SMD LED: 2.8x3.5mm. 940nm Infrared

（贴片 **LED: 2.8x3.5mm. 940nm** 红外线）

Part No(部件型号）: YL-2835D(30)-940nM(60mW)

PRODUCT DESCRIPTION：（产品描述：）

■ Features: 特点：

- **High radiant intensity** （高辐射强度）
- **High reliability** （高可靠性）
- **High output power at** （高输出功率）

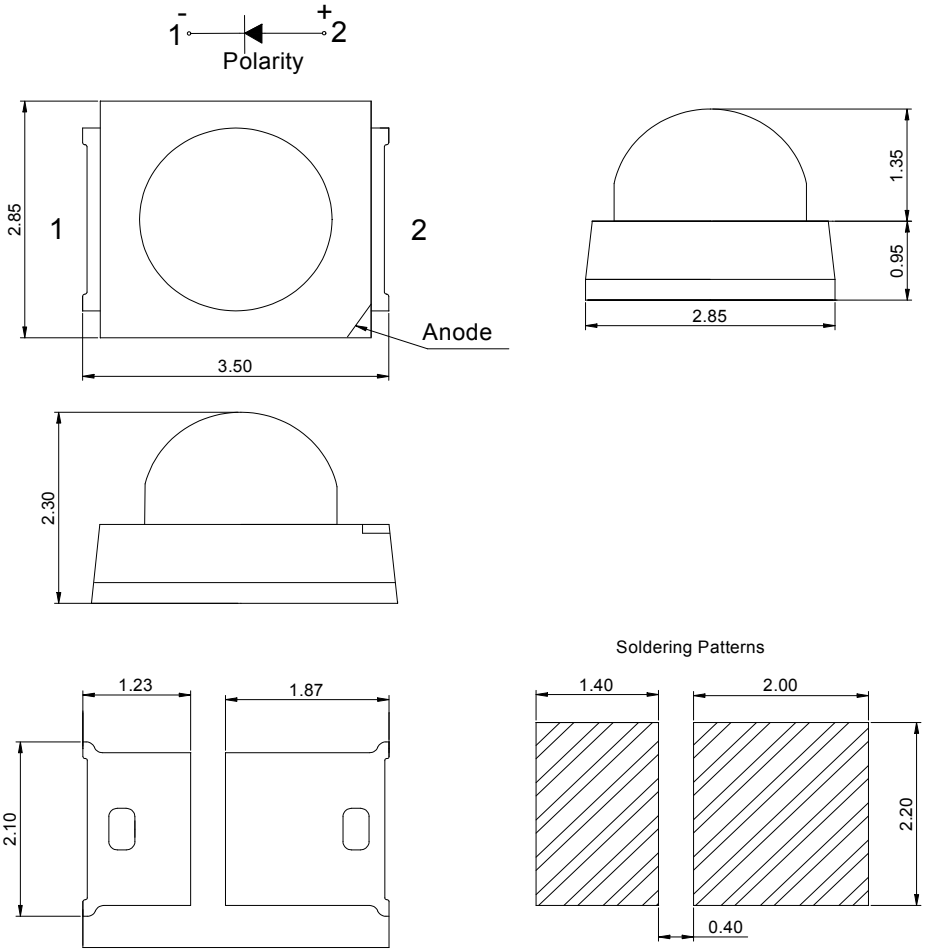
■ Descriptions: 说明：

The series is specially designed for application requiring higher brightness. （該系列產品是專門設計於需要更高亮度的應用 **)**

■ Applications: 应用范围：

- **Free air transmission system** （自由空气传输系统）
- **Infrared remote control units with high power requirement** （高功率要求的红外遥控器）
- **IR searchlight CCD lighting** （**CCD** 的红外探照灯照明）
- **night vision light source** （夜视光源）
- **Smoke detector Infrared applied system** （烟雾探测器红外应用系统）

■ Package Dimension: 封装尺寸：



PART NO(產品型號)	Chip Material （芯片材料 ）	LED Emitted Color （LED 的发光颜色）	LensColor （镜片颜色）
YL-2835D(30)-940nM(60mW)	AIGaAs	Infrared （红外线）	Water Clear （无色透明）

Notes:

1. All dimensions are in millimeters (所有尺寸以毫米為單位)
2. Tolerance is ±0.15mm unless otherwise noted..(未標注公差為：±0.15.，另有標注除外).
3. Specifications are subject to change without notice(規格若有變動，恕不另行通知).

