



产 品 规 格 书

SPECIFICATION FOR PRODUCTION

客户代码 Custome:

产品型号 Product Name: PLK-6812RGB-4

样品单号 Version number:

日 期 Deliver date:

客 户 承 认 签 章

Customer confirm and sign

检 查 TESTED BY	核 对 CHECKED BY	承 认 APPROVED BY
审 核 结 果 INSPECT RESULT	<input type="checkbox"/> 合 格 ACCEPT	<input type="checkbox"/> 不 合 格 REJECT
说明 (REMARK): _____ _____		



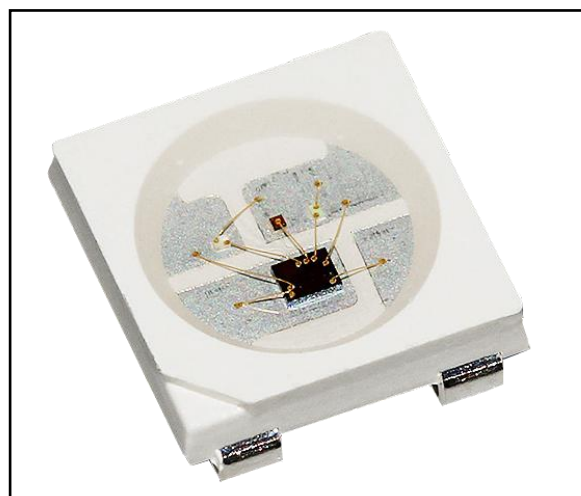
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产品特征 Features

- 封装尺寸: 5.0(长) × 5.0(宽) × 1.6(高) mm
Package Size: 5.0(L) × 5.0(W) × 1.6(T) mm
- 采用硅胶封装 Silicone Packed
- 适应多种工作环境
Suitable for different working environment
- 超长寿命: 30000 小时
Super long lifetime: 30000HRs
- 防紫外线 Anti UV
- 可供白光 (2300K- 25000K)
White colors are available in (2300K- 25000K)
- 宽角度 Wide viewing angle ($2\theta_{1/2}=120^\circ$)

物料选用指南

ITEM 项目	MATERIALS 物料
Resin 胶体	Silicon 硅胶
Bonding wire 焊线	23 μ m Au
Lens color 胶体颜色	Water Clear 水清透明
Dice 晶片	InGaN



产品应用 Applications

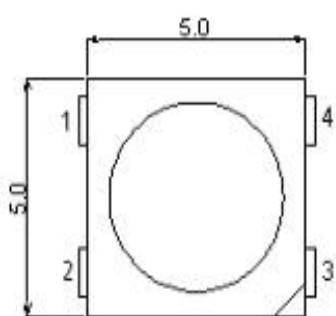
- 室内照明: 日光灯管、灯条
Indoor lighting: Fluorescent lamp, tube
- 商业照明显示: 广告字、广告灯箱
Commercial illumination and displays: Advertising words, light box
- LCD 背光源 LCD Backlighting
- 装饰照明: 柔性灯条 Decorative lighting: light strip
- 汽车内部辅助照明 Automotive interior auxiliary lighting
- 其它照明和显示类 Other illumination and displays



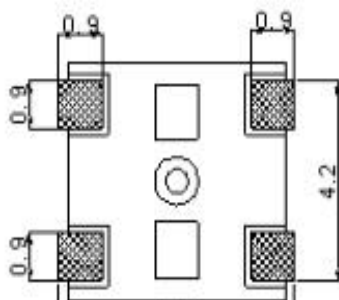
反射盖灌注型高效率发光二极管 REFLECTOR COATING TYPE HIGH-PERFORMANCE LEDs

