

SPECIFICATION

产品规格书

REFOND P/N 产品型号
RF-AL-C3535L2K1**-Q2-L

R&D 研发

Mass Product 

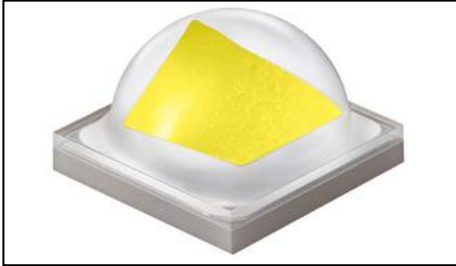
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1. Description 产品介绍

1.1 General

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: 3.45mmX3.45mmX2.20mm.

产品尺寸：3.45mmX3.45mmX2.20mm。

1.2 Features 产品特征

Ceramics Package. 陶瓷封装

viewing angle:120°. 发光角度120°

High reliability, High CRI, High TLCI. 高可靠性，高显指，高TLCI

Suitable for all SMT assembly and solder process. 适用于所有的SMT组装和焊接工艺

Available on tape and reel. 适用于载带及卷轴

RoHS compliant. 满足RoHS要求

1.3 Application 产品应用

Warning lights, Downlights, Shadowless lamp, Television light source, Wash wall lights, Spot lights, Street lights, LCD Backlights.

LCD背光源

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

Hotels, markets, offices, household and other indoor uses. 酒店、商场、办公室、家用及其它室内用途

General use. 其他应用

1.4 Package Dimension 封装尺寸

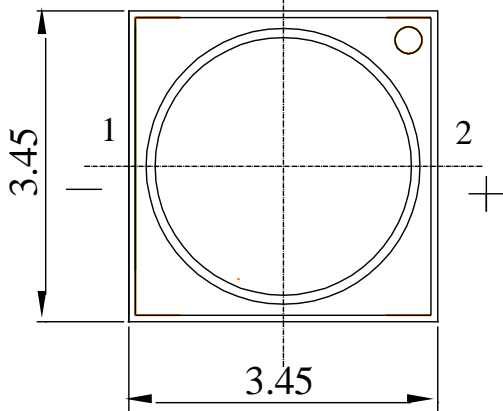


Fig.1-1 Top view 正面视图

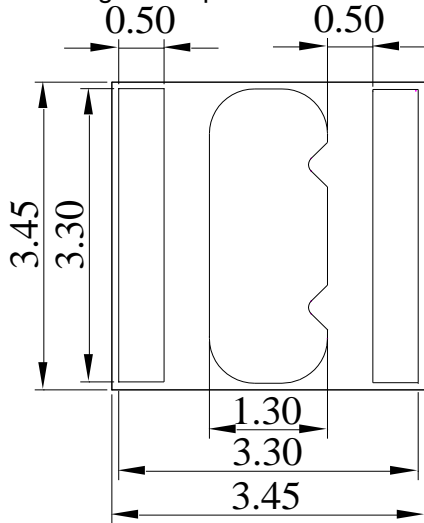


Fig.1-3 Bottom view 背面视图

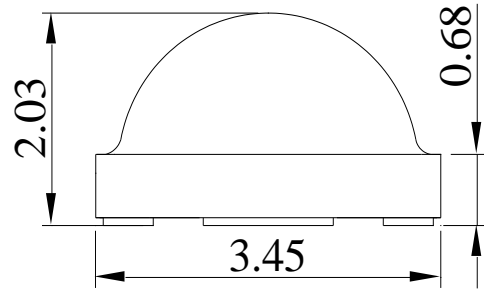


Fig.1-2 Side view 侧面视图

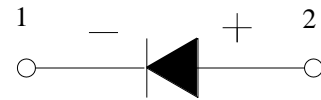


Fig.1-4 Polarity 极性

Fig.1-5 Soldering patterns 推荐焊盘

Notes 备注:

1. All dimensions units are millimeters. 所有尺寸标注单位为毫米
2. All dimensions tolerances are $\pm 0.2\text{mm}$ unless otherwise noted. 除特别标注外, 所有尺寸公差为 ± 0.2 毫米

