

# 江西晶亮光电科技协同创新有限公司

JiangXi JingLiang Sci &Tech Corporation

## 产 品 规 格 书

Specification

产品名称 Product Name:	Chip Scale Package
产品型号 Product P/N:	CSP1919
客 户 Client name:	
客户料号 Client P/N:	
版 本 号 Version No.:	A02
日 期 Sending Date:	



RoHS



REACH



Halogen  
Free

工厂地址:江西省南昌市高新区艾溪湖北路 699 号

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## 1、特点 Features

- ◆ 小尺寸封装，高亮度，高光效  
Small footprint package , High brightness ,High efficiency
- ◆ 尺寸：1.86\*1.86\*0.32mm，单面发光  
Size: 1.86\*1.86\*0.32mm, 1-sided emitter
- ◆ 根据 ANSI 标准分档  
According to the ANSI standard colour gamut
- ◆ 适于 SMT 贴片  
Compatible with SMT
- ◆ 发光角度：120°  
Viewing Angle: 120°
- ◆ 包装：最大 5000 颗/卷  
Package: Max: 5000pcs /reel



## 2、应用 Applications

路灯照明	Street lighting
隧道照明	Tunnel lighting
工业照明	Industrial lighting



### 3、性能 Performance

#### a) 绝对最大额定值 Absolute Maximum Ratings

参数 Parameter	符号 Symbol	最大参数值 Maximum Rating	单位 Unit
电流 DC ( Video Mode ) Forward Current	$I_F$	1200	mA
功率 Power Dissipation	P	4.08	W
脉冲电流 Pulsed(Flash Mode) Forward Current	$I_{FP}$	1500	mA
结温 (DC 模式) LED Junction Temperature (DC mode)	$T_j$	135	°C
反向电压 Reverse Voltage	$V_R$	5	V
工作温度 Operating Temperature Range	$T_{opr}$	-40~105	°C
存储温度 Storage Temperature	$T_{stg}$	-40~120	°C
ESD (人体模式) ESD Human Body Mode	----	2000	V

备注 Notes :

- ◇ 绝对最大额定值环境温度  $T_a=25^{\circ}\text{C}$   
Absolute Maximum Ratings at  $T_a=25^{\circ}\text{C}$
- ◇  $I_{FP}$  脉冲时间 $\leq 10\text{ms}$ , 宽度 $\leq 10\%$   
 $I_{FP}$  Conditions with pulse width  $\leq 10\text{ms}$  and duty cycle $\leq 10\%$

## b) 光电参数

### Electro-Optical Characteristics (T solder pad =85 °C, I<sub>F</sub> =350mA)

项目 Item	符号 Symbol	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
光通量 Luminous Flux	Φ	110	----	200	Lm
正向电压 Forward Voltage	VF	2.8	3.0	3.2	V
色温 CCT	----	2700	----	6500	K
显指 Ra	----	70	----	----	----
发光角度 Viewing Angle	2θ1/2	----	120	----	°
结温 LED Junction Temperature	T <sub>j</sub>	----	135	----	°C

备注 Notes :

- ◇ 光通量测量误差范围±7%  
Luminous flux measurement tolerance: ±7%
- ◇ 光电参数测试是瞬态时间为 20ms  
Electric and optical data is tested at 20 ms pulse condition

### c) 亮度分布特性

**Luminous Flux Bins** (T solder pad = 85 °C, I<sub>F</sub> = 350mA)

典型显指 Typ. Ra	常规色温 Normal CCT	色区块 Chromaticity	最小光通量 Minimum Luminous Flux			出货代码 (例) Order Code (e. g.)
			代码 Code	亮度值 Value		
70/80/90	2700K~6500K	ANSI	I1	110	120	19-3A5-P1-70-B2-BC-CT
			J1	120	130	
			K1	130	140	
			M1	140	150	
			N1	150	160	
			P1	160	170	
			Q1	170	180	
			R1	180	190	
			EL	190	200	

### d) 亮度分布特性

#### Luminous Flux Characteristics

项目 Item	CRI	CCT (K)	M1		N1		P1		Q1		R1		EL	
			140	150	150	160	160	170	170	180	180	190	190	200
Luminous Flux( $\Phi_v$ )	70	2700												
		3000												
		4000												
		4500												
		5000												
		5700												
		6500												

项目 Item	CRI	CCT (K)	K1		M1		N1		P1		Q1		R1	
			130	140	140	150	150	160	160	170	170	180	180	190
Luminous Flux( $\Phi_v$ )	80	2700												
		3000												
		4000												
		5000												
		5700												
		6500												

项目 Item	CRI	CCT (K)	I1		J1		K1		M1		N1		P1	
			110	120	120	130	130	140	140	150	150	160	160	170
Luminous Flux( $\Phi_v$ )	90	2700	[Green bar]											
		3000	[Green bar]											
		4000	[White]		[Green bar]									
		5000	[White]				[Green bar]							
		5700	[White]				[Green bar]							
		6500	[White]				[Green bar]							
		6500	[White]				[Green bar]							



