SPECIFICATION

产品规格书

REFOND P/N 产品型号

RF-E38A8-IRD-FR-01

□R&D 研发

■Mass Product 量产供货

深圳市瑞丰光电子股份有限公司 承认专用章

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General Product Description 产品介绍

General Description 产品描述

- This product uses the EMC package, it has a high reliability. it also be widely application for security monitoring and sensor.
- Size(mm): 3. 80mm×3. 80mm×2.28mm
- 本产品采用EMC封装结构，可靠性高. 广泛运用于各类安防监控和传感器的电子产品中。
- 产品尺寸：3. 80mm×3. 80mm×2.28mm

Key Product Features 主要产品特征

- Low forward voltage. 低电压
- Peak wavelength λp=850nm. 峰值波长λp=850nm
- Pb-free reflow soldering application. 无铅回流焊应用
- Moisture sensitive level:Level3. 防潮等级：Level 3
- RoHS compliant 符合RoHS标准

Product Application 产品应用

- Surveillance systems.监视系统
- Infrared Illumination for cameras. 红外相机
- Machine vision systems. 机器视觉系

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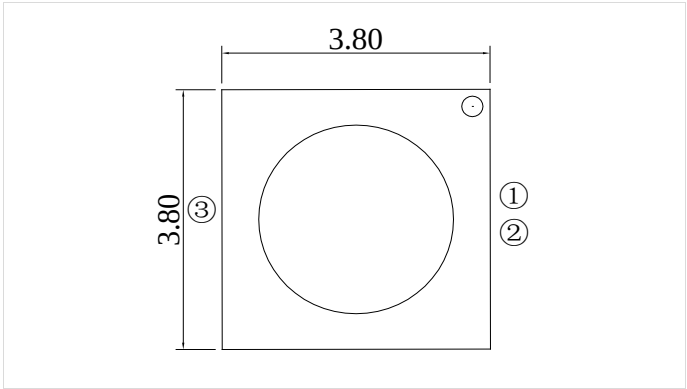
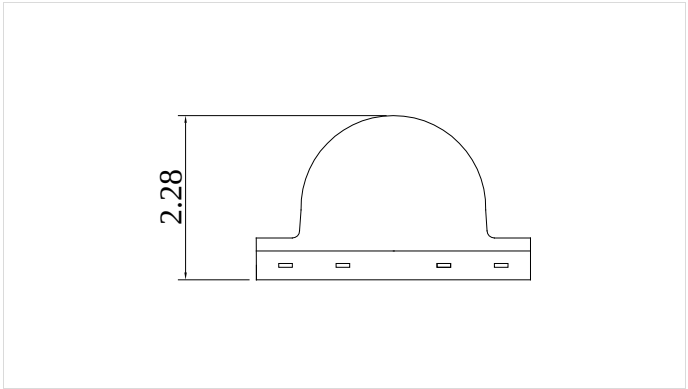
Package Dimension 产品尺寸