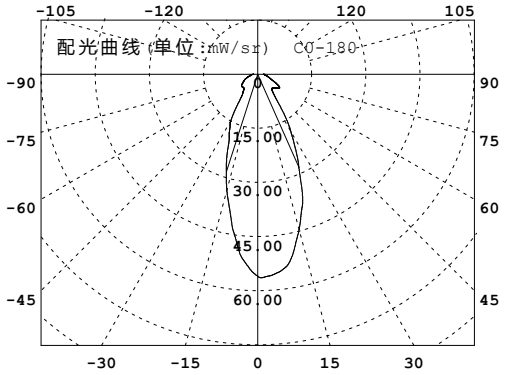
■ **Absolute Maximum Ratings at Ta=25℃（绝对最大额定值在 Ta=25℃）**

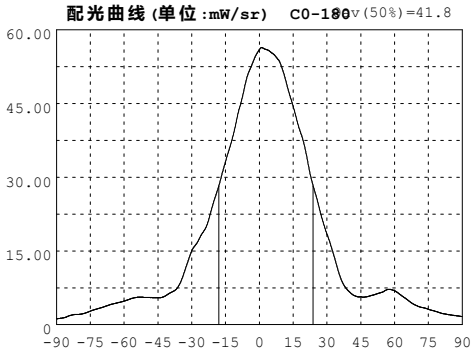
Parameter	Symbol	Rating	Unit
Forward Current 正向电流	IF	100	mA
Operating Temperature 工作温度	Topr	-30 to +85	℃
Storage Temperature 储存温	Tstg	-40 to +85	℃
Soldering Temperature 焊接温度	Tsol	240°C for 5sec	℃
Power Dissipation 消耗功率	Pd	180	mW
Peak Forward Current (Duty 1/10@1KHz) 峰值正向电流	IF(Peak)	150	mA
Reverse Voltage 反向电压	VR	5	V

Electronic Optical Characteristics :

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Radiated Output Power 辐射输出功率	Po	／	60	／	mW	IF=100mA
Radiant Intensity 辐射强度	Ie	／	50	／	mW/sr	IF=100mA
Viewing Angle 视角	2θ1/2	／	30	／	deg	IF=100mA
Peak Wavelength 峰值波长	λp	935	940	960	nm	IF=100mA
Spectrum Radiation Bandwidth 光谱辐射带宽	△λ	／	40	／	nm	IF=100mA
Forward Voltage 正向电压	VF	1.3	1.5	1.8	V	IF=100mA
Reverse Current 反向漏电流	IR	／	／	10	μA	VR=5v

■ Typical electro-optical characteristics curves :典型的光电特性曲线:





辐射强度分布数据:(角度°，辐射强度mW/sr) C0-180

角度	强度	角度	强度	角度	强度	角度	强度	角度	强度	角度	强度
-90.0	1.196	-59.6	4.856	-29.2	15.68	1.2	56.38	31.6	16.33	62.0	6.298
-88.4	1.283	-58.0	5.107	-27.6	16.66	2.8	56.04	33.2	13.90	63.6	5.758
-86.8	1.402	-56.4	5.363	-26.0	18.06	4.4	55.73	34.8	11.32	65.2	5.242
-85.2	1.646	-54.8	5.526	-24.4	19.20	6.0	55.16	36.4	9.113	66.8	4.666
-83.6	1.906	-53.2	5.604	-22.8	20.85	7.6	54.39	38.0	7.708	68.4	4.185
-82.0	2.064	-51.6	5.579	-21.2	23.48	9.2	53.32	39.6	6.851	70.0	3.833
-80.4	2.088	-50.0	5.529	-19.6	25.91	10.8	51.21	41.2	6.183	71.6	3.557
-78.8	2.172	-48.4	5.514	-18.0	28.15	12.4	48.52	42.8	5.801	73.2	3.402
-77.2	2.368	-46.8	5.508	-16.4	30.91	14.0	45.98	44.4	5.639	74.8	3.175
-75.6	2.638	-45.2	5.472	-14.8	33.52	15.6	43.47	46.0	5.622	76.4	2.939
-74.0	2.924	-43.6	5.519	-13.2	35.92	17.2	40.71	47.6	5.674	78.0	2.735
-72.4	3.149	-42.0	5.777	-11.6	38.56	18.8	38.48	49.2	5.869	79.6	2.500
-70.8	3.365	-40.4	6.235	-10.0	41.79	20.4	35.65	50.8	6.066	81.2	2.276
-69.2	3.591	-38.8	6.647	-8.4	44.72	22.0	31.94	52.4	6.314	82.8	2.143
-67.6	3.852	-37.2	7.074	-6.8	47.77	23.6	28.74	54.0	6.531	84.4	2.014
-66.0	4.100	-35.6	8.045	-5.2	50.74	25.2	26.20	55.6	6.869	86.0	1.907
-64.4	4.288	-34.0	9.702	-3.6	52.54	26.8	23.36	57.2	7.184	87.6	1.811
-62.8	4.461	-32.4	11.88	-2.0	54.38	28.4	20.73	58.8	7.109	89.2	1.703
-61.2	4.639	-30.8	14.03	-0.4	55.69	30.0	18.44	60.4	6.813		

电学参数:

工作电流If: 99.96mA **工作电压Vf:** 1.416V

反向电压Vz: 10.01V (偏置Ir=0.10μA)

反向漏电流Ir: 0.00μA (偏置Vr=5.00V)

电功率P: 141.51mW

光学参数(CIE A):

等效辐射通量: Φeff = 52.69mW

平均辐射强度扩散角: θ(25%): 63.7° θ(50%): 41.8° θ(75%): 25.9° θ(50%): 41.8°

最大辐射强度Imax = 56.39 mW/sr (C=0.0°,G=1.0°)

C0-180平面 Imax = 56.39 mW/sr (G=1.0°) Io = 55.84 mW/sr

■ Typical electro-optical characteristics curves :典型的光电特性曲线:

Fig.1 Forward current vs.Forward voltage

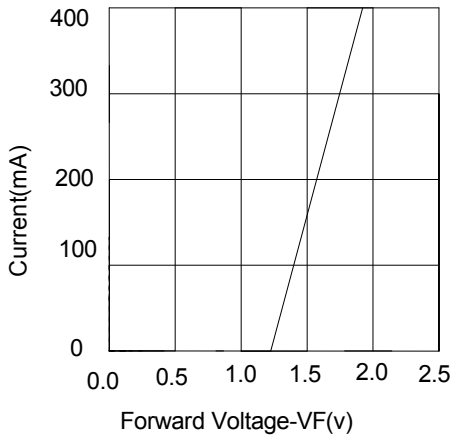


Fig.2 Relative intensity vs. Wavelength

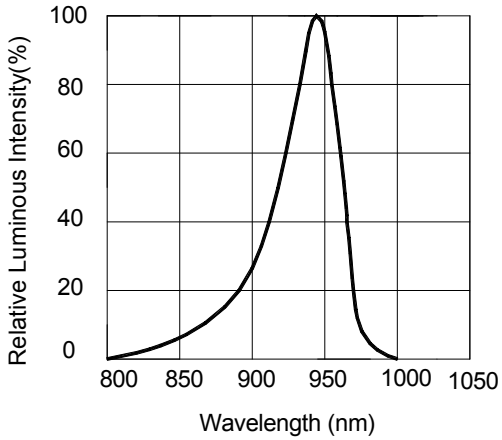


Fig.3 Relative Radiant Flux vs.Forward current

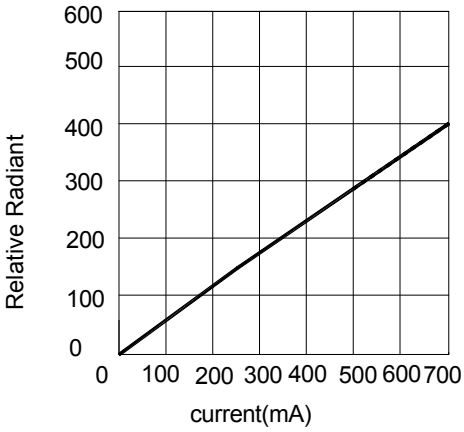


