SPECIFICATION

产品规格书

REFOND P/N 产品型号

RF-P1S191TS-B56

□R&D 研发

■Mass Product 量产供货

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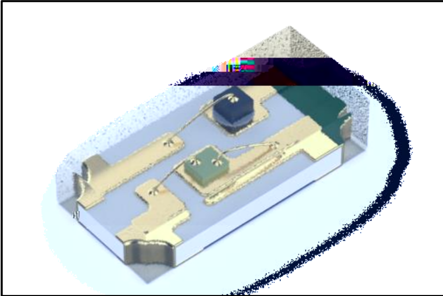
1. Description 产品介绍

1.1 General Description 产品描述



The Colour LED which was fabricated using a blue chip and a amber chip，Package Dimension : 1.6mmX0.8mmX0.4mm.

该产品为双色光 LED，由蓝光和琥珀光晶片封装形成，产品尺寸：1.6mmX0.8mmX0.4mm。

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 Level3

RoHS compliant.满足RoHS要求

1.3 Application 产品应用

Optical indicator.光学指示

Switch and symbol, display.开关和标志，显示器等

General use.其他应用

1.4 Package Dimension 封装尺寸

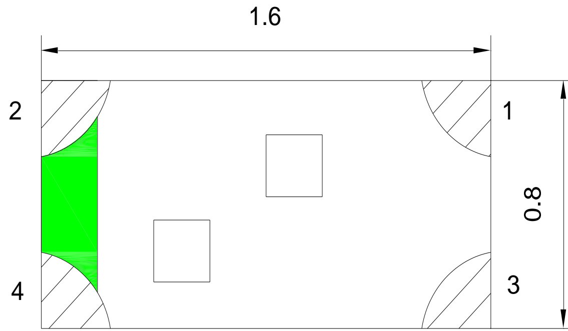


Fig.1-1 Top view 正面视图

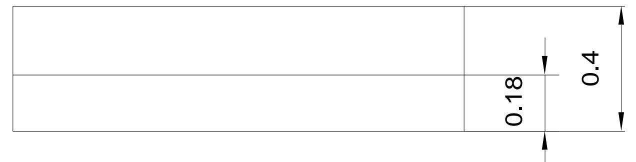


Fig.1-2 Side view 侧面视图

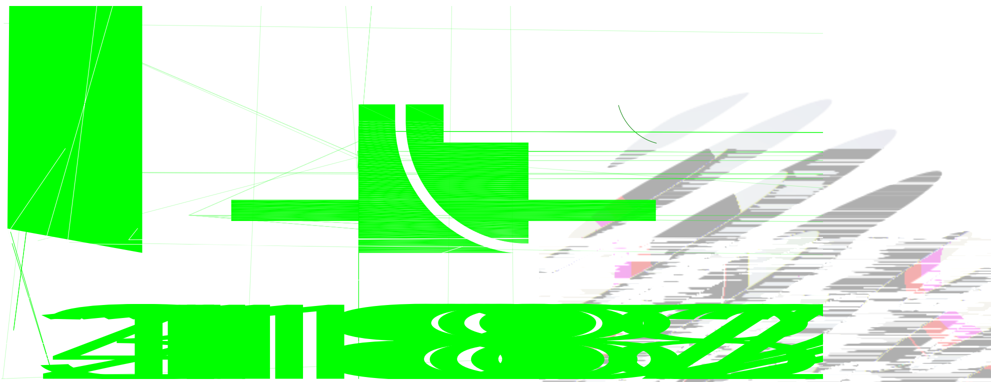


Fig.1-3 Bottom view 背面视图

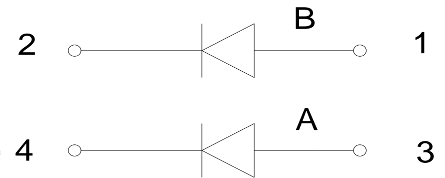


Fig.1-4 Polarity 极性

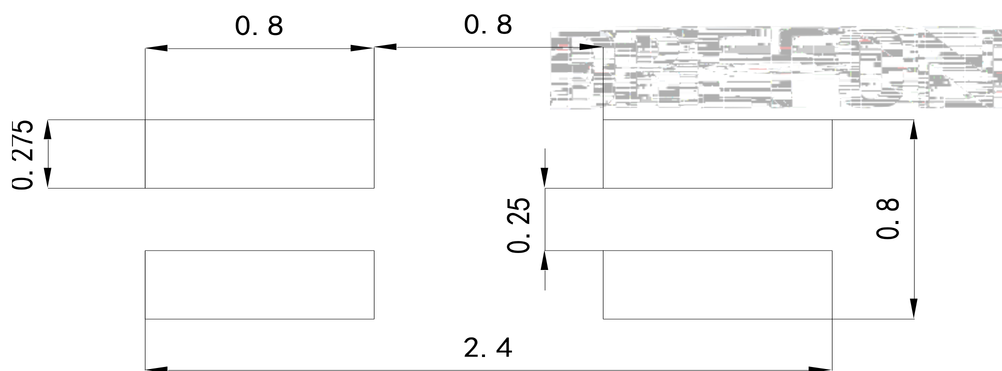


Fig.1-5 Soldering patterns 推荐焊盘

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 0.2mm unless otherwise noted. 除特别标注外，所有尺寸公差为±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

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）
		A	B	
Power Dissipation（功耗）	P_d	72	108	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}	2000		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.

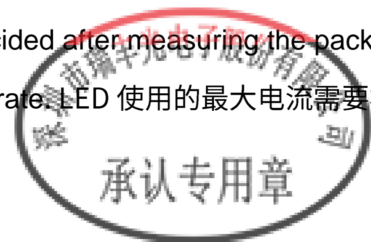
3. The above dominant wavelength measurement allowance tolerance is±2nm. 以主波长测量误差±2nm.

4. The above luminous intensity measurement allowance tolerance ±10%. 上述发光强度的测试允许公差±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。



