

# 承认书

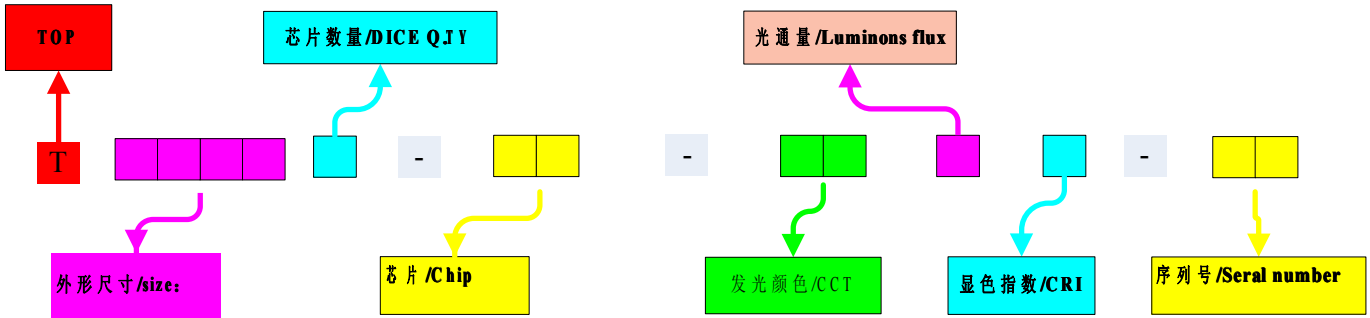
## Specification

<b>Product/产品 :</b>	<b>White SMD LED</b>
<b>Part Number/型号 :</b>	<b>TOP 3528</b>
<b>Issue Date /发行日期 :</b>	<b>2011-06-29</b>

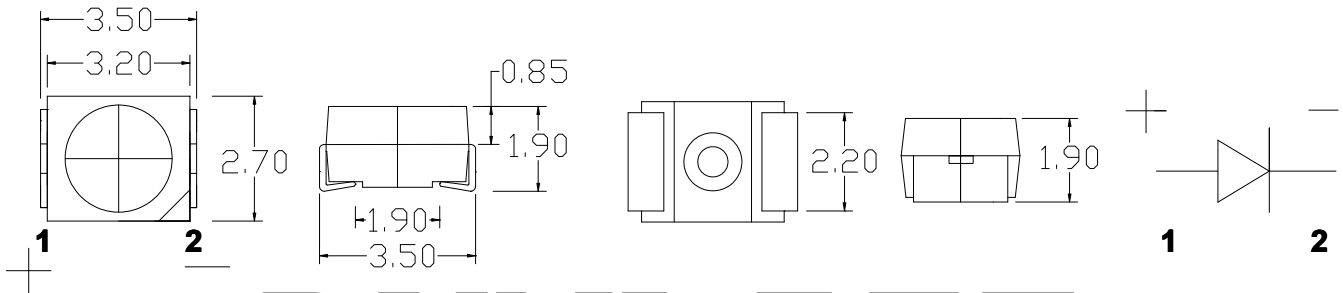
MAKER 制定		
Prepared 制作	Checked 审核	Approved 核准
版本	A0	

<b>Customer Confirmation</b> 客户确认

◆ Product Identification Code/产品型号编码规则



◆ Dimensional drawing/尺寸图



◆ Absolute maximum ratings/最大绝对额定值

Parameter 参数	Symbol 符号	Value 数值	Unit 单位
Forward Current 正向电流	If	20	mA
Reverse Voltage 反向电压	Vr	5	V
Operating Temperature 工作温度	Topr	-25~+85	°C
Storage Temperature 储存温度	Tstg	-35~+85	°C
Soldering temperature 焊接温度	Tsol	260±5°C (for4sec)	°C
Power Dissipation 功率消耗	Pd	60	mW
Pulse Current 脉冲电流	IFP	100	mA



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## ◆ Shape Specification /外观要求