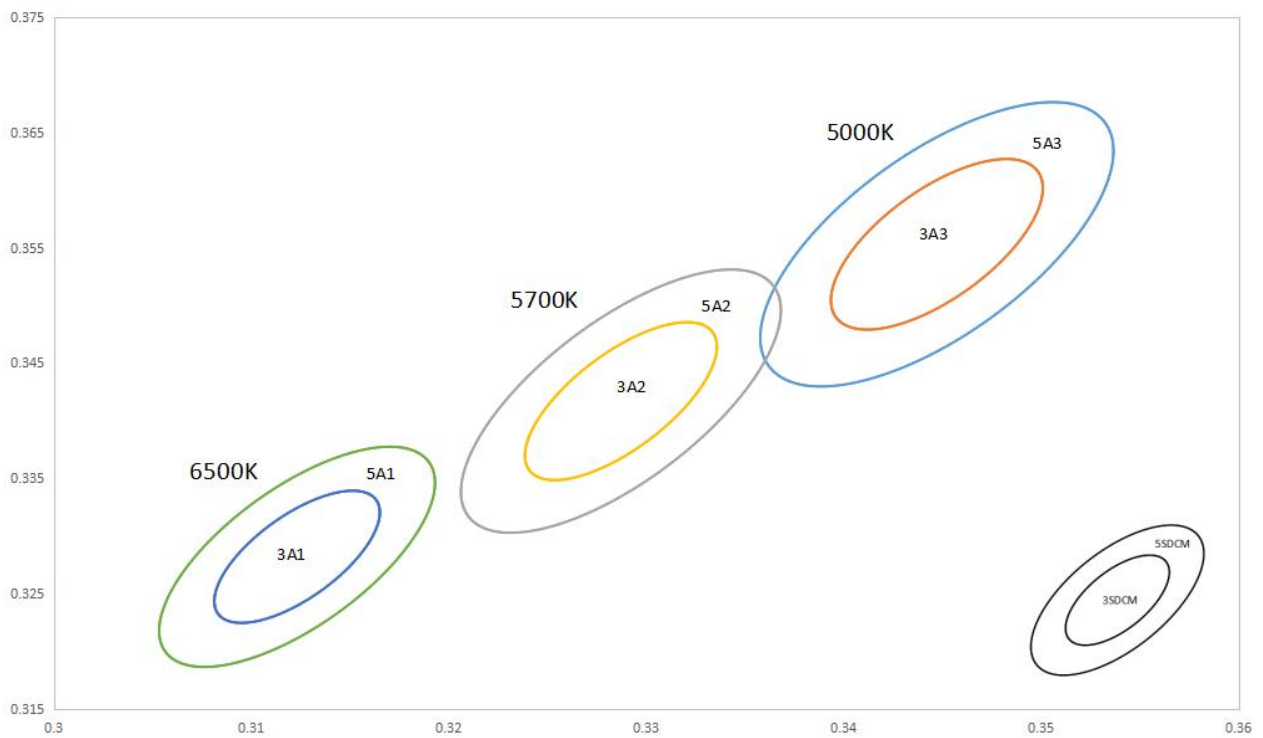
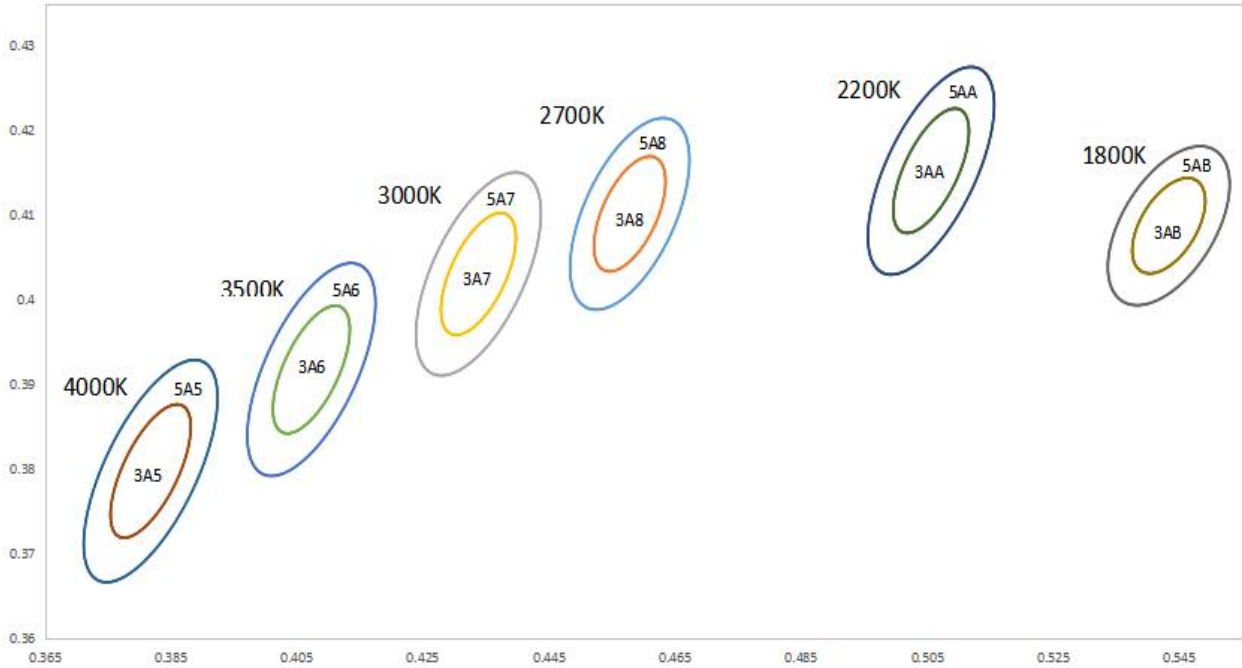
## 4. 产品代码 Product Order Code

