

SPECIFICATION



REFOND P/N 产品型号

RF-PxHI32DS-FF-J

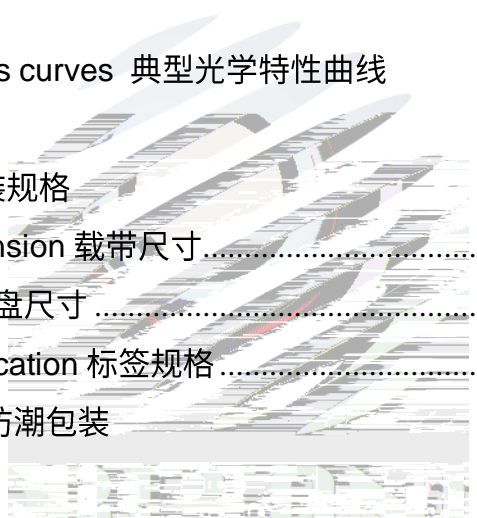


R&D 研发

Mass Product 量产供货

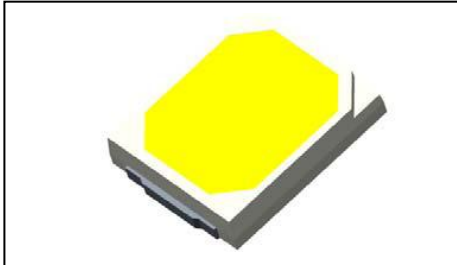
Contents 目录

| | |
|--|----|
| 1. Description 产品介绍 | |
| 1.1 General Description 产品描述 | |
| 1.2 Features 产品特征 | |
| 1.3 Application 产品应用 | |
| 1.4 Package Dimension 封装尺寸 | |
| 1.5 Product Parameters 产品参数 | |
| 1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=150mA) 电压与流明分 BIN 范围 (IF=150mA) | |
| 1.7 Typical optical characteristics curves 典型光学特性曲线 | |
| 2. Packaging 产品包装 | |
| 2.1 Packaging Specification 包装规格 | |
| 2.1.1 Carrier Tape Dimension 载带尺寸..... | 13 |
| 2.1.2 Reel Dimension 卷盘尺寸..... | 13 |
| 2.1.3 Label Form Specification 标签规格..... | 14 |
| 2.2 Moisture Resistant Packing 防潮包装 | |
| 2.3 Cardboard Box 包装纸箱 | |
| 2.4 Reliability Test Items And Conditions 可靠性测试项目及条件 | |
| 2.5 Criteria For Judging Damage 失效判定标准 | |
| 3. SMT Reflow Soldering Instructions SMT 回流焊说明 | |
| 3.1 SMT Reflow Soldering Instructions SMT 回流焊说明 | |
| 4. Handling Precautions 产品使用注意事项 | |
| 4.1 Handling Precautions 产品使用注意事项 | |



1. Description 产品介绍

1.1 General Description 产品描述



The White LED which was fabricated using a blue chip and the phosphor

Product Package: 2.8mmX3.5mmX0.7mm.

该产品为白光 LED，是由蓝光芯片激发荧光粉而形成，产品尺寸：2.8mmX3.5mmX0.7mm。

1.2 Features 产品特征

- ▶ PLCC-2 Package.封装
- ▶ Extremely wide viewing angle.
- ▶ 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 3.防潮等级 Level 3
- ▶ RoHS compliant.满足RoHS要求

1.3 Application 产品应用

- ▶ Indoor lighting.室内照明
- ▶ Bulb lighting.球泡灯
- ▶ General indoor applications.其它适合的室内应用

1.4 Package Dimension 封装尺寸

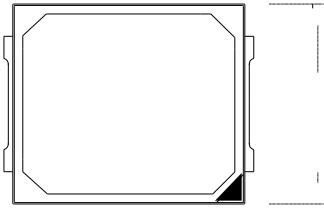


Fig.1-1 Top view 正面视图

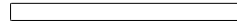


Fig.1-2 Side view 侧面视图

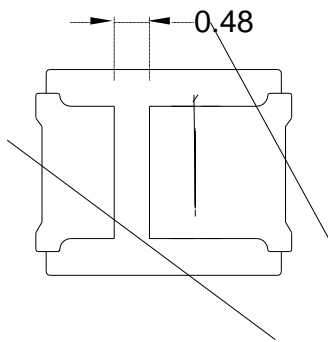


Fig.1-3 Bottom view 背面视图

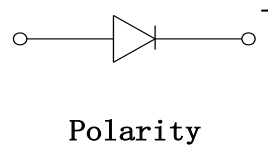


Fig.1-4 Polarity 极性

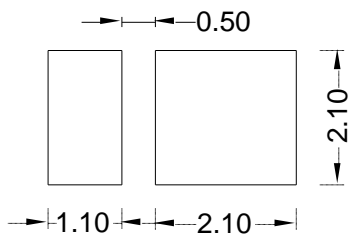


Fig.1-5 Soldering patterns 推荐焊盘

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 $\pm 0.05\text{mm}$ unless otherwise noted. 除特别标注外, 所有尺寸公差为 ± 0.05 毫米

