

愉進電子科技有限公司

EVERREDTRONICS LIMITED

上海市宝山区菊联路 89 号 201907

No 89 Julian Road, Baoshan, Shanghai 201907 China.

Tel:+86-21-6049 5160 Fax:+86-21-6531 1544

URL: www.everredtronics.com E-mail: sales@everredtronics.com

ITEM CODE SMD3528RGBC



ATTENTION

OBSERVE PRECAUTIONS
FOR HANDLING
ELECTROSTATIC
DISCHARGE
SENSITIVE
DEVICES



➤ **Features/特征:**

管芯材料:	红色 Red	绿色 Green	蓝色 Blue
Material:	AlGaInP	InGaN	InGaN

➤ 封装材料: 环氧树脂

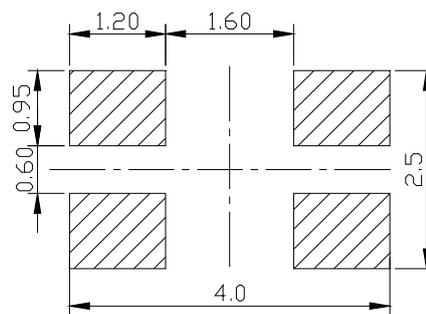
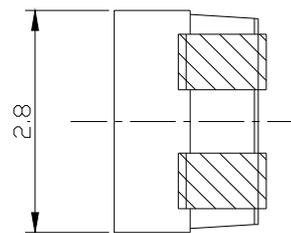
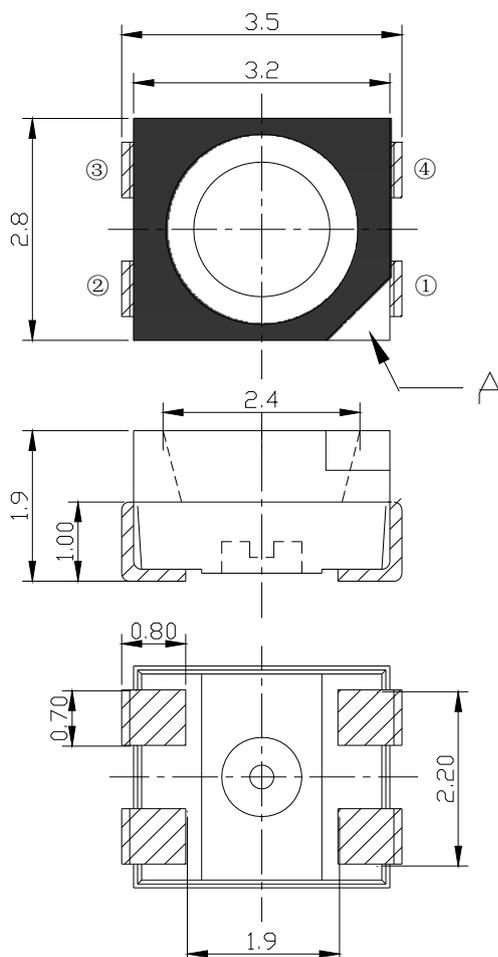
Encapsulation: Resin

➤ 光强度高, 功耗低, 可靠性好, 寿命长

High Luminous Intensity ,Low Power Dissipation,good Reliability and Long Life

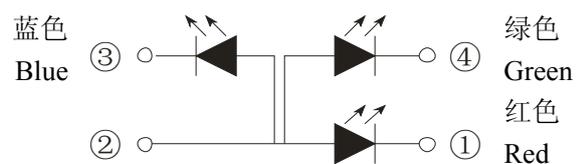
➤ 符合欧盟公布的 ROHS 指令要求

Complied With ROHS Directive



推荐焊盘

Recommended Soldering Pad



极性 Polarity

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➤ **极限参数 (温度=25℃)**

Absolute Maximum Ratings (Temperature=25℃)