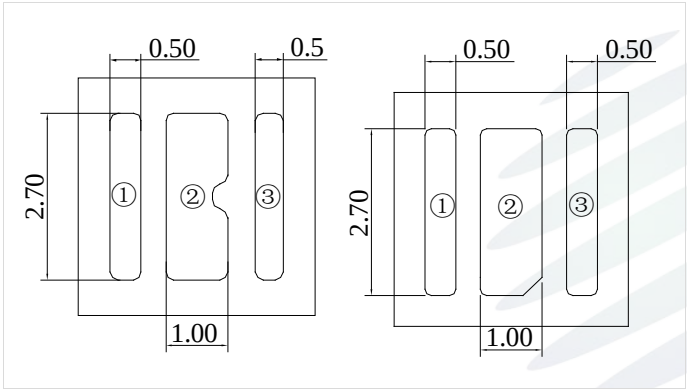
Top view 正面视图



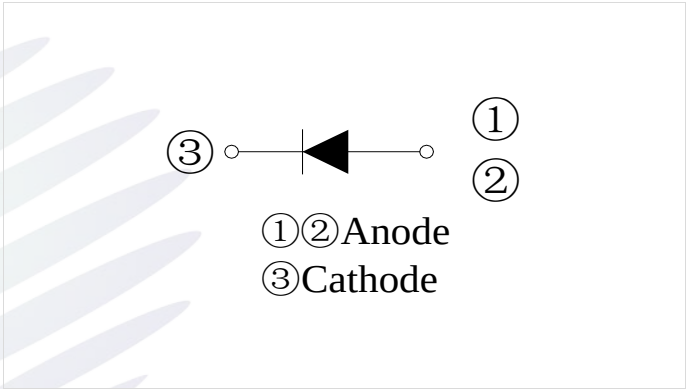
Side view 侧面视图



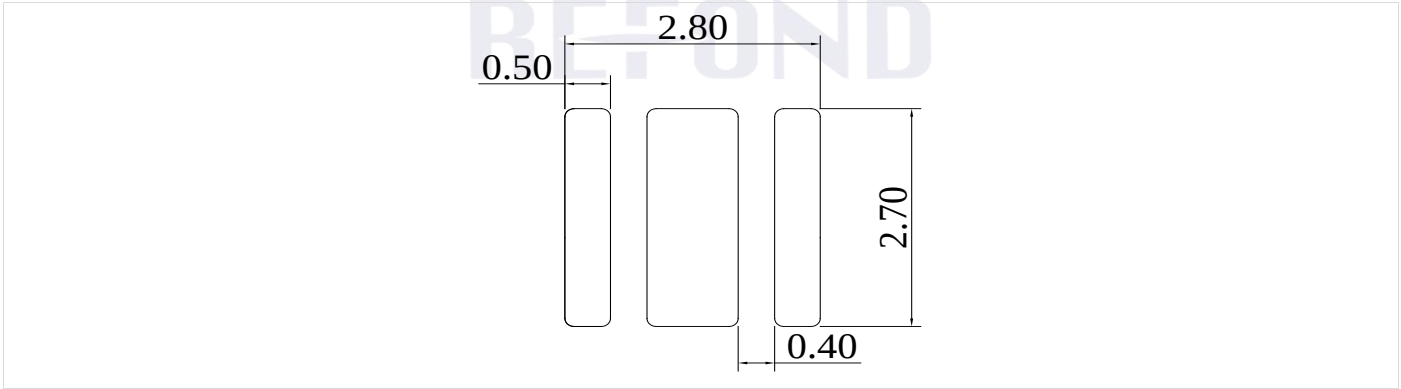
Bottom view 背面视图



Polarity 极性标识



Recommended solder pad 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 ±0.2mm unless otherwise noted 除特别标注外，所有尺寸公差为±0.2 毫米

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Product Parameters 产品特性参数

Opto-Electro-Thermal Characteristics 光电热参数（Ts=25℃ IF=1000mA）

Parameter 参数	Symbol 符号	Unit 单位	Values 值		
			Min.	Typ.	Max.
Forward voltage	V_F	V	--	1.7	--
Peak Wavelength	λ_p	nm	--	850	--
Spectrum Radiation Bandwidth	$\Delta\lambda$	nm	--	35	--
Total radiant flux	Φ_e	mW	710	900	1120
Viewing Angle	$2\theta_{1/2}$	Deg	--	80	--
Reverse Current (VR=5V/10ms)	I_R	μA	--	--	10
Thermal resistance	$R_{th\ J\text{-}S}$	℃/W	--	8	--

Absolute Maximum Ratings 极限参数

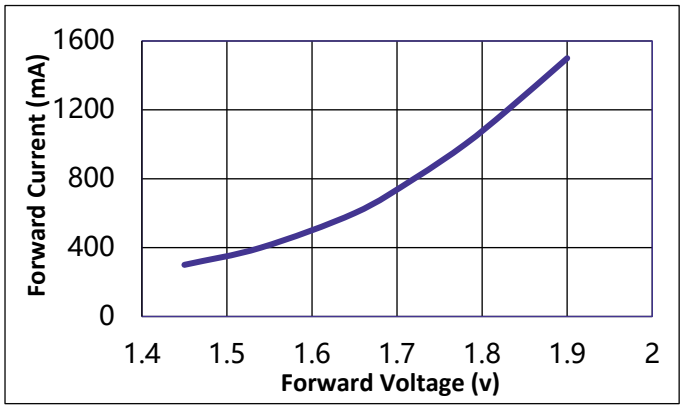
Parameter 参数	Symbol 符号	Unit 单位	Values 值
Power dissipation 功耗 Ts=25℃	P_D	W	3.0
Forward current 正向电流 Ts=25℃	I_F	mA	1500
Reverse voltage(3) 反向电压 Ts=25℃	V_R	V	5
Electrostatic Discharge (HBM)（静电）	E_{SD}	V	2000
Operating temperature 操作温度	T_{OPR}	℃	-40~+100
Storage temperature 储存温度	T_{stg}	℃	-40~+100
Junction temperature 结温	T_J	℃	125

