

Product Specification

产品规格承认书

Product Name/产品名称: 灯带 500mm Ceramics Filament
500mm 灯带产品

Document Number/文件编号: PDS-5008mm Filament DC24V
PDS-500mm 灯带 DC24V

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SDCM/色容差 : ≤ 5 Standard: ☒ IEC60081 Other: ☐

Tolerance/机差 : ≤ 5 标准: ☒ IEC60081 其他 ☐
() Tolerance () 机差 :

Product Application/产品应用: LED Filament Bulb

Customer Requirement/客户要求:

Runlite 源磊		Customer 客户	
		Customer code 客户代码:	
Prepared by 制作		Engineering 工程	
Checked by 审核		Quality 品质	
Approved by 批准		Approved by 批准	

Notes 备注 :

This page and the last page are also signed and approved. Please sign and seal all of them and send them back to our company. Thanks. 此页和最后一页也为签核部分, 请全部签核并盖章后回传到我司, 谢谢。



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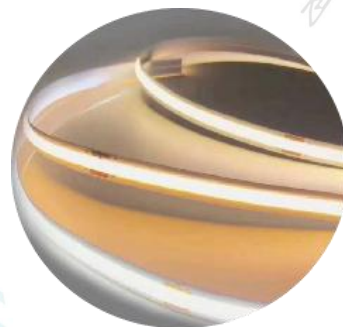
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1. Description 产品介绍

1.1 Product Features 产品特征

- ✧ Flexible PCB Board Package. 柔性 PCB 板封装
- ✧ Viewing Angle up to 140°. 发光角度最大可达 140 度
- ✧ Complied with RoHS directive. 符合 RoHS 指令要求
- ✧ No Spot, No shadow, Soft light. 无光斑, 无暗影, 光线柔和
- ✧ Integrated packaging module, no SMT. 集成封装模块, 免 SMT



1.2 General Description 产品描述

- ✧ The line bar is made of phosphor excited by blue chip. 灯带是由蓝光芯片激发荧光粉而成
- ✧ Product size: 500mm × 8mm × 1.5mm. 产品尺寸: 500mm × 8mm × 1.5mm
- ✧ The line bar LEDs are available in 5-step MacAdam ellipse. 灯带可用于 5 阶椭圆

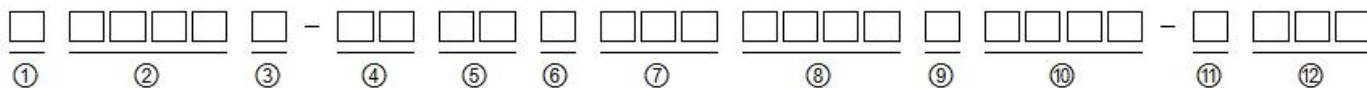
1.3 product Application 产品应用

- ✧ Decorative lighting. 装饰照明
- ✧ General lighting. 一般照明
- ✧ Advertising signs. 广告照明

LM-80



1.4 Product Nomenclature 产品型号释义



- | | | | |
|-------------------------------|-----------------------------------|-------------------------------|-----------------------------|
| ①: Product Series
产品系列 | ④: Die Count In Series
芯片串联数 | ⑦: CCT or Wavelength
色温或波长 | ⑩: VF Bin
电压档位 |
| ②: Product Size
产品尺寸 | ⑤: Die Count In Parallel
芯片并联数 | ⑧: Flux Bin
亮度范围 | ⑪: Dispense Process
点胶工艺 |
| ③: Substrate Material
基板材质 | ⑥: Emitted Color
发光颜色 | ⑨: Minimum CRI
最小显色指数 | ⑫: Serial number
流水号 |