1.6 Typical Optical Characteristics Curves 典型性能参数曲线

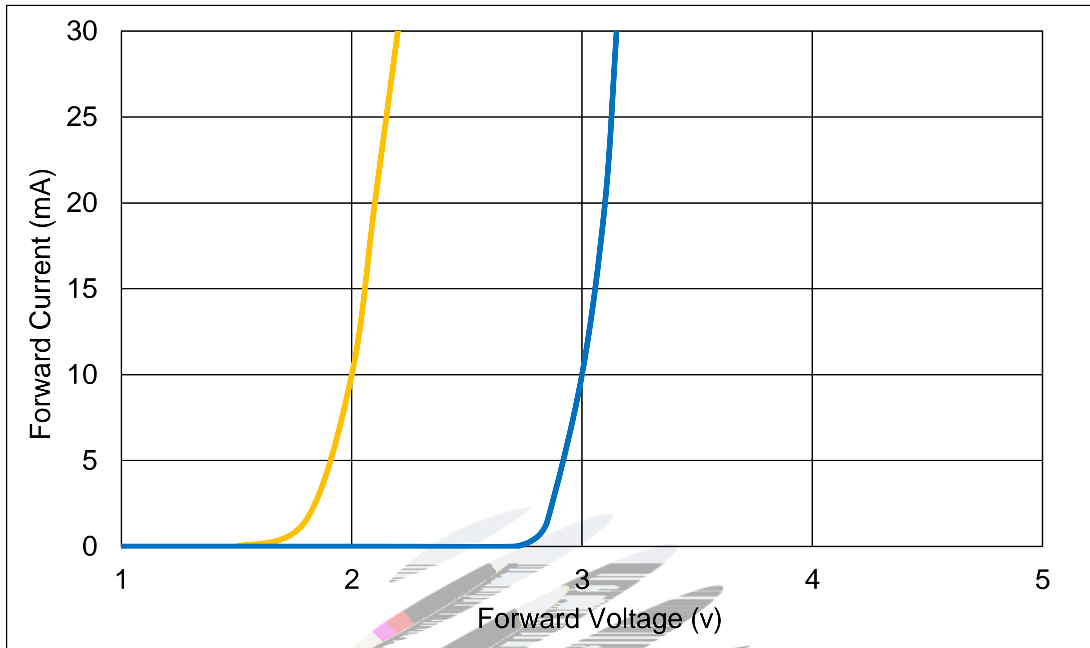


Fig.1-6 Forward Voltage Vs Forward Current 伏安特性曲线

