XL-C4040HIRC-850 **技术数据表** Technical Data Sheet

# 4040 红外发射 850nm 侧贴



模型图仅供参考

## 特点（characteristic）：

* 外观尺寸（L/W/H）:4.0*4.0*3.5mm
Outline Dimensions (L / w / h): 4.0*4.0*3.5mm
* 发光颜色及胶体: 红外 850nm/透明胶体
Luminous color and colloid: Infrared 850 nm /transparent colloid
* 环保工艺符合 ROHS 要求
Environmental protection products Complied With ROHS Directive
* 湿气敏感性等级（MSL）:3 级
Moisture sensitivity level (MSL): 3 levels
* EIA 规范标准包装
EIA standard packaging
* 适用于 SMT 贴片自动化生产
Suitable for SMT automatic production
* 适用于红外线回流焊制程
Suitable for infrared reflow soldering process
* 长寿命，高能效，启动快
Long life, high energy efficiency, fast startup

## 应用领域（product application）：

* 汽车与医疗
Automotive and Healthcare
* 家电，玩具遥控器
Home appliances, toy remote controls
* 安防监控
Camera monitoring head
* 工业控制：计数器、热成像、智能电表
Industrial control: counters, thermal imaging, smart meter
* 无线通信与信号传输
Wireless communication and signal transmission
* 智能小车,机器人
Intelligent car, robot
* 工业传感器
Industrial sensors
* 消费电子红外发射
Consumer electronics infrared emission






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## 电性参数

## Electrical Characteristics

### 极限参数（Absolute Maximum Ratings）（Ta=25℃）

| 参数名称<br>Parameter | 符号<br>Symbol | 数值<br>Rating | 单位<br>Unit |
|---|---|---|---|
| 最大功耗<br>Max Power Dissipation | PD | 200 | mW |
| 最大持续工作电流<br>Maximum continuous operating current | IF | 60 | mA |
| 最大脉冲工作电流<br>Maximum pulse operating current | IFP | 240 | mA |
| 反向击穿电压<br>Reverse breakdown voltage | VR | 5 | V |
| 抗静电能力<br>Antistatic properties | ESD | 2000 | V |
| 工作环境温度<br>Operating Temperature Range | TOPR | -40 ∽ +85° C | |
| 储存温度<br>Storage Temperature Range | TSTR | -40 ∽ +85° C | |
| 焊接温度/时间<br>Lead Soldering Temperature/Time | TSOL | 260℃≤6S | |

注： 脉冲宽度≤0. 1ms ， 占空比≤1/10 ； Note: Pulse width≤0.1ms, Duty≤1/10

光电参数（Initial Electrical Optical Characteristics）（Ta=25℃）

| 项目参数<br>Parameter | 符号<br>Symbol | 最小值<br>Min. | 一般值<br>Typ. | 最大值<br>Max. | 单位<br>Unit | 测试条件<br>Test conditions |
|---|---|---|---|---|---|---|
| 辐射强度<br>Radiation intensity | IE | 5 | - | 30 | mW/Sr | IF=60mA |
| 正向工作电压<br>Positive operating voltage | VF | 1.3 | - | 1.7 | V | IF=60mA |
| 发射波长<br>emission wavelength | λp | - | 850 | - | nm | IF=60mA |
| 半波宽<br>Half-wave width | Δλ | - | 35 | - | nm | IF=60mA |
| 发射角度<br>Emission Angle | 2θ1/2 | - | 120 | - | Deg | IF=60mA |
| 反向电流<br>Reverse current | IR | - | - | ≦5 | μA | 5V |

注 ：电压偏差±0.1V；单色光波长偏差±1nm；

Note: voltage deviation: ±0.1 V; monochromatic wavelength deviation: ±1 nm;

辐射功率分档:
Radiation power levels:

| 代码<br>Code | 最小值<br>Min | 最大值<br>Max | 单位<br>Unit | 测试条件<br>Test conditions |
|---|---|---|---|---|
| P1-3 | 5 | 10 | mw/sr | IF=60mA |
| P1-4 | 10 | 15 | | |
| P1-5 | 15 | 20 | | |
| P1-6 | 20 | 25 | | |
| P1-7 | 25 | 30 | | |

