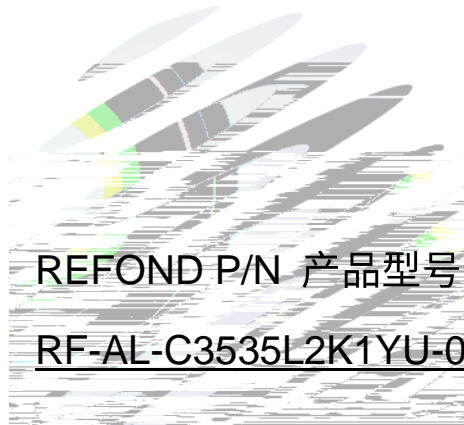


# SPECIFICATION 产品规格书



REFOND P/N 产品型号

RF-AL-C3535L2K1YU-00

R&D 研发

Mass Product 量产供货

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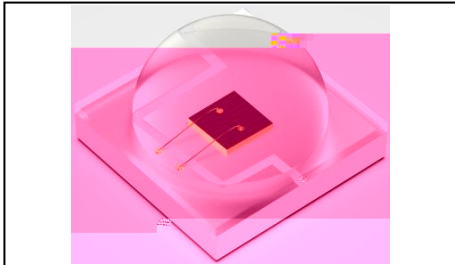
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#### 2.2 Model (Part No.) 6461P6(H Dis) 5(e) 3(n) -3(sio) 8(n) ]TJETQ EMC /Span A MCID 21 BDC q30212 Tf1 0 0 1

## 1. Description 产品介绍

### 1.1 产品描述



The Yellow LED are made with AlGaInP on Substrate Light Emitting Diode

黄光 LED 由 AlGaInP 四种元素芯片激发而成

The LED package dimension: 3.45mmX3.45mmX2.20mm.

产品尺寸: 3.45mmX3.45mmX2.20mm。

### 1.2 Features 产品特征

Ceramics Package. 陶瓷封装

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 sensitive level: Level 1. 防潮等级: Level 1

RoHS compliant. 满足RoHS要求

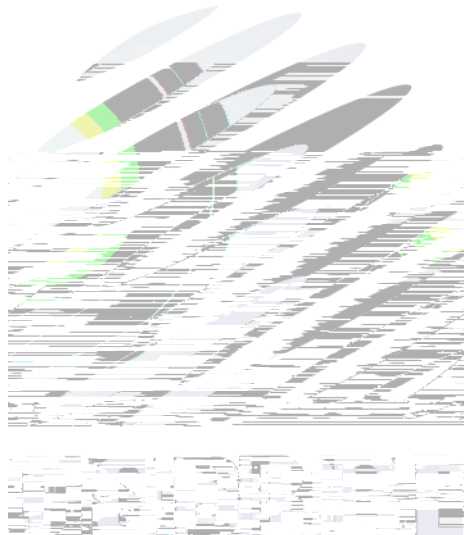
### 1.3 Application 产品应用

Article color lamp, lamp belt. 彩色灯条、灯带

Plant lighting, Landscape lighting

植物照明、景观照明、舞台摄影

Hotels, markets, offices, household and other indoor uses. 酒店、商场、办公室、家用及其它室内用途



## 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

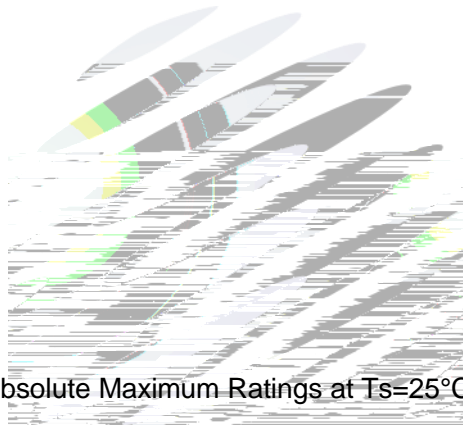


Table 1-2 Absolute Maximum Ratings at Ts=25°C 绝对最大值



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  $\pm 0.1V$ . 以上所示电压测量误差  $\pm 0.1V$ .
3. The above Dominant Wavelength measurement allowance tolerance is  $\pm 1nm$ . 以上所示波长测量误差  $\pm 1nm$ .
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已有的标准测试平台。
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 使用的最大电流要根据散热条件确定, 结温不能超过最大值。
8. ESD yield is over 80% at 2000V ESD (HBM). ESD protection during products handling is needed. 80%的LED 通过人体模式ESD2000V 测试, 在操作时请注意静电防护。

