SPECIFICATION
产品规格书

REFOND P/N 产品型号

RF-WNB190DS-DD

□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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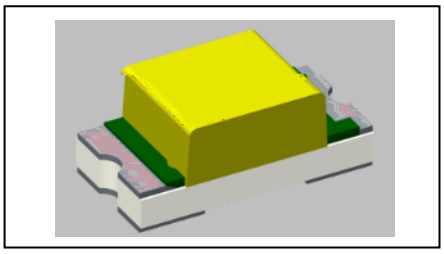
1. Description 产品介绍

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

General use. 其他应用

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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 Min. (最小值)	Value Typ. (典型值)	Value Max. (最大值)	Unit 单位
Forward Voltage 正向电压	I_F=20mA	V_F	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
			J1	3.4	--	3.5	V
Luminous Intensity 发光强度	I_F=20mA	I_V	1BF	600	--	650	mcd
			1BG	650	--	700	mcd
			1BH	700	--	750	mcd
			1BI	750	--	800	mcd
			1BJ	800	--	850	mcd
			1BK	850	--	900	mcd
			1FA	900	--	950	mcd
			1FB	950	--	1000	mcd
Viewing Angle 发光角度	I_F=20mA	--		--	140	--	deg
Reverse Current 漏电流	V_R=5V/10ms	I_R		--	--	10	μA
Thermal Resistance. 热阻	I_F=20mA	R_{THJ-S}		--	--	450	°C/W

Notes 备注: V_R=5V For test conditions. V_R=5V 为测试分选条件。

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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	105	mW
Forward Current（正向电流）	I_F	30	mA
Peak Forward Current Of Pulse（脉冲峰值电流）	I_{FP}	60	mA
Electrostatic Discharge (HBM)（静电）	E_{SD}	1000	V
Operating Temperature（操作温度）	T_{opr}	-40 ~ +85	
Storage Temperature（储存温度）	T_{stg}	-40 ~ +85	
Junction Temperature（结温）	T_j	95	

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. The above color coordinates measurement allowance tolerance is ±0.005. 以上所示坐标测量误差±0.005.
4. The above luminous intensity measurement allowance tolerance ±10%. 上述发光强度的测试允许公差为±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. 所有测试都是在于瑞三现有的标准测试平台。
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。

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1.6 Bin Range Of Forward Voltage and Luminous Flux (IF=20mA)电压与流明分BIN 范围(IF=20mA)

