TOYO LED ELECTRONICS LIMITED
Room 1610, Hong Kong Plaza, 188 Connaught Road West, Hong Kong.
Tel : (852) 2540 7288 Fax : (852) 2517 1797
http://www.toyo-led.com E-mail : sales@toyo-led.com

SPECIFICATION FOR CUSTOMER APPROVAL

P/N: TY-Y0603BL1(0.60)

DATE : May 9, 2025

PREPARED BY : STEVEN

CONFIRMED BY :

PLEASE CONFIRM & SIGN BACK THIS SHEET TO US

CUSTOMER: _____ **APPROVAL BY:** _____

(COMPANY CHOP) (SIGNATURE)

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ISO 9001 BUREAU VERITAS Certification N° 194791 UKAS QUALITY MANAGEMENT 008

P/N: TY-Y0603BL1(0.60)

0603 Package 1.6*0.8mm Surface Mount LEDs Series

➢ Features:

- ✧ 1.6*0.8*0.60 mm
- ✧ Mono-color type
- ✧ Soldering methods :All SMT assembly methods
- ✧ Comply ROHS standard

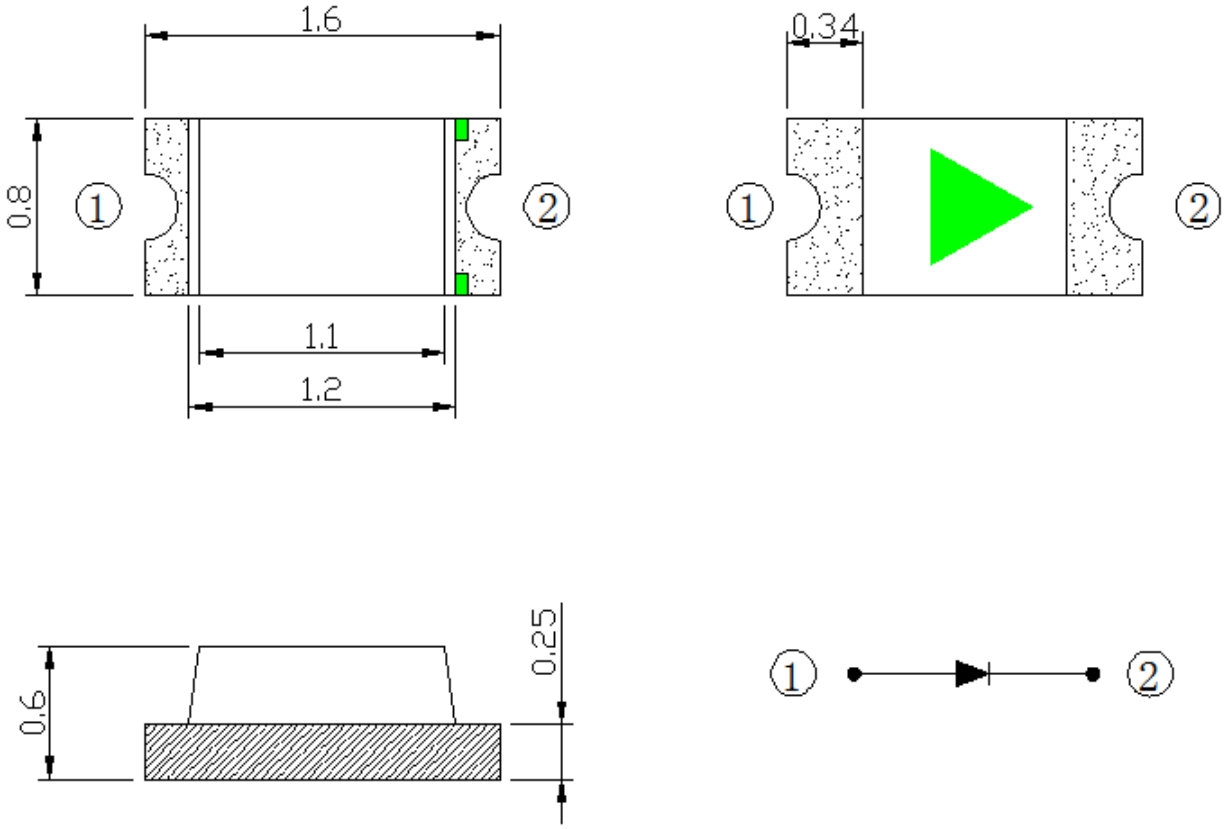
➢ Description

- ✧ The Blue source color devices are made with InGaN on sapphire Light Emitting Diode.