19 - 3A5 - P1 - 70 - B2 - BD - CT  
①            ②            ③            ④            ⑤            ⑥            ⑦

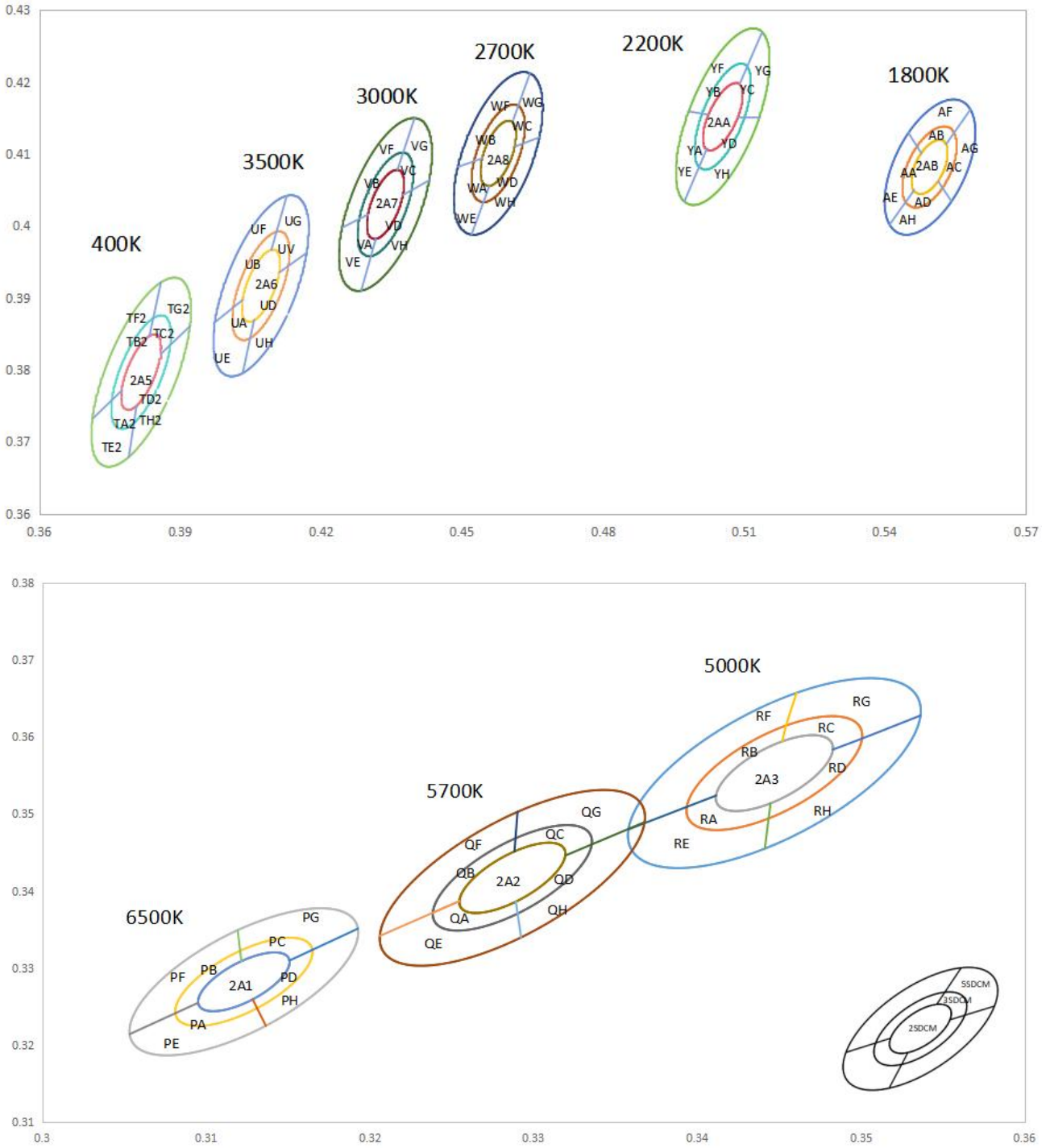
- ① 产品型号    Product Type
- ② 色温区块    Colour Area
- ③ 亮度等级    Brightness Level
- ④ 显色指数    Ra level
- ⑤ 电压等级    VF Level
- ⑥ 内部波长代码（不影响其他参数，不用参考）  
Internal Wavelength Code（Do not affect other parameters）
- ⑦ 色温显指代码    Colour temperature & Ra Code

