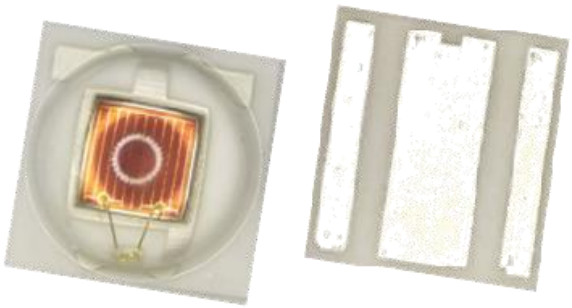
# 1ZHP35AY27CH01Z4



- ◆Outline：3.5*3.5*2.22mm
- ◆High efficiency
- ◆Good thermal dissipation & optical uniformity

## Table of Contents:



## Features

- RoHS2.0 and REACH-compliant
- MSL2 qualified according to J-STD 020
- ESD 8KV (HBM : MIL-STD-883 Class 3B)

## Applications

- Portable lighting
- Outdoor lighting
- Indoor lighting
- Commercial lighting
- Industrial lighting
- Decorative lighting
- Agricultural lighting

## ■ Product Code

**1 – Z – HP35 – A – Y27C – H – 0 – 1 – Z – 4**

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

| ① | ② | ③ | ④ | ⑤ |
|---|---|---|---|---|
| Process type | Category | Specification | Lens Angle code | Dice wavelength & Luminous rank |
| 1: Normal process | Z: High Power LED | HP35: Ceramic 3535 | A: 120° | YXXX: Yellow light |

| ⑥ | ⑦ | ⑧ | ⑨ | ⑩ |
|---|---|---|---|---|
| Support code | Zener & High CRI | Cap color code | Module & Lens code | Current code |
| H: HTCC | 0: None Zener | 1: Series No. | Z: Molding | 4: 350mA |

## ■ Typical Product Characteristics(Ta=25℃)

| Luminous Flux (lm) | | | Dominant Wavelength (nm) | Forward Voltage (V) @350mA | | Viewing Angle |
|---|---|---|---|---|---|---|
| Group | Min. | Max. | | Min. | Max. | |
| B24 | 45 | 50 | 585-595 | 1.8 | 2.4 | 130° |
| B25 | 50 | 55 | | | | |
| B26 | 55 | 60 | | | | |

Notes:

1. Forward voltage ($V_F$ ) ±0.05V ; Luminous flux (Φv) ±7% ; Wavelength (λd/λp) ±1nm ; Viewing angle($2\theta_{1/2}$) ±10°
2. IS standard testing.

## ■ Maximum Rating (Ta : 25℃)

| Characteristics | Symbol | Min. | Typical | Max. | Unit |
|---|---|---|---|---|---|
| DC Forward Current[1] | $I_F$ | | | 700 | mA |
| Pulse Forward Current[2] | $I_{PF}$ | | | 1000 | mA |
| Reverse Voltage | $V_R$ | | | 5 | V |
| Reverse Current | $I_R$ | | | 10 | μA |
| Junction Temperature[3] | $T_j$ | | | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -40 | – | 100 | ℃ |
| Soldering Temperature | $T_{sol}$ | | | 250 | ℃ |

Notes:

1. For other ambient, limited setting of current will depend on de-rating curves.
2. D=0.01s duty 1/10.
3. When drive on maximum current , Tj must be kept below 150℃

## ■ Dominant Wavelength Binning

| Bin code (350mA) | Min. $\lambda_d$ (nm) | Max. $\lambda_d$ (nm) |
|---|---|---|
| Y585 | 585 | 590 |
| Y590 | 590 | 595 |