1.5 Product Parameters 产品参数

Table 1-1 Electrical / Optical Characteristics at Ts=25°C

Item 项目	Symbol 符号	Test Condition 测试条件	Value			Unit 单位
			Min. (最小值)	Typ (典型值)	Max. (最大值)	
Forward Voltage (正向电压)	V _F	I _F =350mA	2.6	---	3.4	V
RF-AL-C3535L2K127-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	100	---	130	lm
		I _F =700mA	180	---	240	lm
RF-AL-C3535L2K130-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	100	---	130	lm
		I _F =700mA	180	---	240	lm
RF-AL-C3535L2K135-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	110	---	140	lm
		I _F =700mA	200	---	260	lm
RF-AL-C3535L2K140-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	110	---	140	lm
		I _F =700mA	200	---	260	lm
RF-AL-C3535L2K145-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	110	---	140	lm
		I _F =700mA	200	---	260	lm
RF-AL-C3535L2K150-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	110	---	140	lm
		I _F =700mA	200	---	260	lm
RF-AL-C3535L2K157-Q2-L Luminous Flux (光通量)	I _v	I _F =350mA	110	---	140	lm
		I _F =700mA	200	---	260	lm

RF-AL-C3535L2K127-Q2-L
Correlated Color Temp 7000K

RF-AL-C3535L2K150-Q2-L Correlated Color Temperature (色温)	CCT	I _F =350mA	---	5000	---	K
RF-AL-C3535L2K157-Q2-L Correlated Color Temperature (色温)	CCT	I _F =350mA	---	5700	---	K
RF-AL-C3535L2K1**-Q2-L Color Rendering Index (显色指数)	Ra	I _F =350mA	95	---	---	---
RF-AL-C3535L2K1**-Q2-L Color Rendering Index (显色指数)	R9	I _F =350mA	90	---	---	---
Television Lighting Consistency Index (TLCI)	TLCI	I _F =350mA	---	99	---	---
Reverse Current (漏电流)	I _R	V _R =5V	---	---	10	uA
Viewing Angle (发光角度)		I _F =350mA	---	120	---	deg
Thermal Resistance. (热阻)	R _{THJ-S}	I _F =700mA T _a =25	---	1.90	---	/W

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

Parameter (参数)	Symbol (符号)	Rating (值)	Units (单位)
Power Dissipation (功耗)	P _D	6800	mW
Forward Current (正向电流)	I _F	2000	mA
Peak Forward Current [REDACTED]	I _{FP}	3000	mA

Notes 备注:

1. 1/10 Duty cycle, 0.1ms pulse width. 1ms,占空比1/10.
2. The above forward voltage measurement allowance tolerance is $\pm 0.1V$. 以上所示电压测量误差 $\pm 0.1V$.
3. The above Dominant Wavelength measurement allowance tolerance is $\pm 1nm$. 以上所示波长测量误差 $\pm 1nm$.
4. The above luminous intensity measurement allowance tolerance $\pm 10\%$. 上述发光强度的测试允许公差为
 $\pm 10\%$.
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. 所有测试都是基于瑞丰现有的
标准测试平台。
7. When the LEDs are in operation the maximum current should be decided after measuring the package
temperature 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)电压与光强分 BIN 范围(IF=350mA)

