

承認書

SPECIFICATION FOR APPROVAL

客戶	
Customer	
客戶品 號	
Customer Part No.	
產品品號	
Brightek Part No.	HC-509U25Y3C-RGB-AAA-LLL-3
規格	
Specification	Φ5 正常圓頭有邊透明膠體四腳全彩共陰極LED
製錶人	
Prepared By	王清
審 核	
Checked by	李东平
客戶回 簽	
Customer	
送樣日期:	
Deliver date:	

說明: 一、謹致執事者: 茲提供敝公司產品之有關詳細規格及圖面資料, 敬請給予辦理測試認定手續。同時敬請送返一份附有貴公司簽認之測試認定後之樣品認定書。

We are sending you our specification and drawings for your approval. Please return to us one copy "For Approval" with your approved signatures.

二、客戶意見欄 Customer'S Proposal

- ☐ Approve 承認 (請於認可欄中簽名)
- ☐ Disagree 不同意

Reason 原因: _____

广东光宇集团

广东光宇实业有限公司

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弘呈光电(香港)有限公司

Hong Cheng Photoelectric (HK) Limited

东莞市弘呈光电有限公司

DongGuan Hong cheng Optoelectronics Co.,Ltd

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版本/版次	修改日期	修改内容
A01		

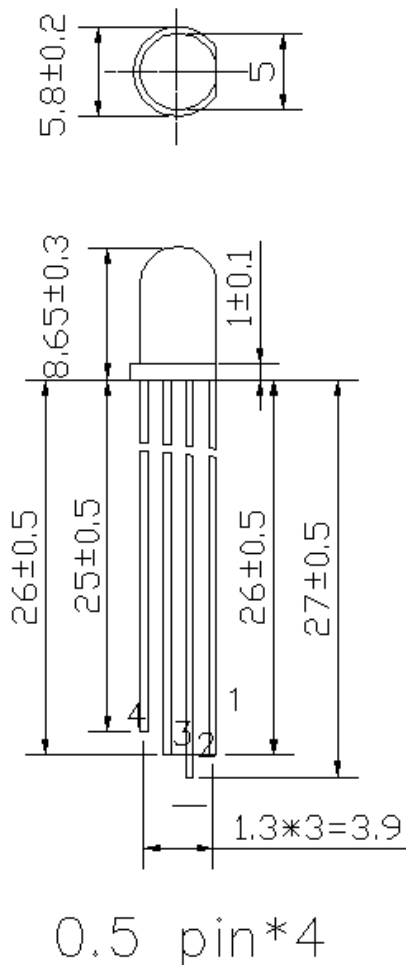
Note: this specification does not recommend using ac, such as improper operation, cause accidental death lamp or other adverse phenomenon, this company is not responsible for ! Advising clients to set the current to use this product, please let us know if they set the voltage to use the product.

1. overview

- * Low power consumption
- * Low power
- * General equipment on the PCB board or panel
- * with IC Supporting the use/Low current requirement

2. Product appearance size figure

(unit: mm)

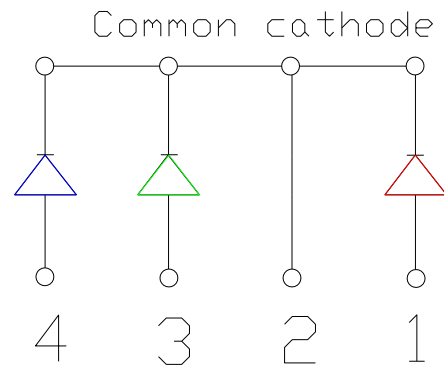


1,RED

2,COMMON

3,GREEN

4,BLUE



Note:

- 1: All dimensions are in millimeters (inches).
- 2: All dimension tolerance is $\pm 0.25\text{mm}$ unless otherwise noted.
- 3: Specifications are subject to change without notices.
- 4: This specification is for reference only for one year

3. parameter

3.1 The limit parameter (room temperature 25℃)

parameter	The numerical	Unit
Dissipation power	R:72 G:102 B:102	mW
Pulse current (1/10 work loops 0.1 millisecond pulse width)	100	mA
Working current (IF)	30	mA
Reverse voltage (VR)	5	V
Working temperature range	-40℃ ~ +80℃	
Storage temperature range	-40℃ ~ +80℃	
Soldering temperature from the roots (4.0 mm)	260℃ for 5 Seconds	