1.5 Package Dimension 封装尺寸

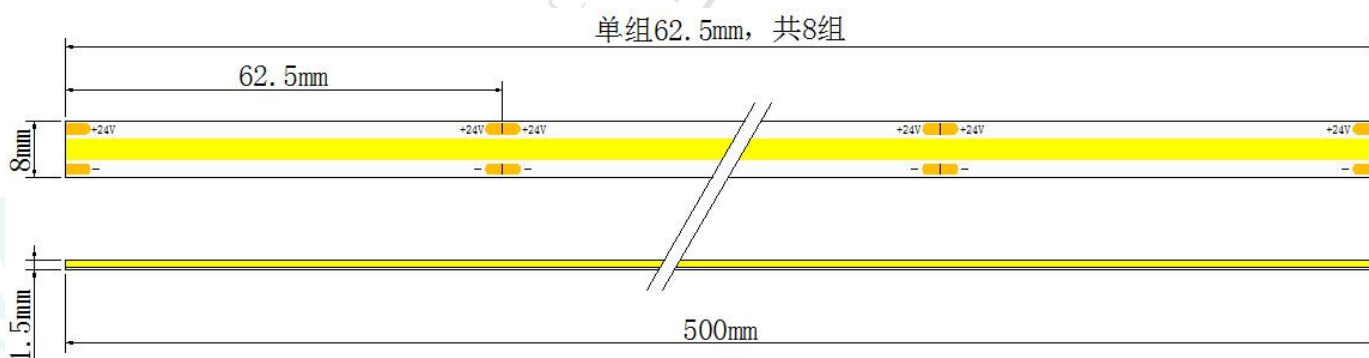


Fig.1-1 Product view 产品示意

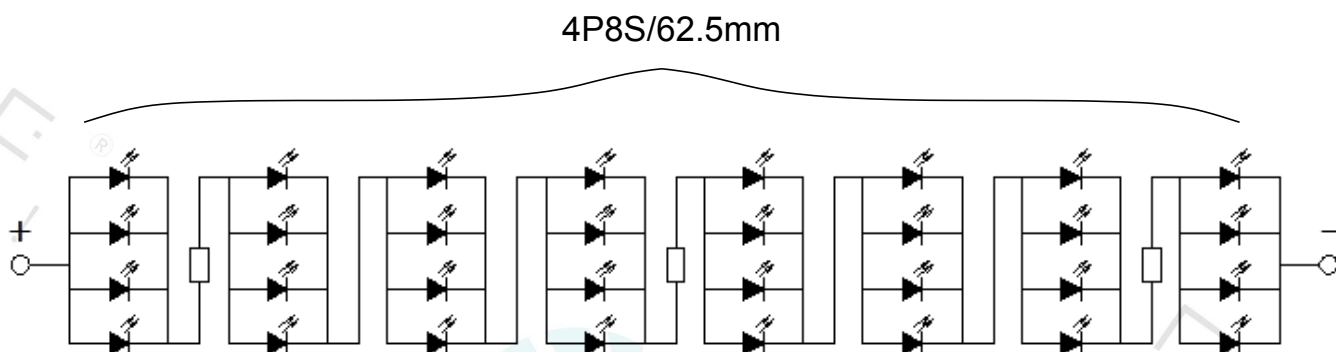


Fig.1-2 Polarity 极性

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 0.5mm unless otherwise noted. 除特别标注外，所有尺寸公差为±0.5 毫米

1.6 Product Parameters 产品参数

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

Parameter 参数	Symbol 符号	Rating 值	Units 单位
Power Dissipation 功耗	PD	8.0	W/m
Forward Current 正向电流	IF	320	mA
Peak Forward Current 峰值电流	IFP	416	mA
Electrostatic Discharge(HBM)抗静电	ESD	2000	V
Operating Temperature 操作温度	Topr	-40 ~ +85	°C
Storage Temperature 储存温度	Tstg	-40 ~ +85	°C
Junction Temperature 结温	TJ	125	°C
Reverse Voltage 反向电压	VR	40	V

Table 1-2 Electrical / Optical Characteristics at Tc=25°C 电性与光学特性

Item 项目	Symbol 符号	Test Condition 测试条件	Value 值			Unit 单位
			Min.	Typ.	Max.	
Forward Voltage 正向电压	IF	DC 24V	---	320	---	V
Luminous Flux 光通量范围	Φ	DC24 V	500	---	750	lm
Reverse Current 反向电流	IR	VR=40V	---	---	320	uA
Viewing Angle 发光角度	2θ1/2	IF=320mA	---	140	---	deg
Color Rendering Index 显色指数	CRI	IF=320mA	80	---	---	/

Notes备注：

- 1/10 Duty cycle, pulse width 10ms.脉宽 10ms , 周期 1/10.
- The above color rendering Index measurement allowance tolerance is ±2.以上所示显指测量误差±2.
- The above forward voltage measurement allowance tolerance is ±0.3V.以上所示电压测量误差±0.3V
- The above color coordinates measurement allowance tolerance is ±0.005.以上所示色坐标测量误差±0.005
- The above luminous intensity measurement allowance tolerance ±10%.以上所示亮度测量误差±10%

1.7 Product Bins (Tc=25°C ,DC 24V) 产品分区

Mass Production List/量产清单

Product /产品型号	CCT(K) 色温	Ra 显示指数	Φ(lm) 流明	Φ(lm) 流明	Condition
		Min.	Min.	Max.	
F5008F-0832W22AN0N1FK1K7-E000-IS	2200	80	500	600	IF=320mA
F5008F-0832W27AN1N2FK1K7-E000-IS	2700	80	550	650	IF=320mA
F5008F-0832W27IN1N2FK1K7-E000-IS	2700	80	550	650	IF=320mA
F5008F-0832W30AN2N3FK1K7-E000-IS	3000	80	600	700	IF=320mA
F5008F-0832W30IN2N3FK1K7-E000-IS	3000	80	600	700	IF=320mA
F5008F-0832W40AN2N3FK1K7-E000-IS	4000	80	650	750	IF=320mA
F5008F-0832W40IN2N3FK1K7-E000-IS	4000	80	650	750	IF=320mA
F5008F-0832W65AN2N3FK1K7-E000-IS	6500	80	650	750	IF=320mA
F5008F-0832W65IN2N3FK1K7-E000-IS	6500	80	650	750	IF=320mA

Table 1-5 Product Bin -Color Rendering Index 显色指数

CRI Code 显色指数代码	Bin Range Of CRI 显色指数范围
D	Ra(Min.) 70 显色指数 (最小值) 70
F	Ra(Min.) 80 显色指数 (最小值) 80
G	Ra(Min.) 85 显色指数 (最小值) 85
H	Ra(Min.) 90 显色指数 (最小值) 90
I	Ra(Min.) 95 显色指数 (最小值) 95

