

# SPECIFICATION 产品规格书

REFOND P/N 产品型号

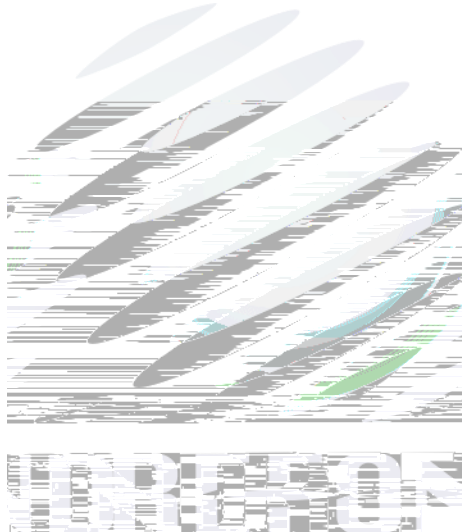
RF-P\*\*HI32DS-AF-N-Y

R&D 研发

Mass Product 量产供货

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## 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: 2.75mmX3.5mmX0.7mm.

该产品为白光 LED，是由蓝光芯片激发荧光粉而形成。 2.75mmX3.5mmX0.7mm。

### 1.2 Features 产品特征

PLCC-2 Package. 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 3. 防潮等级 Level 3

RoHS compliant. 满足RoHS要求

### 1.3 Application 产品应用

Optical indicator. 光电指示

Indoor display. 室内显示

Tubular light application. 用于日光灯管

General use. y

## 1.4 Package Dimension 封装尺寸

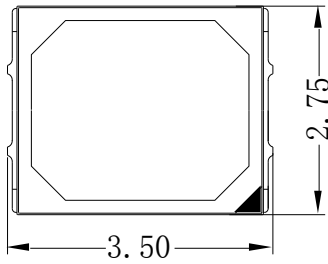


Fig.1-1 Top view 正面视图

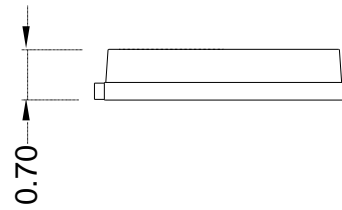


Fig.1-2 Side view 侧面视图

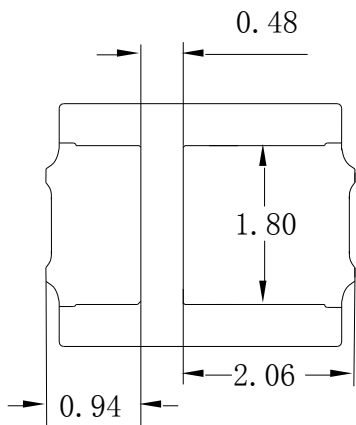


Fig.1-3 Bottom view 背面视图

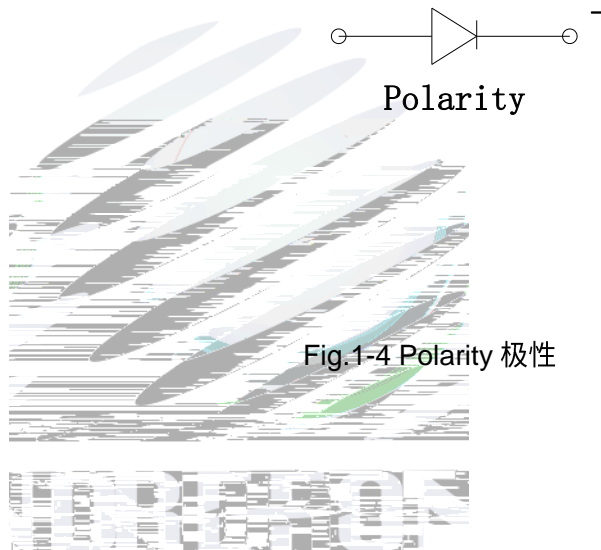


Fig.1-4 Polarity 极性

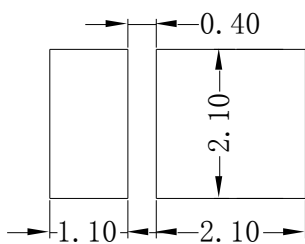


Fig.1-5 Soldering patterns 堆基焊盘

### 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  $\pm 0.05$  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)	VF	IF=60mA	3.0	3.12	3.4	V
Reverse Current (漏电流)						