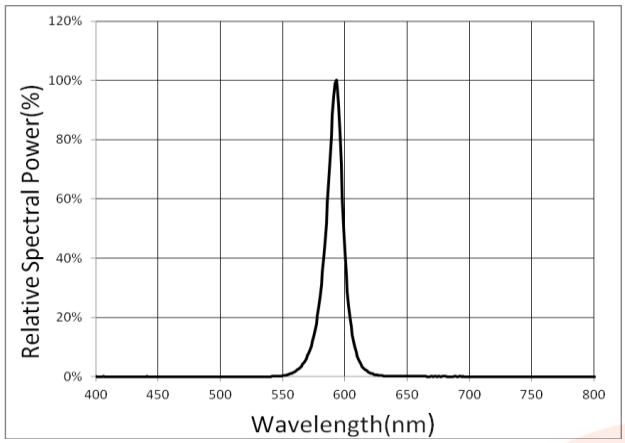
## ■ Intensity Binning

| Bin code (350mA) | Min. $\Phi_v$ (Lm) | Max. $\Phi_v$ (lm) |
|---|---|---|
| B24 | 45 | 50 |
| B25 | 50 | 55 |
| B26 | 55 | 60 |

## ■ Forward Voltage Binning

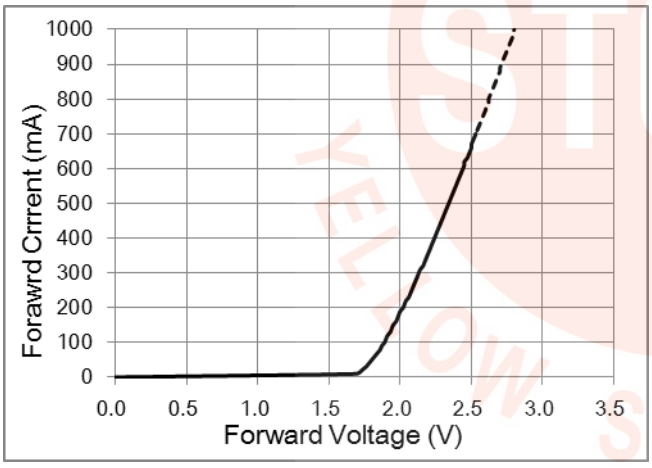
| Bin code (350mA) | Min. $V_F$ (V) | Max. $V_F$ (V) |
|---|---|---|
| V1820 | 1.8 | 2.0 |
| V2022 | 2.0 | 2.2 |
| V2224 | 2.2 | 2.4 |

## ■ Relative spectral power distribution

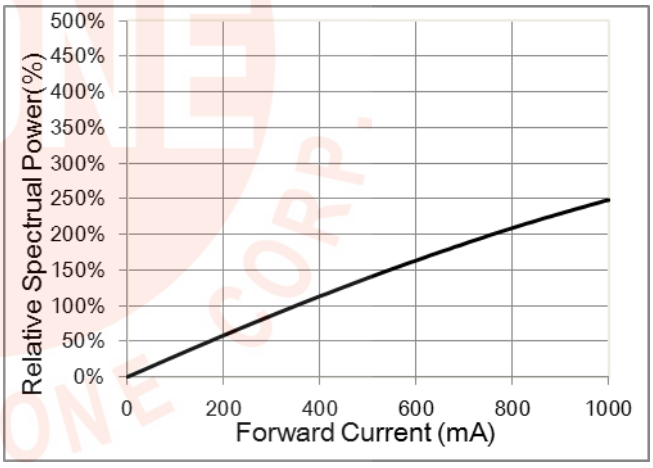



## ■ Electronic-Optical Characteristics

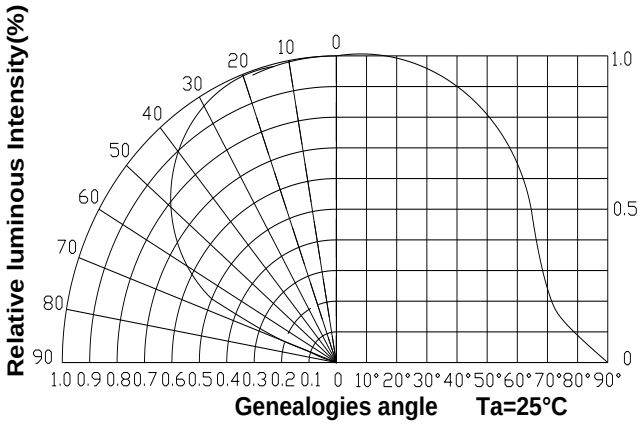
Forward Current vs. Forward Voltage (Ta=25℃)