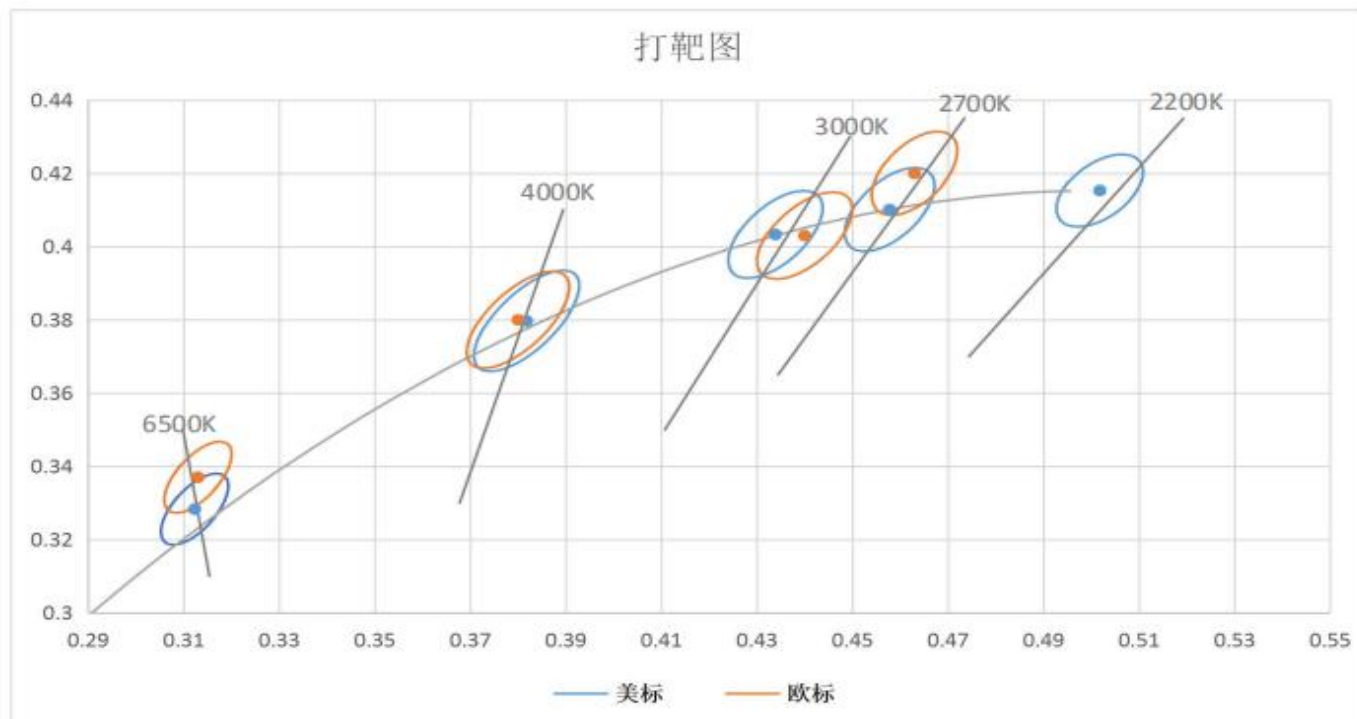
Voltage Class / 电压等级

Group	Min.	Max.	Unit	Condition
K1	22.5	23	V	If=320mA
K2	23	23.5		
K3	23.5	24		
K4	24	24.5		
K5	24.5	25		
K6	25	25.5		
K7	25.5	26		

Notes备注：

1. The above color rendering Index measurement allowance tolerance is ± 2 . 以上所示显指测量误差 ± 2 .
2. The above forward voltage measurement allowance tolerance is $\pm 0.3V$. 以上所示电压测量误差 $\pm 0.3V$
3. The above color coordinates measurement allowance tolerance is ± 0.005 . 以上所示色坐标测量误差 ± 0.005
4. The above luminous intensity measurement allowance tolerance $\pm 10\%$. 以上所示亮度测量误差 $\pm 10\%$

1.8. The Chromaticity Regions Plotted on the 1931CIE Curve 色度图



Runlite 白光分级打靶图基于色容差标准坐标, 色容差小于等于 6.

Runlite binning is according to color tolerance standard coordinates, $SDCM \leq 6$.