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



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  $\pm 0.05V$ . 以上所示电压测量误差  $\pm 0.05V$ .
3. The above color coordinates measurement allowance tolerance is  $\pm 0.005$ . 以上所示坐标测量误差 $\pm 0.005$
4. The above luminous intensity measurement allowance tolerance  $\pm 10\%$ . 上述发光强度的测试允许公差为  $\pm 10\%$ .
5. 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。
6. All measurements were made under the standardized environment of Refond. 所有测试都是基于瑞丰现有标准测试平台。
7. 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。
8. 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。

## 1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=60mA)电压与流明分BIN 范围(IF=60mA)

Table 1-3

V <sub>F</sub> V	H1	H2	I1	I2
	3.0-3.1	3.1-3.2	3.2-3.3	3.3-3.4
lm	QIA			
	26-28			

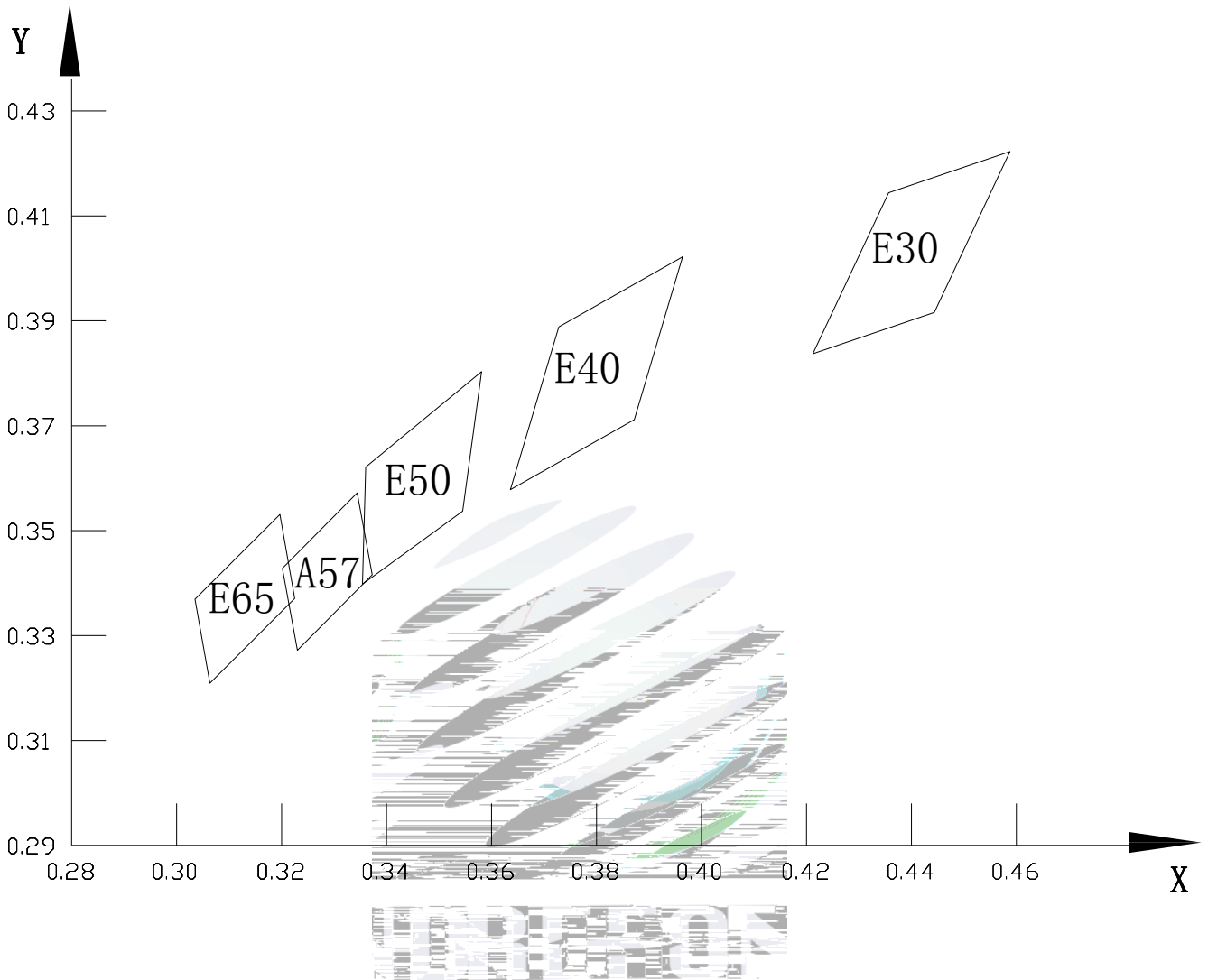


