



## Contents 目录



## 1. Description 产品介绍

### 1.1 产品描述

The Green source color devices are made with InGaN on Substrate Light Emitting Diode  
绿光 LED 由 InGaN 三种元素芯片激发而成

The LED package dimension: 3.45mmX3.45mmX2.20mm.

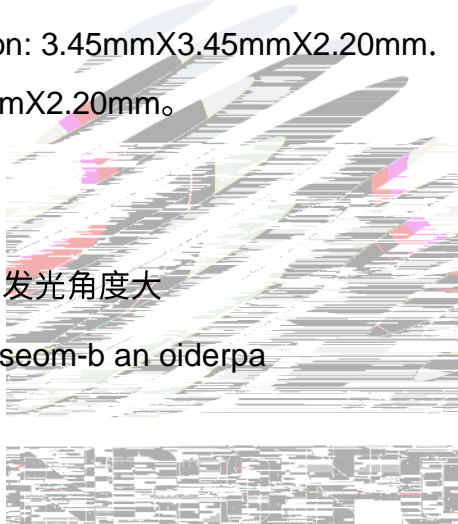
产品尺寸：3.45mmX3.45mmX2.20mm。

### 1.2 Features 产品特征

Ceramics Package.陶瓷封装

Extremely wide viewing angle.发光角度大

Suitable for all SMT q421.R24seom-b an oiderpa



## 1.4 Package Dimension 封装尺寸

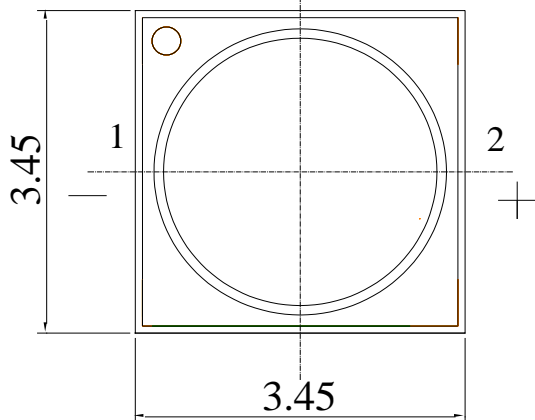


Fig.1-1 Top view 正面视图

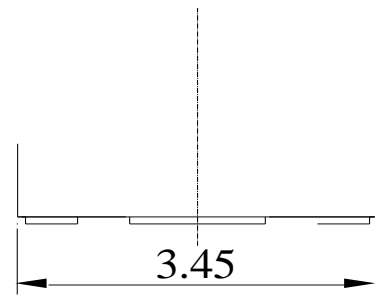


Fig.1-2 Side view 侧面视图

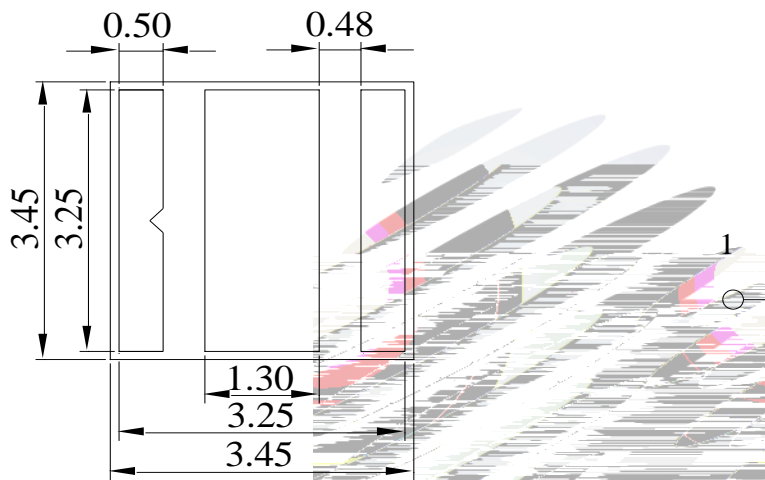


Fig.1-3 Bottom view 背面视图

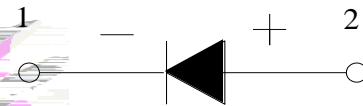


Fig.1-4 Polarity 极性

Fig.1-5 Soldering patterns 推荐焊盘

Notes 备注:

1. All dimensions units are millimeters. 所有尺寸标注单位为毫米
2. All dimensions tolerances are  $\pm 0.2\text{mm}$  unless otherwise noted. 除特别标注外, 所有尺寸公差为  $\pm 0.2$  毫米



Notes 备注:

- 1/10 Duty cycle, 0.1ms pulse width. 脉宽0.1ms,占空比1/10.
- The above forward voltage measurement allowance tolerance is  $\pm 0.1V$ . 以上所示电压测量误差  $\pm 0.1V$ .
- The above Dominant Wavelength measurement allowance tolerance is  $\pm 1nm$ . 以上所示波长测量误差  $\pm 1nm$ .
- The above luminous intensity measurement allowance tolerance  $\pm 10\%$ . 上述发光强度的测试允许公差为  $\pm 10\%$ .
- Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product. 使用功率不能超过规定的最大值。
- All measurements were made under the standardized environment of Refond. 所有测试都是基于瑞丰现有的标准测试平台。
- When the LEDs are in operation the maximum current should be decided after measuring the package temperature, junction temperature should not exceed the maximum rate. LED 使用的最大电流需要根据散热条件确定, 结温不能超过最大值。
- ESD yield is over 80% at 2000V ESD (HBM). ESD protection during products handing is needed. 80%的LED 通过人体模式ESD2000V 测试, 在操作时请注意静电防护。

### 1.5.1 Bin Range Of Forward Voltage and Luminous Intensity (IF=350mA) 电压与光强分 BIN 范围(IF=350mA)

Table 1-3

| V <sub>F</sub> V | F0      | G0      | H0      | I0      |
|------------------|---------|---------|---------|---------|
|                  | 2.6-2.8 | 2.8-3.0 | 3.0-3.2 | 3.2-3.4 |
| WLD(nm)          | FC4     | FC5     | FC6     | FC7     |
|                  | 120-130 | 130-140 | 140-150 | 150-160 |
| WLD(nm)          | E00     | F00     |         |         |
|                  | 520-525 | 525-530 |         |         |

