Chip LED
2H3227PD1HMA0101
Datasheet

Features 产品特性

- Package(L/W/H): 3.2*2.7*0.9mm/外观尺寸: 3.2*2.7*0.9 毫米
- Color ：Photosensitive diode/颜色：光敏二极管
- Lens: Transparent planar colloid/胶体：透明平面胶体
- Fast response time/快速的响应时间
- High photo sensitivity/高光敏度
- EIA STD Package/ EIA 规范标准包装
- Meet ROHS, Green Product/环保产品，符合 ROHS 要求
- Compatible With SMT Automatic Equipment/适用于自动贴片机
- Compatible WithInfrared Reflow Solder Process/适用于红外线回流焊制程

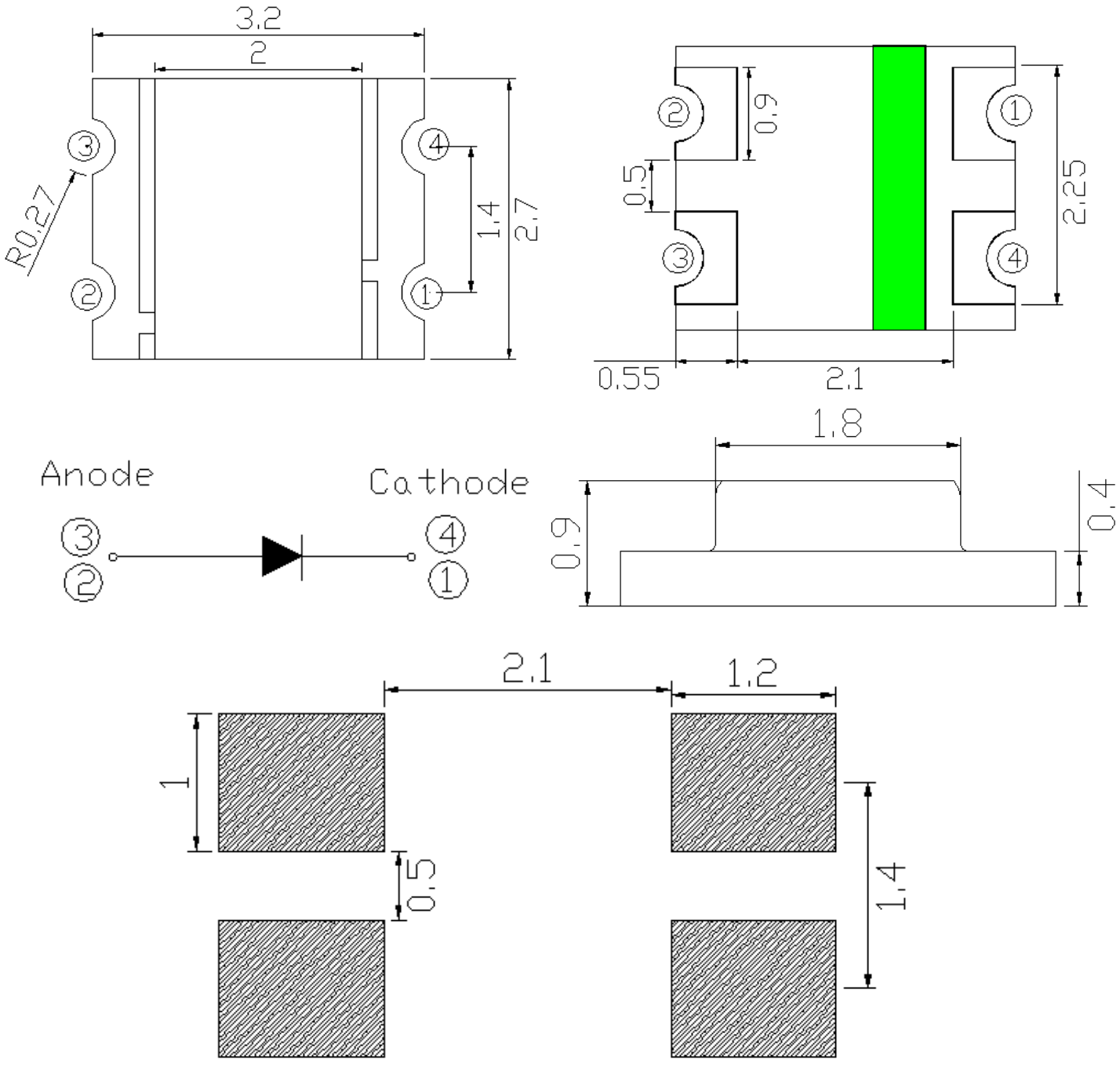
Product Application 产品应用

- High speed photo detector 高速光电探测器
- copy machine etc 复印机等

Table of Contents 目录

Package Dimensions 外形尺寸

Package Profile & Soldering PAD Suggested 外形尺寸及建议焊盘尺寸



Notes:

1. All dimensions are in millimeters.所有尺寸都以毫米为单位
2. Tolerances: ±0.1mm. 公差:±0.1毫米

Absolute Maximum Ratings (Ta=25℃) 绝对最大额定值(Ta=25℃)

Parameter	Symbol	Rating	Unit
Power Dissipation at(or below) 25℃ Free Air Temperature	Pd	150	mW
Reverse Voltage	Vr	32	V
Forward Current	IF	20	mA
Operating Temperature	Topr	-40~+85	℃
Storage Temperature	Tstg	-40~+85	℃
Lead Soldering Temperature (*2)	Tsol	260	℃
Electrostatic Discharge	ESD	2000	V

Notes: (＊1) Pulse width tw=100 μsec. ,Period T=10 msec. (＊2) 2t≦5 Sec

Electro-Optical Characteristics (Ta=25℃) 光电特性(Ta = 25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Rang Of Spectral Bandwidth	Y	700	---	1000	nm	10% of y P
Wavelength Of Peak Sensitivity	V_P	---	940	---	nm	---
Open-Circuit Voltage	V_{OC}	---	0.41	---	V	Ee=5mW /cm2 λP=940nm
Short-Circuit Current	I_{SC}	4.0	6.5	---	μA	Ee=1mW /cm2 λP=875nm
Reverse Light Current	I_L	4.2	6.5	---	μA	Ee=1mW /cm2 λP=875nm VR=5V
Dark Reverse Current	I_D	---	---	10	nA	Ee=0mW /cm2 VR=10V
Reverse Breakdown Voltage	V_{BR}	32	170	---	V	Ee=0mW /cm2 IR=100μA
Rise Time	tr	---	10	---	nS	VR=5V RL=1000Ω
Fall Time	tf	---	10	---		
View Angle	2θ1/2	---	130	---	deg	VR=5V

