

# 承認書

## SPECIFICATION FOR APPROVAL

客 戶

Customer

客 戶 品 號

Customer Part No.

产 品 品 號

HC-B3-4020A02-RGBA3

Brightek Part No.

規 格

4020RGB 三色侧发光共阳极

Specification

製 錶 人

王清

Prepared By

審 核

李东平

Checked by

客 戶 回 簽

Customer Confirmation

送样日期:

Deliver date:

說明: 一、謹致執事者: 茲提供敝公司產品之有關詳細規格及圖面資料, 敬請給予辦理測試認定手續。  
同時敬請送返一份附有貴公司簽認之測試認定後之樣品認定書。

We are sending you our specification and drawings for your approval. Please return to us one copy "For Approval" with your approved signatures.

二、客戶意見欄 Customer'S Proposal

☐ Approve 承認 (請於認可欄中簽名)

☐ Disagree 不同意

Reason 原因:

广东光宇集团

广东光宇实业有限公司

工厂地址: 东莞市寮步镇松湖智谷 A2 栋 3 楼

弘呈光电(香港)有限公司

**Hong Cheng Photoelectric (HK) Limited**

东莞市弘呈光电有限公司

**DongGuan Hong cheng Optoelectronics Co.,Ltd.**

工厂地址: 广东省东莞市樟木头镇莞樟路樟木头段 15 号万辉花园 1 号二楼

ADD: Room 2108, No.1 building, Wanhui Garden, East Guanzhang Road, Zhangmutou,

Dongguan, Guangdong, China

TEL: 0769-87797616 87182291 Fax: 0769-82337396 [www.hc-led168.com](http://www.hc-led168.com)

业务联系人: 李顺阳 13925714318 (微信同号) 销售总监

| 版本/版次 | 修改日期          | 修改内容   |
|-------|---------------|--------|
| A01   | 2021 . 5 . 19 | 修改焊盘尺寸 |
|       |               |        |
|       |               |        |



上述发光角度的测试允许误差为  $\pm 5^\circ$

2. the above luminous flux measurement allowance tolerance  $\pm 10\%$

上述光通量的测试允许误差为  $\pm 10\%$

### ■ Absolute Maximum Ratings at Ta = 25°C 绝对最大额定值

| Parameter(参数)                  | Symbol<br>(符号) | Rating(值) |       |      | Unit<br>(单位) |
|--------------------------------|----------------|-----------|-------|------|--------------|
|                                |                | Red       | Green | Blue |              |
| Pulse Forward Current (脉冲正向电流) | Ifp            | 30        | 30    | 30   | mA           |
| Power Dissipation (功耗)         | Pd             | 40        | 60    | 60   | mW           |
| Reverse Voltage (反向电压)         | VR             | 5         | 5     | 5    | V            |
| Electrostatic Discharge (静电)   | ESD            | 2000      | 2000  | 2000 | V            |
| Operating Temperature (操作温度)   | Topr           | 25~+85    |       |      | °C           |
| Storage Temperature (保存温度)     | Tstg           | -40~+100  |       |      | °C           |

### ■ Typical Optical/Electrical Characteristics at Ta=25°C 光电特性

| Parameter<br>参数            | Symbol<br>符号 | Test<br>Conditions<br>测试条件 | Device | Min.<br>最小 | Typ.<br>平均 | Max.<br>最大 | Tolerance<br>公差 | Unit<br>单位 |
|----------------------------|--------------|----------------------------|--------|------------|------------|------------|-----------------|------------|
| Forward voltage<br>正向电压    | VF           | IF=20mA                    | Red    | 2.0        | --         | 2.4        | $\pm 0.05$      | V          |
|                            |              |                            | Green  | 3.0        | --         | 3.4        | $\pm 0.05$      | V          |
|                            |              |                            | Blue   | 3.0        | --         | 3.4        | $\pm 0.05$      | V          |
| Forward voltage<br>正向电压    | VF           | IF=5mA                     | Red    | 1.8        | --         | 2.0        | $\pm 0.05$      | V          |
|                            |              |                            | Green  | 2.7        | --         | 3.0        | $\pm 0.05$      | V          |
|                            |              |                            | Blue   | 2.7        | --         | 3.0        | $\pm 0.05$      | V          |
| Luminous Flux<br>发光强度      | IV           | IF=20mA                    | Red    | 400        | --         | 600        | $\pm 50$        | mcd        |
|                            |              |                            | Green  | 1400       | --         | 1600       | $\pm 50$        | mcd        |
|                            |              |                            | Blue   | 300        | --         | 500        | $\pm 50$        | mcd        |
| Luminous Flux<br>发光强度      | IV           | IF=5mA                     | Red    | 100        | --         | 200        | $\pm 50$        | mcd        |
|                            |              |                            | Green  | 300        | --         | 400        | $\pm 50$        | mcd        |
|                            |              |                            | Blue   | 50         | --         | 100        | $\pm 50$        | mcd        |
| Dominant wavelength<br>主波长 | WLD          | IF=20mA                    | Red    | 620        | --         | 630        | $\pm 1$         | nm         |
|                            |              |                            | Green  | 520        | --         | 530        | $\pm 1$         | nm         |
|                            |              |                            | Blue   | 460        | --         | 470        | $\pm 1$         | nm         |
| Dominant wavelength<br>主波长 | WLD          | IF=5mA                     | Red    | 620        | --         | 630        | $\pm 1$         | nm         |
|                            |              |                            | Green  | 520        | --         | 530        | $\pm 1$         | nm         |
|                            |              |                            | Blue   | 460        | --         | 470        | $\pm 1$         | nm         |