### 1.5.1 Bin Range Of Forward Voltage and Luminous Intensity (IF=350mA)电压与光强分 BIN 范围(IF=350mA)

Table 1-3

V <sub>F</sub> V	B0	C0	D0	
	1.8-2.0	2.0-2.2	2.2-2.4	
	FA5	FA6	FA7	FA8
	40-45	45-50	50-55	55-60
WLD(nm)	Y00	Y01		
	585-590	590-595		

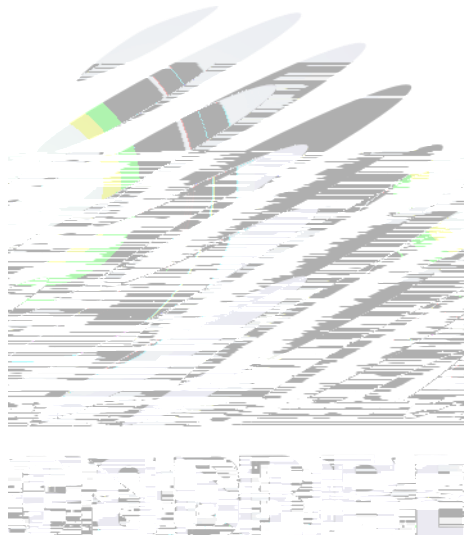




Fig.1-8 Temperature Vs. Relative Intensity 引脚温度与相对光强特性曲线

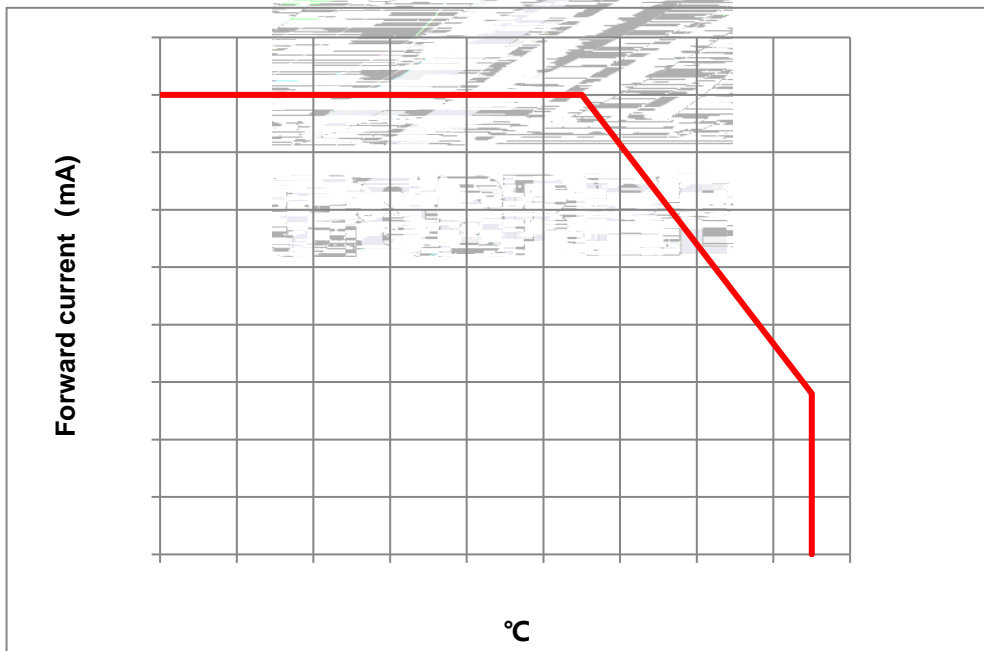


Fig 1-9 Ts Temperature Vs Forward Current 管脚温度与正向电流特性线

T<sub>j</sub> 115°C



Fig 1-10 Spectrum Distribution 光谱分布特性曲线

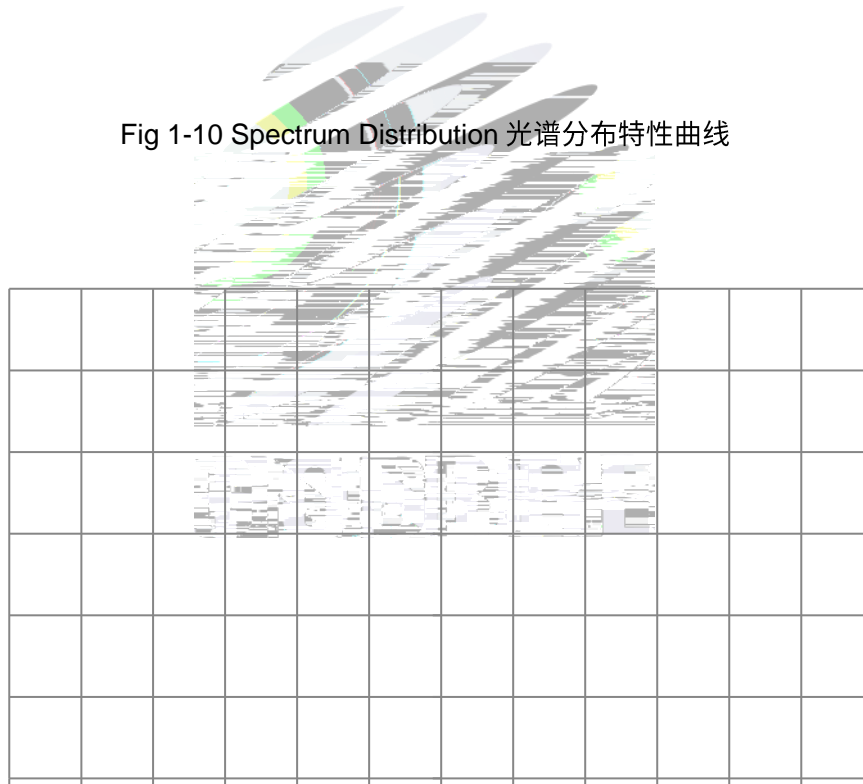


