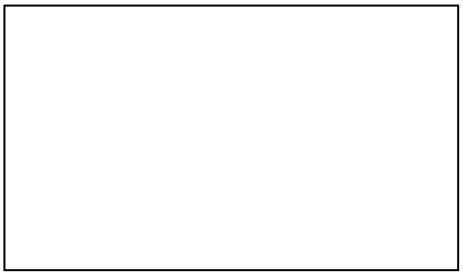
1. Description 产品介绍

1.1 产品描述

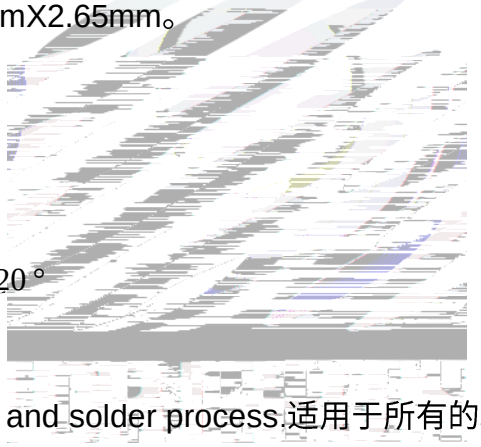


The White LED which was fabricated by using a blue chip and phosphors.

白光 LED，是由蓝光芯片激发荧光粉而形成。

The LED package dimension: 3.45mmX3.45mmX2.65mm.

产品尺寸：3.45mmX3.45mmX2.65mm。



1.2Features 产品特征

Ceramics Package.陶瓷封装

viewing angle:120°.发光角度120°

High reliability.高可靠性

Suitable for all SMT assembly and solder process.适用于所有的SMT

Available on tape and reel.适用于载带及卷轴

RoHS compliant.求

1.3Application 产品应用

Warning lights, Downlights, Wash wall lights, Spot lights, Street lights. 警报器、筒射灯、洗墙灯、

Plant lighting, Landscape lighting, Stage photography light. 植物照明、舞台摄影

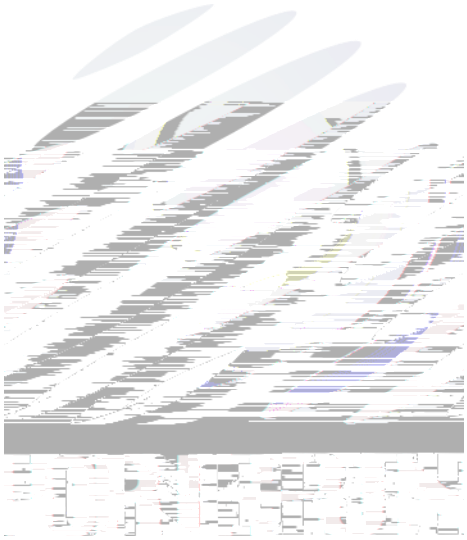
Hotels, markets, offices, household and other indoor uses.

General use.

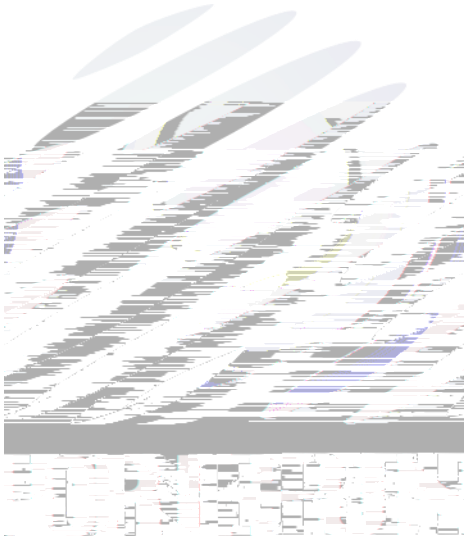
1.4Package Dimension 封装尺寸

Fig.1-1 Top view 正面视图

Fig.1-2 Side view 侧面视图



1.5



RF-AL-C3535L2K135-M4-H Correlated Color Temperature (色温)	CCT	I_F=350mA	---	3500	---	K

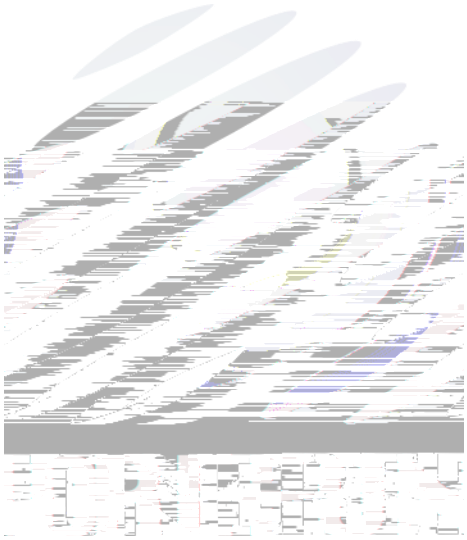
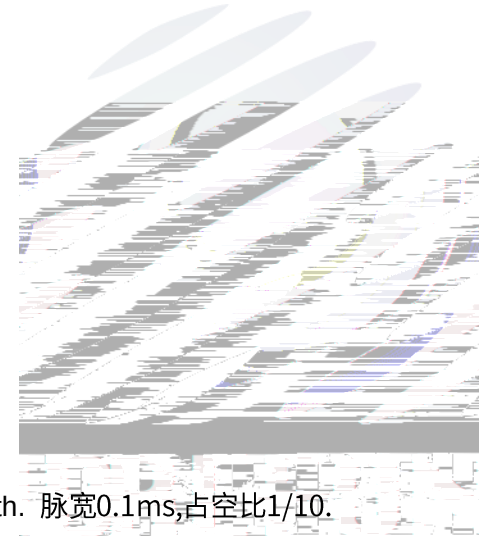


