

# SPECIFICATION

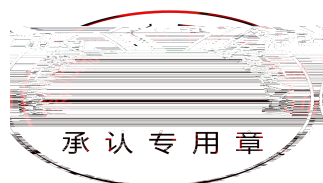
# 产品规格书

REFOND P/N 产品型号

RF-BWB190DS-EB-C

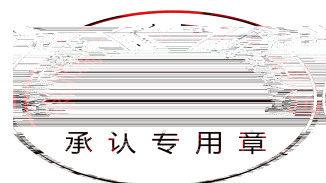
R&D 研发

Mass Product 量产供货



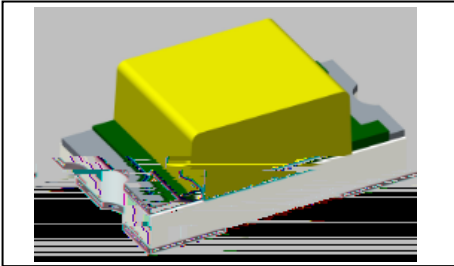
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## 1. Description 产品介绍

### 1.1 General Description 产品描述



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

Product Package: 1.6mmX0.8mmX0.7mm.

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：1.6mmX0.8mmX0.7mm。

### 1.2 Features 产品特征

- ▶ 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
- ▶ 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. 光学指示
- ▶ Switch and Symbol, Display. 开关和标识、显示器等
- ▶ Household electrical appliances . 家电
- ▶ General use. 其他应用