Fig 1-11 Radiation diagram 辐射特性曲线

## 2. Packaging 产品包装

### 2.1 Packaging Specification 包装规格

Package: Max 1000pcs/reel. 包装每卷最多

#### 2.1.1 Carrier Tape Dimension 载带尺寸

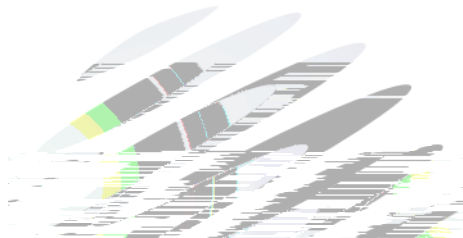


Fig.2-1 Carrier Tape Dimension 载带尺寸

#### 2.1.2 Reel Dimension 卷盘尺寸



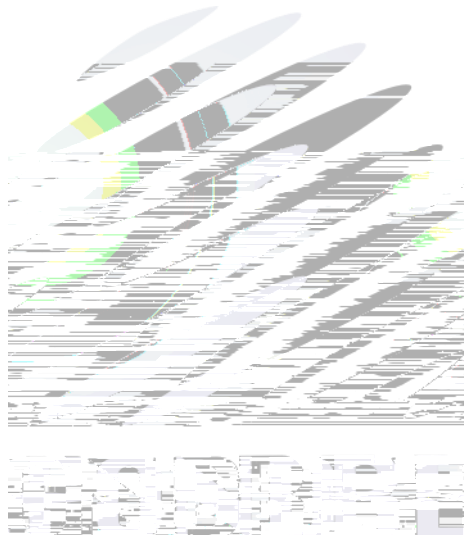
Table 2-1 Reel Dimension 卷盘尺寸

A	14.0±0.5mm
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Fig.2-2 Reel 卷盘

Notes 备注:

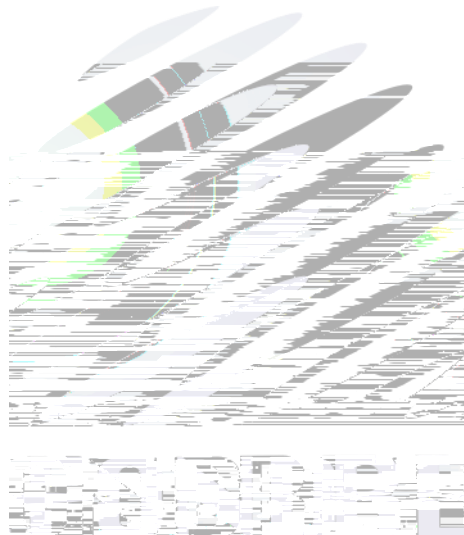
The tolerances unless mentioned  $\pm 0.1$ mm. Unit : mm 注: 未注公差为  $\pm 0.1$ 毫米, 尺寸单位: 毫米。