Fig.4 Forward Voltagevs Ambient temperature

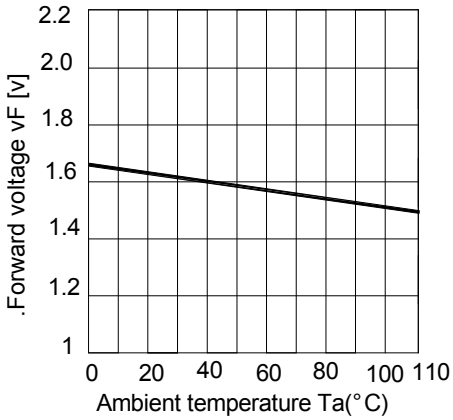


Fig.5 Relative RadiantFlux(vs. Ambient temperature

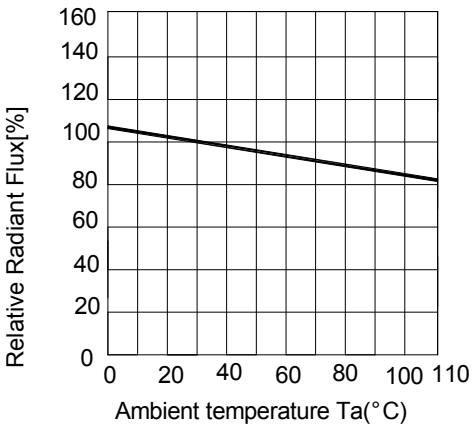
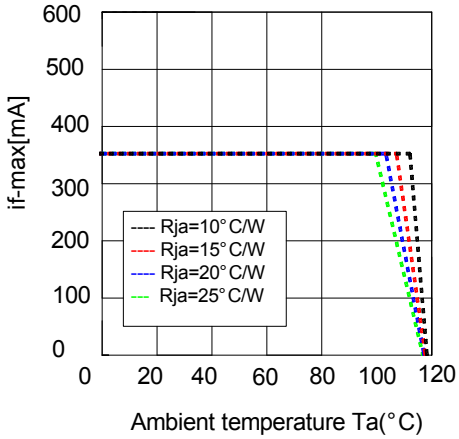
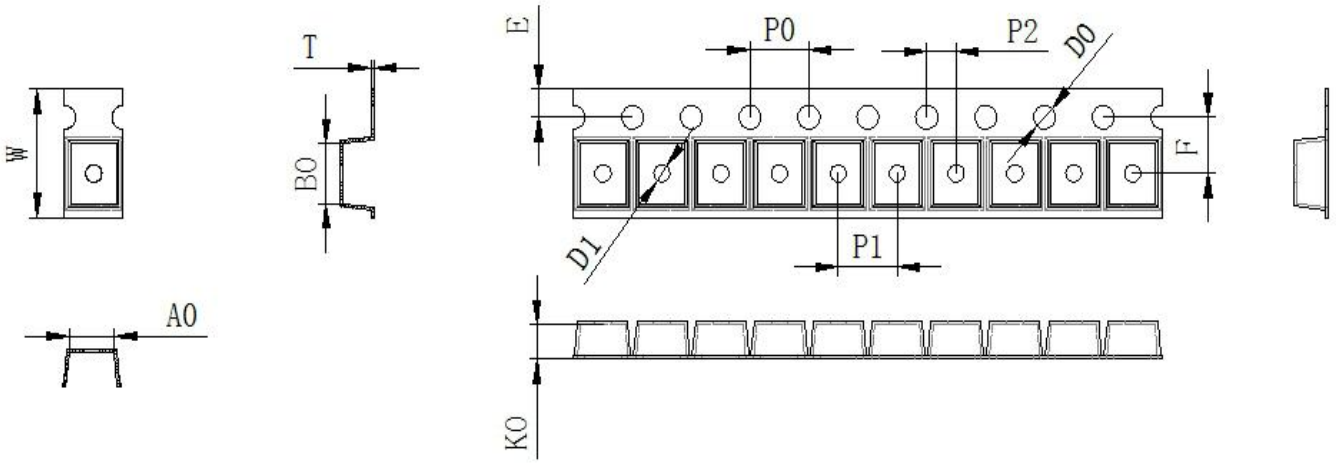