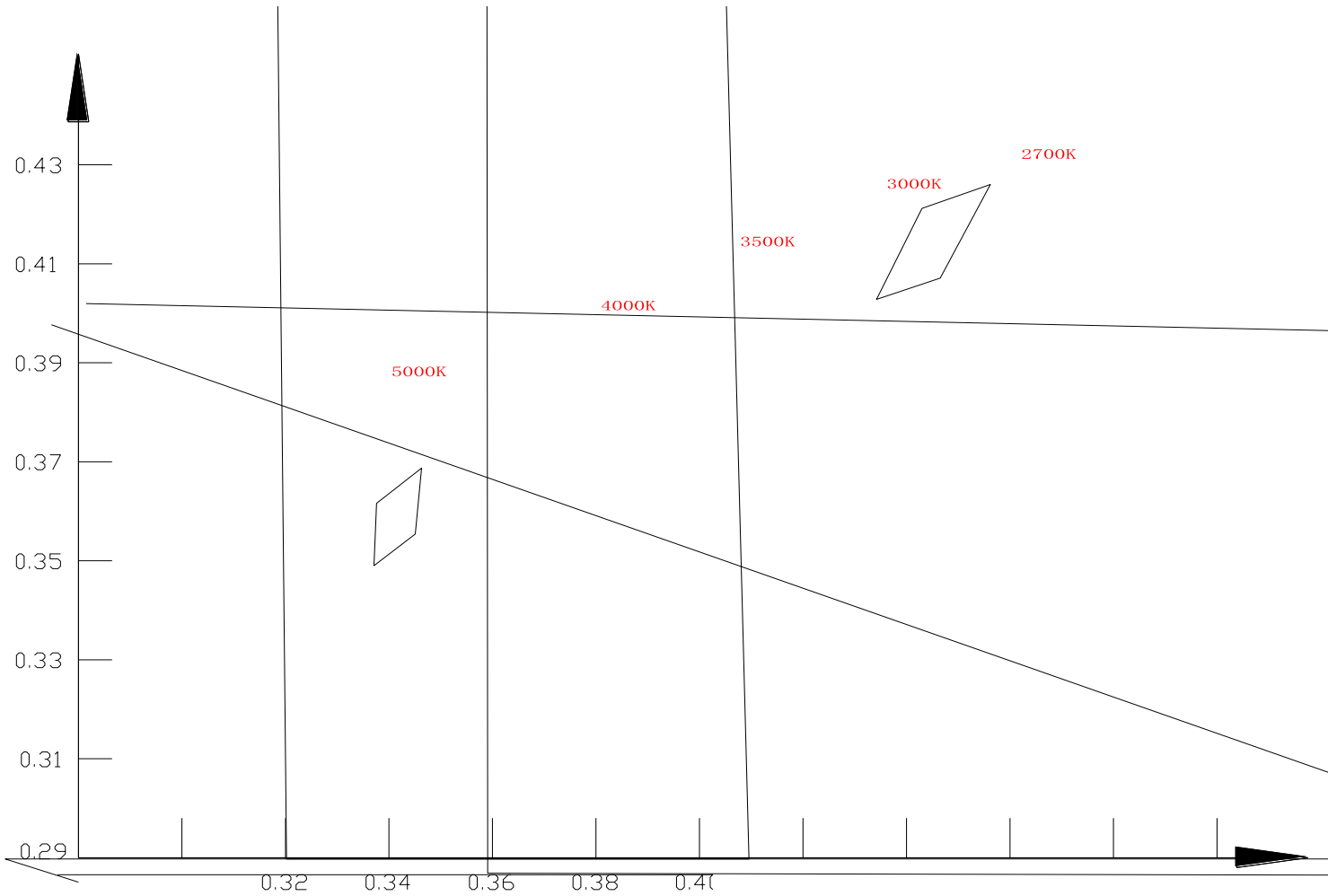


Fig.1-7 Chromaticity Coordinates

Table 1-4 Chromaticity Region & Coordinates

Region	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
27D	0.4483	0.3919	30D	0.4259	0.3853	35D	0.4017	0.3751	40D	0.3783	0.3646
	0.4582	0.4099		0.4342	0.4028		0.4080	0.3916		0.3825	0.3798
	0.4700	0.4126		0.4465	0.4071		0.4221	0.3984		0.3950	0.3875
	0.4593	0.3944		0.4373	0.3893		0.4147	0.3814		0.3898	0.3716
Region	CIE-X	CIE-Y	Region	CIE-X	CIE-Y	Region	CIE-X	CIE-Y	Region	CIE-X	CIE-Y
4500K			5000K			5700K			6500K		
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