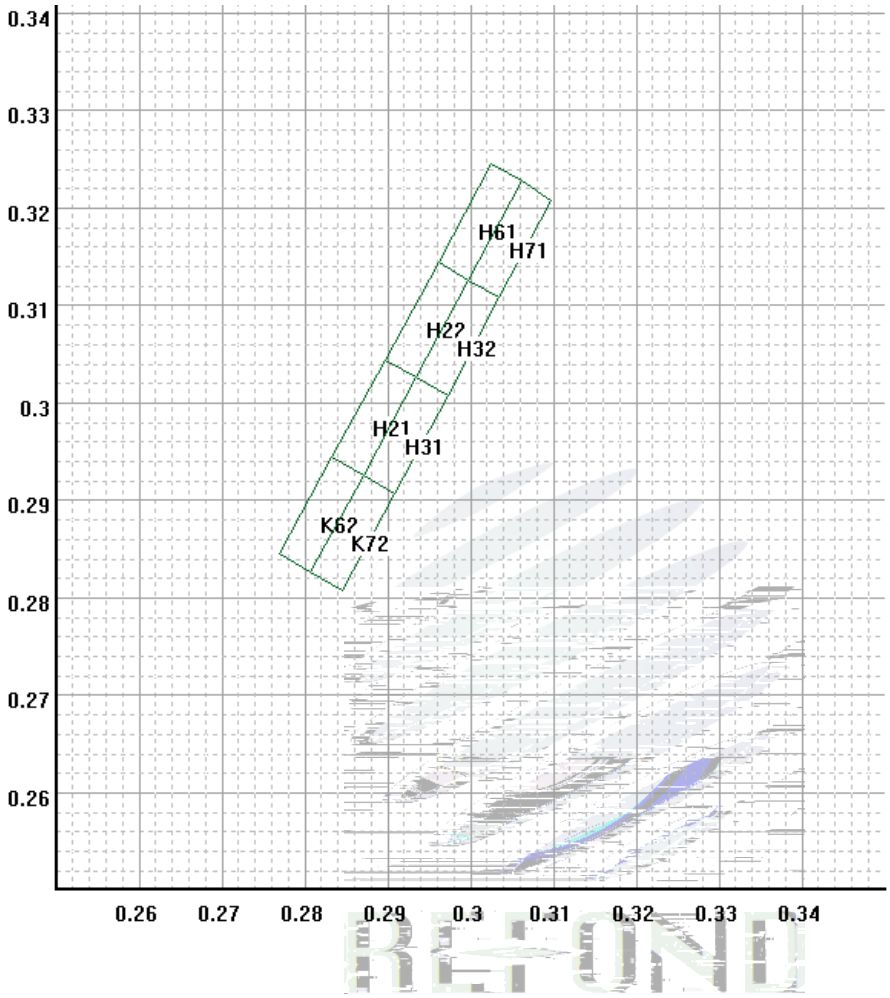


Fig. 1-6 The C.I.E Chromaticity Diagram CIE色度图

Table 1-3 Bin Date　Bin数据

BIN CODE	CIE-X1	CIE-Y1	CIE-X2	CIE-Y2	CIE-X3	CIE-Y3	CIE-X4	CIE-Y4
H21	0.2871	0.2925	0.2833	0.2944	0.2897	0.3043	0.2935	0.3025
H22	0.2897	0.3043	0.2935	0.3025	0.2998	0.3125	0.2962	0.3143
H31	0.2909	0.2906	0.2871	0.2925	0.2935	0.3025	0.2973	0.3006
H32	0.2935	0.3025	0.2973	0.3006	0.3034	0.3107	0.2998	0.3125
H61	0.2962	0.3143	0.2998	0.3125	0.3062	0.3226	0.3025	0.3244
H71	0.2998	0.3125	0.3034	0.3107	0.3098	0.3207	0.3062	0.3226
K62	0.2807	0.2825	0.2769	0.2844	0.2833	0.2944	0.2871	0.2925
K72	0.2845	0.2806	0.2807	0.2825	0.2871	0.2925	0.2909	0.2906

