



型号 Model: 0603HG00 (D)

日期 Date: 2022-12-22

部门 Department: RD

版本 Edition: A/2

### 承认 Acceptance

批量生产 Batch production

初步试样 Initial sample

客户专用设计 Customer Special Design

设计编号 Design Number:

MLS	批准 Approval	审核 Audit	制作 production
	周才祥	周才祥	黄文新
客户会签 Customer signature			
客户意见 Customer comment			

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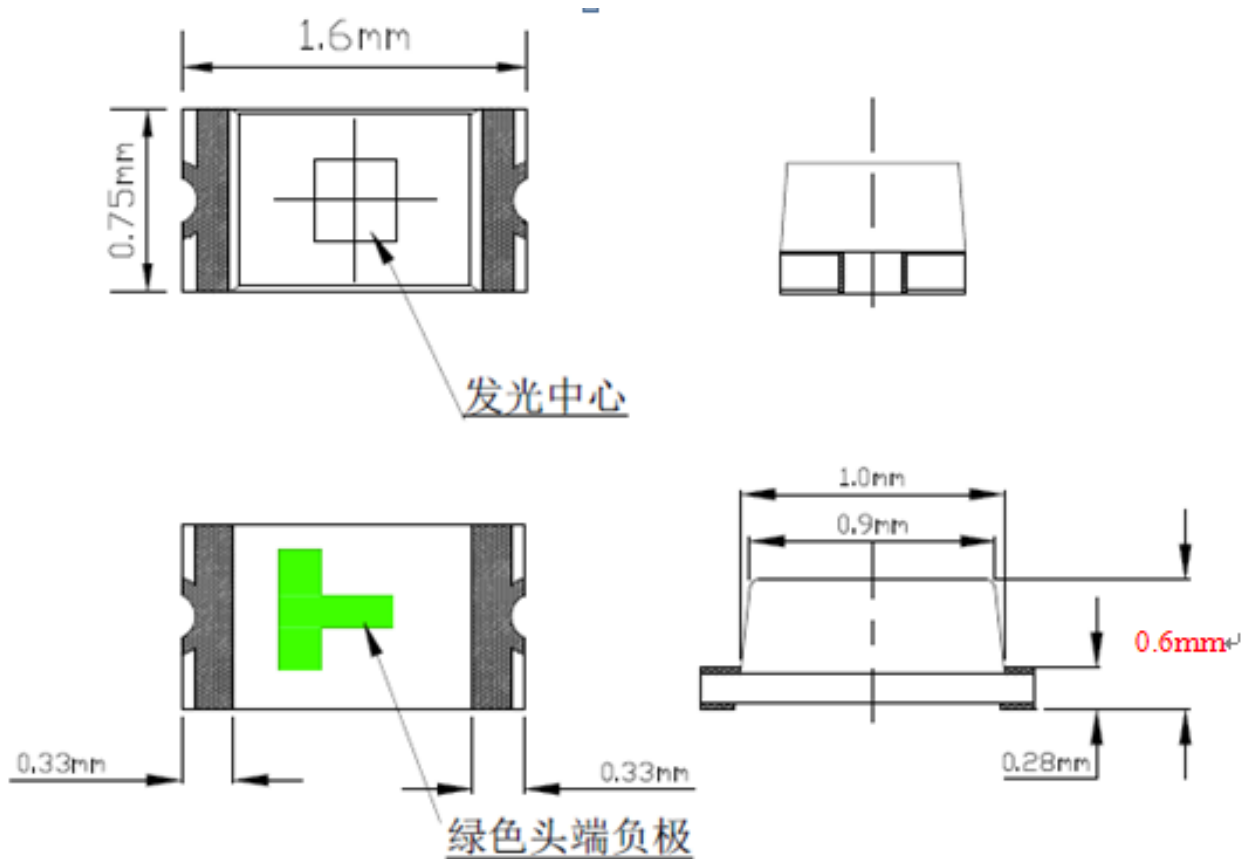
E-mail:mls@zsmil.com

http://www.zsmls.com

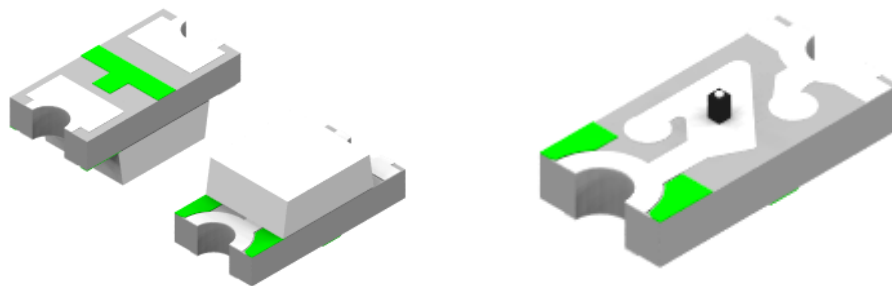


简述 (Description): 平面发光二极管 (Flat LED)

