



TOYO LED ELECTRONICS LIMITED

Room 1610, Hong Kong Plaza, 188 Connaught Road West, Hong Kong.

Tel : (852) 2540 7288

<http://www.toyo-led.com>

Fax : (852) 2517 1797

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P/N: TY-YSV0802UR1(0.96)-400

0802 Package 2.0*0.5mm Side View Surface Mount LEDs Series

SPECIFICATION FOR CUSTOMER APPROVAL

P/N: TY-YSV0802UR1(0.96)-400

DATE : February 21, 2025

PREPARED BY : STEVEN

CONFIRMED BY :

PLEASE CONFIRM & SIGN BACK THIS SHEET TO US

CUSTOMER:

(COMPANY CHOP)

APPROVAL BY:

(SIGNATURE)



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✧ Features:

- 2.0mm x0.5mm SMT LED,0.96mm thickness
- Mono-color type
- Soldering methods :All SMT assembly methods
- Comply ROHS standard

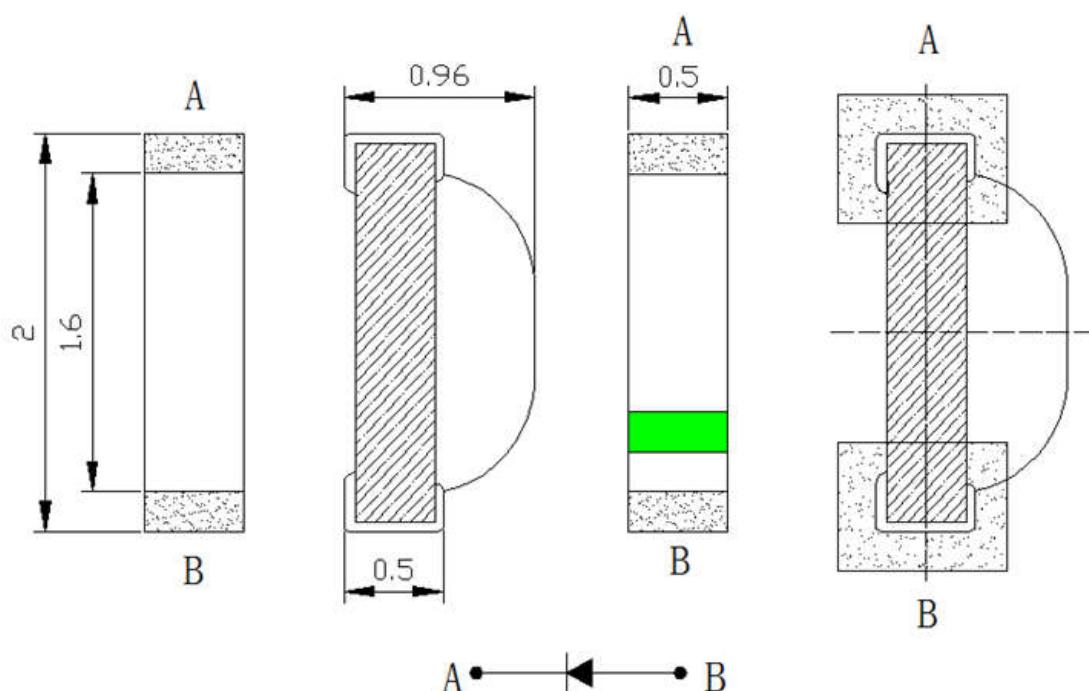
✧ Description

The Red source color devices are made with AlGaInP on sapphire Light Emitting Diode.

✧ Application

- Optical indicator
- Indicator and backlighting in telephone and fax
- Flat backlight for LCD, switch and symbol
- Light pipe application
- General use

✧ Package Dimensions



NOTES:

1. All dimensions are in millimeter[unit];
2. Tolerance is $\pm 0.1\text{mm}$ (0.004") especially other specified;
3. Specifications are subject to change without notice.



