



# 产品规格书 Specification

**HYB50E42N850AG-X4C**

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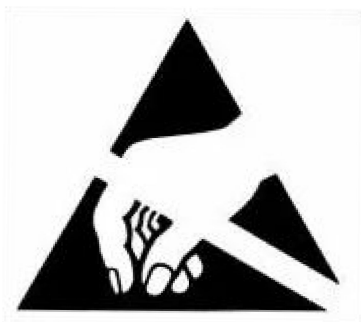
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## 产品特征

- 尺寸(mm ): 5.2\*5.2\*3.2
- 陶瓷 + 石英封装
- 高可靠性
- 适用于所有的SMT组装和焊接工艺
- 无铅回流焊
- 符合RoHS
- 每卷包装: 500pcs

## Features

- Size(mm): 5.2\*5.2\*3.2
- Ceramic and quartz package
- High reliability
- Suitable for all SMT assembly and solder process
- Pb-free reflow soldering application
- RoHS compliant
- Package: 500pcs/reel

## 产品运用

- CCB摄像机
- 监视系统
- 红外相机
- 机器视觉系统

## Applications

- CCB cameras
- Surveillance systems
- Infrared Illumination for cameras
- Machine vision systems



## 封装尺寸

## Package Dimensions

## 推荐焊接

## Recommended Soldering

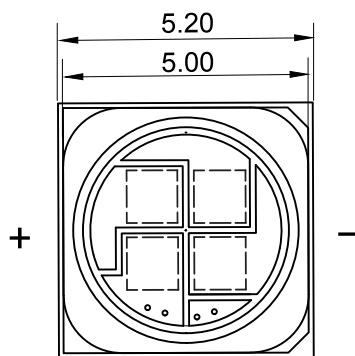


Fig.1-1 Top view 正面视图

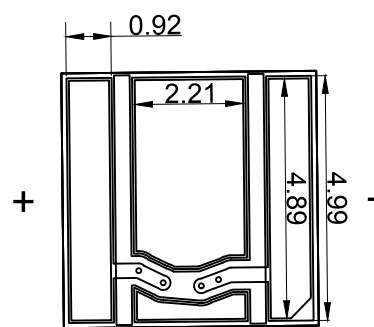


Fig.1- 2 Bottom view 背面视图

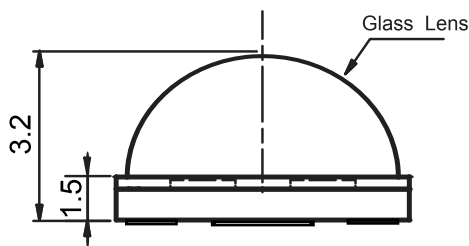


Fig.1-3 Side view 侧面视图



Fig.1-4 Polarity 极性

### Notes注意:

1. All dimension units are millimeters.所有尺寸单位均为毫米.
2. All dimension tolerance is  $\pm 0.2\text{mm}$  unless otherwise noted.所有尺寸误差是 $\pm 0.2$ 毫米除非另有说明.



Typical Optical/ Electrical Characteristics @Ta=25℃

典型的光学/电气特性在 Ta=25℃

Test Conditions 测试条件: IF=1200mA

| Symbol 符号         |                     |      | value 数值 | Units 单位   |
|-------------------|---------------------|------|----------|------------|
| IE                | Radiant Irradiance  | 辐射照度 | Min. 最低  | —          |
|                   |                     |      | Typ. 典型  | 1577 mW/sr |
|                   |                     |      | Max. 最高  | —          |
| Po                | Radiation Power     | 辐射功率 | Min. 最低  | 3800 mw    |
|                   |                     |      | Typ. 典型  | 4900 mw    |
|                   |                     |      | Max. 最高  | —          |
| VF                | Forward Voltage [1] | 正向电压 | Min. 最低  | 5.5 V      |
|                   |                     |      | Typ. 典型  | 7.5 V      |
|                   |                     |      | Max. 最高  | —          |
| λp                | PeakWavelength      | 峰值波长 | Min. 最低  | 840 nm     |
|                   |                     |      | Typ. 典型  | —          |
|                   |                     |      | Max. 最高  | 860 nm     |
| Δλ                | Half Width          | 半波宽度 | Typ. 典型  | 35 nm      |
| 2θ <sub>1/2</sub> | 50% power angle     | 发光角度 | Typ. 典型  | 60 deg     |
| IR                | Reverse Current     | 反向电流 | VR = 5V  | 20 uA      |