1.5 Product Parameters 产品参数

Table 1-1 Electrical / Optical Characteristics at Ts=25°C 电性与光学特性

| Item 项目 | Symbol 符号 | Test Condition 测试条件 | Value | | | Unit 单位 |
|---------------------------|--------------|------------------------|---------------|---------------|---------------|------------|
| | | | Min. (最小值) | Typ. (典型值) | Max. (最大值) | |
| Forward Voltage (正向电压) | V_F | $I_F=150mA$ | 3.0 | 3.15 | 3.3 | V |
| Reverse Current (反向电流) | I_R | $V_R=5V$ | I_{R1} | --- | I_{R2} | μA |



Table 1-2 Absolute Maximum Ratings at Ts=25°C 绝对最大值

| Parameter (参数) | Symbol (符号) | Rating (值) | Units (单位) |
|------------------------------|------------------|------------|------------|
| Power Dissipation (功耗) | P _D | 594 | mW |
| Forward Current (正向电流) | I _F | 180 | mA |
| Peak Forward Current (峰值电流) | I _{FP} | 240 | mA |
| Reverse Voltage (反向电压) | V _R | 5 | V |
| Operating Temperature (操作温度) | T _{OPR} | -40 ~ +100 | |
| Storage Temperature (储存温度) | T _{STG} | -40 ~ +100 | |
| Junction Temperature (结温) | T _J | 125 | |

Notes 备注:

- 1/10 Duty cycle, 10ms pulse width. 脉宽10ms,占空比1/10.
- The above forward voltage measurement allowance tolerance is $\pm 0.1V$. 以上电压测量允许公差为 $\pm 0.1V$.
- The above color coordinates measurement allowance tolerance is ± 0.003 . 以上所示坐标测量误差 ± 0.003 .
- 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. 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。

1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=150mA) 正向电压与光通量分 BIN 范围(IF=150mA)

Table 1-3

| VF(V) | H1 | H2 | I1 | TGA |
|--------|---------|---------|---------|-------|
| | 3.0-3.1 | 3.1-3.2 | 3.2-3.3 | |
| Φ (LM) | SHA | TEA | TFA | |
| | 55-60 | 60-65 | 65-70 | 70-75 |