Fig.6 Maximum Driving Forward DC Current vs. Ambient Temperature(Derating based on Tj max.=125°C

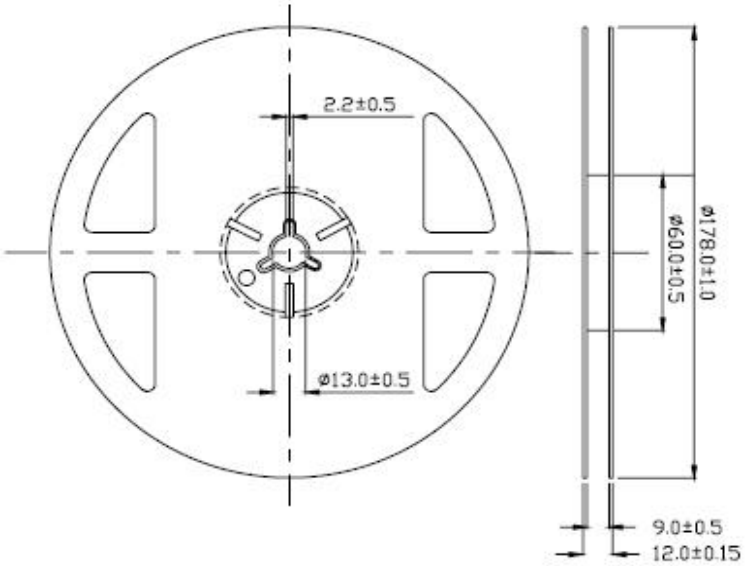


■ Loaded with size　载带尺寸：

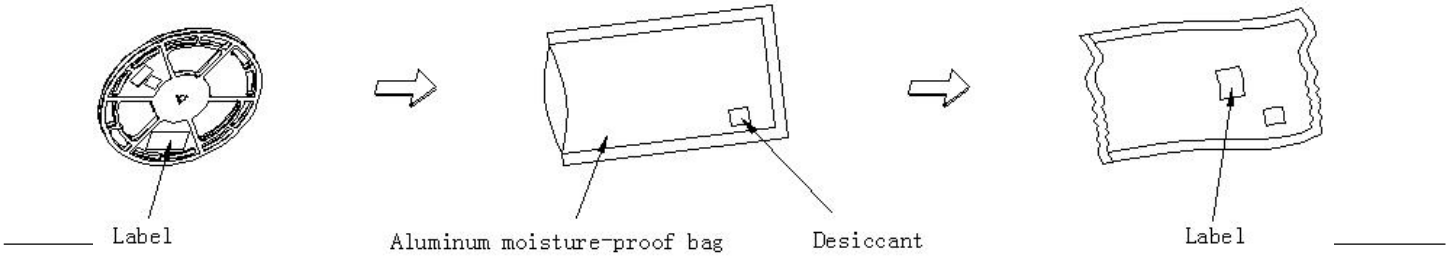


ITEM	W	A0	B0	K0	E	F	D0	D1	P0	P1	P2	T
DIM	8.00	3.05	3.75	2.15	1.75	3.50	1.50	1.10	4.00	4.00	2.00	0.19
TOLE	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.10	±0.03

■ **Reel Packaging :卷轴尺寸(2000pcs/reel)**



■ **Moisture bag packaging 防潮袋包装：**



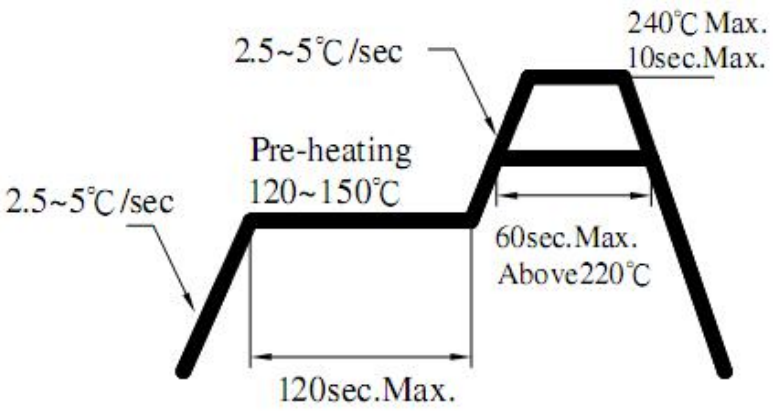
■ 可靠性试验 Reliability Test

测试项目 Test Parameter	参考标准 Reference Criterion	测试条件 Test Condition	时间 Time	样品数 Quantity	Ac/ Re
耐焊接热 Resistance to Solder Heat	JESD22-B106	240℃±5℃	10 sec	22PCS	0/1
冷热冲击 Thermal Shock	JESD22-A104	+85℃(30min) 5min -40℃(30min)	100 cycles	22PCS	0/1
高温贮存 High Temperature storage	JESD22-A103	+100℃	1000H	22PCS	0/1
低温贮存 Low Temperature storage	JESD22-A119	-40℃	1000H	22PCS	0/1
寿命测试 Life Test	JESD22-A108	IF =100 mA	1000H	22PCS	0/1
高温高湿 High Temperature and High Humidity Test	JESD22-A101	85℃&85%R.H	168H	22PCS	0/1

■ Precautions For Use　使用注意事项

Soldering Condition：焊接条件：

Pb-free solder temperature profile无铅焊料的温度曲线



■ 回流焊接 Reflow Soldering

• 回流焊次数不可以超过一次，否则 LED 可能损坏。

Reflow soldering should not be done more than once, or LED will be damaged.

• 当焊接时，不要在材料受热时用力压胶体表面。

When soldering,do not put stress on the Materials during heating.

• 建议回流链速：80-100cm/min（回流炉以 8 温区为基准，温区越多建议使用链速更快）

Please be sure the speed of the chain is 80-100cm/min（The reflow furnace is based on 8 temperature zone,the more temperature zone ,the faster speed of the chain is recommended.）

■ 络铁焊接 Soldering lron

• 如使用手工焊接，建议使用小于 25 瓦的电络铁，络铁温度必须空置在 300℃以下，焊接时间需控制在 3 秒钟以内，且每个点击只能焊接一次。

If solder manually, it is recommended to use soldering iron less than 25W.The temperature of the iron must be kept below 300℃.And soldering time should be within 3 seconds,each point can only be soldered once only.