### 1.4 Package Dimension 封装尺寸

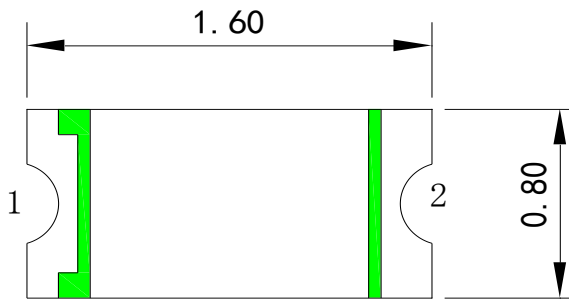


Fig.1-1 Top view 正面视图

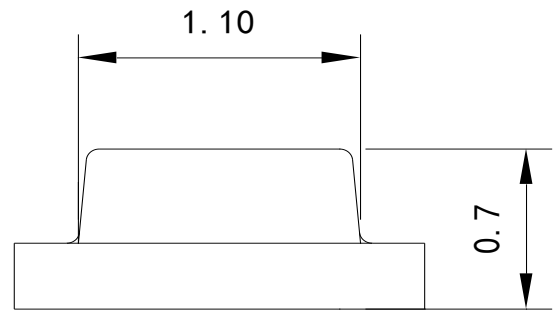


Fig.1-2 Side view 侧面视图

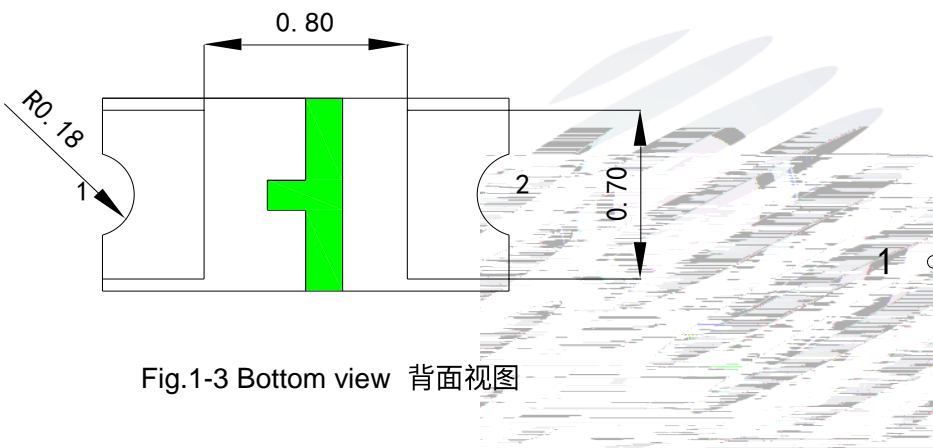


Fig.1-3 Bottom view 背面视图

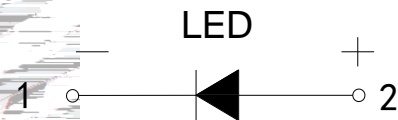


Fig.1-4 Polarity 极性

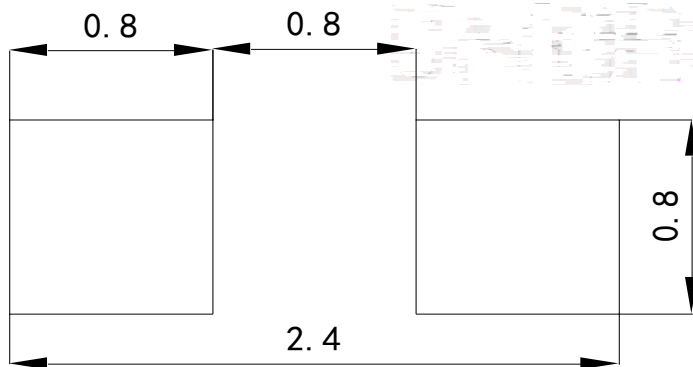
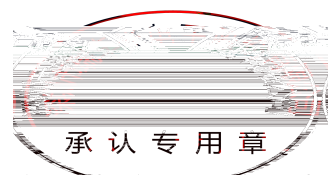


Fig.1-5 Soldering patterns 推荐焊盘

#### 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  $\pm 0.2\text{mm}$  unless otherwise noted. 除特别标注外, 所有尺寸公差为  $\pm 0.2$  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	Test Condition 测试条件	Symbol 符号		Value			Unit 单位
				Min. (最小值)	Typ. (典型值)	Max. (最大值)	
Forward Voltage 正向电压	I <sub>F</sub> =10mA	V <sub>F</sub>	F1	2.6	--	2.7	V
			F2	2.7	--	2.8	V
			G1	2.8	--	2.9	V
			G2	2.9	--	3.0	V
			H1	3.0	--	3.1	V
			H2	3.1	--	3.2	V
			I1	3.2	--	3.3	V
			I2	3.3	--	3.4	V
Luminous Intensity 发光强度	I <sub>F</sub> =10mA	I <sub>v</sub>	J1	3.4	--	3.5	mcd
			I10	230	--	280	mcd
			I20	280	--	350	mcd
			J10	350	--	430	mcd
			J20	430	--	530	mcd
			K10	530	--	650	mcd
			K20	650	--	800	mcd
Viewing Angle 发光角度	I <sub>F</sub> =10mA	2θ <sub>1/2</sub>	--	140	--	deg	
Reverse Current 漏电流	V <sub>R</sub> =5V/10ms	I <sub>R</sub>	--	--	10	μA	
Thermal Resistance. 热阻	I <sub>F</sub> =10mA	R <sub>THJ-S</sub>	--	--	450	°C/W	

Note 备注: V<sub>R</sub>=5V For test conditions. V<sub>R</sub>=5V 为测试分选条件。

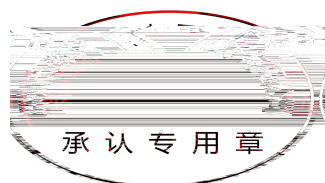
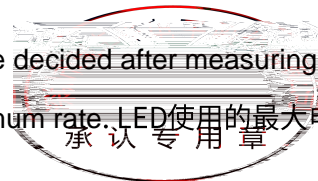


Table 1-2 Absolute Maximum Ratings at Ts=25°C 绝对最大值

Parameter (参数)	Symbol (符号)	Rating (值)	Units (单位)
Power Dissipation (功耗)	Pd	105	mW
Forward Current (正向电流)	IF	30	mA
Peak Forward Current Of Pulse (脉冲峰值电流)	IFP	60	mA
Electrostatic Discharge (HBM) (静电)	ESD	1000	V
Operating Temperature (操作温度)	Topr	-40 ~ +85	°C
Storage Temperature (储存温度)	Tstg	-40 ~ +85	°C
Junction Temperature (结温)	Tj	95	°C

## 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 color coordinates measurement allowance tolerance is  $\pm 0.005$ . 以上所示坐标测量误差  $\pm 0.005$ .
- 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。