1.7 Typical optical characteristics curves 典型光学特性曲线

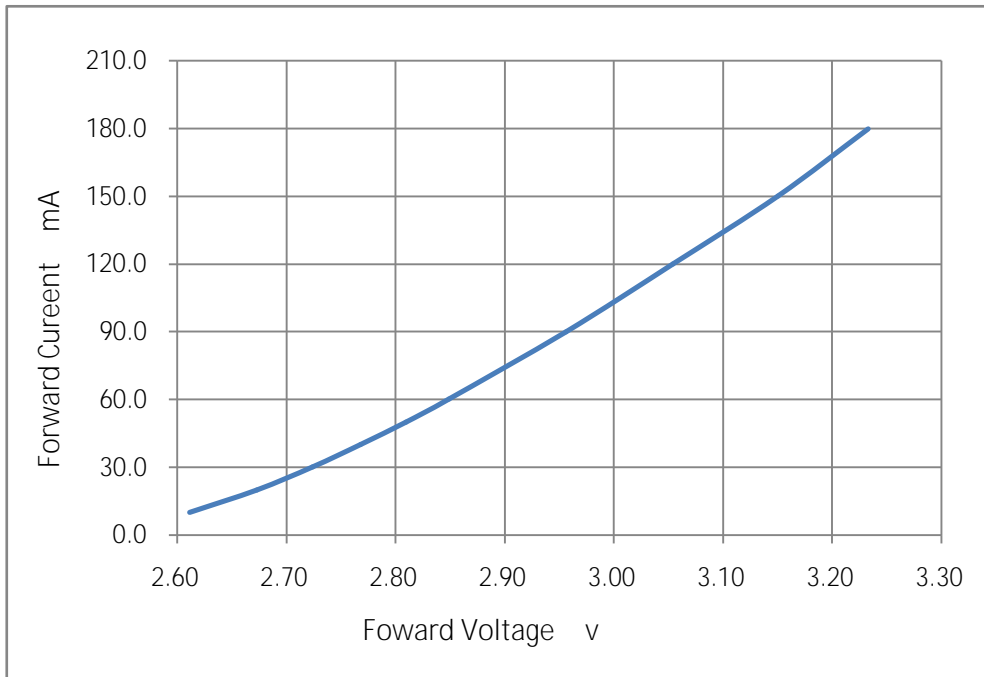


Fig 1-7 Forward Voltage Vs. Forward Current 伏安特性曲线

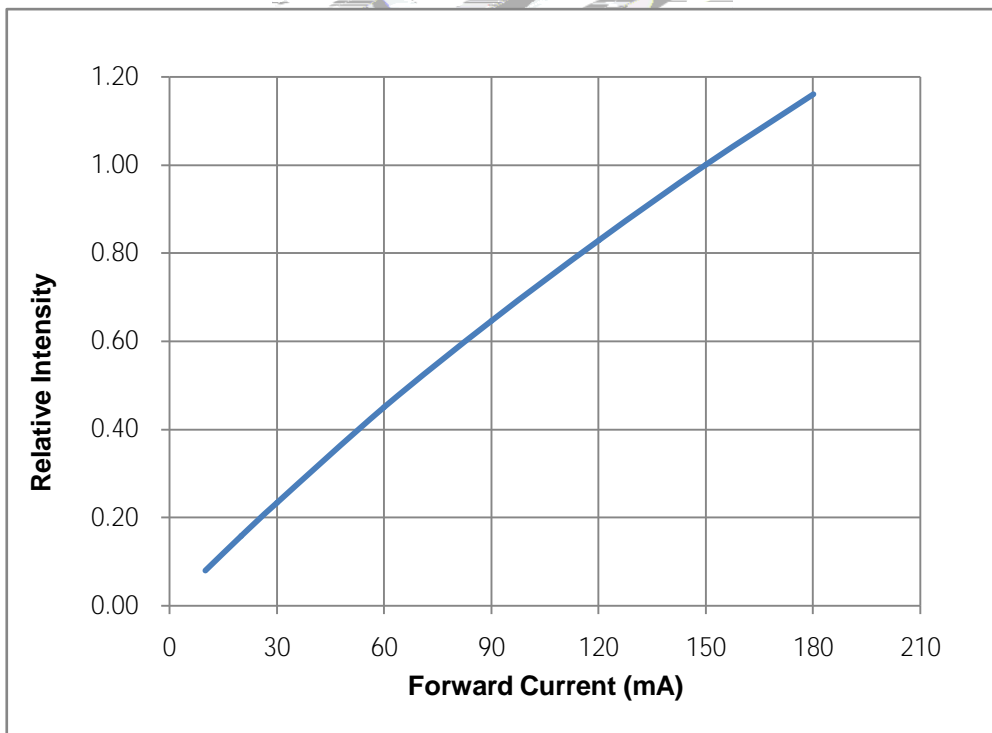


Fig 1-8 Forward Current Vs. Relative Intensity 正向电流与相对光强特性曲线

