

## 6070 球头白3W 贴片式发光二极管

### 特点 (characteristic) :

- \* 外观尺寸 (L/W/H) :10.2\*14.5mm  
Appearance dimension (L / w / h): 10.2x 14.5 mm
- \* 发光颜色及胶体: 高亮度白色/黄色胶体  
Luminous color and colloid: high brightness white / yellow colloid
- \* 环保产品, 符合ROHS要求  
Environmental protection products meet ROHS requirements
- \* EIA规范标准包装  
EIA standard packaging
- \* 适用于自动贴片机  
Suitable for automatic mounter
- \* 适用于回流焊制程  
Suitable for reflow soldering process
- \* 大功率LED  
High Power LED
- \* 贴片式外形  
Package : SMT Package
- \* 视角: 140°  
Half Angle (2 $\Theta$ 1/2):140°
- \* 透镜颜色: 无色透明  
Lens Color:Water Clear

### 应用领域 (product application) :

- \* 普通照明  
General Lighting
- \* 广告灯  
Advertisemen
- \* 建筑照明  
Architectural Lighting
- \* 路灯  
Street Lamps



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## 电性参数

### Electrical Characteristics

**极限参数**（温度=25℃）：

✧ Limit parameters（temperature =25℃）

参数名称 Parameter	符号 Symbol	数值 Ratings	单位 Unit	备注 Remark
正向电流 Forward Current	IF	700	mA	/
正向峰值电流 Peck forward current	IFM	1000	mA	F=1KHZ, 占空比 (duty cycle)1/ 10
反向耐压 Reverse Voltage	VRP	5	V	/
耗散功率 Power Dissipation	Po	3	W	/
工作环境温度 Operation temperature	Tamb	-35 至+60	℃	/
储存温度 Storage temperature	Tstg	-40 至+100	℃	/

备注：

Notes:

- 1,  $\Theta$ 公差为10%  
Tolerance  $\Theta$ :10%
- 2, 脉冲宽度0.1ms, 占空比1/10  
Pulse width 0.1ms, duty cycle 1 / 10

## 光电参数 (温度=25℃) :

## Electro-Optical Characteristics (Temperature=25°C)

项目 Item	符号 Symbol	测试条件 Test condition	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
正向电压 Forward voltage	VF	IF=700mA	3.1	3.3	3.5	V
反向电流 Reverse current	IR	VR=3.2V	0	/	5	μA
光通量 Luminous flux	φ	IF=700mA	260	270	280	LM
色温 Color temperature	CCT	IF=700mA	6000	6250	6500	K
光谱半宽度 Spectrum line half width	Δλ	IF=700mA	/	/	/	nm
静电解除极限 ESD Withstand limit	ESD	/	/	/	/	V

备注:

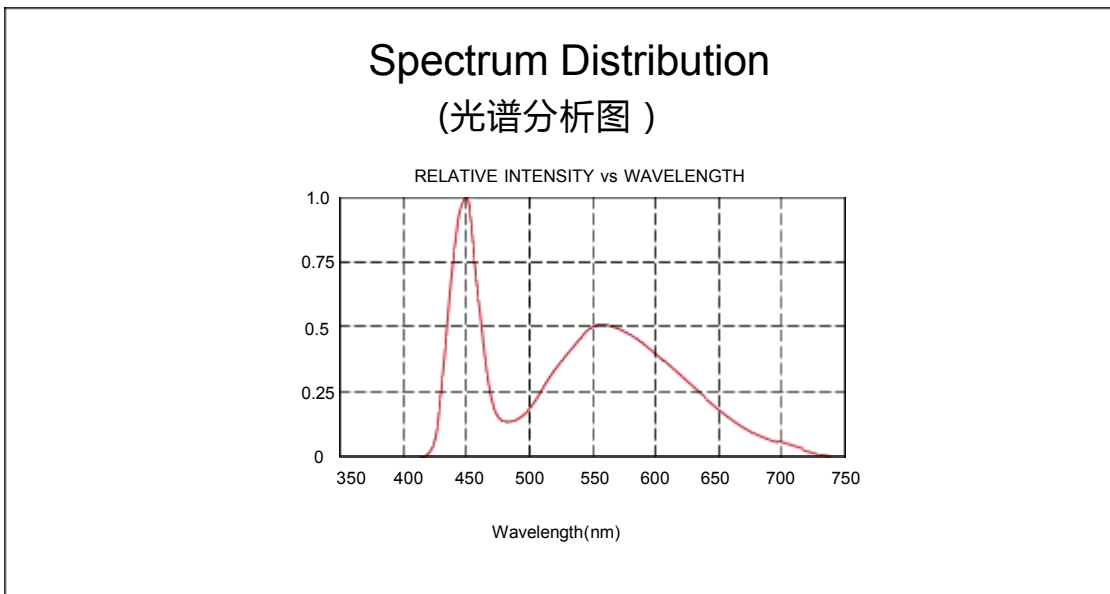
Notes:

- 光通量测量精度±15%  
Luminous flux measurement accuracy ± 15%
- 色温测量精度±100K  
Color temperature measurement accuracy ± 100K
- 波长测量精度±1nm  
Wavelength measurement accuracy ± 1nm
- 正向电压测量的准确性可达±0.1v  
The accuracy of forward voltage measurement can reach ± 0.1V

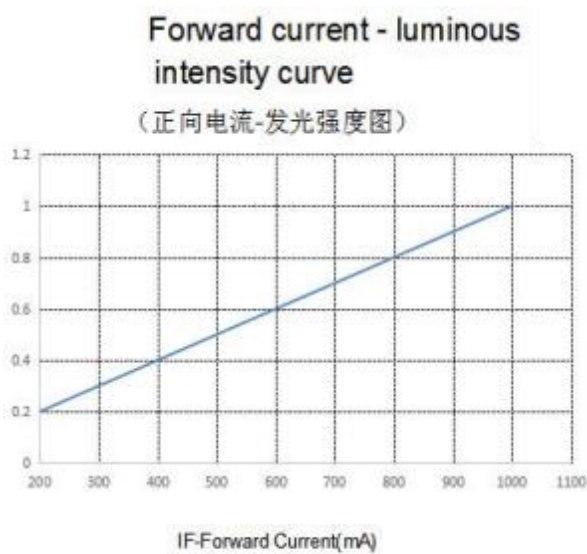
典型特性曲线

Typical Characteristics Curves

■ spectrum distribution (光谱分析图)



■ Forward current - luminous intensity curve(正向电流-发光强度图)



## 可靠性实验

### Reliability experiment

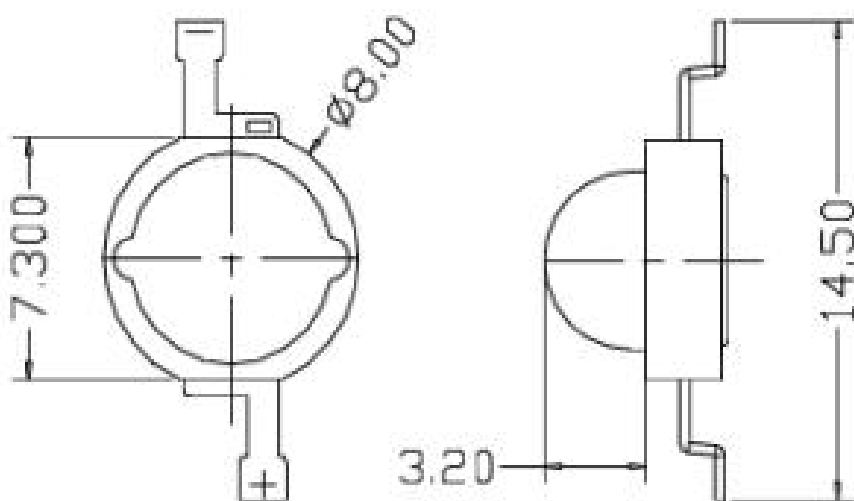
描述 Description	项目 Item	测试标准 Test criterion	测试条件 Test condition	测试时间 Test time	数量 Qty	失效数量 Fail qty	备注 Remarks
寿命测试 Life test	常温寿命测试 Life test(room temperature)	IF=700mA, 标准热条件, 持续点亮 Standard thermal conditions, continuously lit	Ta=25°C±5°C, IF=700mA	1000Hrs	20	0	光衰 5% Light attenuation 5%
环境测试 Ambience test	高温存储 High temperature store	60°C烘烤 Bake at 60 °C	Ta=60°C±5°C	1000Hrs	100	0	
	低温存储 Low temperature store	-35°C冷冻 -35 °C freezing	Ta= -35°C±5°C	1000Hrs	100	0	
	高温高湿测试 High temperature/humidity test	IF=700mA 标准散热条件, 持续点亮。	Ta=80°C±5°C RH=85%	1000Hrs	100	0	
	冷热循环测试 Cold and heat cycle test	Standard thermal conditions, continuously lit	30min 30min 30min -35°C~25°C~ 85°C~25°C 30min 5min 30min 5min	50Cycles	50	0	