参数名称 Parameter	符号 Symbol	数值 Rating	单位 Unit
正向电流 Forward Current	I_F	20	mA
正向脉冲电流* Pulse Forward Current*	I_{FP}	100	mA
反向电压 Reverse Voltage	V_R	5	V
工作温度 Operating Temperature	T_{OPR}	-30 ~ +85	℃
贮存温度 Storage Temperature	T_{stg}	-40 ~ +100	℃
功耗 Power Dissipation	红 Red	48	mW
	绿 Green	72	
	蓝 Blue	72	

* 注: 脉冲宽度 $\leq 0.1ms$, 占空比 $\leq 1/10$ * Note: Pulse Width $\leq 0.1ms$, Duty $\leq 1/10$

➤ **光电参数 (温度=25℃)**

Electro-Optical Characteristics (Temperature=25℃)

参数名称 Parameter	符号 Symbol	条件 Condition	颜色 Color	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
反向电流 Reverse Current	I_R	$V_R=5V$	红 Red			10	μA
			绿 Green			10	
			蓝 Blue			10	
正向电压 Forward Voltage	V_F	$I_F=20mA$	红 Red	1.8	2.0	2.4	V
		$I_F=12mA$	绿 Green	2.8	3.0	3.6	
			蓝 Blue	2.8	3.2	3.6	
主波长 Dominant Wavelength	λ_D	$I_F=20mA$	红 Red	615	620	630	nm
		$I_F=12mA$	绿 Green	515	520	535	
			蓝 Blue	465	470	480	
半波宽度 Spectrum Radiation Bandwidth	$\Delta\lambda$	$I_F=20mA$	红 Red		20		nm
		$I_F=12mA$	绿 Green		35		
			蓝 Blue		30		
光强 Luminous Intensity	I_V	$I_F=20mA$	红 Red	400	600	800	mcd
		$I_F=12mA$	绿 Green	600	820	1100	
			蓝 Blue	100	155	210	
视角 View Angle	$2\theta_{1/2}$				110		deg.