Fig 1-6 The C.I.E Chromaticity Diagram CIE色度图

Table 1-4




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

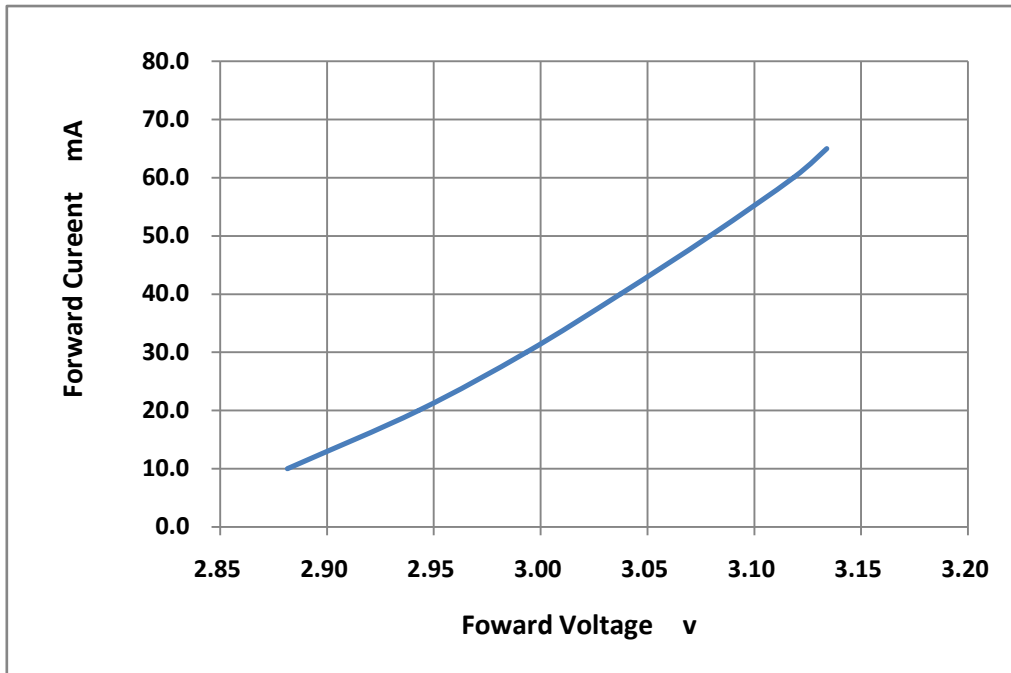


Fig 1-7 Forward Voltage Vs. Forward Current 伏安特性曲线

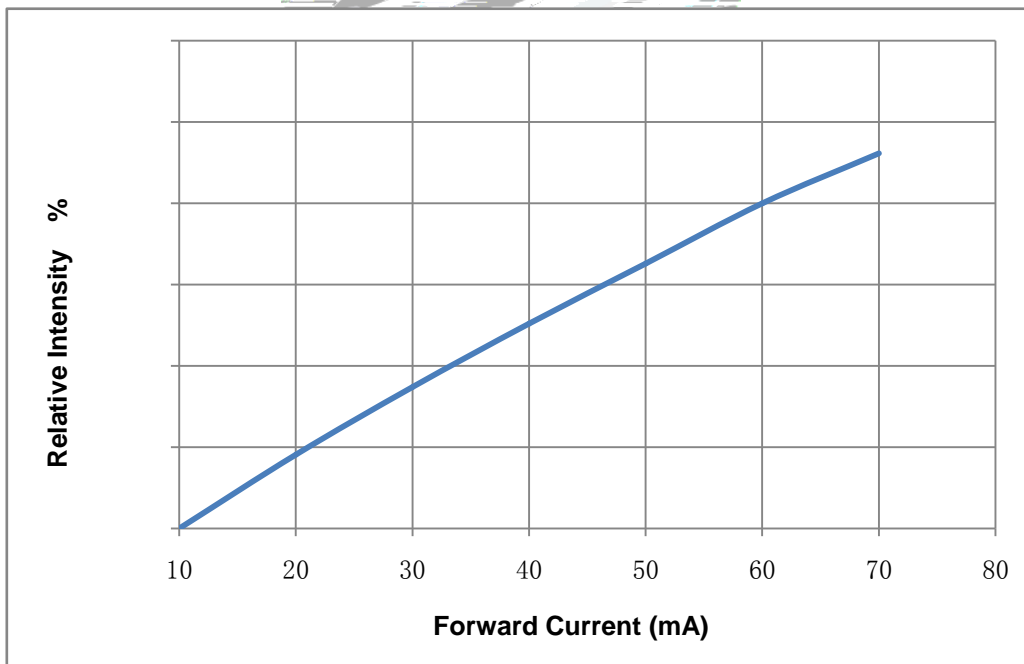


Fig 1-8 Forward Current Vs. Relative Intensity 正向电流与相对光强特性



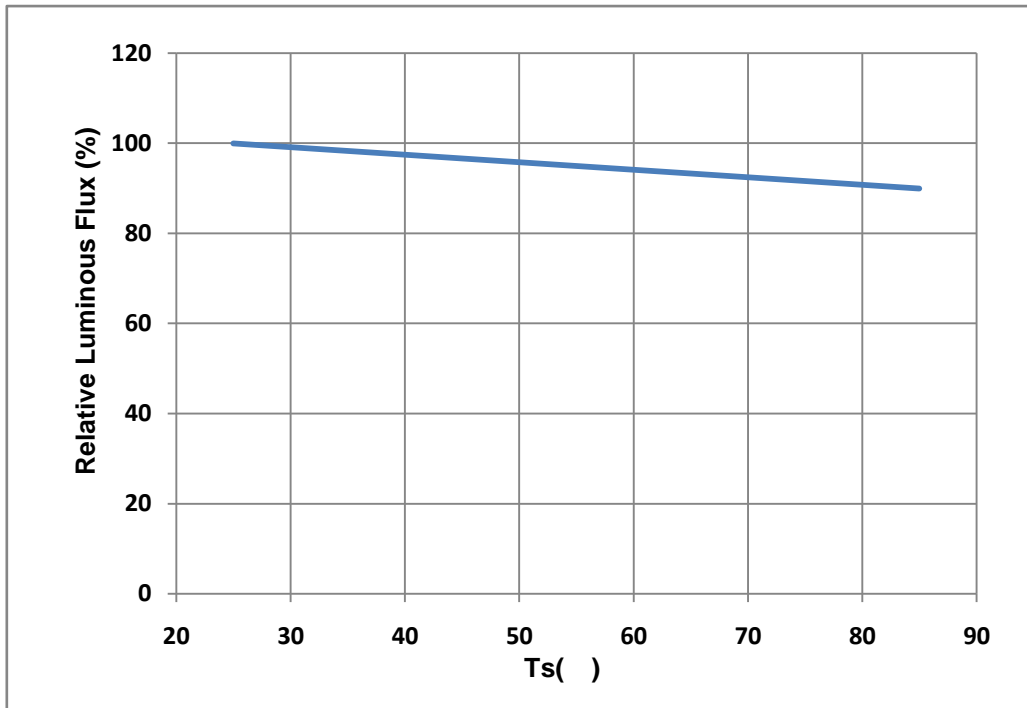


Fig 1-9 Pin Temperature Vs Relative Intensity 管脚温度与相对光强特性曲线

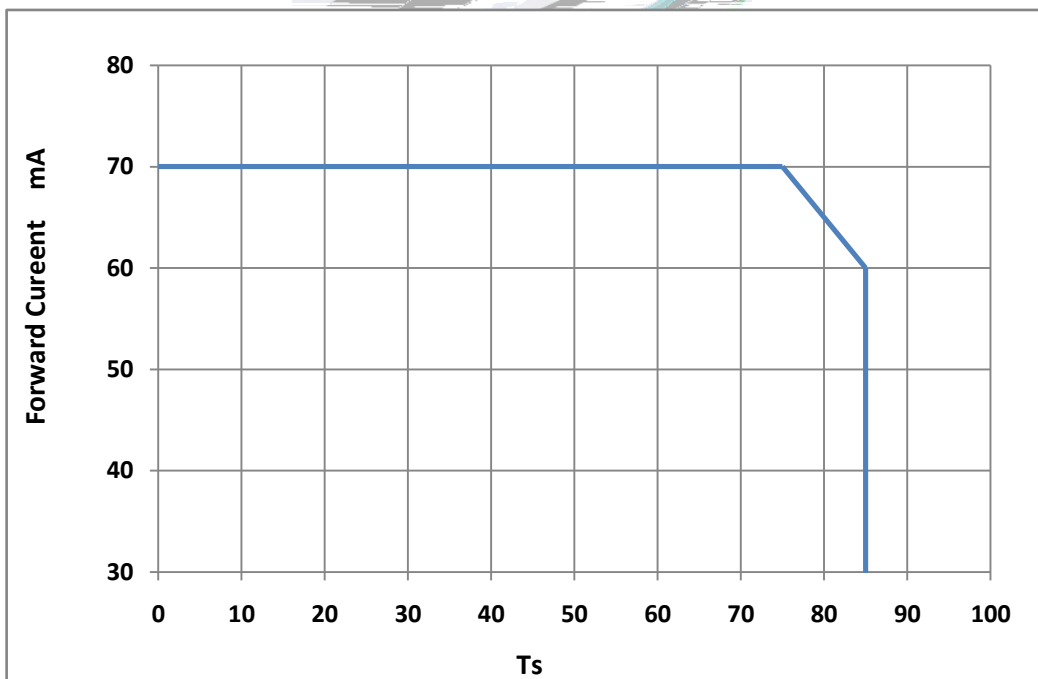