Note 备注：VR=5V For test conditions ，VR=5V 为测试分选条件

Typical Electro-Optical Characteristics Curves 典型光电特性曲线

Fig.1 Collector Power Dissipation vs. Ambient Temperature

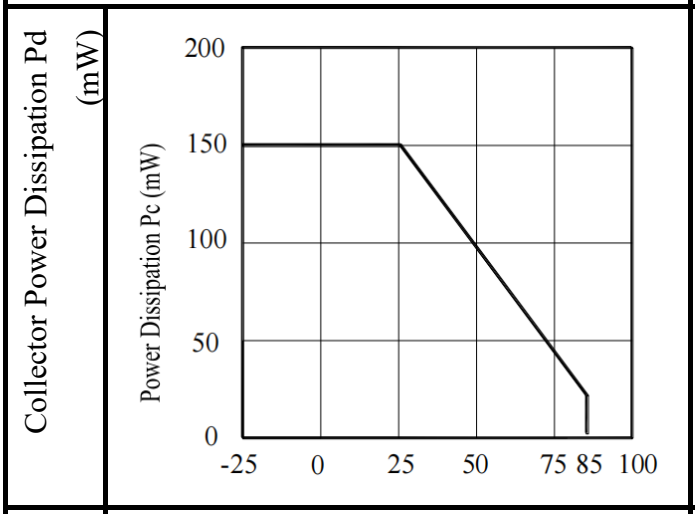


Fig.2 Spectral Distribution

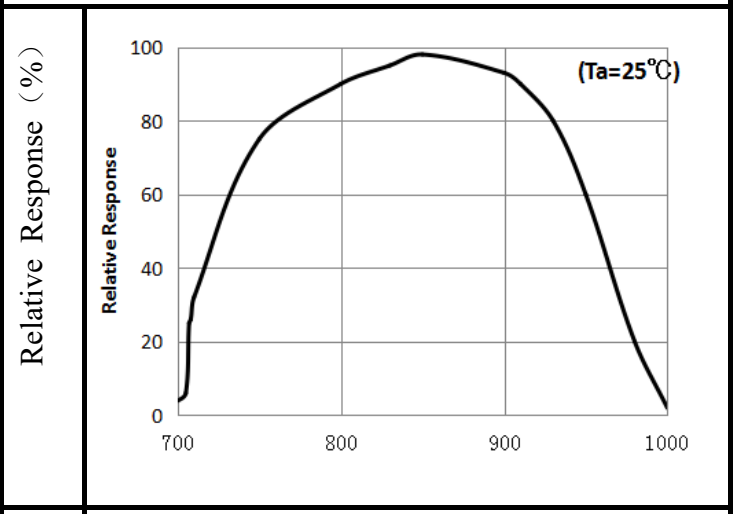


