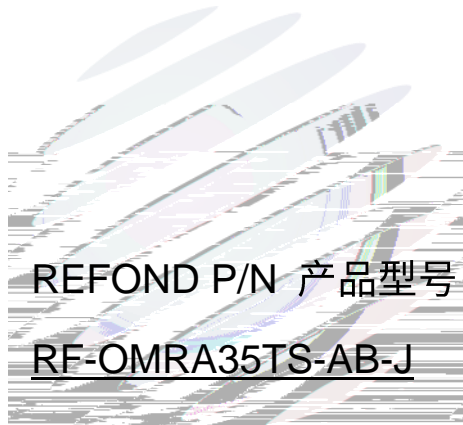


SPECIFICATION 产品规格书



REFOND P/N 产品型号

RF-OMRA35TS-AB-J

R&D 研发

Mass Production 量产供货



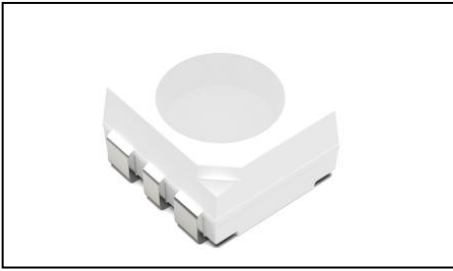
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1. Description 产品介绍

1.1 产品描述



The Red source color devices are made with AlGaInp on Substrate Light Emitting Diode .
Product Package:3.50mmX3.50mmX1.90mm.

该红源LED由AlGaInp四种元素芯片激发而成，产品尺寸 3.50mmX3.50mmX1.90mm .

1.2 Features 产品特征

PLCC6 Package. PLCC6封装

Extremely wide viewing angle. 发光角度大

Suitable for all SMT assembly and solder process. 适用于所有的SMT组装和焊接工艺

Available on tape and reel. 适用于载带及卷轴

Moisture sensitivity level: Level 2. 防潮等级 Level2

RoHS compliant. 满足RoHS要求

Qualifications: The product qualification test plan is based on the guidelines of AEC-Q101 Stress Test Qualification for Automotive Grade Discrete Semiconductors
资格：产品资格测试计划基于AEC-Q101汽车级分立半导体应力测试资格准则

1.3 Application 产品应用

Automotive Lighting Interior and Exterior. 汽车内饰和外饰照明



1.4 Package Dimension 封装尺寸

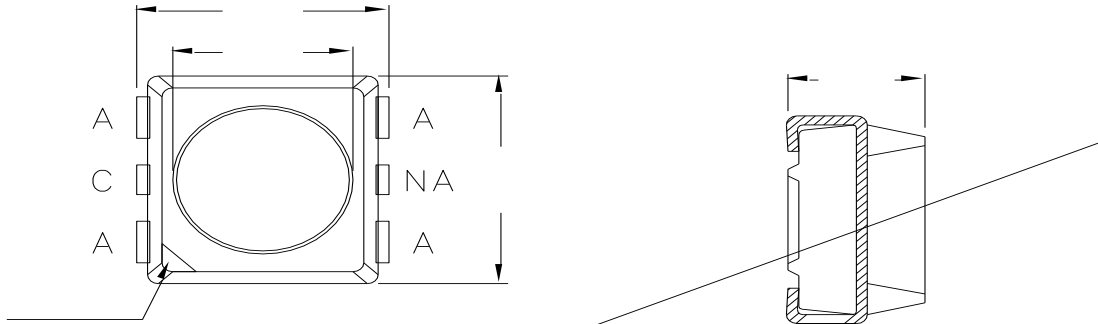
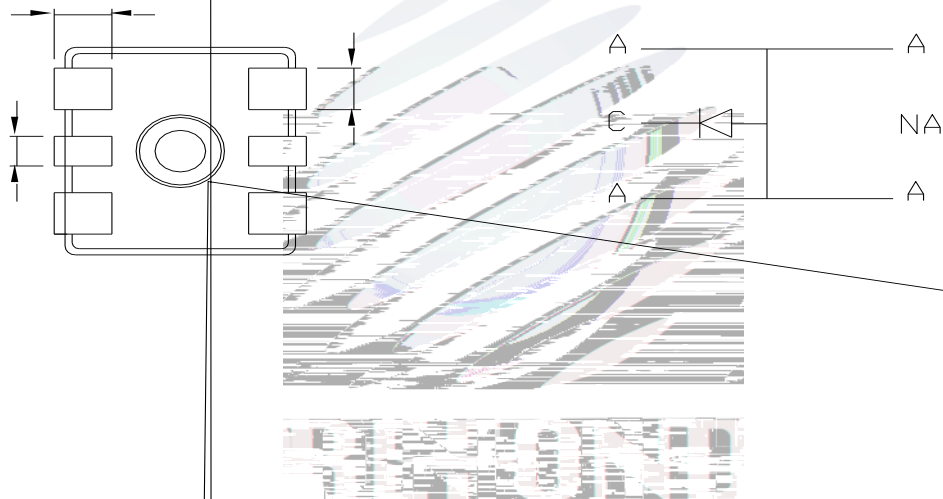