Relative luminous Flux vs. Forward Current ($T_a$=25℃)

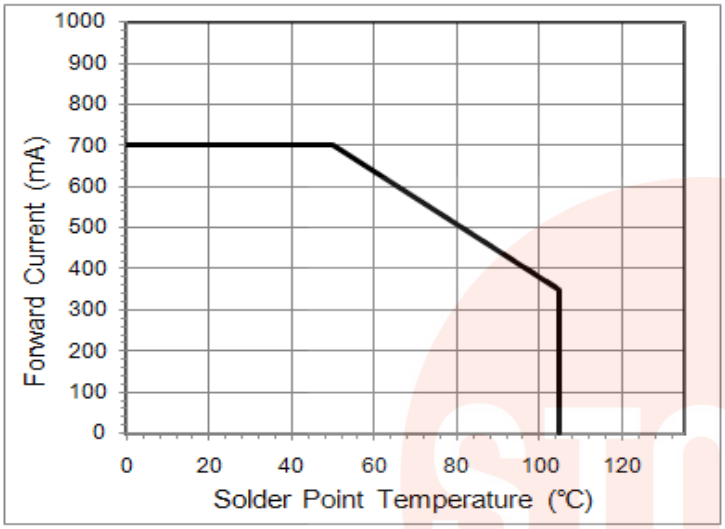


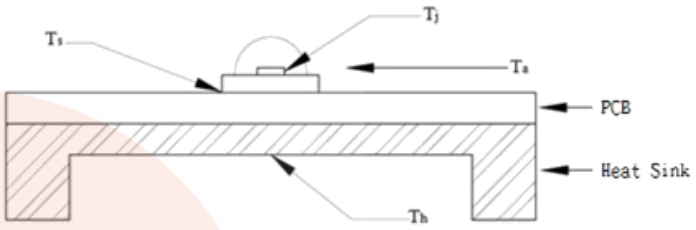

## ■ Typical Spatial Distribution



## ■ Thermal Design for De-rating

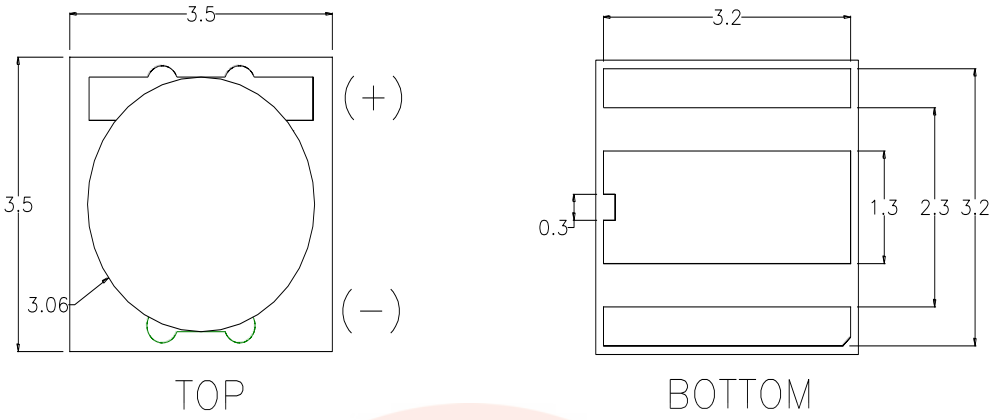
The maximum forward current is determined by the thermal resistance between the LED junction and ambient. It is crucial for the end product to be designed in a manner that minimizes the thermal resistance from the solder point to ambient in order to optimize lamp life and optical characteristics.