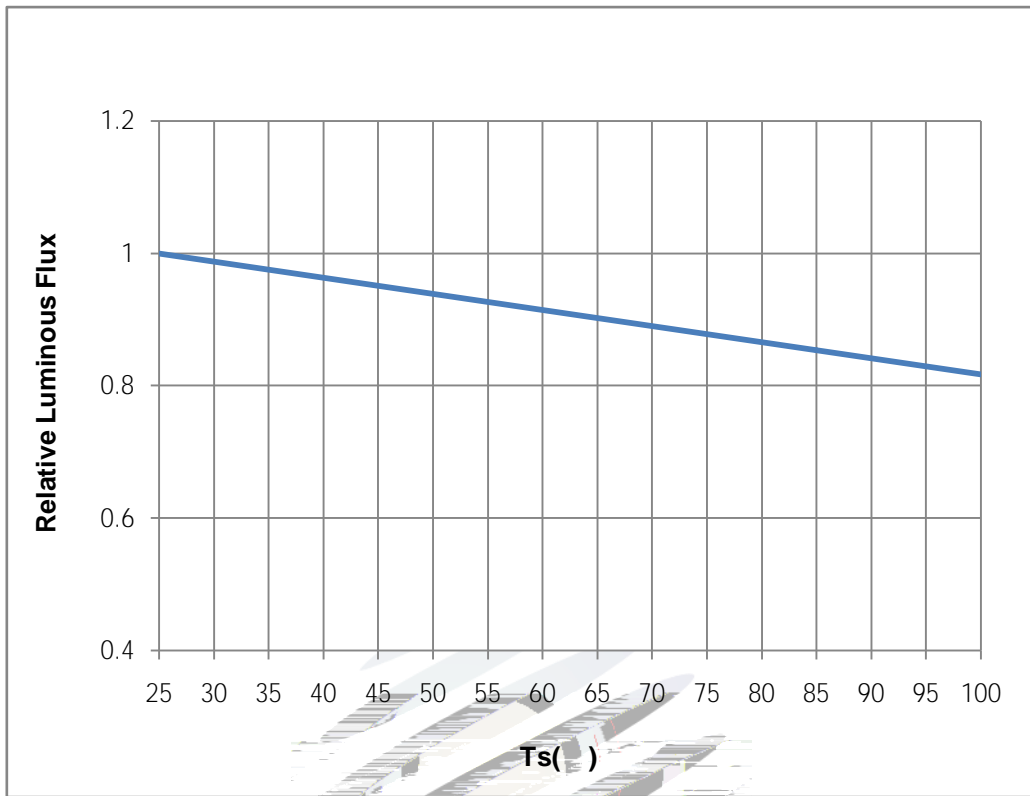


Fig 1-9 Solder Temperature Vs Relative Intensity 管脚温度与相对光强特性曲线

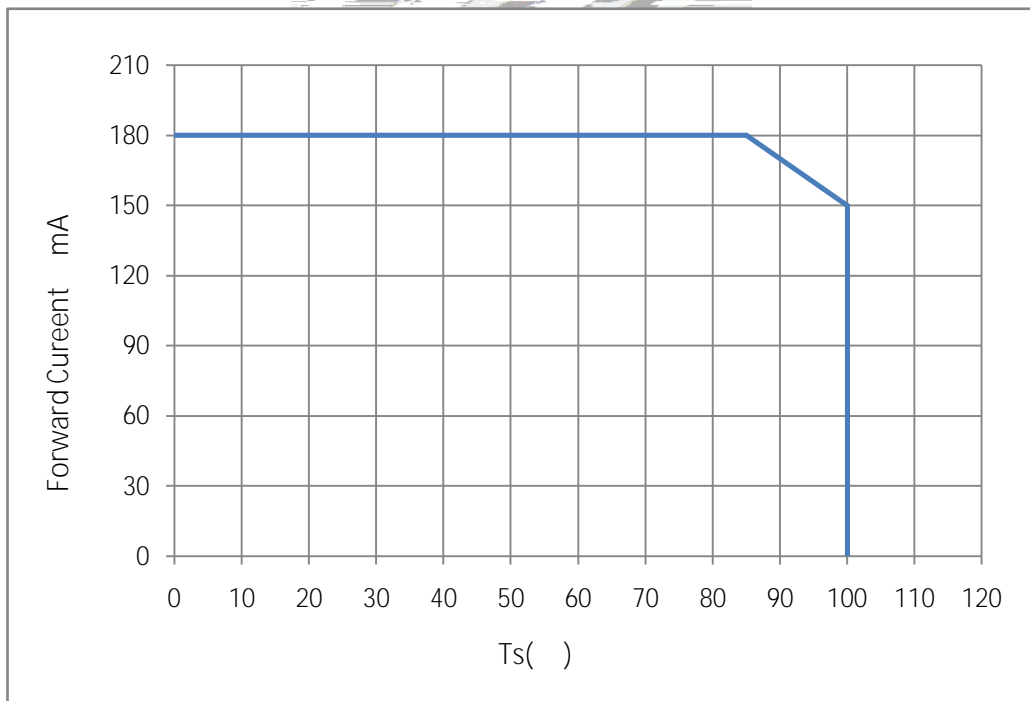


Fig 1-10 Solder Temperature Vs Forward Current 管脚温度与正向电流特性曲线

$T_j \leq 125^\circ\text{C}$

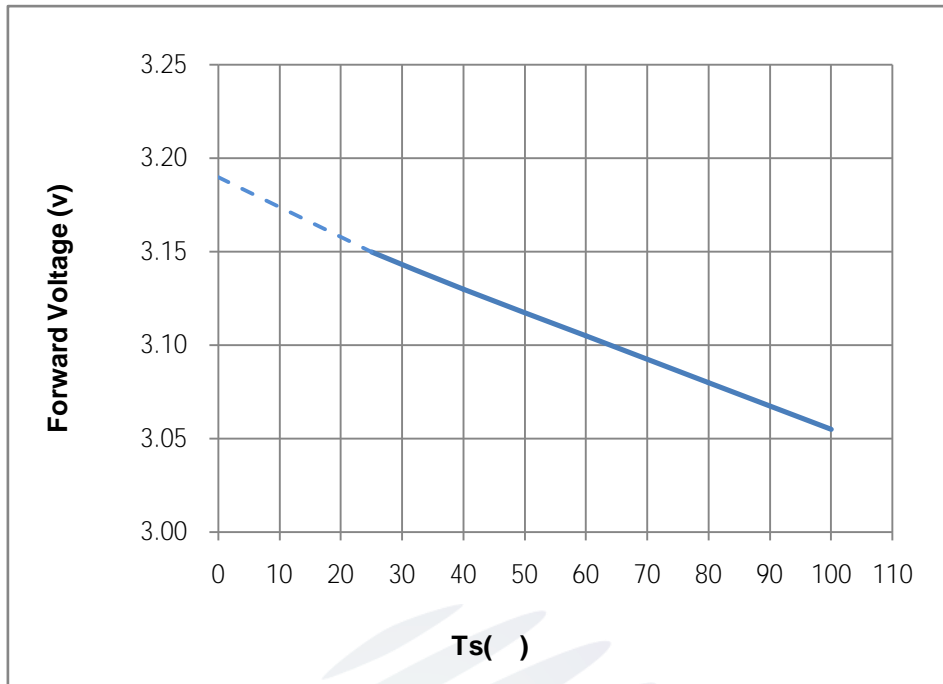