Table 1-2 Absolute Maximum Ratings at Ts=25℃ 绝对最大值

Parameter（参数）	Symbol（符号）	Rating（值）	Units（单位）
Power Dissipation	P_D	6800	mW
Forward Current（正向电流）	I_F	2000	mA
Peak Forward Current（峰值电流）	I_{FP}	3000	mA
Reverse Voltage（反向电压）	V_R	5	V



Notes 备注：

1. 1/10 Duty cycle, 0.1ms pulse width. 脉宽0.1ms,占空比1/10.
2. The above forward voltage measurement allowance tolerance is ±0.1V. 以上所示电压测量误差 ±0.1V.
3. The above Dominant Wavelength measurement allowance tolerance is±1nm. 以上所示波长测量误差±1nm.
4. The above luminous intensity measurement allowance tolerance ±10%. 上述发光强度的测试允许公差为±10%.
5. Care is to be taken that power dissipation does not exceed the absolute maximum rating of the product. 使用功率不能超过规定的最大值。
6. All measurements were made under the standardized environment of Refond. 标准测试平台。

7.When the LEDs are in operation the maximum current should be decided after measuring the package temperature è junction temperature should not exceed the maximum rate. LED 使用的最大电流需要根据散热条件确定，结温不能超过最大值。

1.5.1 Bin Range Of Forward Voltage and Luminous Intensity (IF=350mA)

光强分 BIN (IF=350mA)