Notes注:

1.Tolerance of measurement of forward voltage±0.1V 、 peak Wavelength±2.0nm 、 Radiation Power ±5%  
测量正向电压误差为±0.1、波长误差为2.0nm、辐射功率误差为±5%。



**Absolute Maximum Ratings 绝对最大额定值在 TA=25°C**

| Symbol 符号 | Absolute Maximum Rating<br>绝对最大额定值 |        |            | Units 单位 |
|-----------|------------------------------------|--------|------------|----------|
| Pd        | Power dissipation [1]              | 功率     | 9000       | mW       |
| IF        | DC Forward Current [1]             | 正向电流   | 1200       | mA       |
| IFp       | Peak Forward Current               | 峰值电流   | 1200       | mA       |
| VR        | Reverse Voltage [1]                | 反向电压   | 5          | V        |
| Rthja     | Thermal Resistance                 | 热阻     | 12         | k/w      |
| Topr      | Operating Temperature              | 工作温度范围 | -40 ~ + 85 | °C       |
| Tstg      | Storage Temperature                | 储存温度范围 | -40 ~ +100 | °C       |
| Tj        | Junction Temperature               | 结温     | 145        | °C       |

**Note:**

1. 1/10 Duty Cycle, 0.1ms Pulse Width. 1 / 10 占空比, 0.1ms 脉冲宽度。

2. The temperature of Aluminum PCB do not exceed 55 °C. 基板温度不超过55°C。

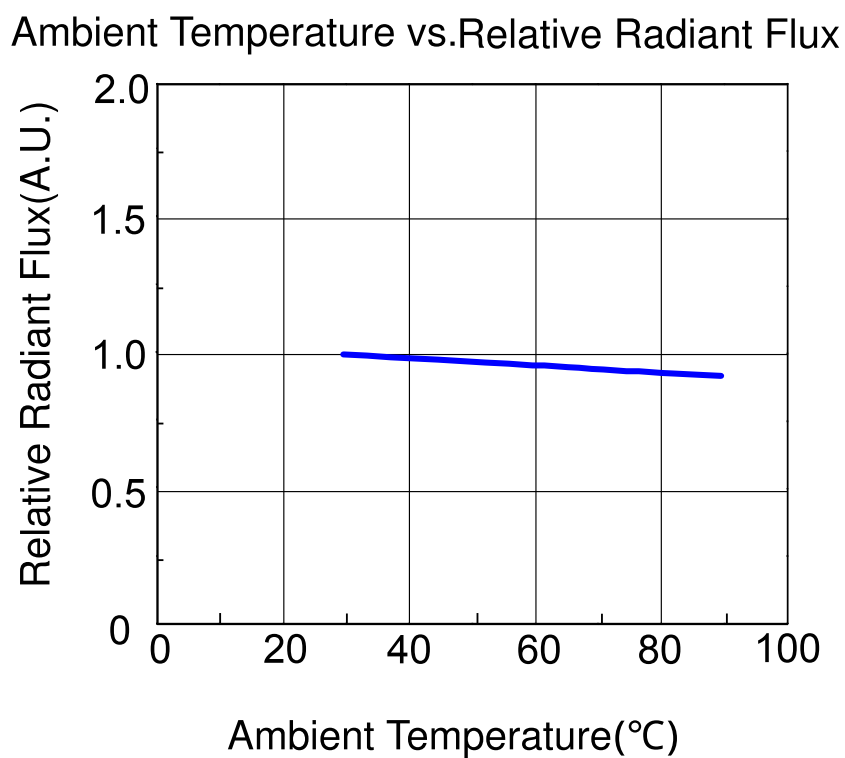