Fig 1-11 Forward Voltage Vs Solder Temperature 电压与管脚温度特性曲线

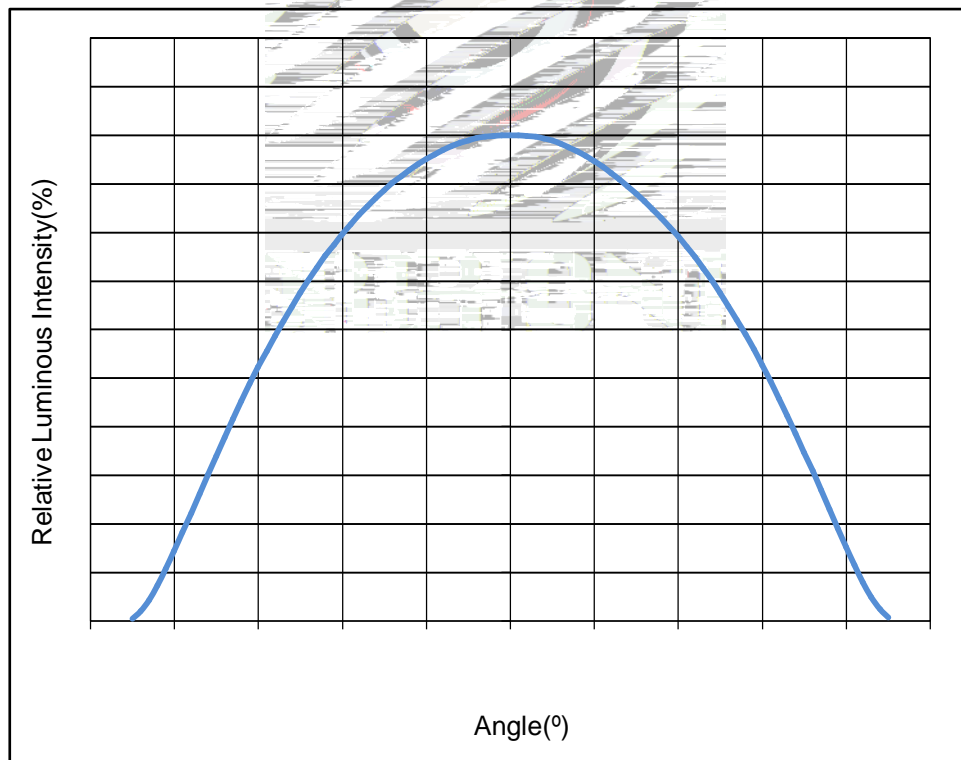


Fig 1-12 Radiation diagram 辐射特性曲线

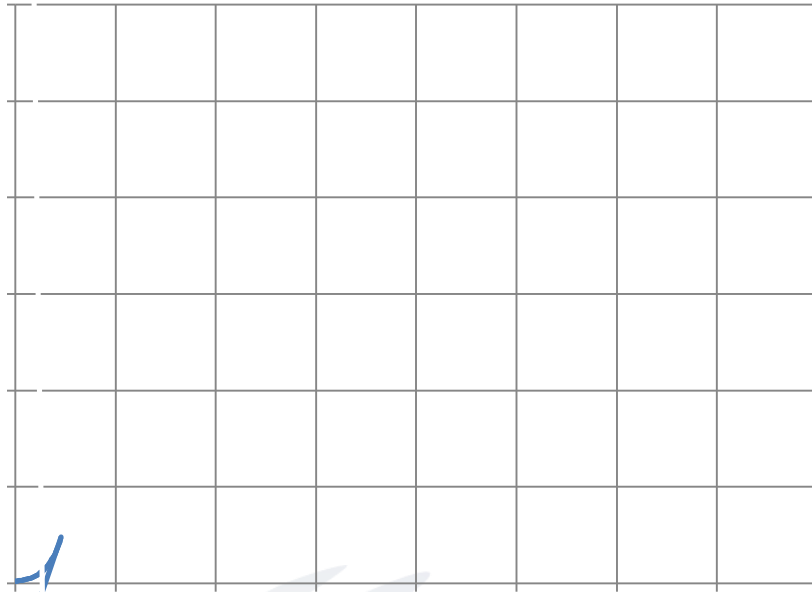
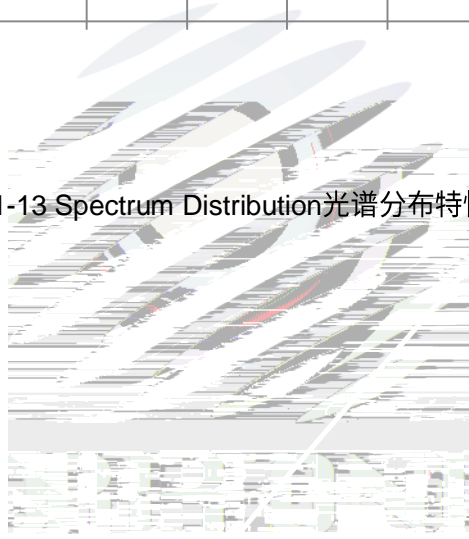


Fig 1-13 Spectrum Distribution 光谱分布特性曲线



2. Packaging 产品包装

