



灯丝产品系列规格书

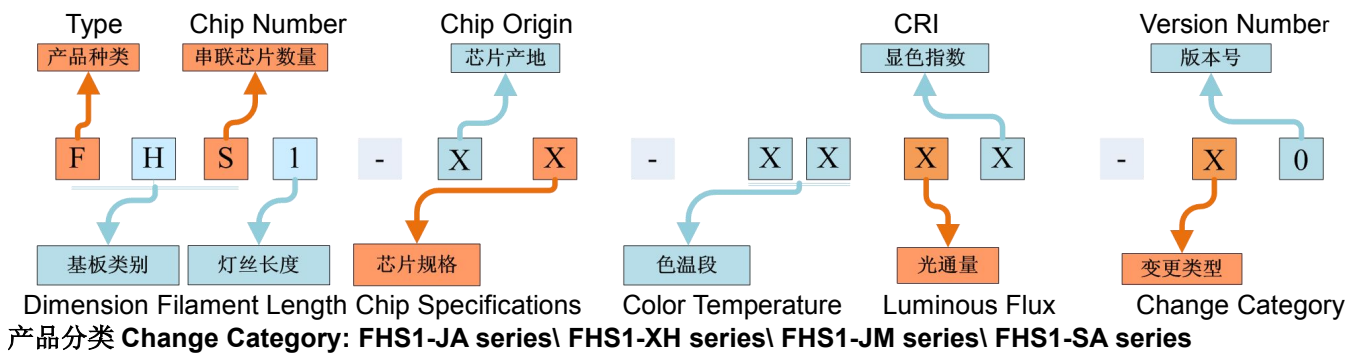
Filament Series Data Sheet

● 特性 Features

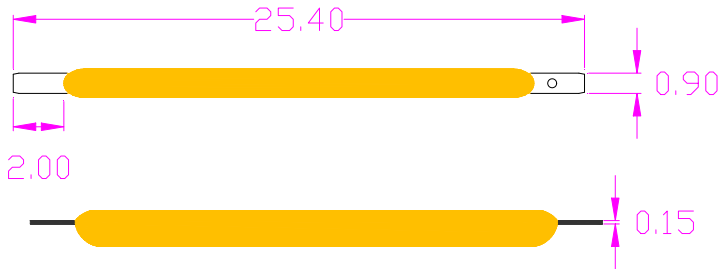
高显指、高光效
发光角度大
高电压驱动
高光色品质
符合 RoHS 指令要求

Super high efficiency
High Viewing angle (360°)
High Voltage Drive
High Optical Quality
Complied with RoHS directive

● 产品编码解说 Product Definition Code



● 封装尺寸 Dimension



图中所有尺寸均以毫米为单位
All dimensions are in millimeter
若无特别标准，图中尺寸公差为： $\pm 0.1\text{mm}$
Tolerance is $\pm 0.1\text{mm}$ unless otherwise noted

1. PIN 脚有打孔“0”的一边为负极
PIN the feet have punch "0" side of the cathode
2. 本灯丝产品制造为成品，需在球泡内充入散热气体
The filament products manufacturing for finished products, need to filling the cooling gas inside the bubble
3. PIN 脚为金属，请注意可焊接性评估
PIN feet for Metal, please pay attention to weldability assessment
4. 成品封泡不可超过 8 根灯丝
You can use Max 8 pieces of filament inside one glass

● 极限参数 (温度=25℃) Absolute maximum ratings at Ta=25℃

项目 Item	符号 Symbol	极限参数 Absolute Maximum Rating	单位 Unit
正向电流 Forward Current	If	10	mA
正向脉冲电流 Pulse Forward Current	Ifp	20	mA
功耗 Power Dissipation	PD	450	mW
工作温度 Operating Temperature	Topr	-30~55	℃
储存温度 Storage Temperature	Tstg	-10~40	℃
储存湿度 Storage Humidity	Rh	60	%
结点温度 Junction Temperature	Tj	85	℃