• 当焊接时，不要在材料受热时用力压胶体表面。

When soldering,do not put stress on the LED colloid surface during heating.

• 手工焊接只可焊接一次。

Manually soldering should be done once only

• 器件外部温度在 40℃以下时，才可以对其进行处理。避免高温时操作对 LED 造成损伤。

Handing of the SMD LED should be done when the package has been cooled down to below 40℃ or less.This is to prevent LED failures due to thermal-mechanical stress during handing.

■ 清洗 Cleaning

• 在焊接后推荐使用酒精进行清洗，在温度不高于 30℃的条件下持续 3 分钟，不高于 50℃的条件下持续 30 秒。使用其他类似溶剂清洗前，请先确认使用的溶剂不会对 LED 的封装和陶瓷底座部分造成损伤。

It is recommended that alcohol be used as the solvent for cleaning after soldering.Cleaning should be done under 30℃ for 3 minutes or 50℃ for 30 seconds.When using other solvents,it should be confirmed beforehand whether the solvents will dissolve the package and the resin or not.

• 回流焊次数不可以超过两次，两次回流焊时间间隔如果超过 24 小时，LED 可能由于吸湿而损坏。

Reflow soldering should not be done more than two times.If time interval of two reflow soldering more than 24 hours ,LED may be damaged by absorbing moisture.

■ 修补 Repairing

• LED 回流焊后不应该修复，当修复是不可避免时，必须使用双头络铁，但必须事先确认此种方式会或不会损坏 LED 本身的特性。

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 the characteristics of LEDs will not be damaged by repairing.

注意：此一般指导原则并不适用于所有 PCB 设计和焊接设备的配置。具体工艺收到诸多因素的影响，请根据特定的 PCB 设计和焊接设备来确定焊接方案。

Note：This general guideline may not suitable for all PCB designs or configurations of all soldering equipment.The technique in practice is influenced by many factors,it should be specialized base on the PCB designs and configurations of the soldering equipment.

■ 产品声明

• 使用本产品之前，请贵司务必预先进行测试，以便确认是否适合使用目的，产品介绍的用途并不保证不抵触任何专利，有关 LED 产品的进出口法律责任应由客户担负，请预先查清每个国家或地区的有关规定。产品可能会因性能提升而更改物料和规格参数，恕不另行通知。

In order to confirm the product is right for using purpose , pretest is necessary before use . We don’t guarantee the product application introduction don’t contravene any patent. The corresponding import and export legal responsibility should be taken by customers. Please verify relevant provision about the LED product in each country and district beforehand. We may change material and specifications from time to time in the interest of product development, without prior notification or public announcement.

■储存 Storage

• 本产使用密封防潮抗静电袋包装,并附有干燥剂,未开封的产品保存时间 2 个月。

The products are stored in sealed anti-moisture and anti-static package with moisture absorbent.Unopened package can be stored 2 months.

• 开封前,产品须存放在温度不高于 30℃,湿度不高于 60%RH 的环境中。

Before opening the package, the product should be kept at 30℃ or less and humidity less than 60%RH.

• 密封防静电袋内的湿度卡应在打开袋子后立即查看袋内的湿度指示卡来确定,湿度显示小于或等于 30%时,使用前须进行烘烤。

Humidity of sealed anti-static bag is subject to the humidity value shows in humidity card at the moment opening the bag.If humidity shows equal or less than 30%,the products should be baked before use.

• 开封后,产品必须 24 小时内使用完(建议工作环境温度不高于 30℃,湿度不高于 60%),如未使用完,余料须存放在温度不高于 30℃,湿度不高于 10%的环境中。

After opening the package, the product should be soldered within 24 hours. If not, please store at 30℃or less and humidity less than 10%RH. It is recommended that the product be operated at the workshop condition of 30℃ or less and humidity less than 60%RH.