No. 序号	ITEM 项目	SPEC OR DESCRIPTION 规格要求描述
1	Lens 胶体	<ul style="list-style-type: none"> <li>◆ No change color/不可有胶体变色</li> <li>◆ No Disrepair/不可有破损</li> <li>◆ Scratch/划伤 (length ≤2.0mm,Width≤0.25mm)</li> <li>◆ macula/黑点、异物 (≤0.25mm and ≤2EA in Encapsulation reverse)</li> <li>◆ bubble/气泡 (≤0.3mm and ≤2EA Encapsulation reverse)</li> </ul>
2	PIN PIN 脚	◆ No oxidation/不可有氧化
3	Configuration 结构	◆ No Encapsulation reverse/不可封反
4	surface preparation 表面处理	◆ Cut needn't electroplate /切口处无需作电镀
5	Lens color 胶体颜色	◆ Yellow /黄色

## ◆ Optical Specification /光电参数规格

Forward voltage(V)	Luminous Flux(lm)	Color Temperatur(k)/ra	Chromatic current(°)	CRI
2.8-3.6	4.0-5.0	暖白: 2550-3700K 自然白: 3700-4700K 正白: 4700-7000K	120°	65-70 70-75 75-80 80-85
	5.0-6.0			
	6.0-7.0			
	6.5-7.5			
	7.0-8.0			
	8.0-9.0			

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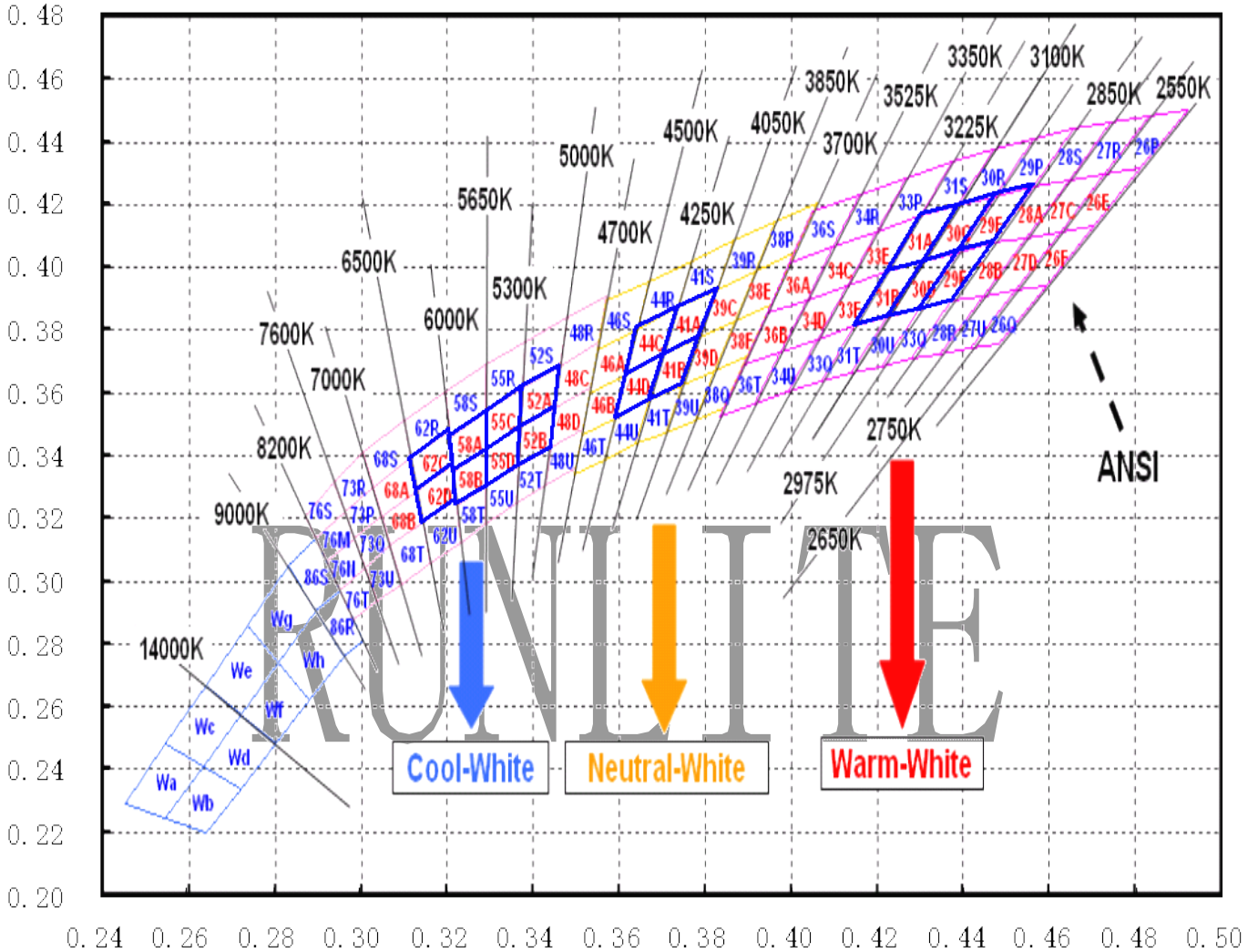
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## ◆ 0 p to-E lectron ical G rading S pecifica tion /光电分级规格