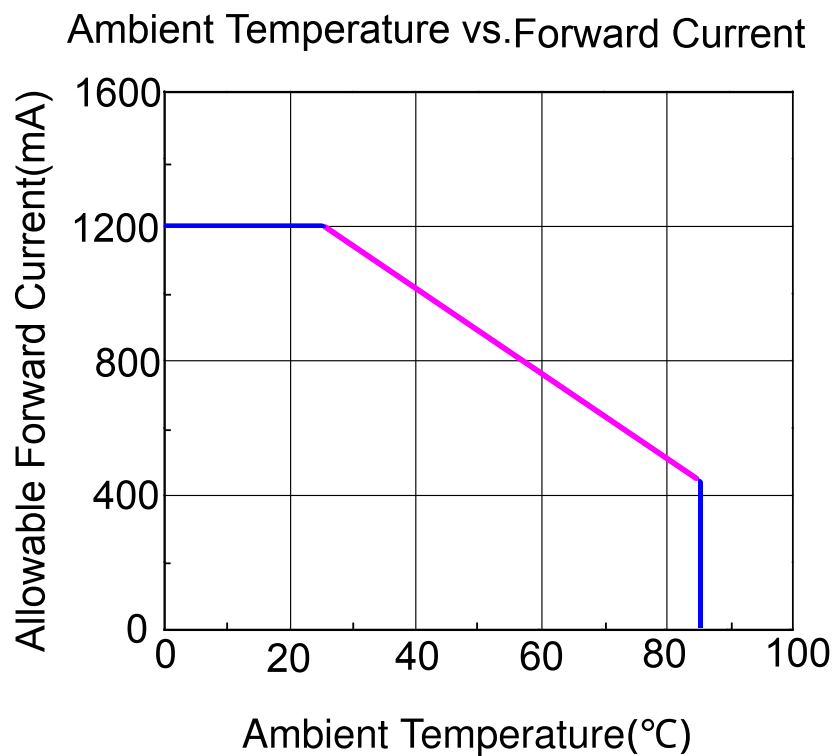


Binning Table ( $I_F=1200mA, T_a=25^{\circ}C$ )

| BIN | Peak Wavelength[nm]<br>峰值波长 | Radiant Flux[mw]<br>辐射通量 | Forward Voitage[V]<br>正向电压 |
|-----|-----------------------------|--------------------------|----------------------------|
| 1   | 840-845                     | 3800-4900                | 5.5-6.5                    |
| 2   | 840-845                     | 3800-4900                | 6.5-7.5                    |
| 3   | 845-850                     | 3800-4900                | 5.5-6.5                    |
| 4   | 845-850                     | 3800-4900                | 6.5-7.5                    |
| 5   | 850-855                     | 3800-4900                | 5.5-6.5                    |
| 6   | 850-855                     | 3800-4900                | 6.5-7.5                    |
| 7   | 855-860                     | 3800-4900                | 5.5-6.5                    |
| 8   | 855-860                     | 3800-4900                | 6.5-7.5                    |
| 9   |                             |                          |                            |
| 10  |                             |                          |                            |

