



# Data Sheet

## 承认书

**Customer Name:** \_\_\_\_\_  
 (客户名称)

**Customer P/N:** \_\_\_\_\_  
 (客户品号)

**Factory P/N: FC2835L\*\*CA\*\*KR8S1V03W02** \_\_\_\_\_  
 (公司品号)

**Factory L/N:** \_\_\_\_\_  
 (公司料号)

**Sending Date:** \_\_\_\_\_  
 (送样日期)

Client approval 客户审核		Approval 审核		
Approval 核准	Audit 确认	Approval 核准	Audit 确认	Confirmation 制作
				马恒玉
<input type="checkbox"/> Qualified 接受	<input type="checkbox"/> Disqualified 不接受	DATE: 日期		

## Features (特征)

1. **PLCC-2 package** (PLCC-2封装)
2. **Top view white LED** (平面式白光LED)
3. **Wide viewing angle** (大角度发光)
4. **RoHS compliant** (符合RoHS标准)
5. **Package:17000pcs/reel.**(包装每卷17000PCS)



## Application(应用)

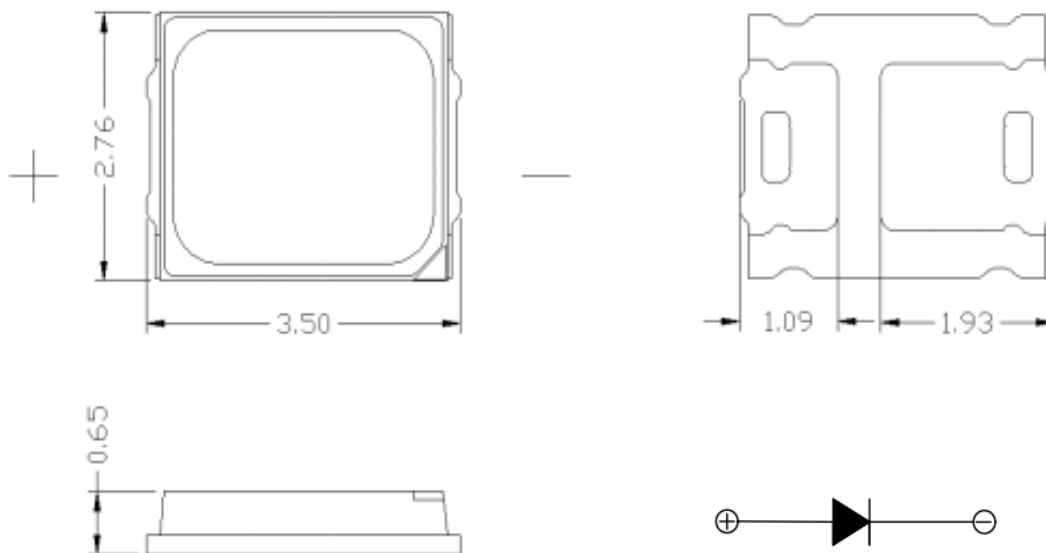
1. **General lighting** (一般照明)
2. **Optical indicator** (光学指示)
3. **Switch Lights** (开关照明)
4. **Decorative and Entertainment Lighting** (装饰与娱乐照明)



**ATTENTION**  
OBSERVE PRECAUTIONS  
FOR HANDLING  
ELECTROSTATIC  
DISCHARGE  
SENSITIVE  
DEVICES

注意：操作时应注意静电敏感  
释放设备装置

## Diagrammatic Sketch(封装尺寸图)



### Notes: (备注)

1. All dimensions are in millimeters (所有标注尺寸单位为毫米)
2. Tolerances are  $\pm 0.10\text{mm}$  unless otherwise noted (除特别标注外，允许公差为  $\pm 0.10\text{mm}$ )

**Absolute maximum ratings at  $T_a=25^{\circ}\text{C}$  (绝对最大额定值)**

Item (项目)	Symbol (符号)	Absolute Maximum Rating (数值)	Unit (单位)
Forward Current (正向电流)	$I_F$	60	mA
Pulse Forward Current (脉冲正向电流)	$I_{FP}$	90	mA
Power Dissipation (功率消耗)	$P_D$	204	mW
Operating Temperature (工作温度)	$T_{opr}$	-40~+85	$^{\circ}\text{C}$
Storage Temperature (储存温度)	$T_{stg}$	-40~+100	$^{\circ}\text{C}$
Temperature of welding pad (焊盘温度)	$T_S$	85	$^{\circ}\text{C}$
Electrostatic Discharge (静电)	ESD	2000(HBM)	V