Notes 备注:

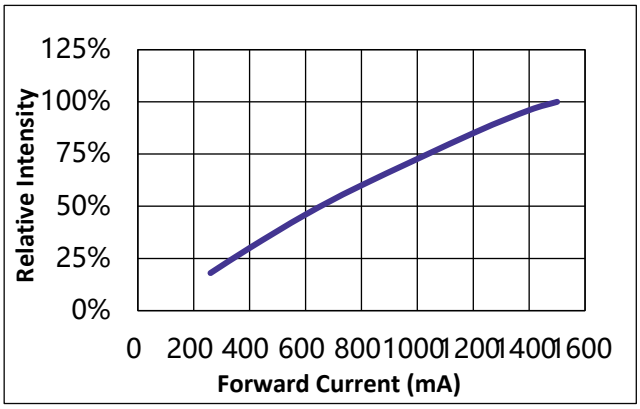
1. 1/10 Duty cycle, 0.1ms pulse width. 脉宽 0.1ms,占空比 1/10
2. The above forward voltage measurement allowance tolerance is ±0.1V. 以上所示电压测量误差 ±0.1V.
3. Tolerance of measurement of Total radiant flux/ Radiant Intensity:±10%.辐射功率/强度测量公差：±10%。
4. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product. 使用功率不能超过规定的最大值
5. 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
6. 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。
7. ESD yield is over 90% at 2000V ESD (HBM). ESD protection during products handing is needed. 90%的 LED 通过人体模式 ESD2000V 测试，在操作时请注意静电防护。

Typical Opto-electrical Characteristics Curves 典型光电特性曲线

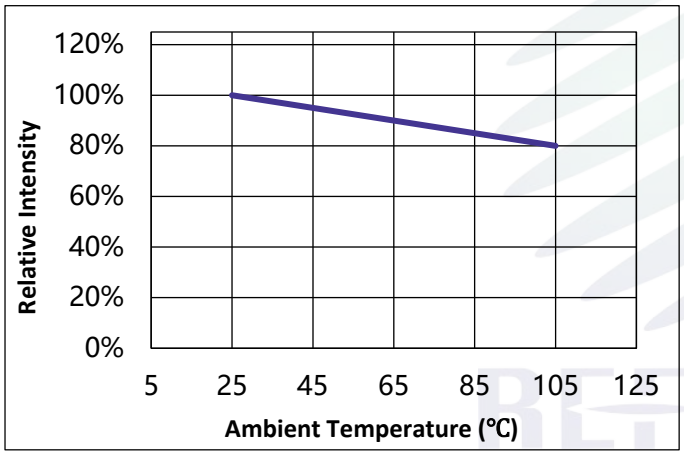
Forward current vs. forward voltage
伏安特性曲线（Ts=25°C）



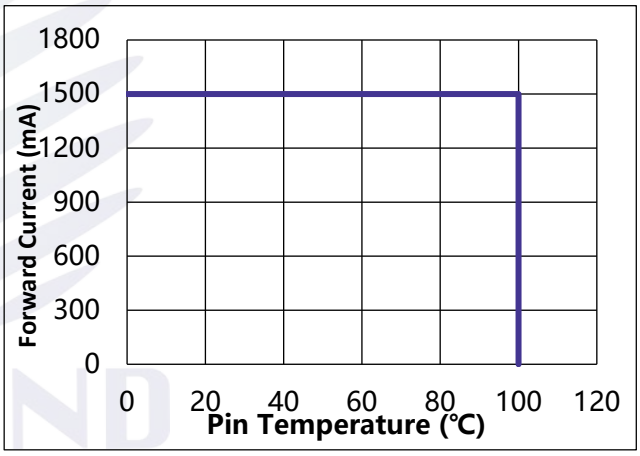
Forward Current Vs Relative Intensity
正向电流与相对光强特性曲线（Ts=25°C）



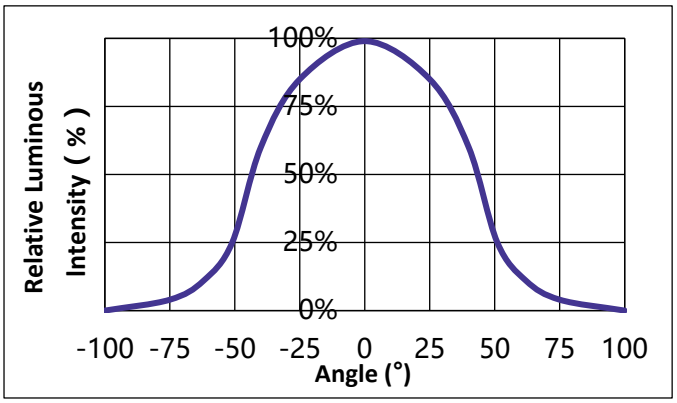
Pin Temperature Vs Relative Intensity
引脚温度与相对光强特性曲线