➢ Application

- ✧ LCD backlight
- ✧ Illuminations

➢ Package Dimensions



NOTES:

1. All dimensions are in millimeter;
2. Tolerance is±0.1mm unless other specified;
3. Specifications are subject to change without notice.

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Part No.	Emitted Color	Lens Color	Chip Material
TY-Y0603BL1(0.60)	Blue	Water Clear	InGaN

➢ Absolute Maximum Ratings(Ta=25℃)

Item	Symbol	Maximum	Unit
Power Dissipation	PD	75	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
Electrostatic Discharge	ESD	2000	V
Operating Temperature Range	T_{opr}	-40 to+85	℃
Storage Temperature Range	T_{stg}	-40 to+85	℃
Lead Solder Temperature	Tsol	260ºC for 3 seconds	

➢ Electrical/Optical Characteristics(Ta=25℃)

Item	Symbol	Condition	Min.	Typ.	Max	Unit
Forward Voltage	V_F	I_F=5mA	2.5	2.7	2.9	V
Luminous Intensity	I_V	I_F=5mA	30	70	100	mcd
Wavelength	λ	I_F=5mA	460	468	475	nm
Viewing Angle	$2\theta_{1/2}$	I_F=5mA	---	120	---	Deg
Reverse Current	IR	V_R =5V	---	---	10	uA

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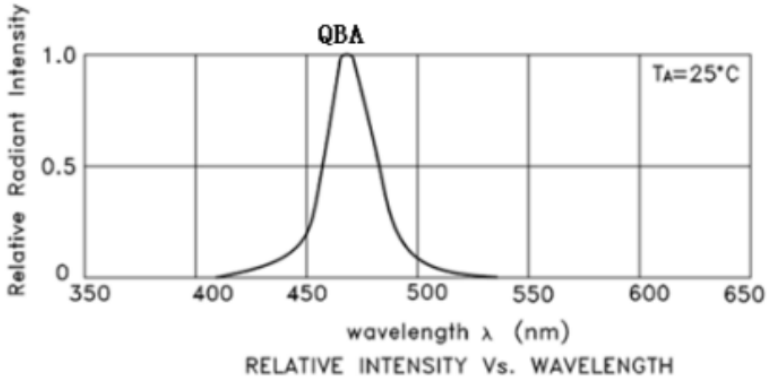
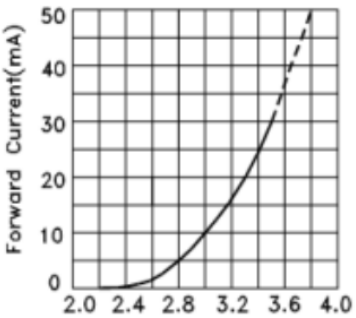
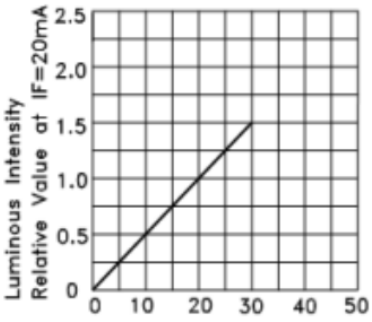
➢ Typical Electro-Optical Characteristics Curves