■ Typical Electro-Optical Characteristic Curves: 典型光/电特性曲线(红色)

Fig.1 Forward current vs. Forward Voltage

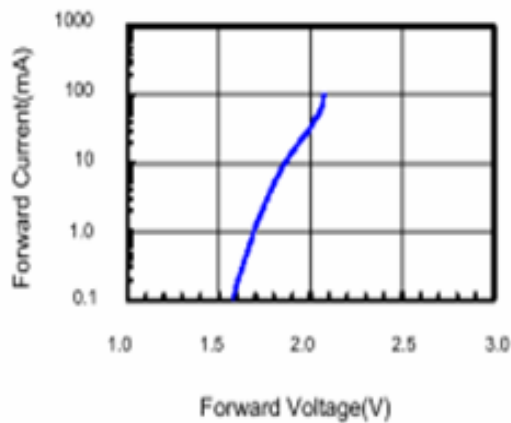


Fig.2 Relative Intensity vs. Forward Current

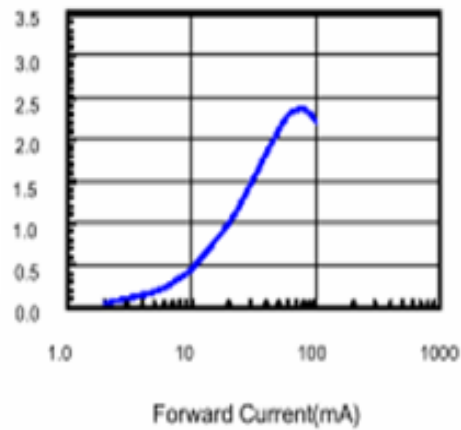


Fig.3 Forward Voltage vs. Temperature

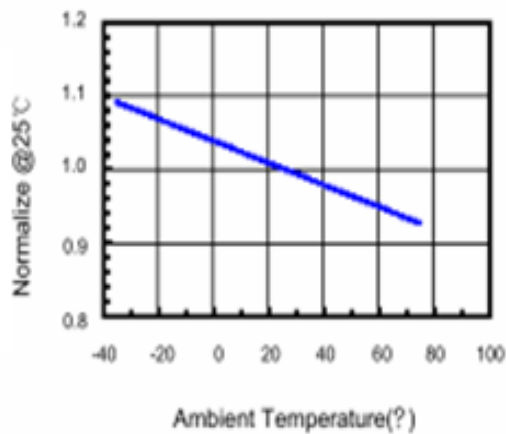


Fig.4 Relative Intensity vs. Temperature

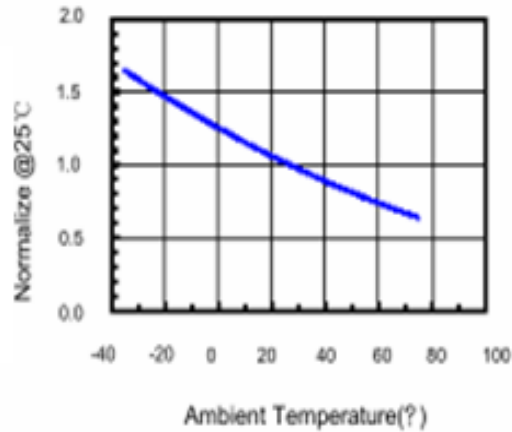


Fig.5 Relative Intensity vs. Wavelength

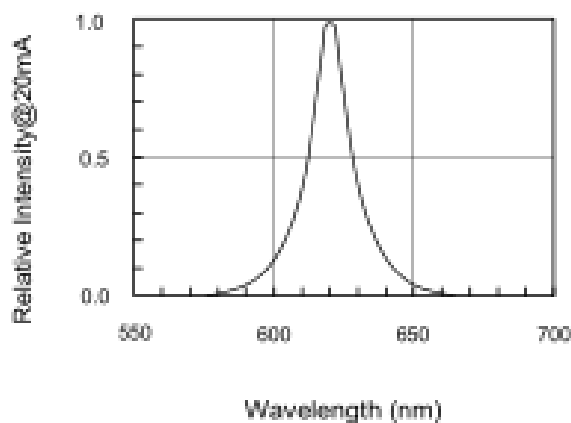
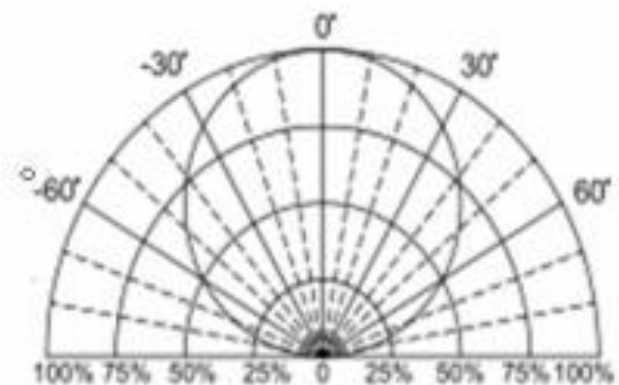