### 1.7 Typical Optical Characteristics Curves 典型光学特性曲线

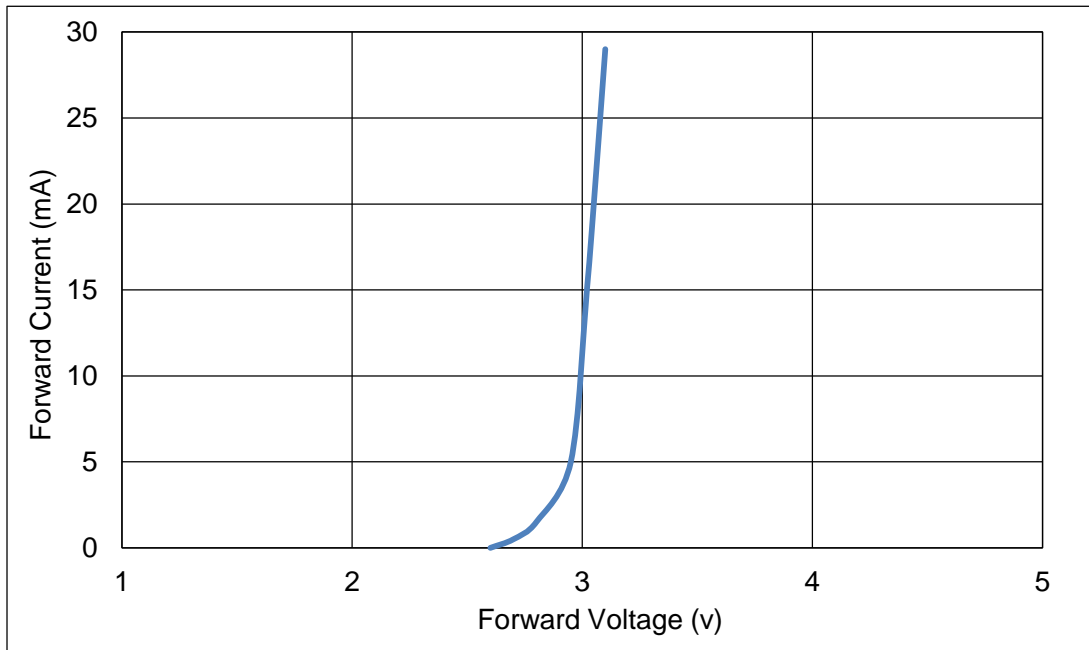


Fig. 1-7 Forward Voltage Vs Forward Current 伏安特性曲线

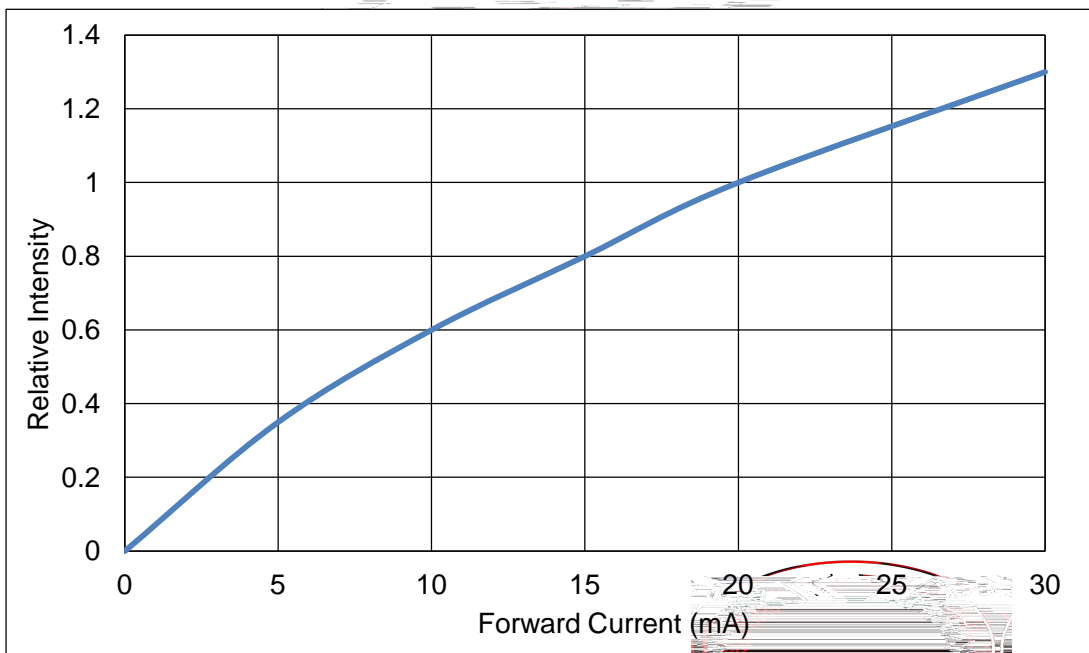