2.1 Packaging Specification 包装规格

Package: 12000/4000pcs/reel. 包装每卷

2.1.1 Carrier Tape Dimension 载带尺寸

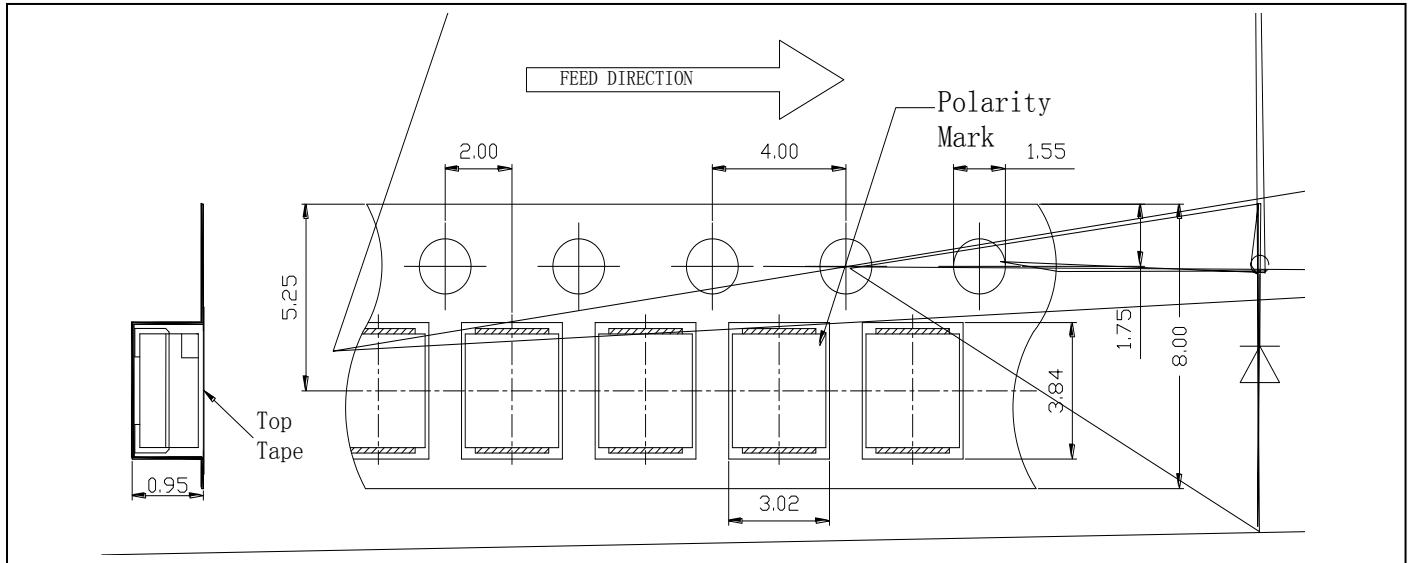
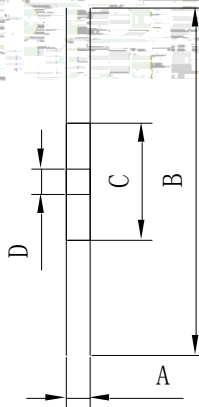
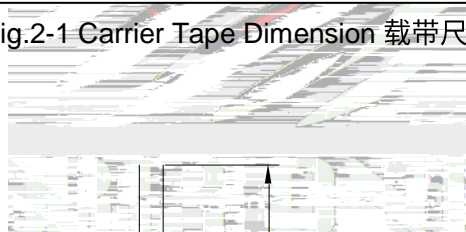
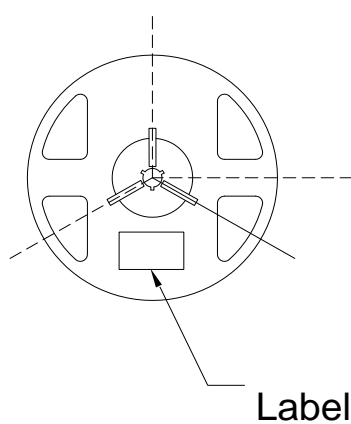