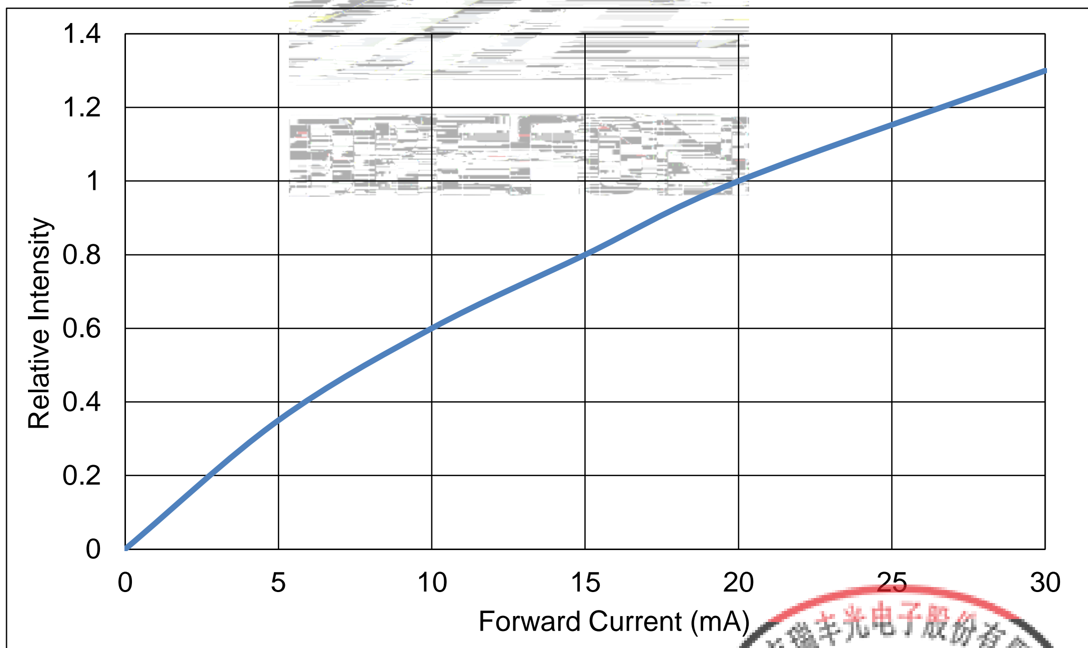


Fig.1-7 Forward Current Vs Relative Intensity 正向电流与相对光强特性曲线

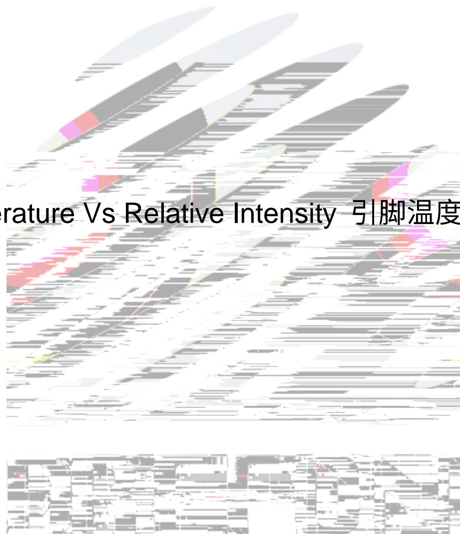