Fig. 1-8 Forward Current Vs Relative Intensity 正向电流与相对光强特性曲线

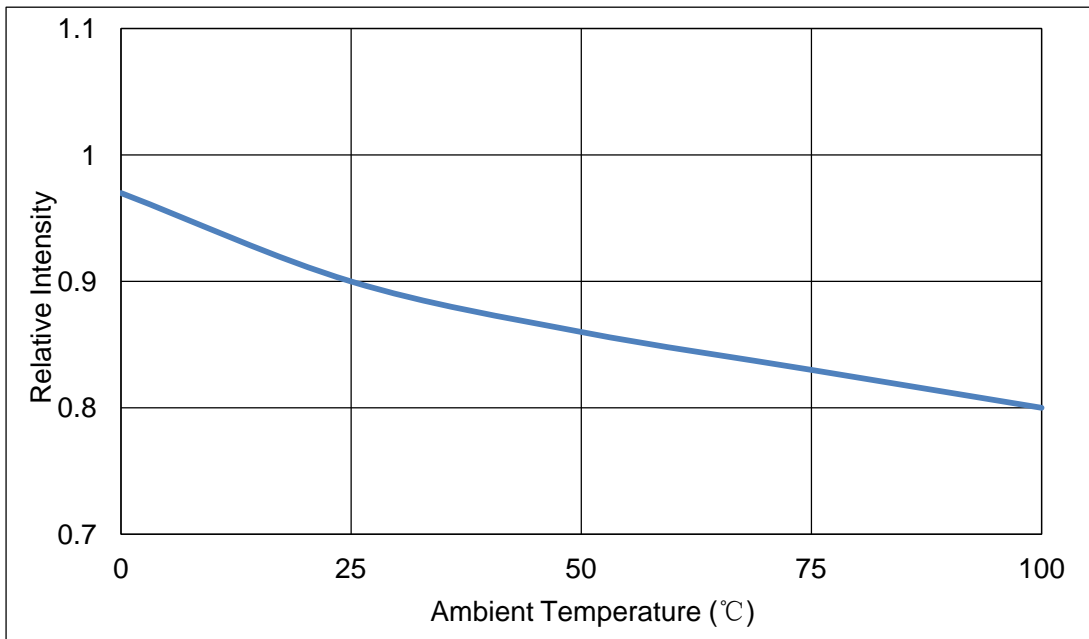


Fig. 1-9 Pin Temperature Vs Relative Intensity 引脚温度与相对光强特性曲线

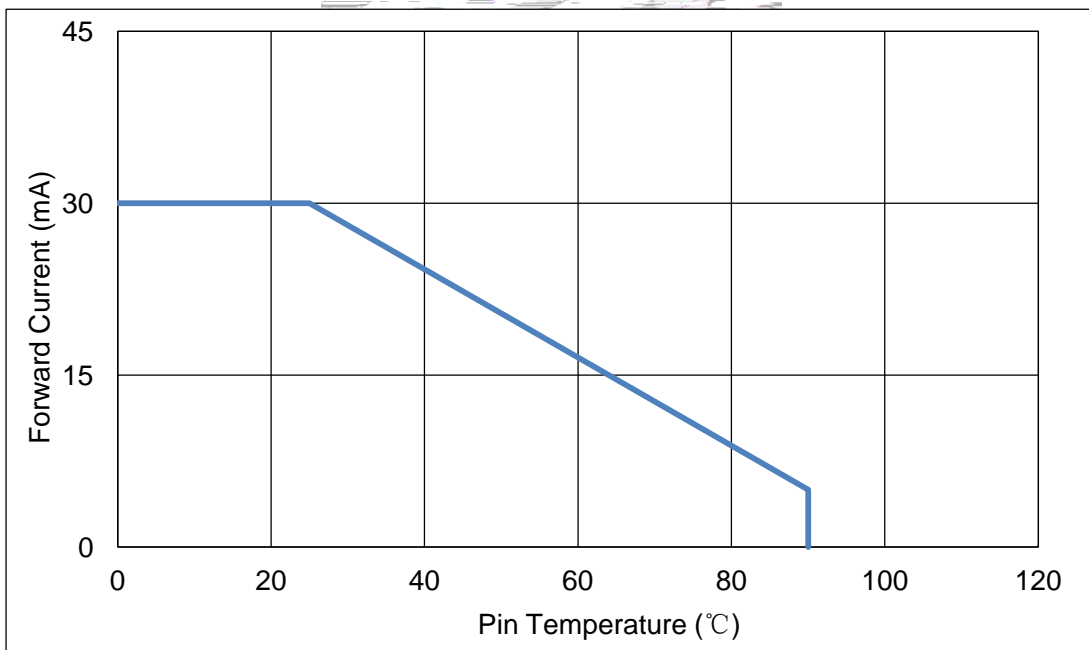