Fig.6 Directive Radiation



## Typical Electro-Optical Characteristic Curves: 典型光/电特性曲线 (绿色)

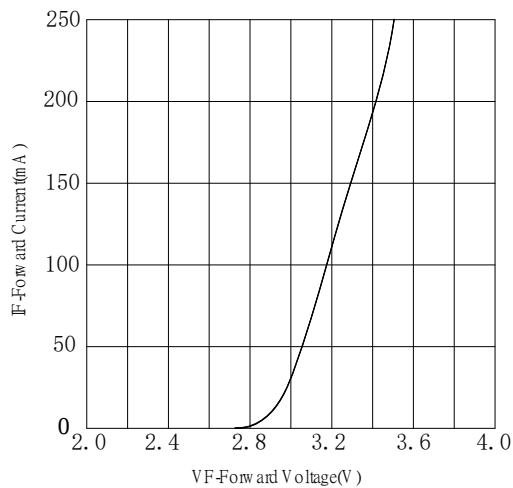


Fig.1 Forward Current vs Forward Voltage

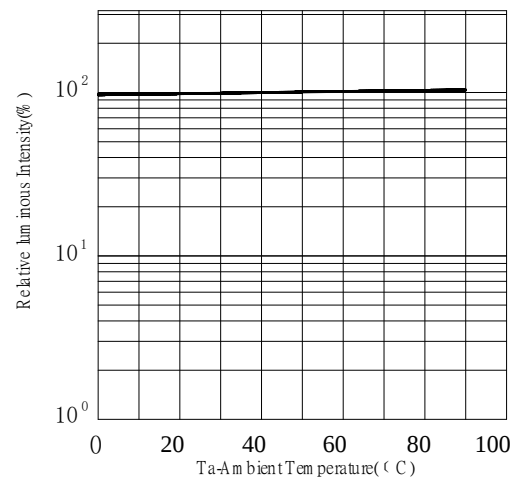


Fig.2 Relative luminous Intensity vs Ambient Temperature

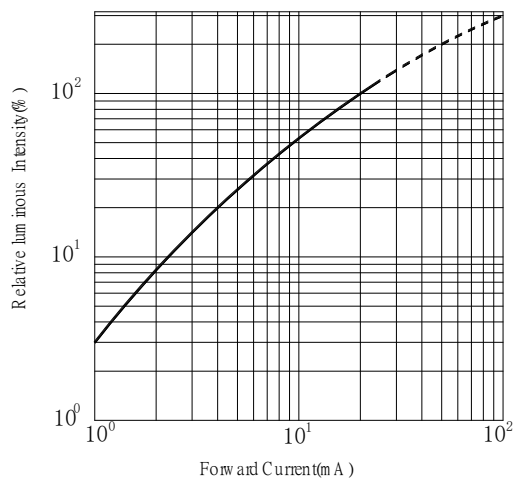


Fig.3 Relative luminous Intensity vs Forward Current

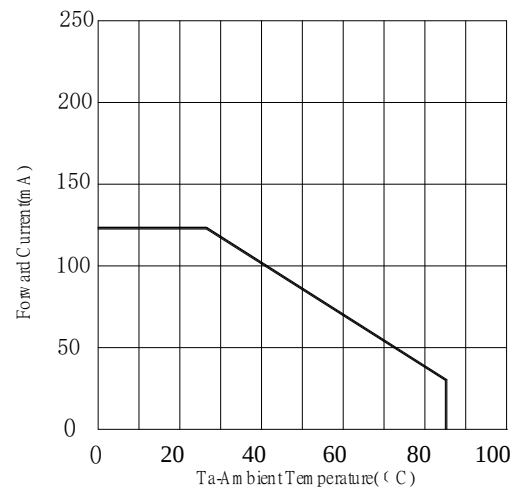


Fig.4 Forward Current vs Ambient Temperature

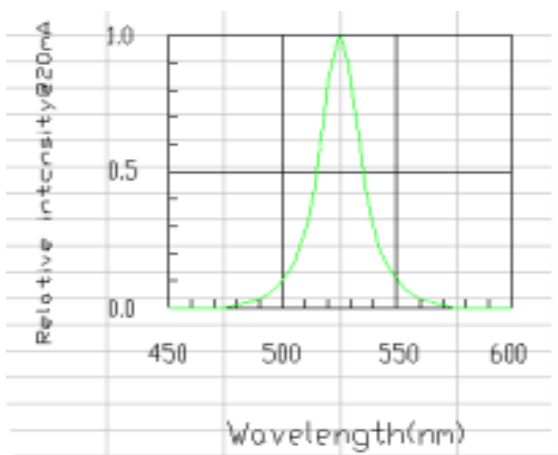


Fig.5 Relative Intensity vs. Wavelength

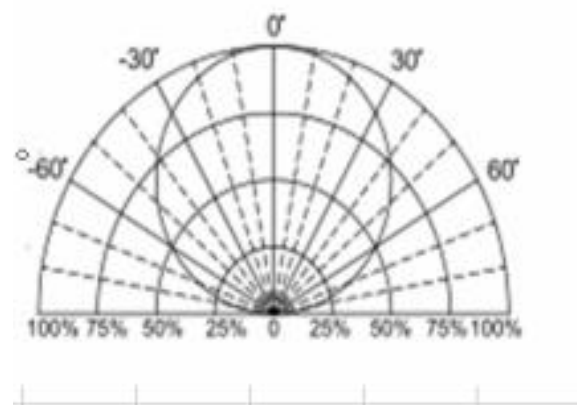


Fig.6 Directive Radiation

Typical Electro-Optical Characteristic Curves: 典型光/电特性曲线(蓝色)