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| Part No. | Emitted Color | Len's Color | Chip Material |
|-------------------------|---------------|-------------|---------------|
| TY-YSV0802UR1(0.96)-400 | Red | Water clear | AlGaInP |

✧ Absolute Maximum Ratings(Ta=25°C)

| Item | Symbol | Maximum | Unit |
|---|-------------------|------------|------|
| Power Dissipation | PD | 55 | mW |
| Continuous Forward Current | I _{Fmax} | 25 | mA |
| Peak Forward Current(1/10 Duty Cycle 0.1ms Pulse Width) | I _{FP} | 60 | mA |
| Reverse Voltage | V _R | 5 | V |
| Operating Temperature Range | T _{opr} | -40 to +85 | °C |
| Storage Temperature Range | T _{stg} | -40 to +85 | °C |

✧ Electrical/Optical Characteristics(Ta=25°C)

| Item | Symbol | Condition | Min. | Typ. | Max | Unit |
|--------------------|-------------------|----------------------------|------|------|-----|------|
| Forward Voltage | V _F | I _F =20mA | 1.8 | 2.0 | 2.4 | V |
| Luminous Intensity | I _V | I _F =20mA | 300 | 550 | -- | mcd |
| Wavelength | λ | I _F =20mA | 617 | 625 | 628 | nm |
| Viewing Angle | 2θ _{1/2} | I _F =20mA | -- | 120 | -- | Deg |
| Capacitance | C | V _F =0V, f=1MHz | -- | 105 | -- | pF |
| Reverse Current | I _R | V _R =5V | -- | 5 | 10 | uA |



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✧ classification (@Ta=25°C)

| classification | MIN | MAX | unit | Test current |
|-------------------|-----|-----|------|--------------|
| Brightness rating | 300 | 400 | mcd | IF =20mA |
| | 400 | 500 | | |
| | 500 | 600 | | |
| Voltage rating | 1.8 | 1.9 | V | IF =20mA |
| | 1.9 | 2.0 | | |
| | 2.0 | 2.1 | | |
| | 2.1 | 2.2 | | |
| | 2.2 | 2.3 | | |
| | 2.3 | 2.4 | | |
| Wavelength rating | 619 | 622 | nm | IF =20mA |
| | 622 | 625 | | |
| | 625 | 628 | | |