Photoelectric parameters At room temperature 25℃

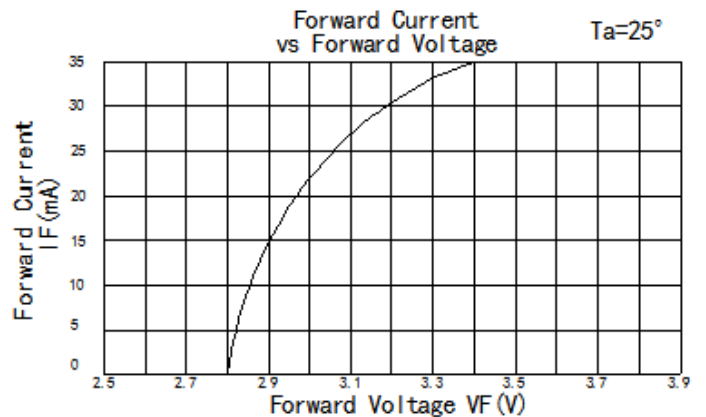
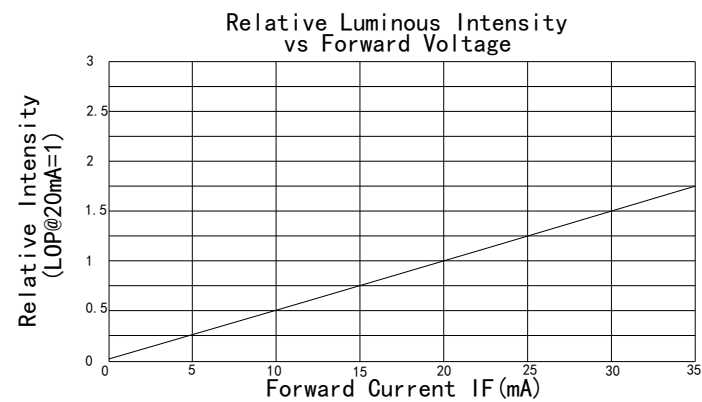
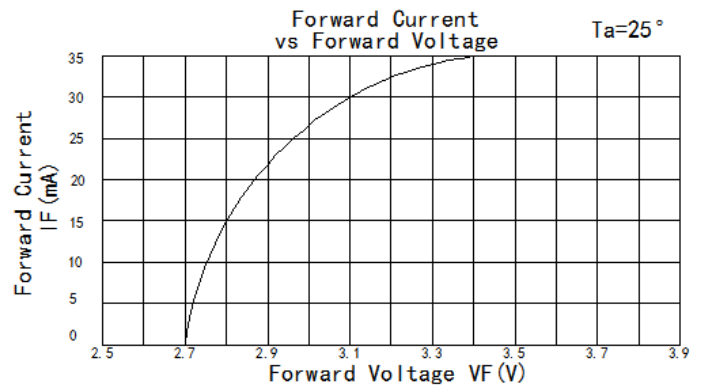
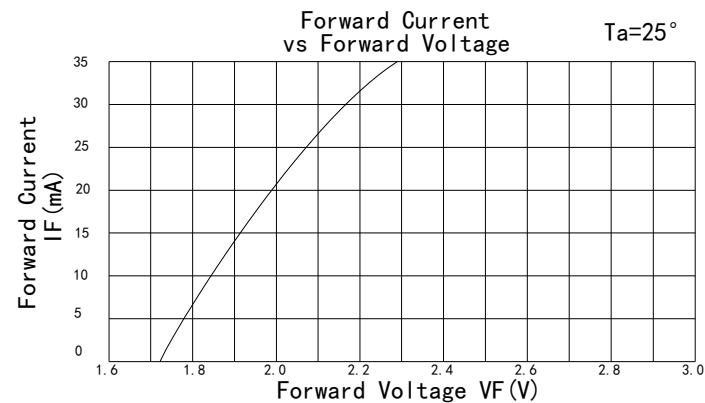
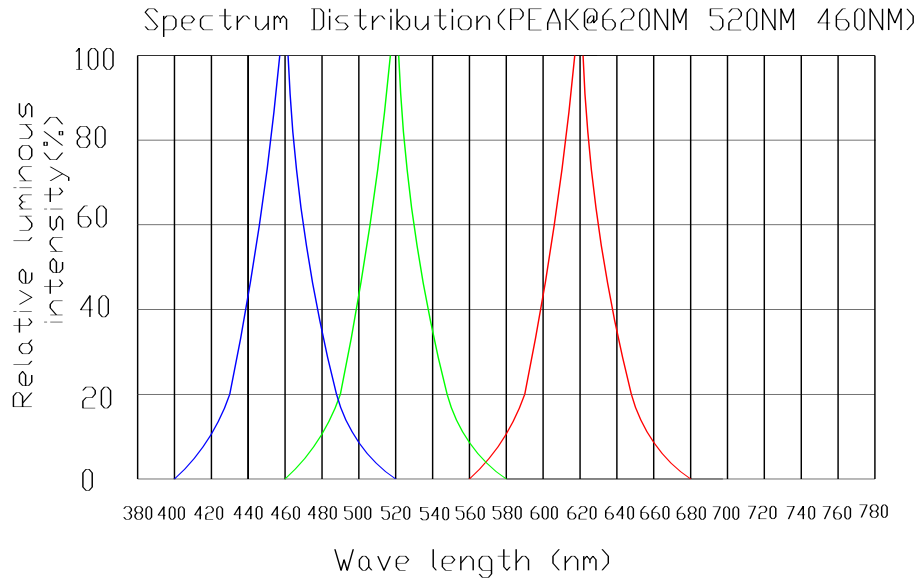
Parameter		min	Avg	max	Unit	Test Condition
Luminous intensity	Red	600	———	1200	mcd	If=20mA
	Green	5000	———	10000	mcd	If=20mA
	Blue	1000	———	3000	mcd	If=20mA
The wavelength(λ)	Red	620	———	630	Nm	If=20mA
	Green	517	520	522	Nm	If=20mA
	Blue	460	———	465	Nm	If=20mA
electric voltage	Red	1.8	———	2.4	V	If=20mA
	Green	2.8	———	3.4	V	If=20mA
	Blue	2.8	———	3.4	V	If=20mA
Reverse current			———	5	μA	Vr=5V