注: Ifp 脉冲条件为脉冲宽度≤10 ms 和周期≤10%

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

● 光电参数 (温度=25℃) Optical-Electrical Characteristics at Ta=25℃

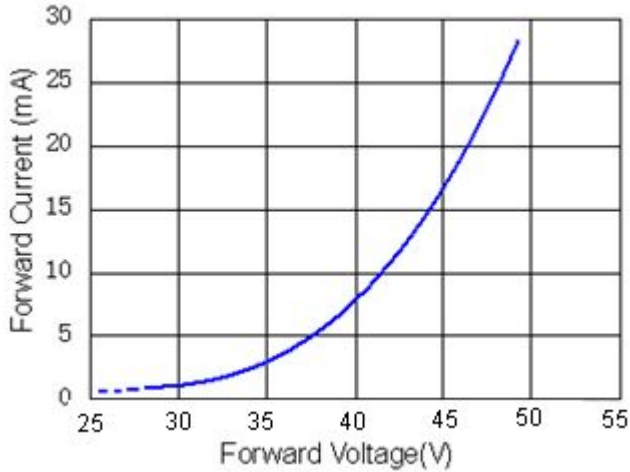
参数名称 Parameter	符号 Symbol	数值 Value			单位 Unit	测试条件 Test condition
		Min.	Typ.	Max.		
正向电压 Forward Voltage	V _F	40	---	45	V	If=10mA
光通量 Luminous Flux	Φ	50	55	65	LM	If=10mA
色温 Color Temperature	CCT	2500	---	7000	K	If=10mA
显色指数 Color Rendering Index	CRI	80	---	90	---	If=10mA
反向电流 Reverse Current	I _R	---	---	10	uA	V _R =5V
全视角 Viewing angle	2θ1/2	---	360	---	Deg	If=10mA
抗静电 Antistatic ability	ESD 模式	HBM(人体模式)			4000V/2 级	
		MM(机器模式)			300V/M3 级	

Notes: 光通量 (LM) ±5% Luminous Flux (LM) ±5%
 正向电压(VF) ±0.1 Forward Voltage (VF) ±0.1V
 色坐标 (X,Y) ±0.01 Wavelength (X,Y) ±0.01 (CCT±5%)
 显色指数 (CRI) ±2 Color Rndering Index (CRI) ±2
 全视角(2θ1/2) ±5 Viewing angle(2θ1/2) ±5

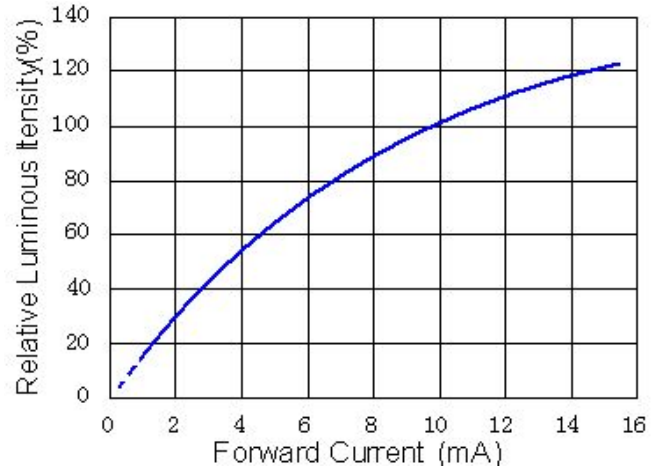
● 典型光电特性曲线 Typical Optical-Electrical Characteristics curves

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

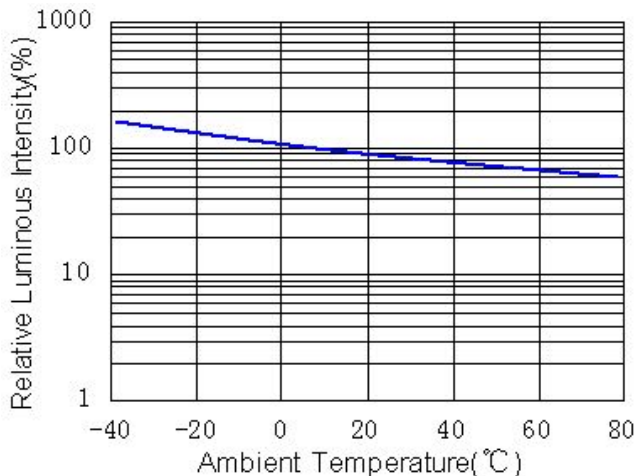
电压与电流关系曲线图
Forward Current VS Forward Voltage