Tj : LED junction Temp.
Ts : Solder Point Temp.
Th : Heat Sink Temp.
Ta : Ambient Temp.
Rj-a : Thermal Resistance from Tj to Ta

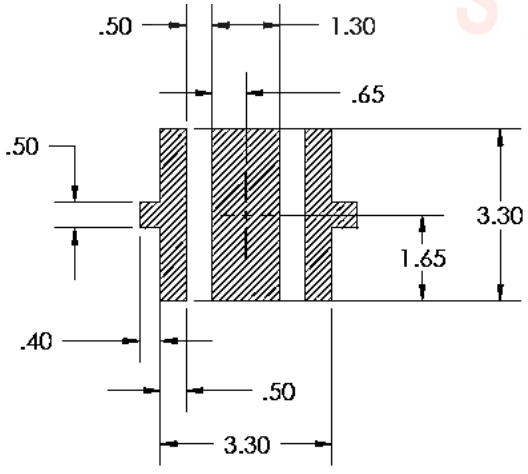
## ■ Dimensions



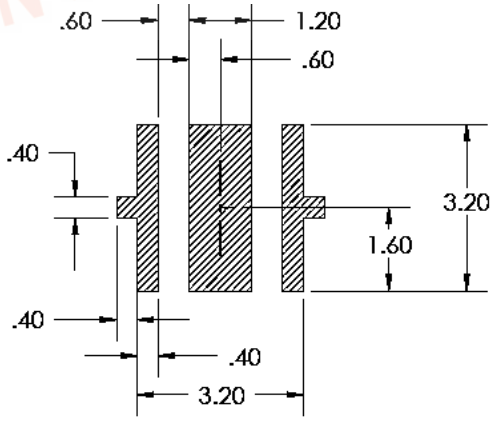

§ All dimensions are in millimeters.

§ Tolerance is ±0.13mm unless other specified.

## ■ Suggest Stencil Pattern (Recommendations for reference)



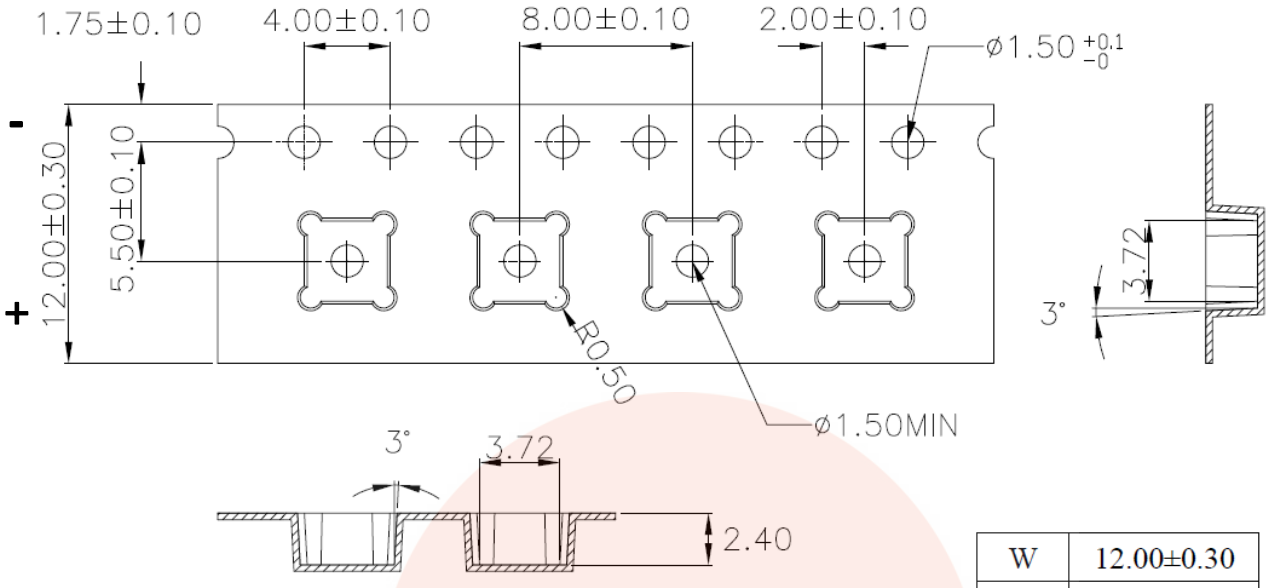

RECOMMENDED PCB SOLDER PAD




RECOMMENDED STENCIL PATTERN
(HATCHED AREA IS OPENING)