Table 1-3

V_F V	F0	G0	H0	I0
	2.6-2.8	2.8-3.0	3.0-3.2	3.2-3.4
	FC8	FC9	FD1	FD2
	160-170	170-180	180-190	190-200
	FD3			
	200-210			

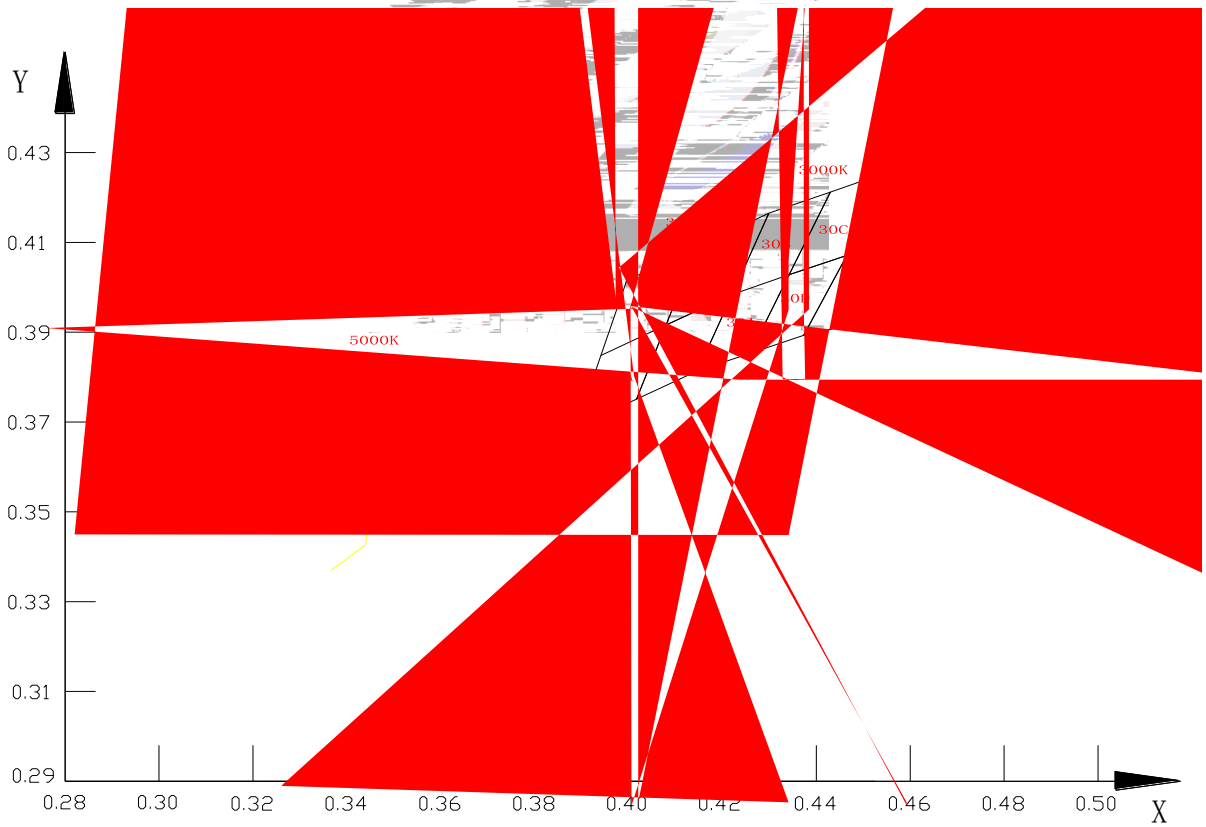


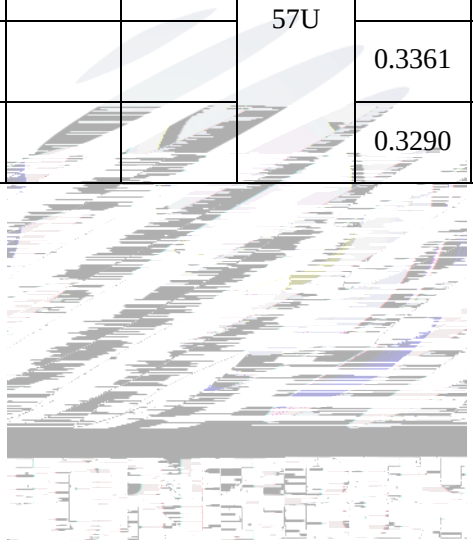
Fig.1-7 Chromaticity Coordinates

Table 1-4 Chromaticity Region & Coordinates

	CIE-X	CIE-Y	Region	CIE-X	CIE-Y	Region	CIE-X	CIE-Y	Region	CIE-X	CIE-Y
2700K			3000K			3500K			4000K		
27A	0.4373	0.3893	30A	0.4147	0.3814	35A	0.3889	0.3690	40A	0.3670	0.3578
	0.4465	0.4071		0.4221	0.3984		0.3941	0.3848		0.3702	0.3722
	0.4582	0.4099		0.4342	0.4028		0.4080	0.3916		0.3825	0.3798
	0.4483	0.3919		0.4259	0.3853		0.4017	0.3751		0.3783	0.3646
27B	0.4465	0.4071	30B	0.4221	0.3984	35B	0.3941	0.3848	40B	0.3702	0.3722
	0.4562	0.4260		0.4299	0.4165		0.3996	0.4015		0.3736	0.3874
	0.4687	0.4289		0.4430	0.4212		0.4146	0.4089		0.3869	0.3958
	0.4582	0.4099		0.4342	0.4028		0.4080	0.3916		0.3825	0.3798
27C	0.4582	0.4099	30C	0.4342	0.4028	35C	0.4080	0.3916	40C	0.3825	0.3798
	0.4687	0.4289		0.4430	0.4212		0.4146	0.4089		0.3869	0.3958
	0.4813	0.4319		0.4562	0.4260		0.4299	0.4165		0.4006	0.4044
	0.4700	0.4126		0.4465	0.4071		0.4221	0.3984		0.3950	0.3875
	0.4483	0.3919		0.4259							
27D			30D								

45A	0.3530	0.3597	50A	0.3371	0.3490	57A	0.3215	0.3350	65A	0.3048	0.3207
	0.3615	0.3659		0.3451	0.3554		0.3290	0.3417		0.3130	0.3290
	0.3590	0.3521		0.3440	0.3427		0.3290	0.3300		0.3144	0.3186
	0.3512	0.3465		0.3366	0.3369		0.3222	0.3243		0.3068	0.3113
45B	0.3548	0.3736	50B	0.3376	0.3616	57B	0.3207	0.3462	65B	0.3028	0.3304
	0.3641	0.3804		0.3463	0.3687		0.3290	0.3538		0.3115	0.3391
	0.3615	0.3659		0.3451	0.3554		0.3290	0.3417		0.3130	0.3290
	0.3530	0.3597		0.3371	0.3490		0.3215	0.3350		0.3048	0.3207
45C	0.3641	0.3804	50C	0.3463	0.3687	57C	0.3290	0.3538	65C	0.3115	0.3391
	0.3736	0.3874		0.3551	0.3760		0.3376	0.3616		0.3205	0.3481
	0.3702	0.3722		0.3533	0.3620		0.3371	0.3490		0.3213	0.3373
	0.3615	0.3659		0.3451	0.3554		0.3290	0.3417		0.3130	0.3290
45D	0.3615	0.3659	50D	0.3451	0.3554	57D	0.3290	0.3417	65D	0.3130	0.3290
	0.3702	0.3722		0.3533	0.3620		0.3371	0.3490		0.3213	0.3373
	0.3670	0.3578		0.3515	0.3487		0.3366	0.3369		0.3221	0.3261
	0.3590	0.3521		0.3440	0.3427		0.3290	0.3300		0.3144	0.3186
			50R	0.3366	0.3369	57R	0.3222	0.3243	65R	0.3068	0.3113
				0.3440	0.3428		0.3290	0.3300		0.3144	0.3186
				0.3429	0.3307		0.3290	0.3180		0.3161	0.3059
				0.3361	0.3245		0.3231	0.3120		0.3093	0.2993
			50S	0.3381	0.3762	57S	0.3196	0.3602	65S	0.3005	0.3415
				0.3480	0.3840		0.3290	0.3690		0.3099	0.3509