电压分档:
Voltage Ranges:

| 代码<br>Code | 最小值<br>Min | 最大值<br>Max | 单位<br>Unit | 测试条件<br>Test conditions |
|---|---|---|---|---|
| M17-4 | 1.3 | 1.4 | V | IF=60mA |
| M17-5 | 1.4 | 1.5 | | |
| M17-6 | 1.5 | 1.6 | | |
| M17-7 | 1.6 | 1.7 | | |

波长分档:
Wavelength Ranges:

| 代码<br>Code | 最小值<br>Min | 最大值<br>Max | 单位<br>Unit | 测试条件<br>Test conditions |
|---|---|---|---|---|
| TR03 | 840 | 850 | V | IF=60mA |
| TR04 | 850 | 860 | | |

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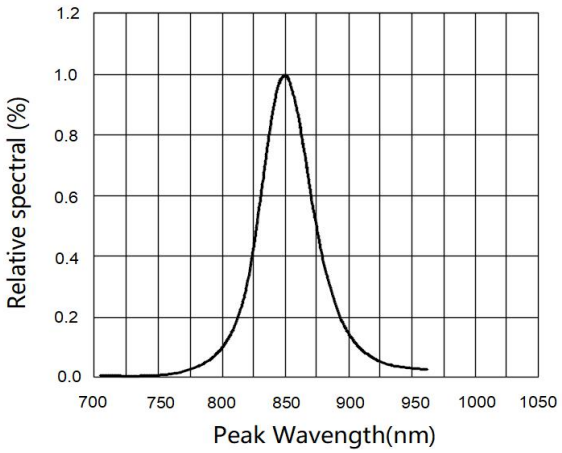
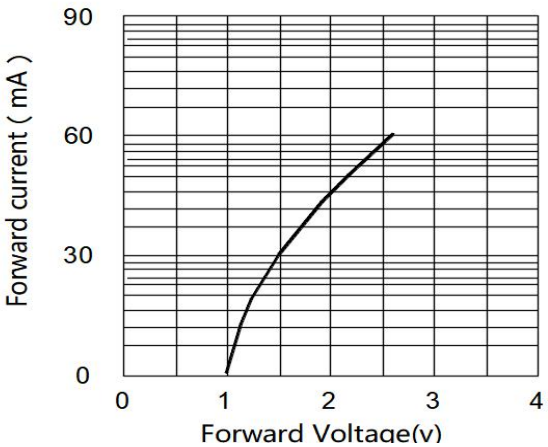
## 典型特性曲线

Typical characteristic curve

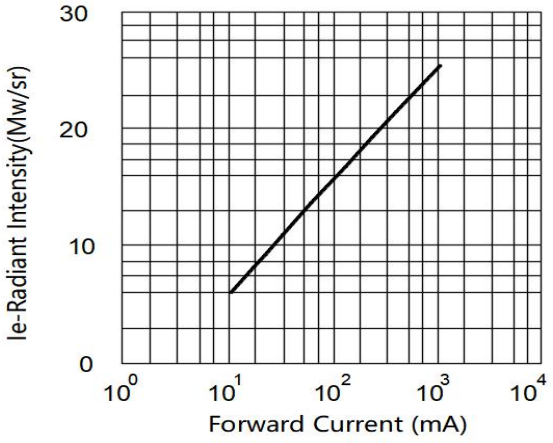
Relative spectral Vs peak Wavength(nm)



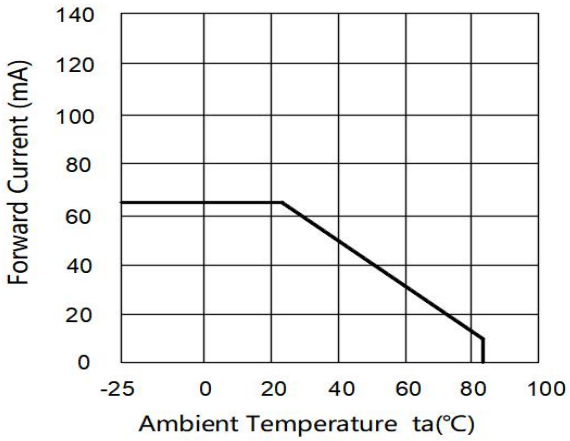

Forward current VS Forward Voltage(v)



