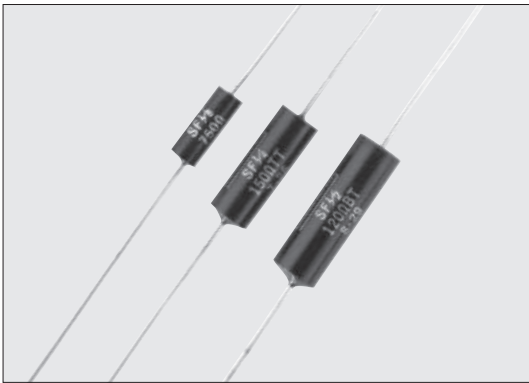


SF 绝缘型超精密金属膜电阻器 Insulated Super Miniature Precision Metal Film Resistors



外观颜色: 黑色 Coating color: Black
表示: 文字表示 Marking: Alphanumeric

特点 Features

- 电阻值范围广, 为 $100\Omega \sim 5.11M\Omega$, 允许偏差 $\pm 0.01\%$, 对应T.C.R. $\pm 5 \times 10^{-6}/K$ 的超高精度品。
- 长期变化小, 为 $\pm 0.01\%$ 年, 非常稳定。
- 容许差在 $\pm 0.01\% \sim \pm 0.25\%$, 可以制作指定的电阻值(表示为有效数字4位)。
- 符合欧盟RoHS。
- Super high precision resistors with a wide resistance range of $100\Omega \sim 5.11M\Omega$ respond to tolerance $\pm 0.01\%$ and T.C.R. $\pm 5 \times 10^{-6}/K$.
- Extremely stable resistors with less variation $\pm 0.01\%/year$.
- Designated resistances (marking in 4-digit effective figures) of tolerances $\pm 0.01\% \sim \pm 0.25\%$ are available.
- Products meet EU-RoHS requirements.

品名构成 Type Designation

实例 Example

SF	1/8	Y	C	1004	B
品种 Product Code	额定功率 Power Rating	电阻温度系数 T.C.R. ($\times 10^{-6}/K$)	端子表面材质 Terminal Surface Material	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance
	1/8: 0.125W 1/4: 0.25W 1/2: 0.5W	Y: ± 5 T: ± 10	C: SnCu	4 digits ^{*1}	T: $\pm 0.01\%$ Q: $\pm 0.02\%$ A: $\pm 0.05\%$ B: $\pm 0.1\%$ C: $\pm 0.25\%$ D: $\pm 0.5\%$

*1 标准阻值表示在4位数以上的是实际电阻值。

*1 It becomes a real number when a nominal resistance is 4 or more digits of significant figures.

额定值 Ratings

型号 Type	额定功率 Power Rating	电阻温度系数 T.C.R. ($\times 10^{-6}/K$)	电阻值范围 Resistance Range (Ω)						最高使用电压 Max. Working Voltage	最高过载电压 Max. Overload Voltage
			T: $\pm 0.01\%$ E24•E96	Q: $\pm 0.02\%$ E24•E96	A: $\pm 0.05\%$ E24•E96	B: $\pm 0.1\%$ E24•E96	C: $\pm 0.25\%$ E24•E96	D: $\pm 0.5\%$ E24•E96		
SF1/8YC	0.125W	Y: ± 5	100~200k	100~200k	100~200k	100~200k	100~200k	100~200k	250V	500V
SF1/8TC		T: ± 10			100~511k	100~511k	100~511k	100~511k		
SF1/4YC	0.25W	Y: ± 5	100~511k	100~511k	100~511k	100~511k	100~511k	100~511k	300V	600V
SF1/4TC		T: ± 10			100~1M	100~1M	100~1M	100~1M		
SF1/2YC	0.5W	Y: ± 5	100~1M	100~1M	100~1M	100~1M	100~1M	100~1M	350V	700V
SF1/2TC		T: ± 10			100~3.57M	100~5.11M	100~5.11M	100~5.11M		

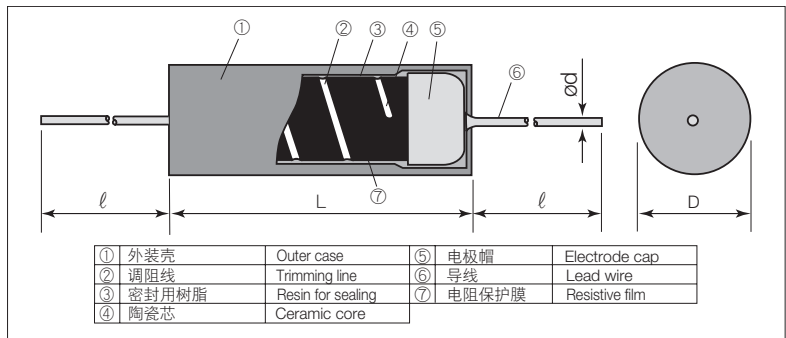
额定环境温度 Rated Ambient Temperature : $+70^\circ C$

使用温度范围 Operating Temperature Range: $-25^\circ C \sim +85^\circ C$

额定电压是 $\sqrt{\text{额定功率} \times \text{公称电阻值}}$ 所算出的值或表中最高使用电压两者中小的值为额定电压。

Rated voltage = $\sqrt{\text{Power Rating} \times \text{Resistance value}}$ or Max. working voltage, whichever is lower.