Fig 1-10 Pin Temperature Vs Forward Current 管脚温度与正向电流特性曲线

$T_j \leq 110^\circ\text{C}$

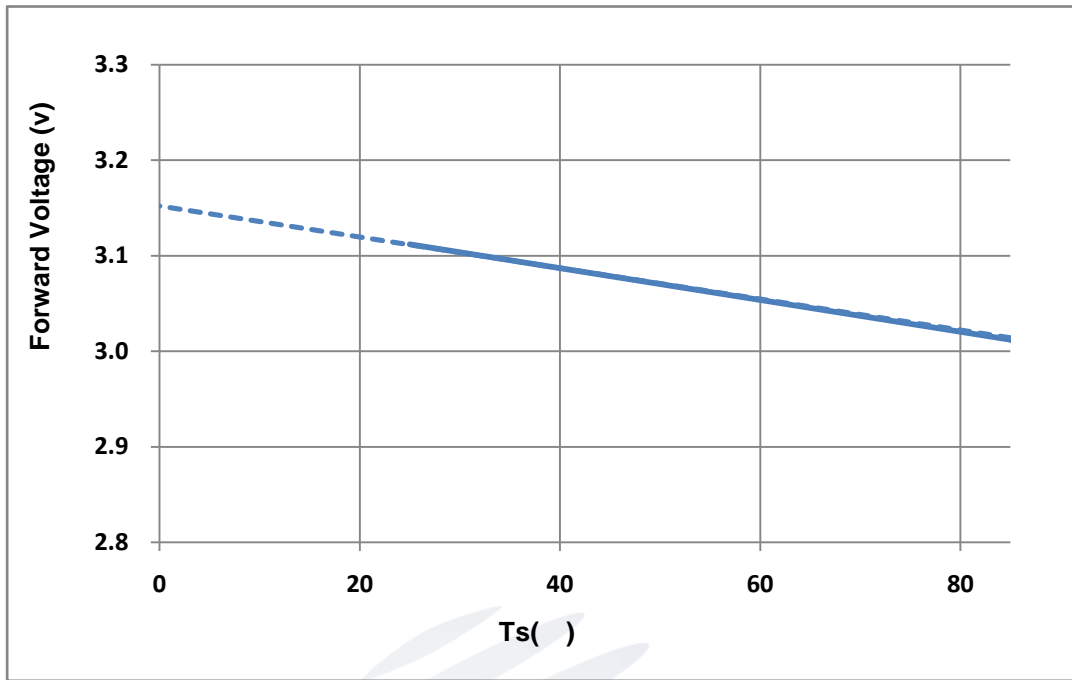


Fig 1-11 Forward Voltage Vs Pin Temperature 中压与管脚温度特性曲线

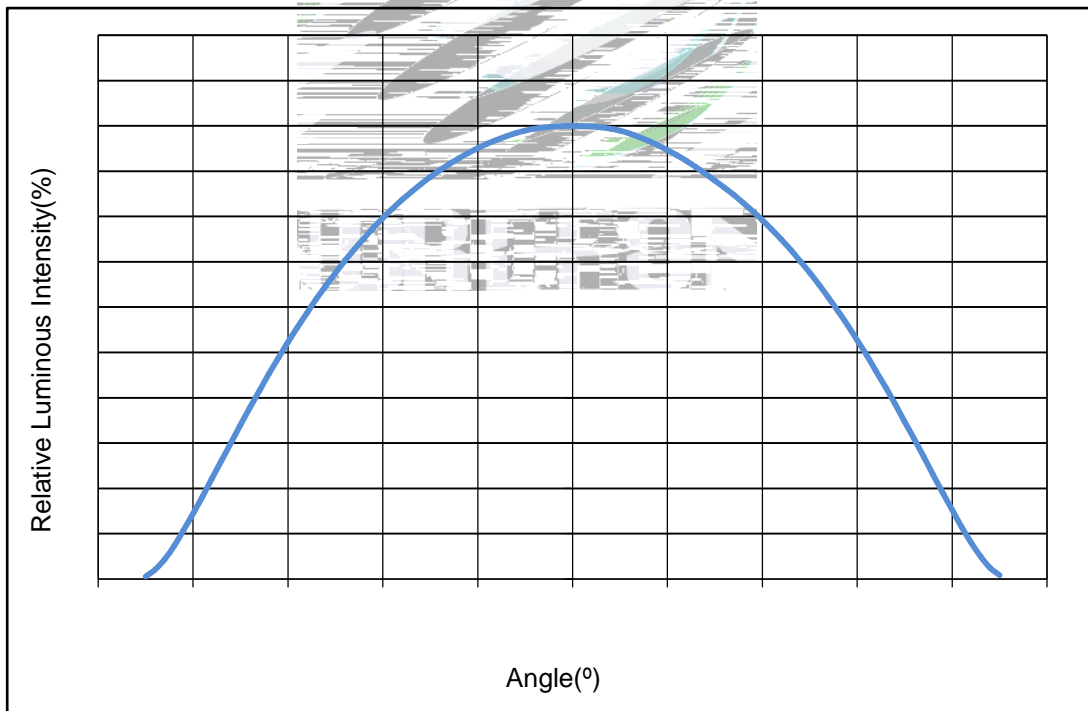
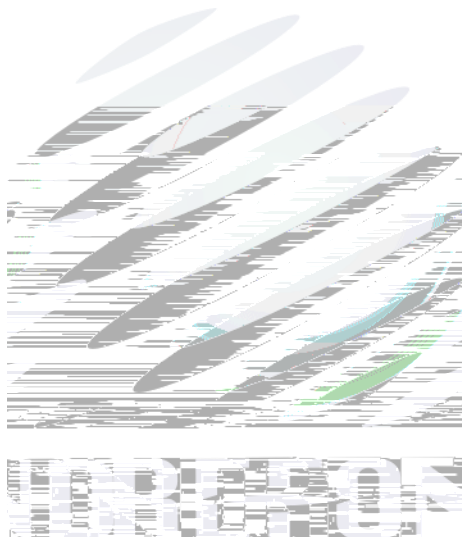


Fig 1-12 Radiation diagram 辐射特性曲线



## 2. Packaging 产品包装

### 2.1 Packaging Specification 包装规格

Package: 23000pcs/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

