RUNLITE
源磊科技

Product Specification
产品规格承认书

Product Name/产品名称: 178mm Flexible Filament
178mm 柔性灯丝

Document Number/文件编号: PDS-178mm Filament 134-142V 20mA
PDS-178mm 灯丝 134-142V 20mA

Version Number/版本号: B5

Page Number/页数: 12 pages/共 12 页:

SDCM/色容差 : ≤6 Standard:() Other::
≤6 标准:() 其他

Tolerance/机差 : ( )Tolerance
( ) 机差 :

Product Application/产品应用: LED Filament Bulb
LED 灯丝球泡

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	

注：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。

电话(Tel)：+86-755-29785901(总机)
传真(Fax)：+86-755-29785685
Http://www.runlite.cn
邮编(Zip)：518100
地址：深圳市宝安区松岗潭头西部工业园A十五栋
Add：Building 15, TanTou West Industrial Zone,SongGang Street,BaoAn District,ShenZhen City,China.

Flexible Filament 178mm 134-142V 20mA Series Datasheet

柔性灯丝 178mm 134-142V 20mA 系列规格书

● Features/ 特性

High efficacy	高光效
High reliability performance	高可靠性
Lighting angle 360°	发光角度 360°
High voltage drive	高电压驱动
Complied with RoHS directive	符合 RoHS 指令要求

● Product Definition Code/ 产品编码解说

F 1785 F - 52 3 W XXX XXXX X XXXX - D 0 00

F=Product category/产品类别

1785= Product dimension/产品尺寸

F= Substrate material/基板材质

52= Chips in series/芯片串联数目

3= Chips in parallel/芯片并联数目

W= Light color/发光颜色

XXX= CCT /色温

XXXX= Brightness/亮度范围

X= Ra/显色指数

XXXX= Voltage range/电压范围

D0= Product type /产品类型

00=Series No. /产品流水码

Category/产品分类: F1785F-523 series

● Dimension/封装尺寸

156 chip series

1. All dimension is in millimeter.
2. Tolerance is ±0.1mm unless otherwise noted
3. Cathode is marked as "○" in PIN connection
4. PIN connection is made by metal. Please evaluate the weld-ability.
5. Filament bulb cannot more than 2 parallel connections.
6. Filament bulb production is in need of cooling gas for heat sinking.

1.图中所有尺寸均以毫米为单位。
2.若无特别标准，图中尺寸公差为±0.1mm。
3.PIN 脚有打孔“○”的一边为负极。
4.PIN 脚为金属，请注意评估可焊接性。
5.并联数量不可超过 2 PCS。
6.本灯丝产品制造成品为球泡，需在球泡内充入散热气体。

● Applications/应用 ：

General lighting / 普通照明

Decorative lighting / 装饰照明

● Absolute Maximum Ratings at Ts=25℃ / 极限参数（温度=25℃）

Item 项目	Symbol 符号	Absolute Maximum Rating 极限参数	Unit 单位
Forward Current 正向电流	I_F	20	mA
Power Dissipation 功耗	P_d	3000	mW
Operating Temperature 操作温度	Topr	-30~55	℃
Storage Temperature 储存温度	Tstg	-40~85	℃
Solder Temperature 过锡温度	Ts	Hand Soldering : 350℃ for 3 sec.	
Anti-static ability 抗静电	ESD	2000V	

Notes: IFP conditions with pulse width ≤10ms and duty cycle ≤10%

注： IFP 脉冲条件为脉冲宽度≤10 ms 和周期≤10%

● 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.	
F1785F-523W22AM2M3FX9Y6-D000-IS	2200	80	350	370	I_F=20mA
F1785F-523W27AM3M4FX9Y6-D000-IS	2700	80	370	390	I_F=20mA
F1785F-523W27IM3M4FX9Y6-D000-IS	2700	80	370	390	I_F=20mA
F1785F-523W30AM4M4FX9Y6-D000-IS	3000	80	380	400	I_F=20mA
F1785F-523W30IM4M4FX9Y6-D000-IS	3000	80	380	400	I_F=20mA
F1785F-523W40AM4N1FX9Y6-D000-IS	4000	80	390	410	I_F=20mA
F1785F-523W40IM4N1FX9Y6-D000-IS	4000	80	390	410	I_F=20mA
F1785F-523W65AM4N1FX9Y6-D000-IS	6500	80	400	420	I_F=20mA
F1785F-523W65IM4N1FX9Y6-D000-IS	6500	80	400	420	I_F=20mA

