

RoHS

# Specification

Client Name :  
客户名称 : \_\_\_\_\_

Client P/N :  
客户品号 : \_\_\_\_\_

Product P/N :  
产品型号 : HL-C3535F7V/365-D1-LVR9(Au120)

Sending Date :  
送样日期 : \_\_\_\_\_

|  |  |   |   |                    |
|--|--|---|---|--------------------|
| Client approval<br>客户审核                  |  | Hongli approval<br>鸿利光电审核   |   |                    |
| Approval<br>核准                           | Audit<br>确认                                  | Approval<br>核准  | Audit<br>确认   | Confirmation<br>制作 |
|  |  |  |  | 张强                 |
| <input type="checkbox"/> Qualified<br>接受 | <input type="checkbox"/> Disqualified<br>不接受 | DATE:<br>日期: 2016. 05. 16   |   |                    |

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2. 此规格书的最终解释权归广州市鸿利光电股份有限公司

3. 此规格书的有效期限为两年,自盖章或签字之日起计算,期满时双方可以续签协议,但应采用书面形式

4.广州市鸿利光电股份有限公司提供样品和规格书请客户会签审核确认规格参数和样品,客户会签后表示认同产品的 相关参数和品质性能符合客户要求。

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**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

|                   |   |
|-------------------|---|
| Under Development |   |
| Mass production   | ● |

## Product naming rules 产品命名规则

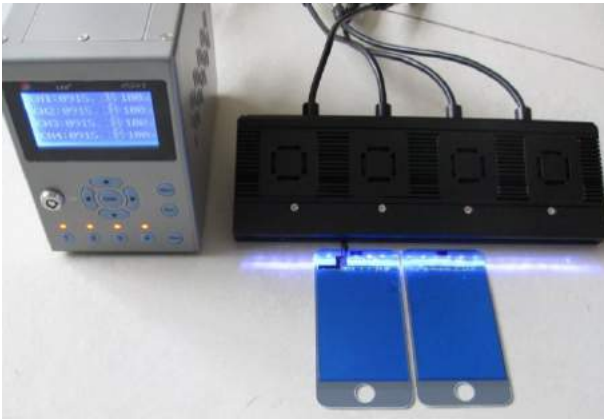
HL-C 3535 F7 V 365 -D 1 -LVR9 (Au 120)  
1 2 3 4 5 6 7 8 9 10 11

- 1：鸿利光电代码
- 2：产品系列代码
- 3：尺寸代码
- 4：芯片代码
- 5：发光颜色为紫外
- 6：产品典型峰值波长
- 7：电路设定
- 8：芯片数量
- 9：齐纳
- 10:基板表面镀金
- 11：发光角度120°

## Features 特点

- Dimension 尺寸：3.45mm×3.45mm×1.9mm
- Long operating life 寿命长
- High radiation flux 高辐射通量
- Instant light (less than 100ns) 瞬间点亮（小于100ns）
- Low voltage DC operated 低电压直流作业
- High heat dissipation efficiency 散热效率高
- Superior ESD protection 良好的静电防护能力
- RoHS compliant RoHS标准

## Application range 应用范围



UV 固化  
UV Curing



UV 印刷  
UV Printing



UV 曝光  
UV Exposure



美甲灯  
Nail Polish Curing



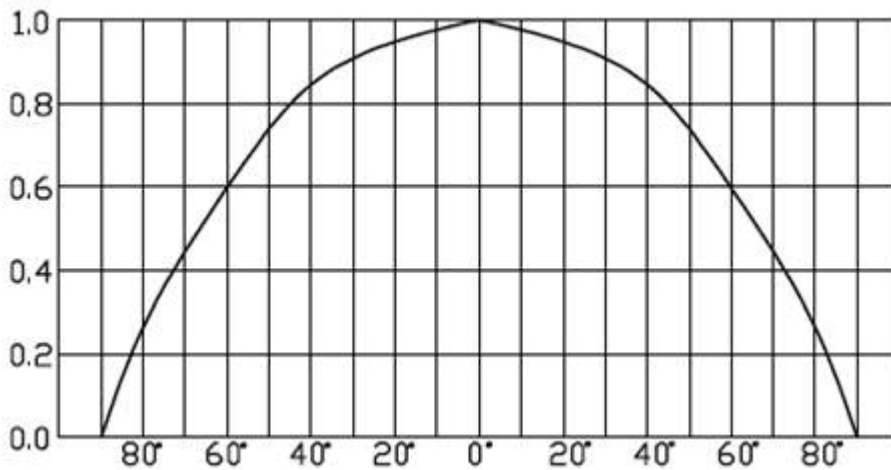
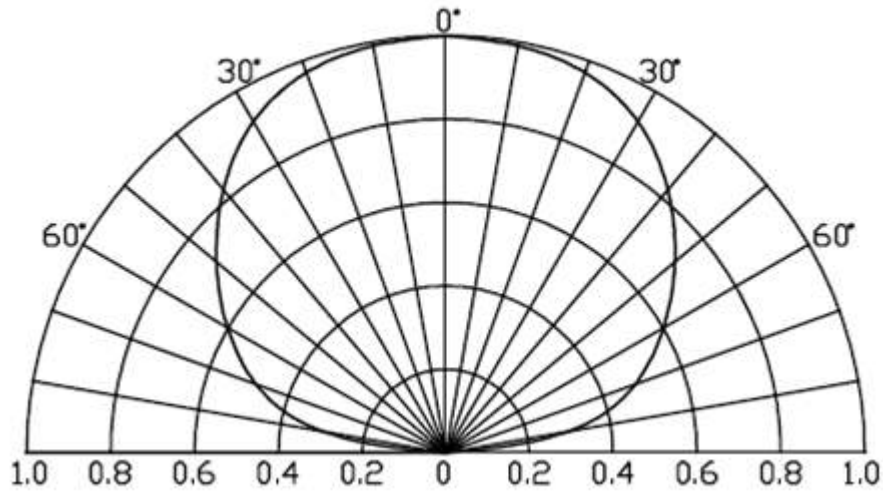
防伪  
Security, Banknote