高性能 SMD 单色顶级 LED High Performance SMD Single-Color Top LEDs

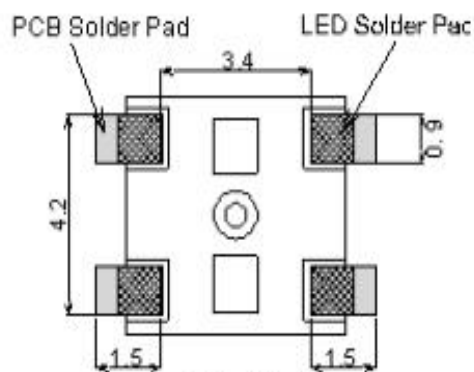
产品型号 Part Number: PLK-6812RGB-4



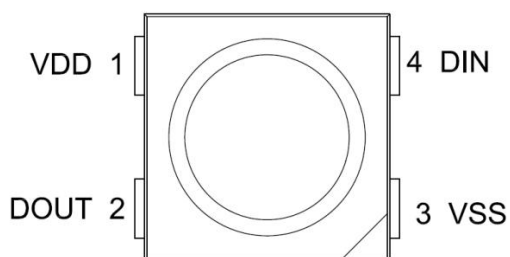
Top View



Back View



Solder Pad



注释:

- 1、所有的尺寸均以毫米(英寸) All dimensions are in millimeters (inches);
- 2、0.2 毫米(0.008 英寸), 除非另有注明 Tolerances are 0.2mm (0.008inch) unless otherwise noted



产品名称 Part Number: PLK-6812RGB-4						
极限参数 Absolute maximum ratings (TA=25°C)						
参数 Parameter	符号 Symbol	额定值 Rat	Unit (单位)			
输入范围 Input range	V _{IN}	+5~+24	V			
逻辑输入电压 Logic input voltage	V _I	-0.5~ VDD+5.5	V			
工作温度 Operating Temperature	Top	-40~+85	°C			
储存温度 Storage Temperature	Tstg	-50~+150	°C			
ESD 耐压 ESD pressure	V _{ESD}	4K	V			
电气参数 Electrical parameters TA=-20°C~70°C VDD=4.5~5.5V VSS=0V						
参数 parameters	符号 Symbol	最小 Min	典型 Typical	最大 Max	单位 Unit	测试条件 Test condition
芯片内部电源电压 Chip internal power supply voltage	V _{DD}	---	5.2	---	V	---
R/G/B/W 端口耐压 Port pressure	V _{DS, MAX}	---	---	26	V	---
DOUT 驱动能力 Driving ability	ID _{OH}	---	49	---	ma	DOUT 接地, 最大 驱动电流
	ID _{OL}	---	-50	---	ma	DOUT 接正, 最大 灌电流
信号输入翻转阈值 The signal input flip threshold	V _{IH}	---	3.4	---	---	VDD=5.0V
	V _{IL}	---	1.6	---	---	---
PWN 频率 Frequency	f _{PWM}	---	1.2	---	KHZ	---
静态功耗 Static power consumption	I _{DD}	---	1.0	---	ma	---



动态参数 dynamic parameter

参数 parameters	符号 Symbol	最小 Min	典型 Typical	最大 Max	单位 Unit	测试条件 Test condition
数据传输速度	fDIN	---	800	---	KHZ	占空比 67% (数据 1)
DOUT 传输延迟	TPLH	---	---	500	ns	DIN→DOUT
	TPHL	---	---	500	ns	

