

Specification

SSC-SZX05A0A

(Rev.06_111024)

| SSC | | Customer |
|------------|----------|-----------------|
| Drawn | Approval | Approval |
| | | |

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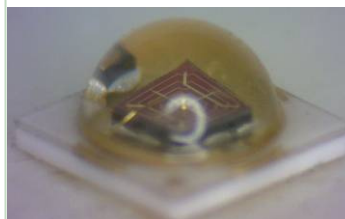
SZX05A0A

Description

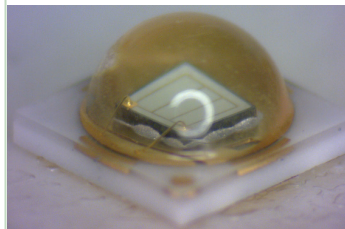
The Z-Power series is designed for high current operation and high flux output applications.

It incorporates state of the art SMD design and low thermal resistant material. The Z Power LED is ideal light sources for general illumination applications, custom designed solutions, automotive, large backlights and high performance torches.

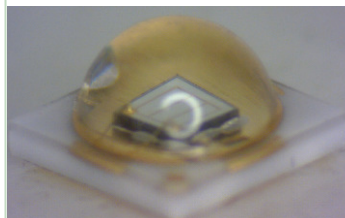
Red



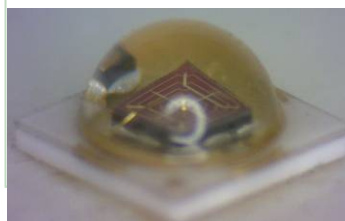
Green



Blue



Amber



SZX05A0A

Features

- Super high Flux output and high Luminance
- Designed for high current operation
- SMT solderable
- Lead Free product
- RoHS compliant

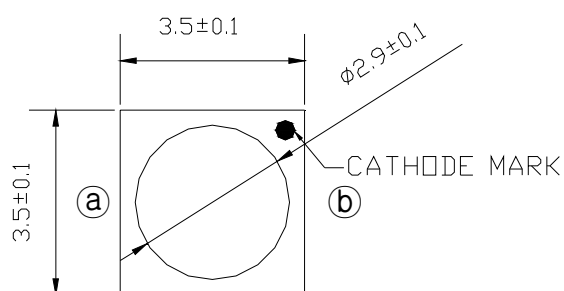
Applications

- Automotive interior / exterior lighting
- Automotive signal lighting
- Automotive forward lighting
- General Torch
- Architectural lighting
- Projector light source
- Traffic signals
- Task lighting
- Decorative / Pathway lighting
- Remote / Solar powered lighting

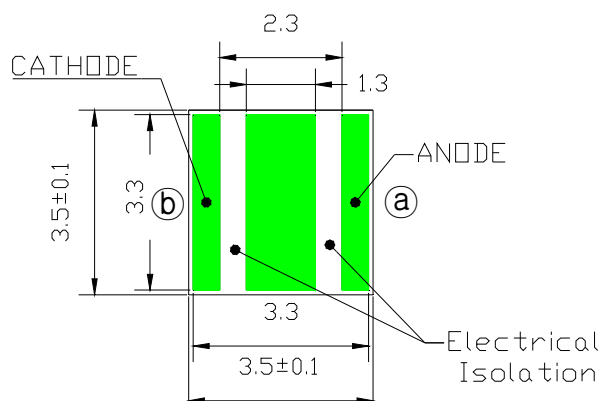
* The appearance and specifications of the product can be changed for improvement without notice.

Outline dimensions

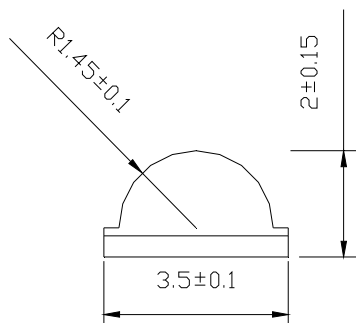
Top View



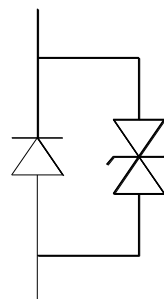
Bottom View



Side View



Circuit



Notes :

- [1] All dimensions are in millimeters.
- [2] Scale : none
- [3] Undefined tolerance is $\pm 0.1\text{mm}$

Characteristics of Z5 (Part No : SZR05A0A)

- Red

1-1 Electro-Optical characteristics at 350mA

| Parameter | Symbol | Value | | | Unit |
|------------------------------------|-------------------------|-------|-----|-----|------|
| | | Min | Typ | Max | |
| Luminous Flux ^[1] | Φ_V ^[2] | - | 55 | - | lm |
| Dominant Wavelength ^[3] | λ_D | - | 625 | - | nm |
| Forward Voltage ^[4] | V_F | - | 2.4 | - | V |
| Thermal resistance (J to S) | $R_{\theta_{J-S}}$ | 7.0 | | | K /W |
| View Angle | $2\Theta \frac{1}{2}$ | 123 | | | deg. |

1-2 Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--------------------------------|-----------|--------------------------|------|
| Forward Current | I_F | 700 | mA |
| Reverse Voltage | V | 5 | V |
| Power Dissipation | P_d | 2.1 | W |
| Junction Temperature | T_j | 125(@ $I_F \leq 700mA$) | °C |
| Operating Temperature | T_{opr} | -40 ~ +100 | °C |
| Storage Temperature | T_{stg} | -40 ~ +100 | °C |
| ESD Sensitivity ^[5] | - | ± 8,000V HBM | - |

*Notes :

[1] SSC maintains a tolerance of ±10% on flux and power measurements.

[2] Φ_V is the total luminous flux output as measured with an integrating sphere.

[3] Dominant Wavelength is derived from the CIE 1931 Chromaticity diagram.

A tolerance of ±0.5nm for dominant wavelength.

[4] Tolerance is ±0.06V on forward voltage measurements

[5] A zener diode is included to protect the product from ESD.