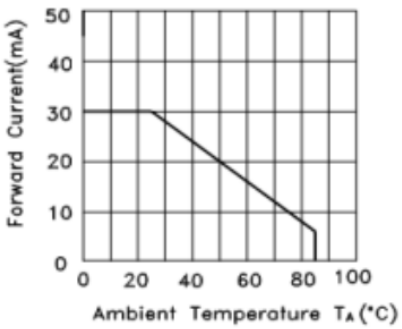
RELATIVE INTENSITY Vs. WAVELENGTH



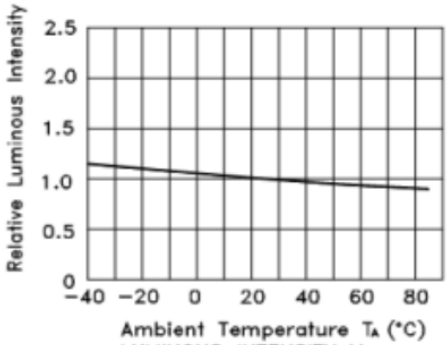
FORWARD CURRENT Vs. FORWARD VOLTAGE



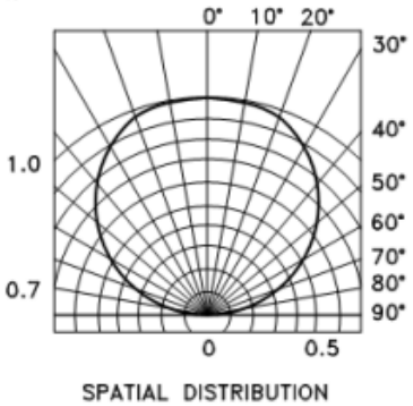
LUMINOUS INTENSITY Vs. FORWARD CURRENT



FORWARD CURRENT DERATING CURVE



LUMINOUS INTENSITY Vs. AMBIENT TEMPERATURE



SPATIAL DISTRIBUTION

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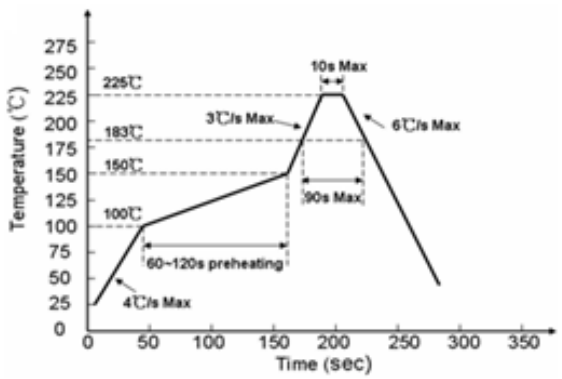
➢ Reliability Test Items And Conditions

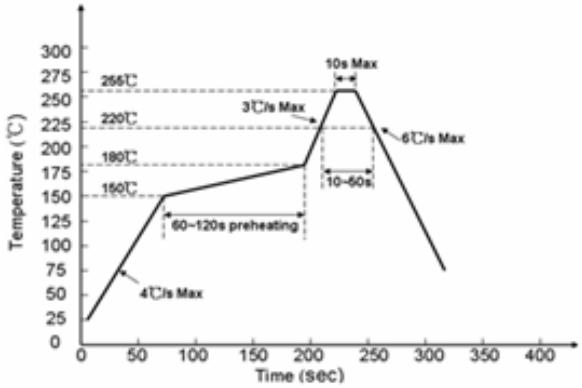