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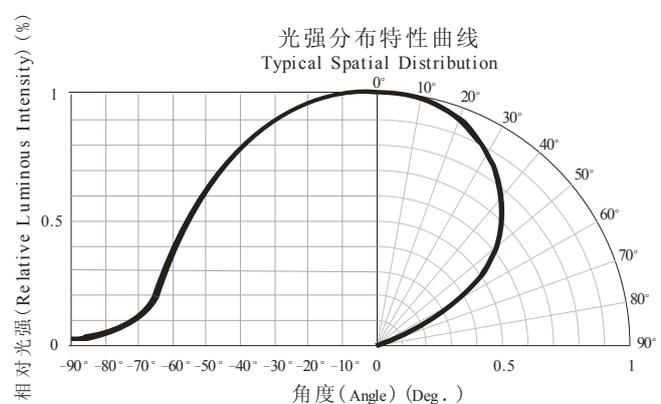
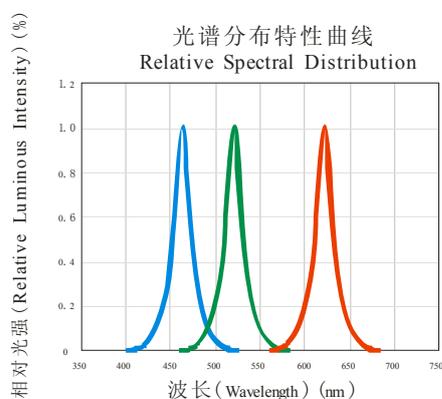
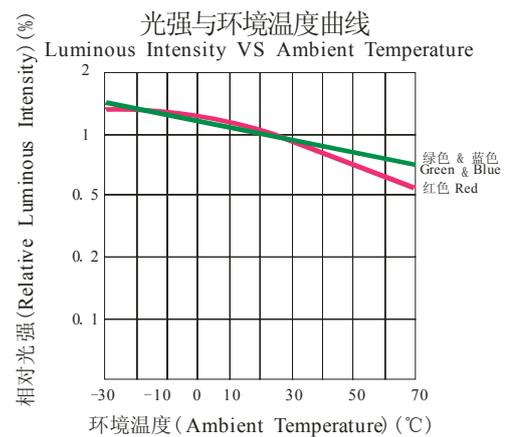
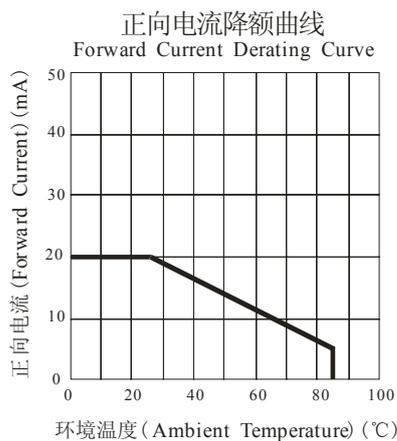
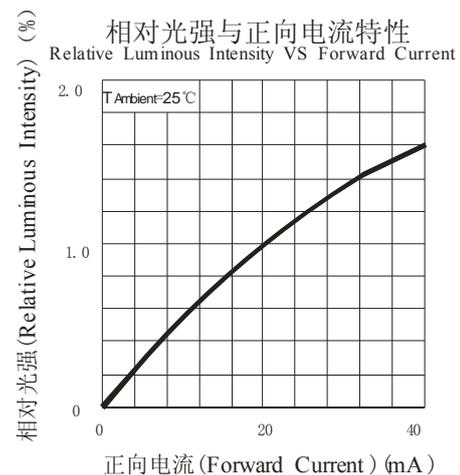
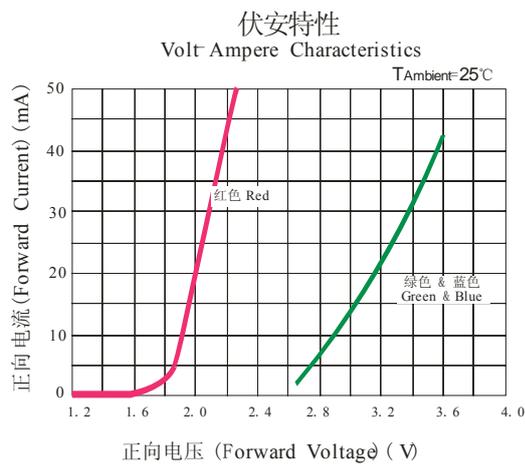
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典型特性曲线

Typical Characteristics Curves



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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)	循环 200 次 200 cycles	22	0/22
湿热循环 Temperature And Humidity Cyclic	JEITA ED-4701 200 203	25°C~65°C , 90%RH 24hrs./1cycle	循环 10 次 10 cycles	22	0/22
高温储存 High Temperature Storage	JEITA ED-4701 200 201	Ta=100°C	1000h	22	0/22
低温储存 Low Temperature Storage	JEITA ED-4701 200 202	Ta=-40°C	1000h	22	0/22
高温高湿储存 High Temperature High Humidity Storage	JEITA ED-4701 100 103	Ta=60°C, RH=90%	1000h	22	0/22
常温寿命试验 Life Test	JESD22-A108D	Ta=25°C IF _R =20mA,IF _G =12mA,IF _B =12mA	1000h	22	0/22
高温寿命 High Temperature Life Test	JESD22-A108D	Ta=80°C IF _R =20mA,IF _G =12mA,IF _B =12mA	1000h	22	0/22
低温寿命 Low Temperature Life Test	JESD22-A108D	Ta=-40°C IF _R =20mA,IF _G =12mA,IF _B =12mA	1000h	22	0/22
高温高湿寿命 High Temperature High Humidity Life Test	JEITA ED-4701 100 102	Ta=60°C, RH=90% IF _R =20mA,IF _G =12mA,IF _B =12mA	1000h	22	0/22
耐焊接热 Resistance to Soldering 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 Reverse Current	I _R	V _R = 5V	I _R ≤10μA
光强 Luminous Intensity	I _V	I _F = I _{FT}	平均 I _V 衰减≤30%, 单个 I _V 衰减≤50% Average I _V degradation≤30%; Single LED I _V degradation≤50%
耐焊接热 Resistance to Soldering Heat			材料无内部裂痕、无材料间爆裂、剥离、无死灯。 Material without internal cracks, no material between stripped, no dead light.