Fig.1-8 Pin Temperature Vs Relative Intensity 引脚温度与相对光强特性曲线

Fig.1-

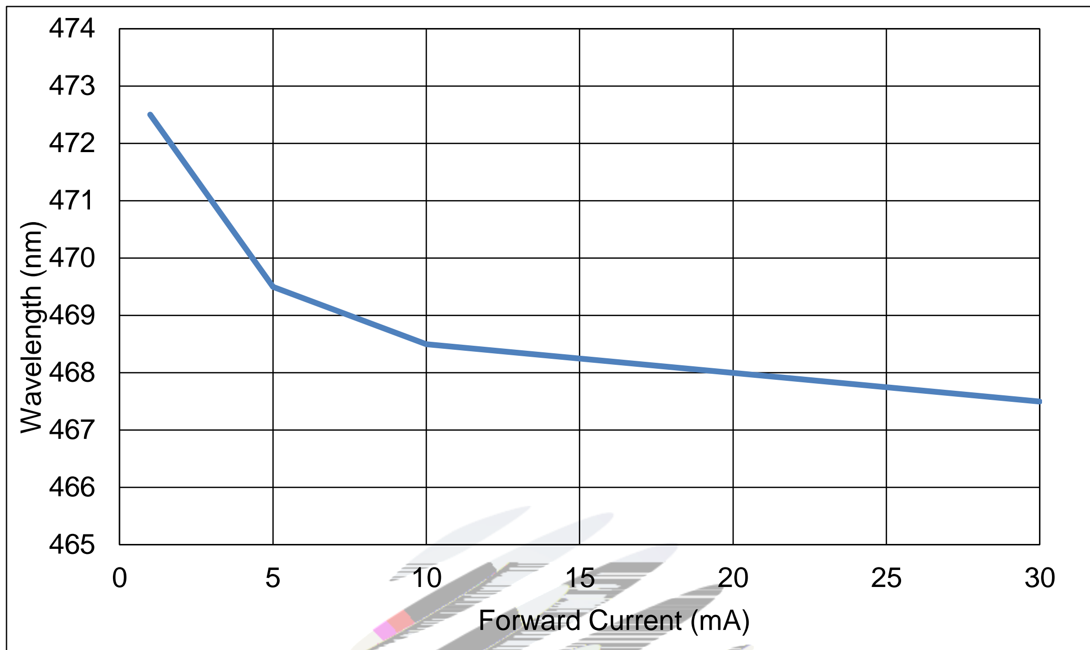
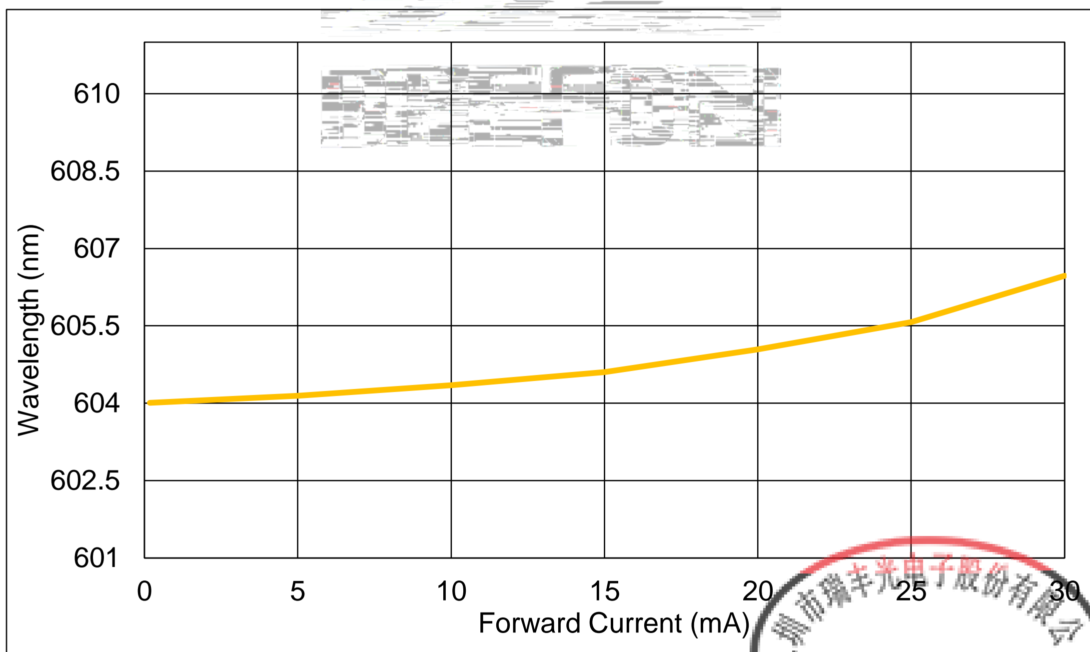