Fig.3 Dark Current vs. Ambient Temperature

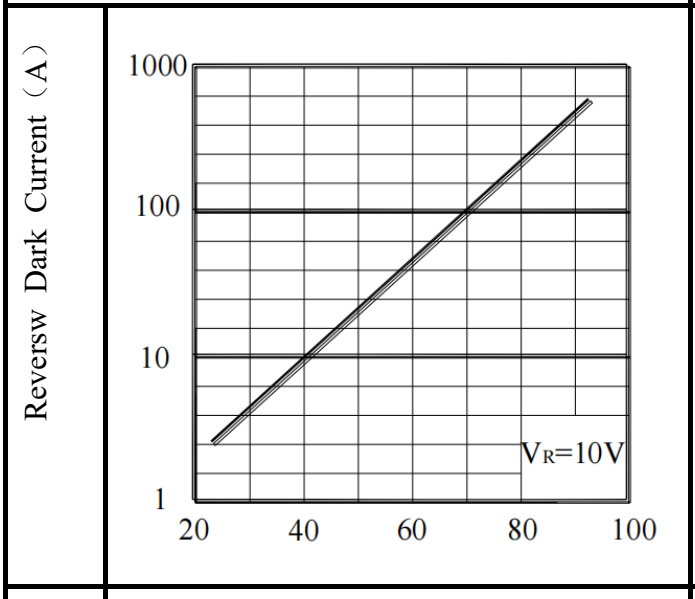


Fig.4 Reverse Light Current vs. Ee

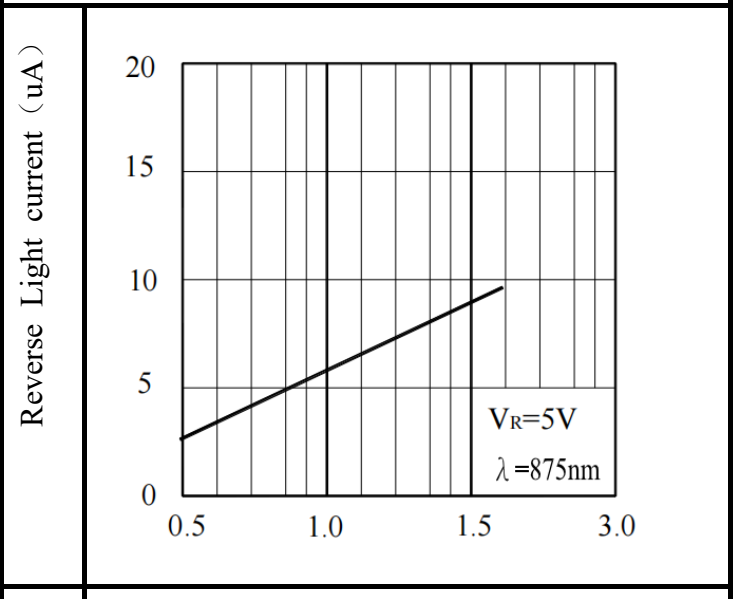
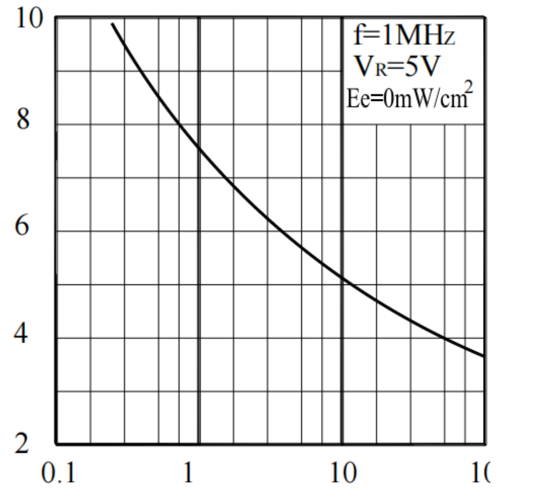
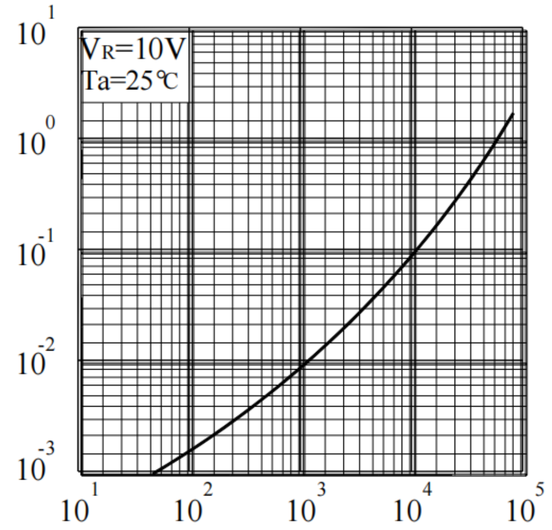
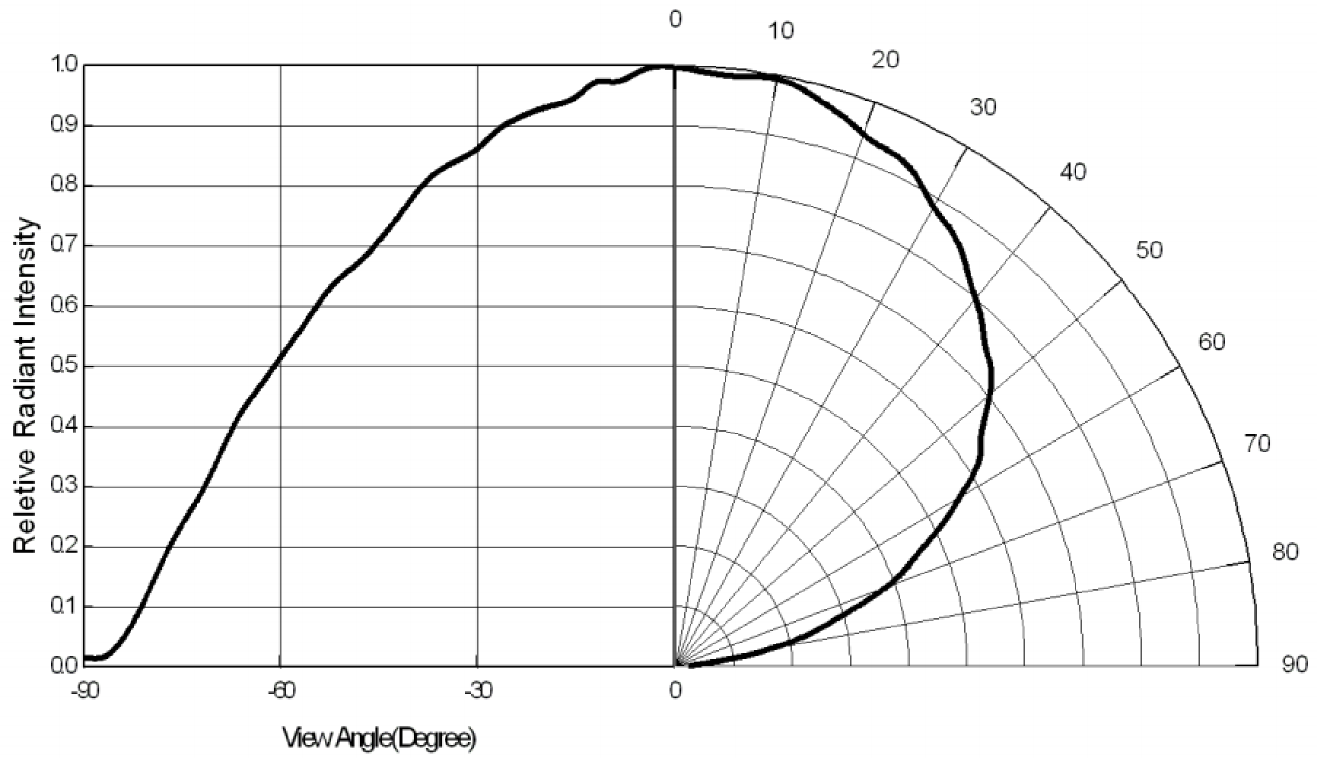