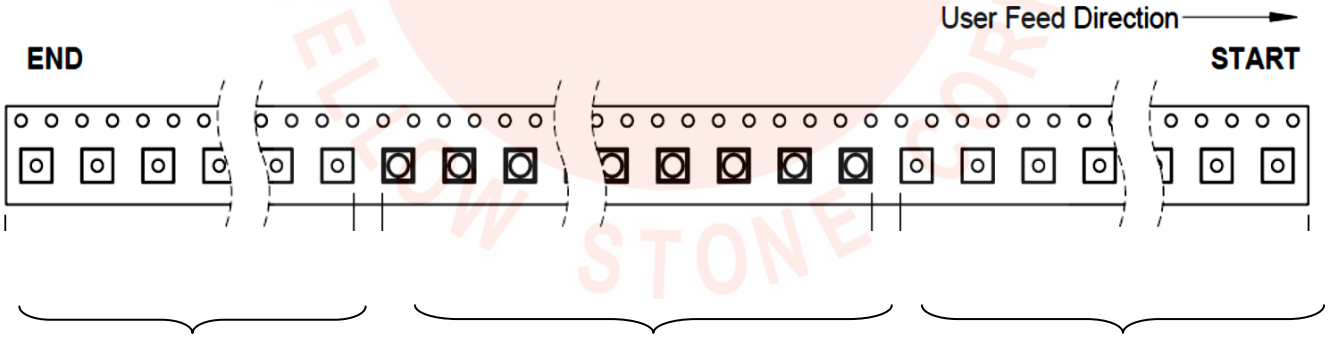
§ Suggest stencil t =0.12 mm

## ■ Packing




| | |
|---|---|
| W | 12.00±0.30 |
| A0 | 3.72±0.10 |
| B0 | 3.72±0.10 |
| K0 | 2.40±0.10 |

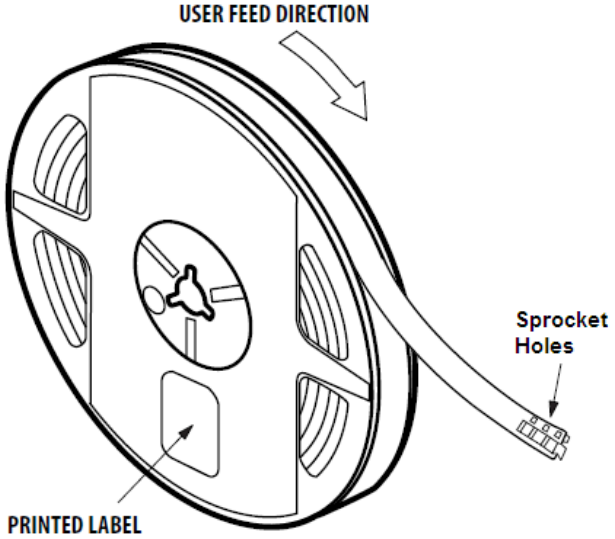
1. 10 sprocket hole pitch cumulative tolerance ±0.20.
2. Carrier camber is within 1 mm in 250 mm.
3. Material : Black Conductive Polystyrene Alloy.
4. All dimensions meet EIA-481-D requirements.
5. Thickness : 0.30±0.05mm.