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

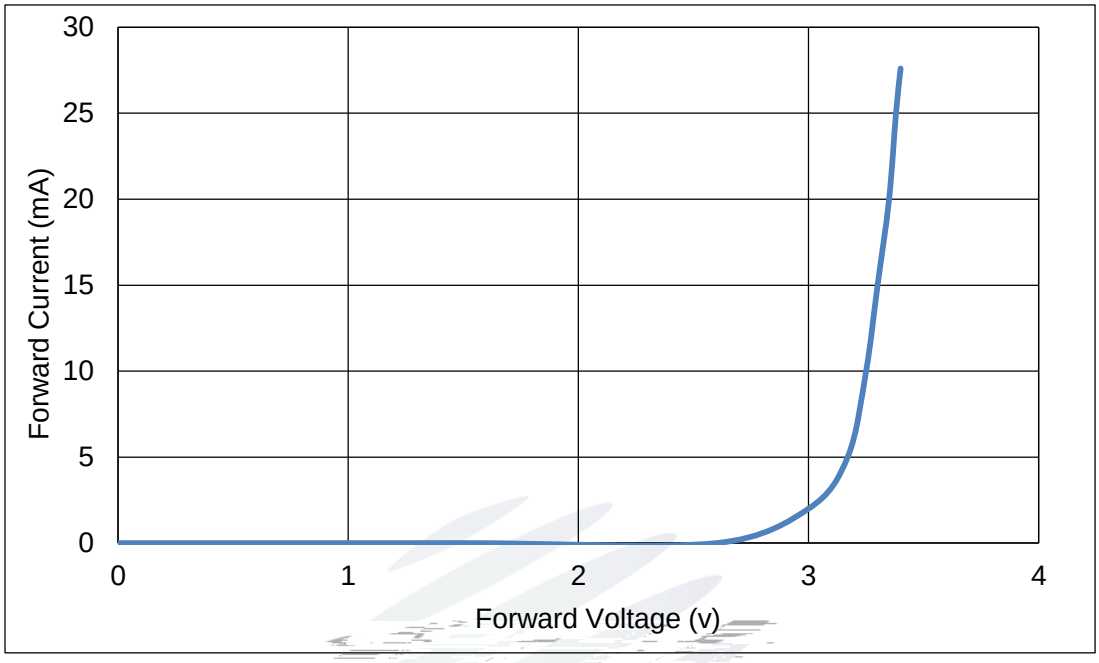


Fig 1-7 Forward Voltage Vs Forward Current 伏安特性曲线

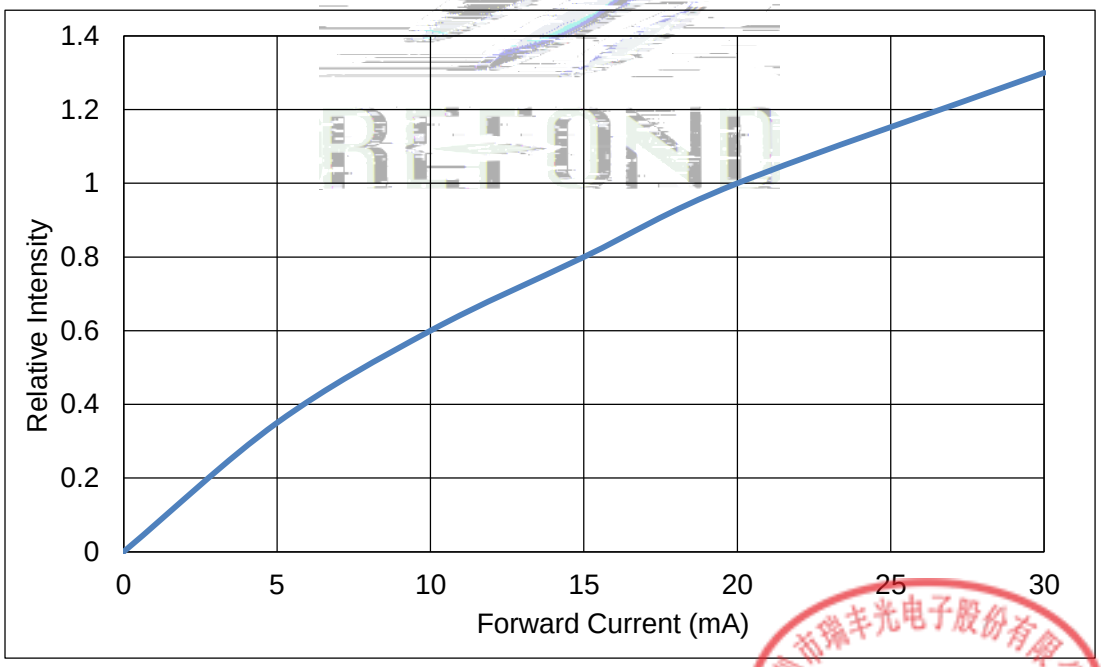


Fig 1-8 Forward Current Vs Relative Intensity 正向电流与相对光强特性曲线

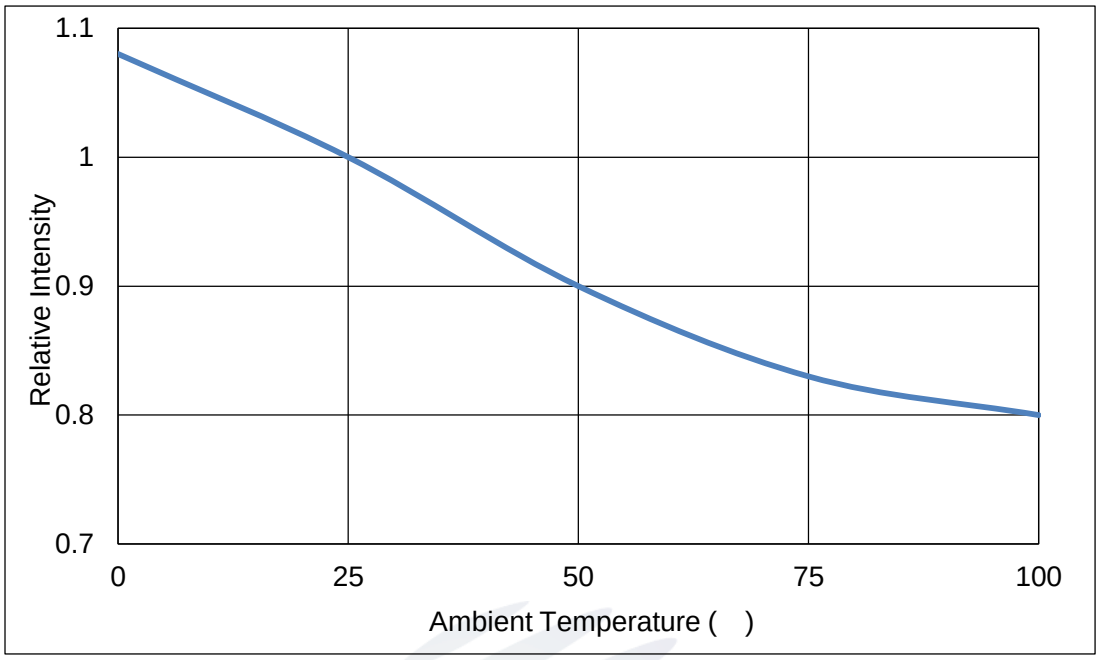


Fig 1-9 Pin Temperature Vs Relative Intensity 引脚温度与相对光强特性曲线