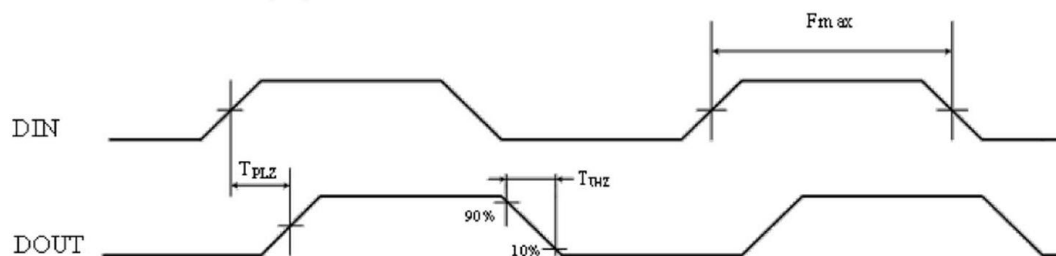
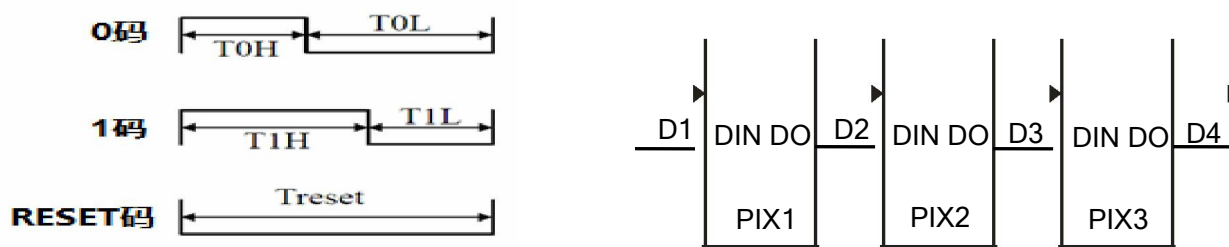
数据传输时间 Data transmission time $T_H+T_L=1.25\mu s \pm 600ns$

TOH	0 码, 高电平时间	0.3μs	±0.15μs
T1H	1 码, 高电平时间	0.6μs	±0.15μs
TOL	0 码, 低电平时间	0.9μs	±0.15μs
T1L	1 码, 低电平时间	0.6μs	±0.15μs
Trst	Reset 码, 低电平时间	80μs	

参数 parameters

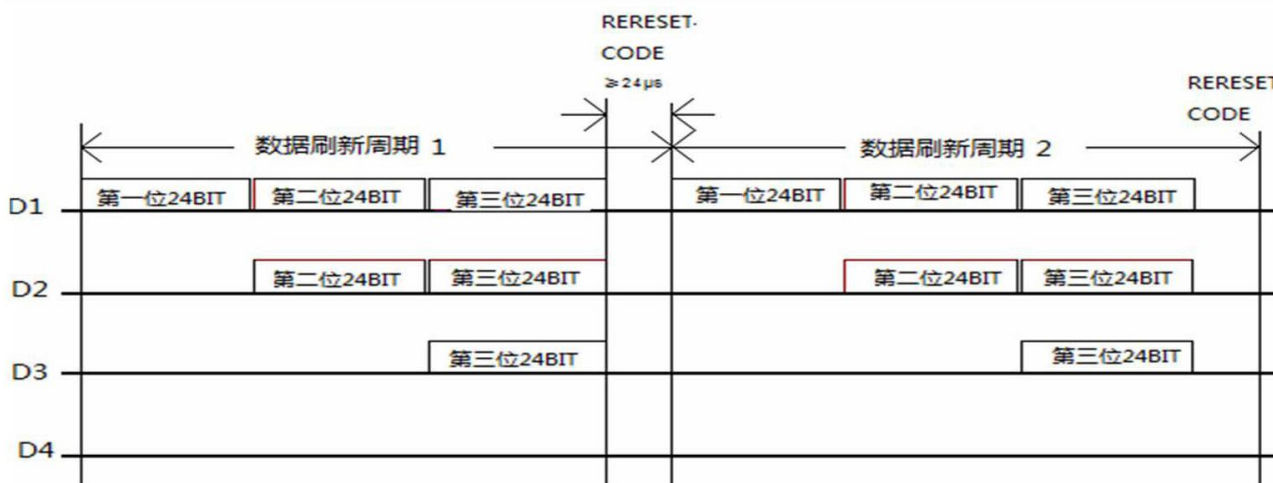
颜色 Color	波长 wavelength (nm)	发光强度 Luminous intensity (mcd)	工作电压 working voltage (V)
红色 (Red)	620-625	360-400	2.0-2.2
绿色 (Green)	518-520	550-600	3.0-3.2
蓝色 (Blue)	464-466	140-150	3.0-3.2

时序波形图 Timing waveform (Ta=25°C) :