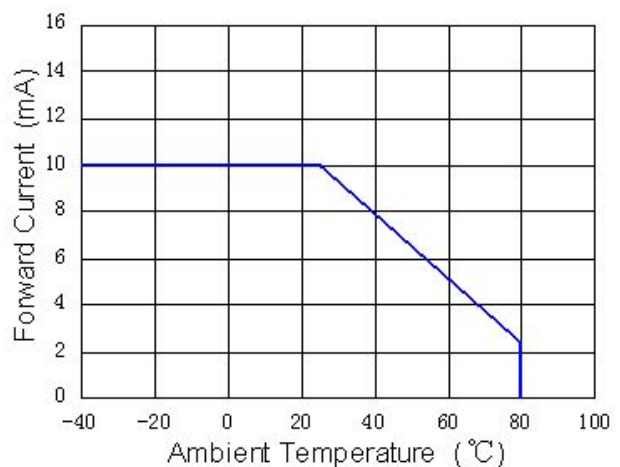
亮度与电流关系曲线图
Relative Flux VS Forward Current



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

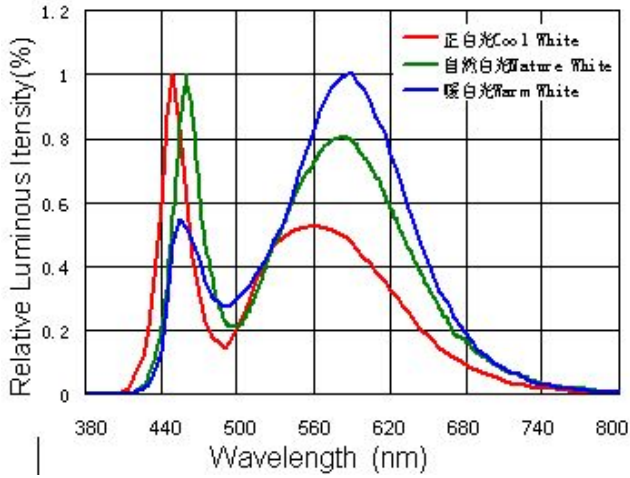


电流与温度关系曲线图
Forward Current VS Ambient Temperature



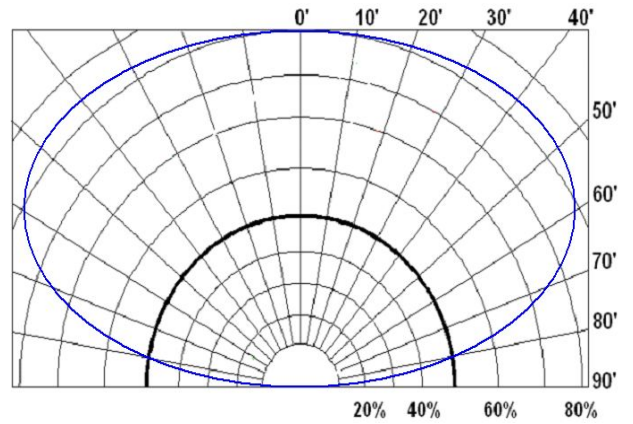
光谱特性图

Relative Spectral Distribution