## Electrical-Optical characteristics @T<sub>a</sub>=25°C (电性与光学特性)

Item 项目	Symbol 符号	Code 代码	Test Condition 测试条件	Min 最小	Typ 平均	Max 最大	Unit 单位
Forward voltage 正向电压	VF	-	IF=60mA	2.8	-	3.4	V
Luminous Flux 亮度	φv	30K	IF=60mA	28	29	-	LM
		35K	IF=60mA	29	30	-	LM
		40K	IF=60mA	30	31	-	LM
		50K	IF=60mA	30	31	-	LM
		60K	IF=60mA	30	31	-	LM
		65K	IF=60mA	30	31	-	LM
View Angle 角度	2θ1/2	-	IF=60mA	-	120	-	deg
Color Temperature 色温	CCT	30KJ	IF=60mA	2800	-	3050	K
		40KJ	IF=60mA	3800	-	4200	K
		50KJ	IF=60mA	4700	-	5300	K
		65KJ	IF=60mA	6100	-	6800	K
		30KC	IF=60mA	2900	-	3200	K
		40KC	IF=60mA	3750	-	4200	K
		50KC	IF=60mA	4750	-	5350	K
		60K-X	IF=60mA	5700	-	6400	K
		65KC	IF=60mA	6100	-	7000	K
Color Rending Index 显指	Ra	/	IF=60mA	-	80	-	-
CIE Chromaticity 色坐标	X	/	IF=60mA	please see the bin sorting standard			
	Y	/					