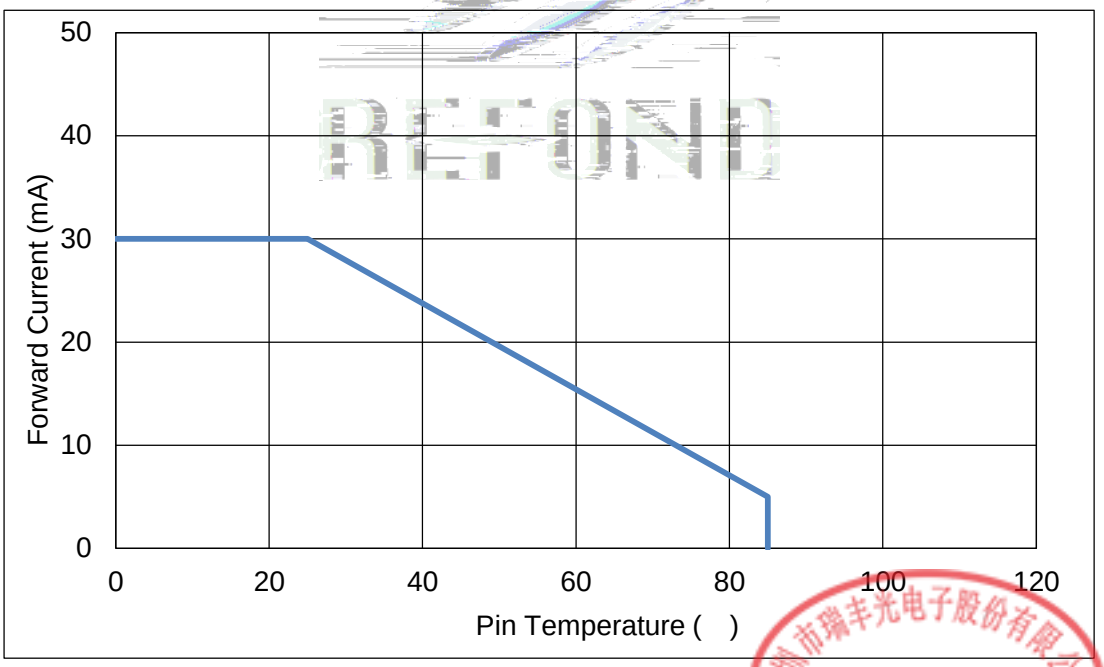


Fig 1-10 Pin Temperature Vs Forward Current 引脚温度与正向电流特性曲线

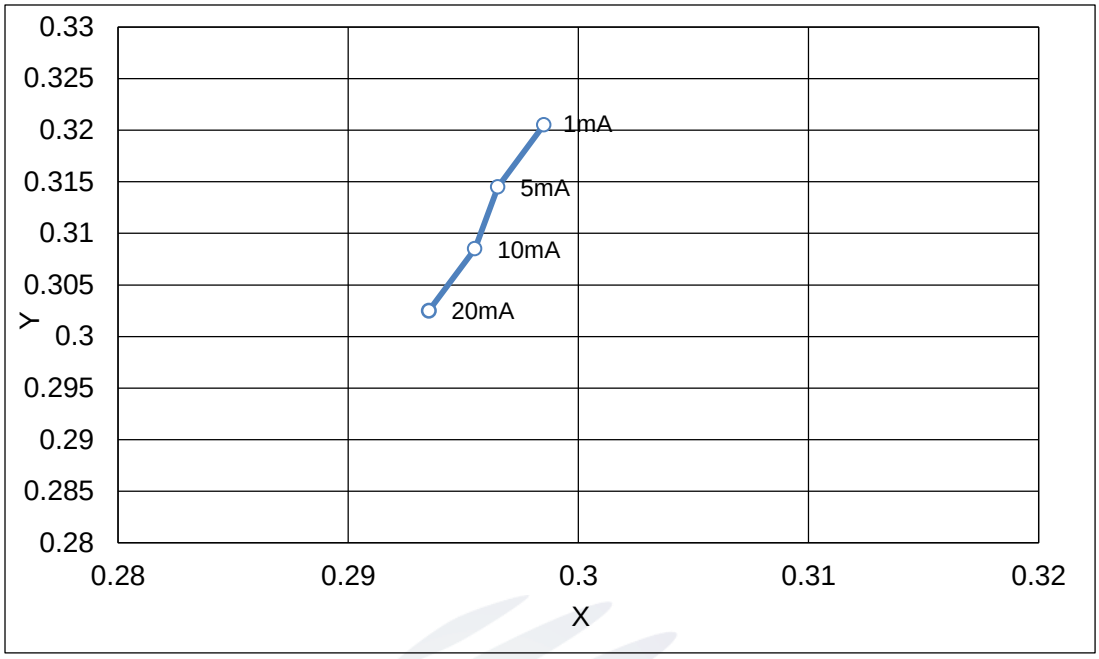


Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25) 正向电流与主波长关系曲线

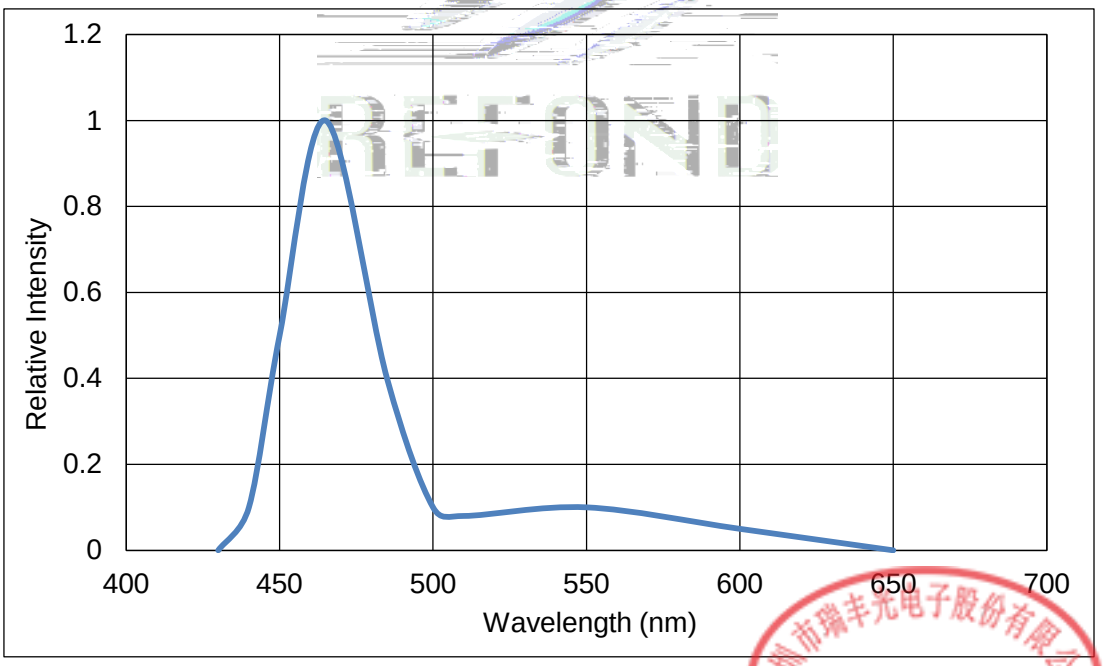


Fig.1-12 Relative Intensity Vs Wavelength (Ta=25) 相对光强与波长关系曲线