● Ra at 25℃/ 显色指数（温度=25℃）

Symbol 符号	Description 描叙
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

注：

1.Luminous flux (lm) ±10% **1.光通量（lm）±10%**

2.Forward Voltage (V_F) ±1V **2.正向电压(V_F) ±1V**

3.Wavelength (X,Y) ±0.005 **3.色坐标（X,Y）±0.005**

4.Color Rendering Index (Ra)±2 **4.显色指数（Ra）±2**

5.Viewing angle（$2\theta_{1/2}$）±15 **5. 全视角（$2\theta_{1/2}$）±15**

● Typical Optical-Electrical Characteristics Curves /典型光电特性曲线

Environment Parameter 环境参数：Temperature=25℃温度， Humidity=45%湿度

Forward Current VS Forward Voltage
电压与电流关系曲线图

Relative Flux VS Forward Current
亮度与电流关系曲线图

Relative Flux VS Ambient Temperature
亮度与温度关系曲线图

Forward Current VS Ambient Temperature
电流与温度关系曲线图

Typical Spectral Distribution
发光角度图

Relative Spectral Distribution
光谱特性图

● Chromaticity Coordinates Bin Chart / 分光打靶图 ：

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≤6.

NO.	Product/型号	Specification/规格				标准
		CCT	Bin Code	CIE-X	CIE-Y	
1	F1785F-523W22AM2M3FX9Y6-D000-IS	2200	22A	0.5018	0.4153	ANSI
2	F1785F-523W27AM3M4FX9Y6-D000-IS	2700	27A	0.4578	0.4101	ANSI
3	F1785F-523W27IM3M4FX9Y6-D000-IS	2700	27I	0.4630	0.4200	IEC
4	F1785F-523W30AM4M4FX9Y6-D000-IS	3000	30A	0.4339	0.4033	ANSI
5	F1785F-523W30IM4M4FX9Y6-D000-IS	3000	30I	0.4400	0.4030	IEC
6	F1785F-523W40AM4N1FX9Y6-D000-IS	4000	40A	0.3818	0.3797	ANSI
7	F1785F-523W40IM4N1FX9Y6-D000-IS	4000	40I	0.3800	0.3800	IEC
8	F1785F-523W65AM4N1FX9Y6-D000-IS	6500	65A	0.3123	0.3283	ANSI
9	F1785F-523W65IM4N1FX9Y6-D000-IS	6500	65I	0.3130	0.3370	IEC

● Test Items and Conditions of Reliability / 信赖性测试项目及标准

Test Item 测试项目	Test Conditions 测试条件	Duration/Cycle 持续周期	Quantity 数量	Ac/Re 接收/拒收
Room Temperature Test 常温老化	Ta=25℃ IF=rated current IF=额定电流	1000 hours 1000 小时	5PCS	0/1
55℃ Test 55℃老化	Ta=55℃ IF=rated current IF=额定电流*80%	1000 hours 1000 小时	5PCS	0/1
Thermal Shock Test 冷热冲击	-40℃ 30min ↑↓ 5sec 100℃ 30min	500 cycle 500 cycle	10PCS	0/1
off/on Test off/on 测试	on 10sec ↑↓ off 10sec	15000 times 15000 次	5PCS	0/1
Filament burn-in 烧灯丝验证	Ta=55℃ IF=rated current IF=额定电流	168 hours 168 小时	5PCS	0/1

● Packaging / 包装规格

1.Label model /标签样式

2.Packaging method /包装方法

8 packages per carton
每箱装 8 袋

100pcs per box
每袋装 100pcs

灯丝使用说明书 Filament Instructions

Thanks for using the series of filament 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 filaments 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灯丝产品，为增进您对我司产品特性的了解，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丝，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 filament 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，有关灯丝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℃and

the humidity is≤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℃，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

When it comes to soldering, please ensure that filament's PIN is not oxidized in case of failure or insufficient solder.灯丝焊接件，焊接前需确保灯丝 PIN 没有氧化，以免出现焊不上或虚焊现象。

Notes as following: 以下是需注意的事项

a. The end-product assembly should be completed as soon as possible (preferably within 24 hours) once the packaging is done.If application is filament encapsulation, filament must be dehumidified at 100±5°C/12 hours and blister-shell at 100±5°C/2 hours to prevent any moisture before vacuum sealing. (Customer needs self-evaluation before filament sealed).开包装后应尽快完成成品组装（最好 24 小时内），如应用到密封泡产品，因为灯丝产品为硅胶易吸湿，封泡前灯丝产品必需进行 100±5℃/12 小时除潮，泡壳必需除潮 100±5℃/2 小时，确保无湿气后真空封泡（具体客户自行评估后使用）。