				0.3463	0.3687		0.3290	0.3538		0.3115	0.3391
				0.3376	0.3616		0.3207	0.3462		0.3028	0.3304
						57T	0.3290	0.3690	65T	0.3099	0.3509
							0.3381	0.3762		0.3196	0.3602
							0.3376	0.3616		0.3205	0.3481
							0.3290	0.3538		0.3115	0.3391
						57U	0.3290	0.3300	65U	0.3144	0.3186
							0.3366	0.3369		0.3221	0.3261
							0.3361	0.3245		0.3231	0.3120
							0.3290	0.3180		0.3161	0.3059



1.6 Typical optical characteristics curves 典型光学特性曲线

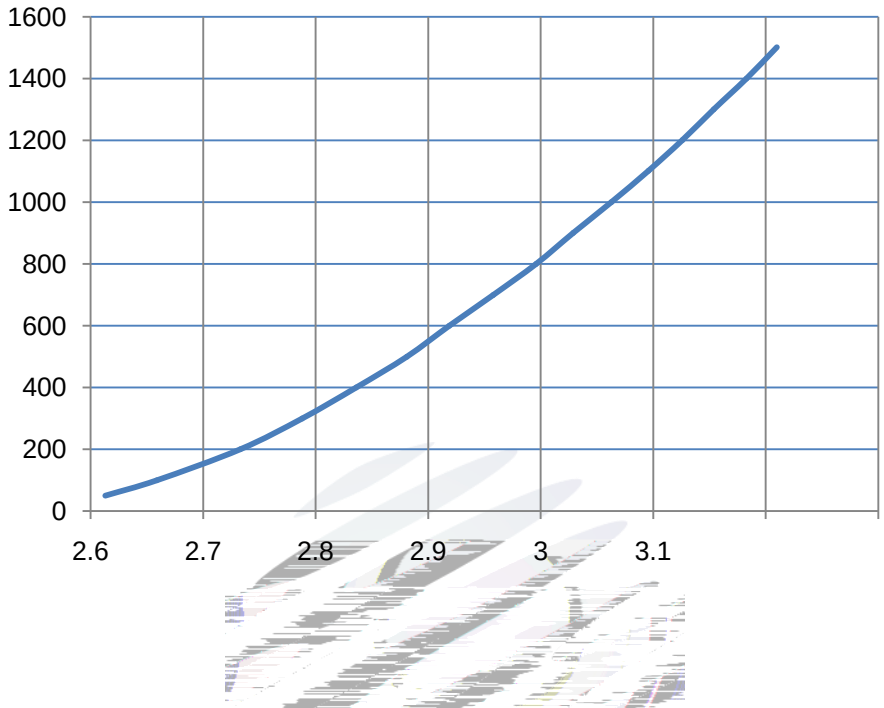
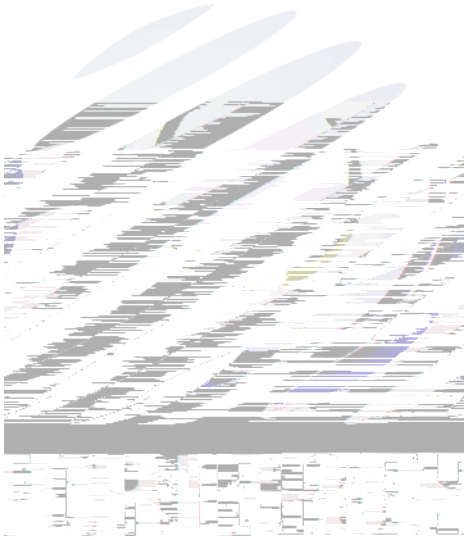


