

规格书

SPECIFICATION

客户名称:

CUSTOMER:

品名:

水泥电阻器

PARTNAME:

FHSQP-\*\*\*\*\*

规格:

SPECIFICATION:

版本号:

A02

VERSION:

日期:

2026-1-20

DATE :

制造			客户		
APPROVAL			APPROVAL		
拟制 Draft by	审核 Checked by	确认 Approve by	检验 Check by	审核 Checked by	批准 Approval by
张桂林	何建东	李四华			

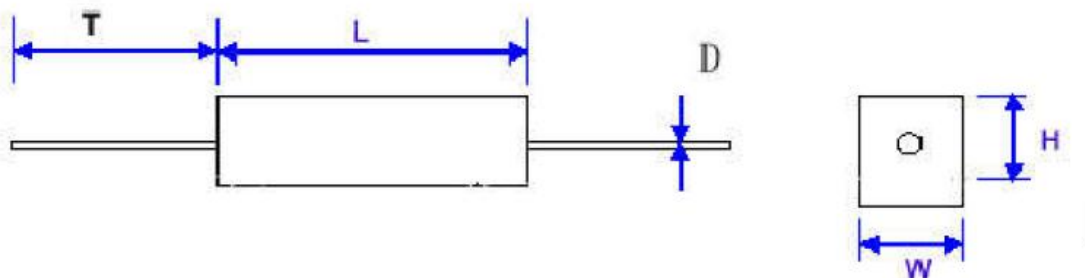
## 一. 品名 TYPE NAME

依据其种类，分别标明型号、额定功耗、标称阻值、精度、和形状。

According to the types of power rated, resistor value, tolerance and shapes.

FHSQP	2W	201	J
产品类别 Type	额定功率 Power Rating	公称电阻值 Nominal Resistance	精 度 Tolerance
FHSQP	2W 3W 5W 7W 10W 15W 20W .....	前2位为有效数，第三位为倍乘数 $10^n$ 100: $10 \times 10^0 \Omega$ 101: $10 \times 10^1 \Omega$ 102: $10 \times 10^2 \Omega$ <10 $\Omega$ 表示如下 R10: 0.1 $\Omega$ 1R0: 1.0 $\Omega$	J: $\pm 5\%$ .....

## 二. 尺寸 Dimension



TYPE	DIMENSION(mm)					WIRE WOUND RODS 绕线芯	RODS 镀膜膜芯	最大工 作电压 MAX WORKING VOLTAGE	最大负 荷电压 MAXIMUM LOAD VOLTAGE	绝缘耐压 Dielectric withstanding
FHSQP	L $\pm 1.5$	W $\pm 1.5$	H $\pm 1.5$	T $\pm 4$	D $\pm 0.05$					
2W	18	7	7	20	0.56	0.1~100 $\Omega$	101 $\Omega$ ~500K $\Omega$	350V	500V	800V
3W	22	8.5	8.5	23	0.7	0.1~180 $\Omega$	181 $\Omega$ ~500K $\Omega$	400V	550V	1000V
5W	22	9.5	9.5	23	0.75	0.1~200 $\Omega$	201 $\Omega$ ~500K $\Omega$	450V	600V	1000V
7W	35	10	10	25	0.75	0.1~430 $\Omega$	431 $\Omega$ ~500K $\Omega$	500V	700V	1000V
10W	48	10	10	25	0.75	0.1~470 $\Omega$	471 $\Omega$ ~500K $\Omega$	600V	800V	1000V
15W	48	12.5	12.5	25	0.75	0.5~600 $\Omega$	601 $\Omega$ ~500K $\Omega$	700V	1000V	1000V
20W	60	14	13	25	0.75	0.5~1K $\Omega$	1K $\Omega$ ~500K $\Omega$	800V	1000V	1000V
20W	63	12.5	12.5	25	0.75	0.5~1K $\Omega$	1K $\Omega$ ~500K $\Omega$	850V	1000V	1000V

### 三. 特点 FEATURES

1. 由瓷壳填封导热材料, 安全性高。

Ceramic potting, Greater safety.

2. 小型化大功率, 大负荷下耐久性优良。

High power in miniature size, longer load life under large load.