Fig.1-7 Forward

Fig 1-9 Ts

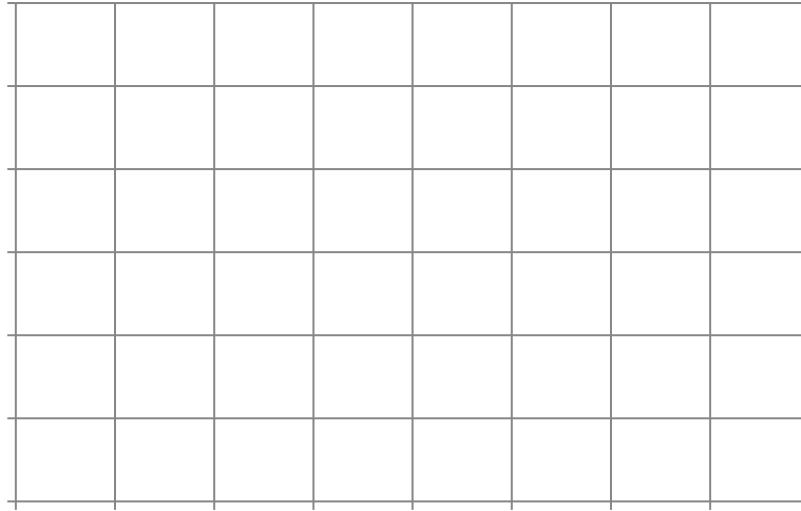


Fig 1-11 Spectrum Distribution 分布特性曲线 光谱

2. Packaging 产品包装

2.1 Packaging Specification 包装规格

Package: 1000pcs/reel. 包装每卷

2.1.1 Carrier Tape Dimension 载带尺寸

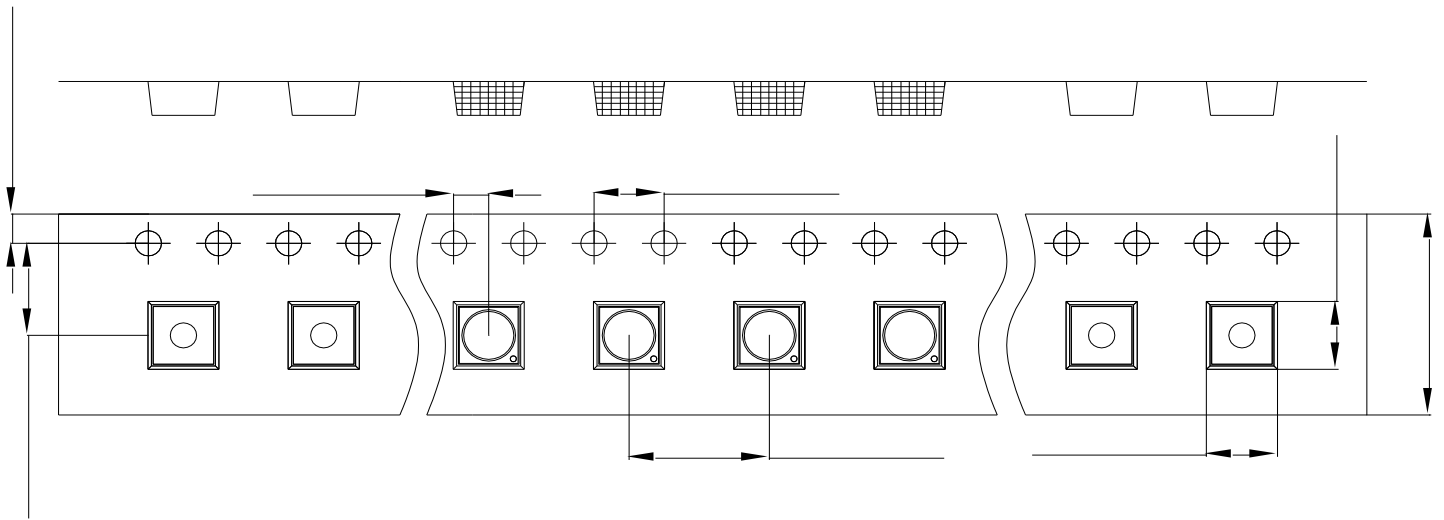


Fig.2-1 Carrier Tape Dimension 载带尺寸

2.1.2 Reel Dimension 卷盘尺寸

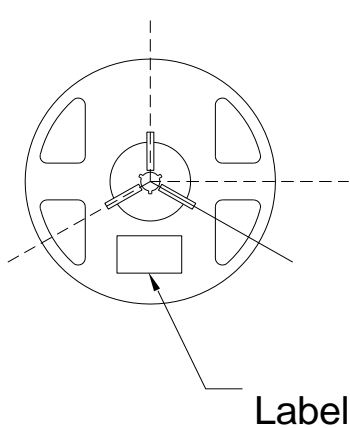


Fig.2-2 Reel 卷盘

Table 2-1 Reel Dimension 卷盘尺寸

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

Notes 备注:

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

2.1.3 Label Form Specification 标签规格

Table 2-2 Label Parameter 标签参数

PART NO.	Part Number 品名
SPEC NO.	Spec Number 规格
LOT NO.	