Fig 1-6 Forward Voltage Vs Forward Current伏安特性曲线

Fig.1-7 Forward Current Vs Relative Intensity



2. Packaging 产品包装

2.1 Packaging Specification 包装规格

Package:1000pcs/reel.包装每卷 7666 a

2.1.1Carrier Tape Dimension 载带尺寸

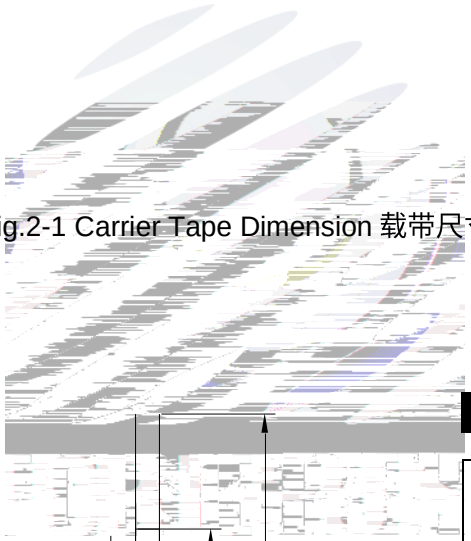
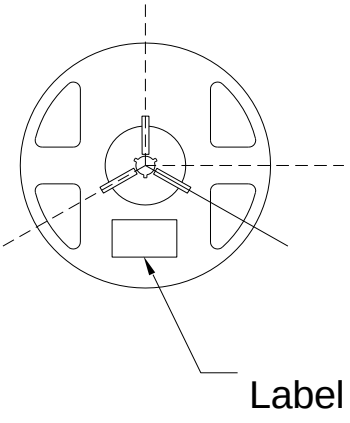
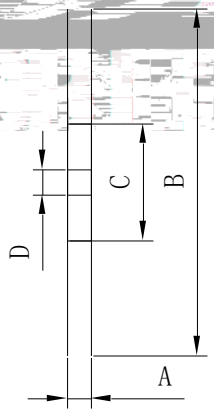


Fig.2-1 Carrier Tape Dimension 载带尺寸

2.1.2Reel Dimension 卷盘尺寸





[redacted]-1Reel Dimension 卷盘尺寸

A	14.0±0.5mm
B	178±1mm
C	59±1mm
D	13.9±0.5mm

Fig.2-2Reel 卷盘

Notes 备注:

The tolerances unless mentioned ±0.1mm. Unit : mm 注：未注公差为±0.1毫米，尺寸单位：毫米

2.1.3Label Form Specification 标签规格

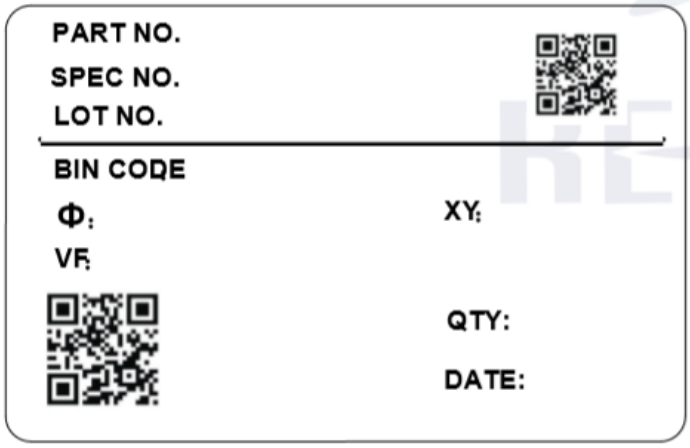


Fig 2-3 Label Form 标签模板

Table 2-2 Label Parameter 标签参数

PART NO.	Part Number 品名
SPEC NO.	Spec Number 规格
LOT NO.	Lot Number 批次号
BIN CODE	Bin Code 参数代码
	Luminous flux 光通量
XY	Chromaticity Bin 色区
V_F	Forward Voltage 正向电压
QTY	Packing Quantity 数量
DATE	Made Date 生产日期