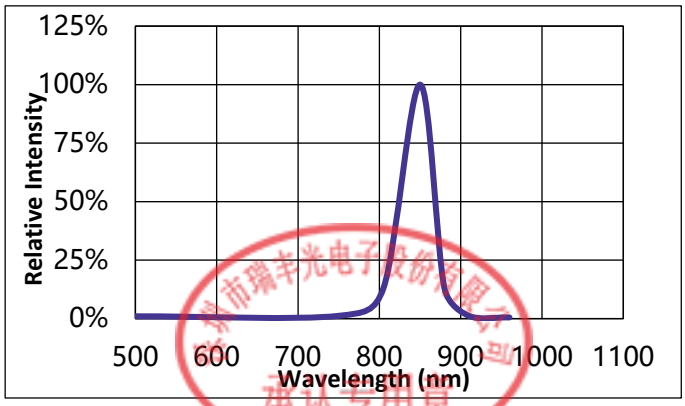
Pin Temperature Vs Forward Current
引脚温度与正向电流特性曲线



Forward Current Vs Dominate Wavelength (Ta=25°C)
正向电流与主波长关系曲线



Relative Intensity Vs Wavelength (Ta=25°C)
相对光强与波长关系曲线

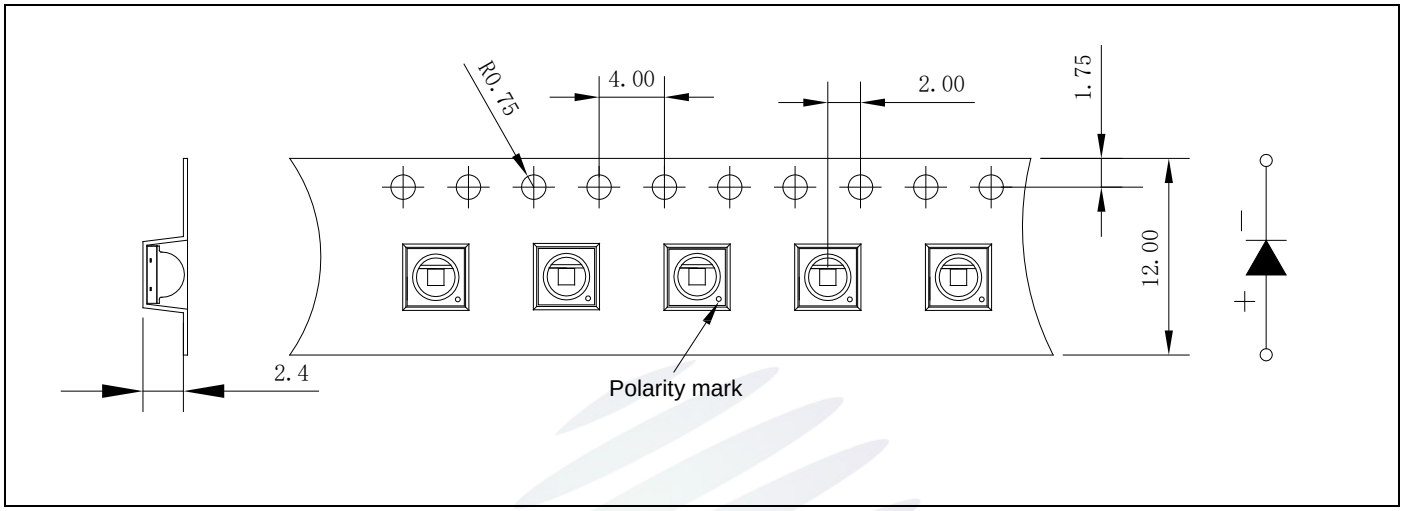


Packaging 产品包装

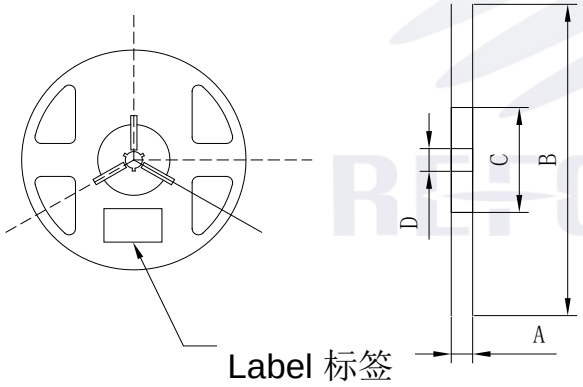
Packaging Specification 包装规格