NO.	Product/型号	Specification/规格				标准
		CCT	Bin Code	CIE-X	CIE-Y	
1	F5008F-0832W22AN0N1FK1K7-E000-IS	2200	22A	0.5018	0.4153	ANSI
2	F5008F-0832W27AN1N2FK1K7-E000-IS	2700	27A	0.4578	0.4101	ANSI
3	F5008F-0832W27IN1N2FK1K7-E000-IS	2700	27I	0.4630	0.4200	IEC
4	F5008F-0832W30AN2N3FK1K7-E000-IS	3000	30A	0.4339	0.4033	ANSI
5	F5008F-0832W30IN2N3FK1K7-E000-IS	3000	30I	0.4400	0.4030	IEC
6	F5008F-0832W40AN2N3FK1K7-E000-IS	4000	40A	0.3818	0.3797	ANSI
7	F5008F-0832W40IN2N3FK1K7-E000-IS	4000	40I	0.3800	0.3800	IEC
8	F5008F-0832W65AN2N3FK1K7-E000-IS	6500	65A	0.3123	0.3283	ANSI
9	F5008F-0832W65IN2N3FK1K7-E000-IS	6500	65I	0.3130	0.3370	IEC



1.9. Typical optical characteristics curves 典型光学特性曲线

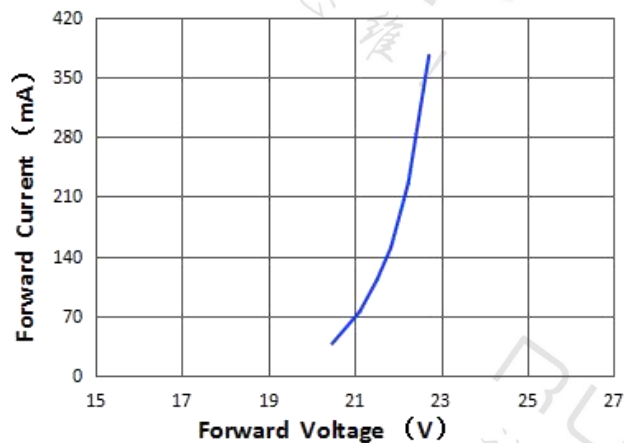


Fig 1-4 Forward Voltage Vs. Forward Current.

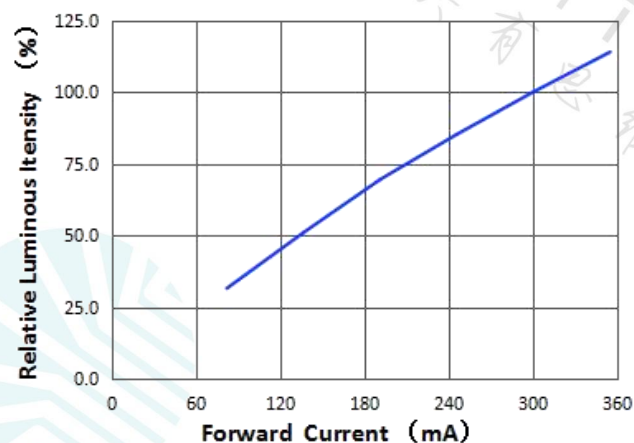


Fig 1-5 Forward Current Vs. Relative Intensity.

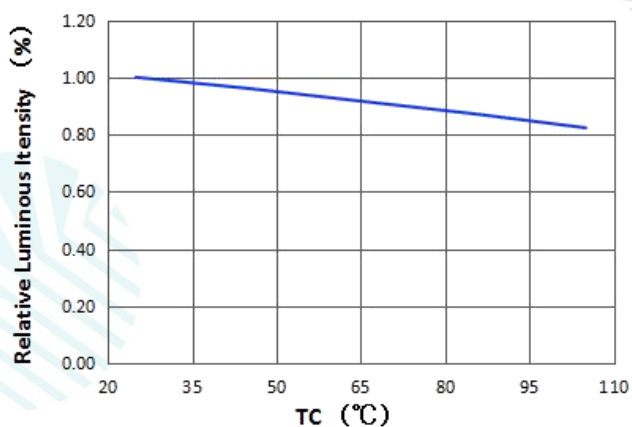


Fig 1-6 Case Temperature Vs. Relative Intensity.

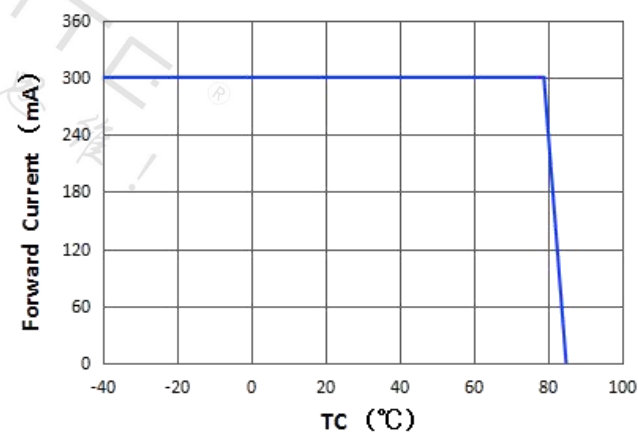


Fig 1-7 Case Temperature Vs. Forward Current.

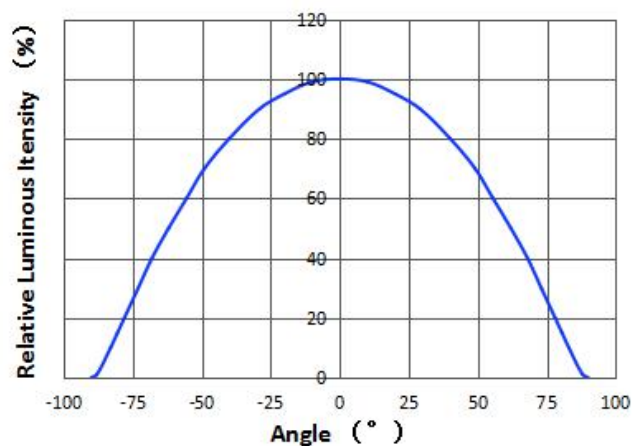


Fig 1-8 Radiation diagram.