Characteristics of Z5 (Part No : SZG05A0A)

- Green

1-1 Electro-Optical characteristics at 350mA

| Parameter | Symbol | Value | | | Unit |
|------------------------------------|-------------------------|-------|-----|-----|------|
| | | Min | Typ | Max | |
| Luminous Flux ^[1] | Φ_V ^[2] | - | 100 | - | lm |
| Dominant Wavelength ^[3] | λ_D | - | 525 | - | nm |
| Forward Voltage ^[4] | V_F | - | 3.3 | - | V |
| Thermal resistance (J to S) | $R_{\theta_{J-S}}$ | 10.0 | | | K /W |
| View Angle | $2\Theta \frac{1}{2}$ | 128 | | | deg. |

1-2 Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--------------------------------|-----------|--------------------------|------|
| Forward Current | I_F | 700 | mA |
| Reverse Voltage | V | 5 | V |
| Power Dissipation | P_d | 2.8 | W |
| Junction Temperature | T_j | 145(@ $I_F \leq 700mA$) | °C |
| Operating Temperature | T_{opr} | -40 ~ +100 | °C |
| Storage Temperature | T_{stg} | -40 ~ +100 | °C |
| ESD Sensitivity ^[5] | - | ± 8,000V HBM | - |

*Notes :

[1] SSC maintains a tolerance of ±10% on flux and power measurements.

[2] Φ_V is the total luminous flux output as measured with an integrating sphere.

[3] Dominant Wavelength is derived from the CIE 1931 Chromaticity diagram.

A tolerance of ±0.5nm for dominant wavelength.

[4] Tolerance is ±0.06V on forward voltage measurements

[5] A zener diode is included to protect the product from ESD.

Characteristics of Z5 (Part No : SZB05A0A)

- Blue

1-1 Electro-Optical characteristics at 350mA

| Parameter | Symbol | Value | | | Unit |
|------------------------------------|-------------------------|-------|-----|-----|------|
| | | Min | Typ | Max | |
| Luminous Flux ^[1] | Φ_V ^[2] | - | 28 | - | lm |
| Dominant Wavelength ^[3] | λ_D | - | 465 | - | nm |
| Forward Voltage ^[4] | V_F | - | 3.3 | - | V |
| Thermal resistance (J to S) | $R_{\theta_{J-S}}$ | 7.0 | | | K /W |
| View Angle | $2\Theta \frac{1}{2}$ | 128 | | | deg. |

1-2 Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--------------------------------|-----------|--------------------------|------|
| Forward Current | I_F | 700 | mA |
| Reverse Voltage | V | 5 | V |
| Power Dissipation | P_d | 2.8 | W |
| Junction Temperature | T_j | 145(@ $I_F \leq 700mA$) | °C |
| Operating Temperature | T_{opr} | -40 ~ +100 | °C |
| Storage Temperature | T_{stg} | -40 ~ +100 | °C |
| ESD Sensitivity ^[5] | - | ± 8,000V HBM | - |

*Notes :

[1] SSC maintains a tolerance of ±10% on flux and power measurements.

[2] Φ_V is the total luminous flux output as measured with an integrating sphere.

[3] Dominant Wavelength is derived from the CIE 1931 Chromaticity diagram.

A tolerance of ±0.5nm for dominant wavelength.

[4] Tolerance is ±0.06V on forward voltage measurements

[5] A zener diode is included to protect the product from ESD.

Characteristics of Z5 (Part No : SZA05A0A)

- Amber

1-1 Electro-Optical characteristics at 350mA

| Parameter | Symbol | Value | | | Unit |
|------------------------------------|-------------------------|-------|-----|-----|------|
| | | Min | Typ | Max | |
| Luminous Flux ^[1] | Φ_V ^[2] | - | 46 | - | lm |
| Dominant Wavelength ^[3] | λ_D | - | 592 | - | nm |
| Forward Voltage ^[4] | V_F | - | 2.3 | - | V |
| Thermal resistance (J to S) | $R_{\theta_{J-S}}$ | 9.0 | | | K /W |
| View Angle | $2\Theta \frac{1}{2}$ | 123 | | | deg. |

1-2 Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|--------------------------------|-----------|--------------------------|------|
| Forward Current | I_F | 700 | mA |
| Reverse Voltage | V | 5 | V |
| Power Dissipation | P_d | 2.1 | W |
| Junction Temperature | T_j | 125(@ $I_F \leq 700mA$) | °C |
| Operating Temperature | T_{opr} | -40 ~ +100 | °C |
| Storage Temperature | T_{stg} | -40 ~ +100 | °C |
| ESD Sensitivity ^[5] | - | ± 8,000V HBM | - |

*Notes :

[1] SSC maintains a tolerance of $\pm 10\%$ on flux and power measurements.

[2] Φ_V is the total luminous flux output as measured with an integrating sphere.

[3] Dominant Wavelength is derived from the CIE 1931 Chromaticity diagram.

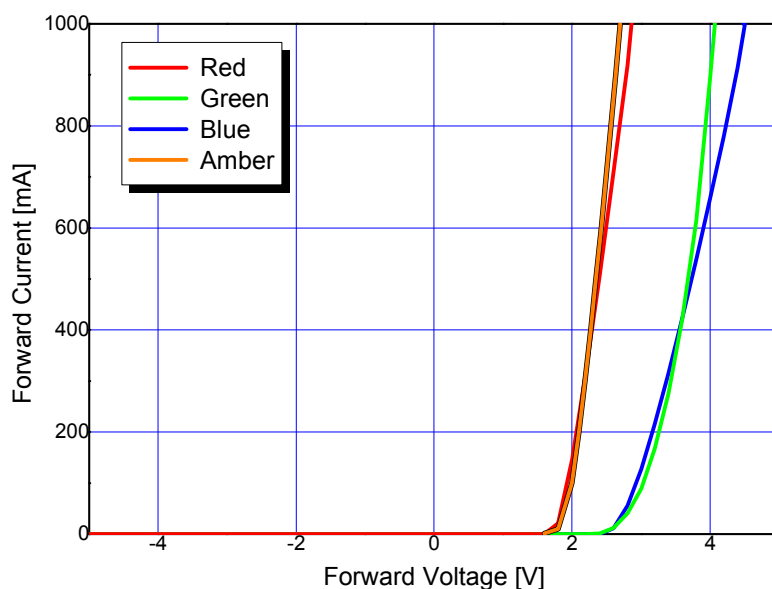
A tolerance of $\pm 0.5nm$ for dominant wavelength.