2.2Moisture Resistant Packing 防潮包装

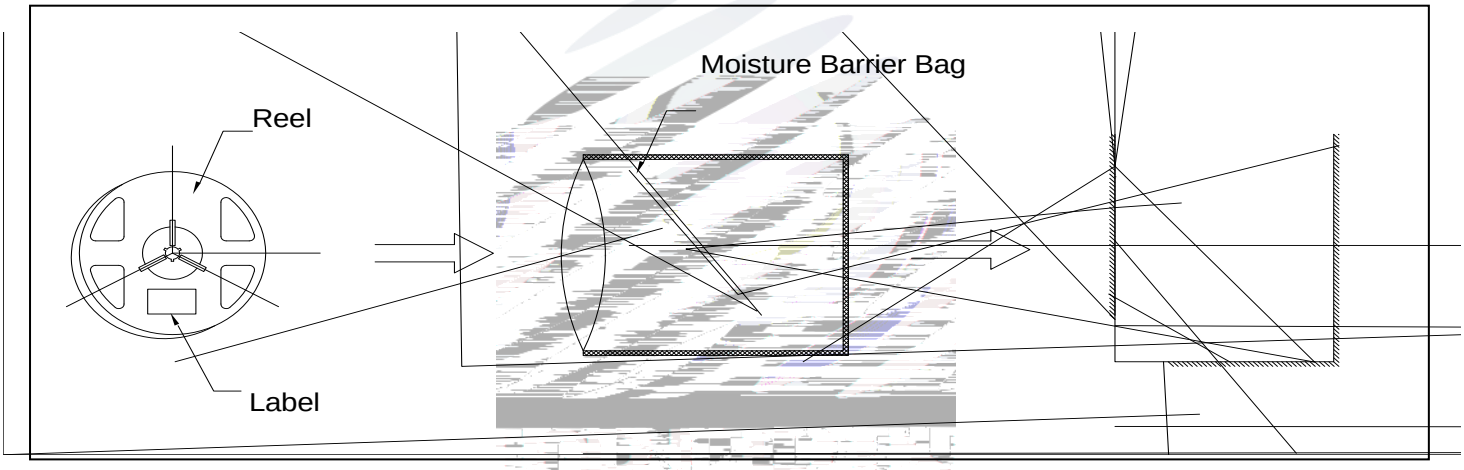


Fig.2-4Packing specification 包装说明

2.3Cardboard Box 包装纸箱

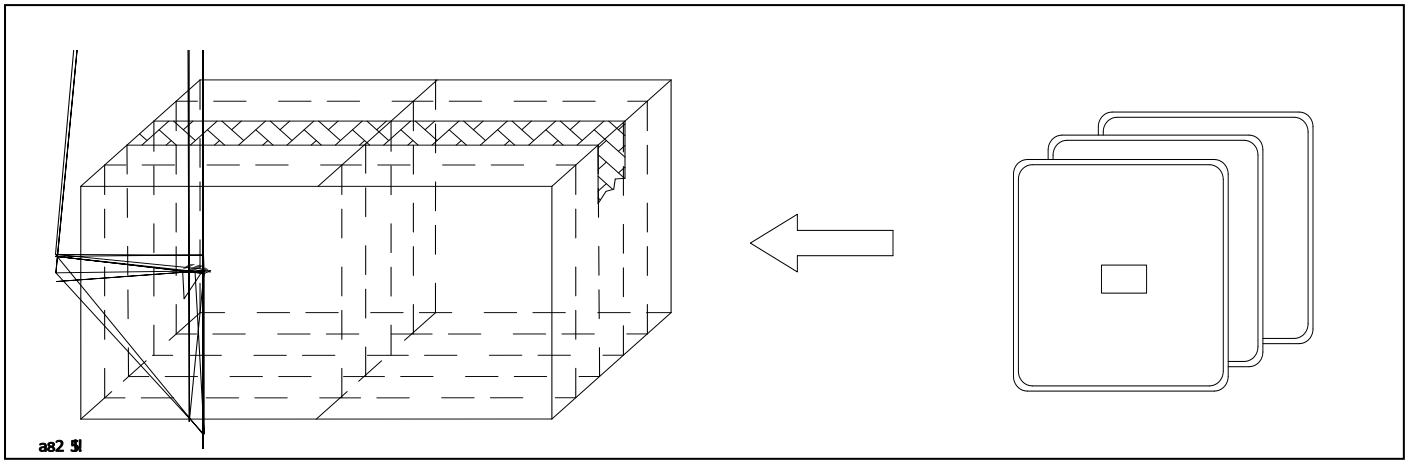
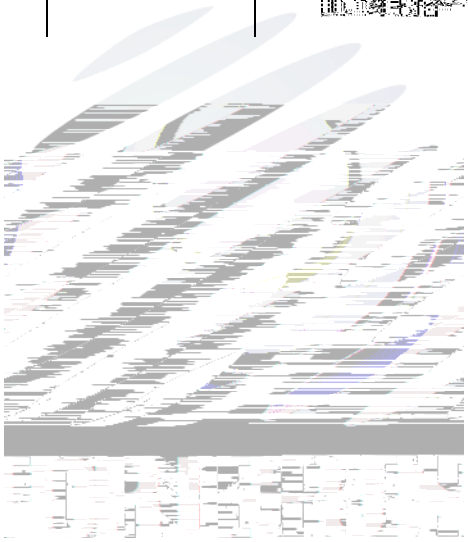


Fig.2-5Cardboard Box 包装纸箱

2.5 Criteria For Judging Damage 失效判定标准

Table 2-4Criteria for judging damage 失效判定标准

Test Items 项目	Symbol 符号	Test Condition 测试条件	Criteria For Judgement 判定标准	Applicable project 适用项目
Forward Voltage 电压	V_F	I_F=350mA	10%	Reflow Thermal Shock High and Low Temperature Storage
Luminous Flux W		I_F=350mA	Maintenance≥80%	