Fig.5 Terminal Capacitance vs. Reverse Voltage

Fig.6 Response Time vs. Load Resistance

Terminal capacitance Ct (pf)		Responce Time tr，tf（us）	
	Reverse Voltage（V）		Load Resistance（Ω）

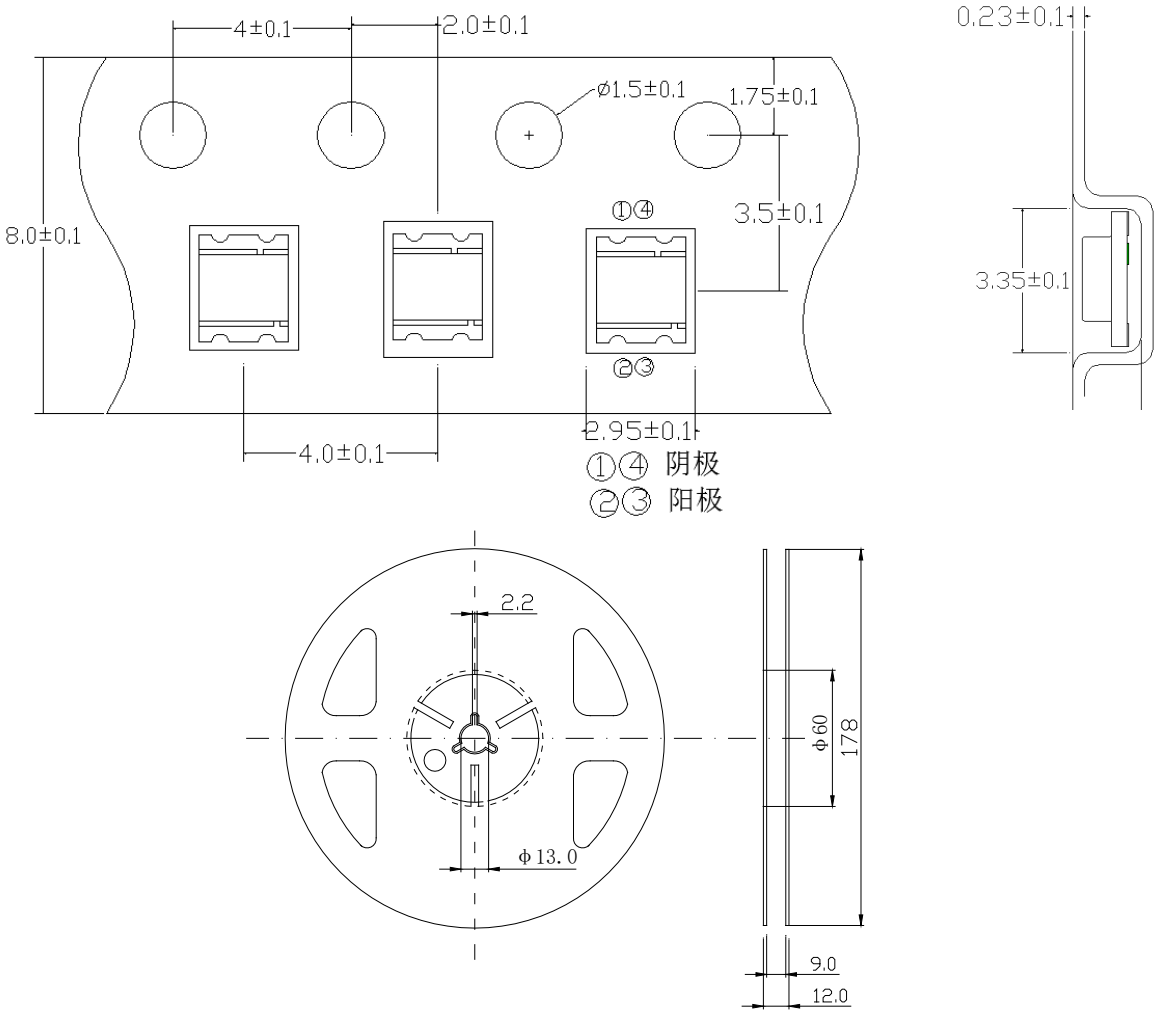
Relative Light Current vs. Angular Displacement