封装尺寸 (Package Dimensions)



胶体 (Colloid)	材质 (Material)	发光颜色 (Color)
透明色 Transparent phosphor	InGaAs	黄绿色 Yellowish green

**实物示意图 (Product drawing)**

**备注(Remarks)**

1、所有尺寸单位为毫米

All dimensions are in millimeters

2、公差: X.X ±0.1mm、 X.XX ±0.05mm (除非另有说明)

Tolerance: X.X ±0.1mm、 X.XX ±0.05mm (unless otherwise noted)

3、规格若有变更另行通知

Specifications subject to change with prior notice

**温度为 25℃时的最大参数值(Absolute Maximum Rating Value Temperature at 25℃)**

参数 (Parameter )	极限参数 (Maximum Rating)	单位 (Units)
功耗(Power)	15	mW
正向峰值电流 (Pulse Forward Current)	15	mA
顺向直流电 (Forward Current)	5	mA
反向电压 (Reverse Voltage)	5	V

注: 脉冲宽度≤0.1ms, 占空比≤10%

Note: Pulse Width≤0.1ms, Duty≤10%

**标签 Label**
**卷盘标签**

Model:产品型号

Lot NO:生产批号

IV: 发光强度等级

VF: 正向电压等级

X/Y (HUE): 发光颜色等级或者波长等级

Date Code: 生产日期/部门/班别/人员编号

Quantity: 数量

HG051: 档次代码

Model: \_\_\_\_\_

Lot NO: \_\_\_\_\_

IV: \_\_\_\_\_

VF: \_\_\_\_\_

X/Y (HUE): \_\_\_\_\_

Date Code: \_\_\_\_\_

Quantity: \_\_\_\_\_

档次代码

二维码

**温度为 25°C 时的光电特性参数 (Optical Parameters Temperature at 25°C)**

参数 Parameter	符号 Symbols	最小值 Min	标准值 Typical	最大值 Max	单位 Units	测试条件 Testing Conditions
光强度 (Luminous Intensity)	Iv	---	10	---	Mcd	IF=5mA
发光角度 (Viewing Angle)	2θ1/2	---	120	---	Deg	IF=5mA
波段 (Band)	WD	---	569	---	nm	IF=5mA
正向电压 (Forward voltage)	VF		2.0		V	IF=5mA
反向电流 (Reverse Current)	IR	---	---	1	uA	VR=5V

**备注 (Remarks):**

1、此发光亮度为根据人眼对发光亮度的感应曲线之模拟发光强度符合 CIE (国际光委会组织)。

Light-emitting brightness is according to human eye simulation of the induction curve of luminous intensity in line with the CIE (International Light Committee Organization).

2、1/2 的角度是从光学中心线处的发光强度为 1/2 光学中心线值。

1/2 angle is from optical centerline at the luminous intensity is 1/2 the optical centerline value.

3、发光亮度保证误差正负 10%。

Brightness tolerance is guaranteed within plus or minus 10%.