## 1.6 Typical optical characteristics curves 典型光学特性曲线

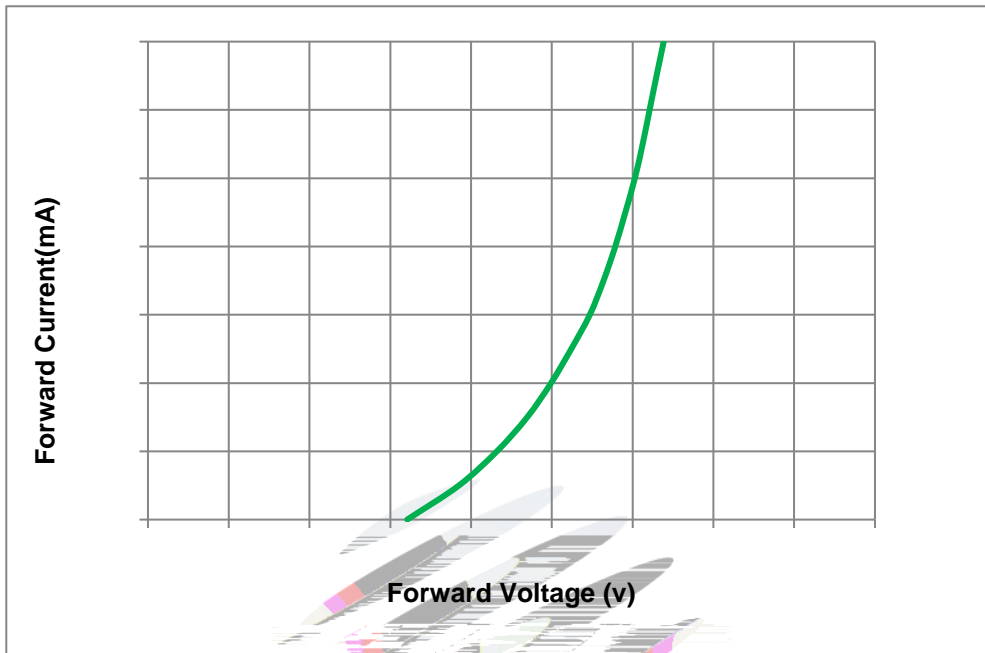


Fig 1-6 Forward Voltage Vs Forward Current 伏安特性曲线

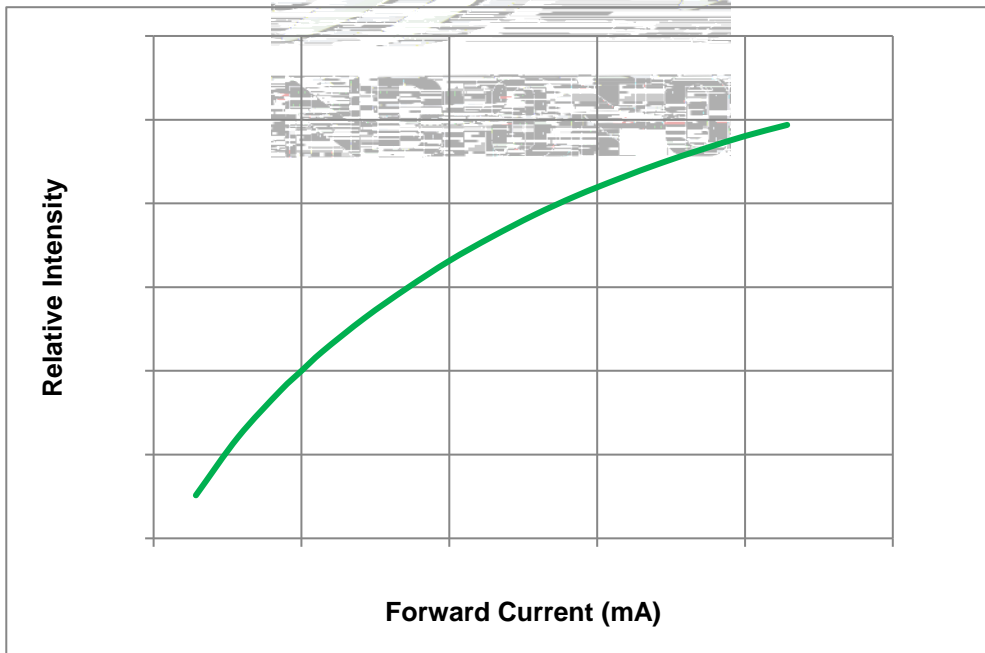


Fig 1-7 Forward Current Vs Relative Intensity 正向电流与相对光强特性曲线

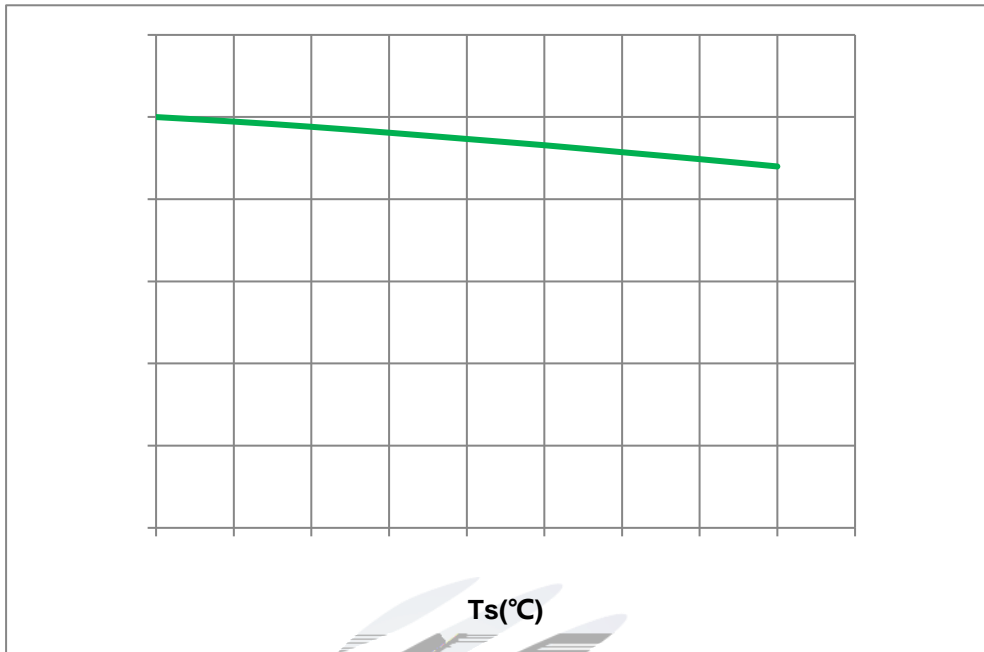


Fig.1-8 Temperature Vs Relative Intensity 引脚温度与相对光强特性曲线

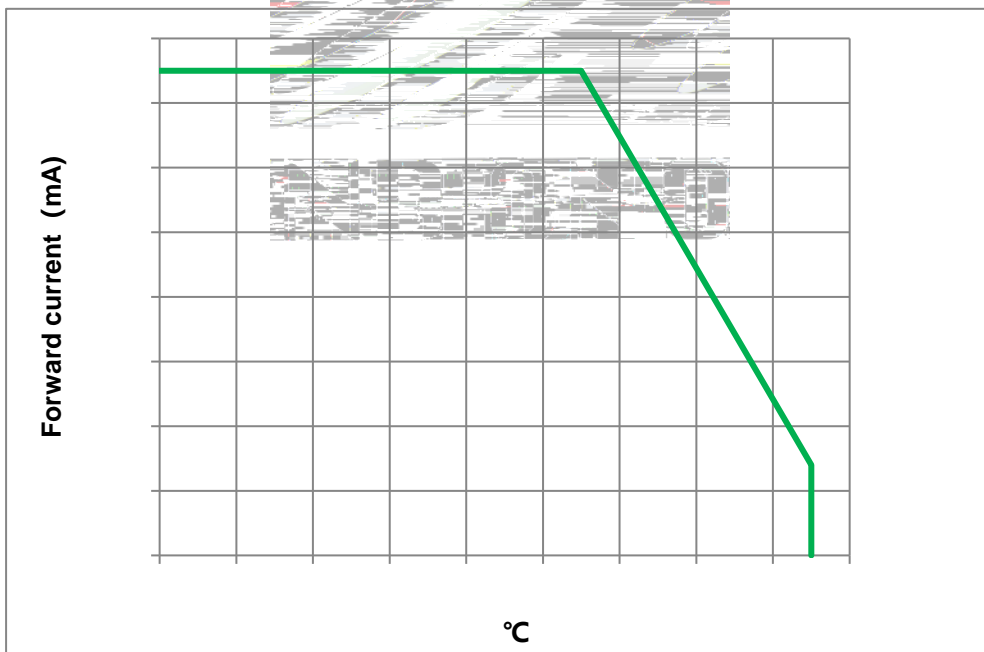


Fig 1-9  $T_s$  Temperature Vs Forward Current 管脚温度与正向电流特性曲线

$T_j$  150°C