Fig. 1-10 Pin Temperature Vs Forward Current 引脚温度与正向电流特性曲线



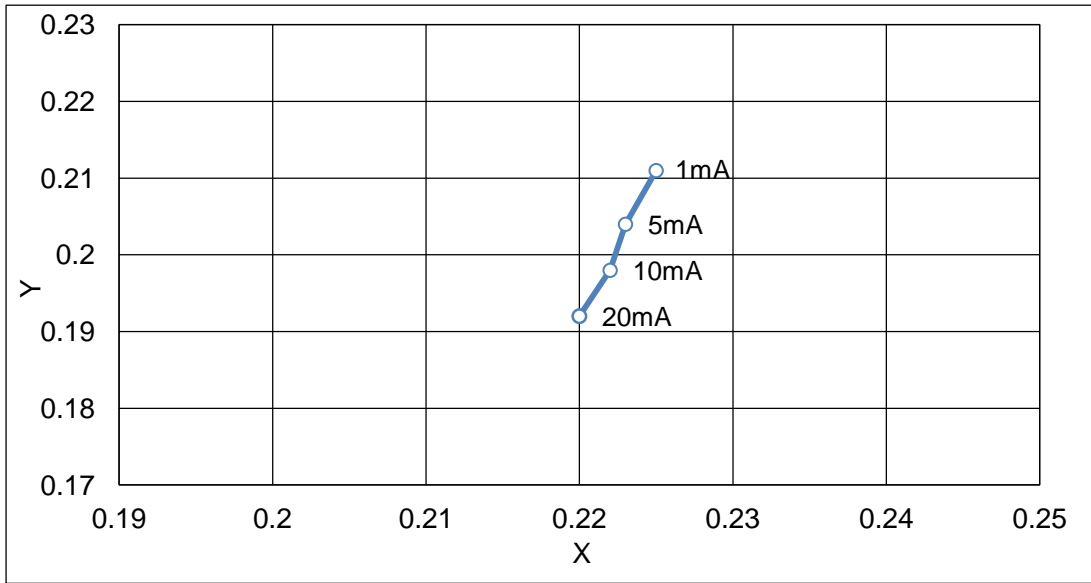


Fig. 1-11 Forward Current Vs Dominate Wavelength (Ta=25°C) 正向电流与主波长关系曲线

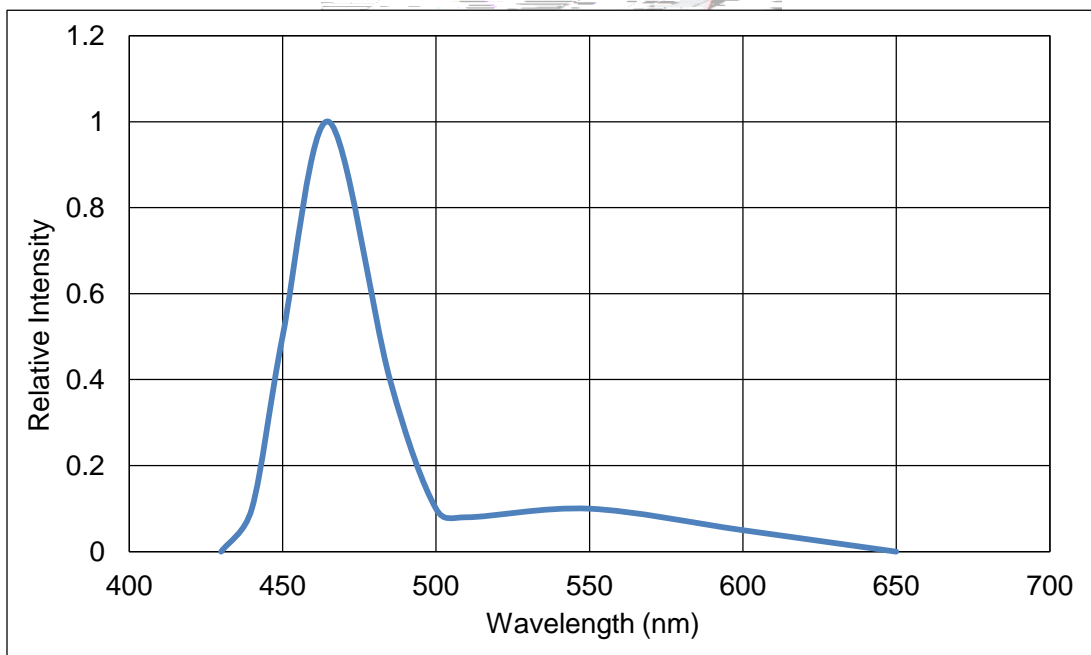