➤ Photoelectric parameter tolerance

1. Forward voltage (REF/VF): $\pm 0.02V$
2. Brightness (CAT/IV) : $\pm 15\%$
3. Wavelength rating: $\pm 2nm$



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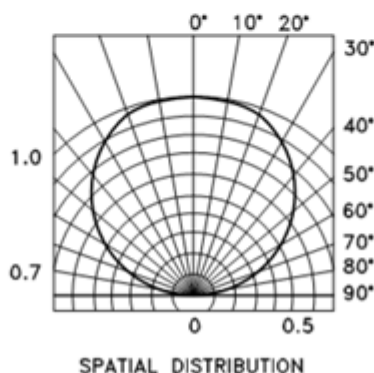
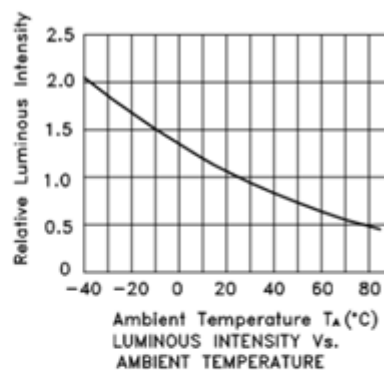
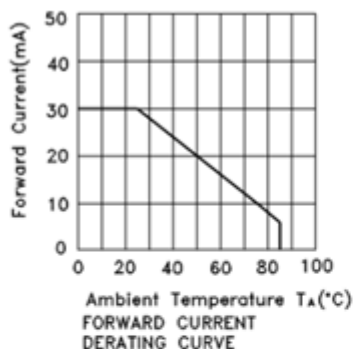
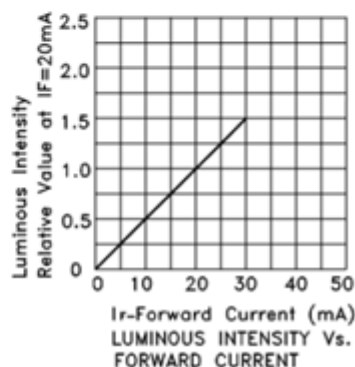
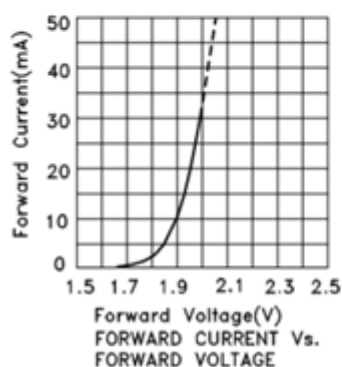
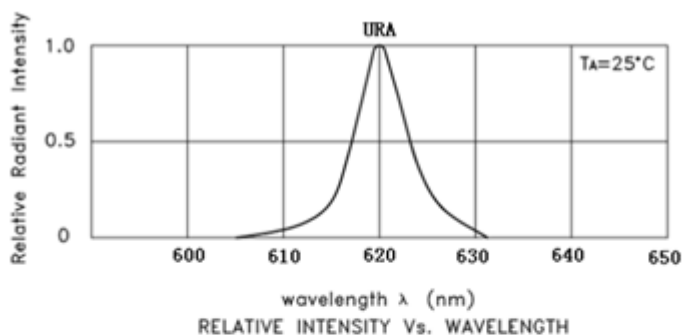
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✧ Typical Electro-Optical Characteristics Curves





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✧ Reliability Test Items And Conditions

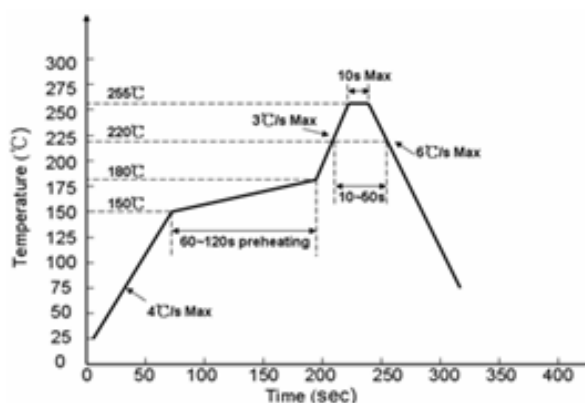
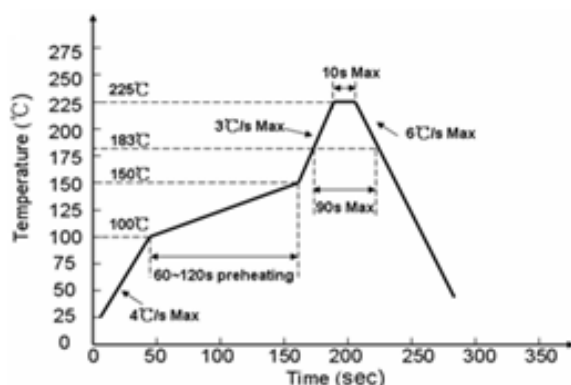
| NO. | Item | Test Condition | Test Hr/cycle/time | Sample Q'ty | Ac/Re |
|-----|--------------------------|--|--------------------|-------------|-------|
| 1 | Reflow | TEMP:260±5℃; Min.5Sec | 6 min | 22pcs | 0/1 |
| 2 | Temperature Cycle | H:+100℃ 15mins To(5mins) L:-40℃ 15mins | 100 cycles | 22pcs | 0/1 |
| 3 | Thermal Shock | H:+100℃ 15mins To(5mins) L:-40℃ 15mins | 500 cycles | 22pcs | 0/1 |
| 4 | High Temperature Storage | TEMP:+260℃ | 1000hrs | 22pcs | 0/1 |
| 5 | Low Temperature Storage | TEMP:-40℃ | 1000hrs | 22pcs | 0/1 |
| 6 | DC Operating Life | IF=20MA | 1000hrs | 22pcs | 0/1 |
| 7 | High Temperature | 85℃ | 1000hrs | 22pcs | 0/1 |
| 8 | High Humidity | 85%R.H. | 1000hrs | 22pcs | 0/1 |