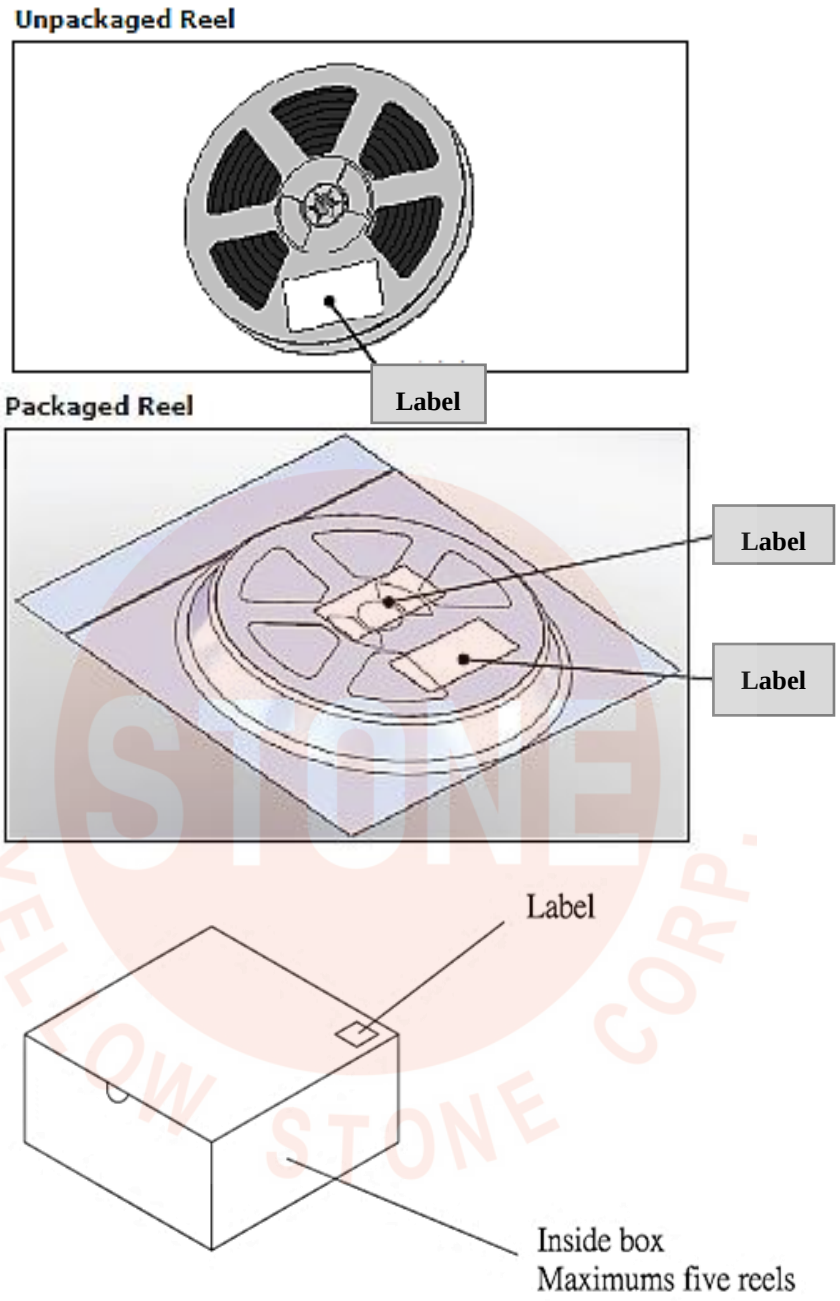



Trailer 160mm (min) of empty pockets sealed

Loaded Pockets (1000 pcs)