### 判断标准Judgment criteria

项目 Item	符号 Symbol	实验条件 Experiment conditi	判断标准Criteria	
			最小值Min.	最大值Max.
正向电压 Forward Voltage	V <sub>F</sub>	IF=700mA	3.2V	3.8V
反向电流 Reverse Current	I <sub>R</sub>	V <sub>R</sub> =3.2V	/	3μA
发光强度 Luminous Intensity	I <sub>V</sub>	IF=700mA	80	160

## 外形尺寸

### Outline Dimension



备注:

Remarks

1, 单位: 毫米 (mm)

Unit: mm

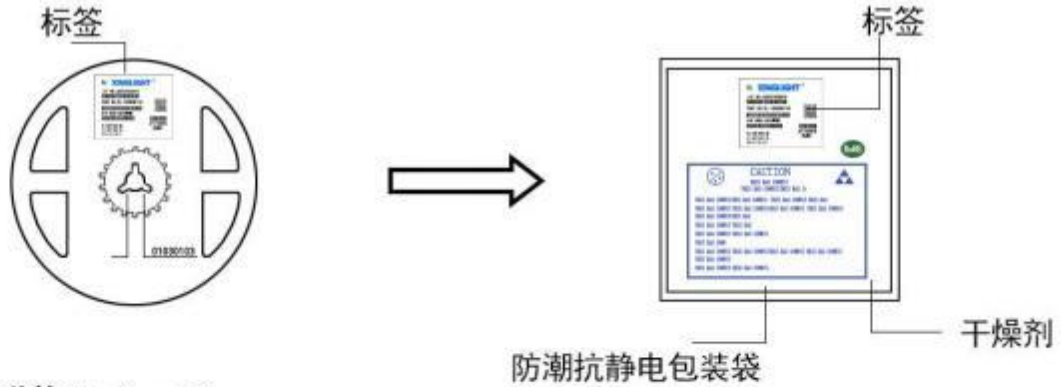
2, 公差: 如无特别标注则为 $\pm 0.10\text{mm}$

Tolerance:  $\pm 0.10\text{mm}$  unless otherwise specified

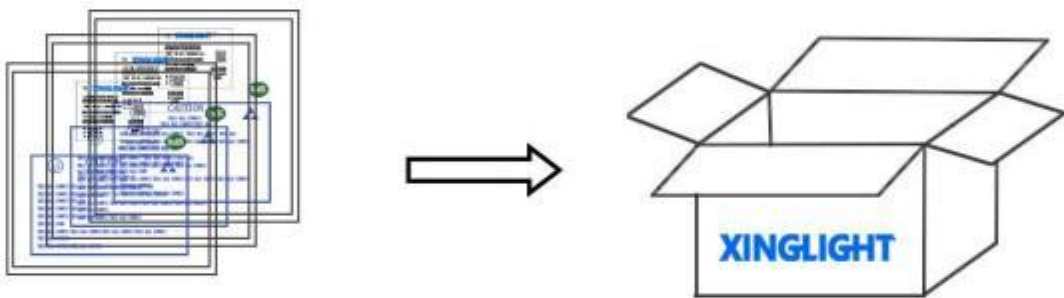
## 包装

### Packaging

#### ◇ 防潮防静电包装 Moisture Proof and Anti-Electrostatic Foil Bag



#### ◇ 外包装箱 Cardboard Box



Capacity 5 or 10 reels per box (内箱容量: 50或100卷)