Selection Guide

Colloid color	Chip		
Water clear	Material	Emitting light colors	λp (nm)
	GaASP/Gap	Red	620
	InGaN/GaN	Green	520
	InGaN/GaN	Blue	460

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4、Under the condition of 25 °C electrical diagram:



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5. Not dry glue label

P/N: Product number

VF: Forward voltage

BIN: points light

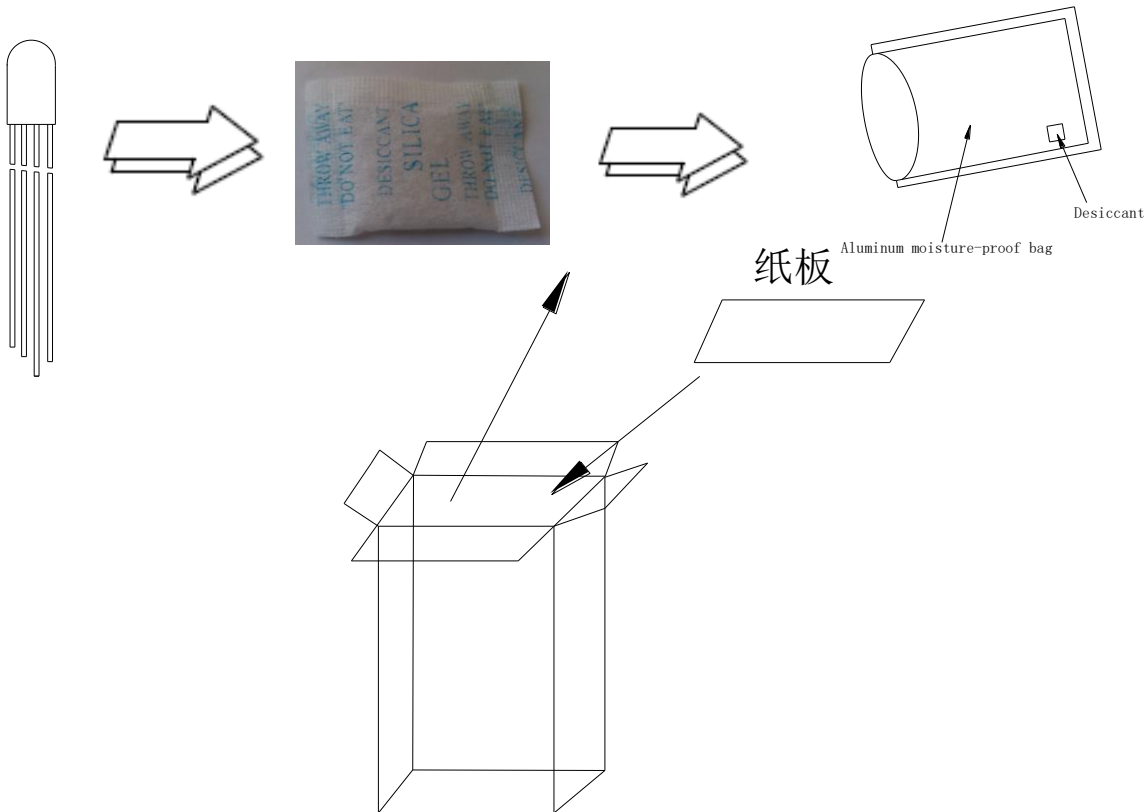
IV: Luminous intensity

WL: Color/wavelength

QTY: number

QC: Production order

6. packaging



The packing way: Electrostatic bag packing

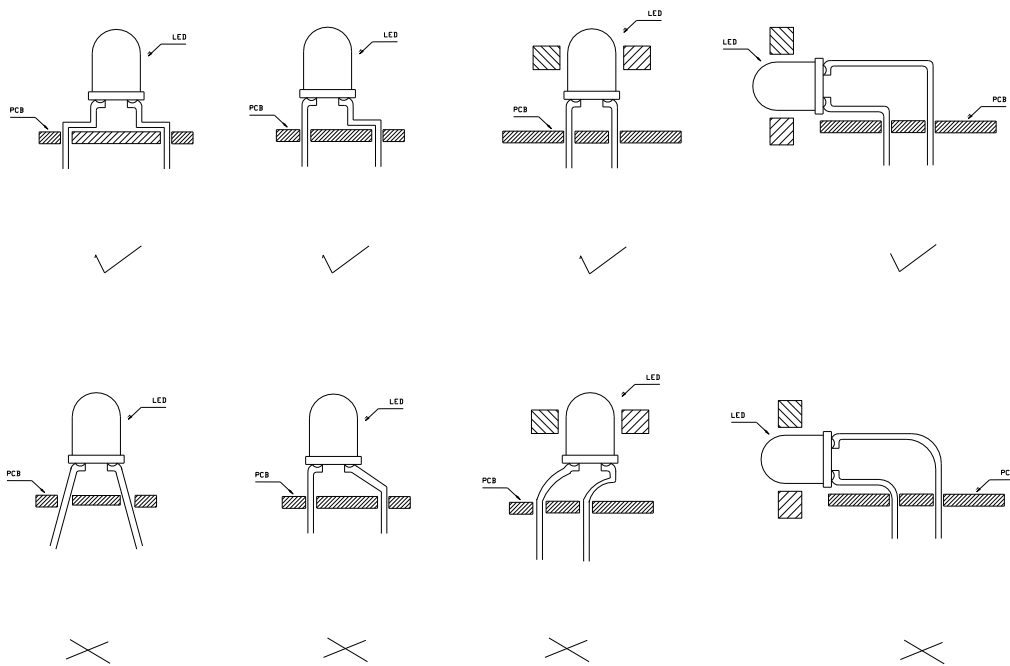
Packing specification: White light color packing 500 PCS/bag, puguang 500 PCS/bag.