Fig 1-10 Spectrum Distribution 光谱分布特性曲线

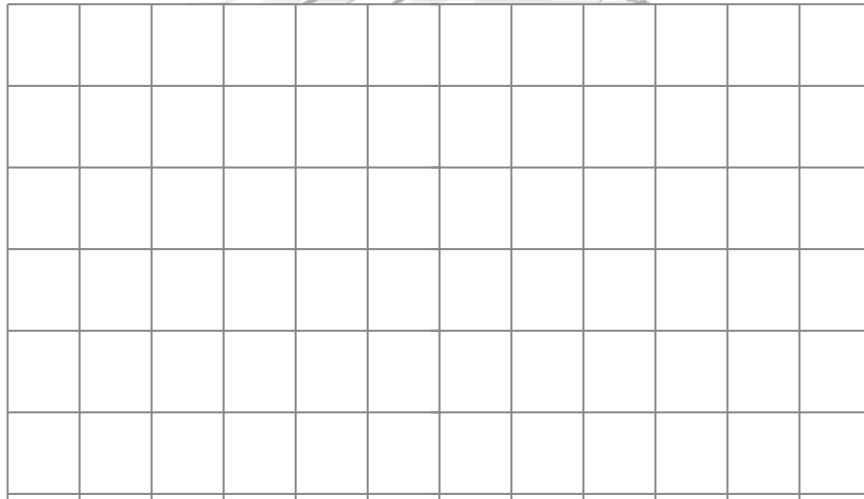


Fig 1-11 Radiation diagram 辐射特性曲线

## 2. Packaging 产品包装

### 2.1 Packaging Specification 包装规格

Package:1000pcs/reel.包装每卷

#### 2.1.1 Carrier Tape Dimension 载带尺寸

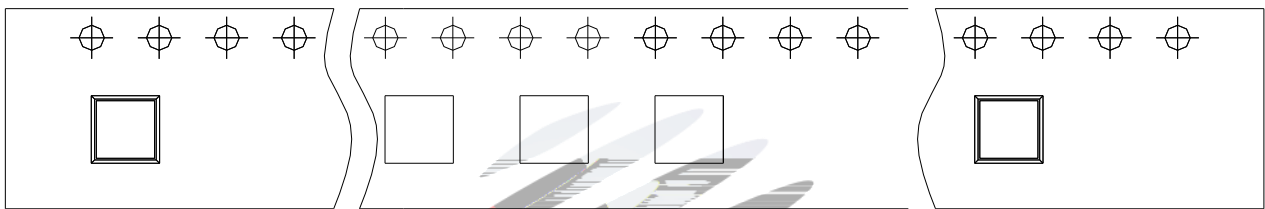


Fig.2-1 Carrier Tape Dimension 载带尺寸

#### 2.1.2 Reel Dimension 卷盘尺寸

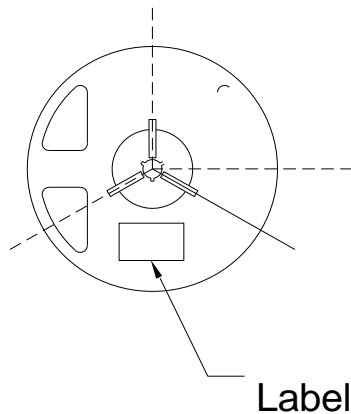


Fig.2-2 Reel 卷盘

Table 2-1 Reel Dimension 卷盘尺寸

|   |            |
|---|------------|
| A | 14.0±0.5mm |
| B | 178±1mm    |
| C | 59±1mm     |
| D | 13.9±0.5mm |

Notes 备注:

The tolerances unless mentioned  $\pm 0.1$ mm. Unit : mm注: 未注公差为 $\pm 0.1$ 毫米, 尺寸单位: 毫米。

### 2.1.3 Label Form Specification 标签规格

Table 2-2 Label Parameter 标签参数

|          |                   |
|----------|-------------------|
| PART NO. | Part Number 品名    |
| SPEC NO. | Spec Number 规格    |
| LOT NO.  | Lot Number 批次号    |
| BIN CODE | Bin Code 参数代码     |
|          | Luminous flux 光通量 |