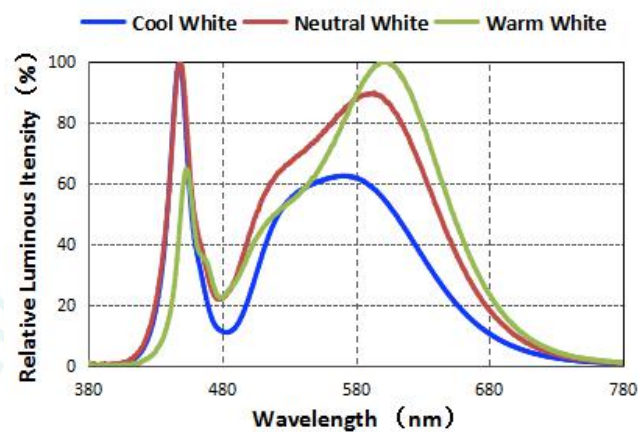


Fig 1-9 Wavelength Vs. Relative Intensity.

2. Packaging 产品包装

2.1 Packaging Specification 包装规格

2.1.1 Label Form Specification 标签规格

 **深圳市源磊科技有限公司**
Shenzhen Runlite Technology Co., Ltd

产品型号 Part No.		尺寸 Size	
外形描述 Appearance		串数 Chip series	
批号 Lot No.		BIN号 CIE Range	
客户订单号 Customer Order		发光角度 Light angle	
客户料号 Client P/N		驱动电流 Forward Current	
数量 Q. TY (pcs)		电压 Voltage	
显色指数 Ra		 	
色温/波长 Color Temp			
光通量/亮度 Luminous Flux/IV			