* 注: T_{sol}-锡液温度 * Note: T_{sol}-Temperature of tin liquid.

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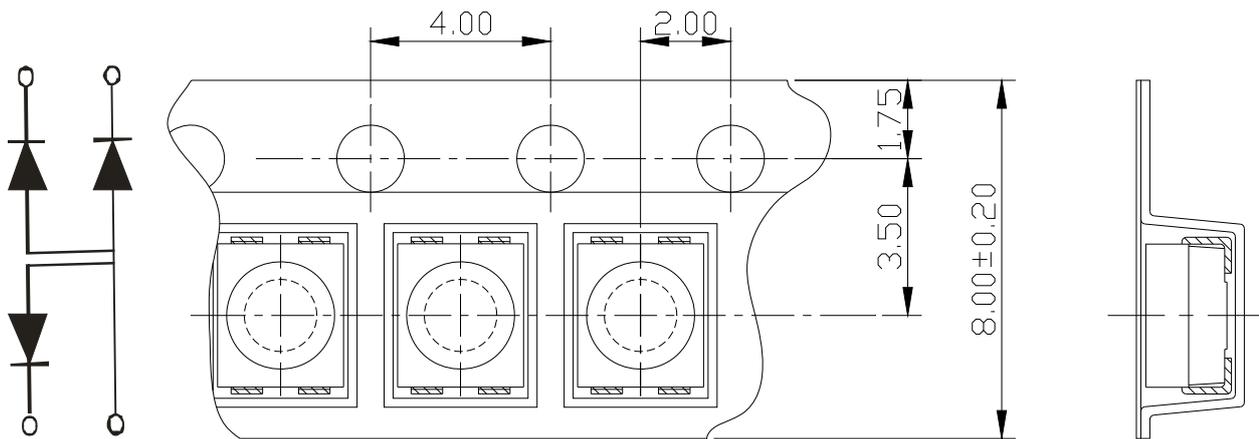
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➤ **包装 (1) Packaging (1)**