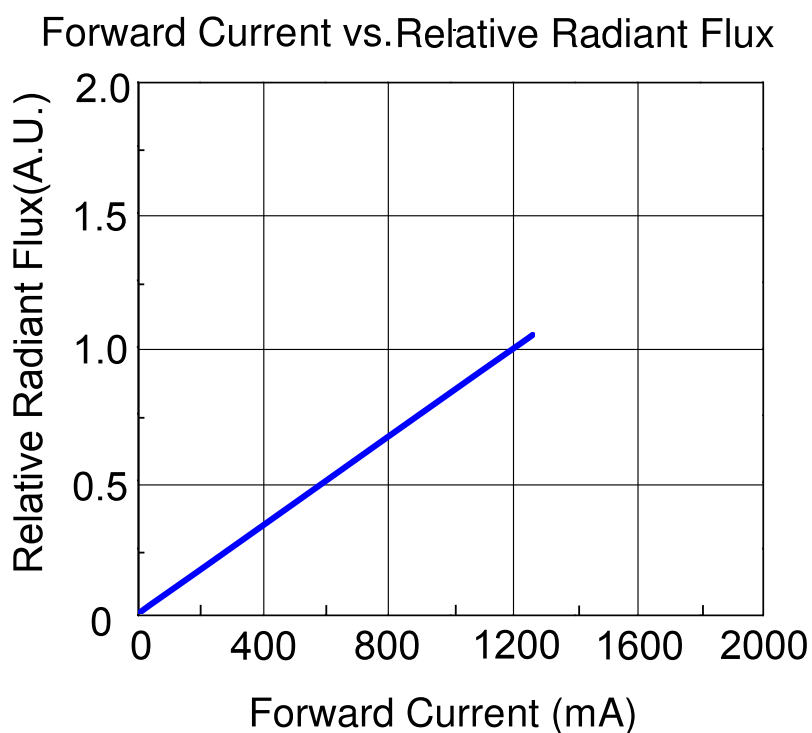
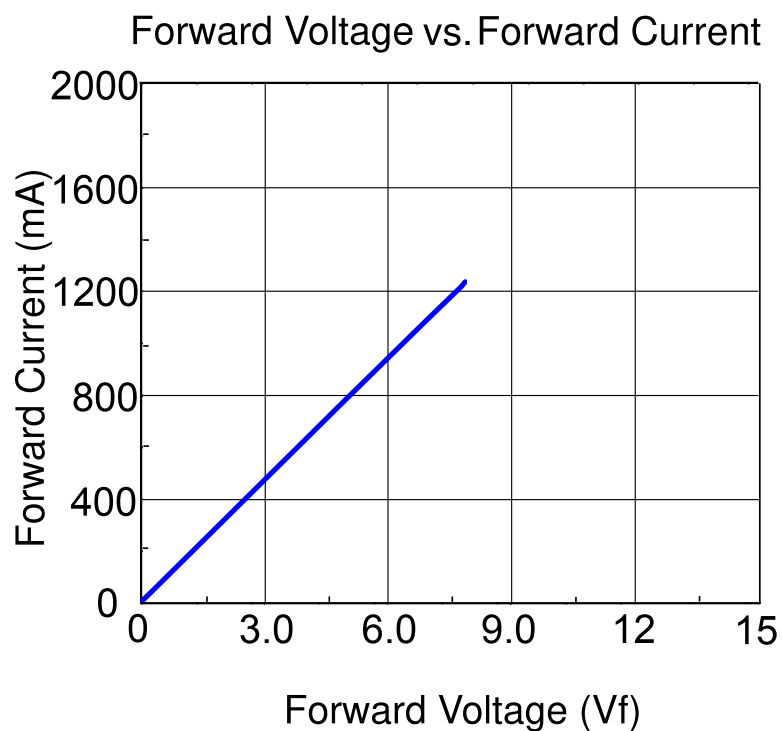


## Typical Optical/Electrical Characteristics Curves 典型光学/电性特征曲线 ( $T_a=25^{\circ}\text{C}$ Unless Otherwise Noted ) ( $T_a=25^{\circ}\text{C}$ 除非另有注释)