Forward Voltage 正向电压	2.8-2.9v	2.9-3.0 v	3.0-3.1 v	3.1-3.2 v	3.2-3.3 v	3.3-3.4V	3.4-3.5V	3.5-3.6V
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Test Conditions 测试条件 Test Temperature 测试温度=25℃ IF/正向电流=20mA

Color Coordinate Comparison./分 BIN 参数图.



备注：蓝色分 BIN 区域为我公司产品产出区域！  
背景为美国能源之星参数。

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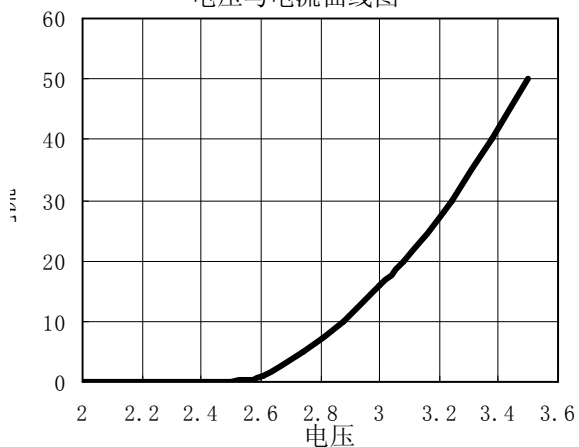
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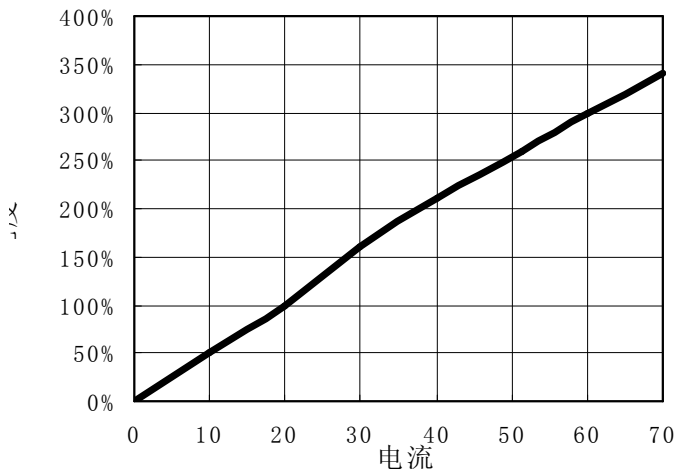
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## ◆ 0 p to-E lectronica lC ha racteristics /光电特性