## 5. 分档规则 Bin Regulations

### a) 色度区域 Chromaticity Regions



### ② 细分椭圆 2Step/3-and 5-Step subdivided SDCM



麦克亚当椭圆色块

## 2Step/ 3-and 5-Step MacAdam ellipse color bin definitions

CCT(K)	色区 COLOR APACE	中心点 CENTER POINT	a MAJOR AXIS	b MAJOR AXIS	θ ANGLE	色块 COLOR BIN
1800	2-step	(0.5433, 0.4087)	0.0047	0.0026	46.50°	2AB
	3-step		0.0070	0.0040		3AB/AA/AB/AC/AD
	5-step		0.0117	0.0066		5AB/AE/AF/AG/AH
2200	2-step	(0.5056, 0.4152)	0.0058	0.0026	49.27°	2AA
	3-step		0.0086	0.0040		3AA/YA/YB/YV/YD
	5-step		0.0144	0.0066		5AA/YE/YF/YG/YH
2700	2-step	(0.4578, 0.4101)	0.0053	0.0027	53.95°	2A8
	3-step		0.0079	0.0041		3A8/WA/WB/WC/WD
	5-step		0.0131	0.0068		5A8/WE/WF/WG/WH
3000	2-step	(0.4338, 0.4030)	0.0056	0.0027	54.00°	2A7
	3-step		0.0084	0.0041		3A7/VA/VB/VC/VD
	5-step		0.014	0.0068		5A7/VE/VF/VG/VH
3500	2-step	(0.4073, 0.3917)	0.0058	0.0027	54.53°	2A6
	3-step		0.0088	0.0041		3A6/UA/UB/UC/UD
	5-step		0.0147	0.0068		5A6/UE/UF/UG/UH
4000	2-step	(0.3818, 0.3797)	0.0062	0.0027	54.05°	2A5
	3-step		0.0093	0.0041		3A5/TA2/TB2/TC2/TD2
	5-step		0.0155	0.0068		5A5/TE2/TF2/TG2/TH2
5000	2-step	(0.3447, 0.3553)	0.0023	0.0056	58.22°	2A3
	3-step		0.0084	0.0036		3A3/RA/RB/RC/RD
	5-step		0.014	0.0059		5A3/RE/RF/RG/RH
5700	2-step	(0.3287, 0.3417)	0.0052	0.0021	58.44°	2A2
	3-step		0.0078	0.0031		3A2/QA/QB/QC/QD
	5-step		0.0130	0.0051		5A2/QE/QF/QG/QH
6500	2-step	(0.3123, 0.3282)	0.0044	0.0018	57.65°	2A1
	3-step		0.0066	0.0027		3A1/PA/PB/PC/PD
	5-step		0.0109	0.0045		5A1/PE/PF/PG/PH

备注 Notes :

- ◇ 色度坐标 (x, y) 来自 CIE1931 色度图  
The chromaticity coordinates(x,y)is derived from the CIE 1931 chromaticity diagram
- ◇ 色度坐标 (x, y) 存在±0.006 公差。  
The chromaticity coordinates(x,y) guarantee should be added ±0.006 tolerance.

## b) 亮度分档

### Luminous Flux Groups (T solder pad = 85°C, I<sub>F</sub> = 350 mA)

代码 Group Code	最小值 Min.	最大值 Max.
I1	110	120
J1	120	130
K1	130	140
M1	140	150
N1	150	160
P1	160	170
Q1	170	180
R1	180	190

### c) 电压分档 Voltage Groups

代码 Group Code	范围 Range
B2	2.8-3.0
B3	3.0-3.2
B4	3.2-3.4

备注 Notes :

- ◇ 亮度测试存在±7%的公差  
It maintains a tolerance of ±7% on luminous flux measurements.