Fig 2-3 Label Form 标签模板

### 2.2 Moisture Resistant Packing 防潮包装



Fig.2-4 Packing specification 包装说明

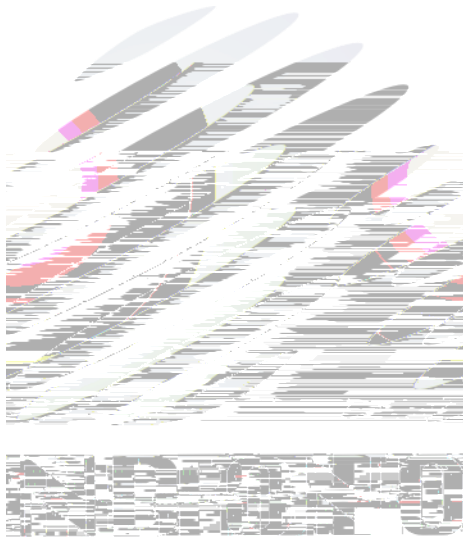
### 2.3 Cardboard Box 包装纸箱

包装纸箱

## 2.4 Reliability Test Items And Conditions 信赖性测试项目及条件

Table 2-3 Test items and conditions 测试项目及条件

| Test Items  | Ref. Standard       | Test Condition                                | Time        | Quantity | Ac/Re / |
|---|---------------------|---|-------------|----------|---------|
| Reflow<br>回流焊   | JESD22-B106         | T <sub>emp</sub> :260°Cmax<br>T=10 sec        | 2times.     | 10pcs.   | 0/1     |
| Thermal Shock<br>冷热冲击                                 | JEITAED-4701300307  | -40°C 15min<br>10s<br>100°C 15min             | 500 cycles. | 10pcs.   | 0/1     |
| High Temperature Storage<br>高温保存                      | JEITAED-4701200201  | T <sub>emp</sub> :100°C                       | 1000hrs.    | 10pcs.   | 0/1     |
| Low Temperature Storage<br>低温保存                       | JEITA ED-4701200202 | T <sub>emp</sub> :-40°C                       | 1000hrs.    | 10pcs.   | 0/1     |
| Life Test<br>常温通电                                     | JESD22-A108         | T <sub>A</sub> =25°C<br>I <sub>F</sub> =350mA | 1000hrs.    | 10pcs.   | 0/1     |
| High Temperature<br>High Humidity Life Test<br>高温高湿通电 | JESD22-A101         | 60°C/ 90%RH<br>I <sub>F</sub> =350mA          | 1000hrs.    | 10pcs.   | 0/1     |



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

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

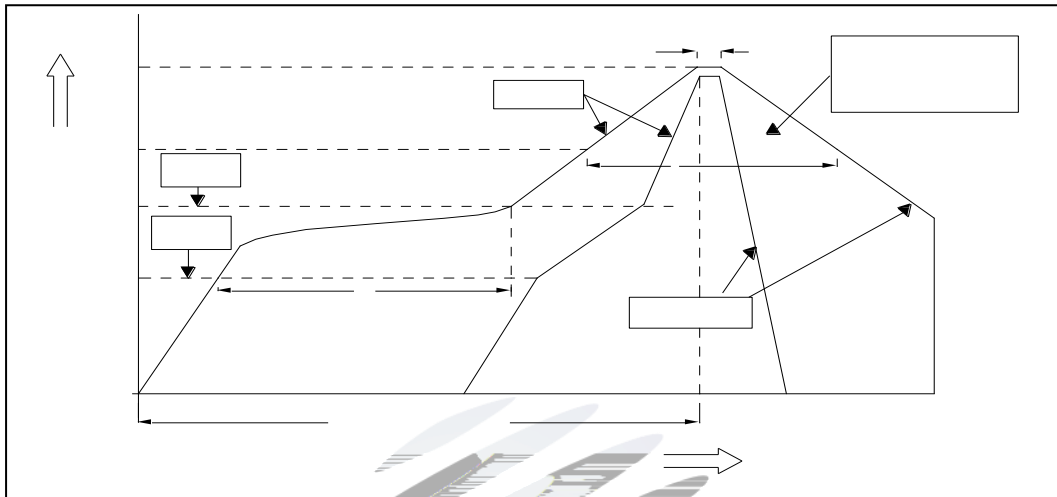


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 SMT Reflow Soldering Parameter SMT 回流焊参数

|                                    |            |
|------------------------------------|------------|
| 平均升温速度 ( $T_{smax}$ 至 $T_P$ )      | 最高 3 °C/ 秒 |
| 预热: 最低温度 ( $T_{smin}$ )            | 150 °C     |
| 预热: 最高温度 ( $T_{smax}$ )            | 200 °C     |
| 预热: 时间 ( $T_{smin}$ 至 $T_{smax}$ ) | 60 - 120 秒 |
| 限时维持高温: 温度 ( $T_L$ )               | 217 °C     |
| 限时维持高温: 时间 ( $t_L$ )               | 最多60 秒     |
| 峰值 / 分类温度 ( $T_P$ )                | 260 °C     |
| 限时峰值分类温度: 时间 ( $t_p$ )             | 最多10 秒     |
| 与实际峰值温度 ( $T_P$ ) 相差 5 °C 以内的保持时间  | 最多30秒      |
| 降温速度                               | 最高 6 °C/ 秒 |
| 25 °C 升至峰值温度所需时间                   | 最多 8 分钟    |

## Notes 备注:

- (1) Reflow soldering should not be done more than twice. If more than 24 hours between the two solderings, LED will be damaged. 回流焊接次数不能超过两次, 两次回流焊接的时间间隔不能超过24小时, LED可能由于吸湿而损坏。
- (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。