Fig. 1-12 Relative Intensity Vs Wavelength (Ta=25°C) 相对光强与波长关系曲线



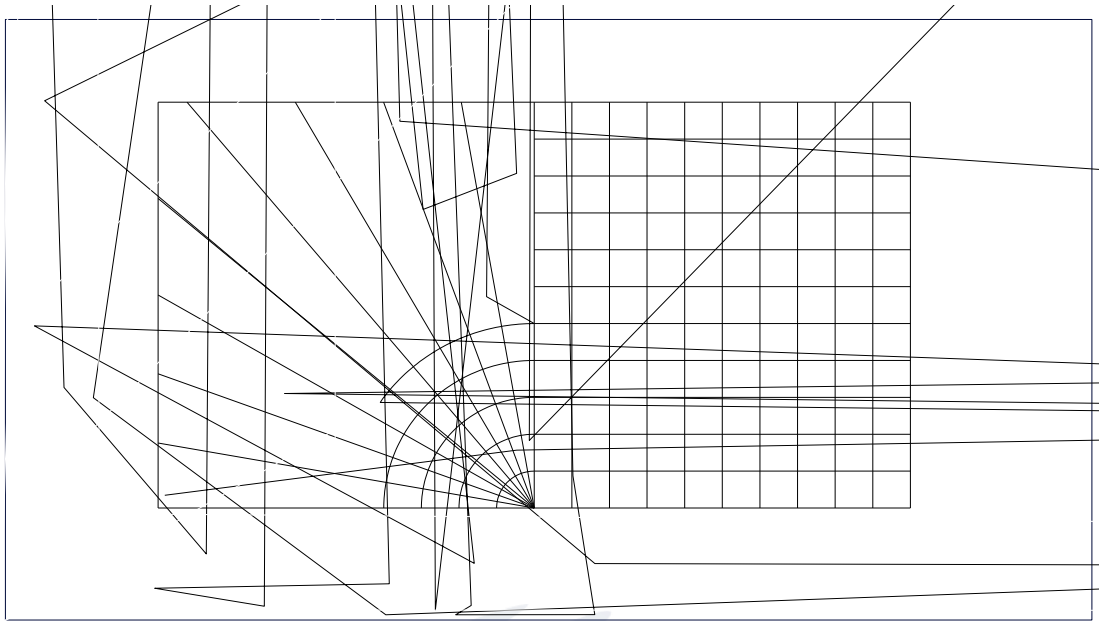
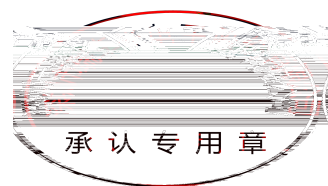
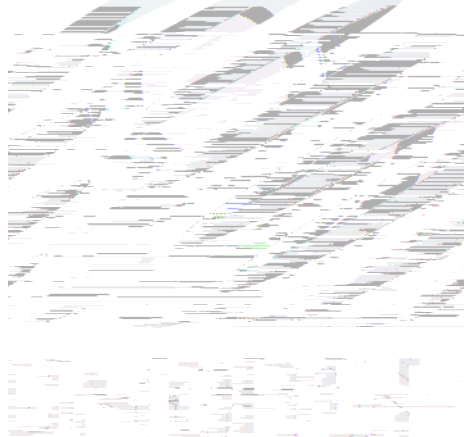