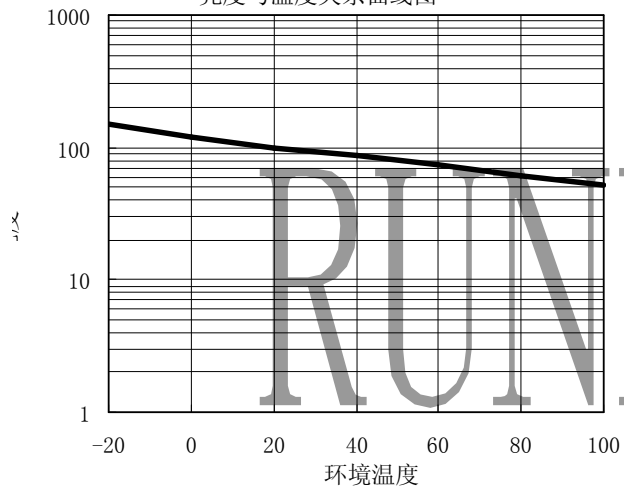
电压与电流曲线图



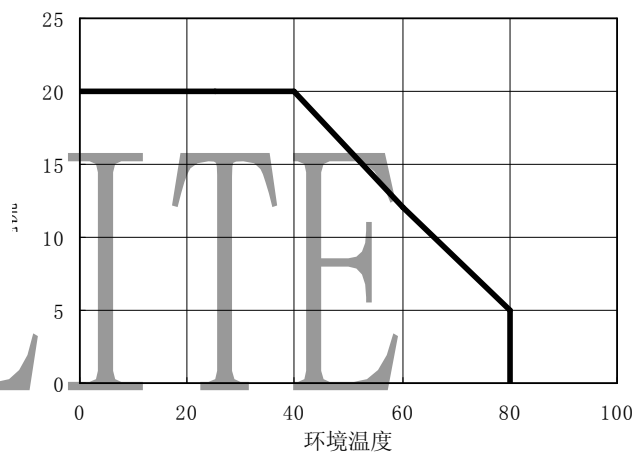
亮度与电流关系曲线图



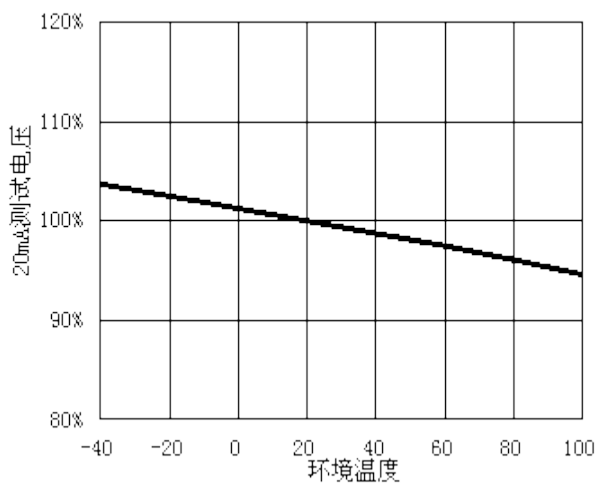
亮度与温度关系曲线图



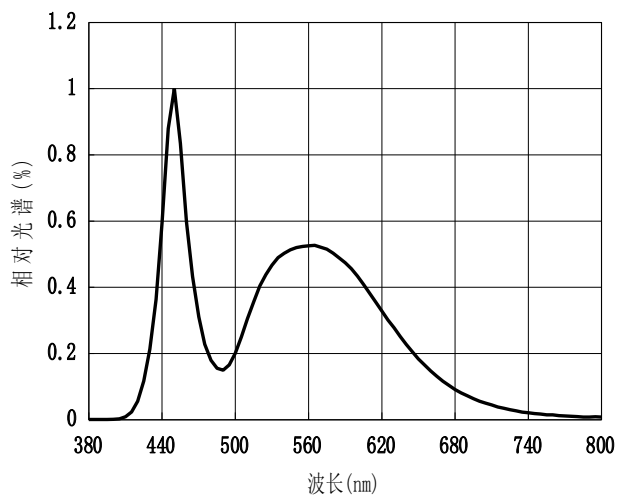
电流与温度曲线图



电压与温度曲线图



光谱图



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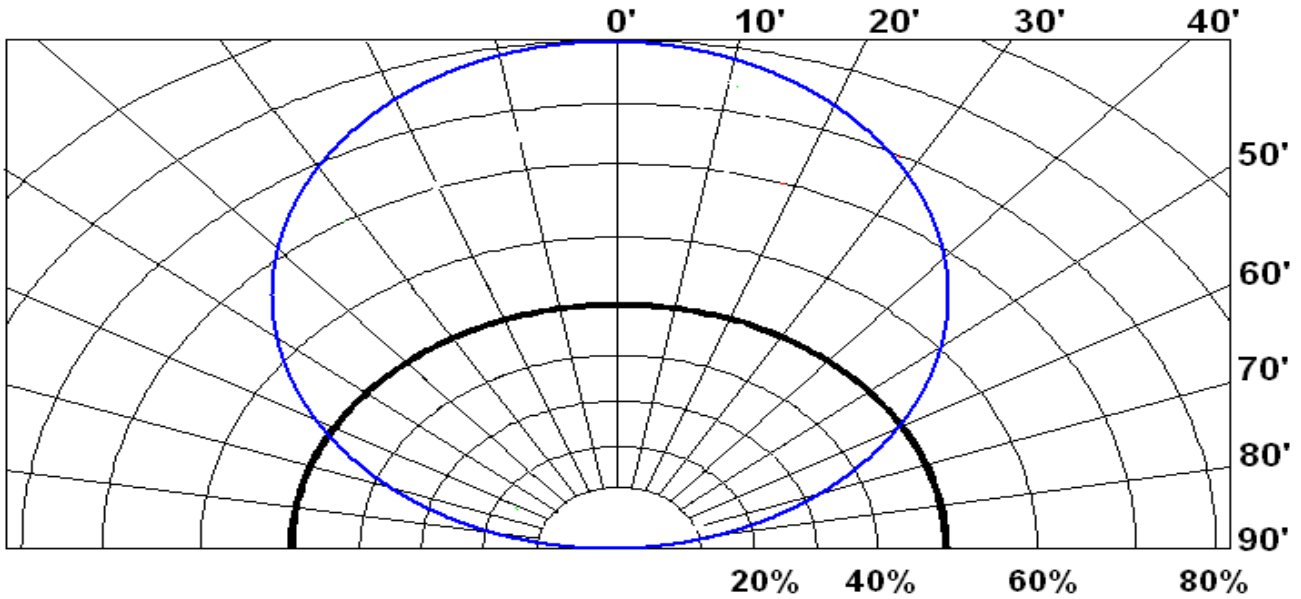


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◆ Lighting Angle / 发光角度



◆ Reliability Test Items / 可靠度测试项目

No.	Item 测度项目	Condition 测试条件	Time/Cycle 测试时间或周期	Number of Damaged 不良数/测试数
1	Soldering Heat Test 焊接试验	260±5°C	10 sec	0/60
2	Thermal Shock 热冲击	0°C (15sec) ~ 100°C (15sec)	20 cycle	0/60
3	High Temp. Storage 高温储存	100°C	1000Hrs	0/60
4	Low Temp. Storage 低温储存	-40°C	1000Hrs	0/60
5	Temperature Cycle Test 高低温循环测试	-40°C ~ 80°C	100 Cycles, 200 Hrs	0/60
6	High Temp. High Humidity Test 高温高湿	60°C, 90% RH	1000 Hrs	0/60
7	Operation Life Test 1 常温老化	Room Temp., 20mA	1000 Hrs	0/60
8	Operation Life Test 2 常温老化	Room Temp., 30mA	500 Hrs	0/60
9	High Temp. Operation Life Test 高温老化	85°C, 5mA	1000 Hrs	0/60
10	Low Temp. Operation Life Test 低温老化	-30°C, 20mA	1000 Hrs	0/60