Fig.1-10 Forward Current Vs Dominate Wavelength (Ta=25℃) 正向电流与主波长关系曲线（蓝光）



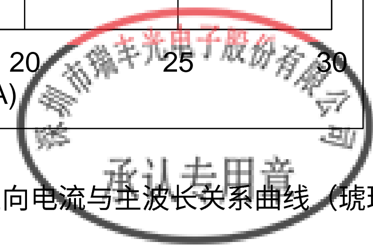


Fig.1-11 Forward Current Vs Dominate Wavelength (Ta=25) 正向电流与主波长关系曲线（琥珀光）

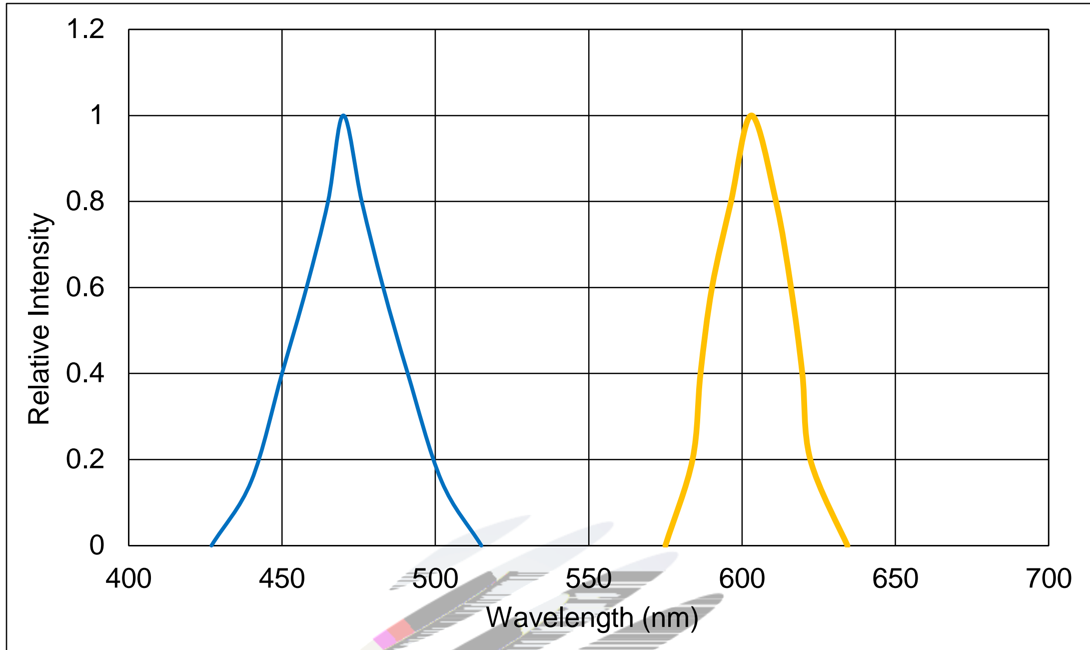
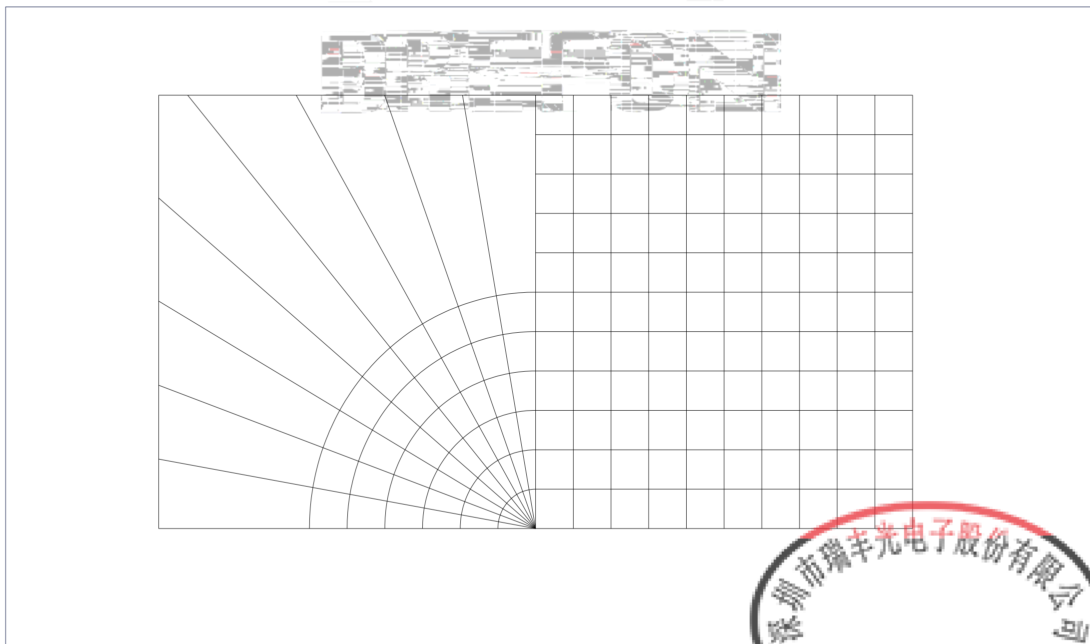