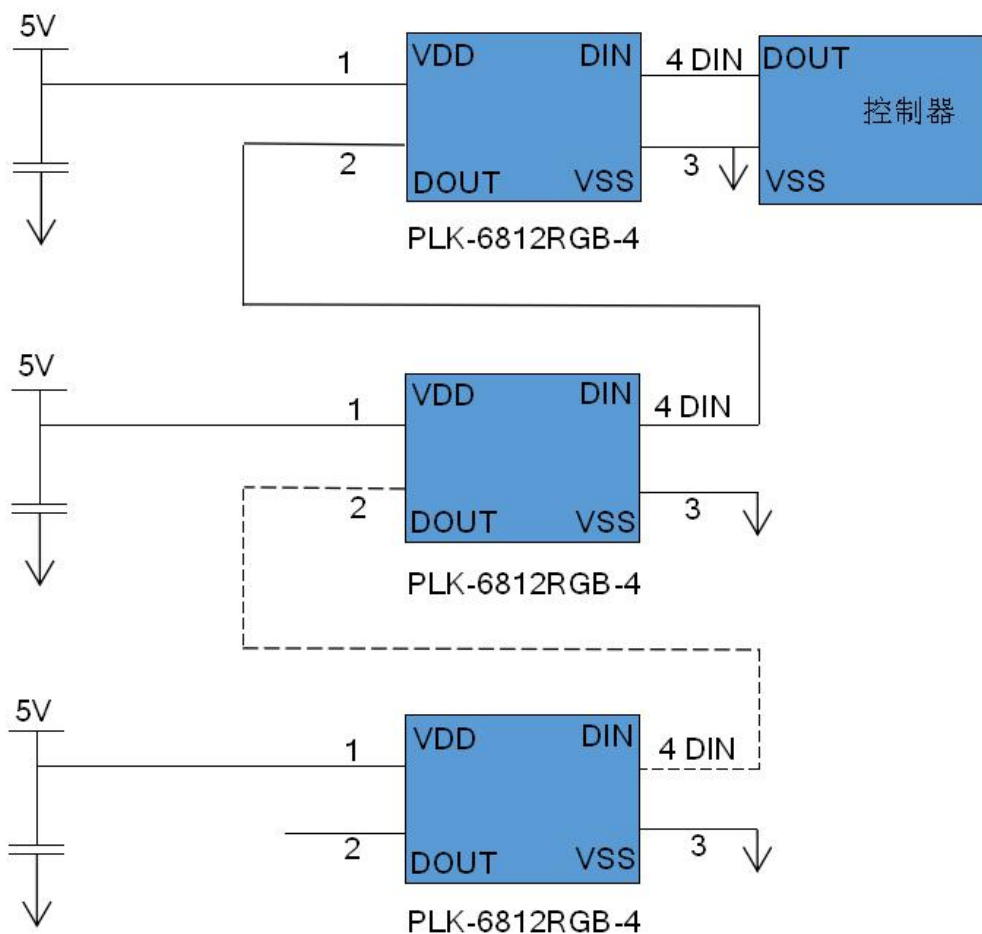
数据传输方式 Data transmission mode (Ta=25°C) :



注：其中D1为MCU端发送的数据，D2、D3、D4为级联电路自动整形转发的数据
24bit 数据结构

G7	G6	G5	G4	G3	G2	G1	G0	R7	R6	R5	R4
R3	R2	R1	R0	B7	B6	B5	B4	B3	B2	B1	B0

注：高位先发，按照RGB的顺序发送数据 (G7-G6-....B0)