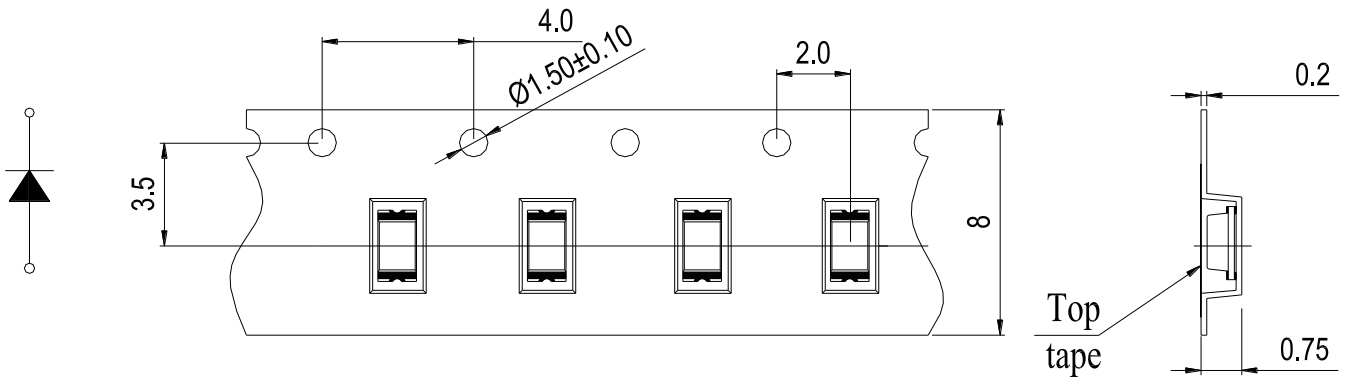
**可靠性测试项目及测试条件(Reliability Test Items and Test Conditions)**

编号 N mber	测试项目 Test Item	实验条件 Test Conditions	样本大小 Sample size	允收/判退 Acceptance/ Rejection
01	回流焊 Reflow Solder	温度: 最大 260°C Temperature: Max 260°C 时间(Time): 10S 周期(Cycles): 3 次 (3times)	22PCS	0/1
02	寿命测试 Life Test	温度(Temperature)=25°C ±5°C 电流(Current)=20mA ±2mA 周期(Cycles): 1000H	22PCS	0/1
03	温度循环 Temperature Cycling	85°C ~ 25°C ~ -40°C ~ 25°C 30 mins 5 mins 30 mins 5 mins 周期(Cycles): 20 个周期 (20 Cycles)	22PCS	0/1
04	冷热冲击 Hot/cold Temperature Shock	100°C ±5°C ~ -40°C ±5°C 15 mins 15 mins 周期(Cycles): 30 个周期 (30 Cycles)	22PCS	0 1
05	低温储存 Low Temperature Storage	温度(Temperature): -40°C ±5°C 周期(Cycles): 1000H	22PCS	0/1
06	高温储存 High Temperature Storage	温度(Temperature): 100°C ±5°C 周期(Cycles): 1000H	22PCS	0/1