Package:3000pcs/reel. 包装：每卷 3000pcs。

Carrier Tape Specification 载带规格



Reel Specification 卷盘规格



	3000PCS
A	12.7±0.3mm
B	330.2±2mm
C	79.5±1mm
D	14.3±0.2mm

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。

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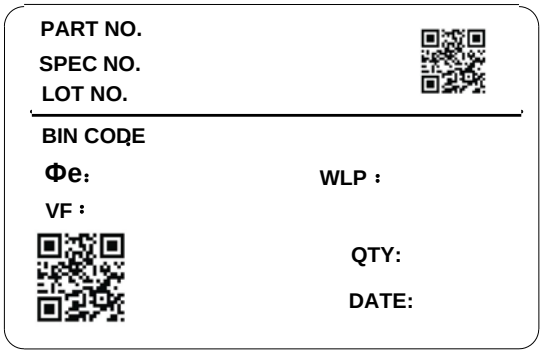
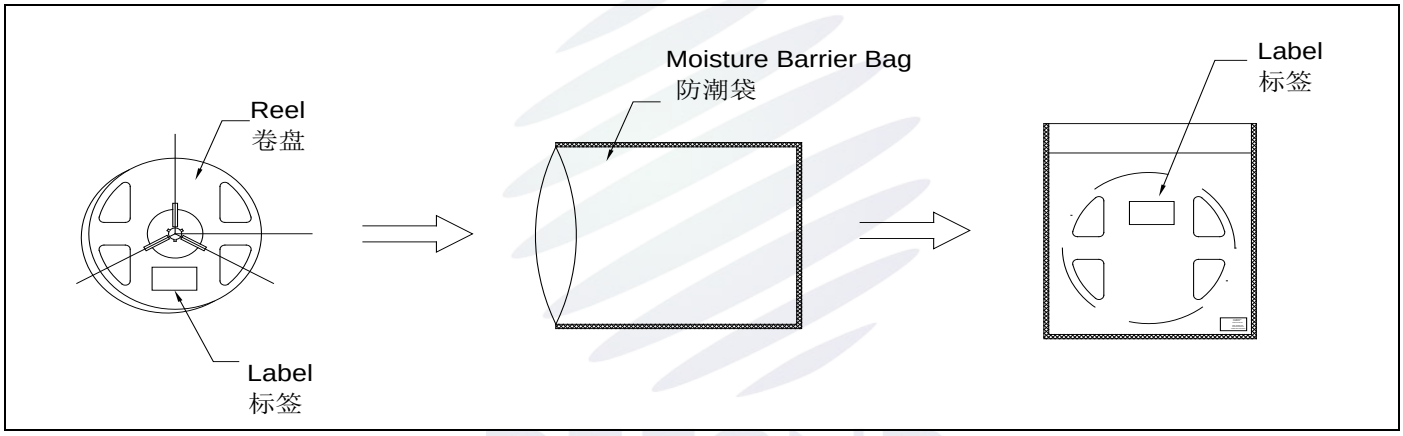
Label Specification 标签信息