✧ SMT Reflow Soldering Instructions

| Reflow soldering | | | Hand welding | |
|------------------|----------------------------|----------------------------|----------------|---------------------------|
| | Lead Solder | Lead-free Solder | Temperature | 350° C Max. |
| Pre-heat | 140 ~ 160° C | 180 ~ 200° C | Soldering time | 3 sec.Max. (onetime only) |
| Pre-heat time | 120 sec. Max. | 120 sec. Max. | | |
| Peak temperature | 230° C Max. | 260° C Max. | | |
| Soldering time | 10 sec. Max. | 10 sec. Max. | | |
| Condition | Refer to the picture below | Refer to the picture below | | |

(Lead Solder)

(Lead-Free Solder)





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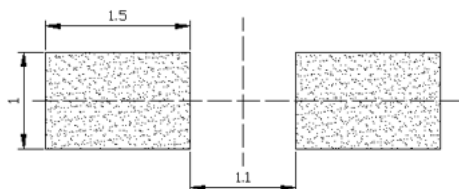
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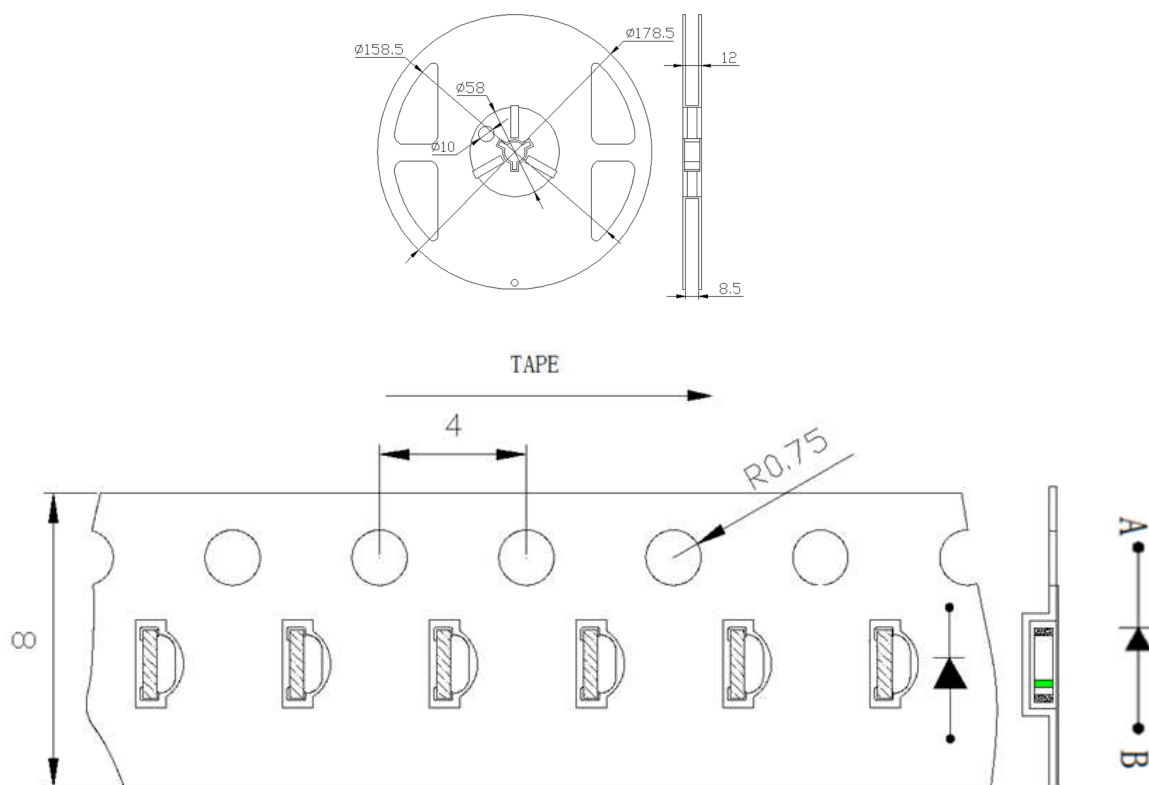
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✧ Recommended Soldering Pad Dimensions