### Notes(备注):

1. Forward voltage (VF) ± 0.1V

正向电压允许公差为 ± 0.1V

2. Luminous Flux(φv) ±10%

流明允许公差为 ±10%

3. The above color coordinates measurement allowance tolerance is ±0.01

以上所示坐标测量误差 ±0.01

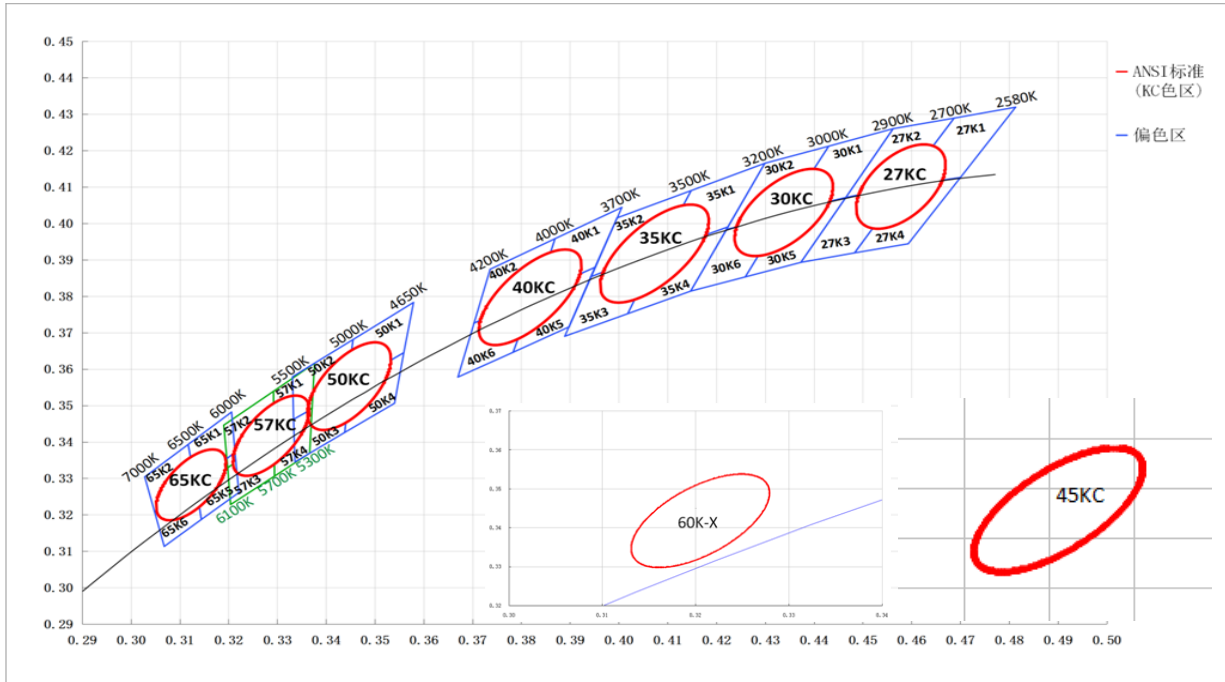
4. Color Rending Index (Ra) ±3

显指允许公差为 ±3

5. View Angle (2θ1/2) ±5

角度允许公差为 ±5

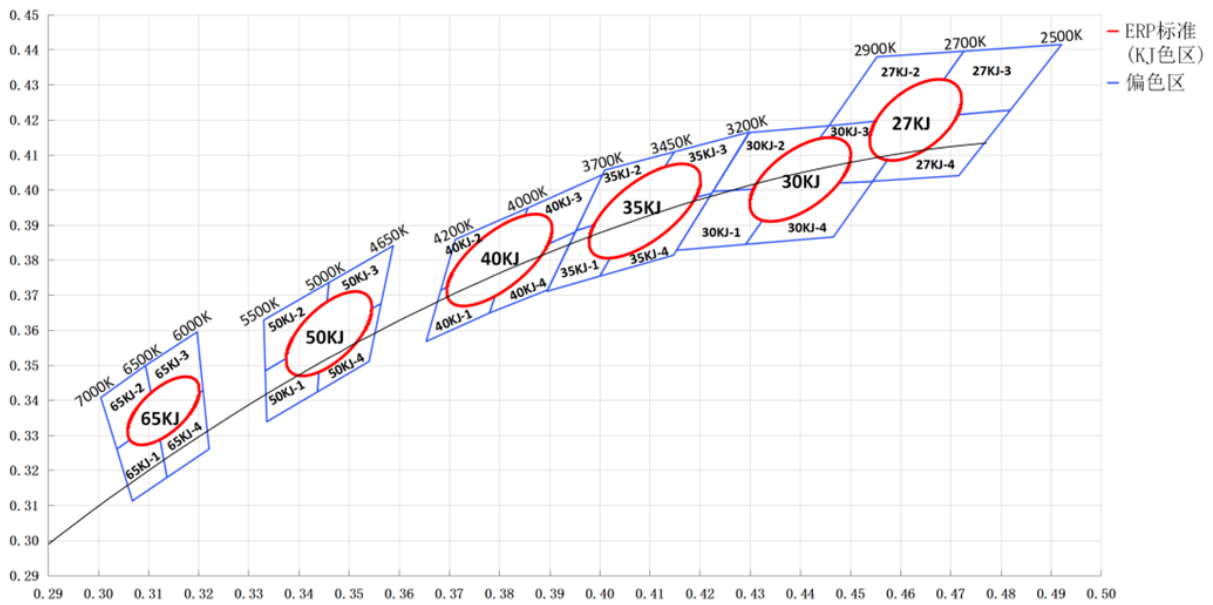
### CIE Chromaticity Diagram @IF=60mA ,Ta=25°C(色区图)



65KC	X	0.3123	57KC	X	0.3287	50KC	X	0.3447
	Y	0.3282		Y	0.3417		Y	0.3553
	a	0.00223		a	0.002486		a	0.00274
	b	0.00095		b	0.001066		b	0.00118
	$\theta$	58.38333		$\theta$	59.09		$\theta$	59.62
	SDCM	5		SDCM	5		SDCM	5
40KC	X	0.3818	30KC	X	0.4338	27KC	X	0.4578
	Y	0.3797		Y	0.403		Y	0.4101
	a	0.00313		a	0.00278		a	0.00258
	b	0.00134		b	0.00136		b	0.00137
	$\theta$	54		$\theta$	53.16667		$\theta$	57.28333
	SDCM	5		SDCM	5		SDCM	5
45KC	X	0.3611	35KC	X	0.4073	60K-X	X	0.3205
	Y	0.3658		Y	0.3917		Y	0.3418
	a	0.002936		a	0.00317		a	0.0026
	b	0.00126		b	0.00139		b	0.0011
	$\theta$	54.35		$\theta$	52.96667		$\theta$	65
	SDCM	5		SDCM	5		SDCM	5

色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
65K1	0.3206	0.3482	65K2	0.3117	0.3393	65K5	0.3221	0.3261	65K6	0.3131	0.3290
	0.3117	0.3393		0.3028	0.3304		0.3144	0.3187		0.3048	0.3209
	0.3131	0.3290		0.3048	0.3209		0.3131	0.3290		0.3068	0.3113
	0.3213	0.3371		0.3131	0.3290		0.3213	0.3371		0.3144	0.3187
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
57K1	0.3376	0.3616	57K2	0.3190	0.3446	57K3	0.3204	0.3228	57K4	0.3293	0.3419
	0.3292	0.3539		0.3198	0.3329		0.3294	0.3306		0.3294	0.3306
	0.3293	0.3419		0.3293	0.3419		0.3293	0.3419		0.3366	0.3369
	0.3371	0.3493		0.3292	0.3539		0.3198	0.3329		0.3371	0.3493
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
50K1	0.3455	0.3681	50K2	0.3333	0.3462	50K3	0.3438	0.3426	50K4	0.3559	0.3645
	0.3579	0.3783		0.3331	0.3579		0.3336	0.3345		0.3540	0.3506
	0.3559	0.3645		0.3455	0.3681		0.3333	0.3462		0.3438	0.3426
	0.3446	0.3553		0.3446	0.3553		0.3446	0.3553		0.3446	0.3553
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
40K1	0.3869	0.3958	40K2	0.3869	0.3958	40K5	0.3952	0.3880	40K6	0.3828	0.3803
	0.4006	0.4044		0.3736	0.3874		0.3898	0.3716		0.3703	0.3726
	0.3952	0.3880		0.3703	0.3726		0.3783	0.3646		0.3670	0.3578
	0.3828	0.3803		0.3828	0.3803		0.3828	0.3803		0.3783	0.3646
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
30K1	0.4342	0.4027	30K2	0.4221	0.3984	30K5	0.4342	0.4027	30K6	0.4221	0.3984
	0.4430	0.4212		0.4299	0.4165		0.4259	0.3853		0.4147	0.3814
	0.4562	0.4260		0.4430	0.4212		0.4373	0.3893		0.4259	0.3853
	0.4465	0.4071		0.4342	0.4027		0.4465	0.4071		0.4342	0.4027
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
27K1	0.4813	0.4319	27K2	0.4687	0.4289	27K3	0.4373	0.3893	27K4	0.4700	0.4126
	0.4687	0.4289		0.4562	0.4260		0.4465	0.4071		0.4582	0.4098
	0.4582	0.4098		0.4465	0.4071		0.4582	0.4098		0.4483	0.3919
	0.4700	0.4126		0.4582	0.4098		0.4483	0.3919		0.4593	0.3944