可靠性试验 Reliability Test Items And Conditions

实验项目 Test Items	参考标准 Reference	实验条件 Test Conditions	时间 Time	样品数 Quantity	判据 Criterion
冷热冲击 Thermal Shock	MIL-STD-202G	-40°C (30min) -100°C (30min)	100循环 100 Cycles	22	0/22
湿热循环 Temperature And Humidity Cyclic	JEITA ED-4701 200 203	-10°C~65°C; 0%~90%RH	10循环 10cycles	22	0/22
高温储存 High Temperature Storage	JEITA ED-4071 200 201	Ta=100°C	1000H	22	0/22
低温储存 Low Temperature Storage	JEITA ED-4071 200 202	Ta=-40°C	1000H	22	0/22
高温高湿储存 High Temperature High Humidity Storage	JEITA ED-4071 100 103	Ta=60°C; RH=90%	1000H	22	0/22
高温寿命 High Temperature Life Test	JESD22-A108D	Ta=80°C	1000H	22	0/22
常温寿命试验 Life Test	JESD22-A108D	Ta=25°C IF=150mA	1000H	22	0/22
耐焊接热 Resistance to Sodering Heat	GB/T 4937, II, 2.2&2.3	Tsol*=(240±5) °C 10secs	2次 2 times	22	0/22

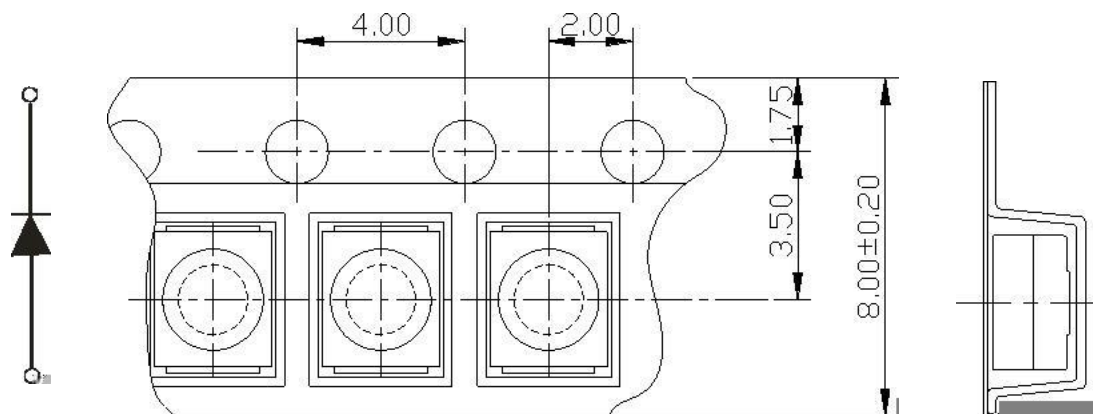
失效判断标准 Criteria For Judging Damage

测试项目 Test Items	符号 Symbol	测试条件 Test Conditions	判定标准 Criteria For Judging Damage
正向电压 Forward Voltage	V _F	I _F =I _{FT}	初始值±10% Initial Data±10%
反向电流 Recerse Current	I _R	V _R =5V	I _R ≤10uA
光强 Luminous Intensity	IV	I _F =I _{FT}	平均I _v 衰减≤30%; 单个I _v 衰减≤50% Average I _v degradadation≤30%; Single LED I _v degradadation≤50%
耐焊接热 Resistance to Soldering Heat	---	---	材料内部无裂痕、无材料间爆裂、剥离、无死灯 Meterial without internal cracks, no meterial between stripped, no deaded light

*注: T_{sol}-锡液温度

包装 Packing (1)

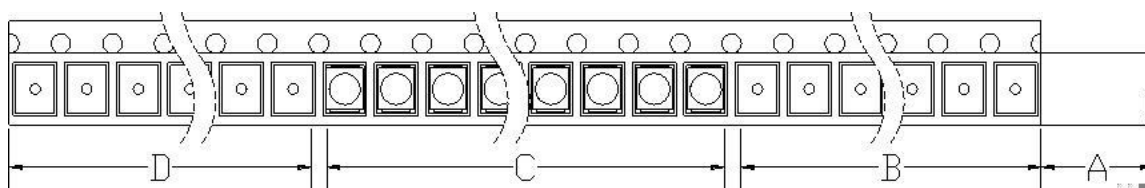
载带 Carrier Tape



单位: mm, 未注公差: ± 0.1 mm All dimensions in mm, tolerances unless mentioned is ± 0.1 mm