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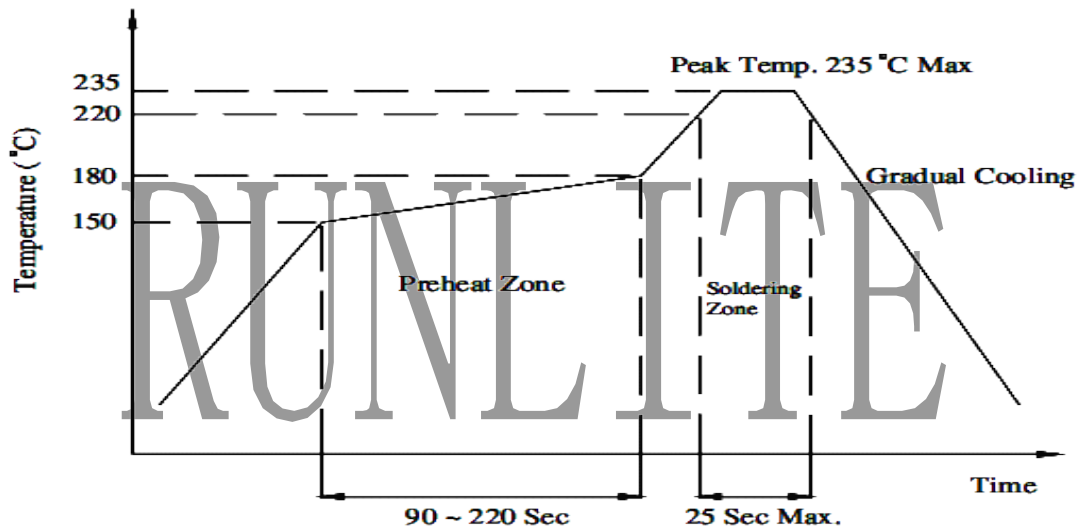
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## ◆ Judgment Criteria / 判定标准:

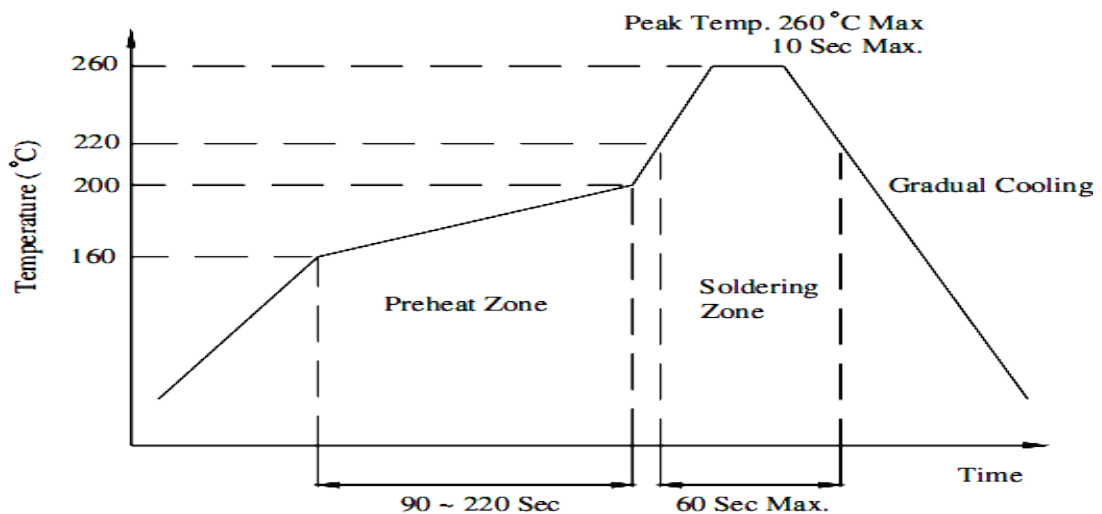
Item 项目	Symbol	Test Conditions	Judgment Criteria
Forward Voltage 正向电压	V <sub>f</sub>	I <sub>F</sub> = 20 mA	Δ% < 10 %
Leakage Current 反向漏电流	I <sub>r</sub>	V <sub>r</sub> = 5V	<10 uA
Luminous Intensity 发光强度	I <sub>v</sub>	I <sub>F</sub> = 20 mA	Δ% < 10%
Luminous Flux 光通量	I <sub>m</sub>	I <sub>F</sub> = 20 mA	Δ% < 10%