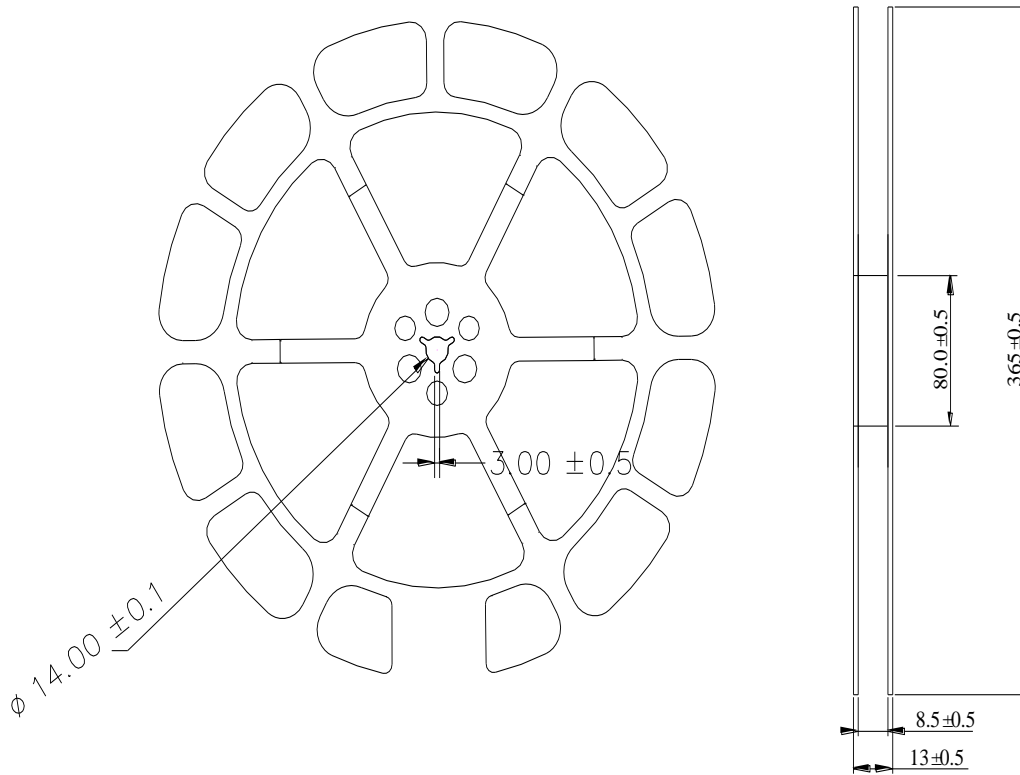
备注: 参数规格若有变更另行通知。

Remarks: Specifications are subject to change with prior notice.

编带规格 Taping Specifications (单位 Unit: mm)



卷轴尺寸 Reel Size (单位 Unit: mm)