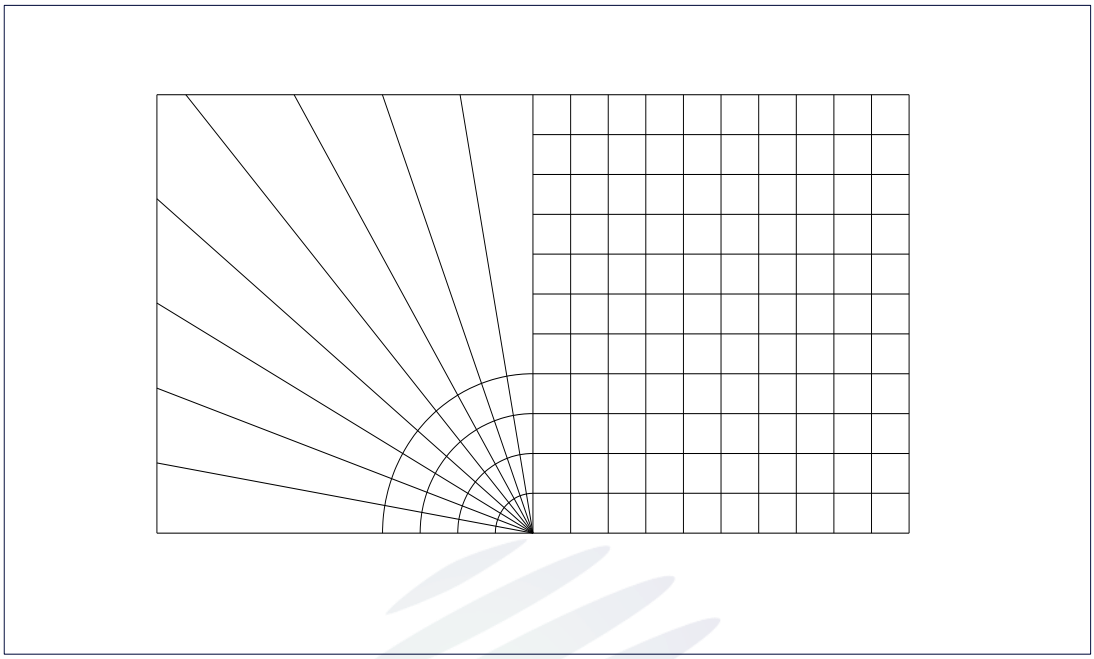


Fig.1-13 Diagram characteristics of radiation 辐射特性曲线

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

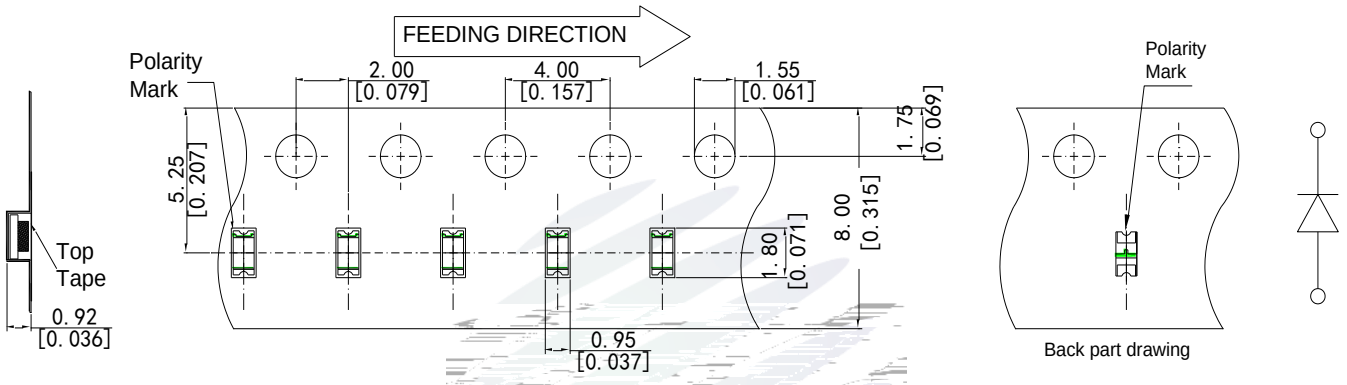


Fig.2-1 Carrier Tape Dimension 载带尺寸

2.1.2 Reel Dimension 卷盘尺寸

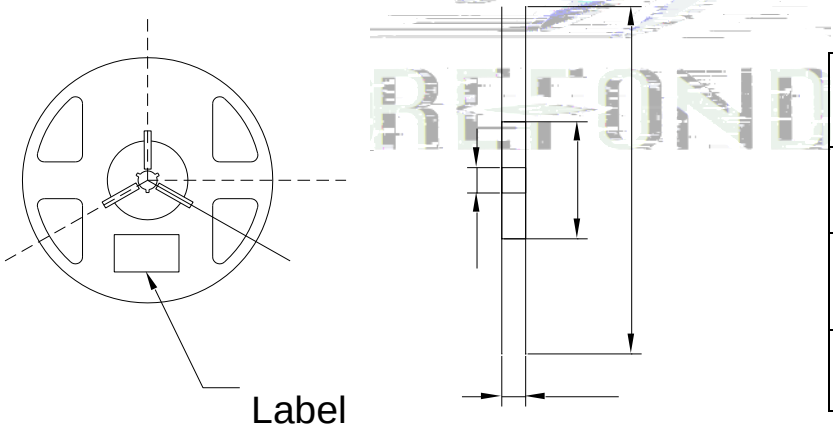


Table 2-1 Dimension 尺寸

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

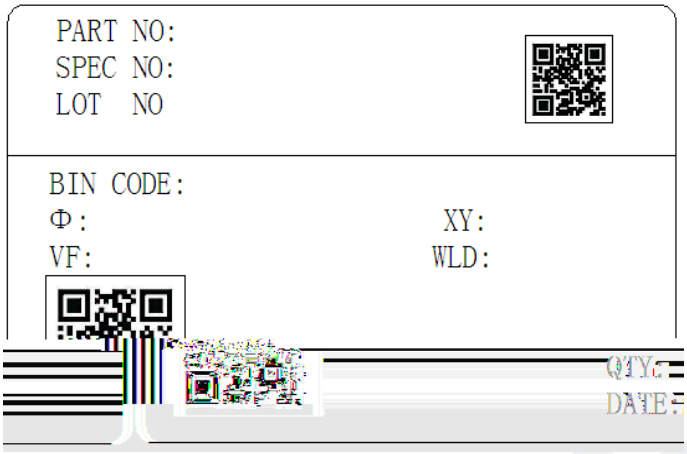
Fig.2-2 Reel Dimension 卷盘尺寸

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。

2.1.3Label 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
	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