[4] Tolerance is $\pm 0.06V$ on forward voltage measurements

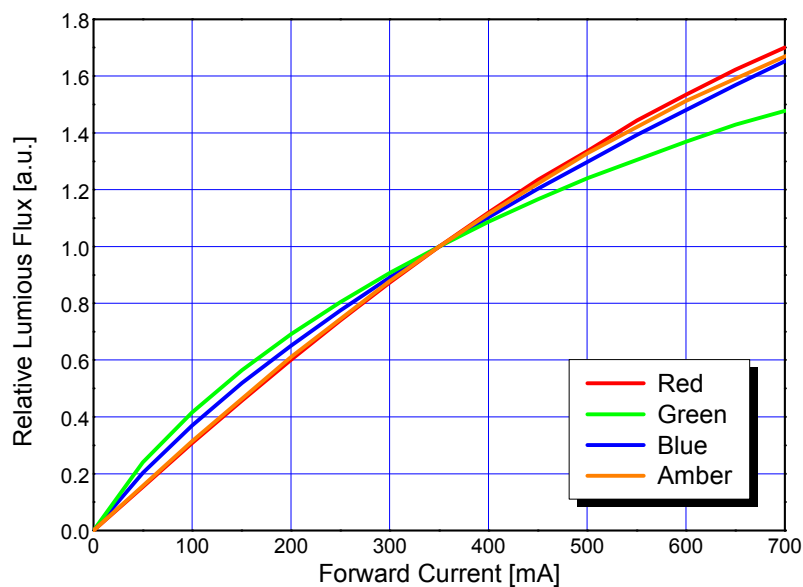
[5] A zener diode is included to protect the product from ESD.

Forward Current Characteristics

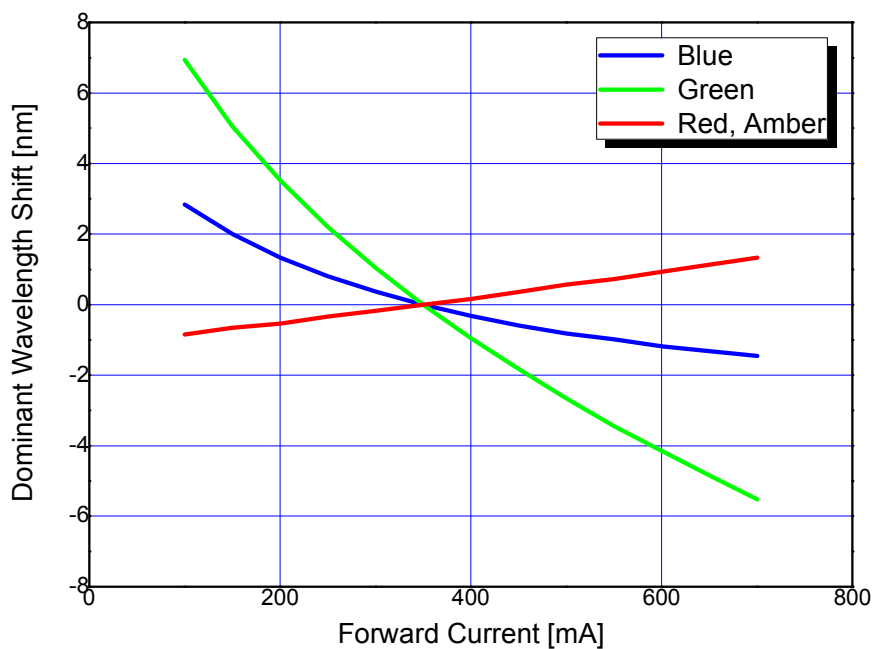
Forward Voltage vs. Forward Current, $T_a=25^\circ\text{C}$