Fig 2-1 Lable 标签样板

2.1.2. Package box Dimension 包装盒规格尺寸

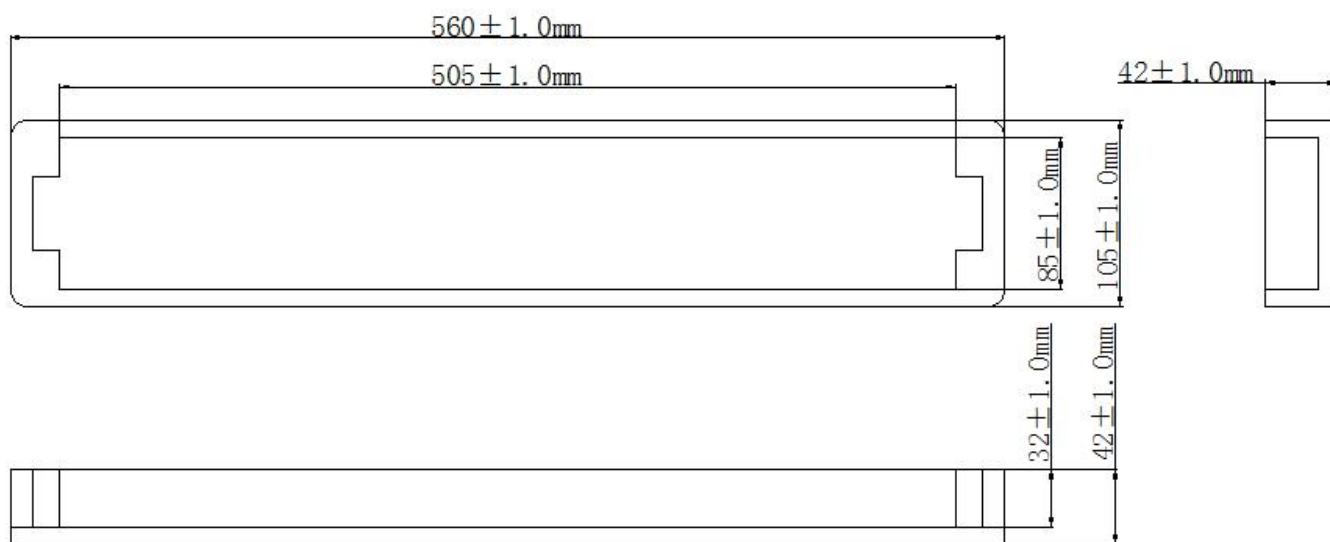


Fig 2-2 Package box Dimension 包装盒尺寸

Notes 备注：

所有尺寸标注单位为毫米



1. All dimensions units are millimeters.

2. All dimensions tolerances are 0.5mm unless otherwise noted. 除特别标注外，所有尺寸公差为 ± 0.5 毫米

2.2 Moisture Resistant Packing 防潮包装

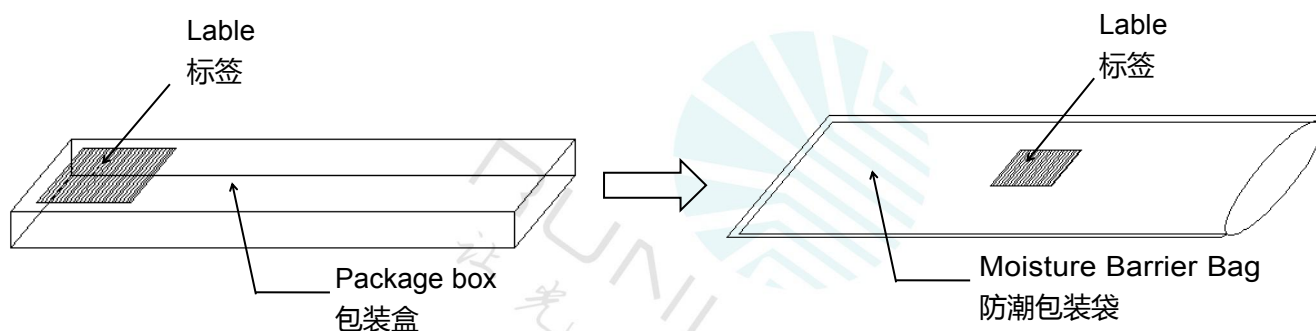


Fig 2-3 Moisture Resistant Packing 防潮包装

2.3 Cardboard Box 包装纸箱

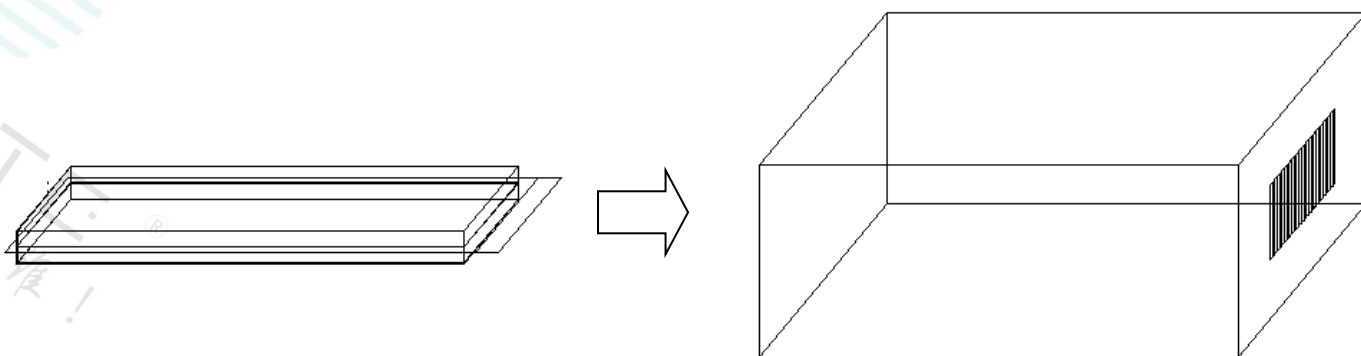


Fig 2-4 Cardboard Box 包装纸箱

Notes 备注：

1. Package:200pcs/bag. 包装每袋 200Pcs

2. Package:2000pcs/box. 包装每箱 2000Pcs

2.4. Reliability Test Items And Conditions 信赖性测试项目及条件

Table 2-1 Reliability Test Items And Conditions 信赖性测试与条件

Test Items 测试项目	Ref.Standard 参考标准	Test Condition 测试条件	Time 时间	Quantity 数量	Ac/Re 接受/拒收
Thermal Shock 冷热冲击	JESD22-A106	-40℃ 30min ↑↓ 5sec 100℃ 30min	500Cycle	10pcs.	0/1
High Temperature Storage 高温保存	JESD22-A103	Temp:100℃	1000Hrs.	5pcs.	0/1
Low Temperature Storage 低温保存	JESD22-A119	Temp:-40℃	1000Hrs.	5pcs.	0/1
Life Test 常温老化	JESD22-A108	Ta=25℃ I _F =320mA	1000Hrs.	5pcs.	0/1
Off/On Test 开/关测试		on 10sec ↑↓ off 10sec	15000Times.	5pcs.	0/1
High Temperature High Humidity Life Test 高温高湿老化	JESD22-A101	60℃/90%RH Tc=85℃ I _F =320mA	1000Hrs.	5pcs.	0/1

2.5. Criteria For Judging Damage 失效判定标准

Table 2-2 Criteria For Judging Damage 失效判定标准

Test Items 测试项目	Symbol 符号	Test Condition 测试条件	Criteria For Judgement 判定标准	
			Min.最小	Max.最大
Forward Voltage 正向电压	V _F	I _F =320mA	--	U.S.L*)x1.1
Luminous Flux 光通量	Φ	I _F =320mA	L.S.L*)x0.9	--

Notes备注：

1. U.S.L: Upper standard level 规格上限 L.S.L: Lower standard level 规格下限
2. The Reliability tests are based on existing test platform. 信赖性测试基于现有的测试平台
3. The technical information shown in the data sheets are limited to the typical characteristics and circuit of the referenced products. It does not constitute the warranting of industrial property nor the granting of any license. 以上技术数据仅为产品的典型值，只作为参考，不作为任何应用条件及应用方式的保证