Fig. 1-1 Top View



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 ± 0.2 毫米



1.7 Typical Optical Characteristics Curves

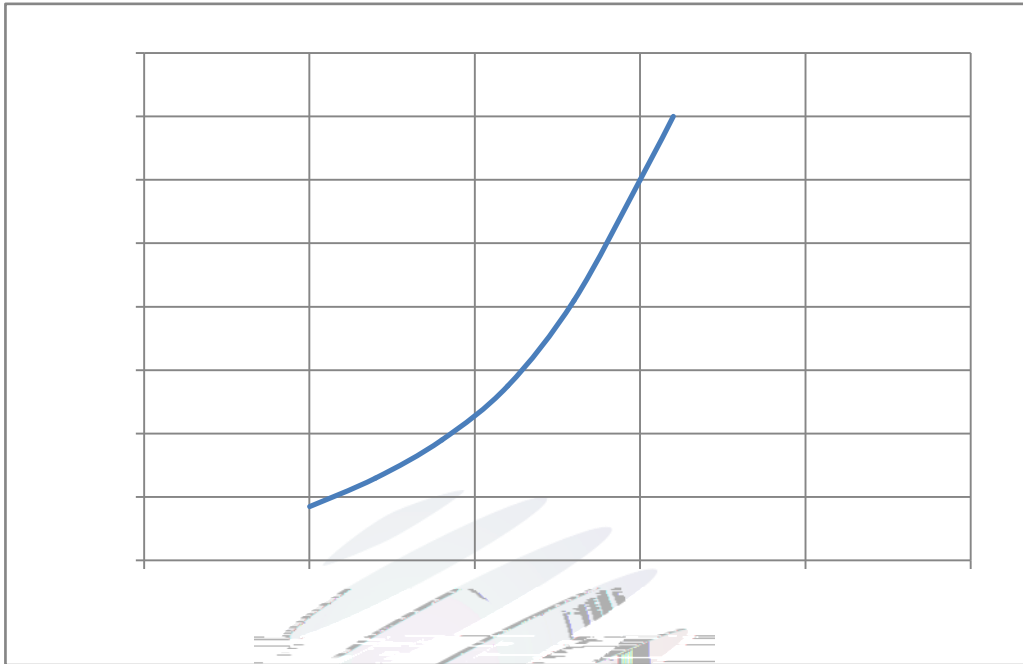


Fig. 1-7 Forward Voltage Vs Forward Current 伏安特性曲线

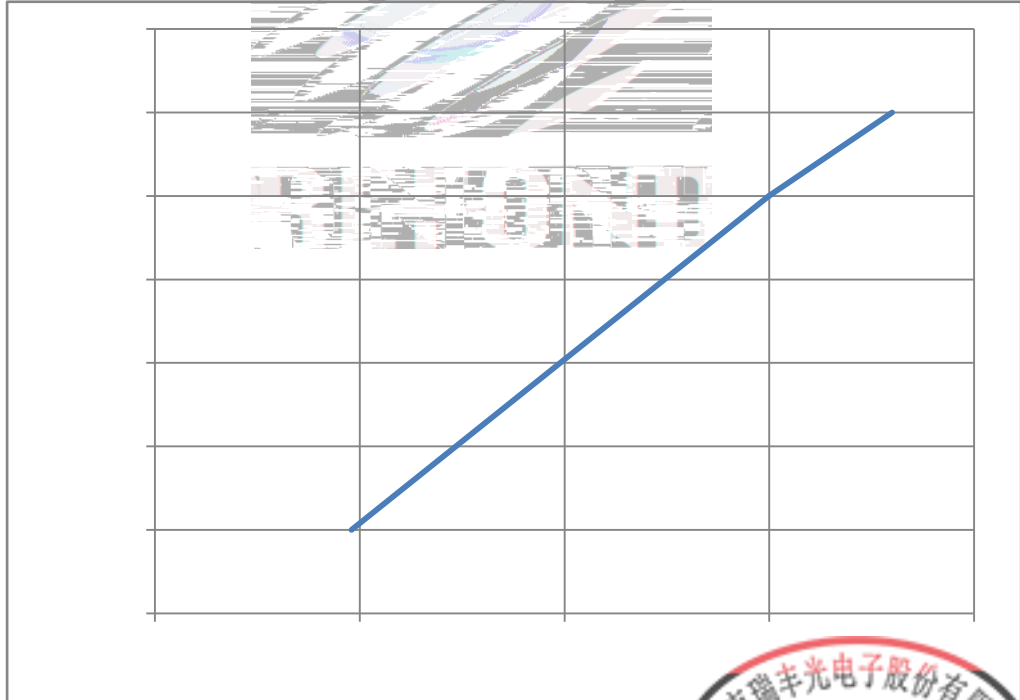