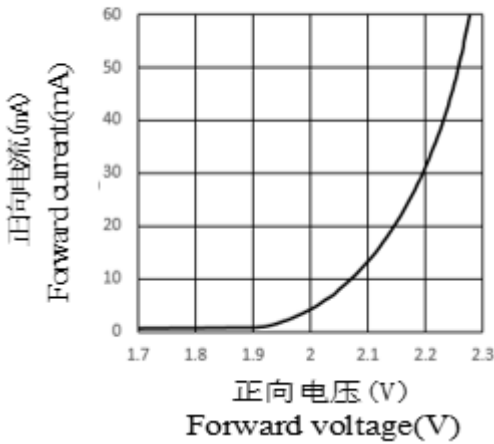


### 典型的电性及视角曲线 (Typical Electrical and Perspective Curve)

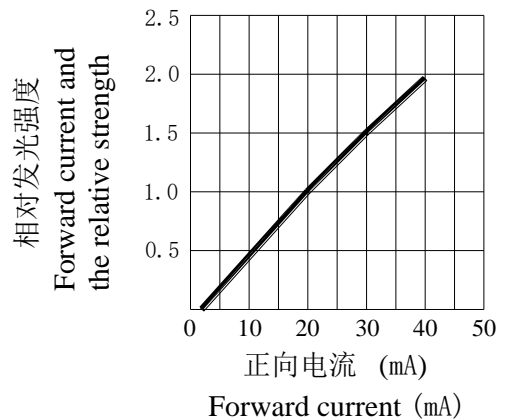
如果没有特别说明, 环境温度为 25°C

Unless Otherwise Specified, Ambient Temperature is 25 °C

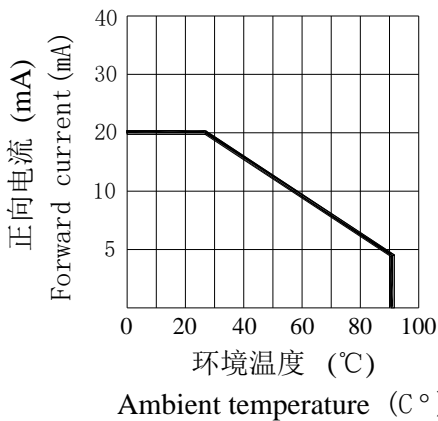
电流与电压  
Current and voltage



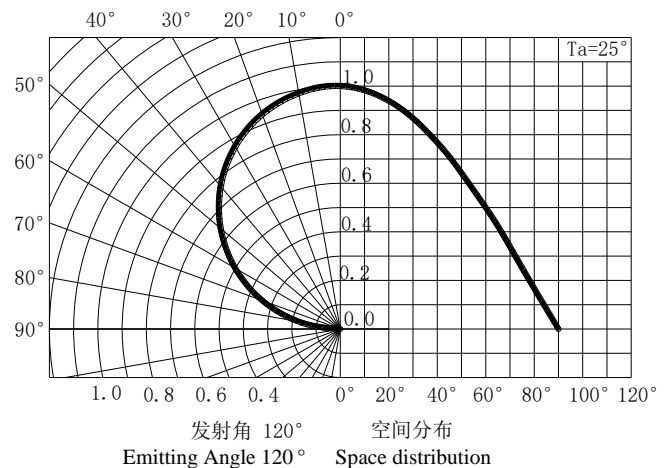
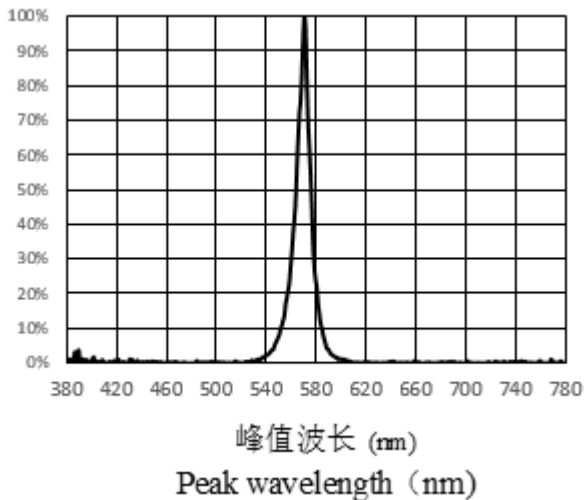
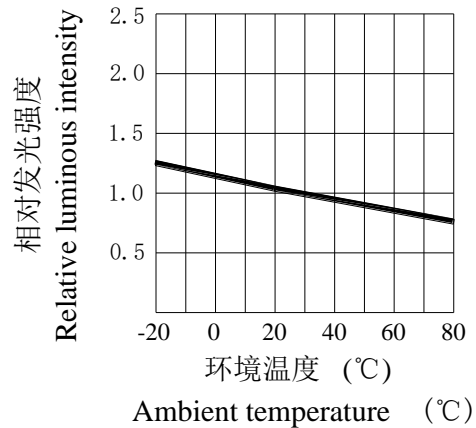
正向电流与相对强度  
Forward current and the relative strength



环境温度与电流  
Ambient temperature and forward current

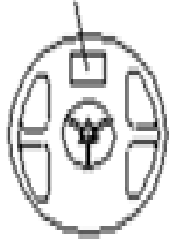


环境温度与相对强度  
Ambient temperature and relative strength

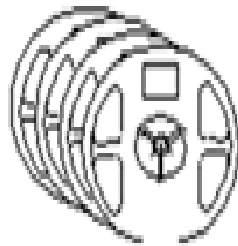


防潮包装 ( Humidity Proof packaging)

标签 label



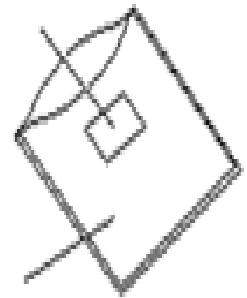
24K



24K\*5

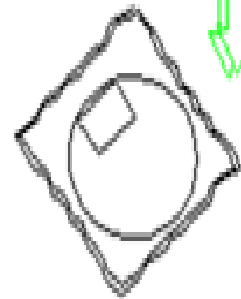


标签 label

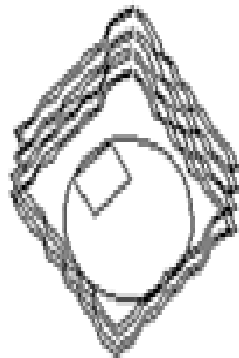


铝箔袋

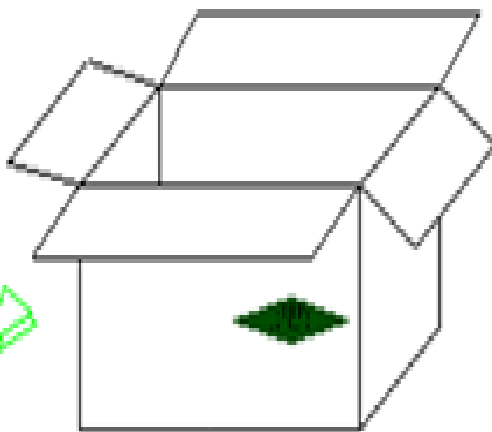
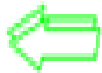
24K\*5