编带细节 Details Of Carrier Tape

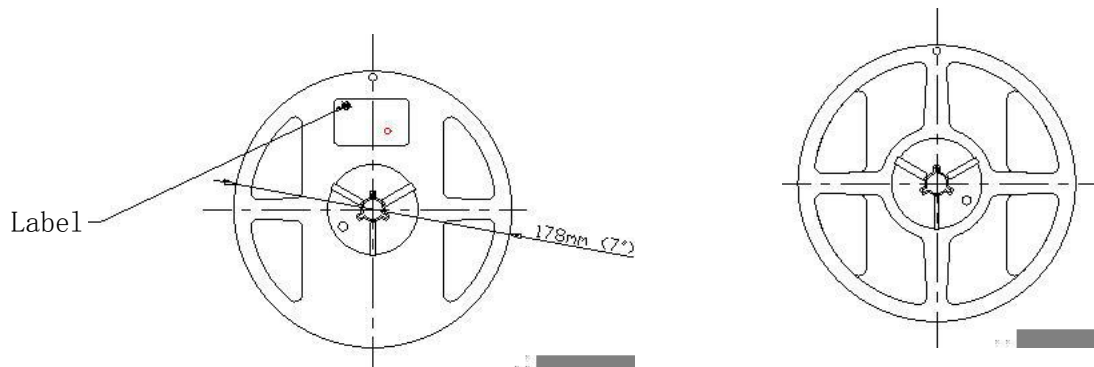
前进方向 Progressive Direction \longrightarrow



A: 盖带, 300mm; B: 引导, 空带, 200mm; C: 编带产品, 1000PCS; D: 尾部, 空带, 200mm
 A: Top Cover Tape 300mm; B: Leader Empty 200mm; C: 1000 Lamps Loaded; D: Trailer Empty 200mm