结构图 Construction



外形尺寸 Dimensions

型号 Type	尺寸 Dimensions (mm)			重量 (g) (1000pcs)
	L	D	d (Nominal)	
SF1/8	10.5 ± 0.4	3.6 ± 0.4	0.65	512
SF1/4	16.0 ± 0.4	5.5 ± 0.5		1044
SF1/2	20.0 ± 0.5	6.7 ± 0.5	0.8	1618

参考标准 Reference Standards

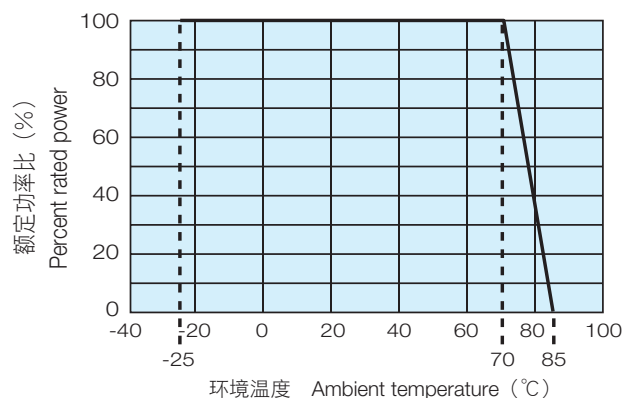
IEC 60115-1

JIS C 5201-1

欲知关于此产品含有的环境负荷物质详情(除EU-RoHS以外), 请与我们联系。

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

■ 负荷减轻特性曲线 Derating Curve



在环境温度70℃以上使用时，应按照上图负荷减轻特性曲线，减小额定功率。

For resistors operated at an ambient temperature of 70°C or above, a power rating shall be derated in accordance with the above derating curve.

■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements ΔR±%	试验方法 Test Methods
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	+25°C
电阻温度系数 T.C.R.	在规定值以内 Within specified T.C.R.	SF1/8 R ≤ 200kΩ: +25°C/-15°C and +25°C/+65°C, R > 200kΩ: +25°C/+65°C SF1/4 R ≤ 511kΩ: +25°C/-15°C and +25°C/+65°C, R > 511kΩ: +25°C/+65°C SF1/2 R ≤ 1MΩ: +25°C/-15°C and +25°C/+65°C, R > 1MΩ: +25°C/+65°C
过载（短时间） Overload (Short time)	0.05	额定电压×2.5倍或者最高过载电压，取两者中低的一方施加5秒 Rated voltage × 2.5 or Max. overload vol., whichever is lower, for 5s.
耐焊接热 Resistance to soldering heat	0.05	350°C ± 10°C, 3s ± 0.5s or 260°C ± 5°C, 10s ± 1s
温度突变 Temperature cycling	0.05	-25°C (30min.) / +85°C (30min.), 5cycles
耐湿负荷 Moisture resistance	0.2	40°C ± 2°C, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70°C的耐久性 Endurance at 70°C	0.2	70°C ± 3°C, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
长期变化 Variation per year	0.01%/Year	常温常湿1年内 Normal temperature and humidity for a year

■ 使用注意事项 Precautions for Use

- 助焊剂等在本产品和安装的印刷电路板上附着离子性杂质时，其耐湿性·耐腐蚀性将受到影响。助焊剂内有时含有氯·酸等离子性物质，为除去这些离子性物质应进行清洗。特别是使用无铅助焊剂时，由于湿润性提高了，有时会含有大量离子性物质，所以在使用RMA系的焊锡或助焊剂时，应充分进行清洗。并且，保管环境和安装条件、环境等，附着了汗·盐等离子性物质时，其耐湿性·耐腐蚀性也将受到影响。对于这种污染，为了除去这些离子性物质，应当进行清洗。
- 产品受到含有人的汗和唾液等的钠 (Na⁺)、氯 (Cl⁻) 等离子性杂质污染时，已确认会引发电蚀，因此，在使用时要注意。
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. Please wash them to get rid of the ionic substances especially when using lead-free solder that may contain much of the said substances for improving a wetting characteristic. Using RMA solder or RMA flux, or well-washing is needed. Also, attaching ionic substances such as perspiration, salt etc. by storage environments or mounting conditions/environments negatively affects their moisture resistance, corrosion resistance etc. Please wash them to remove the ionic substances when they are polluted.
- Pay attention to use when the components are polluted by ionic impurities like sodium (Na⁺), chlorine (Cl⁻) etc. included in perspiration and saliva, because it leads to electric erosion.