Tray structure and packaging 料盘结构与包装

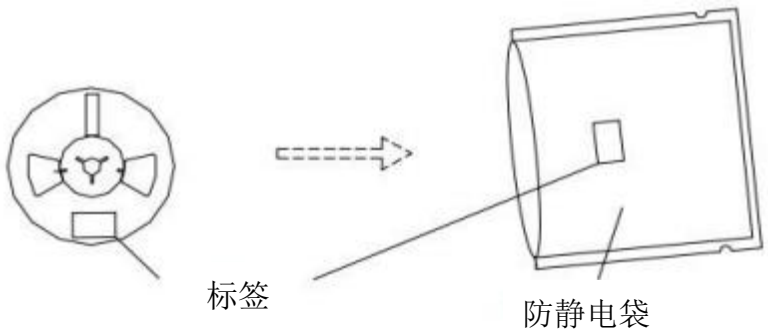
Reel And Tape Dimensions 包装载带与圆盘尺寸

Packing quantity: 3000 PCS/rolls 包装数量：3000pcs/卷



注/Notes: 1. 尺寸单位为毫米(mm)/ All dimensions are in millimeters.
2. 尺寸公差是±0.1mm/ Tolerance is ± 0.1 mm unless otherwise noted.

Label Explanation/标签及标识：



Reliability TestItemsAndConditions/信赖性测试项目及条件

TestItem 测试项目	Ref.Standard 参考标准	Test Condition 测试条件	Time 时间	Quantity 数量	Accepted/Rejected 接收/拒收
Reflow 回流焊	JESD22-B106	Temp:255℃max T=10 sec	1times	22	0/1
Thermal Shock 冷热冲击	JESD22-A106	-40℃15min ↑↓ 100℃ 15min	100 cycles	22	0/1
High Temperature Storage 高温保存	JESD22-A103	Temp:100℃	168Hrs.	22	0/1
Low Temperature Storage 低温保存	JESD22-A119	Temp:-40℃	168Hrs.	22	0/1
Life Test 常温通电	JESD22-A108	Ta=25℃ IF=20mA	168Hrs.	22	0/1
High Temperature / High Humidity 高温高湿	Qiangsq831	85℃/85% RH	168Hrs.	22	0/1

Criteria For JudgingDamage/失效判定标准

Test Items 项目	Symbol 符号	Test Condition 测试条件	Judging For Damage 判定标准	
			Min. 最小	Max. 最大
Forward Voltage 正向电压	VF	IF=20mA	-	U.S.L*)x1.1
Reverse Current 漏电流	IR	VR = 5V	-	U.S.L*)x2.0
Luminous Intensity 光强	Mcd	IF=20mA	L.S.L*)x0.7	

U.S.L: Upper standard level 规格上限
L.S.L: Lower standard level 规格下限

Precautions For Use 预防措施

1. Storage存储

Do not open moisture proof bag before the products are ready to use. 在产品准备使用之前，不要打开防潮袋。

Before opening the package, the device should be kept at 30℃ or less and 90%RH or less. 打开包装前，设备应保持在30℃及90%RH以下。

The device should be used within a year. 该设备应在一年内使用。

After opening the package, the device should be kept at 30℃ or less and 70%RH or less. 打开包装后，设备应保存在30℃及70%RH以下。

The device should be used within 168 hours (7 days) after opening the package. 设备应在打开包装后的168小时(7天)内使用。

If the moisture absorbent material (silica gel) has faded away or the device have exceeded the storage time, baking treatment should be performed using the following conditions. 如果吸湿材料(硅胶)已经褪色或设备已经超过储存时间，应在以下条件下进行烘烤处理。