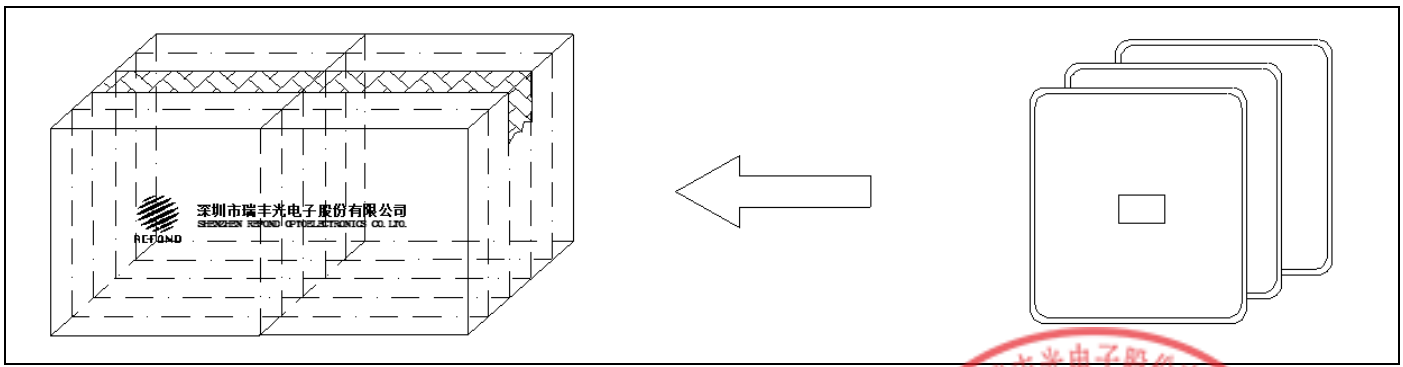


PART NO.	Part Number 品名
SPEC NO.	Spec Number 规格
LOT NO.	Lot Number 批次号
BIN CODE	Bin Code 色区
Φe	Total radiant flux 辐射功率
WLP	Peak Wavelength 峰值波长
VF	Forward Voltage 正向电压
QTY	Packing Quantity 数量
DATE	Made Date 生产日期

Moisture Resistant Packing 防潮包装



Box Information 纸箱信息



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Reliability 可靠性

Test Items and Conditions 测试项目及条件

Test Items 项目	Ref. Standard 参考标准	Test Condition 测试条件	Duration 时间	Quantity 数量	Ac/Re 接收/拒收
Reflow soldering 回流焊	JESD22-B106	Temp: 260°C max T=10 sec	3 times	10pcs	0/1
Temperature Cycle 温度循环	JESD22-A104	100°C 30 min. ↑ ↓ 5 min -40°C 30 min.	100cycles	10Pcs.	0/1
Thermal shock 冷热冲击	JESD22-A104	-40°C 15min ↑ ↓ 10s 100°C 15min	300 cycles	10pcs	0/1
High temperature storage 高温储存	JESD22-A103	Temp=100°C	1000hrs	10pcs	0/1
Low temperature storage 低温储存	JESD22-A119	Temp=-40°C	1000hrs	10pcs	0/1
Room temperature life test 常温通电	JESD22-A108	TA=25°C IF=1500mA	1000hrs	10pcs	0/1

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Failure Criteria 失效判定标准

Test Items 项目	Symbol 符号	Test Condition 测试条件	Failure Criteria 失效标准	
			Min. 最小	Max. 最大
Forward Voltage 正向电压	V_F	I_F =1500mA	--	(U.S.L*)x1.1
Reverse Current 反向电流	I_R	V_R = 5V	--	(U.S.L*)x2.0
Total radiant flux 辐射功率	Φe	I_F =1500mA	(L.S.L*)x0.7	--

Notes 备注:

1. U.S.L: Upper standard level 规格上限；L.S.L: Lower standard level 规格下限。
2. The above reliability tests are based on the verification of a single/strip LED of Refond's existing experimental platform, the reliability experimental 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. 以上可靠性测试是基于瑞丰现有实验平台单颗/条 LED 在良好散热条件验证下的结果。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。
3. 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. 以上技术数据仅为产品的典型值，只作为参考，不作为任何应用条件及应用方式的保证。

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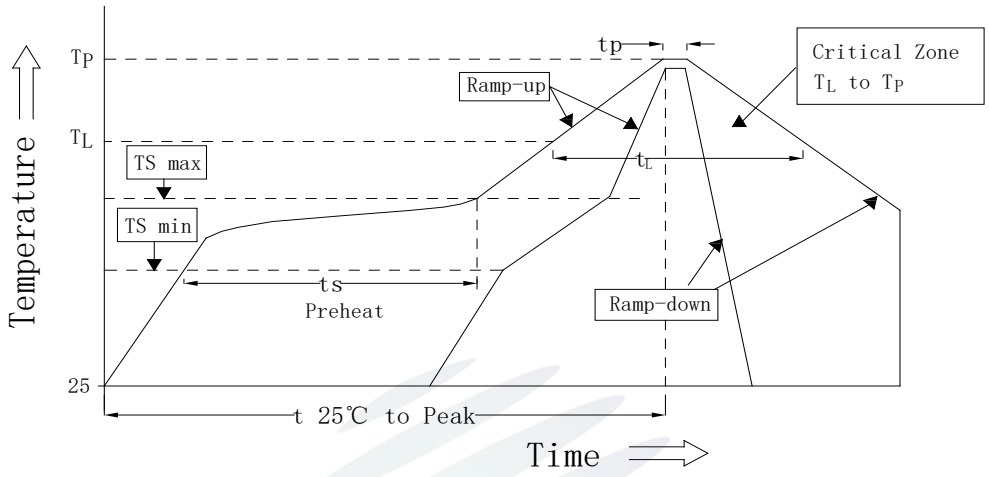
Handing Notes 产品使用说明