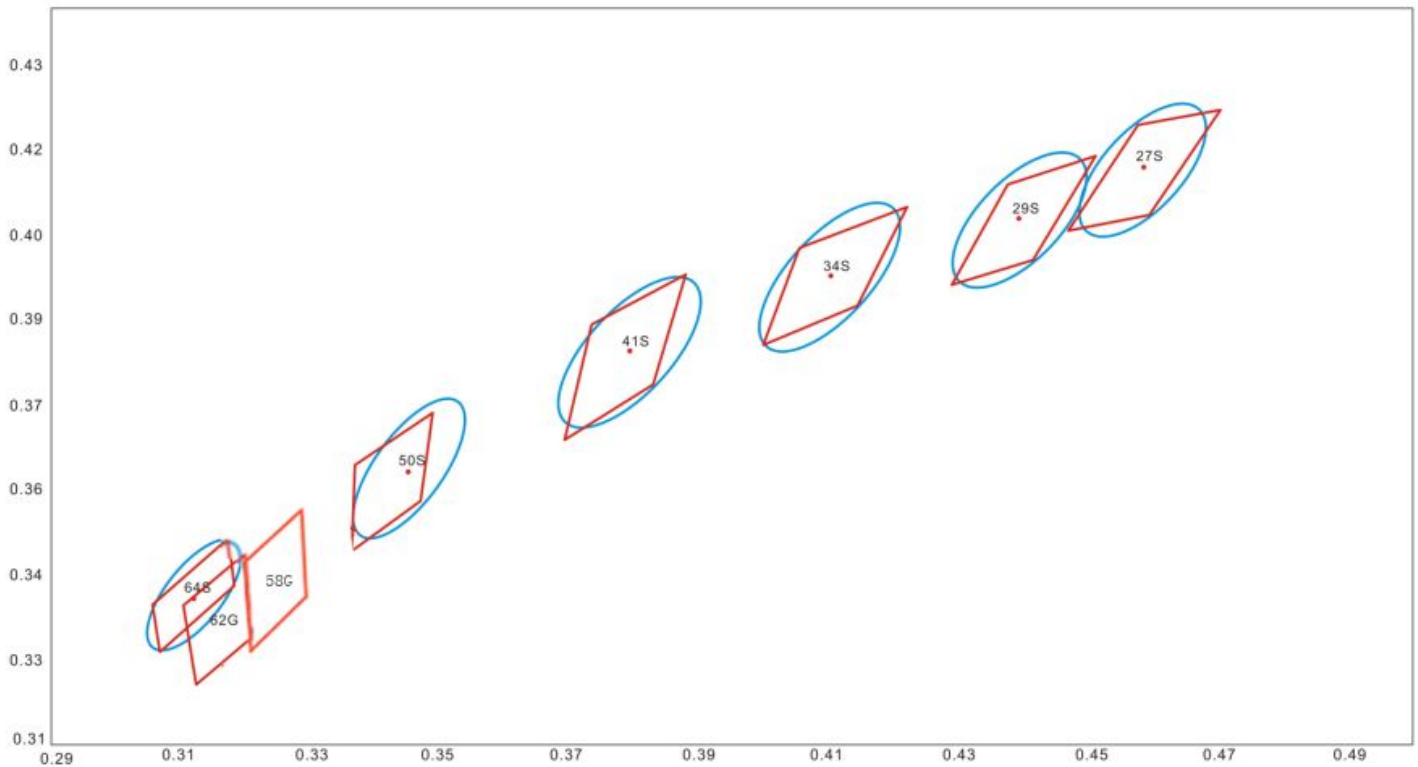


发光角度图 (极坐标)

Typical Spectral Distribution



● 分光打靶图 Chromaticity range & Color lineup



Runlite 白光分级打靶图基于 IEC60081 色容差标准坐标
蓝色椭圆以内落点色容差小于 5

Runlite shooting figure based on IEC60081 color tolerance standard coordinates
Coordinates within ellipse in blue by SDCM < 5