Leader 400mm (min) of empty pockets sealed





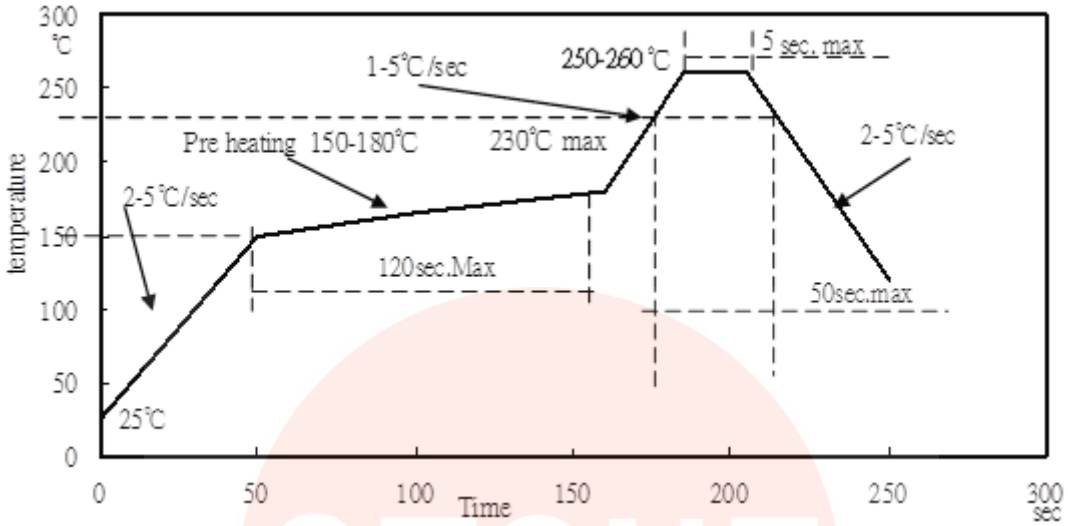

Notes:

1. Each reel (minimum number of pieces is 100 and maximum is 1000 for 120 degree product) is packed in a moisture-proof bag along with a packs of desiccant and a humidity indicator card.
2. A maximum of 5 moisture-proof bags are packed in an inner box (size: 260mm x 230mm x 100mm ±5mm).
3. A maximum of 4 inner boxes are put in an outer box (size: 480mm x 275mm x 215mm ±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




Notes:

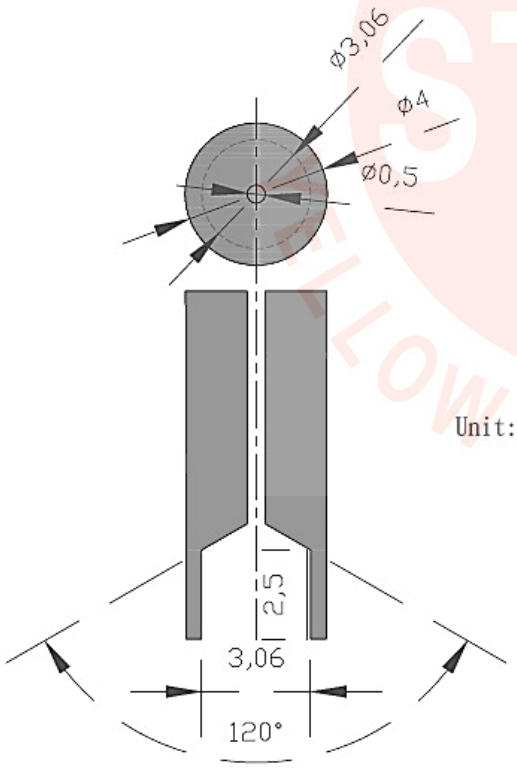
1. The recommended reflow temperature is 240℃(±5℃). The maximum soldering temperature should be limited to 250-260℃.
2. Do not stress the silicone resin while it is exposed to high temperature.
3. The reflow process should not exceed 2 times.

## ■ 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

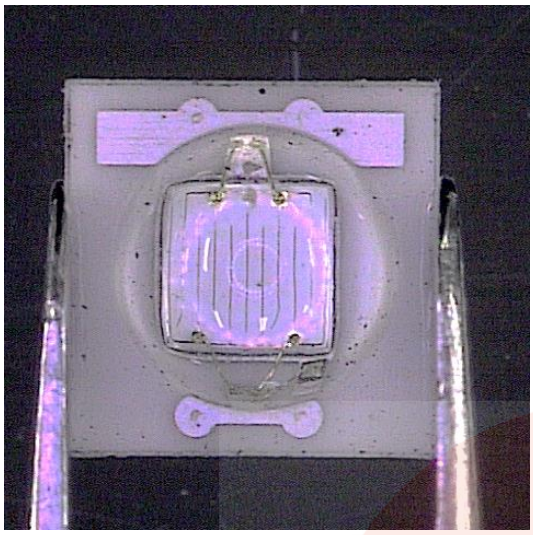
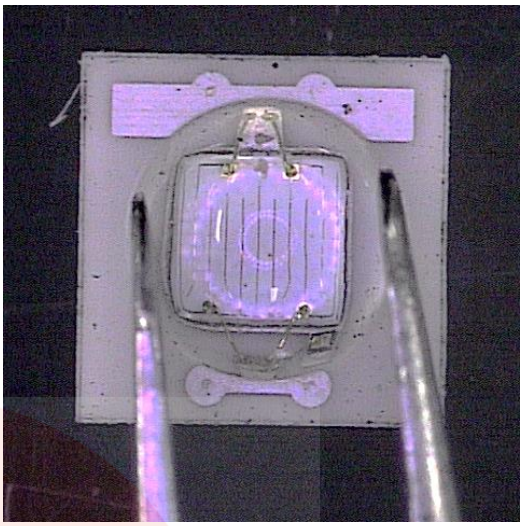
2. Pick & place nozzle