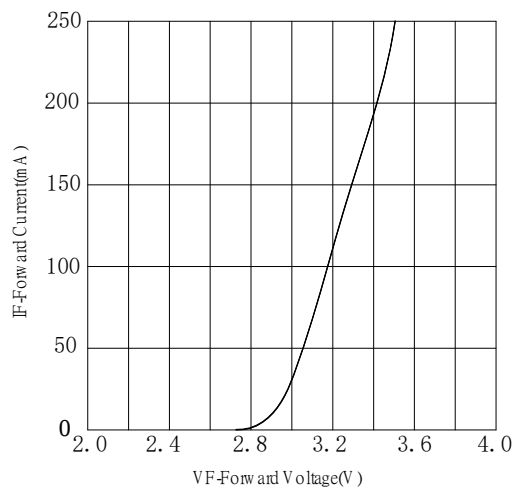


Fig.1 Forward Current vs Forward Voltage

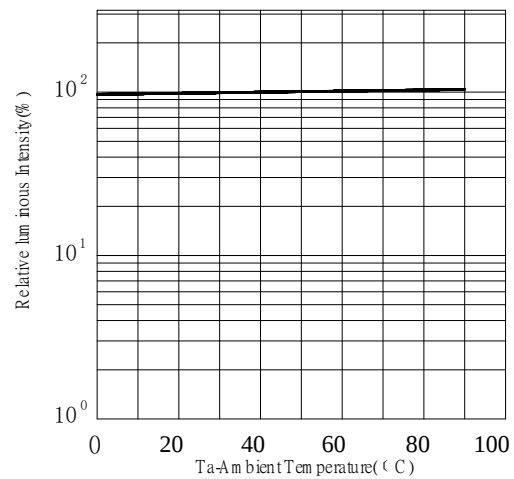


Fig.2 Relative Luminous Intensity vs Ambient Temperature

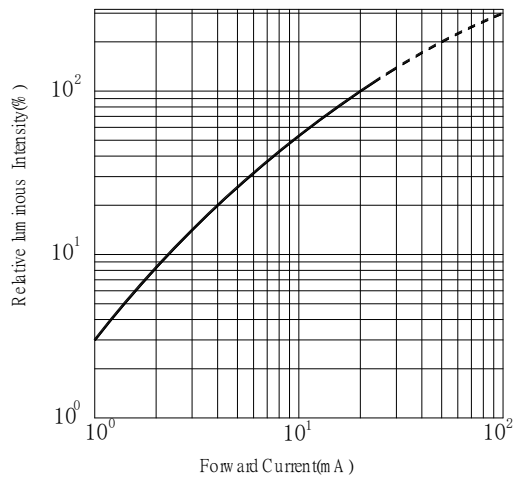


Fig.3 Relative Luminous Intensity vs Forward Current

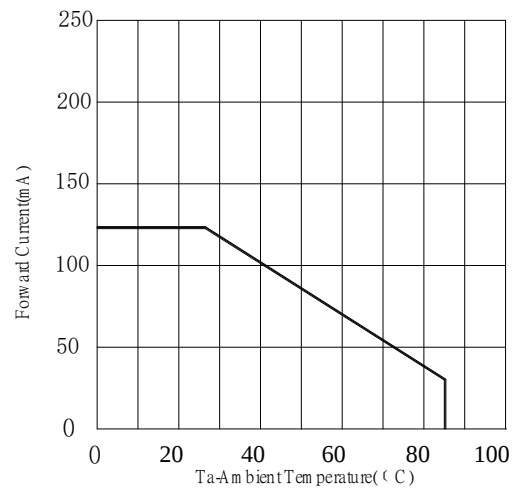


Fig.4 Forward Current vs Ambient Temperature

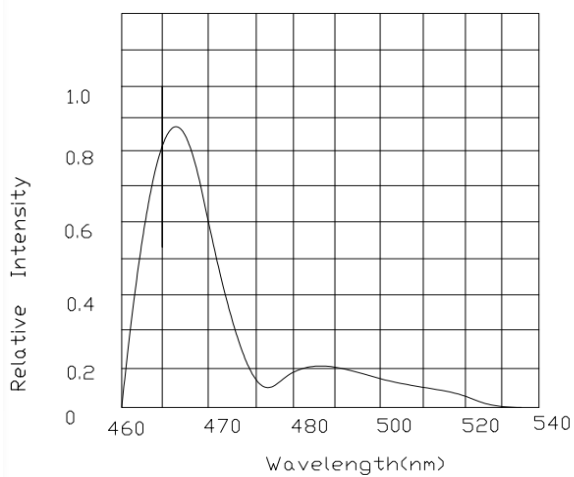


Fig.5 Relative Intensity vs Wavelength

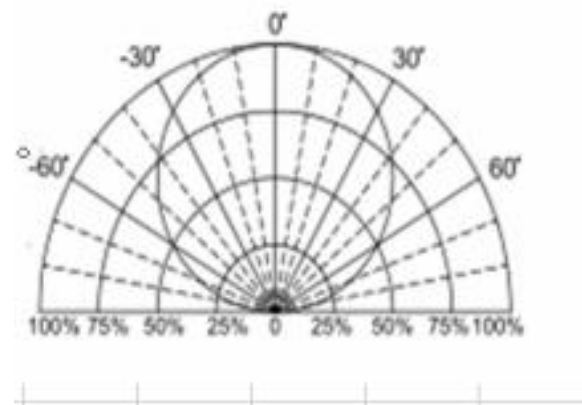


Fig.6 Directive Radiation

# ■ Reliability test items and conditions: 信赖性测试项目及条件

The reliability of products shall be satisfied with items listed below. 产品的可靠性应满足于下列项目