3. 极好的散热性。

Admirable electronic performance against environmental conditions and overload resistant to heat,

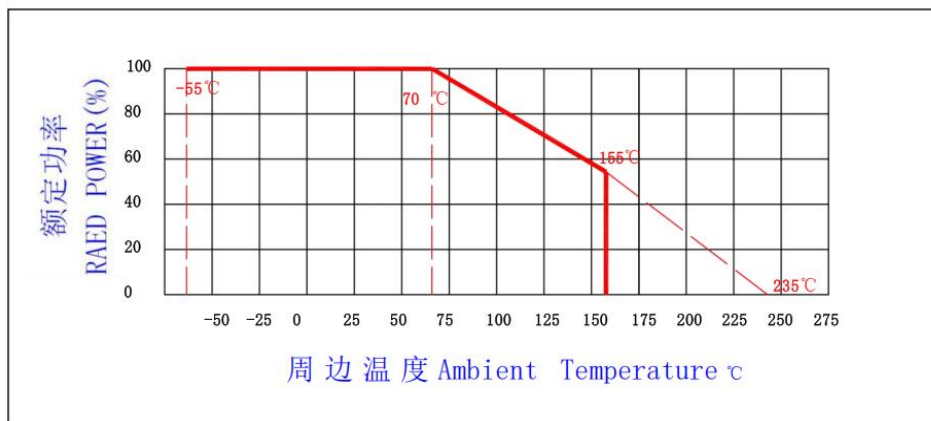
4. 环保无铅产品

RoHS complant / lead-free available.

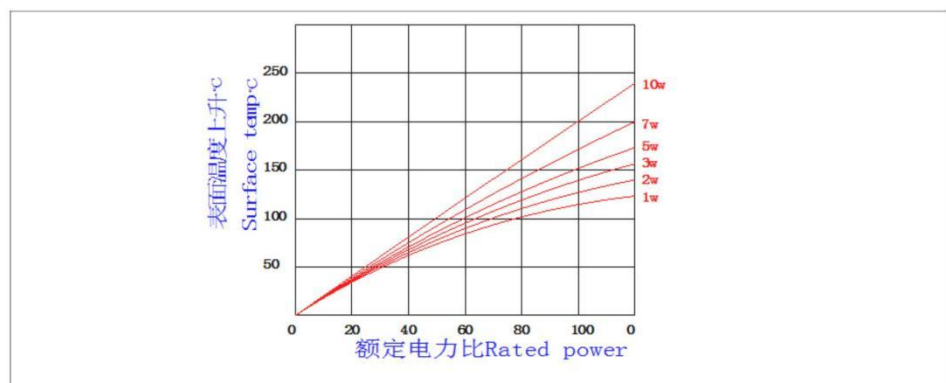
### 四. 额定功率 POWER RATING

额定功率的定义为在环境温度 70℃最大输出功率。当环境温度超过 70℃见下图表。

Power rating is defined as maximum power rating continuously applied under ambient temperature at 70℃. when the ambient temperature exceeds 70℃, use chart.



功率曲线图



表面温升曲线图

## 五. 额定电压 RATED VOLTAGE

额定电压为交流或直流电压（频率为50Hz 或 60Hz）额定电压计算方式为：

Rated voltage is defined as the DC or AC (effective Value at commercial frequency example 50 C/S, 60 C/S), Voltage when rated power is applied and can be calculated.

By the folowing:  $V = \sqrt{P \times R}$

V = 额定电压 RATED VOLTAGE

P = 额定功率 RATED POWER (WATTS)

R = 标准阻值NOMINAL RESISTANCE VALUE (OHM)

当使用电压超出计算出的电压时，功率会不断下降，见上功率曲线图。

When the calculated rated voltage exceeds the Maximum usable voltage flue shown in CHART, the Maximum usable voltage is defined as the voltage According to the power-decreasing curve shown in CHART.