Fig. 2-3 Label Form Specification 标签规格

2.2Moisture Resistant Packing 防潮包装

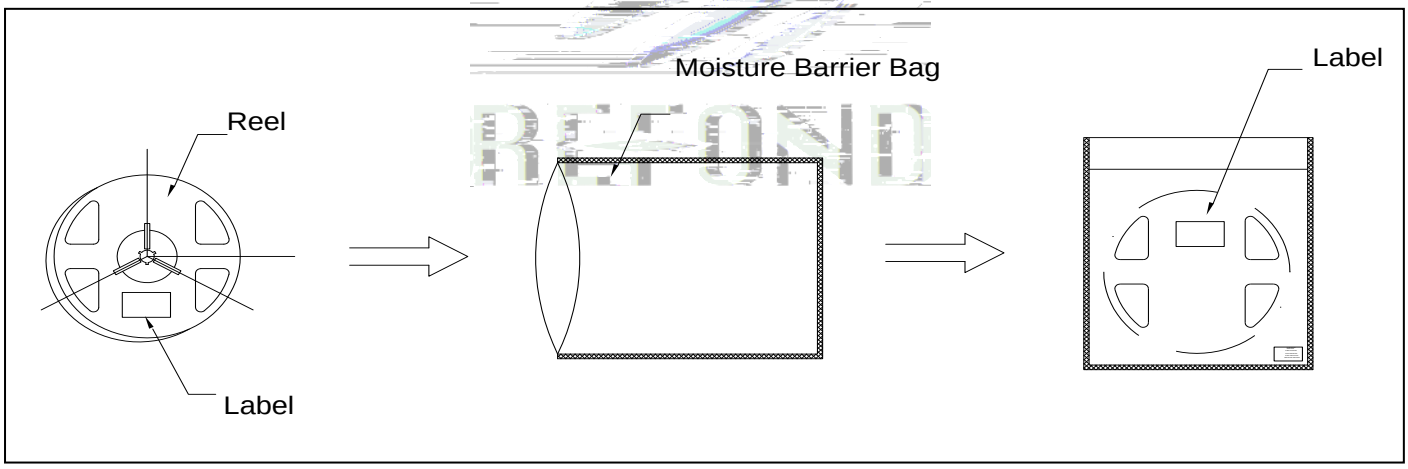


Fig.2-4 Moisture Resistant Packing 防潮包装

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2.3Cardboard Box 包装纸箱

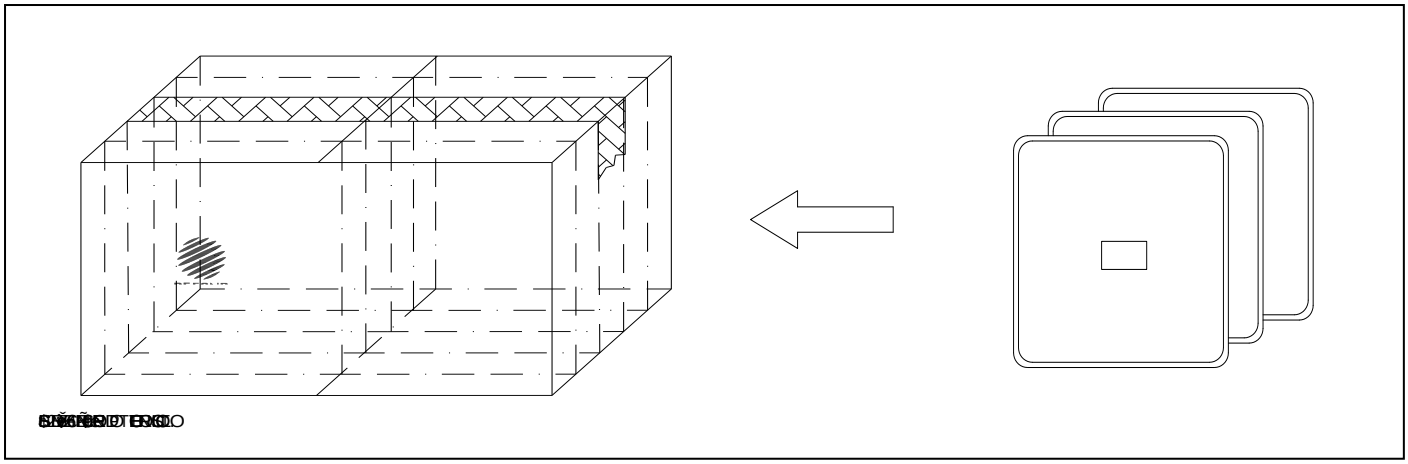

Fig.2-5 Cardboard Box 包装纸箱

2.4Reliability 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	T_{emp}:260℃max T=10 sec	2 times	22Pcs.	0/1
Temperature Cycle 温度循环	JESD22-A104	100℃ 30 min 5 min -40℃ 30 min	100 cycles	22Pcs.	0/1
Thermal Shock 冷热冲击	JESD22-A106	-40℃ 15min 100℃ 15min	300 cycles	22Pcs.	0/1
High Temperature Storage 高温保存	JESD22-A103	T_{emp}:100℃	1000 hrs.	22Pcs.	0/1
Low Temperature Storage 低温保存	JESD22-A119	T_{emp}:-40℃	1000 hrs.	22Pcs.	0/1
Life Test 常温通电	JESD22-A108	T_a=25℃ I_F=20mA	1000 hrs.	22Pcs.	0/1

2.5 Criteria For Judging Damage 失效判定标准

Table 2-4Criteria 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
Forward Voltage 正向电压	V_F	I_F=20mA	-	U.S.L*)x1.1
Reverse Current 漏电流	I_R	V_R= 5V	-	U.S.L*)x2.0
Luminous Flux 光通量		I_F=20mA	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 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/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 is 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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3. SMT Reflow Soldering Instructions SMT 回流焊说明