### CIE Chromaticity Diagram @IF=60mA ,Ta=25°C(色区图)



<b>27KJ</b>	X	0.463	<b>30KJ</b>	X	0.44	<b>35KJ</b>	X	0.409
	Y	0.42		Y	0.403		Y	0.394
	a	0.00258		a	0.00278		a	0.00317
	b	0.00137		b	0.00136		b	0.00139
		57.2833			53.1666			52.9666
	$\theta$	3		$\theta$	7		$\theta$	7
SDCM	5	SDCM	5	SDCM	5			
<b>40KJ</b>	X	0.38	<b>50KJ</b>	X	0.346	<b>65KJ</b>	X	0.313
	Y	0.38		Y	0.359		Y	0.337
	a	0.00313		a	0.00274		a	0.00223
	b	0.00134		b	0.00118		b	0.00095
					59.6166			58.3833
	$\theta$	54		$\theta$	7		$\theta$	3
SDCM	5	SDCM	5	SDCM	5			

色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
65KJ-1	0.3068	0.3113	65KJ-2	0.3037	0.3261	65KJ-3	0.3116	0.3338	65KJ-4	0.3137	0.3180
	0.3037	0.3261		0.3005	0.3408		0.3094	0.3499		0.3116	0.3338
	0.3116	0.3338		0.3094	0.3499		0.3197	0.3595		0.3209	0.3428
	0.3137	0.3180		0.3116	0.3338		0.3209	0.3428		0.3221	0.3261
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
50KJ-1	0.3333	0.3484	50KJ-2	0.3333	0.3484	50KJ-3	0.3449	0.3581	50KJ-4	0.3437	0.3424
	0.3336	0.3339		0.3330	0.3629		0.3460	0.3736		0.3449	0.3581
	0.3437	0.3424		0.3460	0.3736		0.3588	0.3841		0.3564	0.3676
	0.3449	0.3581		0.3449	0.3581		0.3564	0.3676		0.3540	0.3511
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
40KJ-1	0.3654	0.3568	40KJ-2	0.3683	0.3714	40KJ-3	0.3818	0.3793	40KJ-4	0.3780	0.3649
	0.3683	0.3714		0.3712	0.3859		0.3857	0.3949		0.3818	0.3793
	0.3818	0.3793		0.3857	0.3949		0.4006	0.4044		0.3951	0.3880
	0.3780	0.3649		0.3818	0.3793		0.3951	0.3880		0.3896	0.3715
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
35KJ-1	0.3895	0.3711	35KJ-2	0.3953	0.3884	35KJ-3	0.4075	0.3932	35KJ-4	0.4000	0.3754
	0.3953	0.3884		0.4010	0.4057		0.4149	0.4109		0.4075	0.3932
	0.4075	0.3932		0.4149	0.4109		0.4298	0.4165		0.4223	0.3990
	0.4000	0.3754		0.4075	0.3932		0.4223	0.3990		0.4147	0.3814
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
30KJ-1	0.4153	0.3828	30KJ-2	0.4226	0.3996	30KJ-3	0.4372	0.4009	30KJ-4	0.4291	0.3845
	0.4226	0.3996		0.4299	0.4164		0.4457	0.4183		0.4372	0.4009
	0.4372	0.4009		0.4457	0.4183		0.4632	0.4205		0.4544	0.4024
	0.4291	0.3845		0.4372	0.4009		0.4544	0.4024		0.4466	0.3866
色区	X	Y	色区	X	Y	色区	X	Y	色区	X	Y
27KJ-2	0.4457	0.4183	27KJ-3	0.4632	0.4205	27KJ-4	0.4544	0.4025			
	0.4553	0.4380		0.4726	0.4396		0.4632	0.4205			
	0.4726	0.4396		0.4921	0.4415		0.4819	0.4228			
	0.4632	0.4205		0.4819	0.4228		0.4716	0.4041			

**Luminous Intensity Rank (亮度等级)  $\phi_v$  @IF=60mA, Ta=25°C (Unit:lm)**

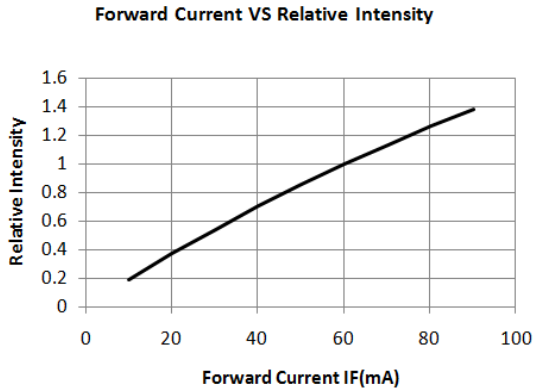
BIN	Min	Max
L15	28	30
L17	30	32
L19	32	34