## 2.4 Reliability Test Items And Conditions 信赖性测试项目及条件

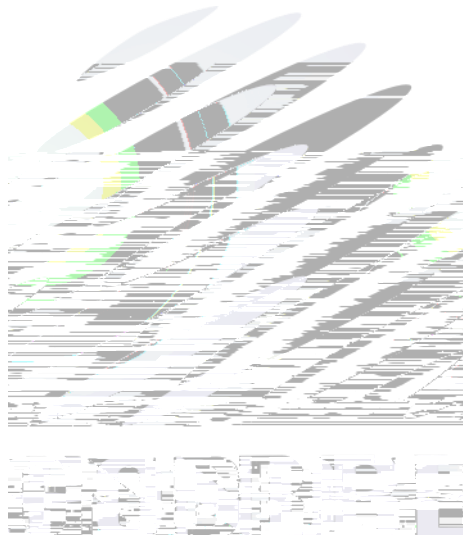
Table 2-3 Test items and conditions 测试项目及条件

Test Items	Ref. Standard	Test Condition	Time	Quantity	Ac/Re /
Reflow 回流焊	JESD22-B106	T <sub>emp</sub> :260°Cmax T=10 sec	2times.	10pcs.	0/1
Thermal Shock 冷热冲击	JEITAED-4701300307	-40°C 15min 10s			



## 2.5 Criteria For Judging Damage 失效判定标准

Table 2-4 Criteria for judging damage



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

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

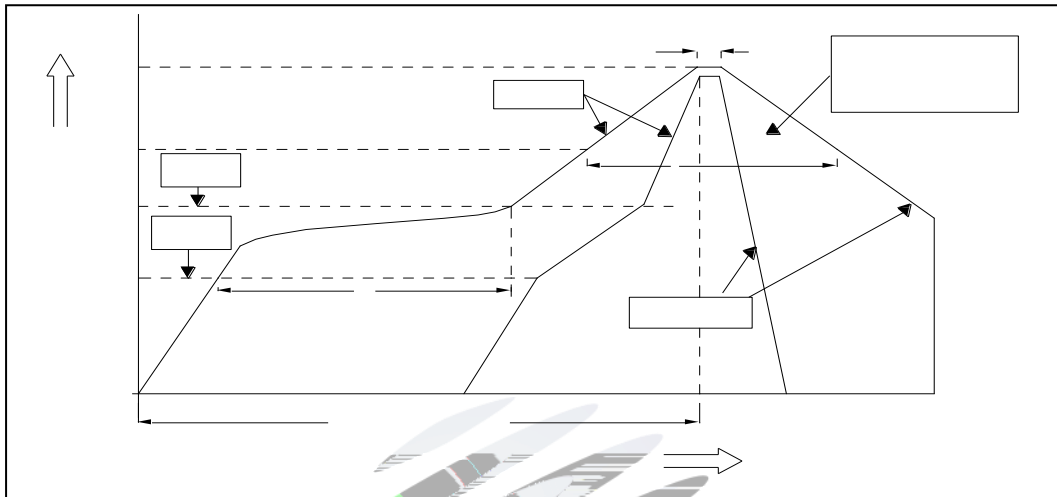


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

Table 3-1 SMT Reflow Soldering Parameter SMT 回流焊参数

平均升温速度 ( $T_{smax}$ 至 $T_P$ )	最高 3 °C/ 秒
预热: 最低温度 ( $T_{smin}$ )	150 °C
预热: 最高温度 ( $T_{smax}$ )	200 °C
预热: 时间 ( $T_{smin}$ 至 $T_{smax}$ )	60 - 120 秒
限时维持高温: 温度 ( $T_L$ )	217 °C
限时维持高温: 时间 ( $t_L$ )	最多60 秒
峰值 / 分类温度 ( $T_P$ )	260 °C
限时峰值分类温度: 时间 ( $t_P$ )	最多10 秒
与实际峰值温度 ( $T_P$ ) 相差 5 °C 以内的保持时间	最多30秒
降温速度	最高 6 °C/ 秒
25 °C 升至峰值温度所需时间	最多 8 分钟

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. 回流焊接最多只能进行两次, 两次回流焊接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

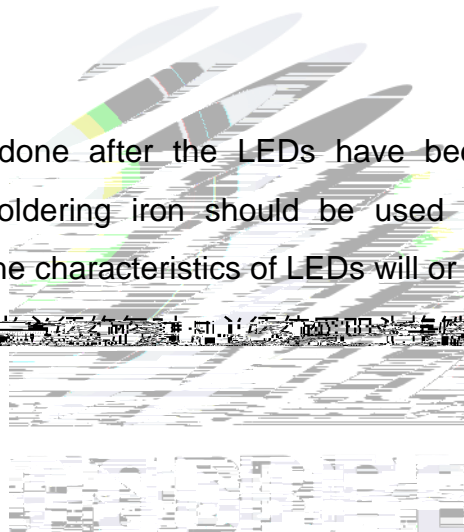
(1) When do soldering by hand, keep the temperature of iron below less 300°C less than 3 seconds. 当手工焊接时, 烙铁的温度必须小于300°C, 时间不可超过3秒。