● 分光等级 Range of bins

CCT	Bin Code	CIE-X	CIE-Y	CCT	Bin Code	CIE-X	CIE-Y
2725±80K	27S	0.4475	0.4012	5100±200K	50S	0.3372	0.3449
		0.4582	0.4199			0.3378	0.3596
		0.470	0.4228			0.3496	0.3694
		0.4598	0.4041			0.3478	0.3533
	中心点 Central point	0.459	0.412		中心点 Central point	0.346	0.359
2940±85K	29S	0.4295	0.3918	6500±325K	64S	0.3079	0.3274
		0.4381	0.4097			0.3068	0.3354
		0.4515	0.4145			0.3181	0.3467
		0.442	0.3962			0.3192	0.3387
	中心点 Central point	0.44	0.403		中心点 Central point	0.313	0.337
3400±135K	34S	0.4006	0.3811	6020-6530K	62G	0.3133	0.3214
		0.4061	0.3980			0.3113	0.3350
		0.4226	0.4056			0.3208	0.3444
		0.4150	0.3930			0.3219	0.3296
	中心点 Central point	0.411	0.393		中心点 Central point	0.3168	0.3328
4060±163K	41S	0.3699	0.3646	5477-6020K	58G	0.3220	0.3280
		0.3743	0.3846			0.3209	0.3425
		0.3885	0.3934			0.3330	0.3533
		0.3835	0.3741			0.3329	0.3375
	中心点 Central point	0.38	0.38		中心点 Central point	0.3272	0.3403

● 电压等级 Voltage classes

Group	Min.	Max.	Unit	Condition
1	3V 分档 Step 3 v		V	IF=10mA

● 光通量标准分档 Luminous flux standard step

颜色 Color	显指 CRI	色温范围 CCT Range		光通量 Lumen (10mA)		
		最小 Min	最大 Max	代码 Code	光通量 Lumen	
					最小 Min	最大 Max
暖白 Warm white	80	2645	2805	27S	50	60
		2855	3025	29S	55	65

● 光电特性 (暖白光) Electro-Optical Characteristics (Warm white)

If(mA)	Vf(v)	Power(w)	Flux(LM)	LM/W	CCT	Ra
5	40.86	0.20021	24.81	123.90	2814	83.6
10	42.63	0.42203	46.28	109.67	2831	82.9
15	43.38	0.64636	61.10	94.53	2853	82.2
20	44.45	0.88455	75.82	85.71	2882	81.8
25	45.08	1.12249	85.18	75.89	2928	81.5
30	45.60	1.36344	88.16	64.66	3003	81.4

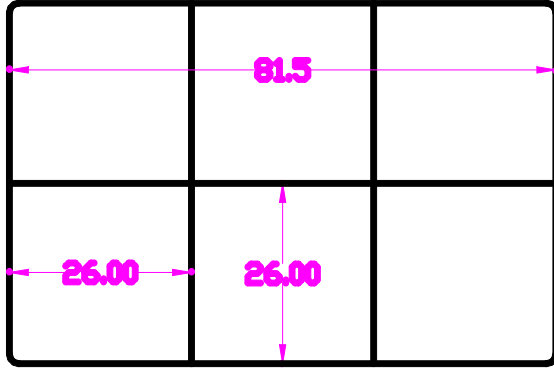
● 信赖性测试项目及标准 Test items and results of reliability

测试项目 Test Item	测试条件 Test Conditions	持续周期 Duration/Cycle	破坏数量 Number of Damage	参考 Reference
温度循环 Temperature	-40°C 30min ↑↓25°C(2min) 100°C 30min	循环 100 次 100 times	0/100	JEITA ED-4701300 303
冷热冲击 Thermal Shock	-40°C 30min ↑↓ 5sec 100°C 30min	循环 100 次 100 times	0/100	JEITA ED-4701200 303
高温储存 High Temperature Storage	Ta=100°C	1000 小时 1000 hours	0/100	EIAJED-4701200 201
高温高湿 Humidity Heat Storage	Ta=85°C RH=85%	1000 小时 1000 hours	0/100	EIAJED-4701100 103
低温储存 Low Temperature Storage	Ta=-40°C	1000 小时 1000 hours	0/100	EIAJED-4701200 202
常温老化 Room Temperature Test	Ta=25°C IF=10mA	1000 小时 1000 hours	0/100	Tested with Runlite standard
静电放电人体模式 ESD(HBM)	-4KV at 1.5KΩ; 100pF	3 次 3 times	0/100	MIL-STD-883D