Soldering Instructions 焊接说明

Reflow soldering 回流焊



Average temperature rise speed 平均升温速度（Tsmax 至 TP）	最高 3 °C/秒 Max 3 °C/ s
Preheating: minimum temperature 预热：最低温度（Tsmin）	150 °C
Preheating: Max temperature 预热：最高温度（Tsmax）	200 °C
Preheating: Time 预热：时间（Tsmin 至 Tsmax）	60 - 120 秒 60s-120s
Time limited to maintain high temperature: the temperature 限时维持高温：温度(TL)	217 °C
Time limited to maintain high temperature: The Time 限时维持高温：时间（tL）	60 - 150 秒 60s-150s
Peak /Classification of temperature:峰值 / 分类温度（TP）	260 °C
Time limit classification of peak temperature time 限时峰值分类温度：时间（tp）	最多 10 秒 Max 10s
Hold time within 5 °C with the actual peak temperature (TP) 与实际峰值温度(TP) 相差 5 °C 以内的保持时间	最多 30 秒 Max 30s
Cooling speed 降温速度	最高 6 °C/秒 Max 6 °C/ s
Needed time from 25 °C to Tp25 °C 升至峰值温度所需时间	最多 8 分钟 Max 8 minutes

Notes 备注：

1. The number of reflow soldering should not exceed two times. If the time interval between two reflow soldering times exceeds 4 hours, the LED may be damaged due to moisture absorption. 回流焊次数不可以超过两次，两次回流焊的时间间隔如果超过4小时，LED可能因吸湿而损坏。
2. Do not press the light emitting surface while soldering in high temperature. 高温焊接时不要用力压产品胶体发光面。

Iron Soldering 烙铁焊接

1. When manually soldering, the soldering iron temperature must be less than 300℃ and the time must not exceed 3s. 手工焊接时，烙铁温度必须小于 300℃，时间不超过 3 秒。
2. Manual soldering can only be done once . 手工焊接只可焊接一次。

Soldering Repair 焊接修补

LED cannot be repaired after reflow soldering. If repair is necessary, a double-ended soldering iron must be used, and it should be confirmed in advance whether this method will damage the characteristics of the LED itself. LED 回流焊后不可修补，当必须修补时，必须使用双头烙铁，且应事先确认此种方式会不会损坏 LED 本身的特性。

Cautions 注意事项

1. The LED light emitting surface is a soft silicone, pressing the surface hard will affect the reliability of the LED. Therefore, precautions should be taken to avoid pressing the device. When using a nozzle, ensure that the pressure applied to the surface will not damage the LED. LED 发光面为软的硅胶，用力按压胶体表面会影响 LED 可靠性，因此应有预防措施避免在按压器件，当使用吸嘴时，应确保施加到胶体表面的压力不会损坏 LED。
2. Do not solder LED on a curved PCB board, and do not bend the PCB after soldering. LED 灯珠不要焊接在弯曲的 PCB 板上，焊接之后，也不要弯折线路板。
3. During the cooling process after reflow soldering, do not apply external force to the material, do not vibrate it, and do not use drastic cooling methods. 回流焊之后冷却过程中，不要对材料实加外力，也不要有震动，不要采用激剧冷却的方式。