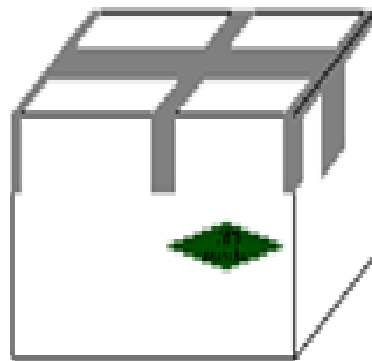
120K



120K\*6



120K\*6

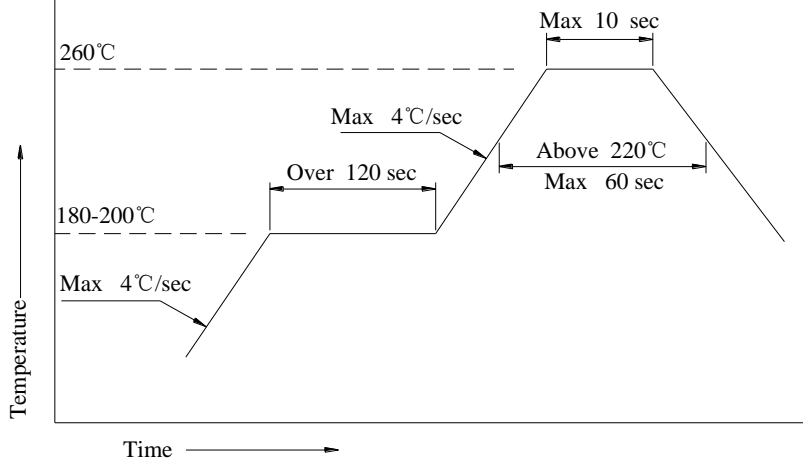


720K



## 注意事项(Note)

### 回流焊说明(Reflow soldering instructions)



- 1、回流焊建议使用免清洗助焊剂，并依照回流焊曲线进行焊接，焊接次数不可超过 2 次。

Reflow soldering is recommended to the use of clean free flux, and in accordance to the reflow curve.

Maximum number of soldering is limited.

- 2、焊接时，不要在加热过程中对其施加压力。

When soldering, do not exert pressure during heating process.

### 烙铁焊接 (Soldering)

- 1、当手动焊接时，建议采用 20W 的防静电烙铁，焊头的温度必须控制在 360°C 以下/3 秒，焊接次数为 1 次。

When manual soldering iron is used, it is recommended to use 20W anti-electro static soldering iron, soldering temperature must be kept below 360 °C / 3 seconds, 1Time soldering only.

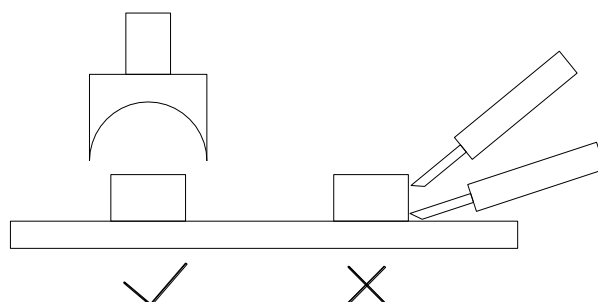
- 2、不可在同一单元板上焊接不同 BIN 的材料，否则会导致 LED 色差。

Do not mix different BIN materials on the same board, otherwise it will cause LED color Variation.

### 修复 (Repair)

当修复发光二极管时，应事先确认发光二极管是否会被破坏，修复过程中应避免接触胶体表面，双焊头烙铁应使用如下图的方式作业。

When repairing light-emitting diodes, it is advised to confirm the light emitting diode will be damaged, the repair process should avoid contact with the colloid surface, use of soldering iron should be according to following diagram.



## 清洗 (Clean)

在焊接后推荐使用纯酒精清洗，清洗擦拭或浸渍不要超过 1 分钟。使用其它类似溶剂清洗前，请确保溶剂不会对发光二极管封装造成损伤。

Recommend the use of pure alcohol to clean, wash and wipe or dipping no more than 1 minutes after soldering. When different solvents are used for cleaning, make sure that solvents do not damage the light emitting diode packaging.

## 静电(Static electricity)

对于整个工序（生产、测试、包装等）所有与 LED 直接接触的员工都要做好防止和消除静电措施，主要有

All employees have direct contact with LED for all processes (production, testing, packaging, etc.) must perform all preventive and eliminating static electricity measures.

1、车间铺设防静电地板并做好接地，工作台采用防静电工作台，带电产品接触低阻值的金属表面时，由于急放电引发产品故障的可能性是很高的，故要求工作台及与产品相接触之处使用表面电阻为  $10^6$ - $10^9\Omega$  的桌垫。

Workshop floors to use of the anti-static flooring and grounding, anti-static work bench, when charged material is in contact with low resistance metal surface, due to acute discharge, possibility of product failure is very high, so the requirements of the bench and any contact with the products should have surface resistance of  $10^6$ - $10^9\Omega$  table mats.