Fig. 1-8 Forward Current Vs Relative Intensity 正向电流与相对光强特性曲线





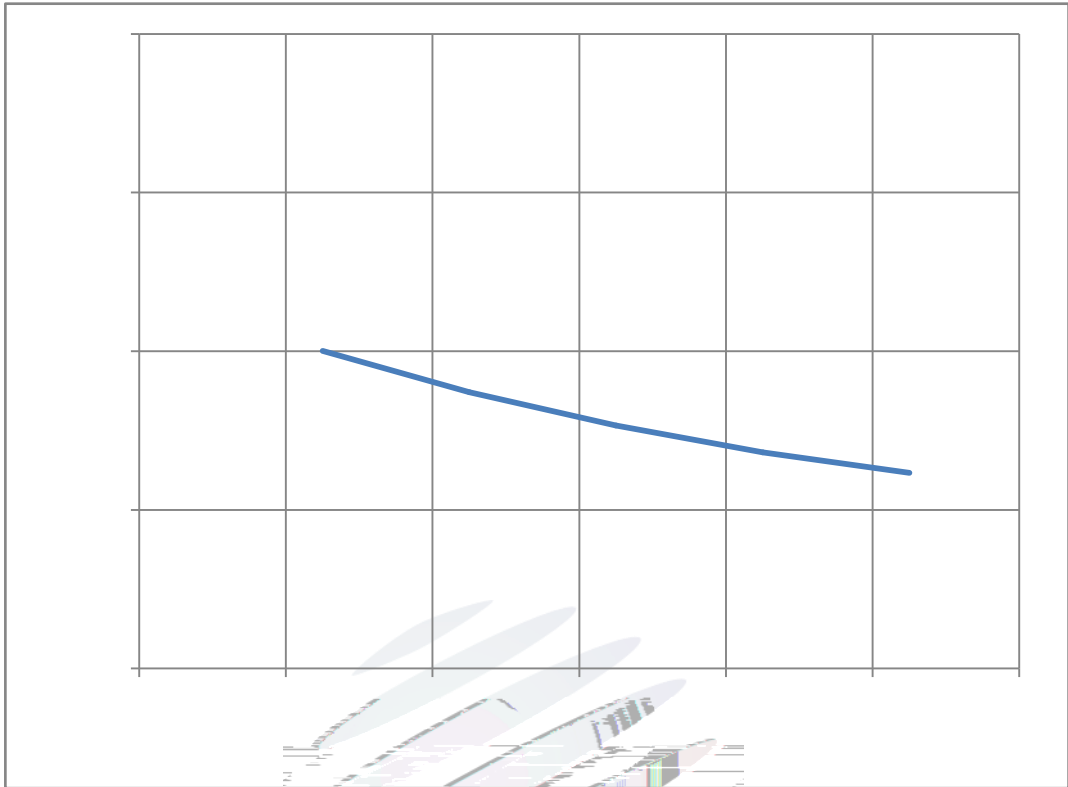


Fig. 1-11 Forward Voltage Vs Solder Temperature 电压与管脚温度特性曲线

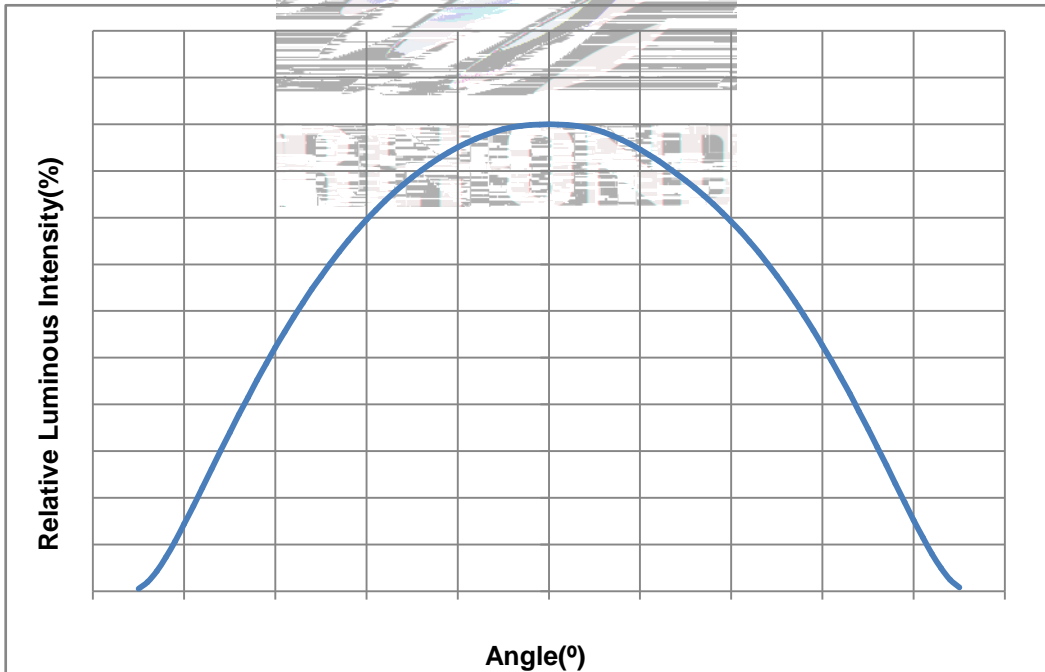


Fig. 1-12 Radiation diagram 辐射特性曲线

Fig. 1-13 Forward current vs. Dominate wavelength正向电流与主波长特性曲线 (Ts=25°C)