• 对于尚未焊接的 LED,如果吸湿剂或包装失效,或者产品没有符合以上有效存储条件,烘烤可以起到一定的性能恢复效果. 烘烤条件:65±5℃,持续时间 24H。

For the LED doesn't solder ,if the moisture absorbent material lose efficacy or the storage condition doesn't conform to the above description,baking can help some extent performance recovery .Backing condition : 65±5℃ for 24 hours.

■ 静电 Static Electricity

以下操作可降低静电破坏的可能性。

The following operations may decrease the possibility of ESD damage。

• 将产品和外界之间的摩擦减到最低以避免静电产生。

Minimize friction between the product and surroundings to avoid static .

• 所有的产品设备和测试仪器必须接地。

All production machinery and test instruments must be grounded.

• 操作人员必须配戴静电环。

Operators must wear anti-static bracelets.

• 进入带电设备工作区域时需穿防静电服。

Wearing anti-static garment when entering into electric devices working areas.

• 所有操作 IC 和 ESD 敏感器件元器件的工作台必须保持低于 150V 的静电保护。

All workstations that operate IC and ESD-sensitive components must maintain an electrostatic protection of 150V or less.

■温度保护 The safe temperature for LEDs working

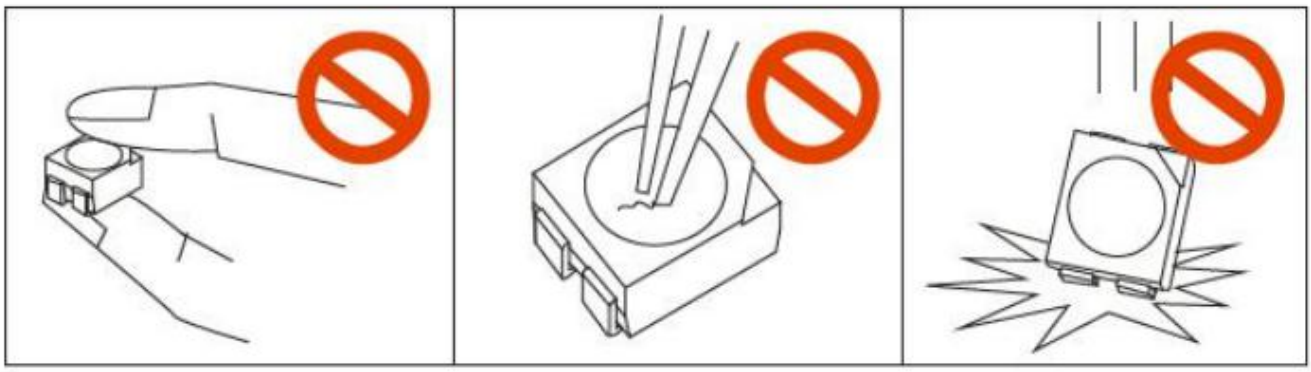
• LED 在高温条件下，衰减会加速,本身应力也会增大，若长期处于高温环境下，极容易出现失效. 对于高密度排列使用的情况,建议在使用过程中灯面温度不超过 55℃，灯脚温度不超过 75℃。

The high temperature will make the LED's luminous intensity deceased radically.If LED worked in high temperature environment for a long time, it would lose efficacy easily. When LEDs are working in a closed array, it is suggested that the LED's surface temperature be lower than 55℃ and the pin's temperature be lower than75℃.

■ 其他事项 Others

• 请勿直接触摸或操作透镜表面，这可能会损坏内部的电路，拿取时用镊子或合适的工具夹在元件的侧边。

Do not touch or operate the lens surface directly,it may damage the internal circuitry. Handle the component along the side surfaces by using tweezers or appropriate tools.

• LED 的底座部分相当脆弱，请勿用坚硬、尖锐的物体刮、擦封装树脂部分。在用镊子夹取的时候也应当小心注意。

The base of LED is fragile,so please avoid scratch or friction over the epoxy resin surface.While handing the product with tweezers,do not hold by the epoxy resin,be careful.