灭蚊灯  
Mosquito Killer



### Radiation Pattern 辐射模式



## Typical Optical/Electrical Characteristics @Ta=25°C Type

| Symbol<br>符号    | Item名称               | Min.最低 | Typ.典型 | Max.最大 | Units单位 | Test Conditions<br>测试条件 |
|-----------------|----------------------|--------|--------|--------|---------|-------------------------|
| $\Phi_e$        | Radiation Flux辐射功率   | 350    | 400    | —      | mW      | IF=500mA                |
| VF              | Forward Voltage 正向电压 | 3.0    | —      | 4.0    | V       | IF=500mA                |
| $\lambda_p$     | Peak Wavelength峰值波长  | 360    | —      | 370    | nm      | IF=500mA                |
| $2\theta_{1/2}$ | 50% Power Angle发光角度  | —      | 120    | —      | deg     | IF=500mA                |
| IR              | Reverse Current反向电流  | —      | —      | 50     | uA      | VR = 5V                 |
| L50             | Life Time 使用寿命（半衰）   | —      | 3000   | —      | Hour    | IF=500mA                |
| L50             | Life Time 使用寿命（半衰）   | —      | 1500   | —      | Hour    | IF=700mA                |

## Absolute Maximum Ratings 绝对最大额定值@TA=25°C

| Item名称                       | Symbol<br>符号 | Absolute Maximum Rating<br>绝对最大额定值 | Units单位 |
|------------------------------|--------------|------------------------------------|---------|
| Power dissipation功率          | Pd           | 2.8                                | W       |
| Peak Forward Current峰值电流     | $I_{FP}$     | 700                                | mA      |
| Reverse Voltage方向电压          | $V_R$        | 5                                  | V       |
| Operating Temperature 工作温度范围 | Topr         | -20°C To +60°C                     |         |
| Storage Temperature 储存温度范围   | Tstg         | 0C To +40°C                        |         |