## 六. 产品性能 PERFORMANCE

项 目 ITEM	性能及验收标准 PERFORMANCE AND QUALITY ACCEPTANCE	测试方法 TEST METHOD
温度系数 Resistance to temperature coefficient	±300PPM/°C	$PPM/^{\circ}C = \frac{R - R_0}{R_0} * \frac{10^6}{T - T_0}$ <p>R = Measured resistance (Ω) at T T °C 电阻实测值 (Ω) R<sub>0</sub> = Measured resistance (Ω) at T<sub>0</sub> T<sub>0</sub> °C 电阻实测值 (Ω) T = Measured test temperature(°C) 测试温度的实测值 T<sub>0</sub> = Measured base temperature(°C) 基准温度的实测值</p>
短时负荷 Short time overload	± (2% R + 0.05ohm) Shall be no mechanical breakage 无破损（外观正常）	2.5 倍额定电压（交流或直流），5 秒。 AC or DC voltage 2.5 times the rated Voltage for 5 seconds .
绝缘电阻 Insulation resistance	> 500MΩ	将电阻放于“V”形槽内，加电压 500V 保持一分钟。 Lay the resistor on the 90 ° angle metal “V” Block apply DC 500V voltage for One Minute.
耐电压 Voltage endurance	± (0.5%R+0.05ohm) Shall be no mechanical breakage 无破损（外观正常）	将电阻放于“V”形槽内，加电压1500V保持一分钟。 Lay the resistor on the 90 ° angle metal “V” Block apply AC 1500V voltage for One Minute.
端子强度 Terminal strength	内外部无损伤 Shall be no mechanical breakage	施加 20N 30S 的拉力 Pull test apply 20N force to the lead in the direction of lead axis for 30±5 seconds .
耐焊性 Heat resistively against soldering	± ( 1%R + 0.05ohm) Shall be no mechanical breakage 无破损（外观正常）	将电阻引出端浸入350°C±10°C的锡中，深度离电阻体3±0.05mm，时间3.5±0.5 秒。放置一小时再测试。 Dip the lead into a solder bath having a temperature of 350°C±10 °C up to 3±0.05mm from the body of the resistor and hold it for 3.5±0.5seconds leave the resistor, at room temperature 1 hours after , then Measure.
寿命试验 Load life test	± (5%R + 0.05ohm) Shall be no mechanical breakage 无破损（外观正常）	在70°C的环境中施加额定电压，1小时通，0.5小时断1000小时。 In the constant temperature chamber 70°C , apply rated voltage for 1 hour and shut voltage for 0.5 hour and repeat this cycle for 1000 hours.

上锡效果 Solder ability	≥95%	浸入 260℃±5℃的锡槽中，时间5±0.5秒。 Dip the lead into a solder bath having a temperature of 260℃±5℃ .Time:5±0.5seconds.
湿度负荷试验 Humidity load test	≤± (5% R+ 0.1ohm) Shall be no mechanical breakage 无破损（外观正常）	温度在40℃± 2℃, 相对湿度90-95%室内，用1/10额定电压1.5小时开和关闭电压0.5小时，重复这个周期1000小时，离开1小时后在室温下测试。 In temperature chamber 40℃±2℃,relative humidity 90 - 95%, Apply1/10 rated voltage 1.5 hour and shut voltage 0.5 hour repeat this cycle for 1000 hours, leave in room temperature for 1 hour after test.
耐振性 Vibration	Shall be no mechanical breakage 无破损（外观正常）	设置振动频率在10HZ-55HZ 10HZ/秒1.5mm的幅度，在1分钟更换频率的。振动三个方向，在3小时内完成。 set a resistor at the vibration table and vibrate 10HZ—55HZ 10 HZ/s . with 1.5mm amplitude in 1 min. when the change of frequency shall be completed uniformly. the vibration shall apply to 3 directions ,vertical and horizontal to the axis of resistor each for 3 h .
不燃性 Incombustibility	Shall be no mechanical breakage 无破损（外观正常）	本体用普通明火烧15秒，停5秒，如此循环5次 Resistance by ordinary fire 15 seconds, stop for 5 seconds, so loop 5 times.

### 附加说明：Additional instructions:

#### 1、产品存放条件 product storage conditions

a 电阻器应存放在干燥、通风的环境条件下，产品不得受阳光直接照射；

Rsistor should be stored in dry and ventilated environment conditions, the product shall not be affected by direct sunlight ;

b 电阻器存放环境应无酸、碱、硫化等具有腐蚀气氛的环境中；

Resistor to deposit environment should be no acid, alkali corrosion, sulfide, etc have atmosphere environment;

c 产品存储时间不得超过两年。

Product storage time may not exceed two years .

#### 2、产品使用补充说明 Products use added

a 产品功率负荷，遵循额定功率降功耗曲线负荷；

Product power load, follow the rated power drop curve of load power consumption ;

b 工作电压按额定电压计算公式计算：

Working voltage according to the rated voltage calculation formula:

$$V = \sqrt{P \times R}$$

式中：

V =额定电压（伏特） rated voltage (volt)

P =额定功率(瓦特) rated power (watts)

R =标称电阻值(欧姆) nominal resistance (ohms)