Baking treatment : 60±5℃ for 24 hours. 烘烤处理:60±5℃烘烤 24 小时。

Avoid the presence of acid, alkali and corrosive gas in the preservation environment, and avoid strong vibration and strong magnetic field。保存环境中避免有酸、碱以及腐蚀气体存在，同时避免强烈震动及强磁场作用。

2.Soldering Condition 焊接条件

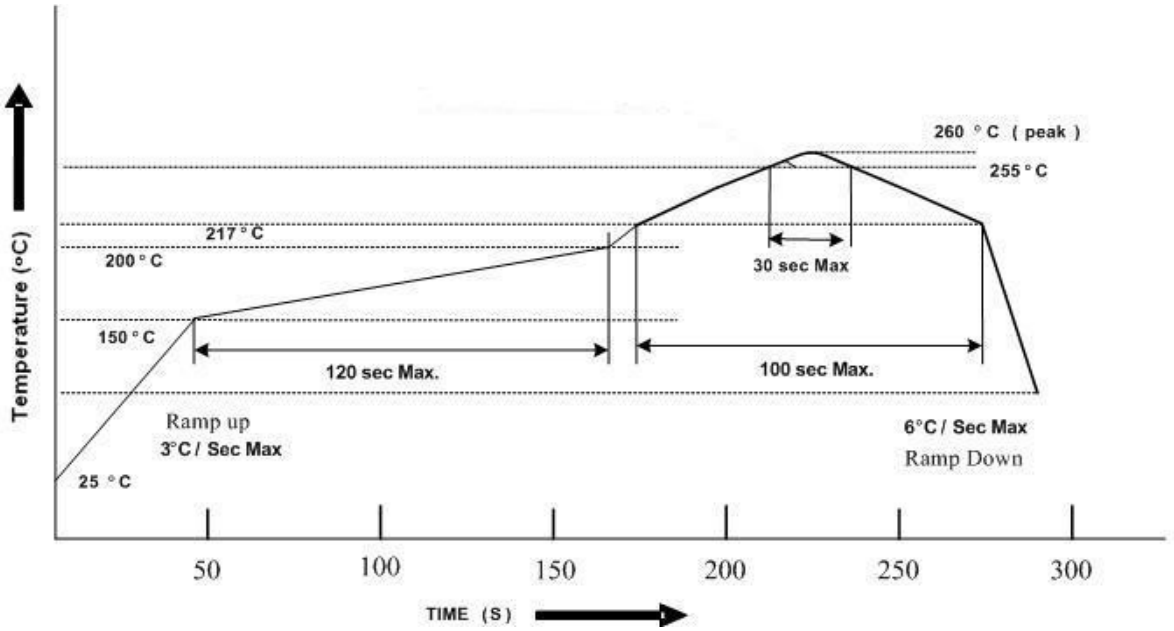
SMD LED is soft and easy to damage the luminous surface and plastic shell by external force. It should be handled lightly when welding SMD LED 灌封胶较软，外力易损坏发光面及塑料壳，焊接时要轻拿轻放。

It is recommended to use soldering flux with tin wash type, reflow soldering according to the condition of reflux curve, reflow twice at most, ensure the LED luminous surface is clean, foreign matter will affect the luminous color。建议使用易洗型的助焊剂，依照回流曲线条件回流焊接，回流次数最多两次，确保 LED 发光面干净， 异物会影响发光颜色。

Manual welding is only recommended for repair and heavy industry;The maximum welding temperature should not exceed 300 degrees, and must be completed within 3 seconds (manual welding can only be welded once) soldering iron maximum power should not exceed 25W. 只建议在修理和重工的情况下使用手工焊接；最高焊接温度不应超过 300 度，且须在 3 秒内完成（手工焊接只可焊接一次）烙铁最大功率应不超过 25W。

During the soldering process, do not touch the lens at high temperature，After soldering, any mechanical force on the lens or any excessive vibration shall not be accepted to apply, also the circuit board shall not be bent as well.焊接过程中，严禁在高温情况下碰触胶体； 焊

接后，禁止对胶体施加外力，禁止弯折 PCB，避免元件受到撞击。



3. cleaning 清洗

No ultrasonic cleaning. It is recommended to use isopropyl alcohol, pure alcohol to wipe or soak, not more than 1 minute, and leave at room temperature for 15 minutes before use. After cleaning, make sure the LED luminous surface is clean and the foreign matter will affect the luminous color。不能用超声波清洗,建议使用异丙醇（isopropyl alcohol）、纯酒精擦拭或浸渍(浸渍不超过 1 分钟) 在室温下放置 15 分钟再使用；清洗后,确保 LED 发光面干净,异物会影响发光颜色。

Avoid touching or contaminating the water, trichloroethylene, acetone, sulfide, nitride, acid, alkali, and salts that can damage leds.应避免接触或污染天那水,三氯乙烯、丙酮、硫化物、氮化物、酸、碱、盐类，这些物质会损伤LED.