3. Instructions 产品使用说明

Thanks for using the series of flexible lamp belt products of Shenzhen Runlite Technology Co., Ltd., Here are corresponding instructions to enhance your understanding of the characteristics of our products. as far as possible to reduce or avoid unnecessary damage to the product caused by human factors, so that it can better serve to your production. Please note that even if it's flexible lamp belt with same specifications ,reliability is related to overall system design level, mode of operation and conditions of use in application field. This Instructions can't cover all questions that customer may encounter in the use of products.we sincerely apologize for any inconvenience caused. 感谢您使用深圳市源磊科技有限公司的系列柔性灯带产品，为增进您对我公司产品特性的了解，也为方便您快速掌握产品的基本操作。为尽量减少或避免因人为等因素造成不必要的产品损坏，使其能够更好的为您的生产服务，特针对使用过程中的一些规范使用作相应说明，同时即使是同一规格灯带，在实际应用领域其可靠性与整体系统设计水平、作业方式、使用条件均相关。本使用说明不可能涵盖客户使用过程中可能碰到的所有问题，由此带来的不便，敬请谅解！

1. Declaring 产品申明

Pretest is necessary to confirm that it's suitable for the purpose of use before using line bar. Product description has no guaranty for not contravening any patents. Please check the relevant regulations of each country or region in advance.The legal responsibility for the import and export of the flexible lamp belt products shall be borne by the customer. The product may be subject to change or performance improvement without notice. We require to sign a formal datasheet before mass production. 使用本产品之前，请贵司务必预先进行测试，以便确认是否适合使用目的。产品介绍的用途并不保证不抵触任何专利，有关柔性灯带产品的进出口法律责任应由客户担负，请预先查清每一国家或地区的有关规定。产品可能会因性能提高或规格参数改变等缘故，恕不经预告更改。我们要求量产前签订正式的产品规格书。

2. Material confirmation 物料确认

Products with same parameters (such as Bin color coordinate, V_F and luminous flux, etc) are advised to be used together. The applicability should be evaluated first if flexible lamp belts with different specs is applied to the same object. (Different VF or CIE BIN used together may cause brightness or color difference). 投料的灯带 BIN 等级是否吻合，如电压、颜色和亮度等是否属同一等级，同一等级的应在一起使用。若不是同一等级的灯带应用在同一物件上，应先评估其适用性（若不同电压或颜

色 Bin 投在一起可能会发生亮度上或颜色上的差异)，是否满足使用目的。

3.Package and Storage 包装储存

3.1. In order to prevent moisture penetration of product before unpacking, it is recommended that the product be stored in a drying cabinet with desiccant. The storage environment is 5-30°C and the humidity is $\leq 50\%$. Unpack the package to confirm whether the desiccant turns red. (Red means failure). 开包装前避免湿气进入产品内部，建议产品存放在内置干燥剂的干燥柜中，储存环境为温度 5-30°C，湿度不超过 50%，拆开包装确认干燥剂是否变为红色（红色为失效标示）。

3.2 .Precautions after unpacking 开包装后的预防措施

3.2.1 please complete soldering within 24 hours after product unsealing to avoid pad oxidation which might lead to soldering failure or virtual soldering. Avoid the silicone cracking caused by product moisture during soldering, which might result in color drift. 产品拆封后请在 24 内完成焊接，避免焊盘氧化，而出现焊不上或虚焊现象；避免产品受潮，而造成在焊接过程中出现胶裂现象，导致了颜色漂移。

3.2.2. Residual materials is required to be sealed or placed in an environment of 5 ~ 40 °C and humidity $\leq 30\%$. 余料请密封或放置在 5 ~ 40°C、湿度不超过 30%的环境中。

3.2.3. Don't store line bar in a place with moisture, chemicals or gas to avoid chemical reaction in product's related parts and affecting performance. 不可存放在潮湿或有化学物品或气体的地方，以免产品相关部位发生化学反应，影响产品性能。

3.2.4. Led package should be dehumidified at $100 \pm 5^\circ \text{C}$ / 12 hours if it's opened ≥ 1 day or humidity indicator card turns blue into pink and exceeds 30% safe level. 如果开包装超过 1 天或湿度指示卡变色（由蓝色变为粉红色）并超出 30%安全值，LED 应进行 $100 \pm 5^\circ \text{C}$ /12 小时的干燥除湿处理。

4.Heat Sinking 散热

4.1. End- product should consider heat dissipation design. The temperature rise coefficient of the line bar power is determined by arrangement density, thermal resistance, and ambient temperature of its circuit board. The heat generated by the line bar can not exceed its maximum limit (please refer to the line bar T_j). Like other electronic components, it is necessary to consider avoiding thermoelement design. 灯带应用终端产品应考虑散热设计，灯带功率温升系数由灯带在线路板中的排布密度、热阻、和环境温度来决定。设计时灯带产生的热量不超过其最大极限值（参考灯带 T_j 结温），和其他电子元器件一样，有必要考虑避开发热元件的设计。



4.2. Please pay attention to that line bar's working current should be determined by its maximum working T_j when light up. High temperature control is highly noted during each process of line bar . 灯带发光工作时，请考虑其工作电流应该由其最大工作结温决定，灯带的各工序需特别注意高温的把控，必须验证无影响后使用。