   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 (400gw) directly onto the lens.

| Correct ( √ ) | Wrong ( X ) |
| --- | --- |
|  |  |

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.

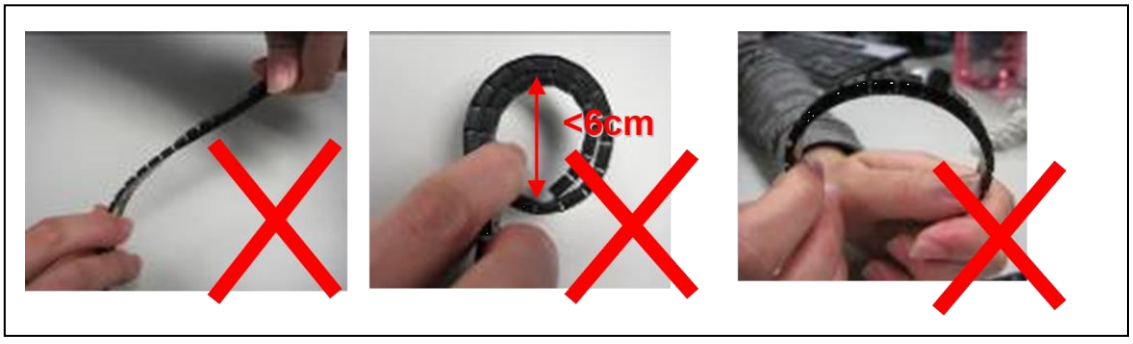
5. Carrier tape handling

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

5.1 Do not twist the carrier tape.

5.2 The inward bending diameter should not be smaller than 6cm for each carrier tape.

5.3 Do not bend the tape outward.



6. Storage

6.1 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.

6.2 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.

## ■ Test Items and Results of Reliability

| Test Item | Test Conditions | Duration/ Cycle | Number of Damage | Reference |
|---|---|---|---|---|
| Thermal Shock | –40℃ 30min<br>↑↓5min<br>125℃ 30min | 1000 cycles | 0/77 | AEC-Q101 |
| High Temperature Storage | $T_a$=100℃ | 1000 hrs | 0/22 | EIAJ ED-4701 200 201 |
| Humidity Heat Storage | $T_a$=85℃<br>RH=85% | 1000 hrs | 0/22 | EIAJ ED-4701 100 103 |
| Low Temperature Storage | $T_a$=-40℃ | 1000 hrs | 0/22 | EIAJ ED-4701 200 202 |
| Life Test | $T_a$=25℃<br>If=350mA | 1000 hrs | 0/22 | |
| High Humidity Heat Operation | 85℃ RH=85%<br>If=350mA | 1000 hrs | 0/22 | |
| High Temperature Operation | $T_a$=85℃<br>If=350mA | 1000 hrs | 0/22 | |
| ESD(HBM) | 2KV at 1.5kΩ;100pf | 3 Times | 0/22 | MIL-STD-883 |

| Failure Criteria | | | | |
|---|---|---|---|---|
| Item | Symbol | Condition | Criteria for Judgment | |
| | | | Min | Max |
| Forward Voltage | $V_F$ | If=350mA | - | USL[1]×1.1 |
| Reverse Current | $I_R$ | $V_R$ =5V | - | 100μA |
| Luminous Intensity | $I_v$ | If=350mA | LSL[2]×0.7 | - |

Notes:

1. USL: Upper specification level
2. LSL: Lower specification level