## ◆ Reflow / 回流焊接

### Lead Solder / 有铅焊接



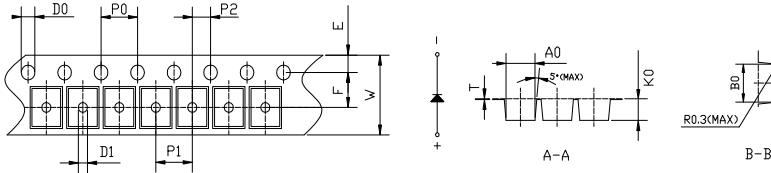
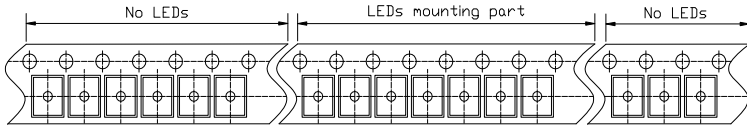
### Lead-Free Solder / 无铅焊接



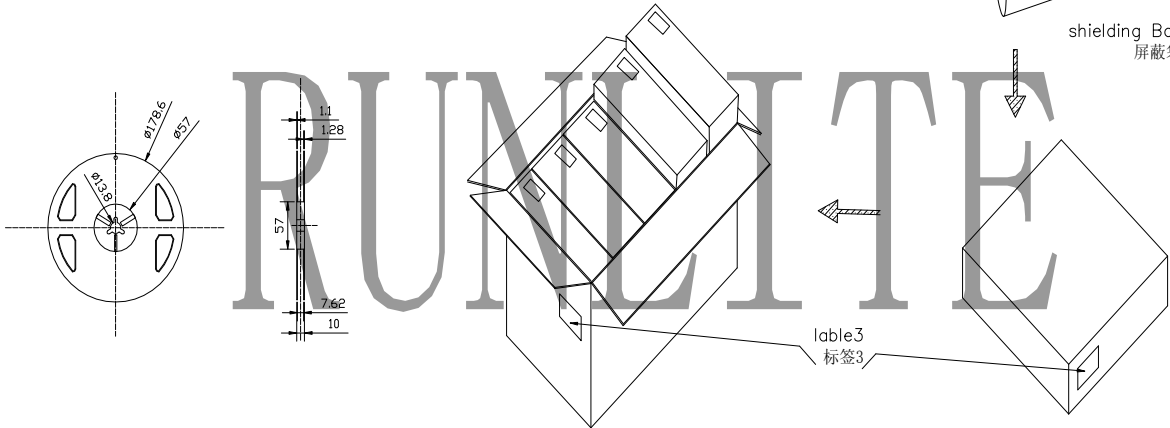
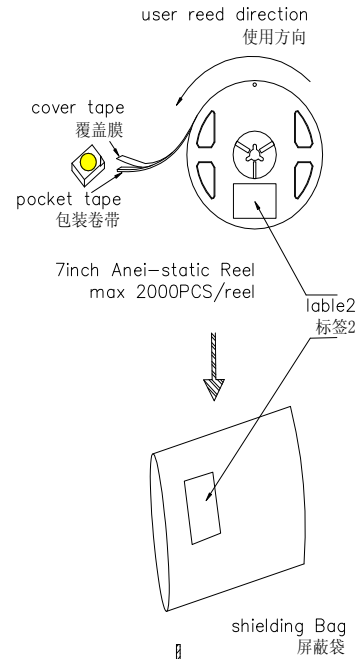
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## ◆ Packaging Specifications/包装规格



symbol	A0	B0	K0	P0	P1	P2	model	unit
spec	3.15±0.10	3.80±0.10	2.10±0.10	4.00±0.10	4.00±0.10	2.00±0.10		
symbol	W	T	E	F	D0	D1	3528	mm
spec	8.00±0.10	0.235±0.05	1.75±0.10	3.50±0.10	1.50 <sup>+0.10</sup> <sub>-0.00</sub>	1.00 <sup>+0.10</sup> <sub>-0.00</sub>		