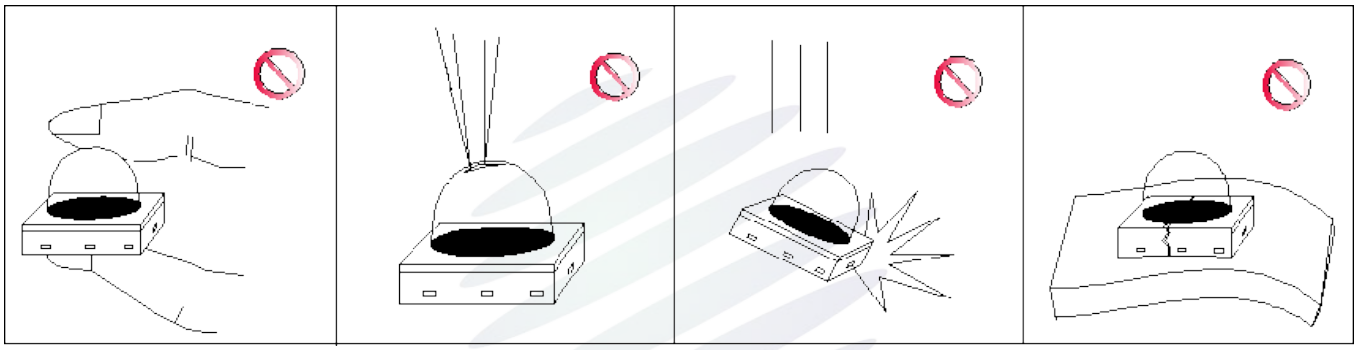
Chemical Compatibility 有害化学物质

1. It is recommended that the sulfur element and compound content in the LED working environment and LED auxiliaries should not exceed 100PPM, but Refond does not provide quality guarantee. 建议 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，但瑞丰不作品质担保。
2. To prevent foreign substances from entering the LED and causing damage to the LED, the LED environment and the auxiliaries used, etc., require that the single bromine content is less than 900PPM, the single chlorine content is less than 900PPM, and the total content of bromine and chlorine must be less than 1500PPM. This is Refond suggestion and does not provide any quality guarantee. 为防止外界物质进入 LED 内部造成 LED 的损伤，LED 所处环境及所用套件等，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. 这是瑞丰的建议，不作任何品质担保。
3. The volatile substances in the application auxiliaries will penetrate into the interior of the LED. When the power is on, photons and heat are generated, which will cause the LED to change color and then cause light decay. Knowing the auxiliaries materials in advance can avoid these problems. Refond opposes the use of any substances or materials that are harmful to the performance or reliability of LED devices, whether these

materials have been confirmed or are only suspected of being harmful. For specific uses and use environments, Refond recommends compatibility testing of all substances and materials. When mounting LEDs, do not use adhesives that can produce organic volatile gases. 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 变色，进而造成光衰，提前了解套件材料能够避免产生这些问题。瑞丰反对使用任何对 LED 器件的性能或者可靠性有害的物质或材料，不管这些材料是已经证实了的还是仅仅怀疑有害。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。

Handling Precautions 产品使用注意事项

1. Use appropriate tools to clamp the material from the side. Do not press the LED light emitting surface directly with your hands or sharp metal, as it may damage the internal circuit. 应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产品发光面，它可能会损坏内部电路。



2. When designing a circuit, the current through the LED cannot exceed the specified maximum value. At the same time, a protective resistor must be used. Otherwise, a small voltage change will cause a large current change, which may cause product damage. The circuit design must ensure that only when the forward voltage changes when turning on or off, do not apply reverse voltage, otherwise it will damage the LED. 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。

3. LED characteristics are prone to heat changes due to their own heat and changes in ambient temperature. Temperature increases will reduce LED efficacy and result in color shift, so heat dissipation issues should be fully considered during design. LED 特性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。

4. Compared with other encapsulating glues, silicone is a soft material and its surface easily absorbs dirt. Special attention should be paid when using the LED. When the cleanliness of the LED is required, appropriate cleaning methods are required after reflow soldering. We recommend using isopropyl alcohol as a cleaning agent. If other cleaning agents are needed, it must be ensured that the package will not be damaged. Ultrasonic cleaning may damage the LED and is not recommended. 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。

5. Recommended storage and baking condition. 建议的储存及烘烤条件。

Conditions 种类	Temperature 温度	Humidity 湿度	Time 时间
Storage Before Opening Aluminum Bag 拆包前	≤30℃	≤75%	Within 1 year from shipping 一年内
Storage After Opening Aluminum Bag 拆包后	≤30℃	≤60%	168hours 168小时
Baking 烘烤	60±5℃	≤5%	≥24hours 大于24小时

6. If the package bag is bloated or damaged, please contact sales staff for assistance. 如果包装胀气或者破损，请联系销售人员协助处理。

7. LEDs are easily broken down by static electricity overcurrent, so static electricity protection is required. LED 极易被静电过流击穿，需要做好静电防护。

8. For other matters needing attention, please refer to the relevant information of Refond. 其它注意事项请参照瑞丰相关资料。

深圳市瑞丰光电子股份有限公司 承认专用章

Revision History 版本历史

Date日期	Revisor修订者	Version版本	Verifier审核	Remarks备注
2024.08.14	朱琴	E/0	王华建	新版发行
2025.07.01	朱琴	E/1	王华建	图纸支架替代&更新模版

深圳市瑞丰光电子股份有限公司 承认专用章

REFOND

创新科技，丰富人类生活！
Innovation enriches life

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。

深圳市瑞丰光电子股份有限公司 承认专用章