Forward Current vs. Normalized Relative Luminous Flux, $T_a=25^\circ\text{C}$

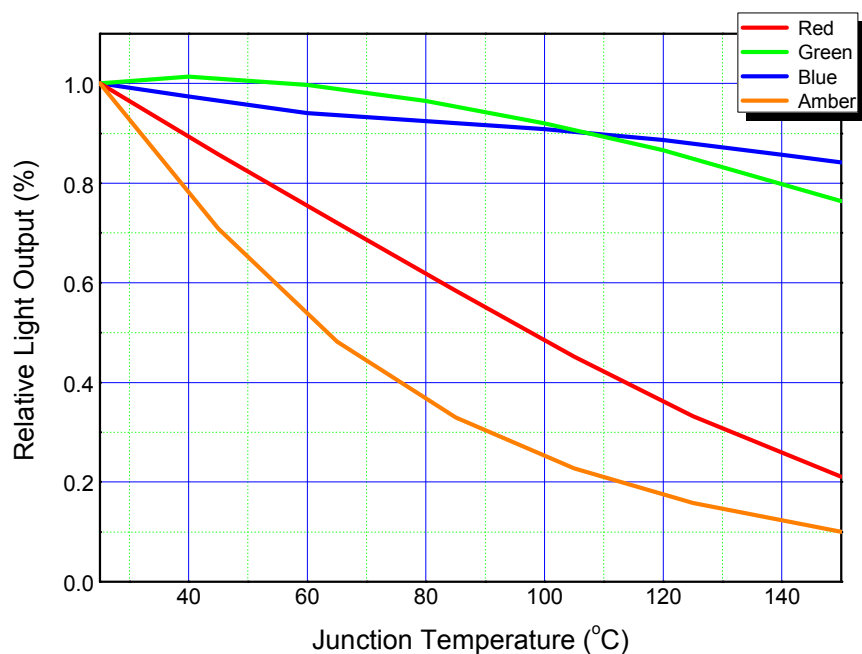


Forward Current vs Wavelength Shift, Ta=25℃

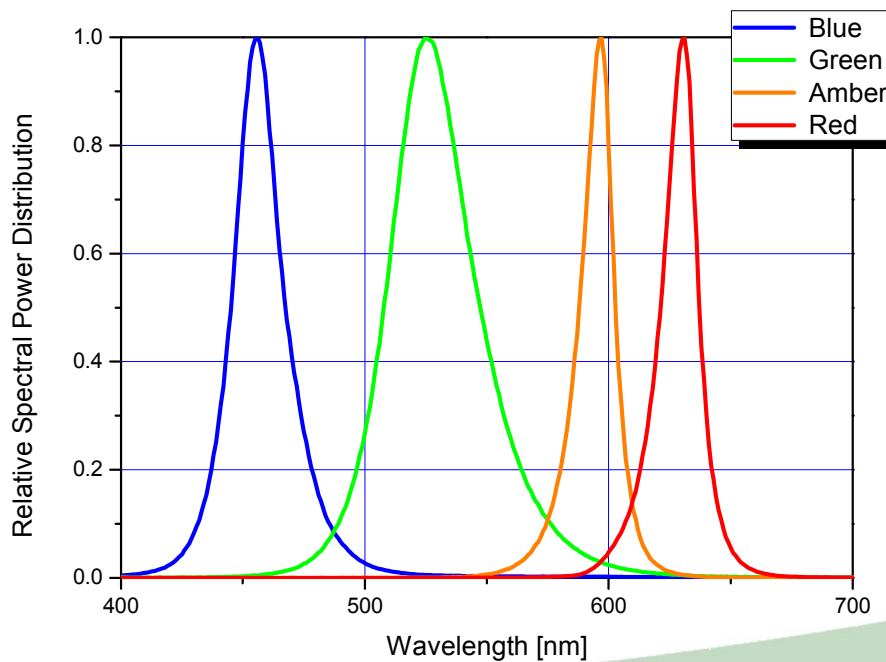


Junction Temperature Characteristics

Relative Light Output vs. Junction Temperature at IF=350mA

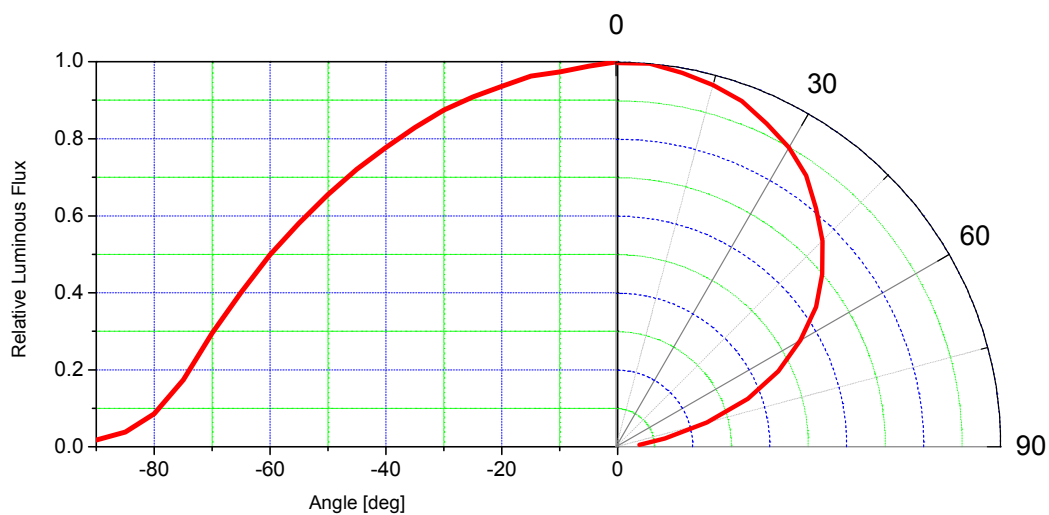


Color Spectrum $T_A=25^{\circ}\text{C}$

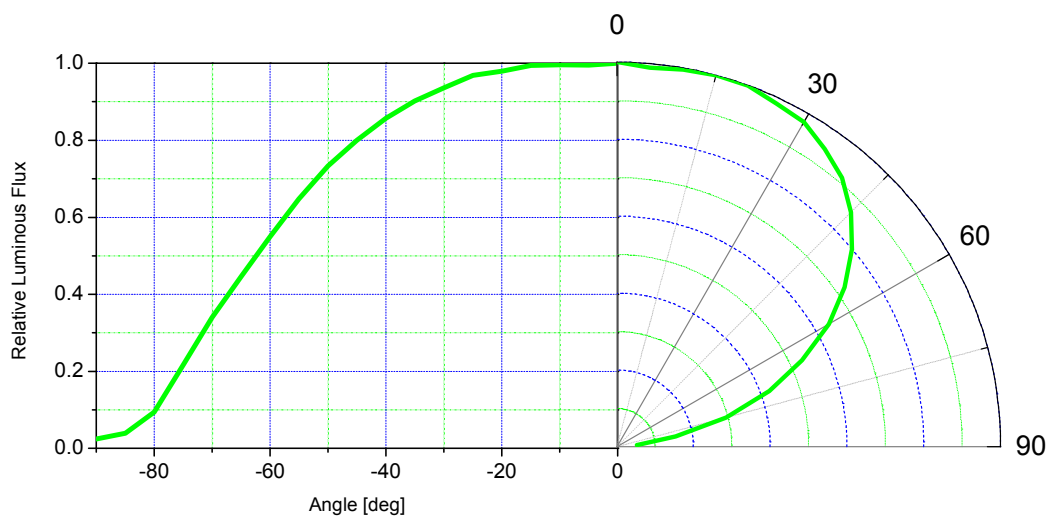


Radiation pattern

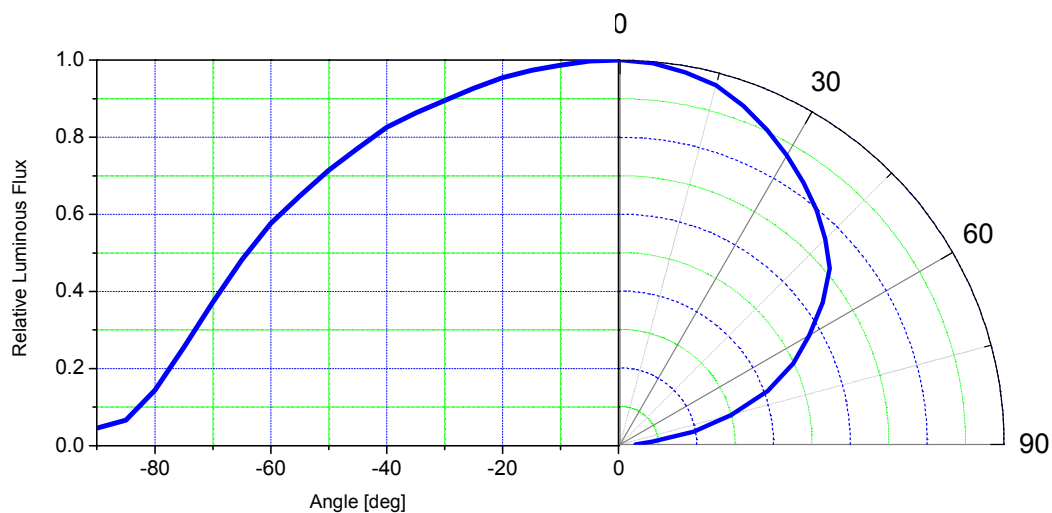
- Red



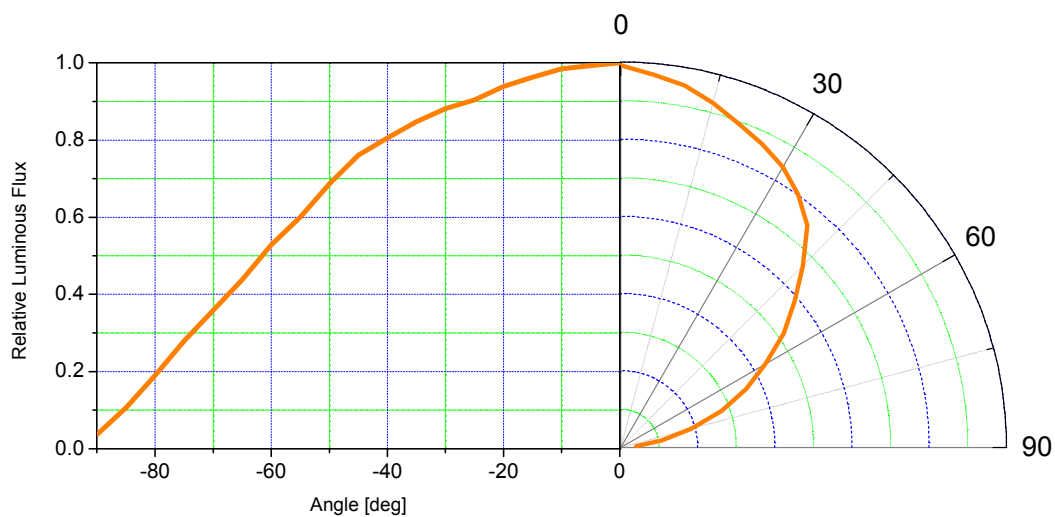
- Green



- Blue

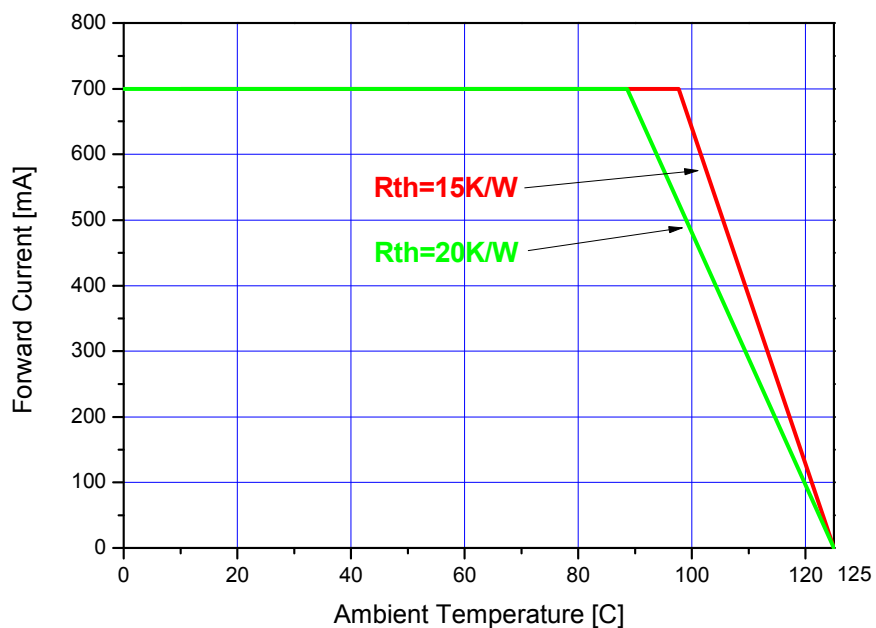


- Amber

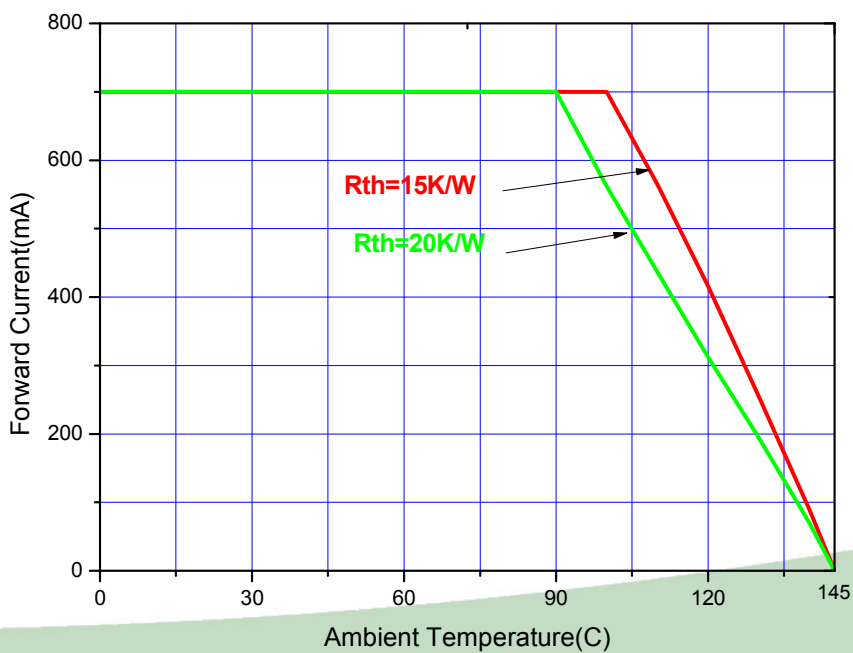


Maximum Forward Current vs. Ambient Temperature