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

### 3.1.2 Repairing 修补

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 焊接后, 不应进行任何二次焊接, 如必须进行二次焊接, 应事先确认是否会损坏LED本身的特性。

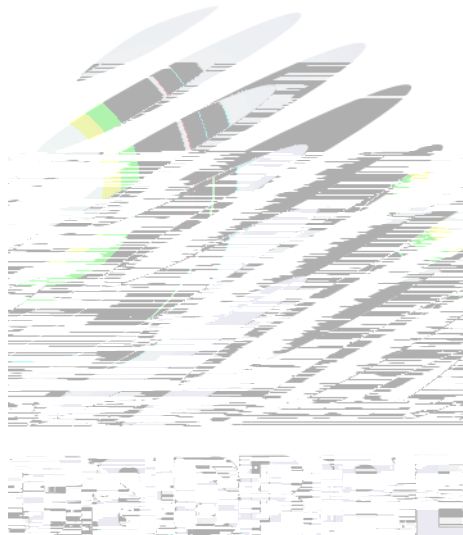


### 3.1.3 Cautions 注意事项

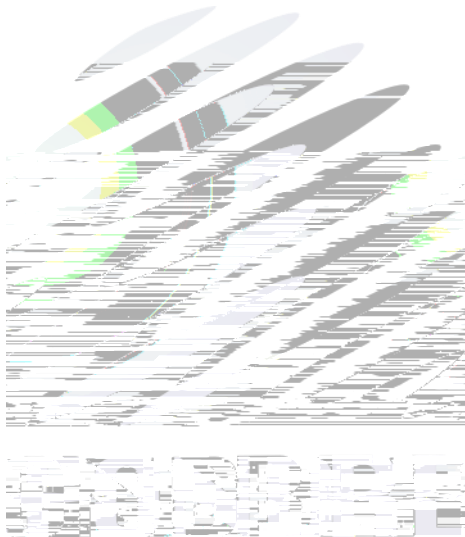
(1) The encapsulated material of the LEDs is silicone. Therefore the LEDs have a soft surface on the top of package. The pressure to the top surface will be impacted on the reliability of the LEDs. Precautions should be taken to avoid the strong pressure on the encapsulated part. So when use the picking 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, 焊接后不要弯曲电路板。

(3) 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，不要对材料施加外力，也不要震动，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. 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。

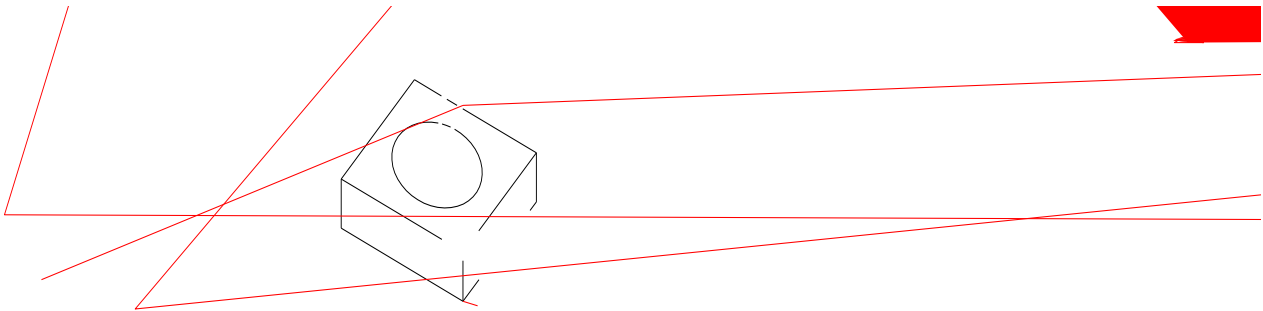


Fig 4-1 Misoperation 错误操作

(5) In designing a circuit, the current through each LED must be exceed the absolute maximum rating specified for each LED. In the meanwhile, 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电流变化，可能导致产品报废。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 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，当清洗方式：我们推荐用异丙醇作清洗剂，如对产品洁净度要求较高时，回流焊以后需要采用恰当的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。

Table 4-1 Storage 储存

Conditions		Temperature	Humidity	Time
Storage	Before Opening Aluminum Bag 拆包前	30°C	75%	Within 1 years From Date 1年内