#### ◇ 标签说明: Label Explanation

- LOT NO: 批次信息
- PART NO: 产品型号
- BIN CODE: 产品名称
- WL: 波长范围
- IV: 光强范围
- VF: 电压范围





**焊接指导 (1)**

**Guideline for Soldering (1)**

**1. 使用烙铁人手焊接**

**Hand Soldering**

推荐使用功率低于 20W 的烙铁, 焊接时烙铁的温度必须保持在 300℃ 以下, 且每个电极只能进行一次焊接, 每次焊接的持续时间不得超过 3 秒。

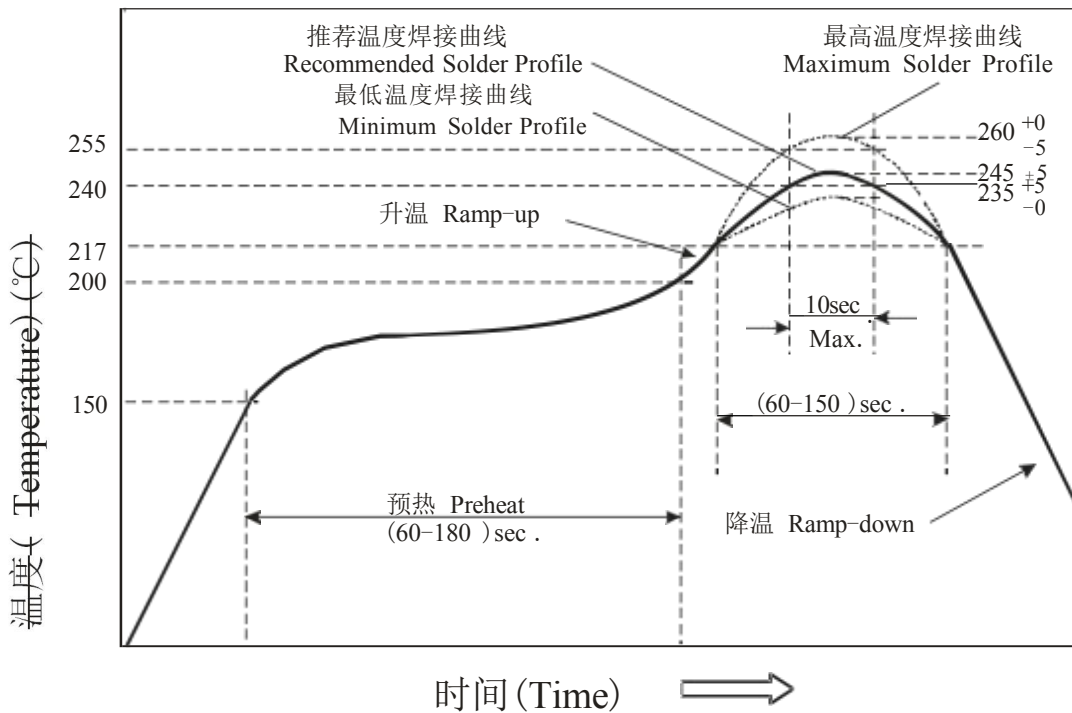
人手焊接过程中的不慎操作易引起 LED 产品的损坏, 应当小心谨慎。

A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 300℃ while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.

Be careful because the damage of the product is often started at the time of the hand soldering.

**2. 回流焊接:** 推荐使用以下无铅回流焊接温度图进行。

**Reflow Soldering:** Use the conditions shown in the under Figure of Pb-Free Reflow Soldering.



- 回流焊接最多只能进行两次。

Reflow soldering should not be done more than two times.

- 在回流焊接升温过程中, 请不要对 LED 施加任何压力。

Stress on the LEDs should be avoided during heating in soldering process.

- 在焊接完成后, 待产品温度下降到室温之后, 再进行其他处理。

After soldering, do not deal with the product before its temperature drop down to room temperature.

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## 焊接指导（2）

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### Guideline for Soldering (2)

#### 3. 清洗：

##### Cleaning

在焊接后推荐使用酒精进行清洗，在温度不高于 30°C 的条件下持续 3 分钟，不高于 50°C 的条件下持续 30 秒。使用其他类似溶剂清洗前，请先确认使用的溶剂不会对 LED 的封装和环氧树脂部分造成损伤。

超声波清洗也是有效的方法，一般最大功率不应超过 300W，否则可能对 LED 造成损伤。请根据具体的情况预先测试清洗条件是否会对 LED 造成损伤。

It is recommended that alcohol be used as a solvent for cleaning after soldering. Cleaning is to go under 30°C for 3 minutes or 50°C for 30 seconds. When using other solvents, it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not.