**Forward Voltage Rank (电压等级) VF @IF=60mA, Ta=25°C (Unit:V)**

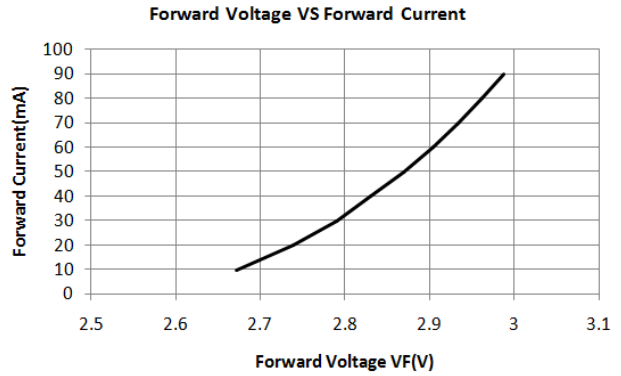
BIN	Min	Max
1	2.8	2.9
2	2.9	3.0
3	3.0	3.1
4	3.1	3.2
5	3.2	3.3
6	3.3	3.4

**Typical optical characteristics curves @Ta=25°C (典型光学特性曲线)**

Forward Current VS. Relative Intensity  
正向电流与相对光强特性曲线

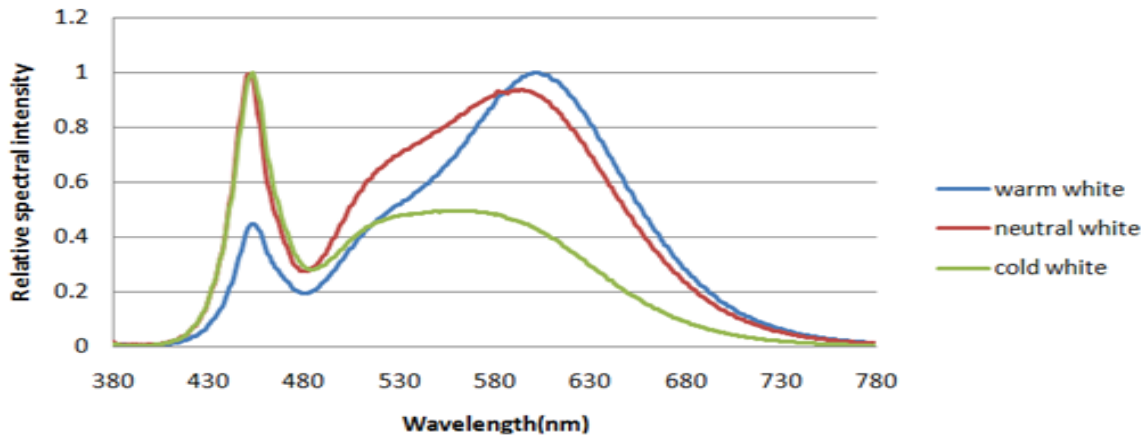


Forward Voltage VS. Forward Current  
正向电压与正向电流特性曲线

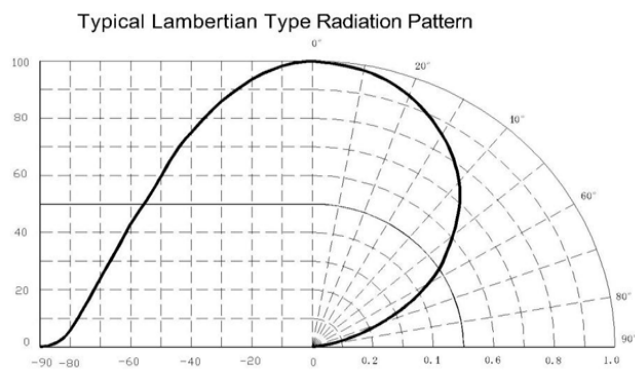


Relative spectral emission

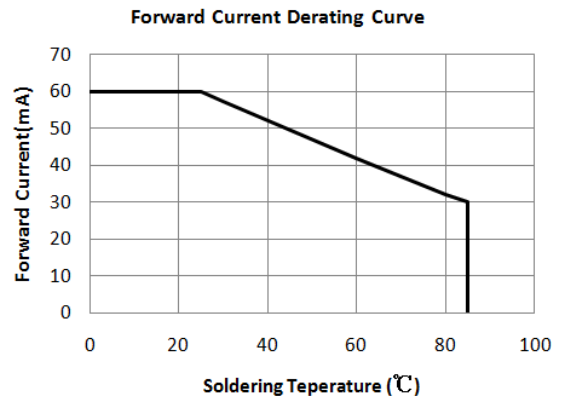
相对光谱分布特性曲线



Radiation diagram 辐射图特性曲线



Ambient Temperature VS Allowable Forward Current  
环境温度与允许温度电流特性



## Reliability Test Items And Conditions(信赖性测试项目及条件)

Test Items 项目	Ref. Standard 参考标准	Test Conditions 测试条件	Time 时间	Quantity 数量
High Temperature storage 高温储存	JESD22-A103	Temp:100°C±5°C	1000 hrs	22
Low Temperature Storage 低温储存	JESD22-A119	Temp:-40°C±5°C	1000 hrs	22
Temperature Cycle 温度循环	JESD22-A104	100°C±5°C 30min ↓↑5min -40°C±5°C 30min	300 cycle	22
Reflow回流焊	JESD22-B106	Temp:max260°C Time:10sec 8min/ cycle	3cycle	22
Life Test常温通电	JESD22-A108	Ta=25°C±5°C IF=60mA	1000 hrs	22
High Temperature High Humidity Life Test高温高湿通电	JESD22-A101	85°C±5°C/85%RH I <sub>F</sub> =60mA	1000 hrs	22