● 包装规格 Packaging

1.料带尺寸 (单位:mm)

Dimensions of Tape (Unit:mm)



86.5mm*57.0*23mm

2.卷盘尺寸 (单位: mm)

Dimensions of Reel(Unit:mm)



3.箱尺寸图 (单位: mm)

Package Dimension (Unit:mm)



每小格装100PCS
Every little pack 100 PCS



每个外箱装5个袋
外箱尺寸=495*358*357
Each carton with 5 pockets
Carton size = 495 * 358 * 357



每盒装600PCS
600 PCS per box



每袋装1盒
Each containing 1 box

灯丝使用说明书

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！

Thanks for using relevant filament products of Shenzhen Runlite Technology Co., Ltd., in order to enhance your understanding of the characteristics of our products, as far as possible to reduce or avoid unnecessary damage to the product due to human factors, and make it can better service your production. We give corresponding instructions, according to the characteristic in the process of standard use. At the same time, even if the same specifications filament, in the practical application fields its reliability are related to overall system design level, mode of operation and conditions of use. This Instructions can't cover all questions may encounter during customer use process; we sincerely apologize for any inconvenience this may cause.

1、产品申明：

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。

1、Declaring:

In order to confirm if it is right for the purpose, Pretest is necessary before use the product. This product presentation does not guarantee not contravene any patent. Relate to imports and exports filament product Legal liability should be responsible by customer, so please verify relevant provision about the filament product in your Target market. We may change specifications from time to time in the interest of product development, without prior notification or public announcement. An agreement of formal product specifications is required prior to mass production.

2、物料确认：

投料的灯丝 BIN 等级是否吻合，如 VF、CIE BIN、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丝应用在同一物件上，应先评估其适用性（若不同 VF 或 CIE 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。

2、Before use:

We suggest that the same parameters products should be used together, such as BIN coordinate, VF and luminous flux etc. Feasibility should be checked before applying to product (different VF or CIE BIN would lead to brightness and color discrepancy) to see if workable.

3、包装储存：

3.1、开包装前避免湿气进入灯丝内部，建议灯丝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%，拆开包装确认温度卡是否 OK。

3.2、开包装后的预防措施

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。

以下是需注意的事项：

a、开包装后应尽快完成成品组装（最好 24 小时内），如应用到密封胶泡产品，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、余料请密封或放置在 5~40℃、湿度不超过 30% 的环境中。

c、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、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、灯丝应用于串并联电路时，并联数不宜超过 4 并，出货前老化 8 个小时以上。

3、Package and Storage:

3.1、To avoid the moisture penetration, it is recommended to store filament s in a dry box(or desiccator) with a desiccant . The recommended storage conditions are Temperature 5 to 30degrees Centigrade with humidity 50% maximum. Please check indicator card status when open package before use.

3.2、Precaution after opening packaging

However filament is correspond, when filament be soldered dip, interfacial separation may affect the light transmission efficiency, causing the light intensity to drop.

Attentions needed

a. Component should be used up as soon as possible (within 24 hours) while the package unsealed due to moisture sensitivity of the Filament product, you have to dehumidify filament for 12 hours at 100±5℃ and glass for 2 hours at 100±5℃ before sealing filament bulb.

b. Keeping of a fraction- Sealing Temperature: 5~40℃ Humidity: Less than 30%

c. If the package has been opened more than 1week or the humidity indicator color changes from blue to pink (over 30%) , components should be dried for 24hrs at 60±5℃

d. You have to dehumidify filament at 70±5℃ for 12 hours when indicator card changes color from blue to pink and exceed safe value of 30% or exposed to the air for more than one day.

e. It is recommended not to use Runlite's filament by more than 4 pieces in parallel connection and have to do aging for more than 8 hours before delivery.

4、散热：

4.1、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、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。

4、Heat Sinking

4.1、Thermal design of the end product is of paramount importance. Please consider the heat generation of the filament when making the system design. The coefficient of temperature increase per input electric power is affected by the thermal resistance of the circuit board and density of filament place mentioned the board, as well as other components. It is necessary to avoid intense heat generation and operate within the maximum ratings given in this specification.