Ultrasonic cleaning is also an effective way for cleaning. But the influence of Ultrasonic cleaning on LED depends on factors such as ultrasonic power. Generally, the ultrasonic power should not be higher than 300W. Before cleaning, a pretest should be done to confirm whether any damage to LEDs will occur.

- \* **注意：** 此一般指导原则并不适用于所有 PCB 设计和焊接设备的配置。具体工艺受到诸多因素的影响，请根据特定的PCB设计和焊接设备来确定焊接方案。
- \* **Note:** This general guideline may not apply to all PCB designs and configurations of all soldering equipment. The technics in practise is influenced by many factors, it should be specialized base on the PCB designs and configurations of the soldering equipment..

## 使用注意事项（1）

### Precautions (1)

#### 1, 防潮包装:

##### Moisture proof packaging:

当水分吸收到SMT封装,其蒸发和扩大在焊接时作用。这可能会导致损坏到发光二极管体的光学特性。出于这个原因.

When moisture is absorbed into the SMT package, its evaporation and expansion play a role in welding. This may cause damage to the optical properties of the LED. For this reason,

#### 1, 存储贮藏条件, 开封前的包装:

##### Storage conditions and packaging before opening:

发光二极管体应保持在30 °C或以下, 相对湿度60 %或更少的状态、发光二极管体的使用应在一年内。开封后的包装发光二极管体的应保持在30 °C或以下, 相对湿度50 %或更少的状态。发光二极管体的焊接应在打开防潮包装后168H(7天)内完成。

如果有未使用完的发光二极管体, 应重新将它们存放在防潮包装内, 遵照防潮包装中吸水材料(硅胶) 的建议. 建议未使用完的 发光二极管体, 重新封装入防潮袋的一次。

当储存的发光二极管体(LED)已经超过了合理的存储时间, 应采用下列条件进行烘干处理. 烘烤处理: 超过48小时, 在60 ± 5 °C / 4H~10H (按照的不同环境湿度) .

The LED shall be kept at 30 °C or below, and the relative humidity shall be 60% or less. The use of the LED shall be within one year. Unpacked packaging:

The temperature of LED shall be kept at 30 °C or below and the relative humidity shall be 50% or less. The welding of LED shall be completed within 168h (7 days) after opening the moisture-proof package.

If there are unused led bodies, they should be stored in moisture-proof packaging again, following the recommendations of water absorbing material (silica gel) in moisture-proof packaging It is suggested that the unused led body should be repackaged into a moisture-proof bag.

When the stored light emitting diodes (LEDs) have exceeded the reasonable storage time, they shall be dried under the following conditions Baking treatment: more than 48 hours, at 60 ± 5 °C / 4H ~ 10h (according to different ambient humidity)

#### 3,产生热量:

##### Heat generation:

最终散热设计是应用产品至关重要的。请系统设计时考虑到LED工作时产生的热量, 输入的电功率, 温度系数的增加, 热传导电路装置设置及其他组件. 这些都是非常必要的. 工作电流决定后, LED所能承受的最高的环境温度也应当得到保证.

The final heat dissipation design is very important for application products. Please consider the heat generated when the LED works, the input electric power, the increase of temperature coefficient, the setting of heat conduction circuit device and other components in the system design These are very necessary After the working current is determined, the maximum ambient temperature that the LED can withstand should also be guaranteed

#### 4, 清洗:

##### Cleaning:

建议使用浓度低的乙醇酒精作为LED的清洗溶剂. 当使用其它溶剂时, 应当事先确认是否会对封装结构及硅胶产生危害. 依照世界各地的法则及规定, 氟利昂溶剂是不能用来清洁LED的.

It is recommended to use low concentration ethanol as the cleaning solvent for LED When using other solvents, it should be confirmed in advance whether they will harm the packaging structure and silica gel According to the rules and regulations around the world, freon solvent cannot be used to clean led

## 使用注意事项 (2)

### Precautions (2)

#### 5, 静电:

##### Static electricity:

静电或浪涌电压是可以对LED产生致命伤害的；建议使用及处理发光二极管时佩戴防静电手腕带或防静电手套，所有设备和机械必须妥善接地，这个措施适用于所有安装了LED的设备、完全考虑到组装的最终产品。在LED的组装过程中，建议检查是否有对发光二极管器件造成了静电损伤、人们能够很容易找到静电对器件造成了破坏。建议：在低的电流环境下受损了的LED将显示一些不寻常的特点，如漏电流值的增加得注意，正向电压变低，或LED死灯。