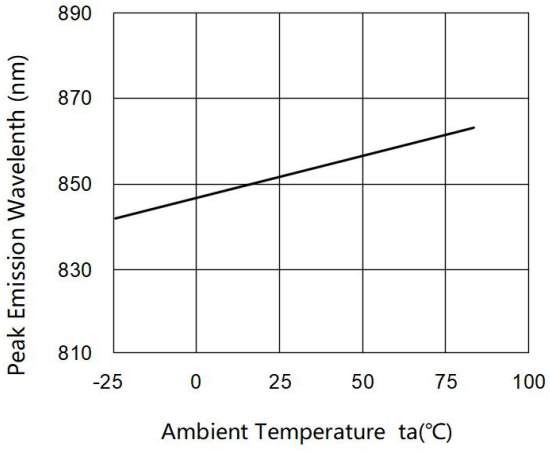

Rediant Intensity vs. Forward Current



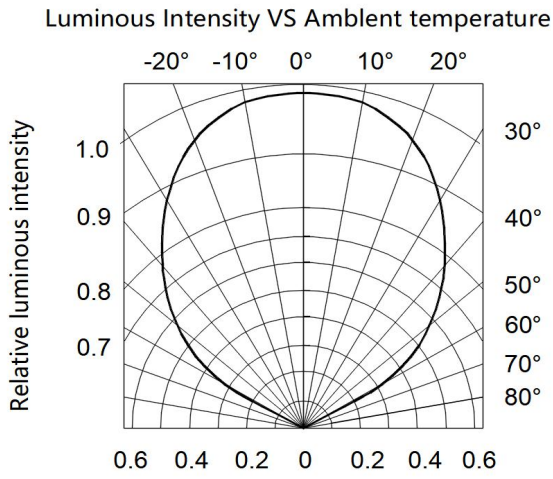

Forward Current Vs Temperature




Peak Emission Wavelenth Vs. Ambient Temperature




Luminous Intensity VS Amblent temperature



## 可靠性试验

## Reliability test items And conditions

### 1.测试项目和标准 Test items and criteria

| 测试项目<br>Test Parameter | 参考标准<br>Reference Criterion | 测试条件<br>Test Condition | 时间<br>Time | 数量<br>Quantity | 接受/拒收<br>Ac/Re |
|---|---|---|---|---|---|
| 回流焊 Resistance to Soldering Heat | JESD22-B106 | Temp:260℃max<br>T=6sec | 3 times | 22Pcs | 0/1 |
| 温度循环<br>temperature cycle | JESD22-A104 | 120℃±5℃30min.<br>-40℃±5℃30min. | 100 Cycles | 22Pcs | 0/1 |
| 高温储存 High-temperature storage | JESD22-A103 | Temp:100℃±5℃ | 1000Hrs | 22Pcs | 0/1 |
| 低温储存<br>Low temperature storage | JESD22-A119 | Temp:-40℃±5℃ | 1000Hrs | 22Pcs | 0/1 |
| 工作寿命<br>Working life | JESD22-A108 | Ta=25℃±5℃<br>IF=60mA | 1000Hrs | 22Pcs | 0/1 |
| 高温高湿实验<br>High temperature | JESD22-A101 | 85℃±5℃/85%RH | 1000Hrs | 22Pcs | 0/1 |

### 2.失效判断标准 Criteria For Judging Damage

| 项目<br>Parameter | 符号<br>Symbol | 测试条件<br>Test Condition | 判定标准<br>requirement | |
|---|---|---|---|---|
| | | | 最小 Min | 最大 Max |
| 正向电压<br>Forward Voltage | VF | IF=60mA | - | U.S.L*1.2 |
| 反向电流<br>Reverse current | IR | VR=5V | - | U.S.L*2.0 |
| 辐射强度<br>Radiation intensity | IE | IF=60mA | L.S.L*0.7 | - |