Fig 2-3 Label Form 标签模板

2.2 Moisture Resistant Packing 防潮包装

Fig.2- Packing specification 包装说明

2.3 Cardboard Box 包装纸箱

Fig.2- Cardboard Box 包装纸箱

2.4 Reliability Test Items And Conditions 测试项目及条件

Table 2-3 Test items and conditions 测试项目及条件

TestItems 项目	Ref.Standard 参考标准	Test Condition 测试条件	Time 时间	Quantity 数量	Ac/Re 接收/拒收
Reflow 回流焊	JESD22-B106	T _{emp} :260°Cmax T=10 sec	2times.	10pcs.	0/1
Thermal Shock 冷热冲击	JEITAED-4701 300307	-40°C 15min 10s 100°C 15min	1000 cycle.	10pcs.	0/1
High Temperature Storage 高温保存	JEITAED-4701 200 201	T _{emp} :100°C	1000hrs.	10pcs.	0/1
Low Temperature Storage 低温保存	JEITA ED-4701 200 202	T _{emp} :-40°C	1000hrs.	10pcs.	0/1
Life Test 常温通电	JESD22-A108	T _A =25°C I _F =350mA	1000hrs.	10pcs.	0/1
High Temperature High Humidity Life Test 高温高湿通电	JESD22-A101	60°C/ 90%RH I _F =350mA	1000hrs.	10pcs.	0/1

3. SMT Reflow Soldering Instructions SMT 回流焊说明

3.1 SMT Reflow Soldering Instructions SMT 回流焊说明

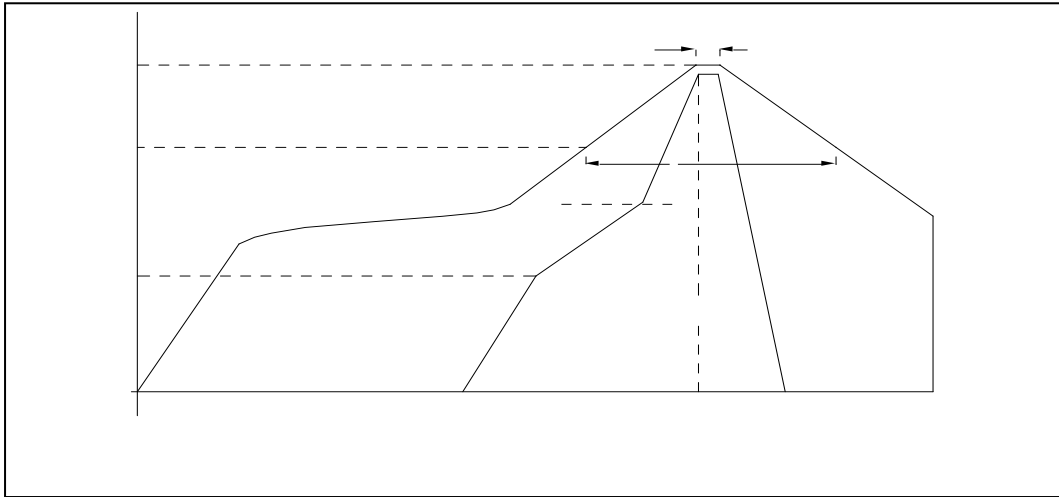


Fig.3-1 SMT Reflow Soldering Instructions SMT 回流焊说明

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

Average temperature rise speed平均升温速度 (Tsmx 至Tp)	Max 3 °C/ s 最高3 °C/秒
Preheating: minimum temperature预热: 最低温度 (Tsm)	150 °C
Preheating: Max temperature预热: 最高温度 (Tsmx)	200 °C
Preheating: Time预热: 时间 (Tsm 至Tsmx)	60 - 120秒 60s-120s
Time limited to maintain high temperature: the temperature限时维持高温: 温度 (Tl)	217 °C
Time limited to maintain high temperature: The Time 限时维持高温: 时间 (tl)	Max 60s 最多60秒
Peak /Classification of temperature:峰值 / 分类温度 (Tp)	260 °C
Time limit classification of peak temperature time限时峰值分类温度: 时间 (tp)	Max 10s 最多10秒

Hold time within 5 °C with the actual peak temperature (TP) 与实际峰值温度 (TP) 相差 5 °C 以内的保持时间	Max 30s 最多30秒
Cooling speed 降温速度	Max 6 °C/ s 最高6 °C/秒
Needed time from 25 °C to Tp 25 °C 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 between the two solderings , LED will be damaged. 回流焊次数不可以超过两次, 两次回流焊的时间间隔如果超过24小时, LED可能由于吸湿而损坏。