## Criteria For Judging Damage (失效判定标准)

Item 项目	Symbol 符号	Test Conditions 测试条件	Criteria for Judgement 判定标准	
			Min.最小	Max.最大
Forward Voltage正向电压	VF	IF=60mA	-	(U.S.L*)×1.1
Luminous Intensity光通量	ΦV	IF=60mA	(L.S.L*) ×0.7	-

Note(备注):

U.S.L.: Upper Standard Level(规格上限)L.S.L.: Lower Standard Level(规格下限)

## Label Explanation (标签说明)

**No:** Product part number(生产料号)

**QTY:** Number of packages (Only denoted by K)(数量)

**Part No:** Product model (生产型号)

**ΦV:** Luminous Intensity rank (流明)

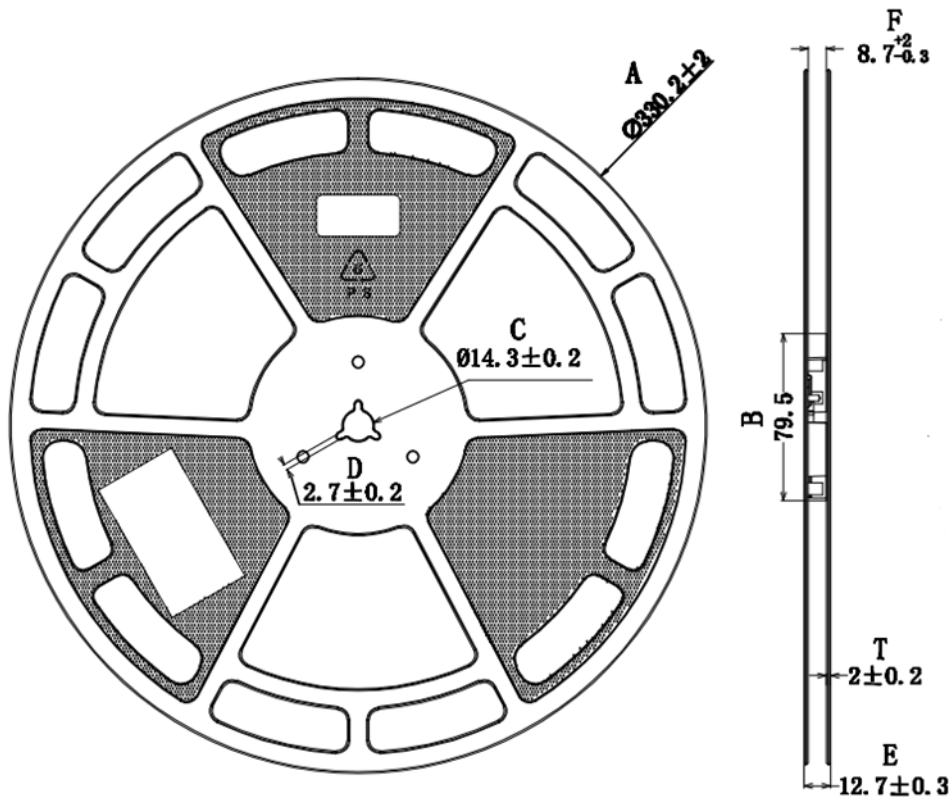
**VF:** Voltage (电压)

**X/Y:** Color zone (色区)

**Lot NO:** Lot number (批号)

		No.:XXXXXXXXXXXX QTY:XXX
Part No.:XXXXXXXXXXXXXXXXXXXX		
ΦV	:XX-XX lm	
VF	:XX-XX V	
x/y	:XXXXX	
Lot No.:XXXXXXXXXXXXXXXXXXXX		

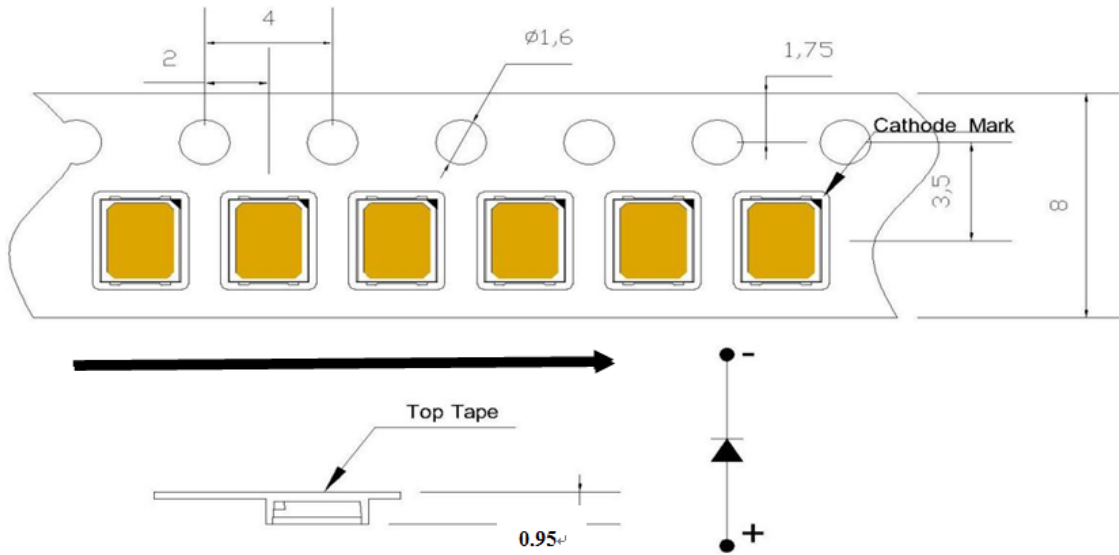
## Reel Dimensions (卷盘尺寸)