5 inner box in one carton/每个外箱装5个内箱  
外箱尺寸/box size=425\*245\*273mm

Maximum 5 bags in 1 inner box/每盒5袋  
内箱尺寸/box size=247\*230\*75mm



## ◆Caution/注意事项

- 1、Before opening the package: the LED should be kept at 30°C or less and 90 % RH or less.  
打开包装前请在温度 30 °C 湿度 90%的环境以下储存。
- 2、After opening the package : the LED should be kept at 30°C or less and 30%RH or less.The LED should be soldered with in 168h( 7days)after opening the package. If unused LEDs remain, they should be stored in moisture proof package, such as sealed containers with packages of moisture absorbent material(silica gel). It is also recommended to return the LEDs to the original moisture proof bag and to seal the moisture bag again.  
打开包装后, LED 请在温度 30 °C 湿度 60%的环境以下储存, 并应在 168 小时内完成焊接。如果包装打开后, 未用完的 LED 应放置在防潮包装中, 比如含有防潮剂(硅胶)的袋子中。建议将此 LED 返回到原始包装带中并将其封口。
- 3、After opening the package ,If the humidity indicator's color change from blue to pink at 30% or more, and if the LEDs have exceed the storage time, bake treatment should be performed using the following conditions.baking treatment :more than 24 hours at 60±5 °C.  
打开包装后, 如果发现湿度指示卡的颜色由蓝色变为粉红色并且是在 30% (含 30%) 以上, 或者产品超过储存时间, 干燥处理如下: 60±5 °C, 24 小时以上。
- 4、The LED is an ESD sensitive device. All the equipment and machine must be properly grounded.  
LED 是静电敏感器件, 使用时所有设备、机构都需有适当的接地导电措施。
- 5、When make use of it,please use static-free container,operator should ware antistatic clothes and rope-satic-ring also should make effective ground  
使用时请使用防静电的盛装容器, 作业人员应穿着防静电服装及佩戴有绳之静电环并作有效接地。
- 6、Damaged device will appear some symptoms,lower forward voltage,higher leak current,or even short current.  
受静电与突波破坏之 LED 的电性特性上, 会有明显的漏电流, 或驱动电压明显变低, 甚至是短路现象。
- 7、After soldering the LED should keep out off any shake or outer force before it come to normal tempreture  
上在焊接温度回到正常以前, 必须避免使 LED 受到任何震动或外力。
- 8、Reflow soldering should not be done more than two times,when soldering,do not put stress on the LEDs during heating.After soldering,do not warp the circuit board.。Repair should not be done after the LEDs have been soldered. When repairing is unavoidable,a double-head soldering iron should be used. It should be confirmed before hand whether the characteristics of the LEDs will not be damaged by repairing.  
LED 不宜过两次回流焊接, 在高温焊接期间, 不要在 LED 表面施压。LED 焊接后, 不要弯曲线路板。LED 焊接后不宜进行返修, 当返修不可避免时, 请事先确认返修是否使 LED 的特性受到破坏, 再确定是否使用双头烙铁进行返修。
- 9、LED is one-way continuity, please check electrode before mount, if mount wrong ,the LED chip will damage or fail when LED applied voltage  
LED 单向导通性, 安装前确认极性, 若装反, 在施加电压时容易造成 LED 芯片损伤或失效。
- 10、Please design the PCB board to keep a distance between LED and other emit heat component  
线路设计时, 请尽量避免将 LED 与发热组件靠得过近。
- 11、Strongly recommend design the board according setting current other than setting voltage .if you are really need setting voltage type please consider there may cause influence arise by difference voltage of difference LED  
电路设计上, 建议以定电流设计, 若为定电压设计, 请考虑 LED 之间不同正向电压所可能造成之影响。
- 12、The outer voltage change will bring the current index change .unsuitable design and current control,easy cause LED fail .for example excess current will cause LED life short or even burn down , too little electricity will cause lacking light  
LED 之外加电压变化, 会造成电流指数级变化, 不当之设计与电流控制, 易造成 LED 失效, 如电流过大引起寿命问题甚至烧毁, 电流过小引起亮度不足。
- 13、If you need make difference BIN LED in the one module .please confirm whether it can meet the electric and optics characteristic require such as the current balance, emitting and brightness consistency.  
不同 BIN 号之 LED 需安装在同一个组件时, 请先确认是否可满足相关电气及光学之特性要求, 如电流是否均衡, 光色、亮度一致性等。