### Notes注:

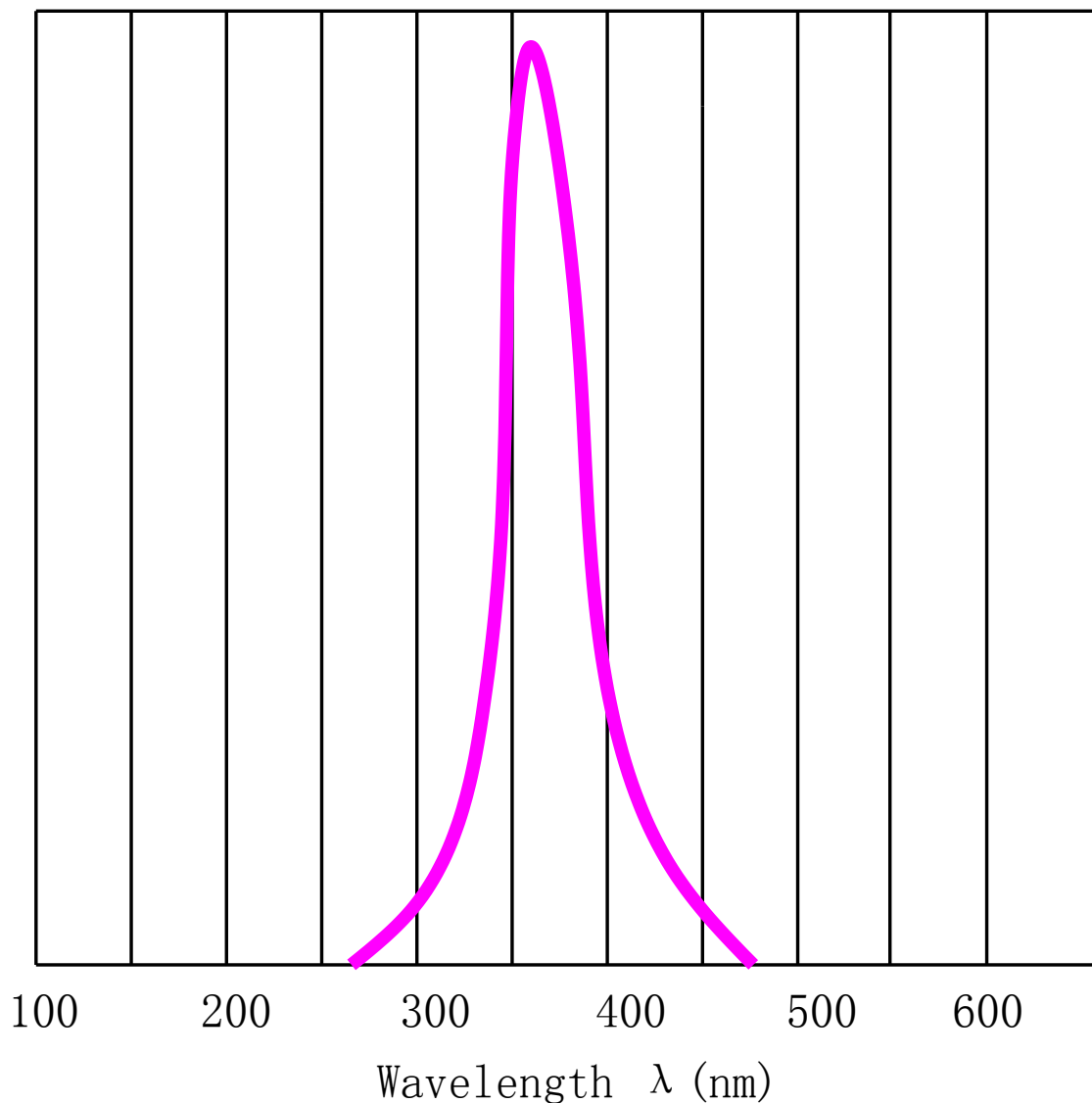
- 1.Radiant flux measurement tolerance:±10%;
- 2.Forward voltage measurement tolerance:±3%;
- 3.Peak wavelength measurement tolerance:±3nm;
- 4.1/10 Duty Cycle,0.1ms Pulse Width.1/10占空比，0.1ms脉冲宽度；
- 5.The temperature of Aluminum PCB do not exceed 55°C.基板温度不超过55°C。



## Typical Optical/Electrical Characteristics Curves ( $T_a=25^\circ\text{C}$ Unless Otherwise Noted )

典型光学/电性特征曲线 ( $T_a=25^\circ\text{C}$  除非另有注释)