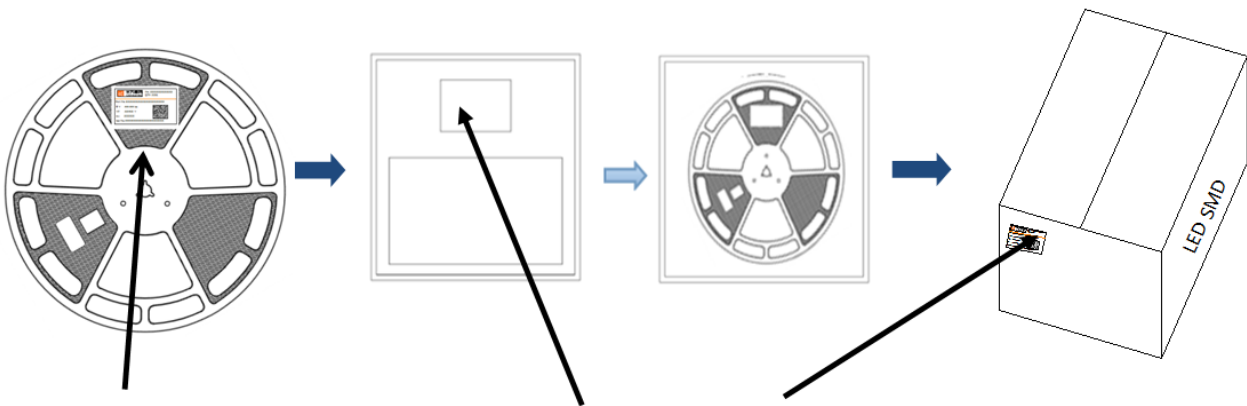
**Note(备注):**

**Tolerance unless mentioned is ±0.3mm; unit=mm(未标注公差为±0.3mm, 尺寸单位: mm)**

## Carrier Tape Dimensions (载带尺寸)



## Moisture Resistant Packing Process (防潮包装过程)



Label 一 20K Aluminum moisture proof bag Label 二 80K Label 三 400K

(标签一 20K) (铝箔袋) (标签二 80K) (标签三 400K)

Note (备注):

1. The cathode is oriented towards the tape sprocket hole in accordance with ANSI/ELARS-481 specifications

负极朝向定位孔, 符合 ANSI/ELARS-481 规格。

2. 20000PCS/Reel.

每盘 20000 颗

### Precautions for use Over-current-proof (通电使用时的注意事项)

**Customer must apply resistors for protection otherwise slight voltage shift will cause big current change (burn out will happen)**

客户必须使用电阻进行保护，否则轻微的电压变化会引起大电流变化(会发生烧坏)

### Storage (存储)

**Do not open moisture proof bag before the products are ready to use**

在使用之前禁止打开防潮包装

**Storage conditions prior to uncapping : 5 - 30 °C , maximum relative humidity of 60 %**

开封前的贮藏条件: 5-30°C, 最大相对湿度为60%RH

**After opening the package, The LEDs should be soldered within 4 hours after opening the package**

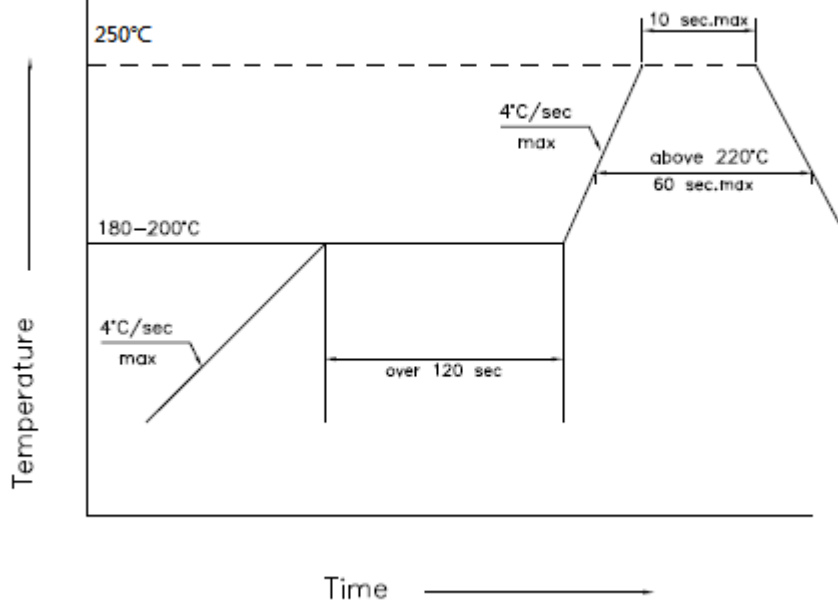
打开包装之后,应在4hrs 内焊接完毕

### Soldering Condition (焊接条件)

**Number of reflow process shall be less than 2 times and cooling process to normal temperature is required between first and Second soldering process**

本产品最多只可回流焊两次,且在首次回焊后须冷却至室温之后方可进行第二次回流焊.