### d) 显指分档 Ra Groups

代码 Group Code	范围 Range
70	70~100
80	80~100
90	90~100

### e) 内部代码 Internal Groups

代码 Group Code	范围 Range
BB	447.5-450
BC	450-452.5
BD	452.5-455
BE	455-457.5

### f) 色温显指代码 Colour temperature & Ra Code

显指 Ra	代码 Code	色温 Colour	代码 Code
70	C	1800	A
80	E	2200	Y
90	G	2700	W
95	H	3000	V
		3500	U
		4000	T
		5000	R
		5700	Q
		6500	P

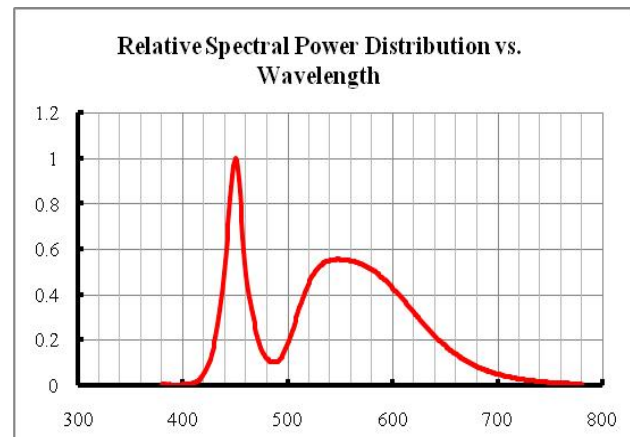
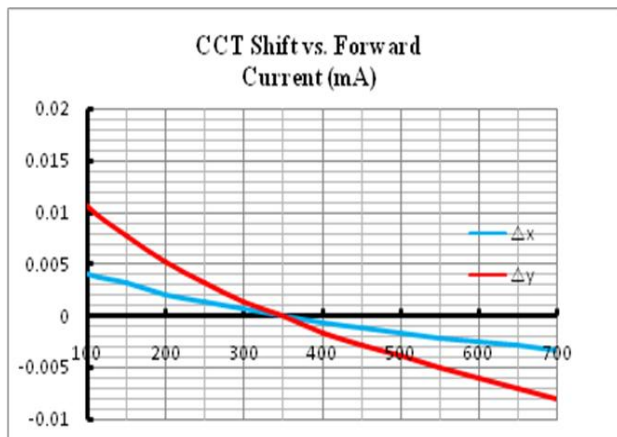
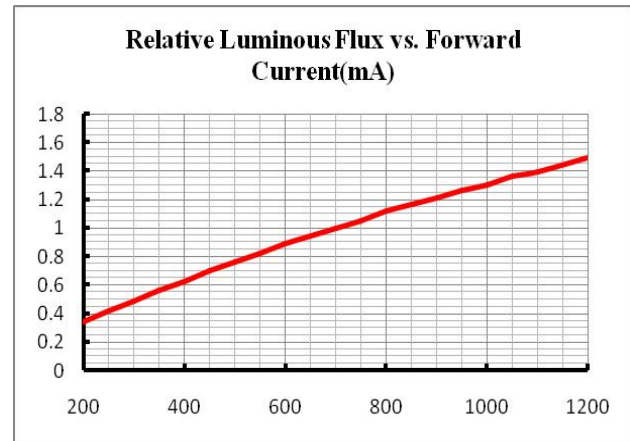
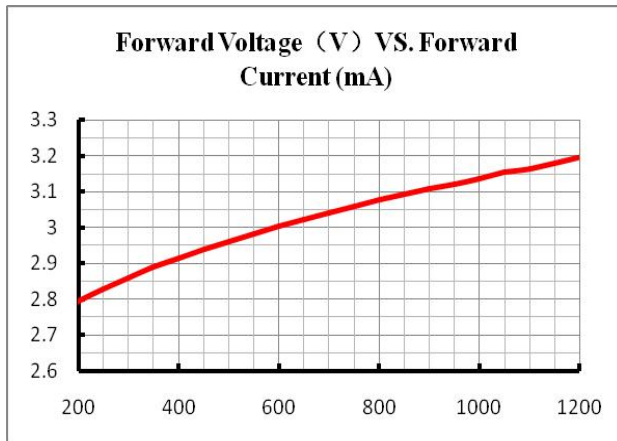
备注 Notes :

- ◇ 显指测试存在±2 的公差  
It maintains a tolerance of ±2 on CRI measurements
- ◇ 内部波长代码（不影响其他参数）  
Internal Wavelength Code （Do not affect other parameters）.