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

c. Don't store filament 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。

d. Led package should be dehumidified at 100 ± 5 ° 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±5℃/12 小时的干燥除湿处理。

e. The number of parallels connections for filament should be ≤ 2 when filament is applied to series-parallel circuit. Aging≥ 8 hours is necessary before shipment.灯丝应用于串并联电路时，并联数不宜超过 2 并，出货前老化 8 个小时以上。

4.Heat Sinking 散热

4.1. End- product should consider heat dissipation design. The temperature rise coefficient of the filament power is determined by arrangement density, thermal resistance, and ambient temperature of its circuit board. The heat generated by the filament can not exceed its maximum limit (please refer to the filament Tj). Like other electronic components, it is necessary to consider avoiding thermoelement design. Cooling gas needs to be filled with in blister-shell to ensure heat dispersed properly. 灯丝应用终端产品应考虑散热设计，灯丝功率温升系数由灯丝在线路板中的排布密度、热阻、和环境温度来决定。设计时灯丝产生的热量不超过其最大极限值（参考灯丝 Tj 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，灯罩内应充入散热气体，确认热量能适当的散出。

4.2. Please pay attention to that filament's working current should be determined by its maximum working Tj when light up. High temperature control is highly noted during each process of filament. 灯丝发光工作时，请考虑其工作电流应该由其最大工作结温决定，灯丝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 condition：焊接条件

5.1. Please refer to datasheet to check whether it fits soldering process. Runlite has no guaranty for infiltration (melting) soldering. Please refer to corresponding datasheet for soldering temperature and time.产品是否适合焊接制程请参考对应产品的规格书。源磊不对浸润式的焊接方式进行质保。焊接温度及时间请参照对应规格书。

5.2. Do not use AC for welding column. Filament is not allowed to be soldered more than twice. This filament is suitable for spot soldering. Please evaluate its availability if other soldering method would be applied.不可用交流电碰焊柱，灯丝不宜进行两次或两次以上的焊接。此灯丝通用适合点焊，如需其它焊接方式请作相关的评估验证和确认是否适合使用目的，且不影响灯丝使用功能

5.3. Do not squeeze filament hardly and its withstand strength is within 180g. No soldering with high temperature for long time and any form of mechanical force or excessive vibration during soldering process. Don't bend filament after soldering.不可用力挤压灯丝，且不要弯曲灯丝,承受力度180g 以内。焊接时避免高温焊接时间过长，在过程中避免任何形式的机械力或过度的震动，焊接后，不要弯曲灯丝。

5.4. Rework is inadvisable for filament soldered. 完成焊接的灯丝不宜进行返修作业。

6. ESD Protection 静电防护：

Filaments 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 filament soldering and to test filament assembled whether it is damaged by static electricity. Method of confirmation for filament with white or blue light for reference: 20μA or 2.5V/single chip cannot be lighted up. Another case is its brightness is significantly darker than other filaments under the same conditions.灯丝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。建议在贴装灯丝时预防机器设备的静电，建议对组装后的灯丝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）：20μA 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. Polarity Identification:极性识别:

Because product is thinner and its PIN is very small, please identity polarity based on datasheet before using.因为产品较细，PIN 也非常小，需按照规格书电极性标识区别极性后使用。

8. Other caution 其他注意事项

8.1. 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。

8.2. Voltage level of filament is 1V. Filament of different voltage should be used separately.电压 1V 一个档，不同电压档材料注意分开使用，不可混用。

8.3. 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。

8.4. 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。

8.5. 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。

8.6. Please avoid interference between the filament and other components during assembly. 请留意避免灯丝在组装时与其他组件发生干涉现象。

8.7. 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丝的瞬间冲击。

8.8. Lead frame is a silver-plated. Silver is easily vulcanized with sulfur which mutates the appearance and light color of filament.The production and using environment should avoid or keep away from sulfur.灯丝支架为镀银支架，银易与硫元素发生硫化现象，导致灯丝外观及光色发生变异。生产及使用环境应避免或远离硫元素。

8.9. 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。

Runlite/源磊		**Customer/客户**	
Prepared/制作		**Engineering/工程**	
Checked/审核		**Quality/品质**	
Approved/批准		**Approved/批准**	