3. SMT Reflow Soldering Instructions SMT 回流焊说明

3.1SMT Reflow Soldering Instructions SMT 回流焊说明

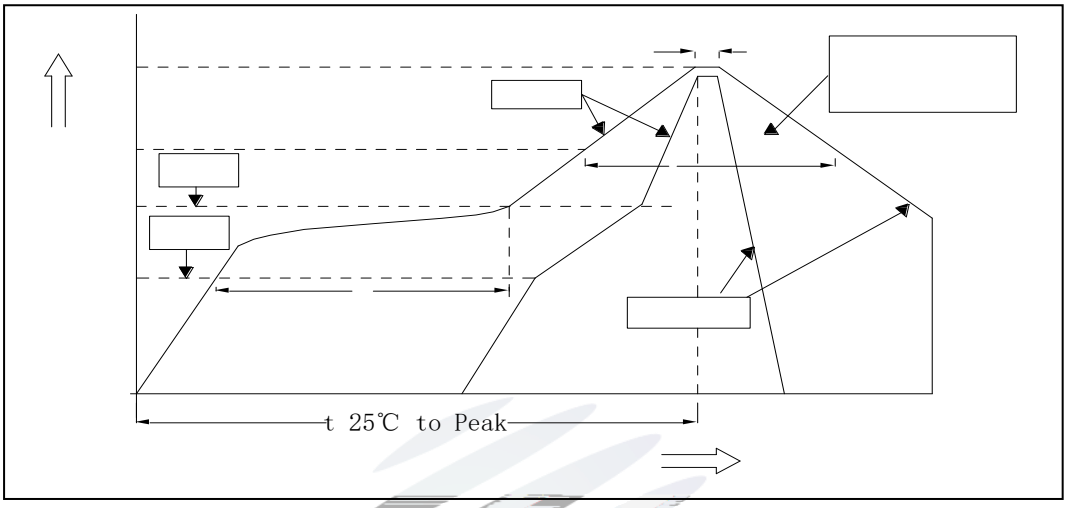


Fig.3-1SMT Reflow Soldering Instructions SMT 回流

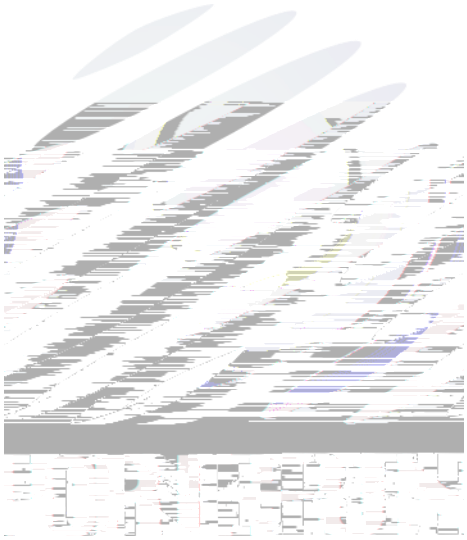
Table 3-1 SMT Reflow Soldering Parameter SMT 回流焊参数

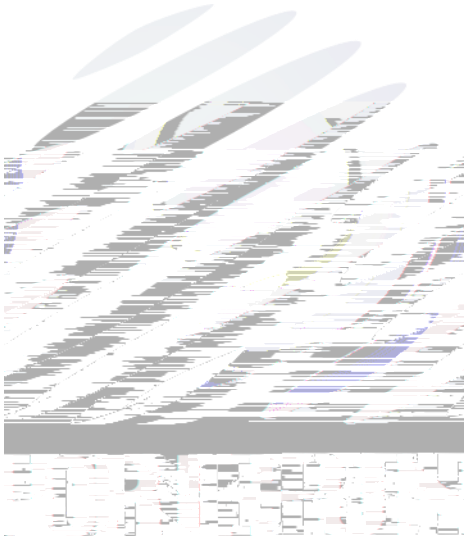
Average temperature rise speed平均升温速度（Tsmax 至T_P）	Max 3 ℃/ s 最高3 ℃/ 秒
Preheating: minimum temperature预热：最低温度 (Tsmin)	150 ℃
Preheating: Max temperature预热：最高温度 (Tsmax)	200 ℃
Preheating: Time预热：时间（Tsmin 至Tsmax）	60 - 120秒 60s-120s
Time limited to maintain high temperature: the temperature限时维持高温：温度 (T_L)	217 ℃
Time limited to maintain high temperature: The Time 限时维持高温：时间 (t_L)	Max 60s 最多60秒
Peak /Classification of temperature:峰值 / 分类温度 (T_P)	260 ℃
Time limit classification of peak temperature time限时峰值分类温度：时间（t_p）	Max 10s 最多10秒

Hold time within 5 °C with the actual peak temperature (TP) 与实际峰值温度 (T_P) 相差 5 ℃ 以内的保持时间	Max 30s 最多30秒
Cooling speed 降温速度	Max 6 ℃/ s 最高6 ℃/ 秒
Needed time from 25 ℃ to Tp 25 ℃ 升至峰值温度所需时间	Max 8 minutes 最多8分钟

Notes 备注:

(1)Reflow soldering should not be done more than twice. If more than 24 hours





4. Handling Precautions　产品使用注意事项

4.1 Handling Precautions　产品使用注意事项

(1) LED operating environment and sulfur element composition cannot be over 100PPM in the LEDmating usage material. This is provided for informational purposes only and is not a warranty or endorsement.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.这只是一个建议，不作任何品质担保。

(2) In order to prevent ex- ternal 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 elementis required to be less than 900PPM,the total content of Bromine element and Chlorine element in the external materials of the application products is required to be less than 1500PPM. This is provided for informational purposes only and is not a warranty or endorsement.为了防止外界物质进入 LED 内部以造成 LED 的损伤，所处环境及所用套件等等，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，溴元素与氯元素总含量必须小于 1500PPM. 这只是一个建议，不作任何品质担保。