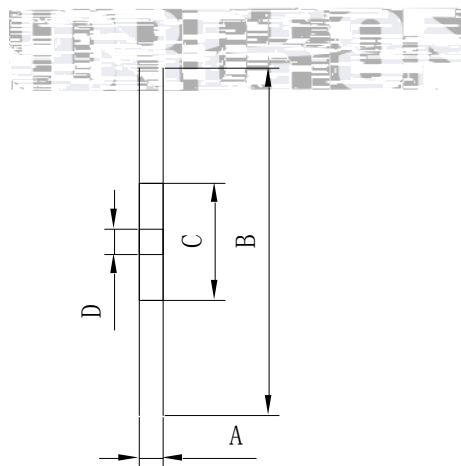
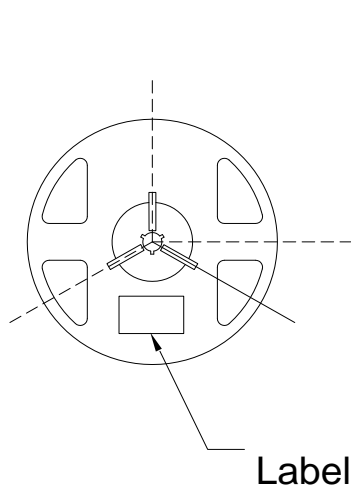


Table 2-1

A	12.4±0.3mm
B	400±2mm
C	100±0.4mm
D	14.3±0.3mm

Fig.2-2Title

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 标签规格

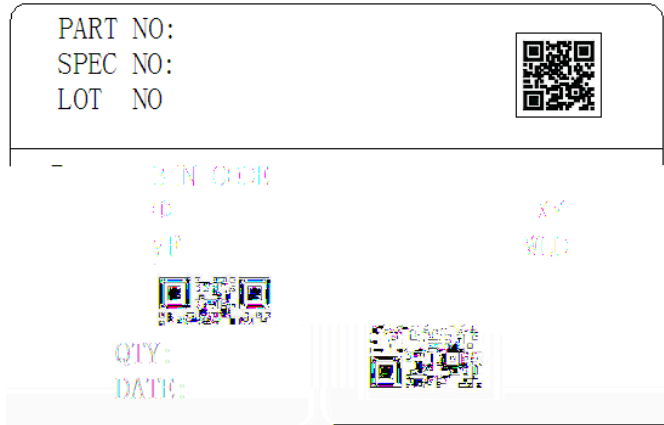


Fig 2-3 Title

Table 2-2 Title

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 <sub>F</sub>	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