NO.	Item	Test Condition	Test Hr/cycle/time	Sample Q'ty	Ac/Re
1	Reflow	TEMP:260±5℃; Min.5Sec	6 min	22pcs	0/1
2	Temperature Cycle	H:+100℃ 15mins To(5mins) L:-40℃ 15mins	100 cycles	22pcs	0/1
3	Thermal Shock	H:+100℃ 15mins To(5mins) L:-40℃ 15mins	500 cycles	22pcs	0/1
4	High Temperature Storage	TEMP:+260℃	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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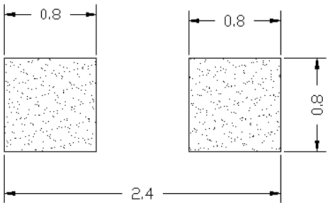
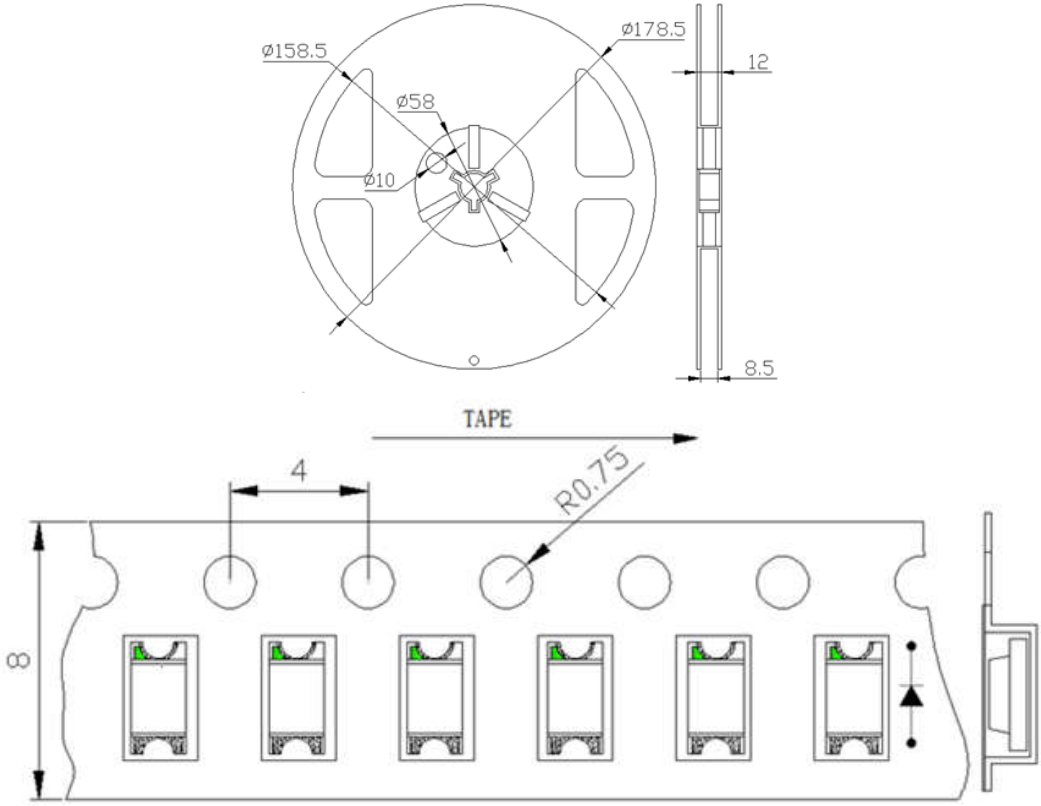
➢ Recommended Soldering Pad Dimensions