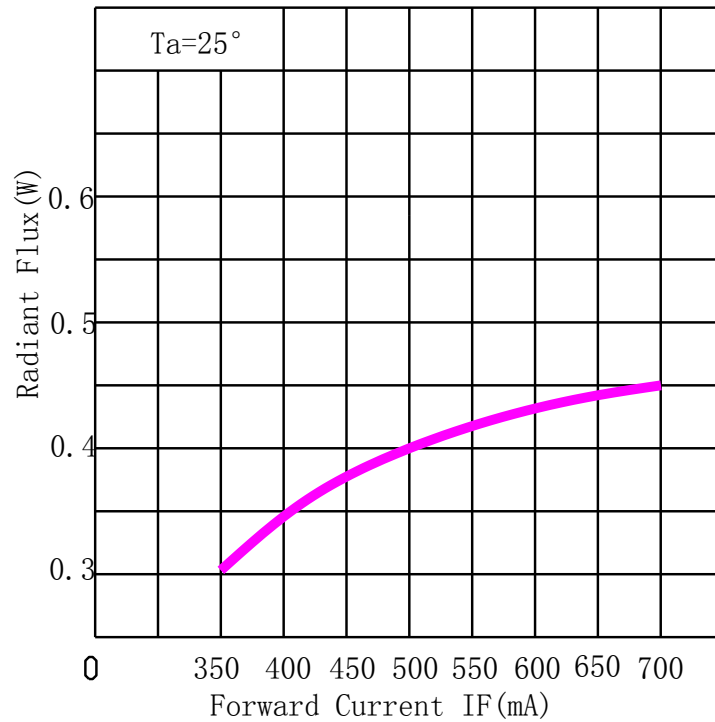
### (1) Wavelength Characteristics



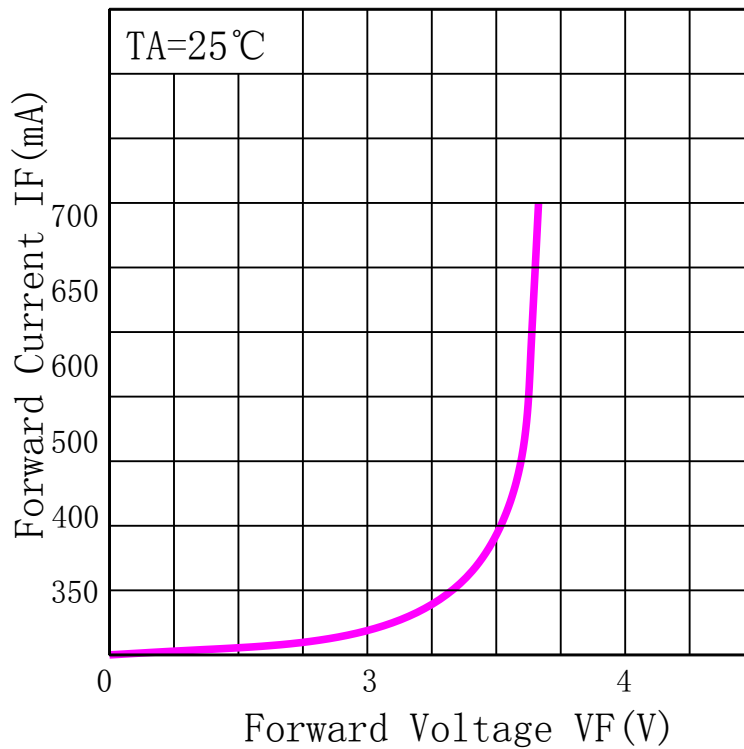




### (2) Relative Radiation Flux-IF

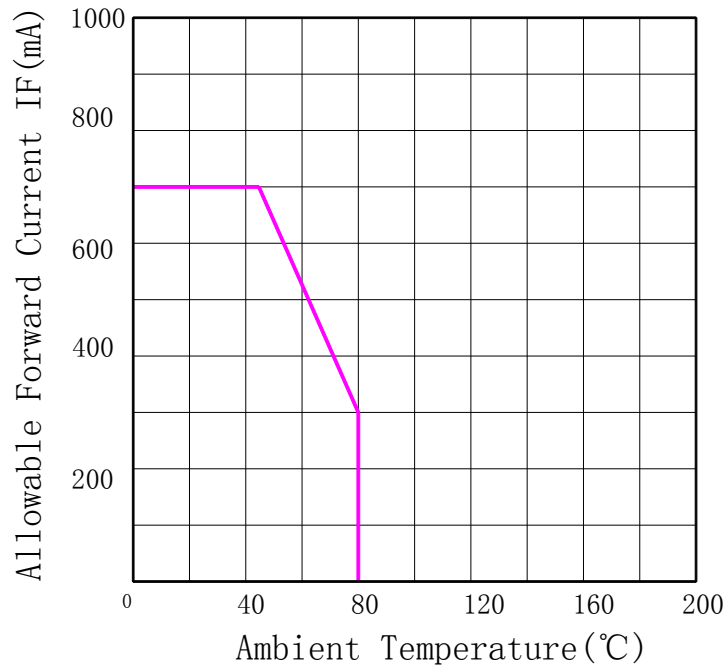


### (3) Relative IF-VF

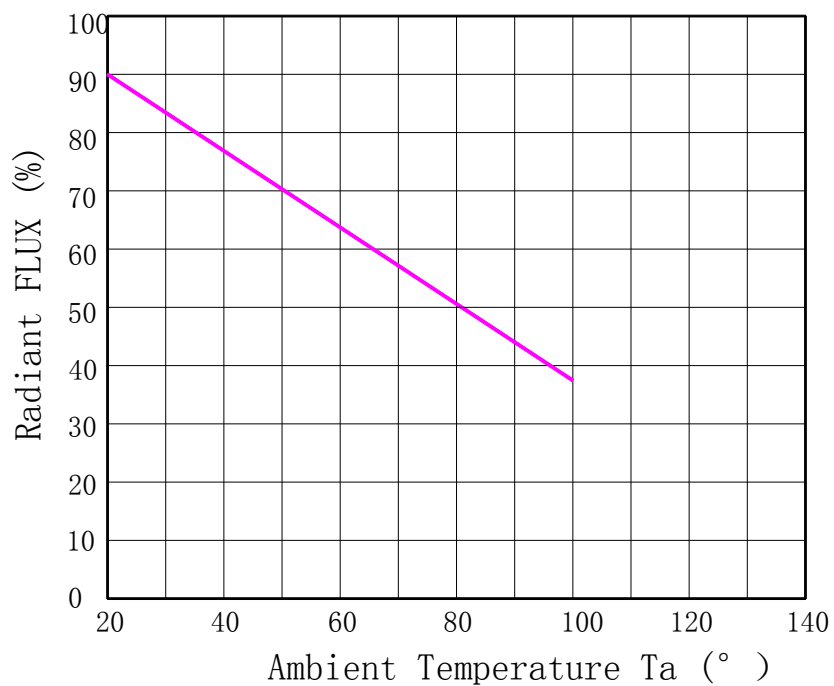




#### (4) Allowable Forward Current-Ta

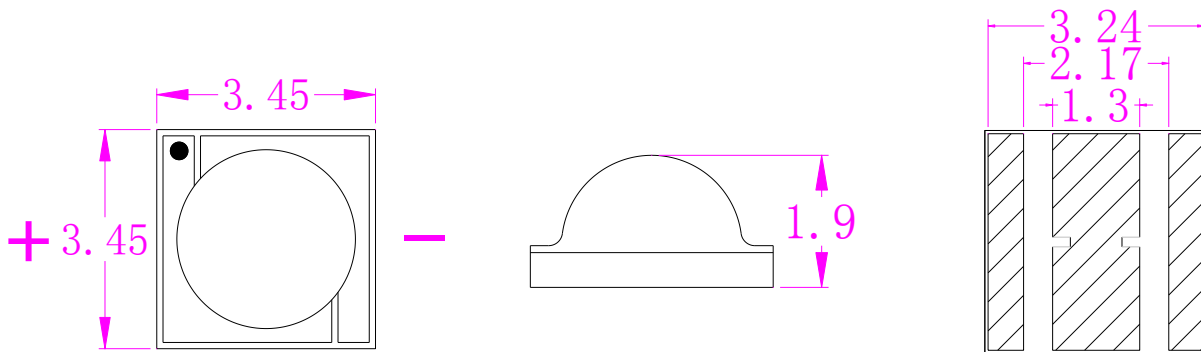


#### (5) Radiation Flux-Ta





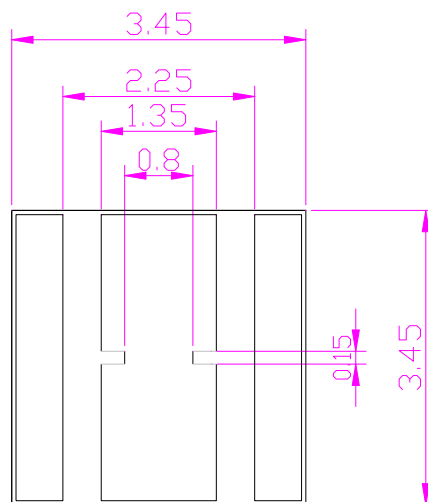
## Package Dimensions 封装尺寸



### Notes 注:

1. All dimension units are millimeters.  
所有尺寸单位均为毫米.
2. All dimension tolerance is  $\pm 0.1$ mm unless otherwise noted.  
所有尺寸误差是 $\pm 0.1$ 毫米除非另有说明

## Welded plate Dimensions 焊盘尺寸



### Notes 注:

When the circuit configuration is not affected, suggested the increase in the middle of the copper area, or the connection between the middle and the pad and the negative electrode can improve the cooling performance of the product. It is recommended to use 1 mm thickness of steel mask.

在不影响电路配置时，建议增加中间焊盘覆铜区域，或中间焊盘和负极焊盘连接，能提高产品散热性能。建议使用热电分离的铜基板作为散热基板。建议使用钢网厚度为1mm。

## Label 标签

TYPE: XXXXXXXXXX

产品型号

QTY: XXXXX

包装数量

VF: Forward voltage rank

正向电压档次范围

$\Phi_e$ : Radiation Flux rank

辐射量档次范围

IF: XXXX

分选电流

$\lambda_p$ : Peak Wavelength

峰值波长

DATE: XXXX

生产日期

LOT.NO: Lot Number

生产批号



RoHS

TYPE:

QTY:

VF:

$\Phi_e$ :

IF:

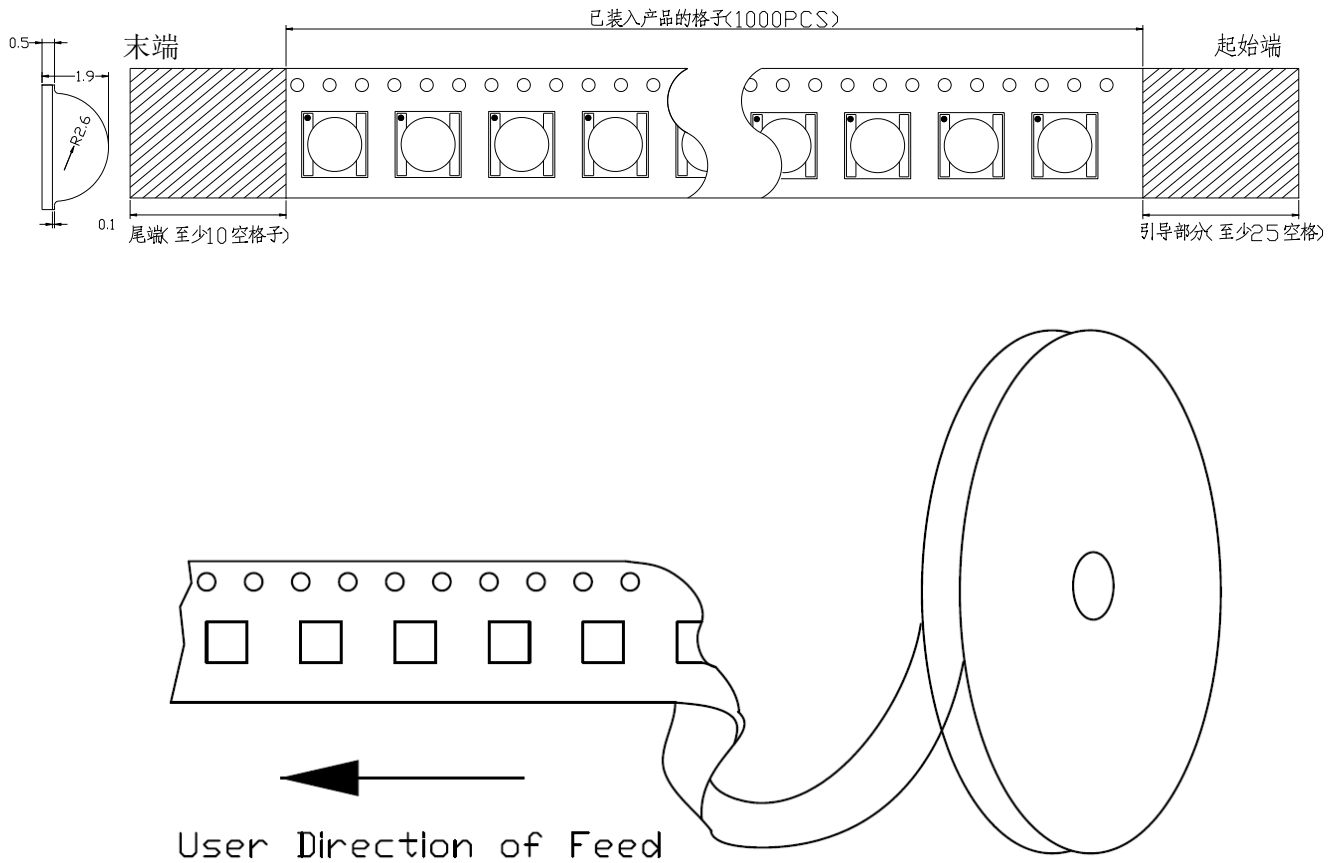
$\lambda_p$ :

DATE

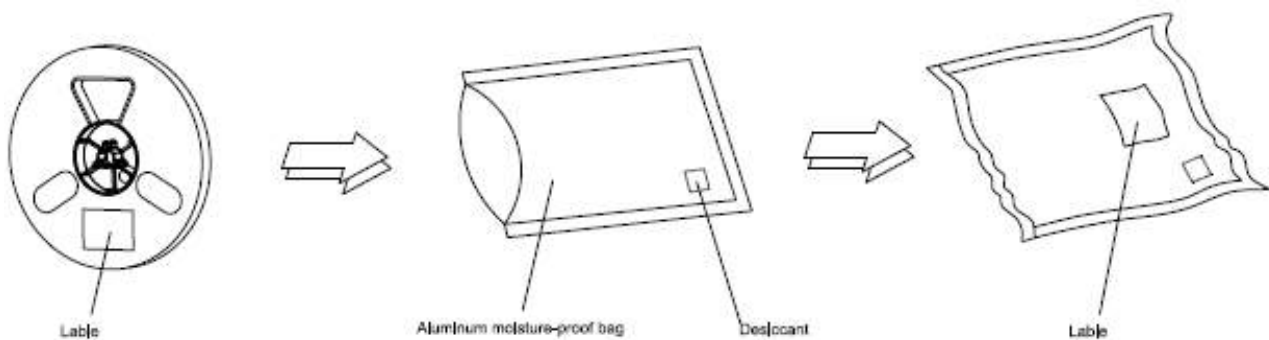
LOT. NO:

## Tape Specifications(Units:mm)包装规格

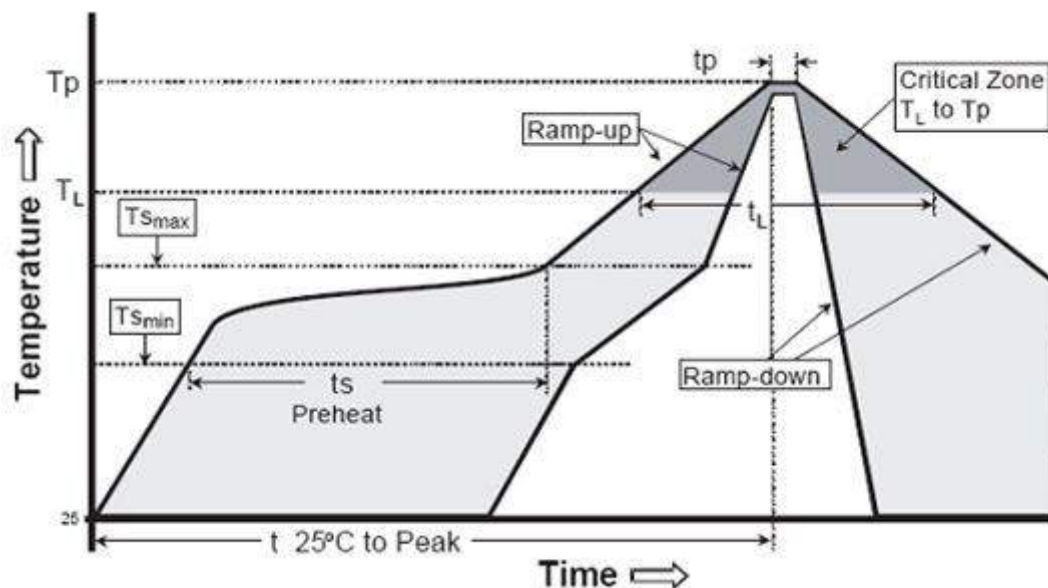
### (1) Reel package (1000 pcs/reel) 卷轴包装 (1000 pcs/卷)



### (2) Moisture resistant packaging 防潮包装



## Reflow soldering instructions 回流焊说明



| Profile Feature                                      | Lead-Based solder | Lead-Free Solder |
|--|-------------------|------------------|
| Average Ramp-Rate ( $T_{Smax}$ to $T_p$ )            | 3°C/second max    | 3°C/second max   |
| Preheat: Temperature Min ( $T_{Smin}$ )              | 100°C             | 150°C            |
| Preheat: Temperature Max ( $T_{Smax}$ )              | 150°C             | 200°C            |
| Preheat: Time ( $t_{Smin}$ to $t_{Smax}$ )           | 60-120 seconds    | 60-180 seconds   |
| Time Maintained Above: Temperature ( $T_L$ )         | 183°C             | 217°C            |
| Time Maintained Above: Time ( $t_L$ )                | 60-150 seconds    | 60-150 seconds   |
| Peak/Classification Temperature ( $T_p$ )            | 215°C             | 260°C            |
| Time Within 5°C of Actual Peak Temperature ( $t_p$ ) | 10-15 seconds     | 20-40 seconds    |
| Ramp-Down Rate                                       | 6°C/second max    | 6°C/second max   |
| Time 25°C to Peak Temperature                        | 6 minutes max     | 8 minutes max    |

### Note:

1. recommend to use a convection type reflow machine with 8 zones.  
建议使用八温区回流焊机，参考曲线 145°-165°-185°-210°-220°-240°-260°-240° 运输速度90cm/min。
2. recommend to use Lead-Free Paste with a melting point between 210°C-220°C.  
建议使用熔点为210°C-220°C的无铅锡膏。
3. the reflow soldering time should not be more than 360s. all temperature means the temperature measured on the surface of the package body.  
总的回流焊时间不要超过360s，所有温度均指在封装本体表面上测得的温度。
4. When using hot plate, the temperature is no more than 260 °C, the time is not more than 5 seconds.  
当使用热板作业时，温度不超过260°C，时间不超过5秒。

## Use the matters needing attention(使用注意事项 )

### 一、储存(storage)：

为避免受潮的影响，我司建议产品在未开包装前储存条件为 5-30°C，相对湿度小于 60%；已开包装的 LED 光源请在 24H 内使用安装完毕，如未用完之产品，请进行除湿并抽真空后密封保存。开封超过一周或湿度卡发生变化时，请务必进行除湿，除湿条件：60°C±5°C，12H；

产品密封保存有效使用期为一年。

To avoid moisture, we recommend storage conditions for the unopened LED +5 ~ +30 °C, relative humidity <60%. LED should be used within 168 Hrs. of opening the package. Please make sure to dehumidify and vacuum pack the remaining/ unused LED. Dehumidifying condition: +120 ° C ± 5 ° C, 04 Hrs. Effective age for the sealed led is one year.

### 二、组装注意事项(the assembly notes)：

焊接条件：此产品必须使用回流焊接的作业方式,回流曲线最高温度不可超过 260°C.作业或存放过程中不可有 1000g 以上的外力或尖锐物体作用于灯珠表面（如压力，摩擦等外力以及钳子镊子等工具），以免造成元件损伤；

如果超出此使用条件，鸿利光电将不能保证产品的稳定性，如需使用超出的操作条件，请务必进行风险评估。

Soldering Conditions：This product must be used reflow soldering practices, the maximum temperature of reflow should not exceed 220°C.Please make sure when soldering, there is no external force on the soldering surface (such as pressure, friction or sharp metal nails, etc.), to avoid gold wire deformation or damage and other abnormalities.