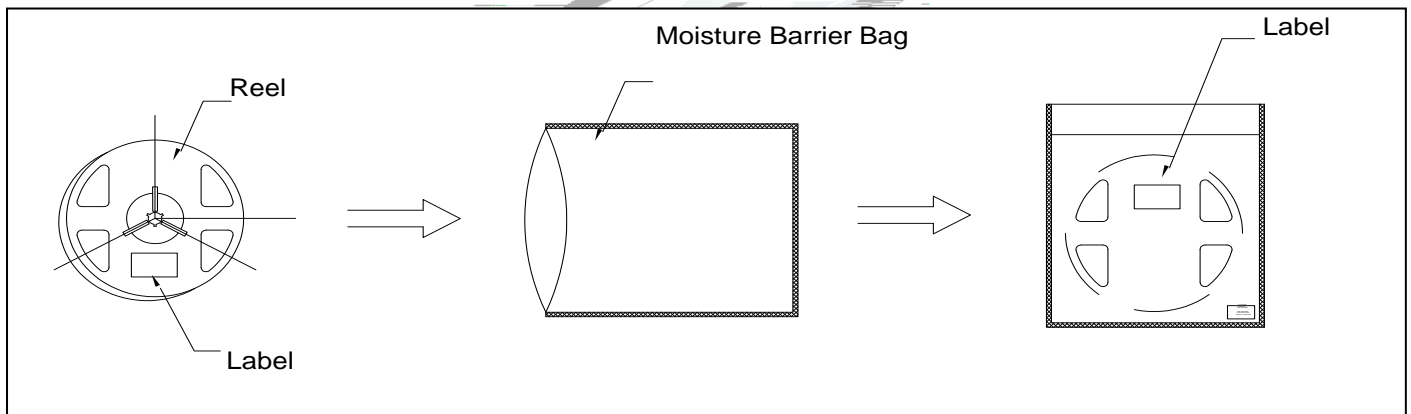


Fig.2-4Title

### 2.3 Cardboard Box 包装纸箱

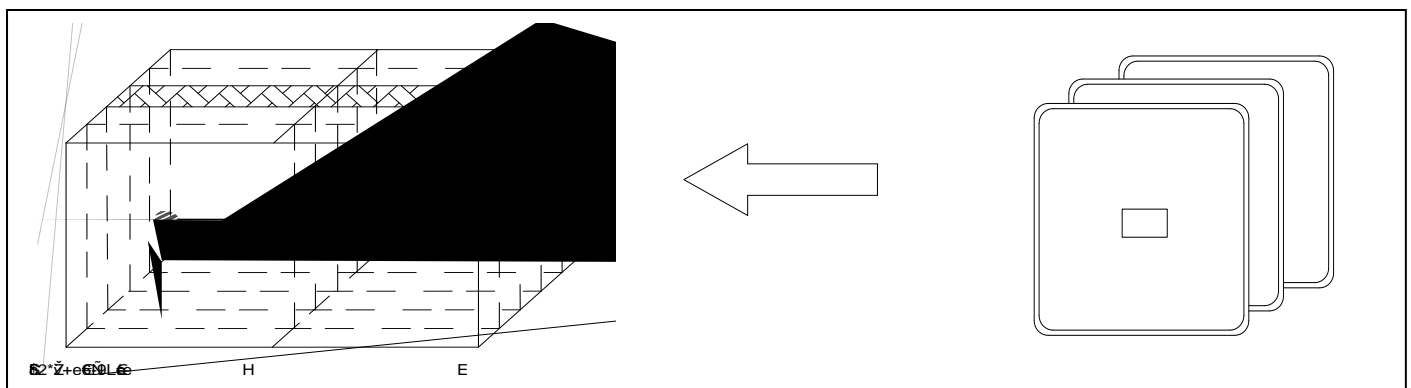


Fig.2-5Title



## 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	$V_F$	$I_F=60mA$	-	$(U.S.L^*) \times 1.1$
Reverse Current 反向电流	$I_R$	$V_R = 5V$	-	$(U.S.L^*) \times 2.0$
Luminous Flux 光通量		$I_F=60mA$	$(L.S.L^*) \times 0.7$	-

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 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. 以上可靠性测试是基于瑞丰现有实验平台单颗/