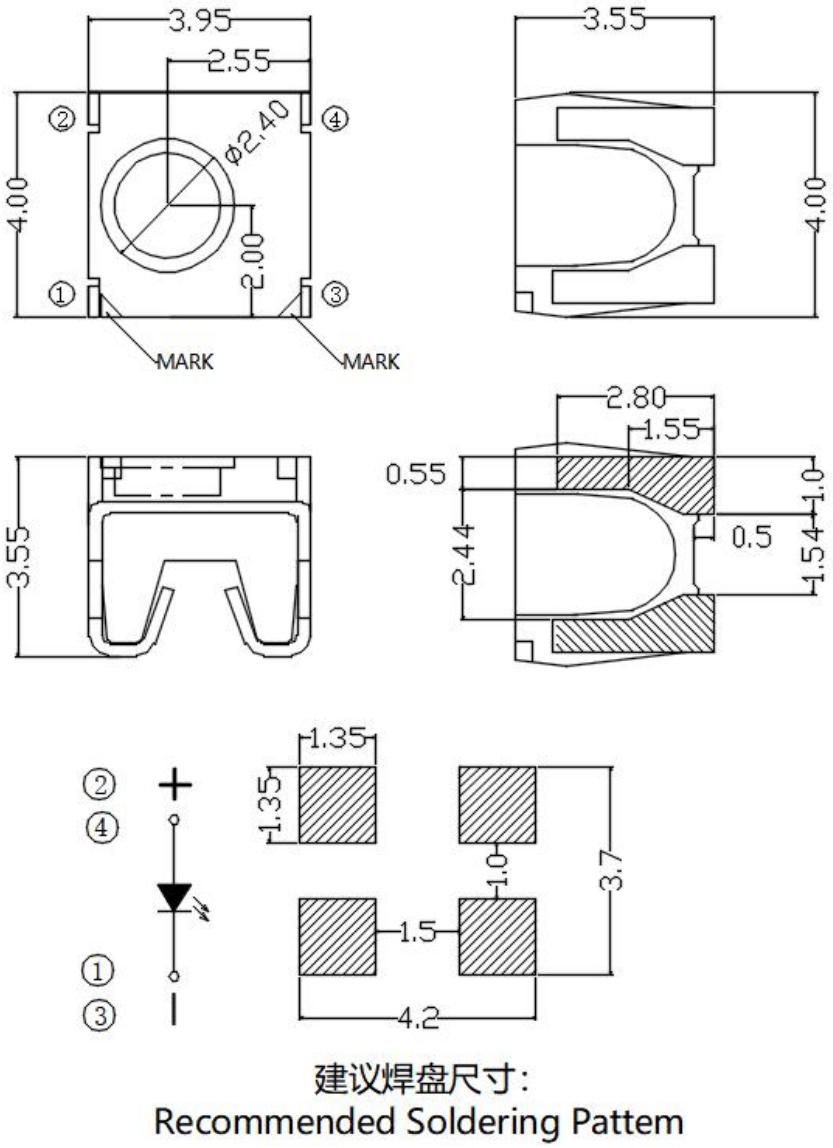
* 注： 1.USL：标准值上限值，LSL：标准值下限值

Note： 1. USL: Upper Standard Level, LSL: Lower Standard Level

2.数据表格中所示的技术信息仅限于典型特征值和电路实例引用的产品，它既不构成工业特性的保证，也不构成任何许可的授权。The technical information shown in the data sheet is limited to the products cited by typical feature values and circuit examples，which is neither a guarantee of industrial characteristics nor an authorization of any license.

## 外形尺寸

## Outline Dimension




建议焊盘尺寸:
Recommended Soldering Pattem

备注(Note):

1. 标注尺寸单位为毫米

Dimensions are in millimeters.

2. 除特别标注外，所有尺寸允许公差± 0.50mm .