If beyond recommended conditions, we cannot guarantee the LED stability, please do the risk assessment first.

### 三、防静电措施(anti-Static Measures)：

请采取足够的措施来防止静电产生，比如带静电环或防静电手指套等；每个制造工程关于产品（工厂、设备、机器、载波机和运输单位）应当连接地面，避免产品电气带电。

Please take adequate measures to prevent electrostatic generation, such as wearing electrostatic ring or anti-static fingerstall etc; any relative products like plant equipment, machinery, carrier and transportation units shall be connected to discharging unit/ ground. After assembly, please make sure to discharge Static Electricity with proper ESD equipment.

### 四、温度控制(temperature Control)：

为确保在组装时降低接触热阻，请注意在组装过程中，散热片采用良好品质的导热膏涂布均匀且分布面积合理，不可出现太少或高低不平等现象。散热介质需保证电介质耐压测试至少通过500V。



During assembly, please ensure that a good quality thermal paste is applied and distributed evenly over the surface. While using thermal pad (Heat Sink), make sure LED is firmly tightened and there is no gap between surfaces. The need to ensure the cooling medium dielectric withstand test at least through 500V.

#### 五、驱动控制(drive control)：

本产品需使用恒流源进行驱动，且输出电流符合规格书上的功率使用范围，如需使用恒压源或其他使用条件，请进行使用效果风险评估。

Drive this product at constant current. Output current range specifications should be according to the operational and other conditions, as mentioned in data sheet. Before using a constant voltage source or altered specifications, other than recommended, please consider risk factors.

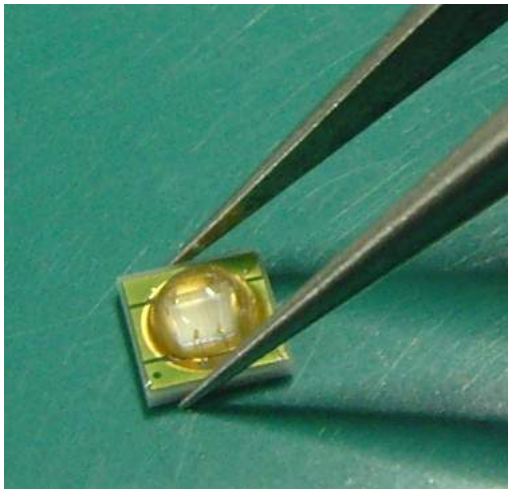
#### 六、其他(other)：

本产品不可在以下条件下使用，如果产品在以下条件下使用，评估其使用效果和风险是有必要的：

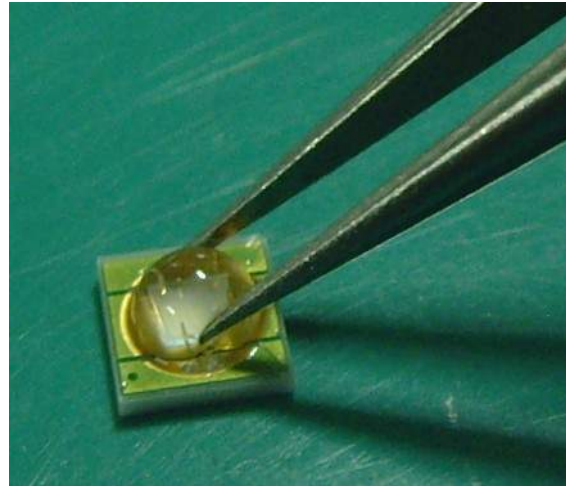
- 直接或间接的打湿或受潮，比如淋雨等；
- 被海水损害或侵蚀；
- 被暴露于腐蚀性气体(如 Cl<sub>2</sub>, H<sub>2</sub>S、NH<sub>3</sub>、SO<sub>x</sub>、NO<sub>x</sub>等)；
- 被暴露于粉尘、液体或油；

Product is not suitable to use in following conditions;

- Direct or indirect wet / damp conditions, such as rain, etc;
- in contact with sea water and erosive materials;
- Exposed to corrosive gases (e.g., Cl<sub>2</sub>, H<sub>2</sub>S, NH<sub>3</sub>, SO<sub>x</sub>, NO<sub>x</sub>, etc.);
- Exposed to dust, liquids or oils;



OK



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#### Notes注:

1.\* All high power emitter LED products mounted on aluminum metal-core printed circuit board, can be lighted directly, but we do not recommend lighting the high power products for more than 5 seconds without a appropriate heat dissipation equipment.

所有高功率的发光LED产品安装在铝金属为核心印刷电路板，可直接点亮，但我们不建议在没有一个适当的散热设备时，照明高功率LED点亮超过5秒，

2.Reflow soldering should not be done more than two times.The reflow temperature we recommend is 260°C,When the temperature exceeds 260 °C, the product failure of LED can be caused

回流焊不能超过两次,回流焊最高温度建议260°C，当温度超过260°C极大可能引起LED产品失效.