**Recommended soldering conditions**



## Soldering Iron (烙铁焊接)

**1. When hand soldering, keep the temperature of iron below less 250°C less than 10 seconds**

当手工焊接时，烙铁的温度必须小于250°C，时间不可超过10秒

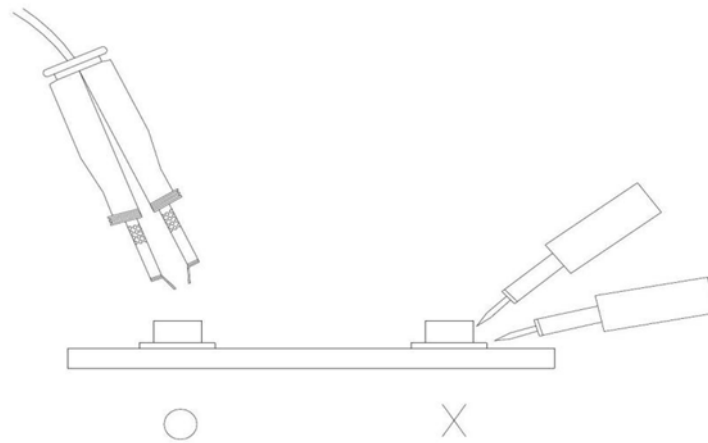
**2. The hand solder should be done only one time.**

手工焊接只可焊接一次

## Repairing (修补)

**Repair should not be done after the LEDs have been soldered. When repairing is unavoidable, a double-head soldering iron should be used (as below figure). It should be confirmed beforehand whether the characteristics of the LEDs will or will not be damaged by repairing**

不应在LED焊接后进行修复。当修复不可避免时，应使用（如下图）之类的双头烙铁，应事先确认此种修补方法会不会损坏LED本身



## Cautions:(使用注意事项)

**1. Please check if there is air leak before opening the package, if so, please return the goods back to take drying process for later using.**

在开包装之前，请先检查包装袋有无漏气，如果有漏气现象，请退回我司重新烘烤除湿包装后再使用

**2. Products can be used within 6 months after packaging, after that, they must be:**

抽真空包装材料未超过6个月可正常使用，包装袋开启后，产品必须：

**A. Soldered within 4 hrs**

A. 在4hrs内焊接完毕

**B. Used in the condition: 30°C within and 60%RH below**

B. 使用条件需： 温度:30°C以内湿度:60%RH以下

**3. The vacuum packaging material is not used for more than 6 months after being packaged unless opening the package and take drying our process in 70°C/12H**

抽真空包装材料超过6个月未使用，再使用时需重新拆铝箔袋取出烘烤70°C/12H除湿后才可使用

## Handling Precautions (处理防备措施)

**Compare to epoxy encapsulant that is hard and brittle, silicone is softer and flexible. Although its characteristic significantly reduces thermal stress, it is more prone to damage by external mechanical force. As a result, Special handling precautions must be observed during assembling using silicone encapsulated LED products, Failure to comply might leads to damage and premature failure of the LED.**

相对环氧树脂较脆较硬而言，硅胶封装较柔软且有弹性，虽然它的特性大大减少了热应力，但易受机械外力损坏，因此，在手工处理方面须要对硅胶封装材料做预防措施，若未按要求操作，可能会导致LED损坏和光衰

### **1.Do not stack together assembled PCBs containing LEDs. Impact may scratch the silicone lens or damage the internal circuitry**

不可将模组材料堆积在一起，它可能会损坏内部电路

### **2.Not suitable to operate in acidic environment, PH<7**

不可用在PH<7的酸性场所

### **3.LED operating environment and sulfur element composition cannot be over 100PPM in the LED mating usage material.**

LED工作环境及与LED适配的材料中硫元素及化合物成份不可超过100PPM

### **4.When we need to use external glue for LED application products, please make sure that the external glue matches the LED packaging glue. Additionally ,as most of LED packaging glue is silica gel, and it has strong Oxygen permeability as well as strong moisture permeability; in order to prevent external material from getting into the inside of LED, which may cause the malfunction of LED, the single content of Bromine element is required to be less than 900PPM,the single content of Chlorine element is required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external glue of the application products is required to be less than 1500PPM**

当我们需要使用外封胶涂抹LED产品时，应确保外封胶与LED封装胶水相匹配，因为大多数LED的封装胶水为硅胶，它有较强的氧化性和较强的吸湿性，必须防止外封材质进入LED内部以造成LED的损伤，单一的溴元素含量要求小于900PPM，单一氯元素含量要求小于900PPM，在涂抹LED产品时要求外封胶溴元素与氯元素总含量必须小于1500PPM