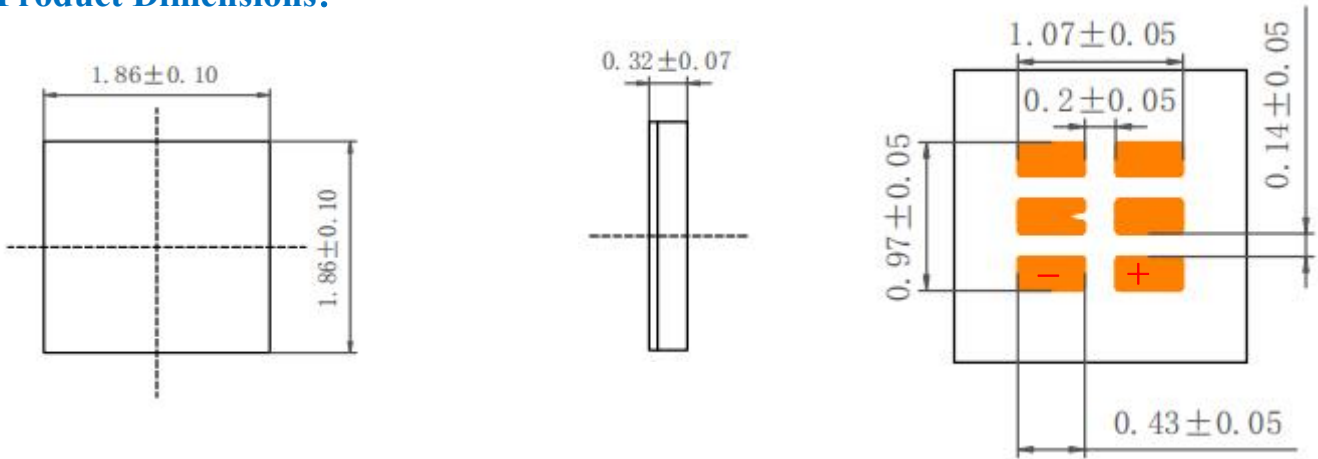
## 6、光电特性图

### The Photoelectric Characteristics Graph (Ta= 25 °C)

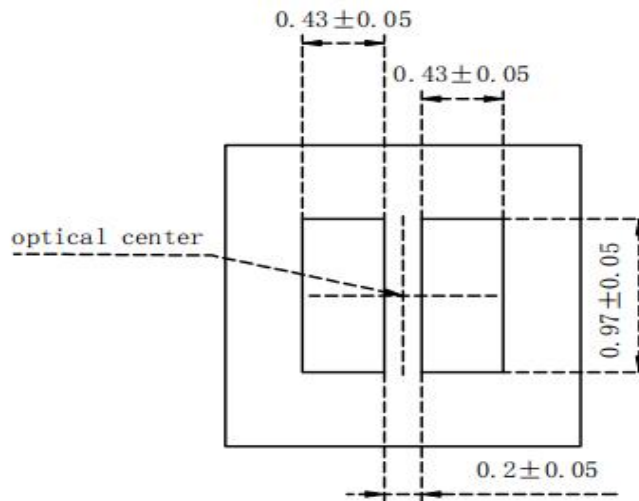


## 7 产品及钢网尺寸 Product and PCB Pad Dimensions

### Product Dimensions:



### PCB Pad Dimensions:

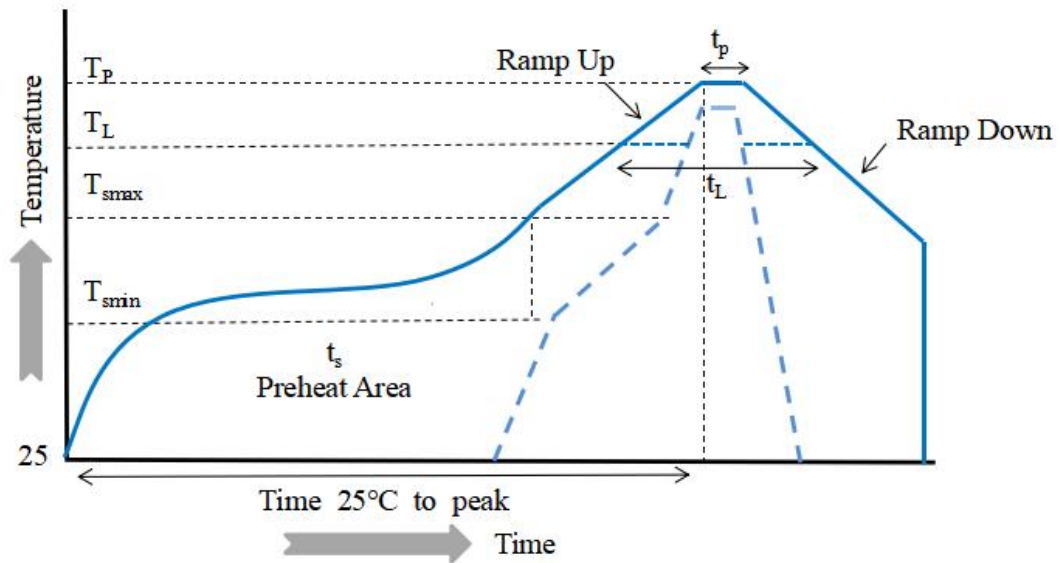


建议 PCB 尺寸

#### 备注 Notes:

- ◇ 所有尺寸均以 mm 为单位  
All dimensions are in millimeters
- ◇ 尺寸未按照公差±0.1mm 标记的，按照图纸标记  
Size is not marked in accordance with tolerance ± 0.1mm and dimension tolerances in accordance with drawings