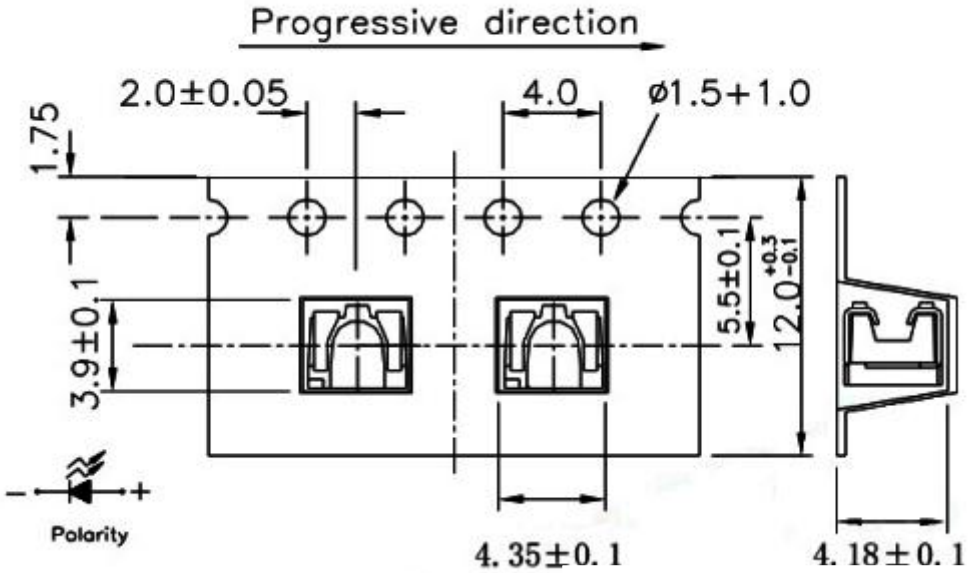
Tolerances unless mentioned are ± 0.50mm.

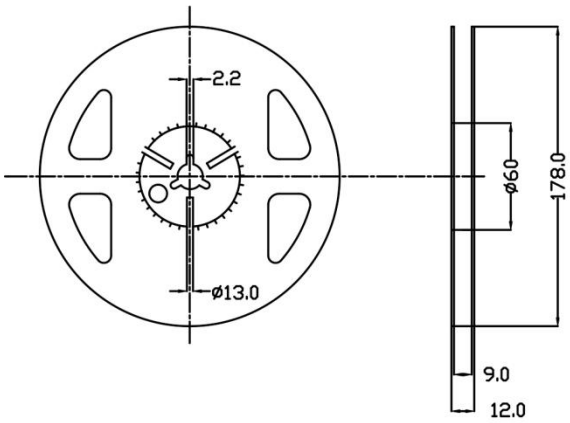
## 包装 (1)

## Packaging (1)

* 载带与圆盘尺寸 Belt and disk dimensions

**载带与圆盘尺寸 Belt and disk dimensions**



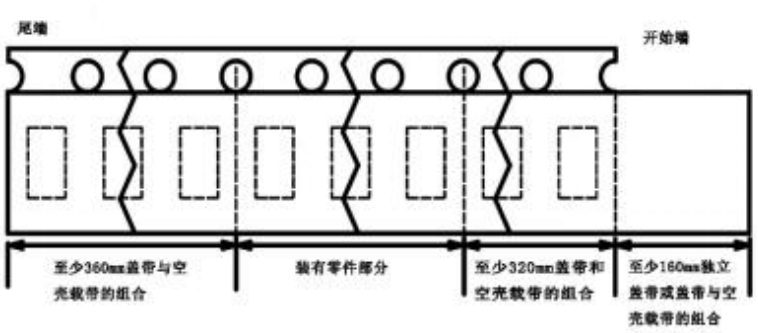



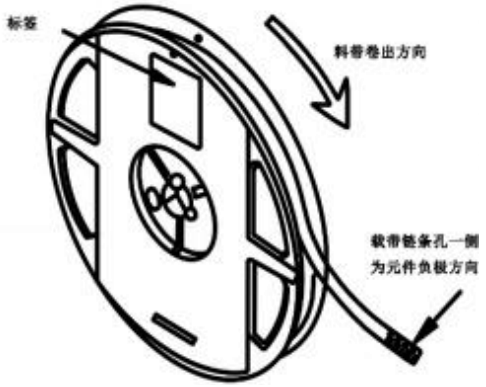

注:

1. 尺寸单位为毫米(mm)。
1. Size unit is mm (mm).
2. 尺寸公差是±0.1mm。
2. The dimensional tolerance is ± 0.1mm.