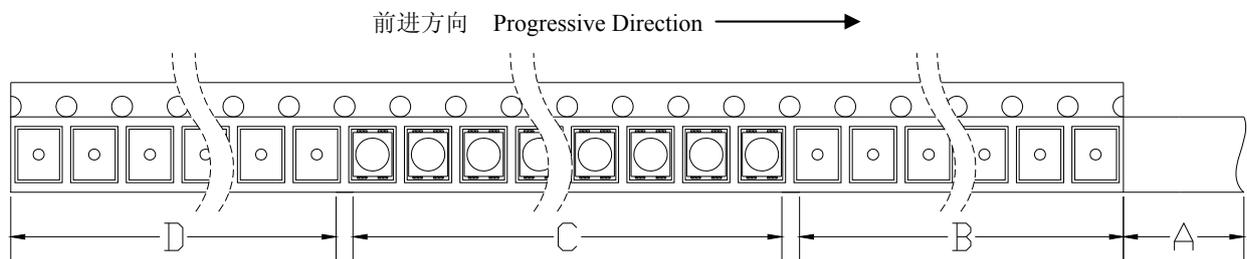
载带 Carrier Tape



单位: mm, 未注公差: ±0.1 mm

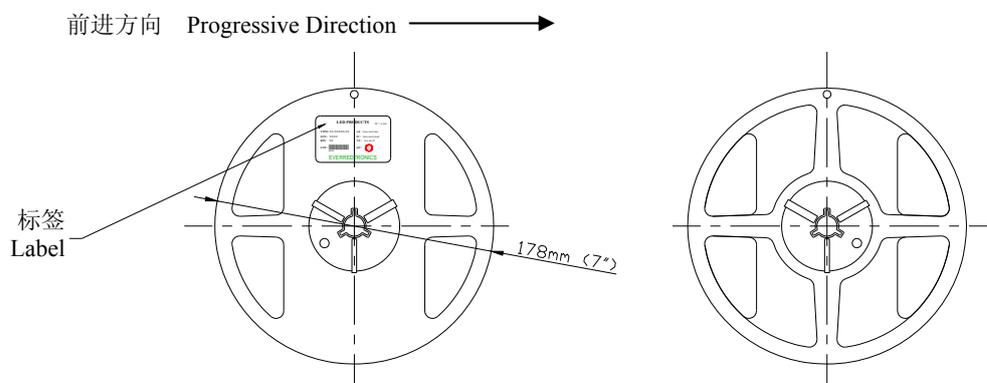
All dimensions in mm, tolerances unless mentioned is ±0.1 mm.

编带细节 Details Of Carrier Tape



A: 盖带, 300 mm; B: 引导, 空带, 200mm; C: 编载产品 2000 只; D: 尾部, 空带, 200mm
 A: Top Cover Tape, 300mm; B: Leader, Empty, 200mm; C: 2000 Lamps Loaded; D: Trailer, Empty, 200mm.

带盘 Reel Dimension



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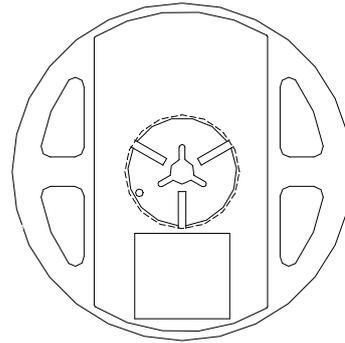
URL: www.everredtronics.com E-mail: sales@everredtronics.com

8.2 Specification of Packing/包装规格

Diameter/直径 : 178 mm

Width/宽度 : 12 mm

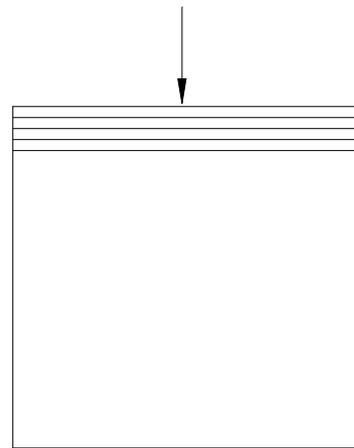
=>2000 pcs / Reel



(Anti-Static Shielding/抗静电保护袋)

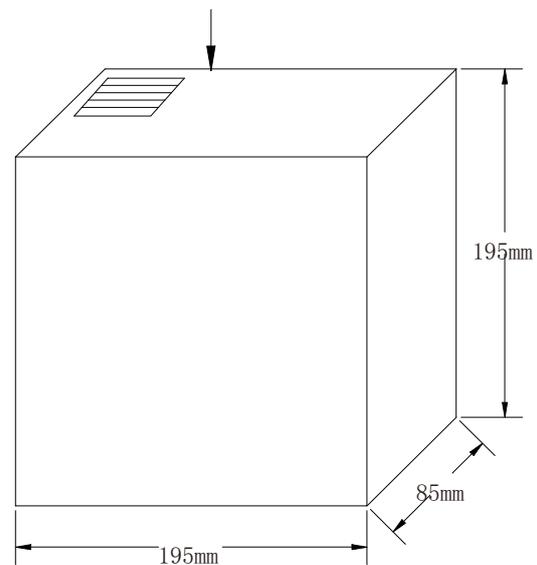
Thickness/厚度: T=0.1 mm

=> 1 Reel / Bag



5 Bags / Box

=> 10,000 pcs / Box



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8.3 Label Form Specification/标签格式规范

Everred Tech Ltd.	
P/N:	_____
Rank :	_____ / _____ / _____
Qty:	_____ pcs QC: _____
Date:	_____
Lot No:	_____
	