5. Soldering instructions 焊接说明

5.1. When soldered by hand, the temperature of the iron must be under 300 degrees, and it can only be soldered once which lasts no more than 3 seconds. 当手工焊接时，烙铁温度必须小于 300°C，时间不超过 3 秒，且只可焊接一次。

5.2. When soldering, do not press the silicone surface of the light strip, and avoid iron contacting with silicone surface to prevent burn. 当焊接时，勿压灯带硅胶体表面，避免烙铁接触胶体表面，以免烫坏。

5.3. Rework is not suitable to the light strip that completed soldering. 完成焊接的灯带不宜进行返修作业。

6. ESD Protection 静电防护：

Line bars are static-sensitive electronic components. Various measures should be taken to avoid static electricity, such as wearing an electrostatic wristband or anti-static gloves during use. All device and equipment should be properly grounded. It is recommended to prevent static electricity from the equipment during line bar soldering and to test line bar assembled whether it is damaged by static electricity. Method of confirmation for filament with white or blue light for reference: 20 μ A or 2.5V/single chip cannot be lighted up. Another case is its brightness is significantly darker than other filaments under the same conditions. 灯带是静电敏感电子元器件，应采取各种措施避免静电，诸如在使用过程中戴静电手环或防静电手套。所有的装置、设备仪器应适当的接地。建议在贴装灯带时预防机器设备的静电，建议对组装后的灯带产品进行测试检查灯丝是否受到静电的破坏，白光或蓝光灯丝确认方法为（参考）：20 μ A 或 2.5V/单颗芯片不能点亮或同等条件下亮度较其他灯丝明显偏暗为缺陷品。

7. Other caution 其他注意事项

7.1. The white line bar is a combination of a blue chip and a special phosphor. Therefore, the color of the filament will change following the change of the operating current. Please consider whether this factor can achieve the desired effect before applying. 白光灯带是由蓝光芯片和特种荧光粉组

合。因此灯带的发光颜色会随着工作电流的变化而变化，使用前应考虑此因素是否能达到预期效果。

7.2. In order to ensure the photoelectric performance of the line bar, please keep the lighting surface of line bar clean to. No fingerprints or other foreign objects. 为保证灯带光电性能，请保持灯带发光区域表面清洁，避免手指印或其它异物覆盖。



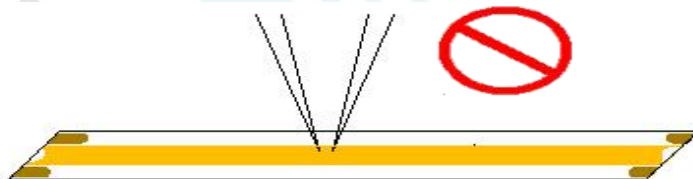
7.3. It is not recommended to cover other silicone materials that are not compatible with silicone on line bar's surface. 不建议在灯带的硅胶表面覆盖其他与之不兼容的脂类物质。

7.4. In view of different assembly methods of manufacturers, please verify assembly process is no problem before assembling. 鉴于目前各厂商组装方式不一致，请验证自己组装工艺无问题后组装。

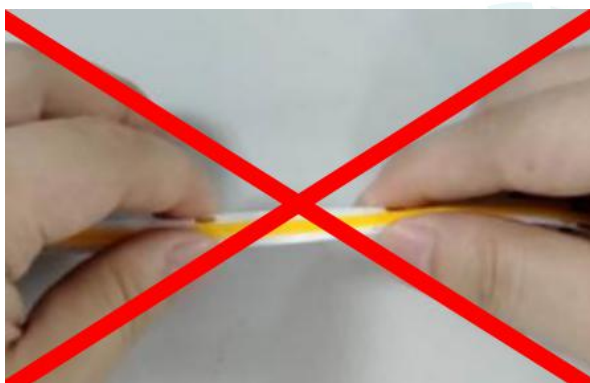
7.5. Please avoid interference between the line bar and other components during assembly. 请留意避免灯带在组装时与其他组件发生干涉现象。

7.6. Please design a circuit that prevents voltage or excessive current from being applied to this product instantaneously during switch process. 在设计电路时应预防开关过程中产生电压或过大电流对灯带的瞬间冲击。

7.7. Sharp tools such as tweezers is not allowed to touch the silica gel area during use. 使用过程中避免镊子等锋利工具触碰硅胶胶体部分。



7.8. Twisting the products in short-distance are strictly prohibited. The minimum distortion distance must be guaranteed to be greater than the single set of shear distance (62.5mm) during using. The maximum twist angle of single light strip (0.5 m) is 720°. 严禁短距离扭曲产品，使用时保证最小扭曲距离大于单组剪切距离（62.5mm），单条灯带（0.5 米）最大扭曲角度 720°



7.9. Bend diameter at any location must be greater than 1cm. 任意位置折弯直径需大于 1cm



源磊 Runlite			客户 Customer		
批准 Approved	审核 Checked	制作 Prepared	批准 Approved	品质 Quality	工程 Engineering
OK ☐ NG ☐			Date:		