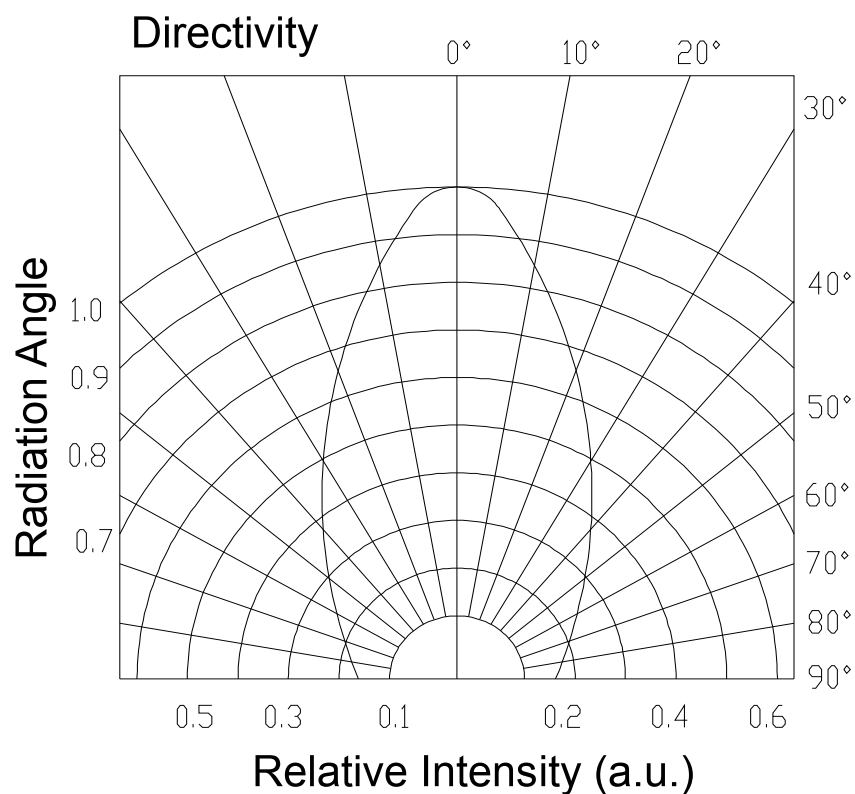
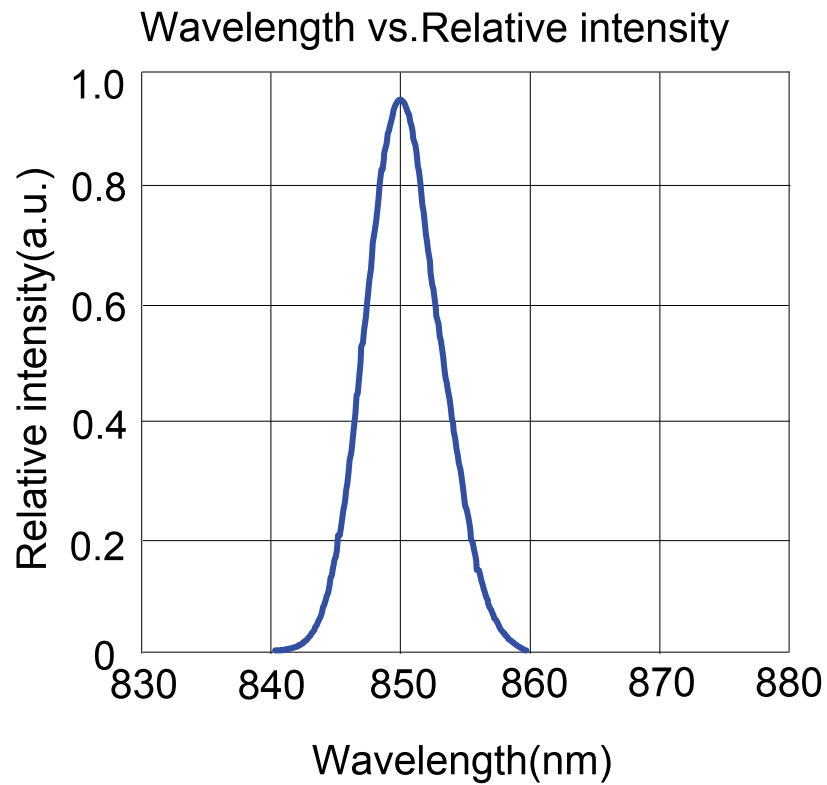