P/N: Customer's Production Number/产品编号

Ranks: Iv / Vf / WD

Iv: Iv Rank/亮度; Vf: Vf Rank/电压; WD: Color Group/色系

Qty: Packing Quantity/包装数量

QC: Quality Control chapter/质量控制人员

Date: mm / dd / yy

mm: Month/月; dd: Date/日; yy: Year/年;

Lot No: Production batch Number/生产批号

9、Notes/注意

9.1 Moisture Proof Packaging/防潮包装

9.1.1 LEDs need to package in moisture proof bag. When moisture is absorbed into the SMT package it may vaporize and expand during soldering. There is a possibility that this can cause exfoliation of the contacts and damage to the optical characteristics of the LEDs. For this reason, the moisture proof bag is used to keep moisture to a minimum in the bag.

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产品必须包封装在防潮包装袋中。当湿气进入防潮包装袋的时候，在焊接时，湿气会受热汽化膨胀，从而可能影响产品的光学特性，甚至造成封装胶体的开裂剥离。因此，防潮袋要求放置在保持低湿度的盒中。

9.1.2 Moisture proof function is inactive. The moisture proof bag is made of an aluminum moisture proof bag. A package of a moisture absorbent material (silica gel) is inserted into the aluminum moisture proof bag. The silica gel turns the smashing from the transparent circular spherical pellet.

防潮的作用是缓慢的。防潮袋使用铝防潮袋，并在铝防潮袋中放入潮气吸收材料（硅胶干燥剂）。当硅胶干燥剂吸收潮气后，硅胶干燥剂从透明圆形球状颗粒变成粉碎物。

9.2 Storage Method/储存方式

9.2.1 Before opening the bag: The LEDs should be used within a year and kept at 30°C or less and 70%RH or less. The moisture proof bag with absorbent material is needed when storing the LEDs.

拆开包装袋之前：产品可以使用一年，但要求放置在温度低于30°C,湿度低于70%的环境中；当存放产品时，必须放置在带有干燥剂的防潮容器中。

9.2.2 After opening the bag: The LEDs should be soldered within 72 hours after opening the package. If unused LEDs remain, they should be stored in moisture proof bags with moisture absorbent material. If the LEDs have exceeded the storage time or the moisture absorbent material has faded away. Baking process should be performed by using more than 24hours baking at $60 \pm 5^{\circ}\text{C}$ before using LEDs. It recommended that the user use the LEDs as soon as possible.

拆开包装袋之后：产品应该在拆封后的72小时内焊接完毕；如果没用完，产品应该储存在带有干燥剂的防潮包装袋中；如果产品超出了使用期限或者干燥剂失效，那么产品在使用前必须在 $60 \pm 5^{\circ}\text{C}$ 中烘烤至少24小时；建议客户尽快的使用完产品。

9.3 Heat Generation/产品热量的产生

Thermal design of the end applications are of paramount importance. Please consider the heat generation of the LED when making the system design. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.