(3) VOCs (Volatile organic compounds) emitted from materials used in the construction of fixtures can penetrate silicone encapsulants of LEDs and discolor when exposed to heat and photonic energy. The result can be a significant loss of light output from the fixture. Knowledge of the properties of the materials selected to be used in the construction of fixtures can help prevent these issues. Refond

(4) Handle the component along the side surface by using forceps or appropriate tools; do not directlytouch or Handle the silicone lens surface, it may damage the internal circuitry.通过使用适当的工具从材料侧面处理，不要直接用手或尖锐金属压胶体表面，它可能会损坏内部电路。

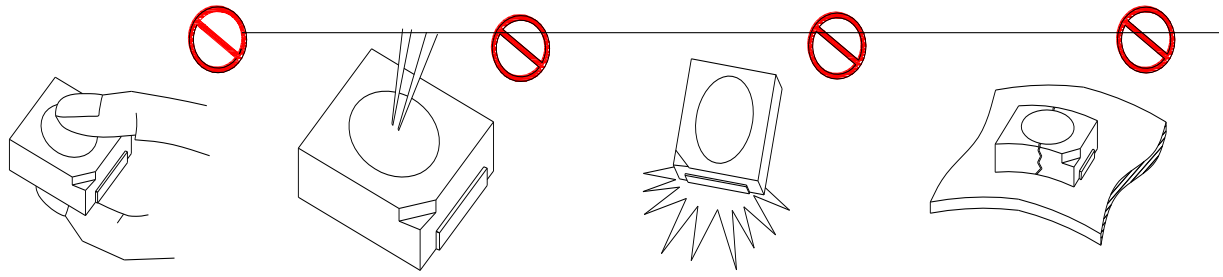
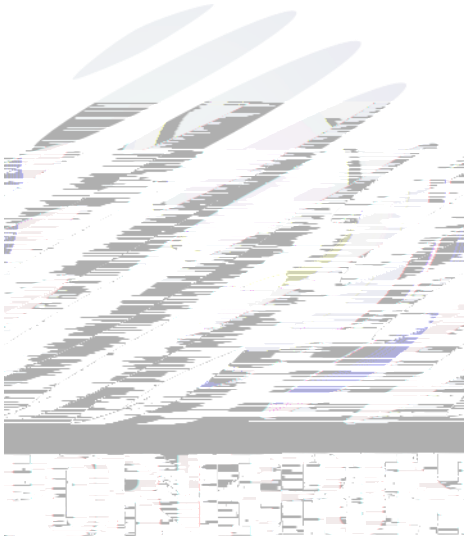


Fig 4-1Misoperation 错误操作

(5) In designing a circuit,the current through each LED must be exceed the absolute maximum rating specified for each LED.In the meanwhile,resistors for protection should be applied,otherwise slight voltage shift will cause big current change,burn out may happen. The driving circuit must be designed to allow forward voltage only when it is ON or OFF.If the reverse voltage is applied to LED, migration can be generated resulting in LED damage. 设计电路时，通过 LED 的电流不能超过规定的最大值。同时，还需使用保护电阻，否则，微小的电压变化将会引起[redacted]变化，不要施加反压，否则会损坏 LED。

(6) Thermal Design is paramount importance because heat generation may result in the Characteristics decline,such as brightness decreased,Color change and so on.Please consider the heat generation of the LEDs when making the system design.LED 容易因为自身的发热和环境的温度改变而改变，温度升高会降低 LED 发光效率，影响发光颜色，所以在设计时应充分考虑散热问题。

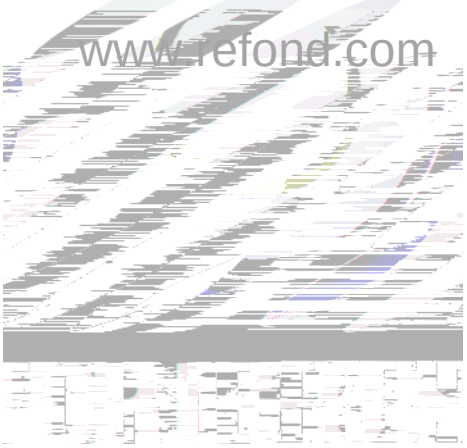
(7) Compared to standard encapsulants, silicone is generally softer, and the surface is more likely to attract dust è requiring special care during processing. In cases where a minimal level of dirt and dust particles cannot be guaranteed, a suitable cleaning solution must be applied to the surface after the soldering of components. Refond suggests using isopropyl alcohol for cleaning. In case other solvents are used, it must be assured that these solvents do not dissolve the package or resin. Ultrasonic cleaning is not recommended. Ultrasonic cleaning may cause



Version History/修订历史

Date日期	Revisor修订者	Version版本	Verifier审核	Remarks备注
2022-05-13	刘明	E0	姚胜坚	

www.refond.com



Declare 申明

This specification is written both in English and in Chinese and the latter is formal.

产品规格书以中英文方式书写，若有冲突以中文版本为准。