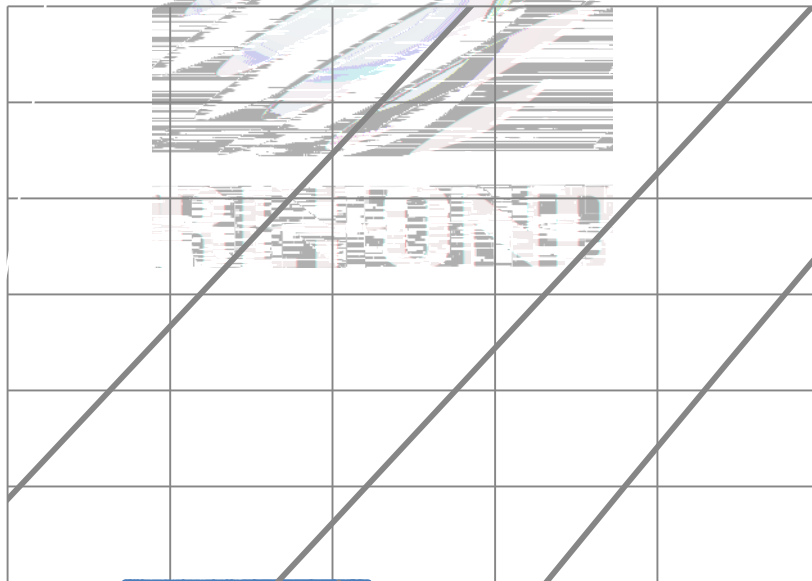


Fig. 1-14 Spectrum Distribution光谱分布特性曲线



2. Packaging 产品包装

2.1 Packaging Specification 包装规格

Package: 4000pcs/reel. 包装每卷

2.1.1 Carrier Tape Dimension 载带尺寸

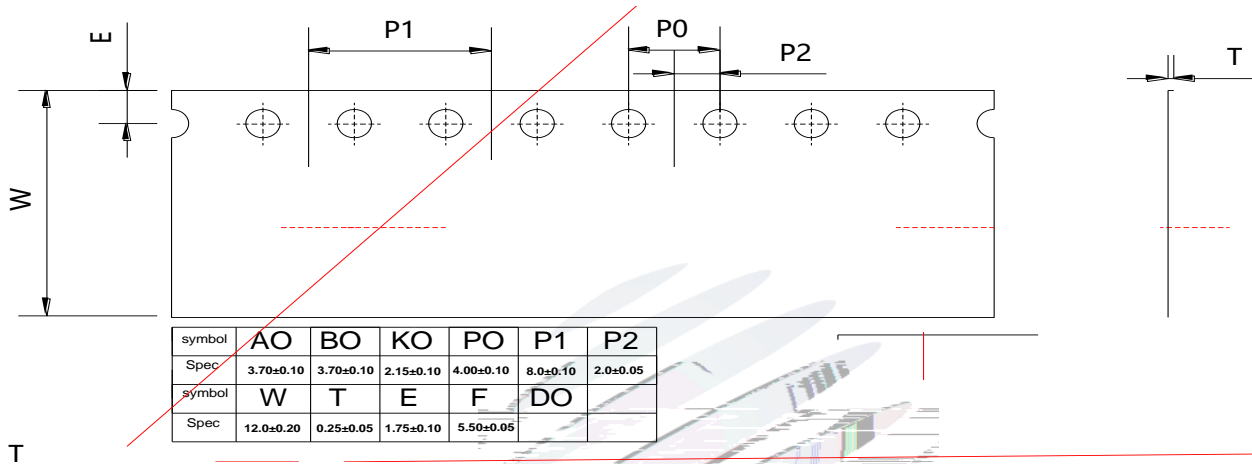


Fig.2-1 Carrier Tape Dimension 载带尺寸

2.1.2 Reel Dimension 卷盘尺寸

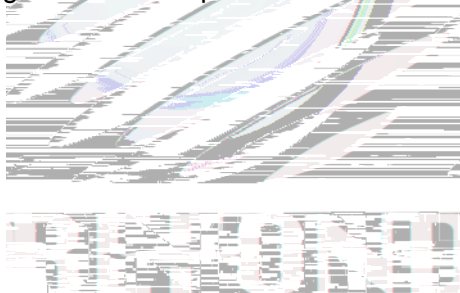


Table 2-1 Reel Dimension 卷盘尺寸

| | |
|---|-----------|
| A | 8.0±0.1mm |
| B | 178±1mm |

Fig.2-2 Reel Dimension 卷盘尺寸

Notes 备注:

The tolerances unless mentioned ±0.1mm. Unit : mm. 注：未注公差为±0.1毫米。尺寸单位：毫米。

2.1.3 Label Form Specification

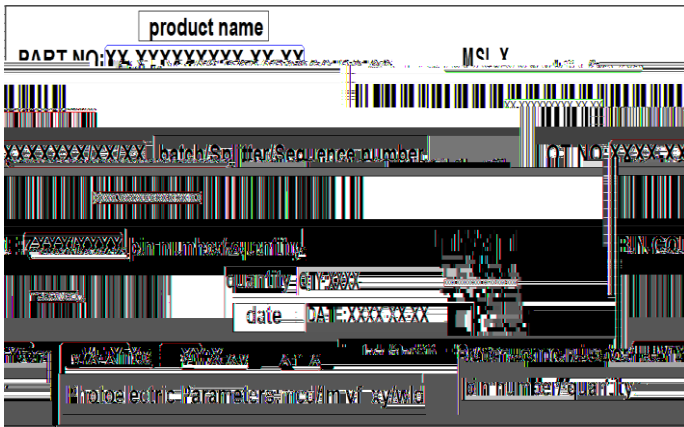


Fig. 2-3 Label 标签

Table 2-2 Specification 规格

| | |
|----------------|----------------------|
| 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 |
| XY | Chromaticity Bin 色区 |
| V _F | Forward Voltage 正向电压 |
| WLD | Wavelength 波长代码 |
| QTY | Packing Quantity 数量 |
| DATE | Made Date 生产日期 |