* 圆盘及载带卷出方向及空穴规格

Disc and tape reel discharge direction and hole specifications

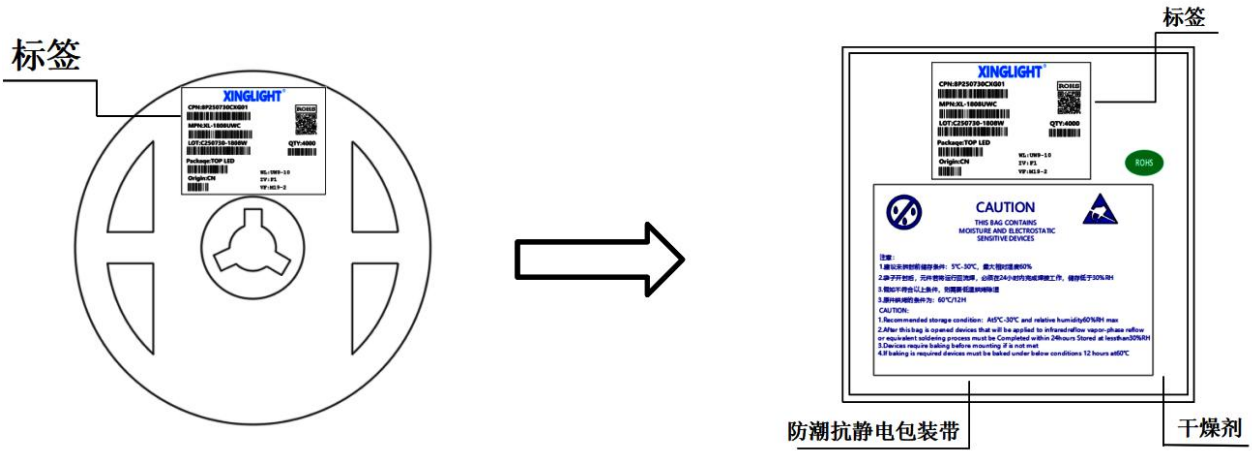


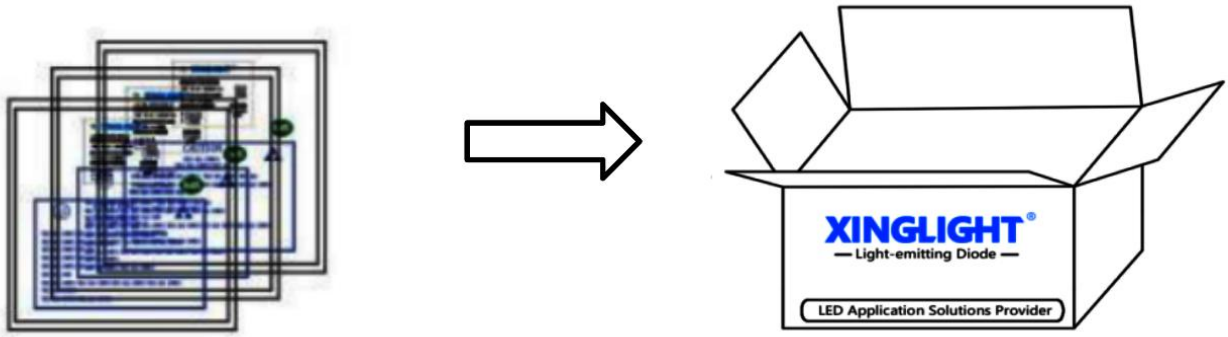
## 包装（2）

## Packaging (2)

* 防潮抗静电包装 Moisture-proof and anti-static packaging




* 防外包装箱 Outer packaging box




* 标签说明 Label Description

CPN：批号/档位　　LOT：日期/封装颜色

MPN：型号　　VF：电压代码

WL：波长代码　　IV：亮度代码

ORIGIN：产地　　QTY：数量

PACKAQE：封装



# 焊接指导（1）

# Welding Instructions (1)

## 1、使用烙铁人手焊接 Hand Soldering：

只建议在修理和重工的情况下使用手工焊接；推荐使用功率低于 30W 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。