## 8、回流焊特性 Reflow Soldering Characteristics

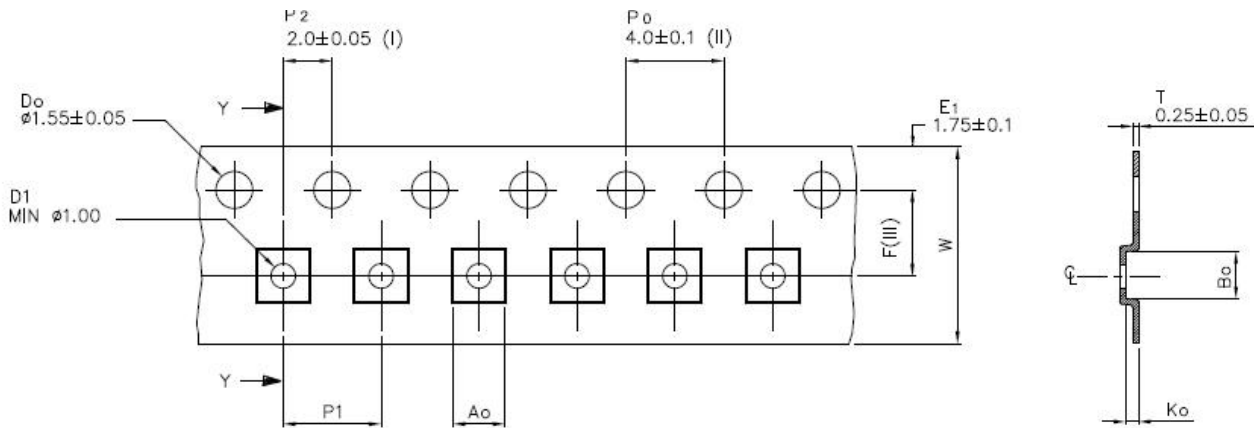


根据 EDEC-J-STD-020D 内容，参考以下内容。

Compatible with the JEDEC-J-STD-020D, using the parameters listed below.

特制参数 Profile Feature	无铅焊料 Lead-Free Solder
平均上升速率 (T <sub>smax</sub> 至 T <sub>p</sub> ) Average Ramp-Up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C/sec max.
预热: 温度最小值 (T <sub>smin</sub> ) Preheat: Temperature Min (T <sub>smin</sub> )	150
预热: 最高温度 (T <sub>smax</sub> ) Preheat: Temperature Max (T <sub>smax</sub> )	200
预热: 时间 (t <sub>smin</sub> 到 t <sub>smax</sub> ) Preheat: Time (t <sub>smin</sub> to t <sub>smax</sub> )	60-120 secs
回流温度 (T <sub>L</sub> ) Time Maintained Above: Temperature (T <sub>L</sub> )	217°C
回流时间 (t <sub>L</sub> ) Time Maintained Above: Time (t <sub>L</sub> )	60-150 secs
峰值/分类温度 (T <sub>p</sub> ) Peak/Classification Temperature(T <sub>p</sub> )	255 ± 5°C
实际峰值温度 (t <sub>p</sub> ) 在 5°C 以内的时间 Time Within 5°C of Actual Peak Temperature (t <sub>p</sub> )	5 secs
降低速率 Ramp-Down Rate	4°C/sec max.

## 9、 卷轴 Reel Dimensions



Ao	2.20 +/−0.05
Bc	2.20 +/−0.05
Ko	0.55 +/−0.05
F	3.50 +/−0.05
P1	4.00 +/−0.10
W	8.00 +0.3/−0.1

### 备注 Notes:

- ◇ 卷轴包装最大 5000pcs  
Reel: max 5000pcs.
- ◇ 卷轴包装方法符合 IJSC0806 (连续胶带上的电子元件包装)  
The tape packing method complies with IJSC0806(Packing of Electronic Components on Continuous Tapes).
- ◇ 当卷轴由于工作中断而重绕时, 载带上压力不应超过 10N, 否则 LED 可能会粘在盖带上  
When the tape is rewound due to work interruptions, no more than 10N should be applied to the embossed carrier tape.  
The LEDs may stick to the cover tape.

## 10、可靠性 Reliability

### a) 测试和结果 Tests and Results

测试项目 Test Item	参考标准 Reference Standard	测试条件 Test Conditions	测试周期 Test Duration	失效标准 Failure Criteria#	失效数/测试数 Units Failed/Tested
可焊性（回流焊） Solderability (Reflow Soldering)	JESD22-B102	$T_{sld}=255\pm 5^{\circ}\text{C}$ , 5sec, Lead-free Solder(Sn-3.0Ag-0.5Cu)	5times	#2	0/22
高低温循环 Temperature Cycle	JESD22-A105	$I_F=1200\text{mA}$ , $-40^{\circ}\text{C}$ (30min)~ $25^{\circ}\text{C}$ (5min) ~ $80^{\circ}\text{C}$ (30min)~ $25^{\circ}\text{C}$ (5min)	100cycles	#1	0/22
高温/低温储存 High/Low Temperature Storage	JESD22-A119	$T_A=120^{\circ}\text{C}/T_A=-40^{\circ}\text{C}$	1000h	#1	0/22
高温老化 High Temperature Operating	JESD22-A108	$T_A=85^{\circ}\text{C}$ , $I_F=1200\text{mA}$	1000h	#1	0/22
高温高湿老化 Temperature Humidity Operating	JESD22- A101	$85^{\circ}\text{C}$ , RH=85%, $I_F=1200\text{mA}$	1000h	#1	0/22