Fig.2-1 Carrier Tape Dimension 载带尺寸

2.1.2 Reel Dimension 卷盘尺寸



| | | | |
|-----|------------|----|------------|
| A | 8.7±0.3mm | A | 8.5±0.3mm |
| B | 290±2.0mm | B | 178±1.0mm |
| C | 79.6±0.2mm | C | 59±1.0mm |
| D | 14.2±0.2mm | D | 13.5±0.3mm |
| 12K | | 4K | |

Fig.2-2Title

Notes 备注:

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

2.1.3 Label Form Specification 标签规格

Table 2-2 Title

PART NO. 0 16en-UW* nBT1 01g (en-L

2.2 Moisture Resistant Packing 防潮包装



Fig.2-4Title

2.3 Cardboard Box 包装纸箱

Fig.2-5Title

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

Table 2-3 Title

| TestItems | Ref.Standard | Test Condition | Time | Quantity | Ac/Re |
|-----------|--------------|----------------|------|----------|-------|
| 项目 | 参考标准 | 测试条件 | 时间 | 数量 | 接收/拒收 |
| Reflow | | Temp:260 | | | |
| 回流焊 | JESD22-B106 | | | | |

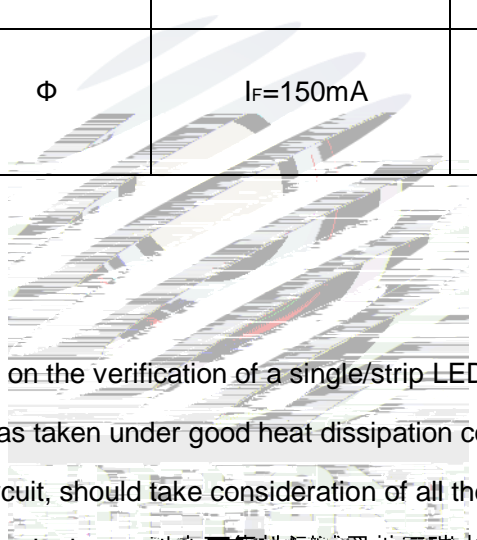


2.5 Criteria For Judging Damage 失效判定标准

Table 2-4 Title

| 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 |
| Forward Voltage 正向电压 | V_F | $I_F=150mA$ | - | $(U.S.L^*) \times 1.1$ |
| Reverse Current 反向电流 | I_R | $V_R = 5V$ | - | $(U.S.L^*) \times 2.0$ |
| Luminous Flux 光通量 | Φ | $I_F=150mA$ | $(L.S.L^*) \times 0.7$ | - |

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 all the factors such as the current, voltage distribution, heat dissipation and others.  LED 产品在良好散热条件下验证的结果。客户端将 LED 应用于串、并联线路时，需自行评估电流、电压分配、散热等问题。