手工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。

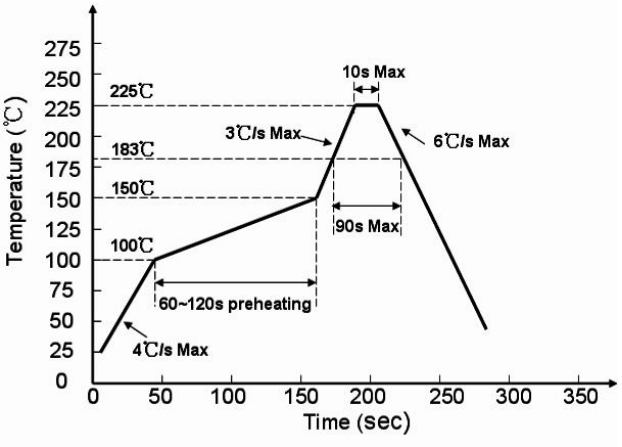
Manual welding is recommended only for repair and heavy industry situations. A soldering iron of less than 30W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 300℃ while soldering. Each terminal of the LED is to go for less than 3 second and for one time only.

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

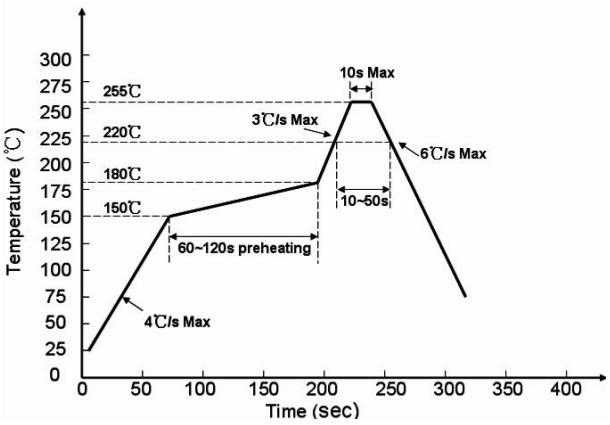
## 2、回流焊接 Reflow Soldering:

推荐使用以下无铅回流焊接温度图进行。

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




有铅制程 Lead process




无铅制程 lead free

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.

产品最佳的最高焊接温度建议控制在 240±5℃/6S

The recommended maximum welding temperature for the product is 240±5 ℃/6s

# 焊接指导（2）

# Welding Instructions (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℃的条件下持续 3 分钟， 不高于 50℃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℃ for 3 minutes or 50℃ 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.

Please pre-test whether the cleaning conditions will cause damage to the LEDs, depending on the specific circumstances.

* 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..

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# 使用注意事项（ 1）

# Precautions (1)

## 1、贮存 Storage

1.1、本产品使用密封防潮抗静电袋包装，并附有干燥剂；产品须存放在温度不高于 30℃，湿度不高于 60%RH 的环境中保存。

This product is packaged in a sealed, moisture-proof, anti-static bag and includes desiccant; the product shall be stored in an environment where the temperature does not exceed 30° C and the relative humidity does not exceed 60% RH.

1.2、对于准备焊接使用的 LED ，如果吸湿剂或包装失效，产品没有符合以上有效存储条件，烘焙除湿可以起到产品性能的恢复效果。烘烤条件：（60±5） ℃ ，持续 12 小时。

For LED products intended for welding applications, if the moisture absorber or packaging is ineffective or the product does not meet the aforementioned valid storage conditions, baking dehumidification can restore the product's performance. Baking conditions: (60 ± 5) ° C, for a duration of 12 hours.

1.3、开封后，产品须存放在温度不高于 30℃，湿度不高于 40%RH 的环境中，且应该在 168 时（7 天）内使用完，否则引脚容易氧化。

After 开封 (unsealing), the product must be stored in an environment with a temperature not exceeding 30° C and a relative humidity not exceeding 40% RH; it should be used within 168 hours (7 days); otherwise, the pins may oxidize easily.12 hours.