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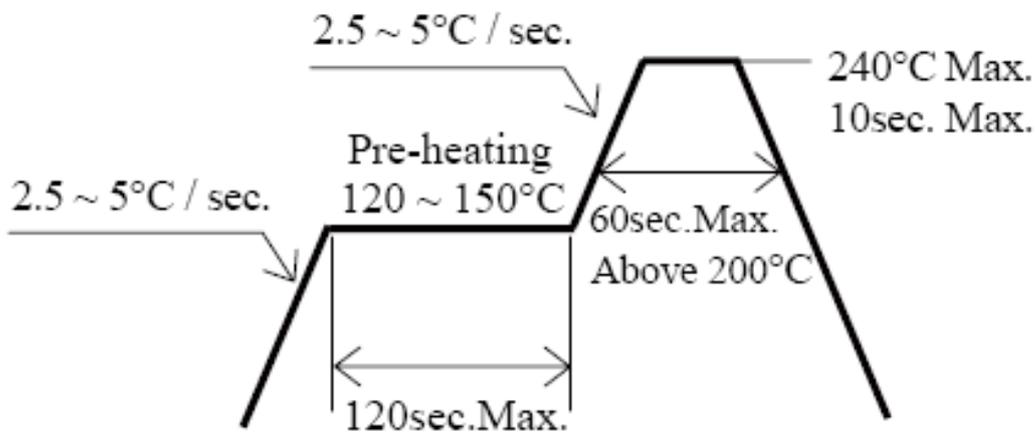
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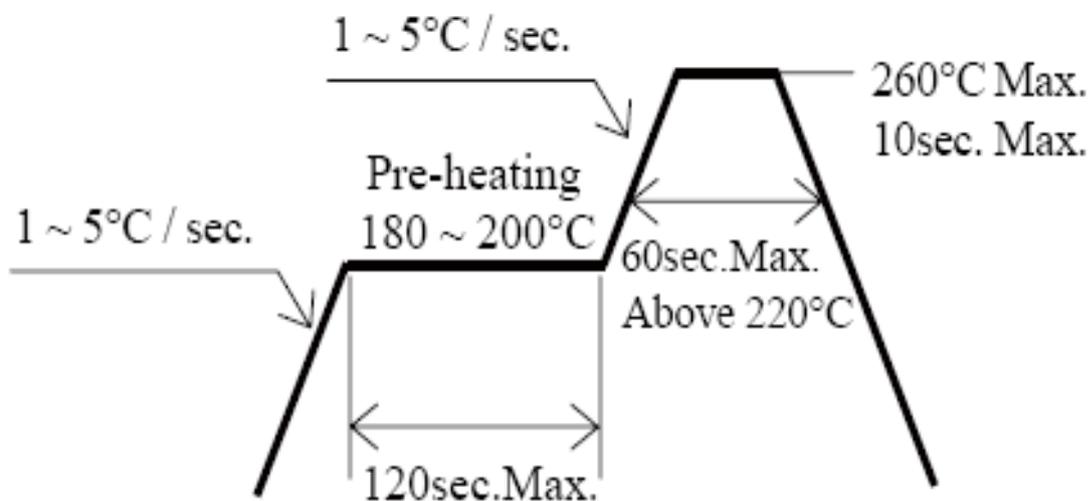
应用产品的热学设计是至关重要的。在做系统设计时，请考虑LED的散热，避免热量的积累，必须严格的在允许的温度范围内使用。

9.4 Soldering/焊接

9.4.1 Lead Solder/回流焊接



9.4.2 Lead – Free Solder/无铅回流焊接



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9.4.3 Hand Soldering (Not Recommended) /手工焊接 (不推荐)

Soldering iron/烙铁焊接: 300 degrees C max/不超过300℃; 5 seconds max/不超过5s;
once/允许1次.

9.5 Cleaning/清洗

It is recommended that isopropyl alcohol be used as a solvent for cleaning the LEDs. It should be confirmed beforehand whether the solvents will dissolve the package the resin or not when using other solvents. Please do not clean the LEDs by the ultrasonic. If it is absolutely necessary, the influence of ultrasonic cleaning on the LEDs depends on ultrasonic power and the assembled condition. Before cleaning, a pre-test should be done to confirm whether any damage to the LEDs will occur.

建议使用酒精作为溶剂清洗LEDs。若要使用其他溶剂，应该预先证实是否能溶化封装料。请不要使用超声波清洗LEDs，如果一定要使用超声波清洗，则一定要注意超声波的功率和超声条件。在清洗作业前，必须预先实验确认对LEDs无任何的伤害。

9.6 Static Electricity/静电

It is recommended that a wrist band or an anti-electrostatic glove be used when handling the LEDs. All devices, equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment that mounts the LEDs.

在接触LEDs时，建议使用防静电手腕带或防静电手套。所有的器件、设备和机器必须有可靠的接地。对所有LEDs接触的设备，建议采取预防措施消除冲击电压。

9.7 Others/其他

The LED light output is strong enough to injure human eyes. Precautions must be taken to prevent looking directly at the LEDs with unaided eyes for more than a few seconds.

LED的光辐射足够强时，会对人眼造成伤害。若眼睛要直接看LED，并且要一定的时间，则必须采取相应防护措施。