(2)Whensoldering , do not put stress on the LEDs during heating.当焊接时, 不要在材料受热时用力压胶体表面。

表面较软，用力按压胶体表面会影响LED可靠性，因此应有预防措施避免在按压器件，当使用吸嘴时，胶体表面的压力应是恰当的。

(2) Components should not be mounted on warped (non coplanar) portion of PCB. After soldering, do not warp the circuit board. LED 灯珠不要焊接在弯曲的 [REDACTED] 上。焊接之后，也不要弯折线路板。

(3) Do not apply mechanical force or excess vibration during the cooling process to normal temperature after soldering. Do not rapidly cool device after soldering. 回流焊之后冷却过程中，不要对材料施加外力，也不要震动，回流焊后，不要采用激剧冷却的方式。

(4) Handle the component along the side surface by using forceps or appropriate tools; do not directly touch 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夹取，不可直接用手或尖锐金属压胶体表面，它可能会损坏内部电路。

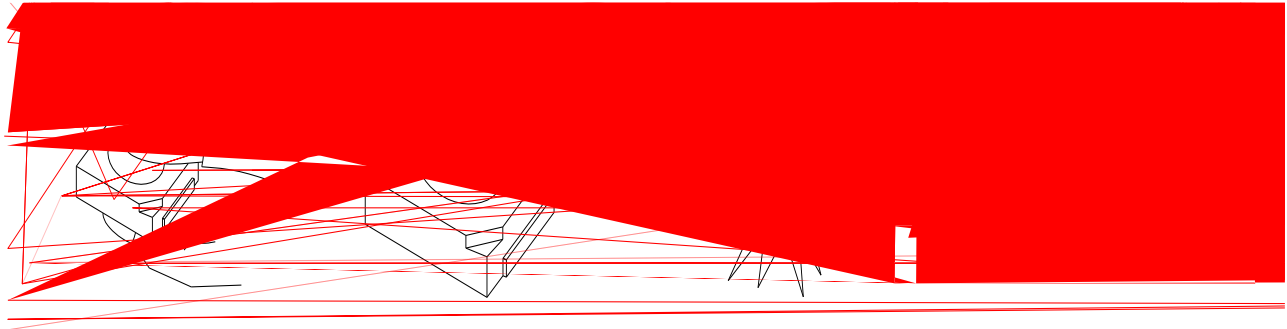


Fig 4-1 Misoperation 错误操作

(5) In designing a circuit, the current through each LED must not 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较大的电流变化，可能导致产品损坏。任何时候出现正向电压的变化，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 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

damage to the LED. 与其他封装胶相比，硅胶通常较软，表面易吸附脏物，应用时应特别注意，当对产品洁净度要求较高时，回流焊以后需要采用恰当清洗方式。我们推荐用异丙醇作清洗剂。如需要用到其他清洗剂，必须保证不会破坏封装体，超声清洗可能会对 LED 带来损害。不推荐这种清洗方式。

Table 4-1 Storage 储存

Conditions 种类		Temperature 温度	Humidity 湿度	Time 时间
Storage	Before Opening Aluminum Bag 拆包前	≤30°C	≤75%	Within 6 Months From Date 6个月内
	After Opening Aluminum Bag 拆包后	≤30°C	≤60%	168hours 168小时
Baking 烘烤		60±5°C	<5%	≥24hours 大于24小时

(8) If the moisture absorbent material silica gel has faded away or the LEDs have exceeded the storage time, baking treatment should be performed after unpacking and based on the following condition 60 5 - and less than 5%RH for above 24 hours. 如果干燥剂或包装失效，或者产品不满足出厂封装储存条件，需拆包后 进行烘烤，烘烤条件：60±5°C，小于 5%RH，大于 24 小时。

If the package is flatulence or damaged, please notify the sales staff to assist. 如果包装胀气或者破损，请通知销售人员协助处理。

(9) Similar to most Solid state devices; LEDs are sensitive to Electro-Static Discharge (ESD) and Electrical Over Stress (EOS). 和其他的固态器件类似，LED 对静电过流击穿非常敏感，需要做好防护。

(10) Other points for attention, please refer to our relevant information. 其它注意事项请参照瑞丰相关资料。





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。