Static electricity or surge voltage can cause fatal damage to LED; It is recommended to wear anti-static wrist strap or anti-static gloves when using and handling led, and all equipment and machinery must be properly grounded. This measure is applicable to all equipment installed with LED and fully considering the final product assembled In the process of LED assembly, it is recommended to check whether there is electrostatic damage to the LED device, and people can easily find the damage caused by static electricity to the device Suggestion: in the low current environment, the damaged LED will show some unusual characteristics, such as the increase of leakage current value, attention, low forward voltage, or dead led.

#### 6, 设计建议:

##### Design Consideration

设计电路时，通过 LED 的电流不能超过规定的最大值，同时，还需使用保护电阻，否则，微小的电压变化将会引起较大的电流变化，可能导致产品损毁。

建议使用以下 (A) 电路，该电路能够很好的调节通过每个 LED 的电流；不推荐使用 (B) 电路，该电路在持续的电压驱动下，LED 的正向电压 ( $V_F$ ) 发生变化，电流会随之而发生变化，可能使某些 LED 承受高于规定的电流值。

In designing a circuit, the current through each LED must not exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen.

It is recommended to use Circuit A which regulates the current flowing through each LED rather than Circuit B. When driving LEDs with a constant voltage in Circuit B, the current through the LEDs may vary due to the variation in Forward Voltage ( $V_F$ ) of the LEDs. In the worst case, some LED may be subjected to stresses in excess of the Absolute Maximum Rating.



LED 的特性容易因为自身的发热和环境的温度的改变而发生改变。温度的升高会降低 LED 的发光效率、影响发光颜色等，所以在设计时应充分考虑散热的问题。

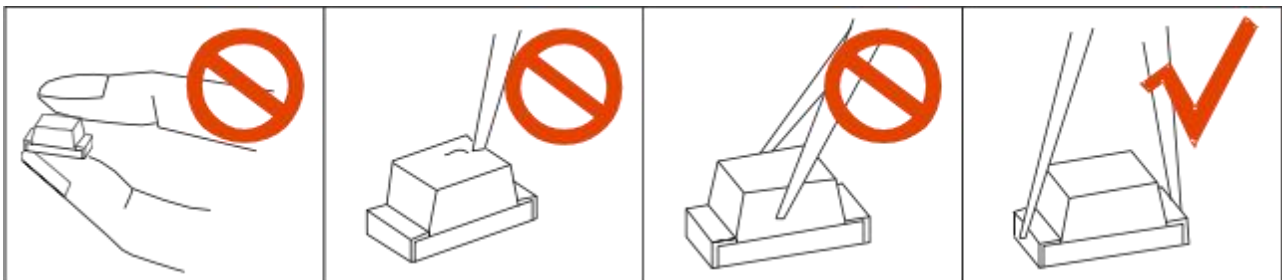
Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color changed and so on. Please consider the heat generation of the LEDs when making the system design.

## 7, 其他事项:

### Others

直接用手拿取产品不但会污染封装树脂表面，也可能由于静电等因素导致产品性能的改变。过度的压力也可能直接影响封装内部的管芯和金线，因此请勿对产品施加过度压力，特别当产品处于高温状态下，例如在回流焊接过程中。

When handling the product, touching the encapsulant with bare hands will not only contaminate its surface, but also affect on its optical characteristics. Excessive force to the encapsulant might result in catastrophic failure of the LEDs due to die breakage or wire deformation. For this reason, please do not put excessive stress on LEDs, especially when the LEDs are heated such as during Reflow Soldering.



LED 的环氧树脂封装部分相当脆弱，请勿用坚硬、尖锐的物体刮、擦封装树脂部分。在用镊子夹取的时候也应当小心注意。

The epoxy resin of encapsulant is fragile, so please avoid scratch or friction over the epoxy resin surface. While handling the product with tweezers, do not hold by the epoxy resin, be careful.

## 8, 眼睛保护忠告:

### Safety Advice For Human Eyes

LED 发光时，请勿直视发光光源，特别是对于一些光强较高的 LED，强光可能伤害你的眼睛。

Viewing direct to the light emitting center of the LEDs, especially those of great Luminous Intensity, will cause great hazard to human eyes. Please be careful.