Fig.1-12 Relative Intensity Vs Wavelength (Ta=25) 相对光强与波长关系曲线



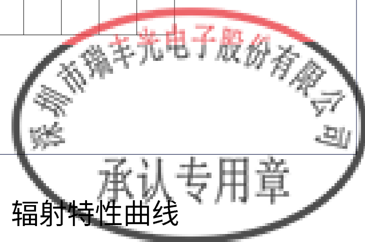


Fig.1-12 Diagram characteristics of radiation 辐射特性曲线

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

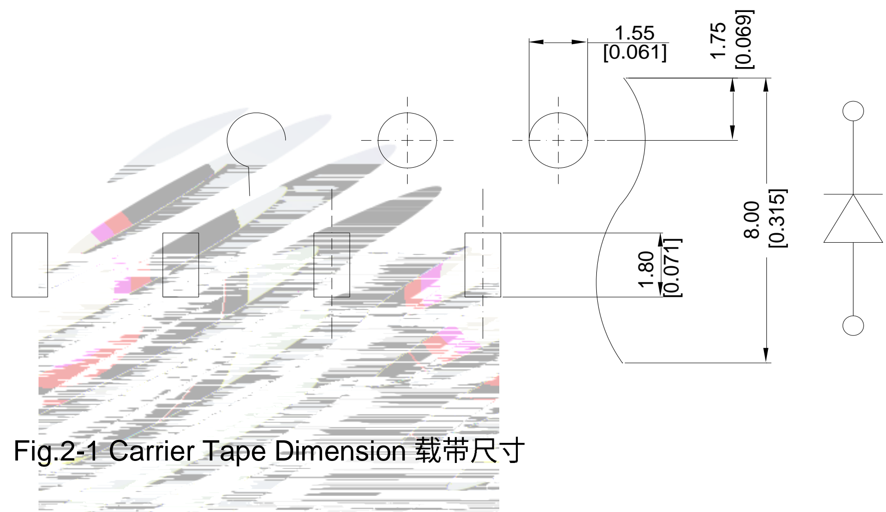


Fig.2-1 Carrier Tape Dimension 载带尺寸

2.1.2 Reel Dimension 卷盘尺寸

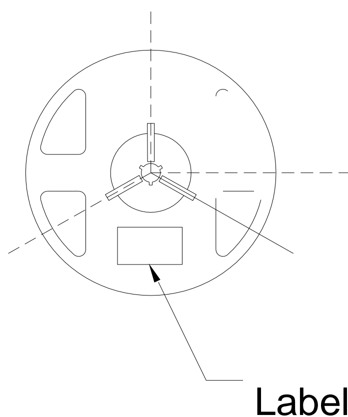


Fig.2-2 Reel Dimension 卷盘尺寸

Table 2-1 Dimension 尺寸

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

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。

2.3 Cardboard Box 包装纸箱

Fig.2-5 Cardboard Box 包装纸箱

2.4 Reliability 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				

3. SMT Reflow Soldering Instructions SMT

3.1 SMT Reflow Soldering Instructions SMT 回流焊说明

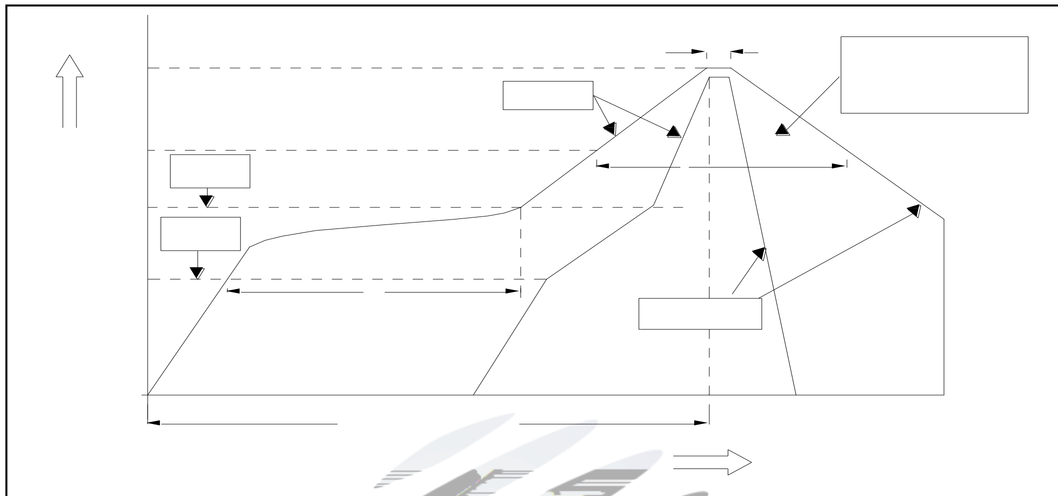


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 Parameter 参数

Parameter	Value
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维持高温限时温度(TL)	217 °C
Time limited to maintain high temperature: The Time 限时维持高温：时间 (tL)	60秒-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 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 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 less than 3 seconds 当手工焊接时,烙铁的温度必须小于300℃，时间不可超过3秒。