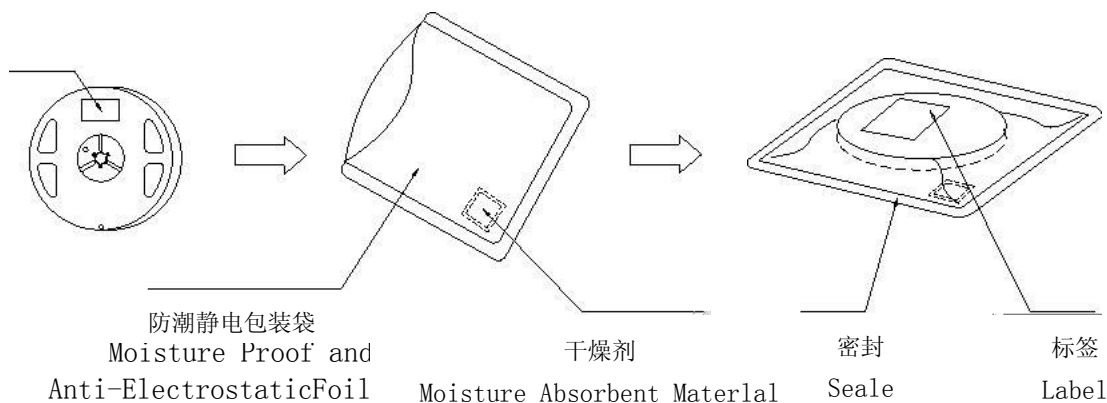
带盘 Reel Dimension

前进方向 Progressive Direction \longrightarrow

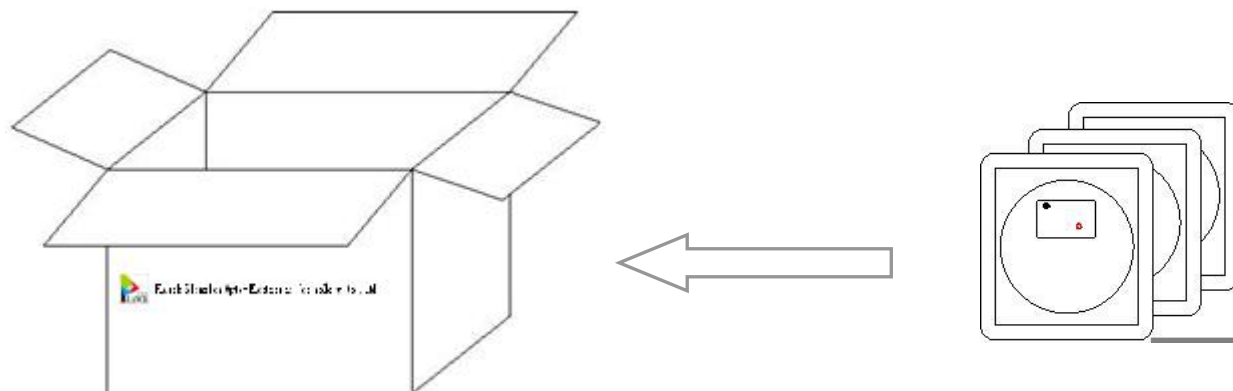


包装 Packing (2)

防潮防静电包装 Moisture Proof and Anti-Electrostatic Foil Bag



外包装箱 Cardboard Box



标签 Label

	 深圳市普朗克光电科技有限公司 Planck Shenzhen Opto-Electronic Technology Co., Ltd		
产品型号	←	Item: PL-XXXXXXXX-XX-XX	
生产批号	←	Lot No: PLXXXXXXXX	
			
色温/波长	←	TC: XXXX-XXXXK	Bin Code: XXX → 颜色代码
光通量/光强度	←	Φ : XX-XXLM	VF: X.X-X.XV → 电压
日期	←	Date: XXXX/XX/XX	QTY: XXXXPCS → 数量
网址	←	Http: //www.planckled.com	

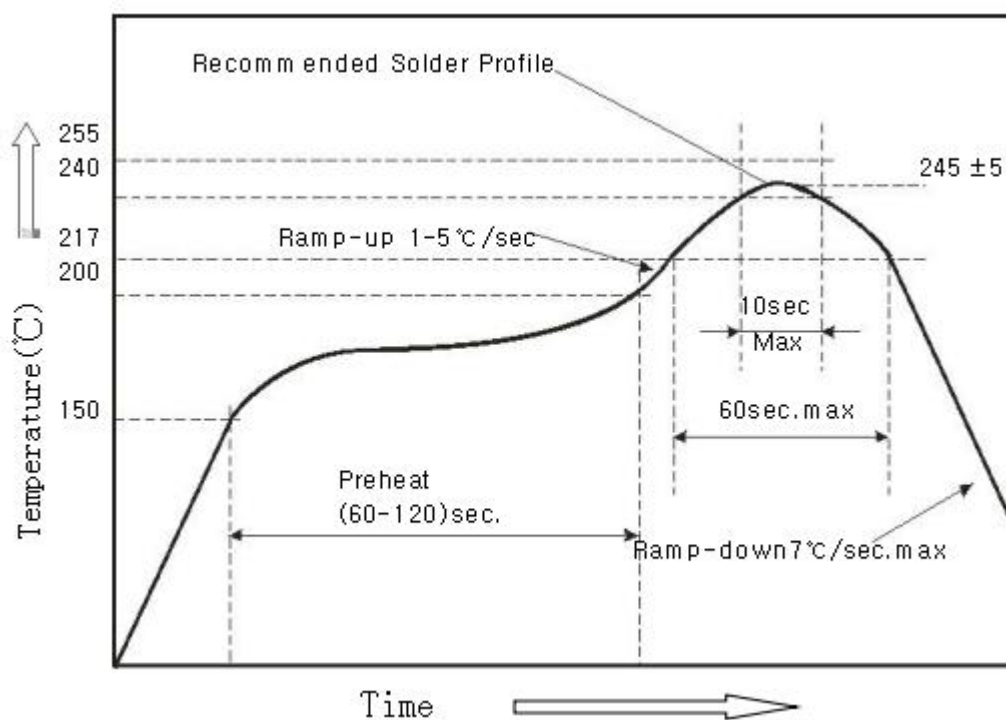
产品使用说明 Useful hint:

1、使用烙铁，手动焊接 Hand Soldering

推荐使用功率低于 20W 的烙铁，焊接时烙铁的温度必须保持在 360℃ 以下，且每个电极只能进行一次焊接，每次焊接的持续时间不得超过 3 秒，手动焊接过程中不慎操作易硬气 LED 产品的损坏，应当小心谨慎

A soldering iron of less than 20W is recommended to be used in Hand Soldering. Please keep the temperature of the soldering iron under 360℃ while soldering. Each terminal of the LED is to go for less than 3 second and for one time only. Be careful because the damage of the product is often started at the time of the hand soldering.