✧ Tape Specification: 4,000PCS per reel



✧ Package Label

| SMD LED | |
|---|---------|
| PART NO: _____ | QA Pass |
| LOT NO : _____ | |
| Q' TY : _____ | |
| VF : _____ IV : _____ | |
| WL : _____ BIN: _____ | Pb |
| DATA : _____ | |
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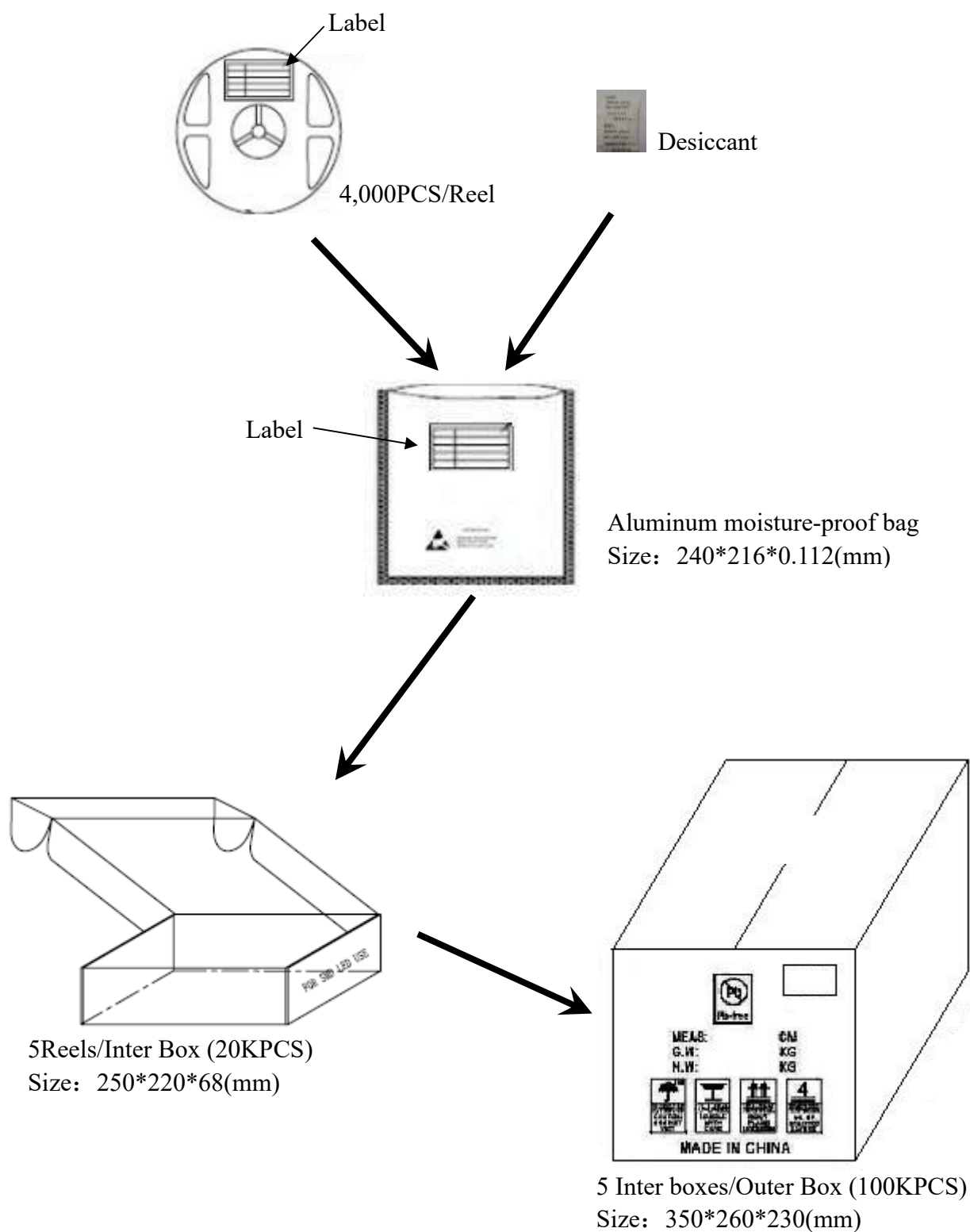
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✧ Package & Shipping Instructions