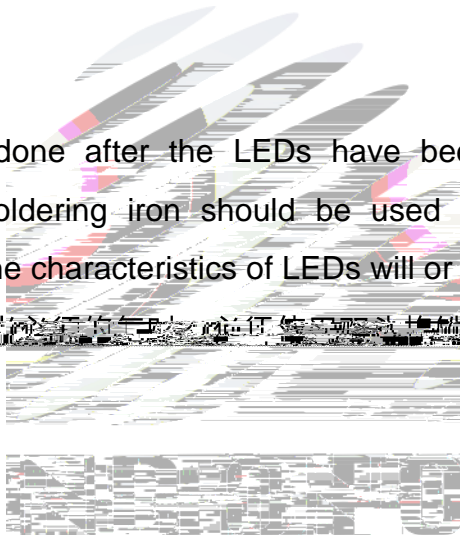
## 3.1.1 Soldering Iron 烙铁焊接

- (1) When do soldering by hand, keep the temperature of iron below less 300°C less than 3 seconds. 当手工焊接时, 烙铁的温度必须小于300°C, 时间不可超过3秒。
- (2) Soldering by hand should be done only one time. 手工焊接只可焊接一次。

## 3.1.2 Repairing 修补

Repairing 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 not be damaged by repairing.

LED焊接后, 不能再进行修补。当不可避免进行修补时, 应使用双头烙铁(如下图所示)。应事先确认LED本身的特性是否会损坏LED本身的特性。



## 3.1.3 Cautions 注意事项

- (1) The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking up nozzle, the pressure on the silicone resin should be pulds.

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering.回流焊之后冷却过程中，不要对材料施加外力，也不要震动，回流焊后，不要采用激剧冷却的方式。







(4) 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。

Fig 4-1 Misoperation 错误操作

(5) In designing a circuit, the current through each LED must be exceed the absolute maximum rating specified for each LED. In the meanwhile, resistors for protection should be applied, otherwise slight voltage shift will cause big current change, burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF. If the reverse voltage is applied to LED, migration can be generated resulting in LED damage. 设计电路时，通过 LED 的电流不能超过规定的最大值，同时，还需使用保护电阻，否则，微小的电压变化将会引起较大的电流变化，可能烧毁 LED。电路设计必须保证只有在开启或者关闭的时候出现正向电压的变化，不要施加反压，否则会损坏 LED。

(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline, such as brightness decreased, Color change and so on. Please consider the heat generation of the LEDs when making the system design. LED 容易因为自身的发热和环境的温度变化而改变，温度升高会降低 LED 发光效率，影响发光颜色，所以在设计时应充分考虑散热问题。

(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust ,

damage to the LED. 与其他封装胶相比，硅胶通常较软，表面易吸附脏物，应用时应特别注意。当对产品洁净度要求较高时，回流焊以后需要采用恰当的清洗方式，我们推荐用异丙醇作清洗剂，如需要用到其他清洗剂，必须保证不会破坏封装体，超声清洗可能会对 LED 带来损害，不推荐这种清洗方式。

Table 4-1 Storage 储存

| Conditions   |                                    | Temperature | Humidity | Time                            |
|--------------|------------------------------------|-------------|----------|---------------------------------|
| Storage      | Before Opening Aluminum Bag<br>拆包前 | 30°C        | 75%      | Within 1 years From Date<br>1年内 |
|              | After Opening Aluminum Bag<br>拆包后  | 30°C        | 60%      | 168hours<br>168小时               |
| Baking<br>烘烤 |                                    | 60±5°C      | <5%      | ≥24hours<br>大于24小时              |

(8) If the moisture absorbent material (silica gel) has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition (60±5) and less than 5%RH for above 24 hours. 如果干燥剂或包装失效，或者产品不符合以上有效储存条件，需拆包后进行烘烤。烘烤条件：60±5°C，小于 5%RH，大于 24 小时。

If the package is flatulence or damaged, please notify the sales staff to assist. 如果包装胀气或者

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). 像其他的半导体电子器件一样，LED 对静电过流击穿非常敏感，需要做好防护。

(10) Other points for attention, please refer to our relevant information. 其它注意事项请参照瑞丰相





### Declare 申明

This specification is written both in English and in Chinese and the latter is formal.

产品规格书以中英文方式书写，若有冲突以中文版本为准。