2.2 Moisture Resistant Packing 防潮包装

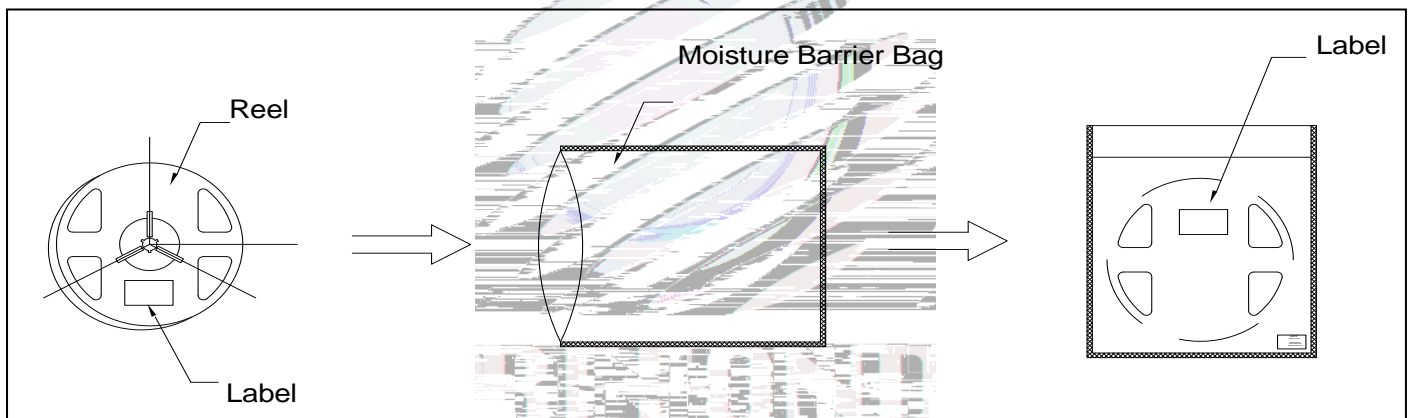


Fig.2-4 Moisture Resistant Packing

2.3 Cardboard Box 包装纸箱

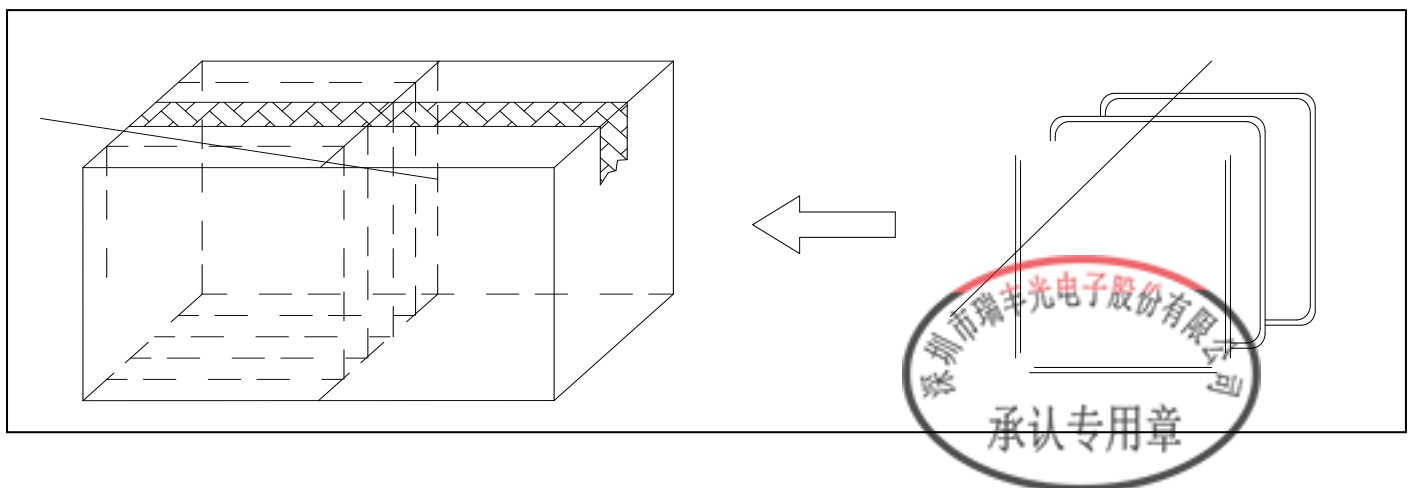


Fig.2- Cardboard Box

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

Table 2-3 Reliability Test Items And Conditions 信赖性测试项目及条件

| Test Items 项目 | Ref. Standard 参考标准 | Test Condition 测试条件 | Time 时间 | Quantity 数量 | Ac/Re 接收/拒收 |
|---|------------------------|-----------------------------------|------------|----------------|----------------|
| Reflow 回流焊 | JESD22-B106 | Temp:260°Cmax T=10 sec | 2times | 20pcs. | 0/1 |
| MSL2 防潮等级2 | JESD22-A113 | 85°C/ 60%RH | 168 hrs. | 20pcs. | 0/1 |
| Thermal Shock 冷热冲击 | JEITAED-4701 300307 | -40°C 15min 10s 125°C 15min | 1000 cycle | 20pcs. | 0/1 |
| Life Test 高温测试 | JESD22-A108 | Ta=105°C If=150mA | 1000hrs. | 20pcs. | 0/1 |
| High Temperature High Humidity Life Test 高温高湿测试 | JESD22-A101 | 85°C/ 85%RH If=150mA | 1000hrs. | 20pcs. | 0/1 |



2.5 Criteria For Judging Damage 失效判定标准

Table 2-4 Criteria For Judging Damage 失效判定标准

| Test Items 项目 | Symbol 符号 | Test Condition 测试条件 | Criteria For Judgement 判定标准 | |
|----------------------|--------------|------------------------|--------------------------------|-------------|
| | | | Min. 最小 | Max. 最大 |
| Voltage 电压 | V_F | $I_F=150mA$ | - | U.S.L*)x1.1 |
| Current 电流 | I_R | $V_R = 5V$ | - | U.S.L*)x2.0 |
| Luminous Flux 光通量 | | $I_F=150mA$ | L.S.L*)x0.7 | - |

Notes 备注

1. The above reliability tests is based on the verification of a single/strip LED of Refond's existing experimental platform, the reliability experiment was taken under good heat dissipation conditions. when customers applies the LED to the series and parallel circuit, should take consideration of af*57.4c[).TBT1 0 0 1 c7>BDC q459.94 581.5 78.
2. The above reliability tests is based on the verification of a single/strip LED of Refond's existing experimental platform, the reliability experiment was taken under good heat dissipation conditions. when customers applies the LED to the series and parallel circuit, should take consideration of af*57.4c[).TBT1 0 0 1 c7>BDC q459.94 581.5 78.