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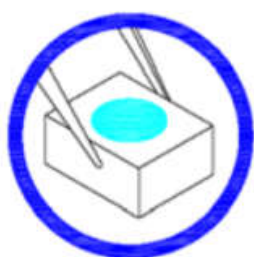
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➤ Handling Precautions

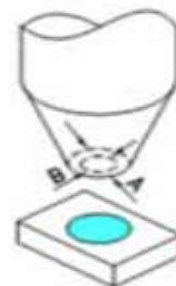
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly Orangeuces thermal stress, it is more susceptible to damage by external mechanical force.

As a result, special handling precautions need to be observed during assembly using silicone encapsulated LED products. Failure to comply might lead to damage and premature failure of the LED.

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



2. 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.



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

4. Not suitable to operate in acidic environment, $\text{PH} < 7$



5. LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material.

6. When we need to use external glue for LED application products, please make sure that the external glue matches the LED packaging glue. Additionally, as most of LED packaging glue is silica gel, and it has strong Oxygen permeability as well as strong moisture permeability; in order to prevent external material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM, the single content of Chlorine element is required to be less than 900PPM, the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM



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➤ ESD (Electrostatic Discharge)

Static Electricity or power surge will damage the LED. Use of a conductive wrist band or anti-electrostatic glove is recommended when handling these LED. All devices, equipment and machinery must be properly grounded.

➤ Notes for designing

Care must be taken to provide the current limiting resistor in the circuit so as to drive the TOYO LEDs within the rated figures. Also, caution should be taken not to overload TOYO LEDs with instantaneous voltage at the turning ON and OFF of the circuit.

When using the pulse drive care must be taken to keep the average current within the rated figures. Also, the circuit should be designed so as to be subjected to reverse voltage when turning off the TOYO LEDs.

Storage

1. We recommend the reflow temperature $230 \pm 5^{\circ}\text{C}$. The maximum soldering temperature should be limited to 240°C for 10s (max).
2. SMD products are easily moisturized. Before soldering the unpacked SMD, de-moisturize process under $65 \pm 5^{\circ}\text{C}$ /24 hours is recommended. It could effectively prevent the defects caused by rapid expansion of hydro particles in the plastic under heat;
3. All unpacked and de-moisturized SMD should be used up within 168 hours. Otherwise, you need to de-moisturize them under $65 \pm 5^{\circ}\text{C}$ /24 hours again;
4. During reflow soldering, tin paste high in hydro or with sulfide cannot be used; Also, avoid using thinner to remain tin paste for fear that moisture penetrates to the base of the SMD and causes defects.
5. SMD storage conditions: $5-30^{\circ}\text{C}$, humidity: 60% MAX
6. Product is not recommended to work in high temperature and high humidity environment, will affect the life of the product
7. During manual welding, the welding temperature should be controlled at 350°C /3 seconds to avoid direct contact with the product colloid at the high temperature of the hot head, so as to prevent defective dead lamps caused by high temperature during welding
8. The number of reflow welding of the product is 1, and the repeated reflow will cause the product dead lamp to be defective
9. Moisture sensitivity level: 3



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REVISION HISTORY

| DATE | REVISION CONTENTS | VERSION |
|-----------|-------------------|---------|
| 2024-6-17 | Initial release | A |
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