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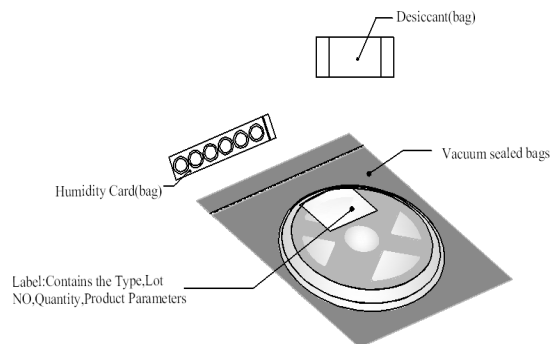
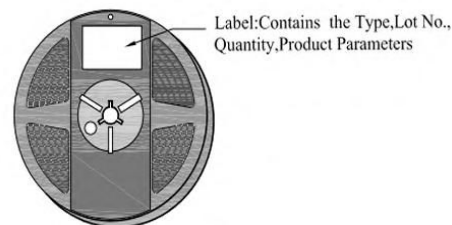
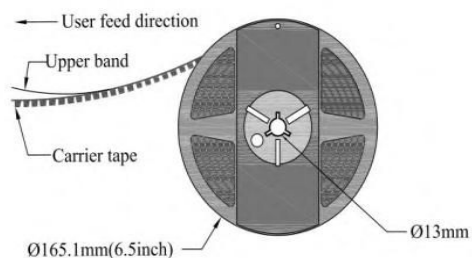
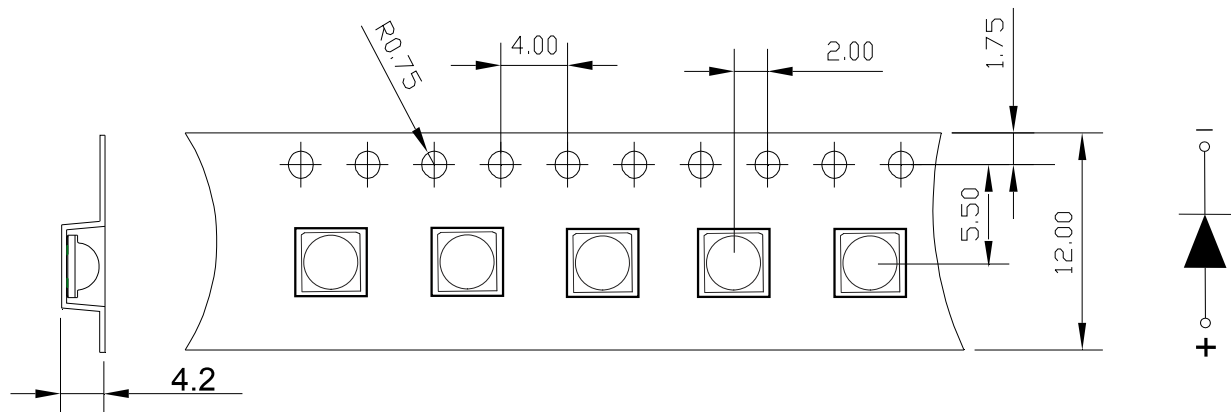
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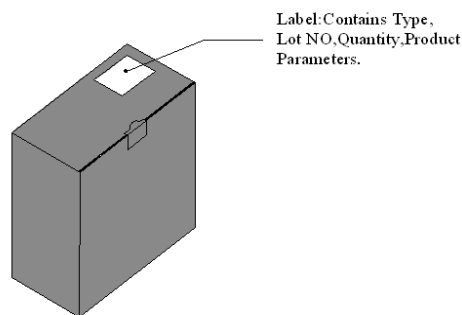
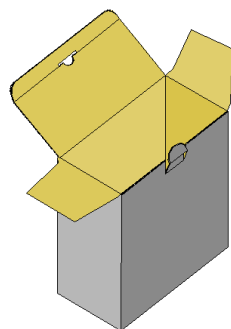
### 包装规格 Packaging Specifications

#### 1. 载体尺寸 Carrier Tape Dimensions



#### 2. 标签格式规范 Label Form Specification

##### Inner Box (内箱)



\* Capacity 4 reels per box (内箱容量: 4 卷)