3. SMT Reflow Soldering Instructions SMT 回流焊说明

3.1 SMT Reflow Soldering Instructions SMT 回流焊说明

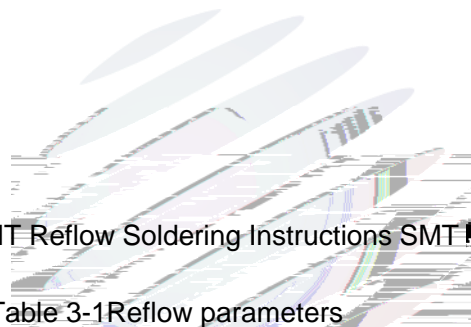


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 Reflow parameters

| | |
|--|----------------------|
| Average temperature rise speed 平均升温速度 (T _{smax} 至T _p) | 最高3 °C/秒 Max 3 °C/ s |
| Preheating: minimum temperature 预热：最低温度 (T _{smin}) | 150 °C |
| Preheating: Max temperature 预热：最高温度 (T _{smax}) | 200 °C |
| Preheating: Time 预热：时间 (T _{smin} 至T _{smax}) | 60 - 120秒 60s-120s |

Time limited to W* n4 331.13 Tm0 g[)]TJET1 40.29 1 36 671.86 Tm[)]TJETBTreh

4. Handling Precautions 产品使用注意事项

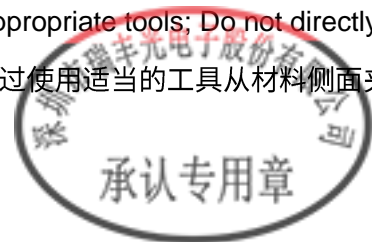
4.1 Handling Precautions 产品使用注意事项

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material. This is provided for informational purposes only and is not a warranty or endorsement. 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. 这只是一个建议，不作任何品质担保。

(2) In order to prevent ex-ternal 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 materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement. 为了防止外界物质进入 LED 内部以造成 LED 的损伤，所处环境及所用套件等等，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，溴元素与氯元素总含量必须小于 1500PPM. 这只是一个建议，不作任何品质担保。

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond advises against the use of any chemicals or materials that have been found or are suspected to have an adverse affect on device performance or reliability. To verify compatibility, Refond recommends that all chemicals and materials be tested in the specific application and environment for which they are intended to be used. Attaching LEDs, do not use adhesives that outgas organic vapor. 应用套件中的挥发性物质会渗透到 LED 内部，在通电产生光子及热的条件下，会导致 LED 附件的性能或可靠性有高的物质或材料，无论这些材料是否已经适应了它还是仅仅怀疑存在，针对特定的应用和使用环境，瑞丰建议对所有的物质和材料进行相容性的测试。在贴装 LED 时候，不要使用能产生有机挥发性气体的粘结剂。

(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。



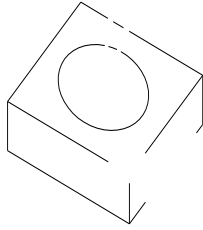


Fig 4-1 Handling Precautions 产品使用注意事项

(5) In designing a circuit, the current through each LED can not 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电流变化，可能导致产品损毁。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 工作时会产生热量，如果散热不良会导致 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, requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause 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 儲存

| Conditions 种类 | | Temperature 温度 | Humidity 湿度 | Time 时间 |
|------------------|------------------------------------|-------------------|----------------|---|
| Storage | Before Opening Aluminum Bag 拆包前 | ≤30°C | ≤75% | Within 1 Year From Date 一年内 |
| | After Opening Aluminum Bag 拆包后 | ≤30°C | ≤60% | Recommended for use within 24 hours 建议24小时内使用 |
| Baking 烘烤 | | 60±5°C | - | ≥24hours 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 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，大于 24 小时。

If the package is flatulence or damaged, please notify the sales staff to assist. 如果包装胀气或者破损，请通知销售人员协助处理。

(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关资料。





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。