Pay attention to: Above belongs to the normal packing specification, if you have any special requirements according to customer requirements

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7. The cautions of stent deformation

Stent deformation must be conducted before welding, plastic, stent bend position must be at least 3 mm at the bottom of the encapsulating resin, at the same time, avoid bent many times on the same position. When the deformation, fixed bracket, please use the right tools to avoid resin pressure. Especially not as a pivot pin connected with the resin part, so the stress within the product on light emitting structure directly into damage, lead to the change of product features and even damaged. For the same reason, in the assembly of products, the distance between welding PCB hole must be in the pin spacing of the products strictly match, as shown in the figure below:



✓ correct mounting methods

✗ Incorrect mounting methods

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8. Reliability of the experimental project and conditions

Test Item 测试项目	Ref. Standard 参考标准	Test Conditions 测试条件	Note 备注	Conclusion 结论
Life Test 老化测试	JESD22-A108	Ta=25℃ IF=20mA	1000 hrs	0/100
Temperature Cycle 温度循环	JESD22-A104	-20℃ 30min ↑↓15min 80℃ 30min	200 cycle	0/100
Thermal Shock 冷热冲击	JESD22-A106	-20℃ 15min ↑↓15sec 80℃ 15min	200 cycle	0/100
High Temperature Storage 高温存储	JESD22-A103	Ta=100℃	1000 hrs	0/100
Low Temperature Storage 低温存储	JESD22-A119	Ta=-20℃	1000 hrs	0/100
Power Temperature Cycling 点亮高低温循环	JESD22-A105	On5min-20℃>15min ↑↓ ↑↓<15min Off5min80℃>15min	200 cycle	0/100
High Humidity Heat Life Test 高温高湿	JESD22-A101	60℃ RH=90% IF=20mA	1000 hrs	0/100
Wave soldering 波峰焊	JESD22-B106	260℃ for 3 sec	3 times	0/22

Reliability experiment unqualified judgement standard

IV: Attenuation is more than 30%

VF: Change is more than 20%

note: 1) Same project the results of the test must be completed within 2 hours.

2) Testing must be completed in each experiment. Material return to normal conditions.

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9. ESD protective

LED is a semiconductor device, the static sensitive, especially for white, green, blue, purple LED to make efforts to prevent electrostatic generation and eliminate static electricity.

9.1 The generation of static electricity

a. Friction: in daily life, any two objects of different material contact after the separation, can produce static, and the one of the most common method of generation of static electricity, is the electrification. The insulation material, the better, the easier the electrification. In addition, any two objects of different material contact again after separation, also can produce static electricity.

b. Induction: in view of the conductive material, because electrons can flow freely in its surface, such as to be put in the electric field, due to the same, opposites attract, the positive and negative ions will move, can produce electric charge on the surface.

c. Conduction: in view of the conductive material, because electrons can flow freely in surface, such as contact with a charged object, the charge transfer will occur.

9.2 The dangers of static electricity on the LED:

a. For the moment's electric field or electric current produced by the heat, the LED local injury.

b. Because of destruction of the electric field or current LED insulation layer, the device will not work (destroyed) characterized by death lamp.

9.3 Electrostatic protection and measures to eliminate

For the entire process (production, testing, packaging, etc.) all employees in direct contact with the LED to measures to prevent and eliminate static electricity, mainly:

- Laying anti-static workshop floor and well grounded.
- Workbench for esd workstation, production machines grounding is good.
- Operators wear anti-static clothing, anti-static hand ring, gloves or foot ring.
- Application of ion fan, the welding electric grounding measures.
- Packing with antistatic materials.

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CAUTIONS- Super Bright LED

(1) Lead Forming

- a. At least 3mm from the base of the epoxy bulb should be kept when forming leads.
- b. Do not use the base of the leadframe as a fulcrum during lead forming. Lead forming should be done before soldering.
- c. Because the stress to the base may damage the characteristics or it may break the LEDs, do not apply any bending stress to the base of the lead.
- d. When mounting the LEDs onto a PCB, the holes on the circuit board should be exactly aligned with the leads of the LEDs. Stress at the leads should be avoided when the LEDs are mounted on the PCB, because it causes damage to the epoxy resin and this will degrade the LEDs.

(2) Storage

- a. The LEDs should be stored at 30 °C or less and 70%RH or less after being shipped and the storage life limits are 3 months.
- b. If the LEDs are stored more than 3 months, they can be stored for a year in a sealed container with a nitrogen atmosphere and moisture absorbent material.
- c. Please avoid rapid transitions in ambient temperature, especially, in high humidity environments where condensation can occur.

(3) Static Electricity

- a. Static electricity or surge voltage damages the LEDs.
- b. It is recommended that a wristband or an anti-electrostatic glove be used when handling the LEDs.
- c. All devices, equipment and machinery must be properly grounded.
- d. It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.
- e. Damaged LEDs will show some unusual characteristics such as the leak current remarkably increases, the forward voltage becomes lower, or the LEDs do not light at the low current.