备注 Note: 标注公差为±0.1毫米, 单位: 毫米。The tolerances unless mentioned ±0.1mm. Unit: mm



焊接指导   Guideline for Soldering

1. 使用烙铁焊接   Hand Soldering

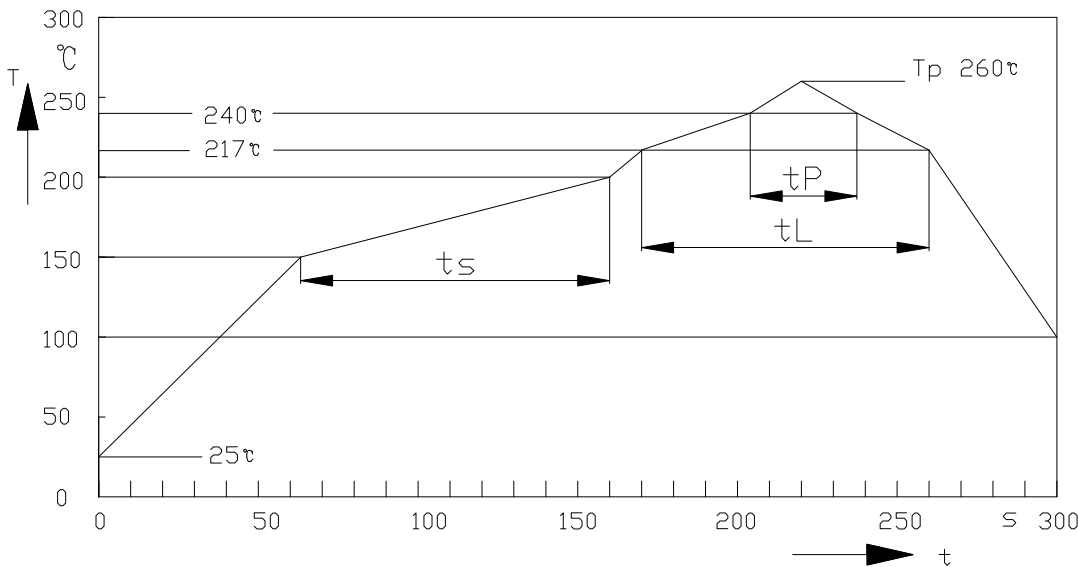
推荐使用功率低于 20W 的恒温烙铁,焊接时烙铁的温度必须保持在 300℃以下,且每个电极只能进行一次焊接,每次焊接的持续时间不得超过 3 秒.

手动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.

Asoldering iron with Constant temperature 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.



|                              |            |            |
|------------------------------|------------|------------|
| 平均升温速度 (Tsmax 至 Tp)          | 最高 3 °C/ 秒 | 最高 3 °C/ 秒 |
| 预热：最低温度 (Tsmín)              | 100 °C     | 150 °C     |
| 预热：最高温度 (Tsmáx)              | 150 °C     | 200 °C     |
| 预热：时间 (tsmín 至 tsmáx)        | 60 - 120 秒 | 60 - 180 秒 |
| 限时维持高温：温度 (TL)               | 183 °C     | 217 °C     |
| 限时维持高温：时间 (tL)               | 60 - 150 秒 | 60 - 150 秒 |
| 峰值 / 分类温度 (Tp)               | 215 °C     | 260 °C     |
| 与实际峰值温度 (tp) 相差 5 °C 以内的保持时间 | 10 - 30 秒  | 20 - 40 秒  |
| 降温速度                         | 最高 6 °C/ 秒 | 最高 6 °C/ 秒 |
| 25 °C 升至峰值温度所需时间             | 最多 6 分钟    | 最多 8 分钟    |



- 回流焊接最多只能进行一次。  
Reflow soldering should not be done more than one times.
- 推荐使用中温锡膏生产加工。  
It is recommended that use the middle temperature solder paste.
- 在回流焊接过程中,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后,再进行其它处理。  
After soldering ,do not deal with the product before its temperature drop down to room temperature.