- Amber, Red



- Blue, Green



Rev. 06

October 2011

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Luminous Flux

| Rank | LF [lm] | Color | | | | Condition |
|----------|-------------|-------|--|--|--|-----------|
| K | 8.5~ 11.0 | | | | | 350mA |
| L | 11.0~ 14.5 | | | | | |
| M | 14.5~ 19.0 | | | | | |
| O | 19.0~ 24.5 | | | | | |
| P | 24.5~ 32.0 | | | | | |
| Q | 32.0~ 41.5 | | | | | |
| R | 41.5~ 54.0 | | | | | |
| S | 54.0~ 70.0 | | | | | |
| T | 70.0~ 91.0 | | | | | |
| U | 91.0~ 118.5 | | | | | |

Dominant Wavelength

| Rank | DW [nm] | Color | | | | Condition |
|------------|------------|-------|--|--|--|-----------|
| BB1 | 453~ 460 | | | | | 350mA |
| BB2 | 460~ 465 | | | | | |
| BB3 | 465~ 470 | | | | | |
| BB4 | 470~ 475 | | | | | |
| GG1 | 518~ 525 | | | | | |
| GG2 | 525~ 530 | | | | | |
| GG3 | 530~ 535 | | | | | |
| AA1 | 585~ 587.5 | | | | | |
| AA2 | 587.5~ 590 | | | | | |
| AA3 | 590~ 592.5 | | | | | |
| AA4 | 592.5~ 595 | | | | | |
| RR1 | 618~ 625 | | | | | |
| RR2 | 625~ 632 | | | | | |

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Forward Voltage


| Rank | V_F [V] | Color | | | | Condition |
|----------|-----------|-------|--|--|--|-----------|
| D | 2.0~ 2.25 | | | | | 350mA |
| E | 2.25~ 2.5 | | | | | |
| F | 2.5~ 2.75 | | | | | |
| G | 2.75~ 3.0 | | | | | |
| H | 3.0~ 3.25 | | | | | |
| I | 3.25~ 3.5 | | | | | |
| J | 3.5~ 3.75 | | | | | |
| K | 3.75~ 4.0 | | | | | |