Fig. 1-13 Diagram characteristics of radiation 辐射特性曲线



## 2. Packaging 产品包装

### 2.1 Packaging Specification 包装规格

Package:4000pcs/reel.包装每卷 4000pcs。

#### 2.1.1 Carrier Tape Dimension 载带尺寸

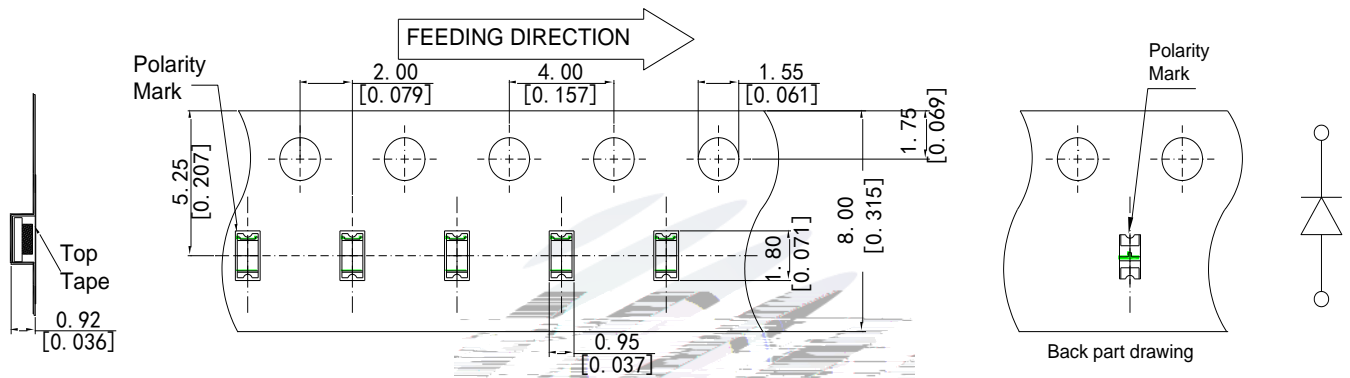


Fig.2-1 Carrier Tape Dimension 载带尺寸

#### 2.1.2 Reel Dimension 卷盘尺寸

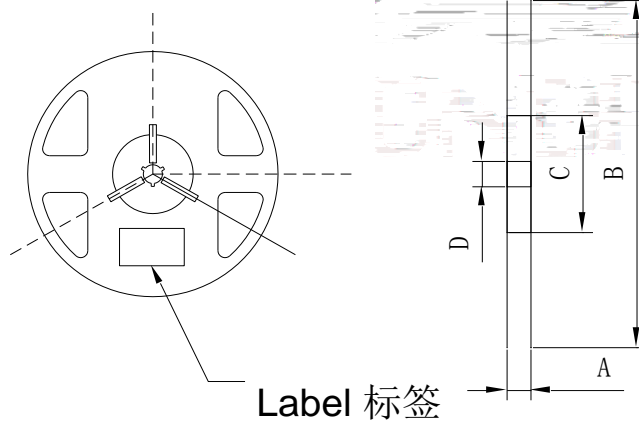


Table 2-1 Dimension 尺寸

A	8.0±0.1mm
B	178±1mm
C	60±1mm
D	13.0±0.5mm

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 标签规格

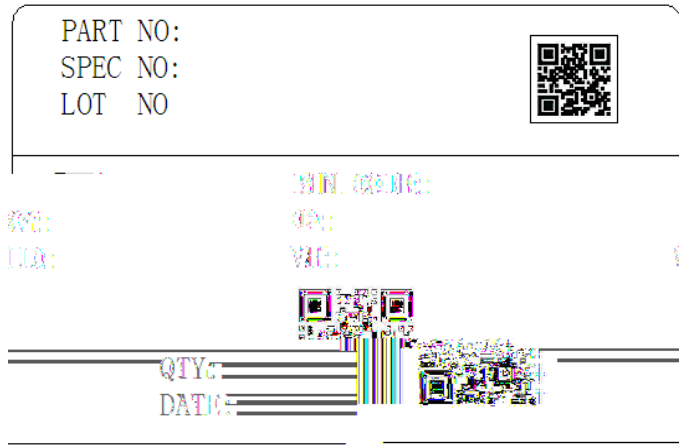


Fig. 2-3 Label Form Specification 标签规格

Table 2-2 Parameter 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
$\Phi$	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