(2) Soldering by hand should be done only one time.手工焊接只可焊接一次。

3.1.2 Repairing [illegible]

Repairing 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 not be damaged by repairing.

LED[illegible]会损坏LED本身的特性。

3.1.3 Cautions 注意事项

(1) 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，也不要弯折线板。

(2) 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，不要对材料实加外力，也不要有震动，回流焊后，不要采用激剧冷却的方式。

(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.[illegible]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。

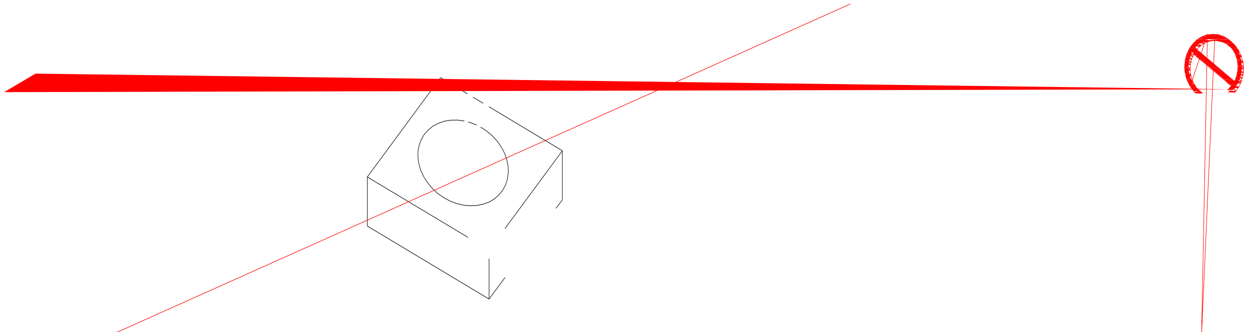
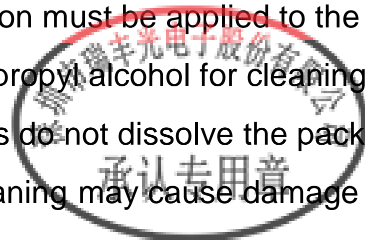


Fig 4-1Handling Precautions

(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。[illegible]
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. 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 [illegible] [illegible] LED [illegible]

Table 4-1Storage 储存

Conditions 种类		Temperature 温度	Humidity 湿度	Time 时间
Storage 储存	Before Opening Aluminum Bag 拆包前	≤30℃	≤	

Version History/修订历史

Date日期	Revisor修订者	Version版本	Verifier审核	Remarks备注
2019.04.26	贾彬浩	E/0	宋明	新版本制定
2022.10.15	曾晓芬	E/1	刘军	修改P4，

深圳市瑞丰光电子股份有限公司 承认专用章

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