Labeling


Rank : # 1# 2# 3




QUANTITY : 1000




Lot No : #####



SSC PART NUMBER : SZX05A0A



SZX05A0A

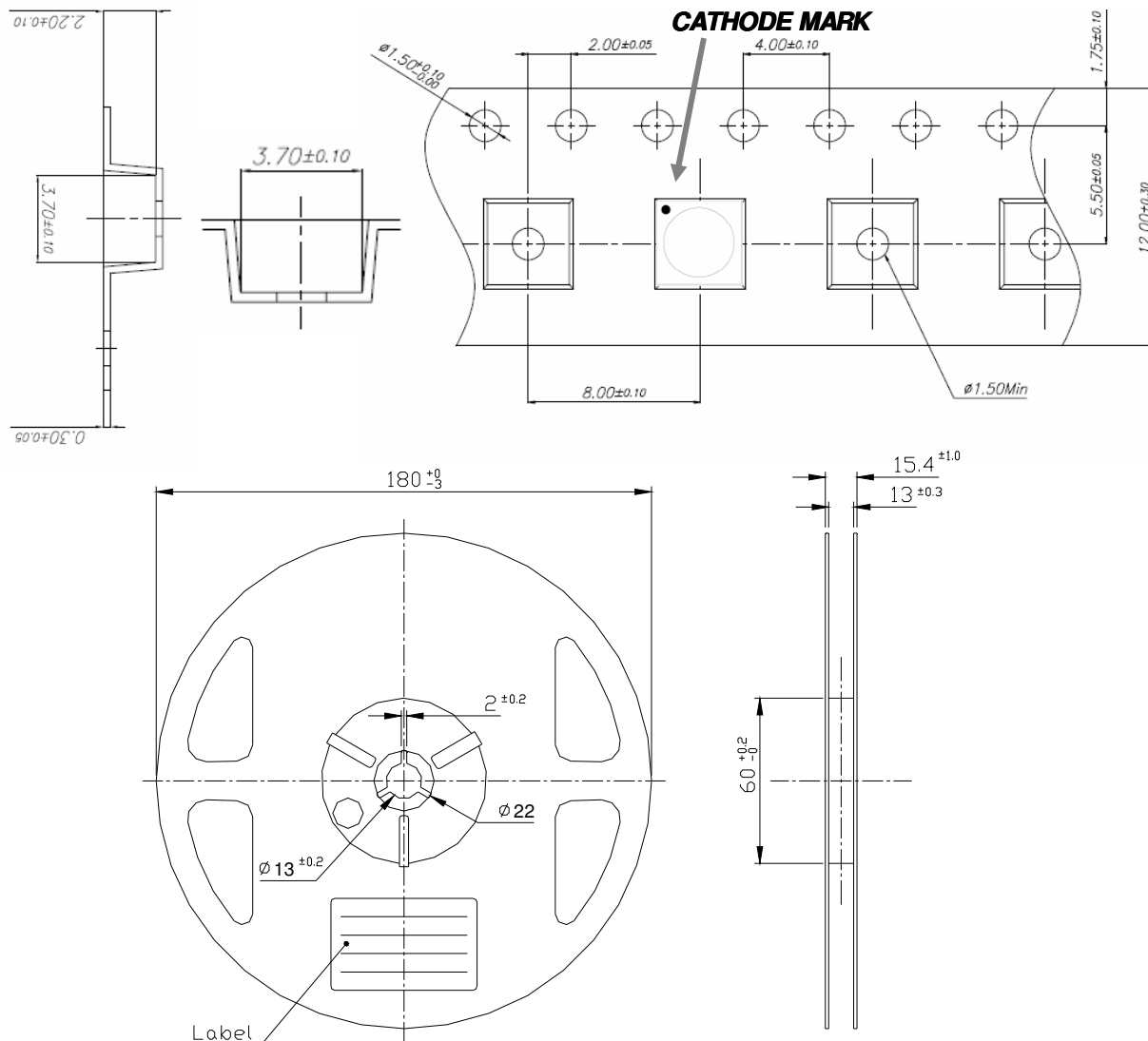


Rank

1# 2# 3

- #1 : Luminous Flux : LF [lm]
- #2 : Dominant Wavelength : DW [nm]
- #3 : Forward Voltage : V_F [V]

Emitter Carrier & Reel Packaging

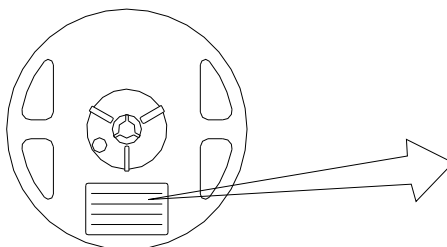


NOTES:

1. 10 sprocket hole pitch cumulative tolerance ± 0.20
2. Camber not to exceed 1mm in 250mm
3. Material: Black conductive Polystyrene
4. Ao and Bo measured on a plane 0.3mm above the bottom of the pocket
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.
7. Pocket center and pocket hole center must be same position.

Packing

Reel



Rank : #####

QUANTITY : 1000

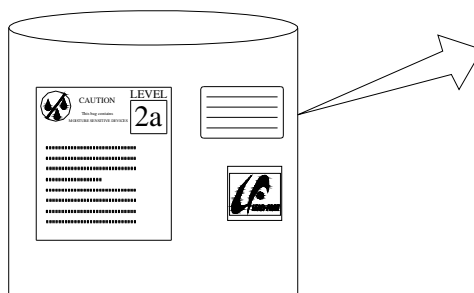
Lot No #####

SSC PART NUMBER : SZX05A0A

SEOUL SZX05A0A



Aluminum Vinyl Bag



Rank : #####

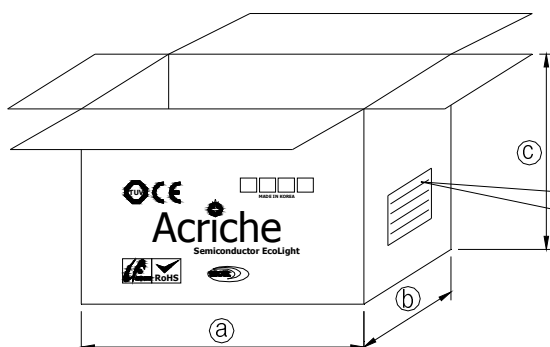
QUANTITY : 1000

Lot No #####

SSC PART NUMBER : SZX05A0A

SEOUL SZX05A0A

Outer Box



*Material : Paper (SW3B(B))

| TYPE | SIZE(mm) | | |
|-------|----------|-----|-----|
| | (a) | (b) | (c) |
| 7inch | 245 | 220 | 142 |

CHIP LED

PART : SSC-SZX05A0A

CODE :

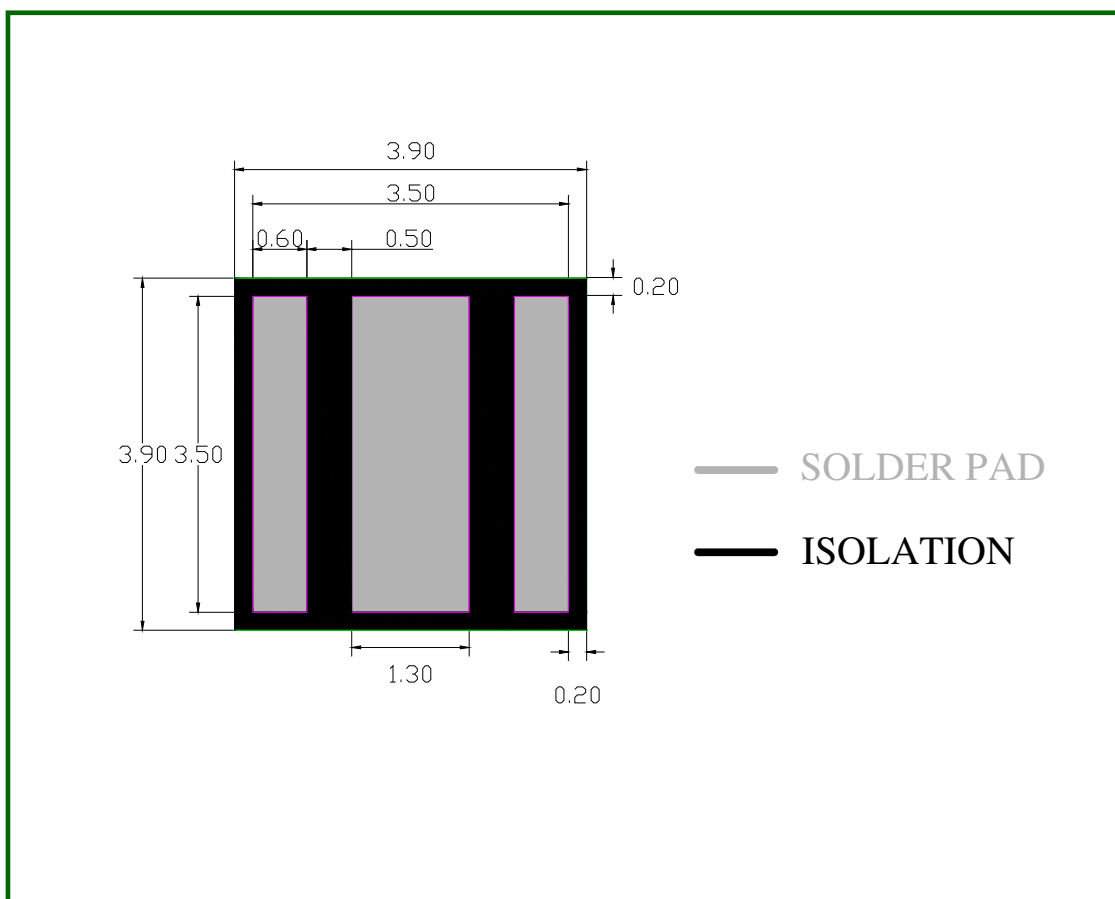
QTY : 10,000EA

LOT NO :