Confidence level: 97% 信赖级别: 97%

| NO | Item<br>项目                                  | Test Conditions<br>测试条件                      | Time<br>时间 | Quantity<br>数量 | Ac/Re<br>接受/拒收 |
|----|---------------------------------------------|----------------------------------------------|------------|----------------|----------------|
| 1  | IR-Reflow<br>回流焊                            | TEMP : 245℃ ± 5 °C                           | 10 Sec     | 22 PCS         | 0/1            |
| 2  | Temperature Cycle<br>温度循环                   | H : +100℃ 15min<br>J 5 min<br>L : -40℃ 15min | 300 Cycles | 22 PCS         | 0/1            |
| 3  | Thermal Shock<br>冷热冲击                       | H : +100℃ 5min<br>J 10 sec<br>L : -10℃ 5min  | 300 Cycles | 22 PCS         | 0/1            |
| 4  | High Temperature<br>Storage<br>高温储存         | TEMP : 100℃                                  | 1000 Hrs   | 22 PCS         | 0/1            |
| 5  | Low Temperature<br>Storage<br>低温储存          | TEMP : -40℃                                  | 1000 Hrs   | 22 PCS         | 0/1            |
| 6  | DC Operating Life<br>寿命实验(直流)               | TEMP : 25℃                                   | 1000 Hrs   | 22 PCS         | 0/1            |
|    |                                             | I <sub>F</sub> = 20mA                        |            |                |                |
| 7  | High Temperature /<br>High Humidity<br>高温高湿 | 85℃ / 85% RH                                 | 1000 Hrs   | 22 PCS         | 0/1            |

\*The technical information shown in the data sheets are limited to the typical characteristics and circuit examples of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license.

\* 数据工作表中所示的技术信息仅限于典型特征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

## Criteria For Judging Damage 失效判定标准

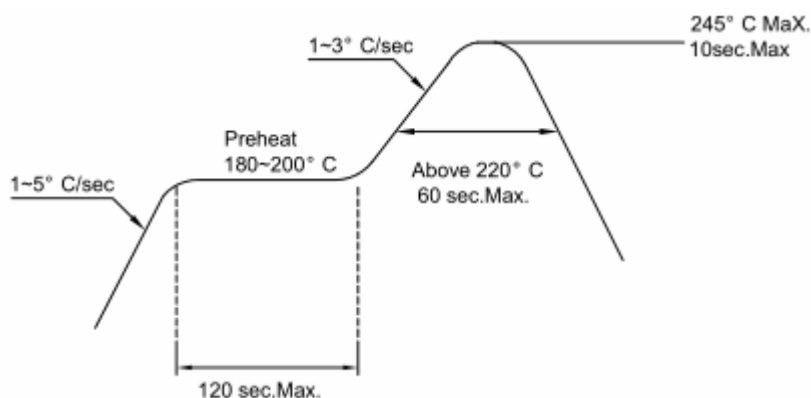
| Item<br>项目              | Symbol<br>符号 | Test Conditions<br>测试条件 | Criteria for Judgement<br>判定标准 |             |
|-------------------------|--------------|-------------------------|--------------------------------|-------------|
|                         |              |                         | Min                            | Max         |
| Forward Voltage<br>正向电压 | VF           | IF=20mA                 |                                | U.S.L*)x1.1 |
| Reverse Current<br>反向电流 | IR           | VR=5V                   |                                | U.S.L*)x2.0 |
| Luminous Flux<br>光通量    | LM           | IF=20mA                 | L.S.L*)x0.7                    |             |

U.S.L: Upper standard level 规格上限

L.S.L: Lower standard level 规格下限

## Soldering Conditions 焊接条件

### SMT Reflow Soldering Instructions SMT 回流焊说明



1. Reflow soldering should not be done more than two times. many times reflow soldering has destructive effect to the product

回流焊不可以做两次以上，多次回流焊对产品有破坏性作用

2. When soldering , do not put stress on the LEDs during heating

当焊接时，不要在材料受热时用力压胶体表面

## ■ Hand Solder&Repairing 手动焊接&修补

1. Hand Solder should not be using hand soldering iron, suggest using heating operation, the use of solder paste melting point under 220 °C, the heating temperature set less than or equal to 250 °C, the time is not more than 10 s, a welding is complete, multiple welding products are destructive

手动焊接不宜用手动烙铁，建议用加热台作业，使用的锡膏熔点在 220℃以下，加热台温度设定小于等于 250℃，时间不可超过 10s，一次焊接完成，多次焊接对产品有破坏性。

2. Handle the component along the side surface by using forceps or appropriate tools; do not directly touch or Handle the silicone lens surface, it may damage the internal circuitry.

通过使用适当的工具从材料侧面夹取，不可直接用手或尖锐金属压胶体表面，它可能会损坏内部电路



## ■ Cautions 注意事项

### Storage condtion

1. The operation of Temperatures and RH are :  $\leq 30^{\circ}\text{C}$ , RH<60%.

温度和湿度条件:  $\leq 30^{\circ}\text{C}$ , RH<60%.