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

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

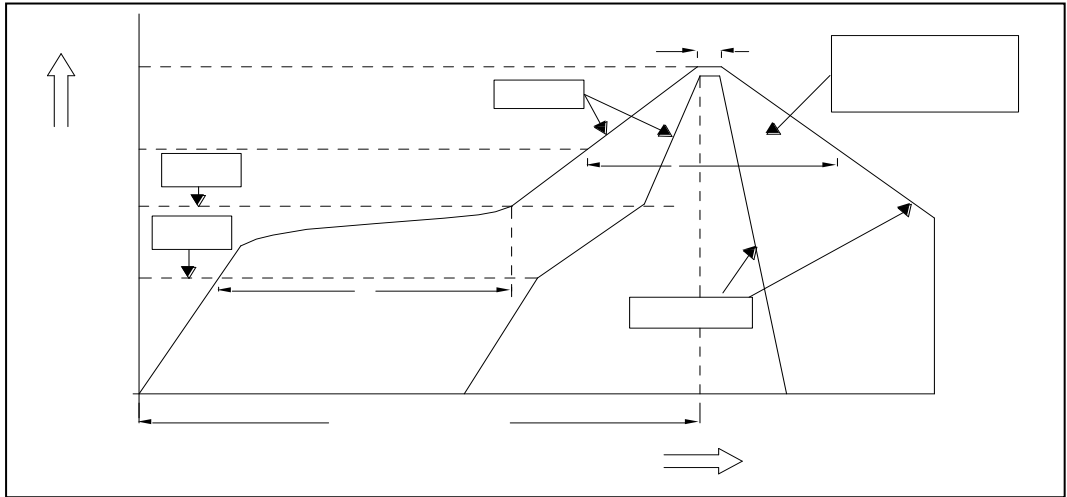


Fig.3-1Title

Table 3-1Title

Average temperature rise speed 平均升温速度 (Tsmmax 至Tp)	最高3 °C/秒 Max 3 °C/ s
Preheating: minimum temperature 预热: 最低温度 (Tsmmin)	150 °C
Preheating: Max temperature 预热: 最高温度 (Tsmmax)	200 °C
Preheating: Time 预热: 时间 (Tsmmin 至Tsmmax)	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)	最多60秒 Max 60s
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 Tp 25 °C 升至峰值温度所需时间	最多8分钟 Max 8 minutes



Notes 备注:

(1) Reflow soldering should not be done more than two times. In the case of more than 24 hours passed soldering after first, LEDs will be damaged. 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 hand soldering, 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) The hand solder should be done only one time. 手工焊接只可焊接一次。

### 3.1.2 Repairing 维修

Repair 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 will not be damaged by repairing.

LED 焊接完成后，尽量不要维修。当维修不可避免时，应使用双头烙铁（如下图所示）。应事先确认LED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 influence to 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 proper. LED封装胶为硅胶，表面较软。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，胶体表面的压力应是恰当的。

(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board. 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。



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黏结剂。

(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。

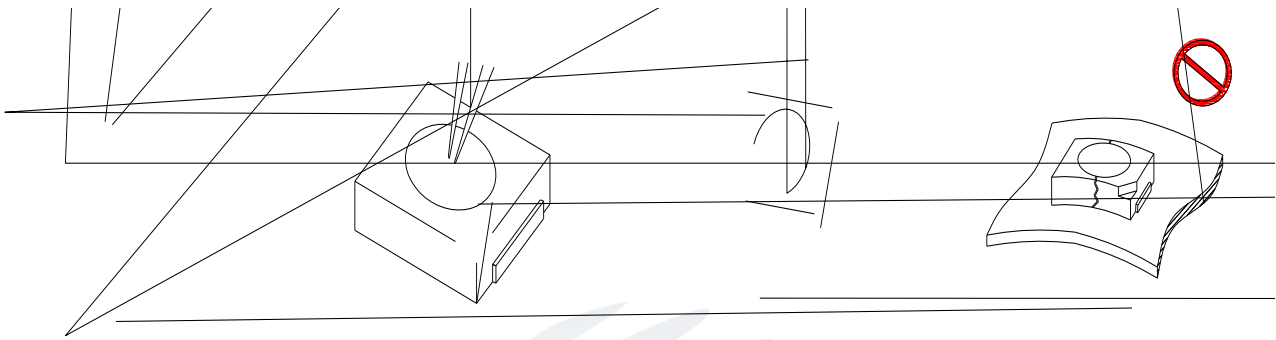


Fig 4-1 Title

(5) In designing a circuit, the current through each LED can not be exceed the absolute maximum rating specified for each LED. In the mean while, 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 容易因为自身的发热和环境温度的改变而改变，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. 与其他封装材料相比，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，可采用超声波清洗或有机溶剂清洗，但不推荐超声波清洗，因为超声波清洗会造成LED封装材料表面损伤，且清洗后易产生静电，影响LED封装材料的使用寿命。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 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。

Version History/修订历史

Date日期	Revisor修订者	Version版本	Verifier审核	Remarks备注
2020-11-19		E/0		



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。