2、回流焊接：推荐使用以下无铅回流焊接温度图进行 Reflow Soldering: Use the conditions shown in the under Figure of Pb-Free Reflow Soldering



- 回流焊最多只能进行两次 Reflow soldering should not be done more than two times
- 在回流焊升温过程中，请不要对 LED 施加任何压力 Stress on the LEDs should be avoided during heating in soldering process
- 在焊接完成后，待产品温度下降到室温之后，再进行其它处理 After soldering, do not deal with the product before its temperature drop down to room Temperature.



使用注意事项 Precautions

1. 贮存 Storage

- 本产品使用密封防潮抗静电袋包装，并附有干燥剂，未开封的产品有一年的保存时间
- 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
- 开封后，产品须存放在温度不高于 30℃，湿度不高于 10%RH 的环境中，且应该在 24 小时（1 天）内使用完。建议工作环境为温度不高于 30℃，湿度不高于 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，烘焙可以起到一定的性能恢复效果。烘焙条件：(70±5)℃，持续 24 小时
- Moisture proof and anti-electrostatic package with moisture absorbent material is used, to keep moisture to a minimum.
- Before opening the package, the product should be kept at 30℃ or less and humidity less than 60% RH, and be used within a year.
- After opening the package, the product should be stored at 30℃ or less and humidity less than 10%RH, and be soldered within 24 hours (1day). It is recommended that the product be operated at the workshop condition of 30℃ or less and humidity less than 60%RH.
- If the moisture absorbent material has faded away or the LEDs have exceeded the storage time, baking treatment should be performed based on the following condition: (70±5)℃ for 24 hours.

2. 静电 Static Electricity

静电和电涌会导致产品特性发生改变，例如正向电压降低等，如果情况严重甚至会损毁产品。所以在使用时必须采取有效的防静电措施，所有相关的设备和机器都应该正确接地，同时必须采取其他防止静电和电涌的措施，使用防静电手环，防静电垫子，防静电工作服、工作鞋、手套，防静电容器，都是有效的防止静电和电涌的措施。

Static electricity or surge voltage damages the LEDs. Damaged LEDs will show some unusual characteristic such as the forward voltage becomes lower, or the LEDs do not light at the low current. even not light. All devices, equipment and machinery must be properly grounded. At the same time, it is recommended that wrist bands or anti-electrostatic gloves, anti-electrostatic containers be used when dealing with the LEDs.

3. 硫化 Vulcanization

LED 硫化是由于环境中的硫进入支架内部与+1 价的银发生化学反应生成黑色 Ag₂S 的过程。该过程会导致支架镀银层的反光能力下降，色温漂移和光衰严重，很大程度上影响了产品性能。因此，在使用时应注意采取相应的防硫措施，如避免使用挥发性强的含硫物质，避免接触含硫较高的物质

LED curing is due to sulfur being in bracket and the +1 price of silver in the chemical reaction generated Ag₂S in the process. It will lead to the capacity of reflecting of silver layer reducing, light color temperature drift and serious decline, seriously affecting the performance of the product. So we should take corresponding measures to avoid vulcanization, such as to avoid using sulphur volatile substances and keeping away from high sulphur content of the material.

4. 眼睛保护忠告 Safety Advice For Human Eyes

LED 发光时，请勿直视发光光源，特别是对于一些光强较高的 LED，强光可能伤害你的眼睛
Viewing direct to the light emitting center of the LEDs, especially those of great Luminous Intensity will cause great hazard to human eyes. Please be careful.