➢ Tape Specification: 4,000PCS per reel



➢ Package Label

SMD LED

PART NO: _____

LOT NO : _____

Q'TY : _____

VF : _____ IV : _____

WL : _____ BIN: _____

DATA : _____

QA Pass

Pb

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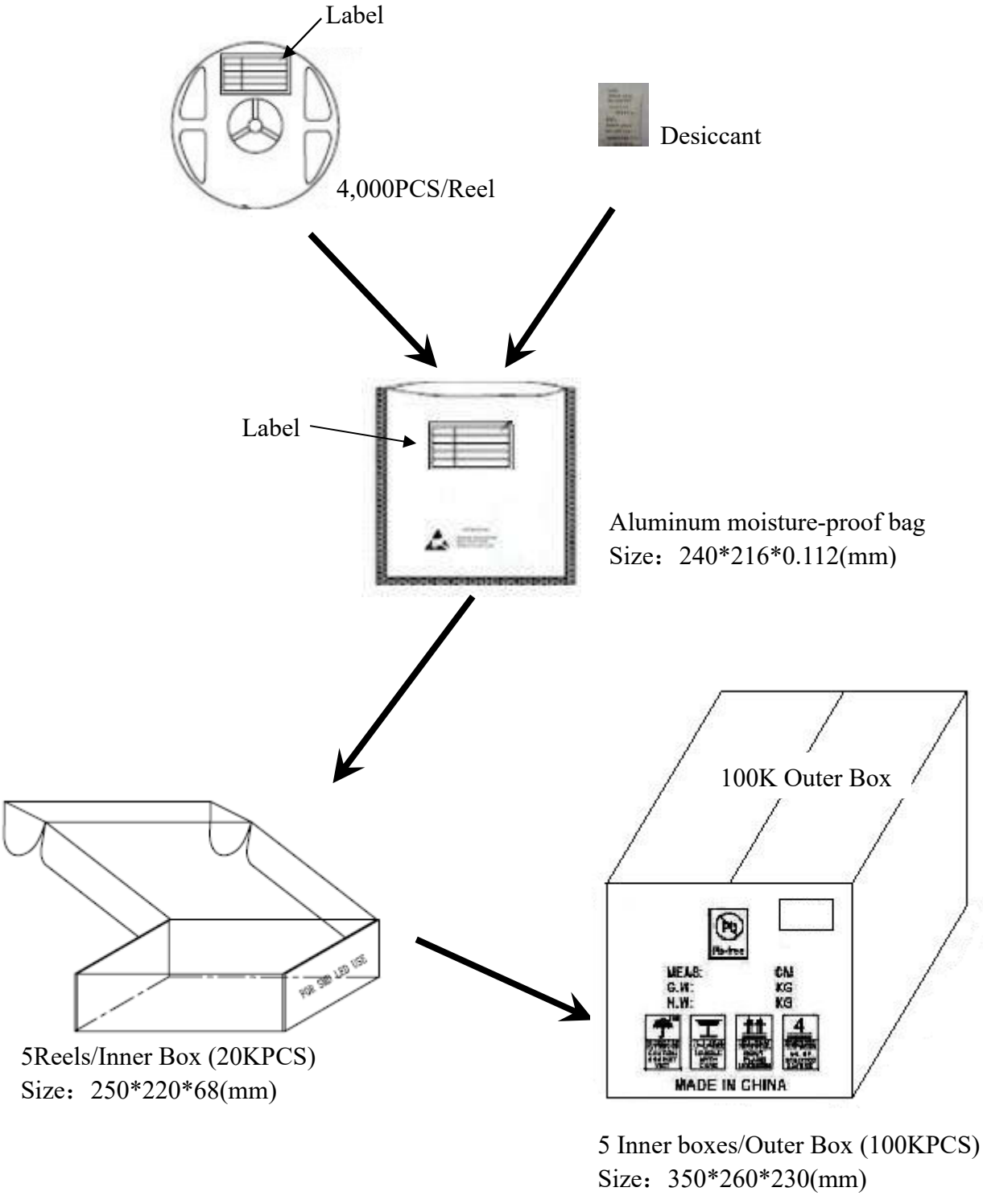
➢ Package & Shipping Instructions



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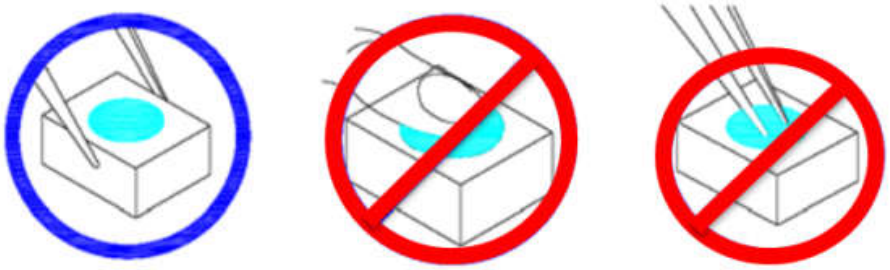
➢ Handling Precautions

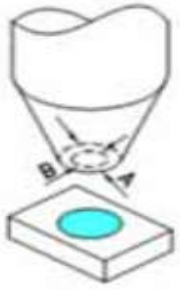
Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly Orangeuces thermal stress, it is more susceptible to damage by external mechanical force.

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.

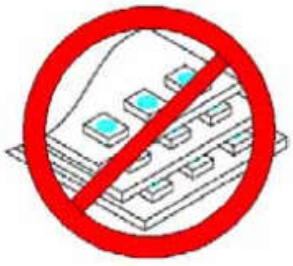
1. Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handlethe silicone lens surface, it may damage the internal circuitry.



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,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 handing 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 be subjected to reverse voltage when turning off the TOYO LEDs.

- Storage

  1. We recommend the reflow temperature 230±5℃ .The maximum soldering temperature should be limited to 240℃ for 10s (max).

  2. SMD products are easily moisturized. Before soldering the unpacked SMD, de-moisturize process under 65±5℃ /24 hours is recommended. It could effectively prevent the defects caused by rapid expend of hydro particles inthe 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±5℃ /24 hours again;

  4. During reflow soldering, tin paste high in hydro or with sulfide cannot be used; Also, avoid using thinner to remained tin paste for fear that moistures penetrate to the base of the SMD and cause defects.

  5. SMD storage conditions: 5-30 ℃ , 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 luotie 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
2025-05-09	New	A