3.1SMT Reflow Soldering Instructions SMT 回流焊说明

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

Table 3-1Parameters 参数

Average temperature rise speed平均升温速度（Tsmax至T_P）	最高3 °C/秒 Max 3 °C/ s
Preheating: minimum temperature预热：最低温度（Tsmin)	


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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 LEDmating 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 L.62 62 -2(t)-11(e) L.JI

(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。

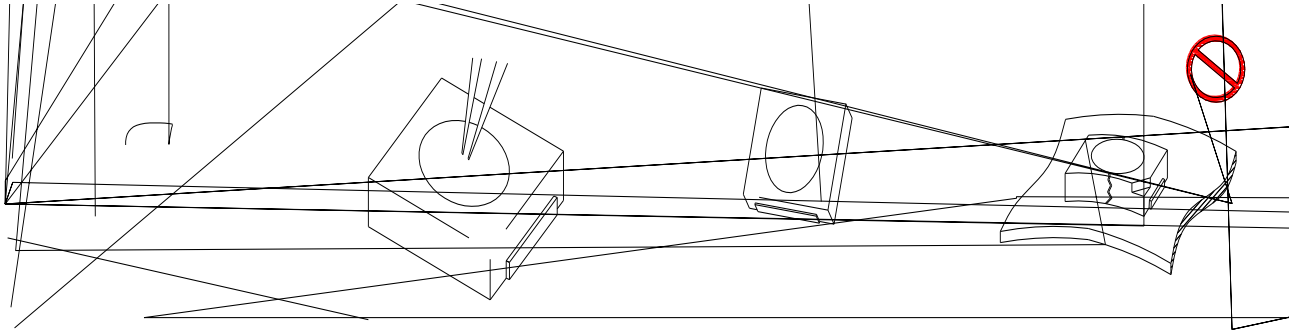

Fig 4-1Handling Precautions

(5) In designing a circuit,the current through each LED can not 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


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Version History/修订历史

Date日期	Revisor修订者	Version版本	Verifier审核	Remarks备注
2017.02.22	王华建	E/0	宋明	新版本制定
2017.7.30	王华建	E/1	宋明	-
2017.12.09	王华建	E/2	宋明	-
2021.07.05	贾彬浩	E/3	宋明	模板更新
2022.05.26	贾彬浩	E/4	刘军	更正烘烤温度
2022.08.25	曾晓芬	E/5	刘军	增加K62 K72色区
2022.11.21		E/6		

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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。