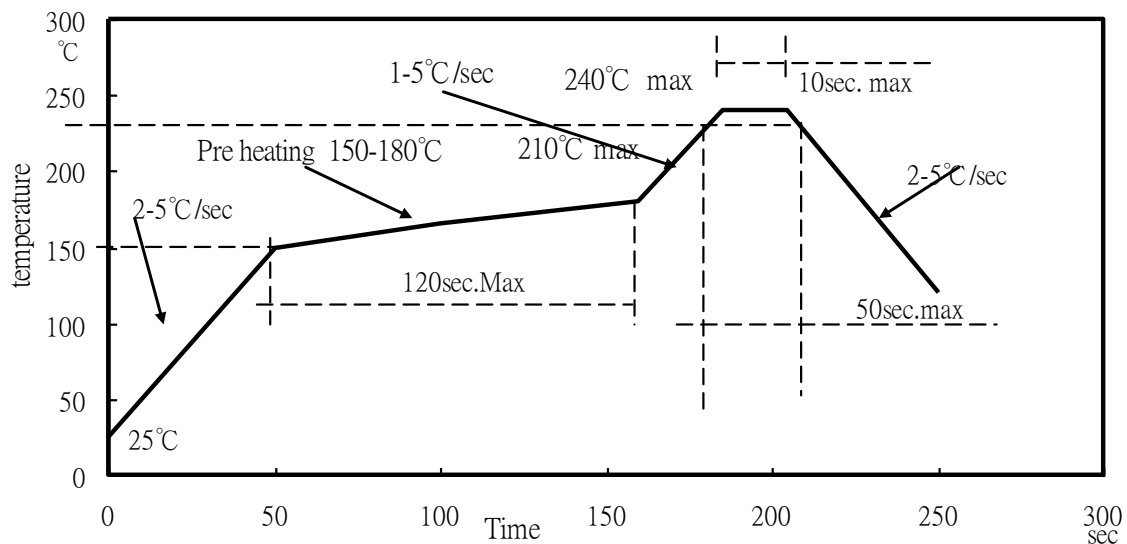
## ■ Reflow Profile

### IR reflow soldering Profile

#### Lead Free solder



#### Lead solder



#### Notes:

1. The recommended reflow temperature is 240°C(±5°C). The maximum soldering temperature should be limited to 260°C.
2. Do not stress the silicone resin while it is exposed to high temperature.
3. The number of reflow process should not exceed 3 times.

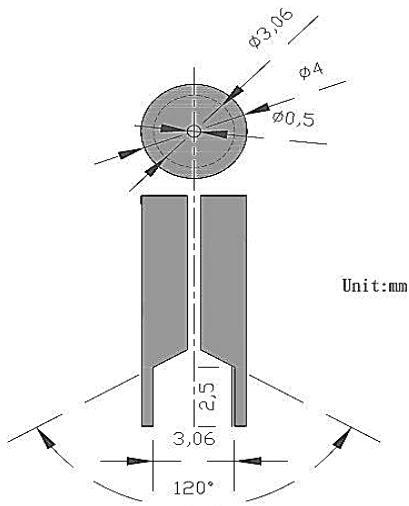
## ■ Precautions

### 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. Pick & place nozzle

The pickup tool was recommended and shown as below



### 3. Lens handling

Please follow the guideline to pick LEDs

- 3.1 Use tweezers to pick LEDs
- 3.2 Do not touch the lens by using tweezers
- 3.3 Do not touch lens with fingers
- 3.4 Do not apply more than 4N of lens (400g) directly onto the lens

### 4. 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.

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