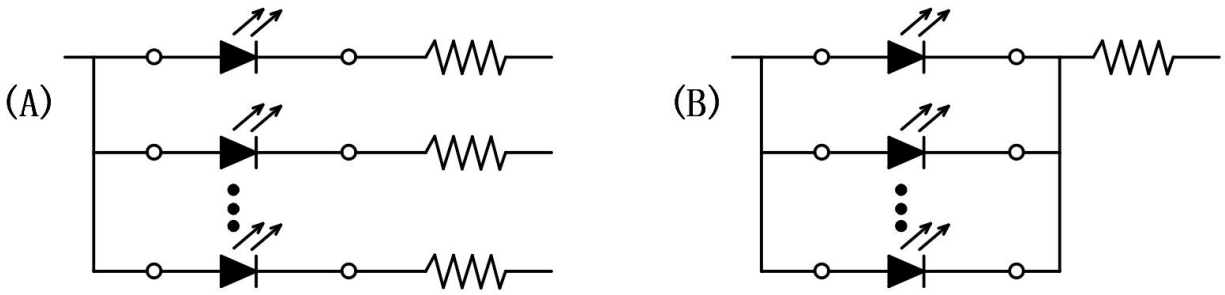
## 2、设计建议 Design Consideration

2.1、设计电路时，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（VF）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。

When designing circuits, it is recommended to use Circuit (A), which provides excellent current regulation for each LED; Circuit (B) is not recommended, as under continuous voltage drive, the forward voltage (VF) of the LED may change, causing the current to vary accordingly, which could potentially expose certain LEDs to currents exceeding their specified limits.

2.2、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.



# 使用注意事项（2）

# Precautions (2)

## 3、静电 Static Electricity

静电、电源浪涌会导致产品特性发生改变，情况严重甚至会损毁产品。所以在使用 LED 时,必须采取有效的防静电措施。所有相关的设备和机器都应该正确接地，使用防静电手环，防静电垫子，防静电工作服、工作鞋、手套等，都是有效的防止静电、电源浪涌的措施。

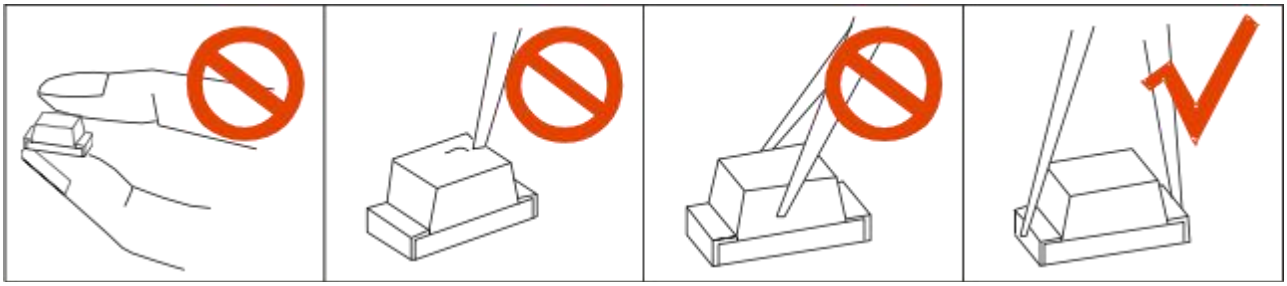
Static electricity and power surges can alter product characteristics; in severe cases, they may even cause product damage. Therefore, when using LEDs, it is essential to implement effective anti-static measures. All relevant equipment and machinery should be properly grounded; utilizing anti-static wrist straps, anti-static mats, anti-static workwear, work shoes, and gloves are all effective methods for preventing static electricity and power surges.

## 4. 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芯片和金线，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；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。

Handling products directly with your hands may not only contaminate the surface of the encapsulation resin but may also alter the product's performance due to factors such as static electricity; excessive pressure may also directly affect the chip and gold wires within the package. Therefore, please do not apply excessive pressure to the product, especially when the product is under high-temperature conditions, such as during the reflow soldering process.

The epoxy resin encapsulation of the LED is quite fragile; do not use hard or sharp objects to scrape or rub the encapsulated resin area. Exercise extreme caution when handling the component with tweezers.



## 5、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。

When LEDs are emitting light, do not look directly at the light source; especially with LEDs that have high luminance, intense light may cause eye injury.

规格书如有修改，不另行通知

If there are any modifications to the specification sheet, no further notice will be given