## b) 失效判定 Failure Criteria

判定 Criteria #	项目 Items	条件 Conditions	失效判定 Failure Criteria
#1	正向电压 Forward Voltage ( $V_F$ )	$I_F$	> 初始值×1.1 倍 > Initial value×1.1
	光通量 Luminous Flux ( $\Phi_v$ )	$I_F$	< 初始值×0.9 倍 < Initial value×0.9
	反向电流 Reverse Current ( $I_R$ )	$V_R=5V$	> 1uA > 1uA
#2	回流焊 Solderability	-	焊接面积 < 80% Less than 80% solder coverage

## 11、注意事项 Cautions

### a) 存储 Storage

- 不要将芯片放在潮湿的地方，存放温度在 5°C~30°C 之间，相对湿度在 30% 以下。  
Do not place the chips in damp places, Storage temperature between 5 °C and 30 °C, Relative humidity under 30%.
- 开包后建议在 24 小时内过完回流焊，车间条件 ≤30°C/60%RH。  
After opening the package, it is recommended to finish the reflow within 24 hours. The workshop conditions are ≤30°C/60%RH
- 如果受潮，需将贴片卷盘放入 60°C 烤箱烘烤 24 小时；打开后，LED 灯可重新密封在原始真空袋中。  
If it is wet, the patch reel should be baked in a 60 ° C oven for 24 hours; after opening, the LED light can be resealed in the original vacuum bag.
- 不要接触任何未知的液体，特别是丙酮。  
Don't touch any unknown liquid, In particular, acetone.
- 防止静电死亡，手动操作需要戴橡胶手套并佩戴静电环。  
Prevent electrostatic killed, Manual operation is required to wear rubber gloves and wear electrostatic ring.

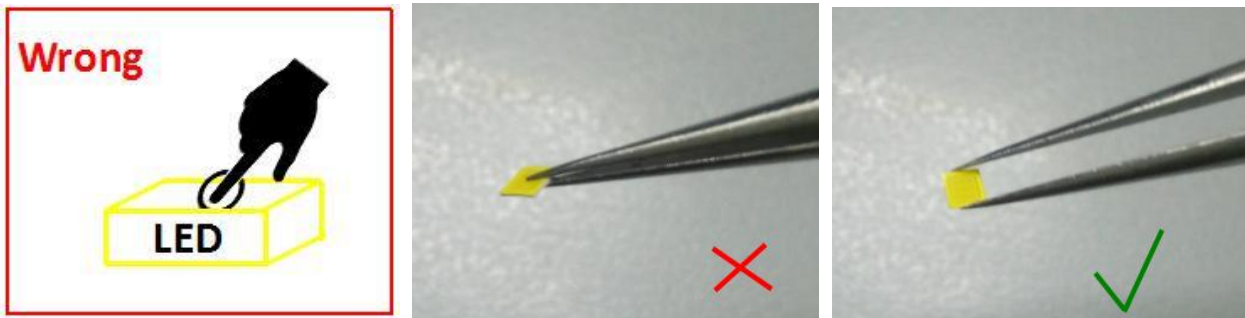
### b) 清洗 Cleaning

- 通常，LED 不建议对部件进行湿式清洁处理，因为封装不是密封的。  
In general, LED does not recommend a wet cleaning process for component as the package is not hermetically sealed.
- 由于采用开放式设计，所有类型的清洁液都可能渗透到封装中，导致 LED 退化或完全失效。  
Due to the open design, all kind of cleaning liquids can infiltrate the package and cause a degradation or a complete failure of the LED.

### c) 推荐吸嘴 Recommend Nozzle Dimensions

- 建议使用聚四氟乙烯等材料作为喷嘴，锐化钢材料拾取工具不建议使用  
Recommend using Teflon material for the nozzle, sharpen steel material pick up tools are refused.

### d) 操作注意 Handling Precautions



- 在处理过程中，还应注意确保组件顶面没有压力  
During the handling, care should be taken as well to ensure no pressure on the top surface of component.
- 应避免使用所有类型的尖锐物体（例如镊子，指甲等），以防止对硅树脂造成压力，因为这会导致部件损坏。  
All types of sharp objects(e.g. forceps, fingernail, etc) should be avoided in order to prevent stress to the silicone, since this can lead to damage of the component.