DATE :

SEOUL SEMICONDUCTOR CO.,LTD

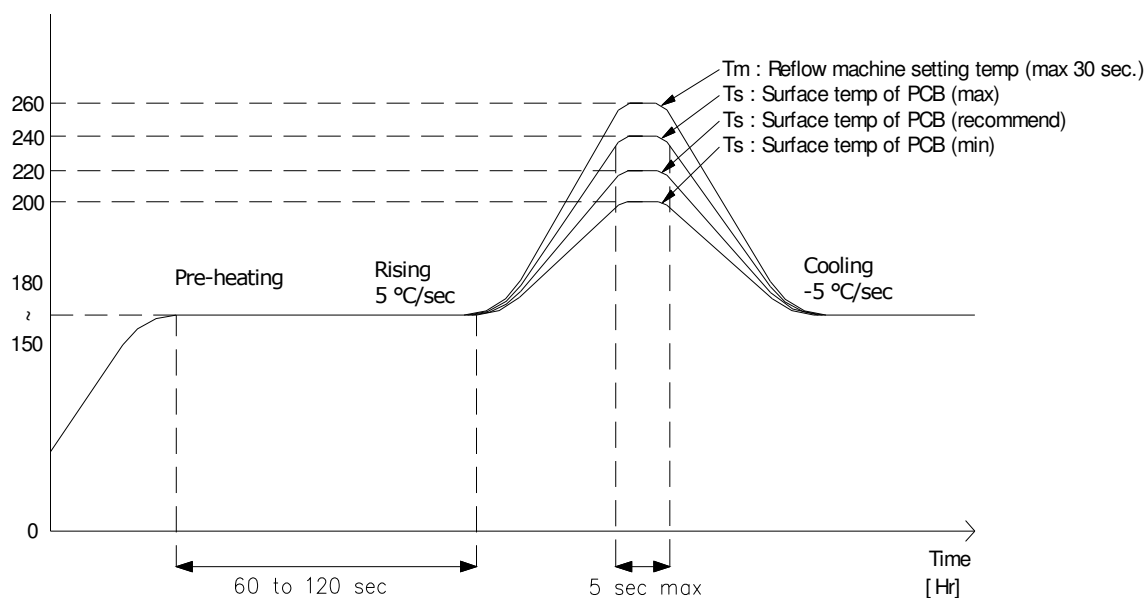
Recommended solder pad



Notes :

- [1] All dimensions are in millimeters.
- [2] Scale : none
- [3] This drawing without tolerances are for reference only

Reflow Soldering Conditions / Profile



* Caution

1. Reflow soldering should not be done more than one time.
2. Repairs should not be done after the LEDs have been soldered. When repair is unavoidable, suitable tools must be used.
3. Die slug is to be soldered.
4. When soldering, do not put stress on the LEDs during heating.
5. After soldering, do not warp the circuit board.
6. Recommend to use a convection type reflow machine with 7 ~ 8 zones.

Precaution for use

- Storage

To avoid the moisture penetration, we recommend storing Z Power LEDs in a dry box with a desiccant. The recommended storage temperature range is 5C to 30C and a maximum humidity of 50%.

- Use Precaution after Opening the Packaging

Use proper SMD techniques when the LED is to be soldered dipped as separation of the lens may affect the light output efficiency.

Pay attention to the following:

- Soldering should be done immediately after opening the package (within 24Hrs).
 - Required conditions after opening the package
 - Sealing
 - Temperature : 5 ~ 40°C Humidity : less than 30%
 - If the package has been opened more than 4 week or the color of the desiccant changes, components should be dried for 10-12hr at 60±5°C
- Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering.
 - Do not rapidly cool device after soldering.
 - Components should not be mounted on warped (non coplanar) portion of PCB.
 - Radioactive exposure is not considered for the products listed here in.
 - Gallium arsenide is used in some of the products listed in this publication. These products are dangerous if they are burned or shredded in the process of disposal. It is also dangerous to drink the liquid or inhale the gas generated by such products when chemically disposed of.
 - This device should not be used in any type of fluid such as water, oil, organic solvent and etc. When washing is required, IPA (Isopropyl Alcohol) should be used.
 - When the LEDs are in operation the maximum current should be decided after measuring the package temperature.
 - LEDs must be stored properly to maintain the device. If the LEDs are stored for 3 months or more after being shipped from SSC, a sealed container with a nitrogen atmosphere should be used for storage.
 - The appearance and specifications of the product may be modified for improvement without notice.
 - Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
 - The slug is isolated from anode electrically.
Therefore, we recommend that you don't isolate the heat sink.
 - Attaching LEDs, do not use adhesives that outgas organic vapor.

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Handling of Silicone resin LEDs

The Z-Power LED is encapsulated with a silicone resin for the highest flux efficiency.

Notes for handling:

- Avoid touching silicone resin parts especially with sharp tools such as Pincetter (Tweezers)
- Avoid leaving fingerprints on silicone resin parts.
- Silicone resin will attract dust so use covered containers for storage.
- When populating boards in SMT production, there are basically no restrictions regarding the form of the pick and place nozzle, except that excessive mechanical pressure on the surface of the resin must be prevented.
- It is not recommend to cover the silicone resin of the LEDs with other resin (epoxy, urethane, etc)