2. Once the package is opened, the products should be used within 8hours, Otherwise, more than the dehumidification process, dehumidifying conditions: reel 70 °C / 6 ~ 8 h, bulk LED150 °C / 3 h

包装被打开后，产品应在 8H 内使用完，否则，超过则需除湿处理，除湿条件：卷盘 70℃/6~8H，散装 LED 150℃/3H

3. Considering the operation environment of temperature and humidity ,we suggest our customers to use our products within three months (from production date), More than 3 months with toasted constant temperature 70 °C  $\pm$  5 °C for 6 ~ 8 hours desiccant (need to get rid of aluminum foil bag packing).

考虑到作来环境的温湿度，我们建议客户在三个月内将产品使用完（从生产日期开始），超过 3 个月先用 70℃&6~8 小时进行恒温烘烤除湿（需除掉包装铝箔袋）

4. The outer diameter of the SMD pickup nozzle should not exceed the size of the LED to prevent air leaks.

The inner diameter of the nozzle should be as large as possible. A pliable material is suggested for the nozzle tip to avoid scratching or damaging the LED surface during pickup. The dimensions of the component must be accurately programmed in the pick-and-place machine to insure precise pickup and avoid damage during production.

为防止气压泄漏，SMD 吸咀外径不可以超过 LED 尺寸，吸咀内径尺寸应尽可能大，吸咀顶端材质建议采用柔软材料以防在吸取期间刮伤或损坏 LED 胶体表面，元件的尺寸必须在取放机里准确的编程好，以确保精确的吸取和避免生产过程中的损害



5. LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material.

LED 工作环境及与 LED 适配的材料中硫元素及化合物成份不可超过 100PPM

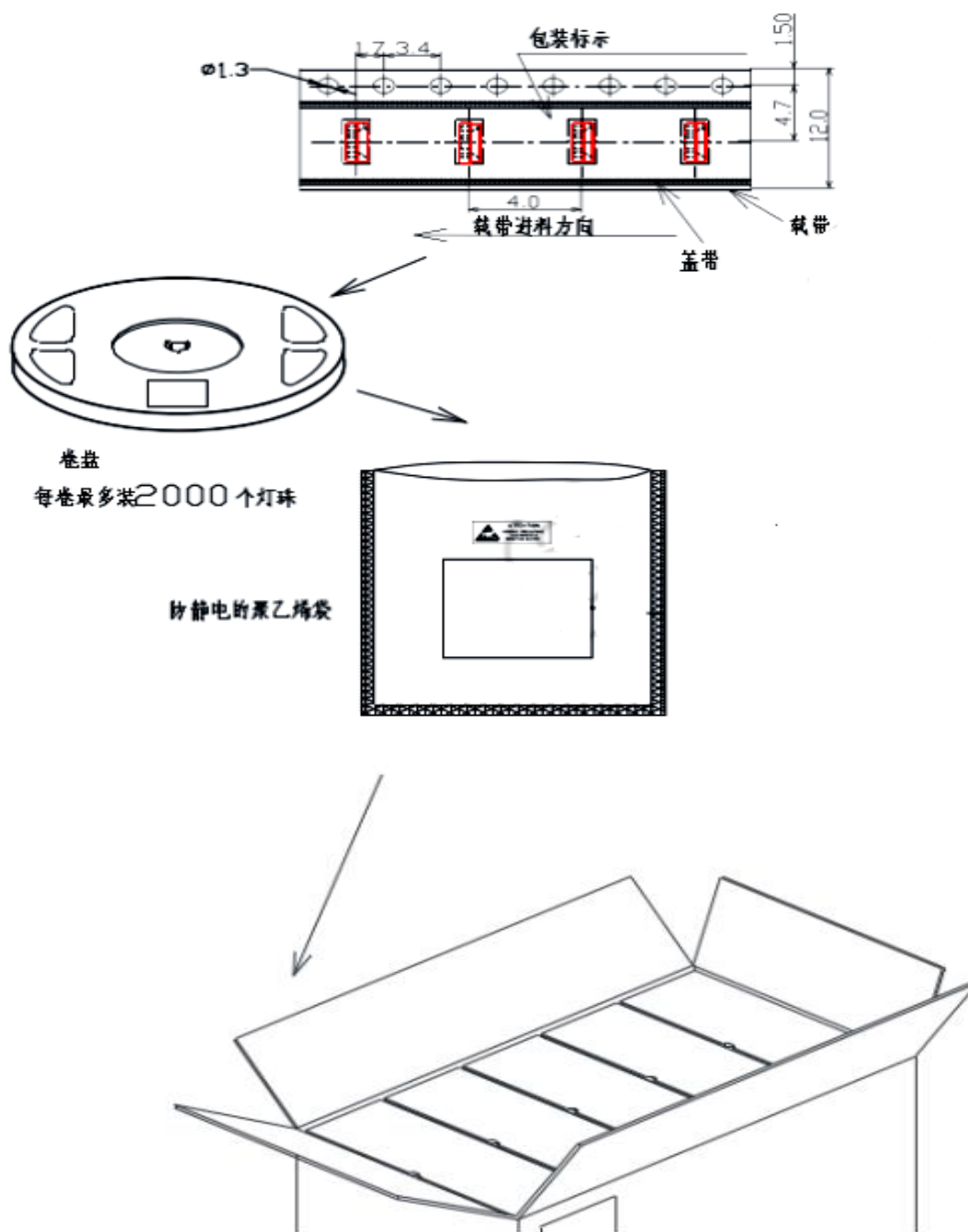
6. When we need to use external glue for LED application products, please make sure that the external glue matches the LED packaging glue. Additionally, as most of LED packaging glue is silica gel, and it has strong Oxygen permeability as well as strong moisture permeability; in order to prevent external material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM, the single content of Chlorine element is required to be less than 900PPM, the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM

当我们需要使用外封胶涂抹 LED 产品时，应确保外封胶与 LED 封装胶水相匹配，因为大多数 LED 的封装胶水为硅胶，它有较强的氧化性和较强的吸湿性，必须防止外封材质进入 LED 内部以造成 LED 的损伤，单一的溴元素含量要求小于 900PPM，单一氯元素含量要求小于 900PPM，在涂抹 LED 产品时要求外封胶溴元素与氯元素总含量必须小于 1500PPM

7. Please note that the electrostatic protection during processing, All devices, equipment and machinery must be properly grounded.

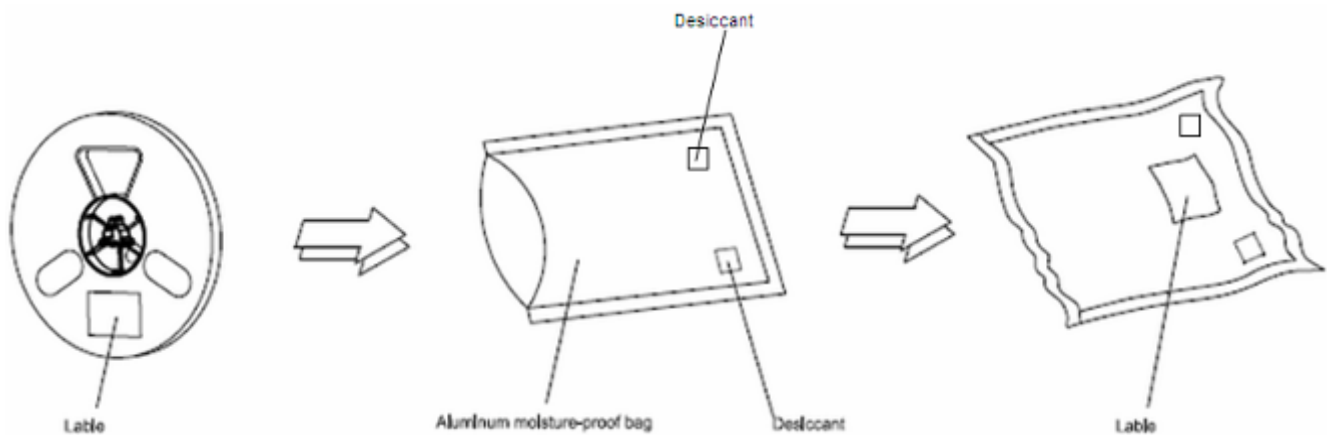
操作过程中请注意静电防护，所有的装置，仪器和机器必须妥善接地

## ■ 产品包装要求



Note: The tolerances unless mentioned is  $\pm 0.1\text{mm}$  , Unit: mm  
备注：标注公差为 $\pm 0.1\text{mm}$  ，单位：mm

## ■ Moisture Resistant Packaging 防潮袋包装



表面贴装 LED 采用卷盘包装, LED 在用普通或防静电袋包装后再装在纸箱中. 纸箱用于保护运输途中 LED 不受机械冲击, 纸箱不防水, 因此请注意防潮防水