4. enbedment 灌封

Volatile substances to leach into the LED inside, photons in electricity and heat conditions, will lead to the LED color, thus causing serious droop, it is forbidden to use any of the LED device performance or reliability of harmful substances or materials, for a specific purpose and use of the environment, advice on all the material and the material compatibility test.When attaching LED, do not use adhesive that can produce volatile organic gas.挥发性物质会渗透到 LED 内部，在通电产生光子及热的条件下，会导致 LED 变色，进而造成严重光衰，严禁使用任何对 LED 器件的性能或者可靠性有害的物质或材料，针对特定的用途和使用环境， 建议对所有的物质和材料进行相容性的测试。在贴装 LED 时候，不要使用能产生有机挥发性气体的粘结剂。

It is recommended to light up for 168 hours at room temperature for a small amount of test before using normal filling and sealing glue。使用正常灌封胶时,建议先以少量试验，常温点亮 168 小时，确定没有问题再作业。

5. electrostatic 静电

Static electricity or peak surge voltage will damage the LED, avoiding instantaneous voltage when the lamp is turned on or off。静电或峰值浪涌电压会损坏 LED,避免在开灯、关灯时产生瞬时电压。

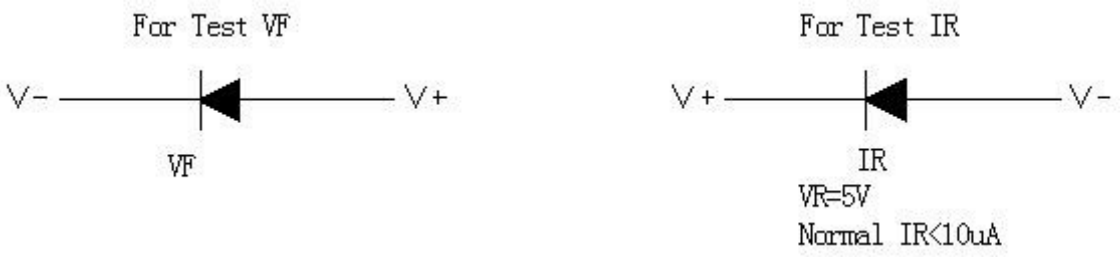
It is recommended to wear anti-static wrist bands, anti-static gloves and anti-static shoes when using LED. The equipment and instruments used are properly grounded. After the LED was damaged, the leakage current increased obviously, the forward voltage of low current became lower, and the low current point did not light, etc。建议使用 LED 时佩戴防静电手腕带,防静电手套,穿防静电鞋,使用的设备、仪器正确接地。LED 损坏后,表现出漏电流明显增加,低电流正向电压变低，低电流点不亮等现象。

6.test 测试

LED shall be driven trated current and shall be protected bycurrent-limiting resistance inthecircuit.Otherwise,slight voltage change swill cause largecurrent changes,which will damage theLED. LED 要在额定电流下驱动,同时电路中需要加限流电阻保护；否则,轻微的电压变化就会引起较大的电流变化,从而破坏 LED。

When the circuitison or off,avoid sudden surge voltage.Otherwise,the LED will be burnt out 在电路导通或关闭情况下,要避免瞬间浪涌电压的产生,否则 LED 将被烧坏。

Please check the LED as shown 请参照下图示检测 LED



If the forward voltage VF is too high or there verse voltage VR is too high,the LED will bedamaged. 顺向电压 VF 过高或反向电压 VR 过高，均会损坏 LED.

Revision history 修订历史

Versions 版本	Description	Release Date
0.1	Preliminary 初定	2024/10/11

About Edison Opto 关于艾笛森

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

www.edison-opto.com

For general assistance please contact:
service@edison-opto.com.tw

For technical assistance please contact:
LED.Detective@edison-opto.com.tw