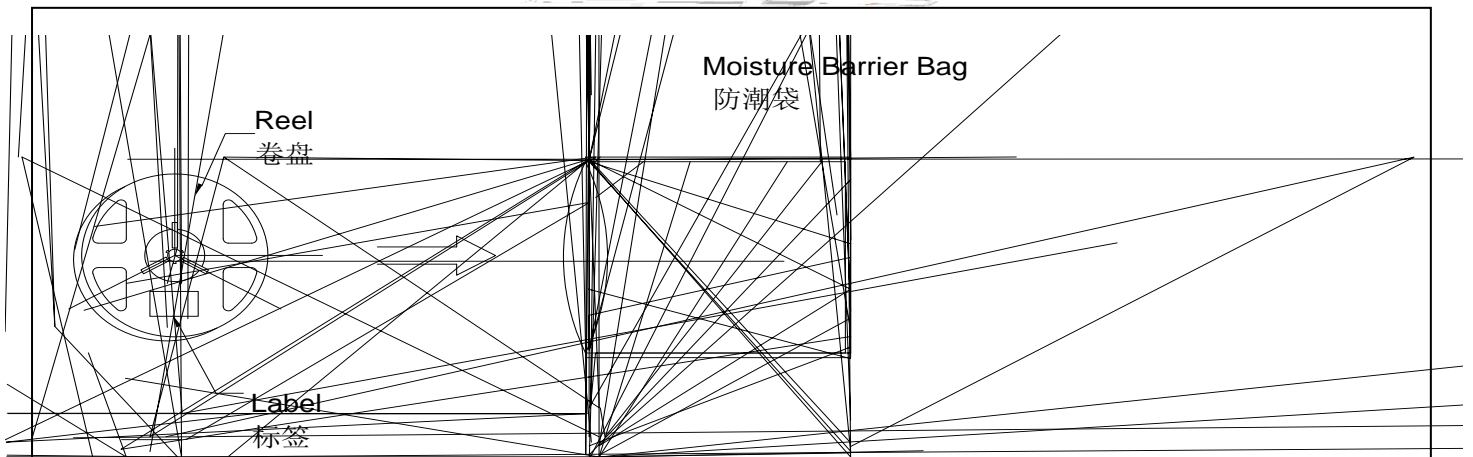


Fig.2-4 Moisture Resistant Packing 防潮包装





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

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

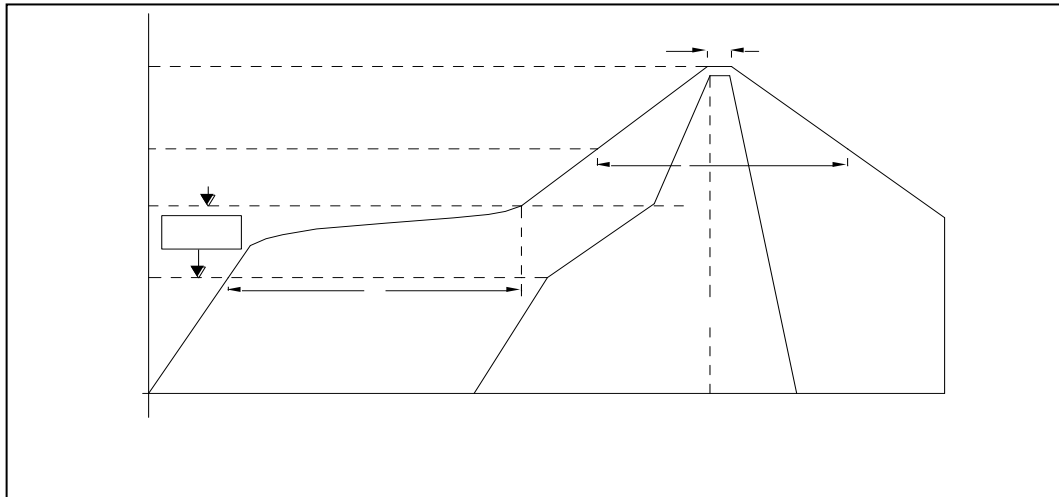


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 Parameter 参数

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 (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

承认专用

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)Whensoldering , 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 time is less than 3 seconds. 烙铁焊接时间不可超过3秒。



## 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 external 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

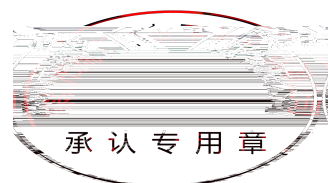


(4) In designing a circuit, the current through each LED can not exceed the absolute maximum



(8) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). 半导体元器件中LED和其他LED对静电过流击穿非常敏感，需要做好防护。

(9) 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。