### 3. 修补 Repairing

LED回流焊后不应该修复,当修复是不可避免时,必须使用双头烙铁,但必须事先确认此种方式会不会 损坏LED本身的特性。

Repair should not be done after the LEDs have been soldered. When repairing is unavoidable,a double-head soldering iron should be used (as below figure). It should be confirmed in advance whether the characteristics of LEDs will or will not be damaged by repairing.

### 1. 贮存 Storage

- 本产使用密封防潮抗静电袋包装,并附有干燥剂,未开封的产品保存时间一年。  
Moisture proof and anti-electrostatic package with moisture absorbent material is used, Packaged products have one year to save time.
- 开封前,产品须存放在温度不高于30°C,湿度不高于60%RH的环境中。  
Before opening the package, the product should be kept at30°C or less and humidity less the60%RH.
- 开封后,产品必须24小时内使用完(建议工作环境温度不高于30°C,湿度不高于60%),如未使用完,余料须存放在温度不高于30°C,湿度不高于60%的环境中。  
After opening the package, the product should be soldered within 24 hours. If not, please store at 30°C or less and humidity less than 10%RH. It is recommended that the product be operated at the workshop condition of 30°C or less and humidity less than 60%RH.
- 对于尚未焊接的LED,如果吸湿剂或包装失效,或者产品没有符合以上有效存储条件,烘烤可以起到一定的性能恢复效果.烘烤条件:65±5°C,持续时间24H。  
If the moisture absorbent material has fade away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition : 65±5°C for 24 hours.



## 2. 静电 Static Electricity

以下操作可降低静电破坏的可能性

The following procedures may decrease the possibility of ESD damage.

- 将产品和外界之间的摩擦减到最低以避免静电产生。  
Minimize friction between the product and surroundings to avoid static buildup.
- 所有的产品设备和测试仪器必须接地。  
All production machinery and test instruments must be electrically grounded.
- 操作人员必须配戴静电环。  
Operators must wear anti-static bracelets.
- 进入带电设备工作区域时需穿防静电服。  
Wear anti-static suit when entering work areas with conductive machinery.
- 所有操作 IC 和 ESD 敏感器件元器件的工作台必须保持低于 150V 的静电保护。  
All workstations that handle IC and ESD-sensitive components must maintain an electrostatic potential of 150V or less.

## 3. 反压保护 Reverse voltage protection

通常 LED 的反向漏电流都会很小,不会影响正常使用. 如果长期遭受超过其所能承受的反向电压冲击时,LED 会损伤, 反向漏电流会迅速变大,引起显示屏零灰度下串光的发生. 在设计中, 要注意控制反向电压, 建议加在 LED 上的反向电压值不超过 10V.

In generally the reverse current of LED is very small, it can't effect using the component normally, but when it often suffered the reverse voltage which exceed the limits of the component than it will be damaged, the reverse current increases rapidly causing the string light display gray scale so when designing, please pay attention to control the reverse voltage we suggest the reverse voltage less than 10V.



#### 4. 温度保护 The safe temperature for LEDs working

LED 在高温条件下, 衰减会加速, 本身应力也会增大, 若长期处于高温环境下, 极容易出现失效. 对于高密度排列使用的情况, 建议在使用过程中灯面温度不超过 55°C, 灯脚温度不超过 75°C.

The high temperature will make the LED's Luminous Intensity deceased radically, if LEDs worked in hot environment for a long time, they will be disabled easily. When LEDs are working in a closed array, we suggest that the LED's surface temperature should be lower than 55°C and the leg's temperature should be lower than 75°C.

#### 5. 其它事项 Others

- 请勿直接触摸或操作石英透镜表面, 这可能会损坏内部的电路, 拿取时用镊子或合适的工具夹在元件的侧边  
Do not directly touch or handle the quartz lens surface. It may damage the internal circuitry. Handle the component along the side surfaces by using forceps or appropriate tools.