2、生产机台如：锡炉、回流焊、SMT 设备、电烙铁，以及检测设备均需接地良好，接地交流阻抗小于  $1.0\Omega$ 。在容易产生静电的环境与设备上，还必须安装离子风扇、作业过程中，操作员穿防静电服、带防静电手环、手套等，取放时尽可能接触产品的绝缘部分。

Production machines such as: tin furnace, reflow soldering, SMT equipment, electric soldering iron, and testing equipment need to be grounded, grounded AC impedance less than 1.0 ohm. Prone to static electricity environment and equipment must be installed ion fan. During working process, operators to wear anti-static clothing, wrist strap, gloves, and etc., When handling, hold the insulated part of the product as much as possible.

3、盛装 LED 使用防静电元件盒，包装则采用防静电材料。

For packaging of LED, anti-static component boxes, packaging materials should be use.

4、请保持环境湿度在 60%RH 以下，以免空气过于干燥产生静电。

Keep ambient humidity below 60% RH to avoid air being too dry to generate static electricity.

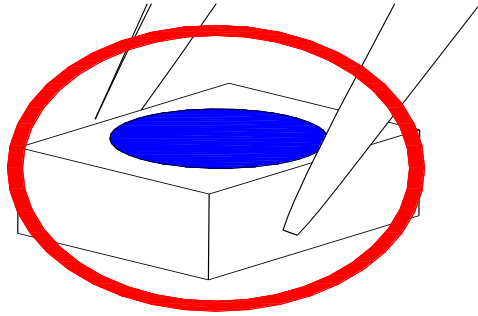
5、静电接地需与电源零线、防雷地线分开，接地措施应完全防止静电产生，必须用粗的铜线引入泥土内，在铜线末端系上大铁块，埋入地表 1 米以下，各接地线均需与主线连接在一起。

Grounding should be connected to the neutral input line. It should be separated from the lightning grounding. Grounding should be done with anti-static. Heavy gauge copper cable should be connected to a large piece of metal and buried at least 1 meter deep into the ground. All ground cables must be connected together with the main cable.

## 使用操作示意图 (Operating diagram)

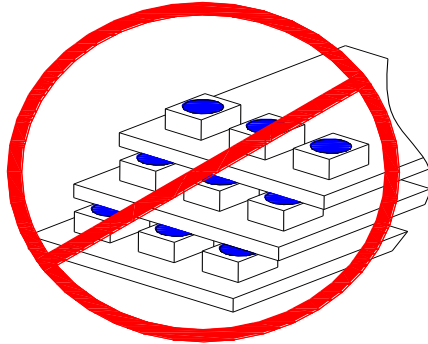
1、使用镊子或合适的工具，沿侧表面夹取元件。

Use forceps or other appropriate tools grip along the side surface of component.



2、不要将焊接好的发光二极管堆叠放置，会导致发光二极管划伤及胶体受损造成死灯。

Do not stack soldered LED, it may cause scratching of LED and silicone damage leading to dead LED.



### 储存 (Storage)

1、建议未拆封前储存条件：5°C-30°C/60%RH 下，保存期限为一年。

Recommended storage conditions before opening packaging: 5 °C -30 °C / <60% RH, retention period of one year.

2、拆封后在室温<30°C，湿度 60%RH 以下，建议在 4H 内完成回流焊作业，12H 内完成封装作业。因发光二极管吸湿后回流焊高温会导致硅胶与 PPA 分层，元器件失效。对于未使用之产品，请采取除湿处理（卷轴产品 75°C ±5°C/12H，散装产品 110°C ±5°C/1H，在烤箱内作自然冷却 1H）后再进行使用。

After opening of packaging: Room temperature <30 °C, humidity < 60% RH. It is recommended to complete the reflow soldering operations in 4Hours. Complete LED packaging operations within 12 hours. If LED absorbed moisture prior to high temperature reflow soldering process, it will cause silicone and PPA to separate leading to component failures. Unused products, perform dehumidification procedure (reel products 75 °C ±5 °C / 12H, bulk products, 110 °C ±5 °C / 1H, natural cooling 1H inside oven) before reuse.

3、使用时若发现有包装袋真空失效时，请不要使用，需要进行除湿后才可使用。

In the case of vacuum packing leakage, do not use, Use only after.