2.The technical information

3. SMT Reflow Soldering Instructions SMT 回流焊说明

3.1 SMT Reflow Soldering Instructions SMT 回流焊说明

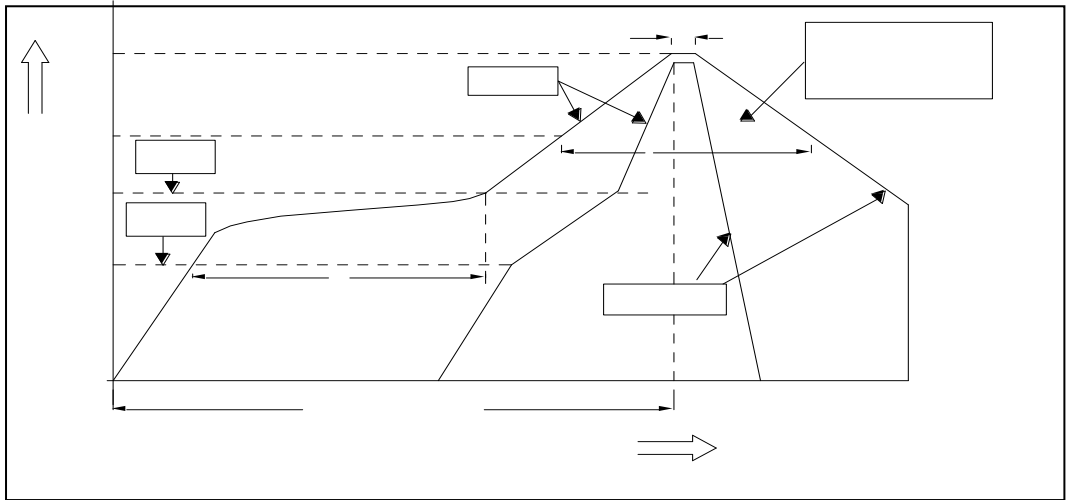


Fig.3-1 Title

Table 3-1 Title

| | |
|--|----------------------|
| 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 maintain high temperature: the temperature 限时维持高温: 温度 (T _L) | 217 °C |
| Time limited to maintain high temperature: The Time 限时维持高温: 时间 (t _L) | 最多60秒 Max 60s |
| Peak /Classification of temperature: 峰值 / 分类温度 (T _P) | 260 °C |
| Time limit classification of peak temperature time 限时峰值分类温度 (t _P) | 最多10秒 Max 10s |
| Hold time within 5 °C with the actual peak temperature (T _P) 与实际峰值温度 (T _P) 相差 5 °C 以内的保持时间 | 最多40秒 Max 40s |
| Cooling speed 降温速度 | 最高6 °C/秒 Max 6 °C/ s |
| Needed time from 25 °C to T _p 25 °C 升至峰值温度所需时间 | 最多8分钟 Max 8 minutes |



(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

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.



还是仅仅怀疑有害。针对特定的用途和使用环境，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抓取，不可直接用手或非金属压印体表面，有可能会损坏内部电路。

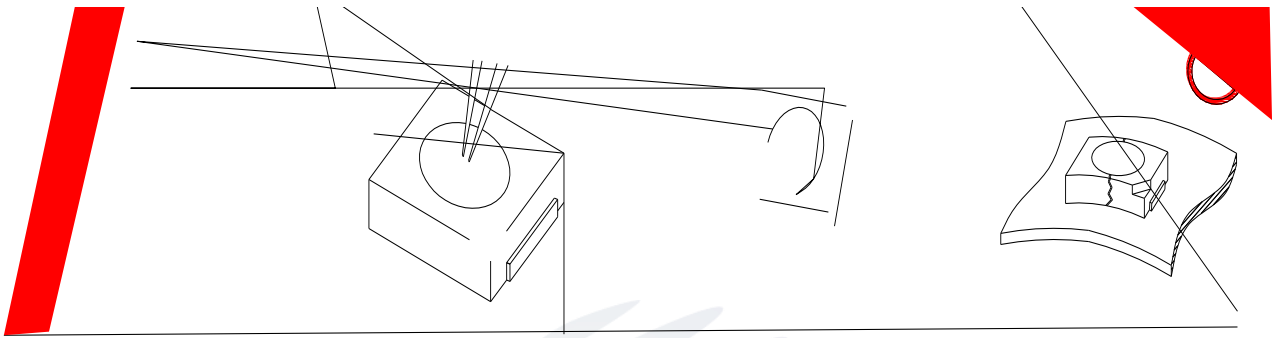


Fig 4-1 Title

(5) In designing a circuit, the current through each LED can not 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电流变化，可能导致芯片烧毁。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 容易因为自身的发热和环境的温度改变而改变，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, 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. 如果必须使用其他溶剂清洗LED，必须保证不会损坏封装树脂。超声波清洗可能会为LED带来损害，不推荐这种清洗方式。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，必须保证不会损坏封装树脂。超声波清洗可能会为LED带来损害，不推荐这种清洗方式。

Table 4-1 Storage 储存

| 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% | 24hours 24小时 |
| 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) °C 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). 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. 瑞丰光电其它注意事项请参考相关资料。

Version History/修订历史

| Date日期 | Revisor修订者 | Version版本 | Verifier审核 | Remarks备注 |
|----------|------------|-----------|------------|-----------|
| 2021-2-5 | | E/0 | | |
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www.refond.com



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。