4.2、The operating current should be decided after considering the ambient maximum temperature of filament s.

5、焊接条件:

- 5.1、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考对应规格书。
- 5.2、不可用交流碰焊柱，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、不可用力剂压灯丝，且不要弯曲灯丝。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、完成焊接的灯丝不宜进行返修作业。

5、Recommended soldering conditions

- 5.1、Please refer to filament specification corresponded whether the product is adaptable to reflow process. Runlite is not responsible for dip soldering method on filament.
- 5.2、Do not apply AC current to filament and avoid welding more than twice. Filament is suitable for point welding; please make evaluation when want to try other method to ensure normal function.
- 5.3、Components should not be mounted on warped direction of PCB. Please avoid rapid cooling after soldering. Any mechanical force or any excess vibration shall not be accepted to apply during cooling process to normal temp after soldering. After soldering, do not warp the filament.
- 5.4、Repairing should not be done after the filament have been soldered. When repairing is unavoidable, a double-head soldering iron is suggested.

6、静电防护:

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）：20 μA 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。

6、Handling of static electricity:

These products are sensitive to static electricity charge. Please take measures to prevent any static electricity being produced such as the wearing of a wristband or anti-static gloves when handling this product. All devices, equipment and machinery must be properly grounded. It is recommended that precautions be taken against surge voltage to the equipment. When inspecting the final products in which filaments were assembly filament, it is recommended to check whether the assembled filaments are damaged by static electricity or not. It is easy to find static-damaged filaments by a light-on test @20 μA/ a dice (reference)

7、极性识别:因为产品较细，PIN 也非常小，有印极性但不易识别，需按照规格书电极性标识区别极性后使用。

7、Polarity identification:

Please identify polarity first before use since filament itself is quite slim, not easy to identify polarity mark on PIN leads. Please identify polarity electrode first before use.

8、其他注意事项:

- 8.1、白光灯丝是由蓝光芯片和特种荧光粉组合。因此，灯丝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、电压 2V 一个档，不同电压档材料注意分开使用，不可混用。
- 8.3、为保证灯丝光电性能，请保持灯丝发光区域表面清洁，避免手指印或其它异物覆盖。
- 8.4、不建议在灯丝的硅胶表面覆盖其他与之不兼容的脂类物质。
- 8.5、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、请留意避免灯丝在组装时与其他组件发生干涉现象。
- 8.7、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、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、使用过程中避免镊子等锋利工具触碰硅胶胶体部分。

8、Other caution:

- 8.1、The White filaments are devices which are materialized by combining Blue chip and special phosphors. Consequently, the color temperature varies from current to current. Please take this into consideration while application expect.
- 8.2、2V is rated range for filament, better use filaments together with the same characteristics and mixture may bring bad effect.
- 8.3、In order to ensure the filament photoelectric property, please keep the lighting district clean and fingerprint and other staff off.
- 8.4、Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- 8.5、filament electrode and leadframe are comprised of a silver plated copper alloy. The silver surface may be affected by environments which contain corrosive gases and so on. Please avoid conditions which may cause the filament to corrode, tarnish or discolor. This corrosion or discoloration might lower solderability or might affect on optical characteristics.
- 8.6、Please do not recommend to cover the silicone resin of the filaments with other resin (epoxy, urethane, etc)
- 8.7、Please make sure assembly process workable since process varies from different users.
- 8.8、Please be aware that this product should not come into contact with other parts in assembled status.
- 8.9、Please design a circuit that prevents any reverse voltage (excess current) from being applied to this product instantaneously when the circuit is ON or OFF.
- 8.10、filament electrode and lead frame are comprised of a silver plated copper alloy. it is easy to chemical reaction with sulfur. It will be results in filament exterior and color have been changed. So during produce process and storage condition should avoid or far away for the sulfur materials.
- 8.11、Avoid touching silicone resin parts especially by sharp tools such as Pancetta(Tweezers)

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