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Criteria: ($V_F > 2.0V$ at $I_F = 0.5mA$)

(4) Heat Generation

- a. Thermal design of the end product was most importance. Please consider the heat generation of the LED when making the system design.
- b. The thermal resistance of the circuit board and density of LED placement on the board, as well as other components was the important factor affecting the coefficient of temperature increase per input electric power. It must be avoid intense heat generation and operate within the maximum ratings given in the specification.
- c. The operating current should be decided after considering the ambient maximum temperature of LEDs.

(5) Cleaning

- a. It is recommended that isopropyl alcohol be used as a solvent for cleaning the LEDs. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the resin or not. Freon solvents should not be used to clean the LEDs because of worldwide regulations.
- b. Do not clean the LEDs by the ultrasonic. When it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on factors such as ultrasonic power and the assembled condition. Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs would occur.

(6) Safety Guideline for Human Eyes

- a. In 1993, the International Electric Committee (IEC) issued a standard concerning laser product safety (IEC 825-1). Since then, this standard has been applied for diffused light sources (LEDs) as well as lasers. In 1998 IEC 60825-1 Edition 1.1 evaluated the magnitude of the light source.
- b. In 2001 IEC 60825-1 Amendment 2 converted the laser class into 7 classes for end products.

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- c. Components are excluded from this system. Products which contain visible LEDs are now classified as class 1. Products containing UV LEDs can be classified as class 2 in cases where viewing angles are narrow, optical manipulation intensifies the light, and/or the energy emitted is high. For these systems it is recommended to avoid long term exposure. It is also recommended to follow the ICE regulations regarding safety and labeling of products.

(7) Soldering Condition for LED Lamps

- a. Careful attention should be paid during soldering.
- b. Solder the LED no closer than 3mm from the base of the epoxy bulb. Soldering beyond the base of the tie bar is recommender.
- c. Recommender soldering conditions

Dip Soldering		Soldering	
Pre-Heat	120° C Max	Temperature	350° C Max
Pre-Heat Time	60 seconds Max	Soldering Time	3 seconds Max
Solder Bath	260° C Max	Position	No closer than 3 mm from the base of the epoxy bulb.
Temperature	10 seconds Max		
Dipping Time	No lower than 3 mm from the base of the epoxy bulb.		
Dipping Position			

- b. For manual soldering, it is recommended a fixture be used to prevent damage to the inner structure of the LED. The lead pitch of the LED must match the pitch of the mounting holes on the PCB during component placement. Stress applied on the lead, particularly when heated, may cause damage to the conducting elements inside the LED.

- e. For auto-soldering, ensure the PCB is of proper orientation as otherwise the lead may be

bent slightly after soldered, which also apply stress on the LED. Use specific fixture whenever necessary.

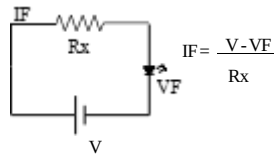
f. NO stress should be applied on the LED during soldering or other heating processes, the LED should NOT be repositioned after soldering.

Avoid any mechanical stress or shock to the epoxy lens until the LED is cooled down to the room temperature. Minimize the mechanical stress applied onto the LED.

Cut the LED leadframes at room temperature. Cutting the leadframes at high temperatures may cause failure of the LEDs.

(8) Others

- a. Care must be taken to ensure that the reverse voltage will not exceed the absolute maximum rating when using the LEDs with matrix drive. Keeping the Normal Forward to 20 mA.
- b. The LEDs described in this manual are intended to be used for ordinary electronic equipments (such as office equipment, communications equipment, measurement instruments and household appliances). Consult Wah Wang' s sales staff in advance for information on the applications in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health (such as for airplanes, aerospace, submersible repeaters, nuclear reactor control systems, automobiles, traffic control equipment, life support systems and safety devices).



- c. User shall not reverse engineer by disassembling or analysis of the LEDs without having prior written consent from Wah Wang. When defective LEDs are found, the User shall inform Wah Wang directly before disassembling or analysis.

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- d. The formal specifications must be exchanged and signed by both parties before large volume purchase begins.
- e. The appearance and specifications of the product may be modified for improvement without notice.