

■厚膜网络电阻器

Thick Film Network Resistor

◆特征 Features

- * 按工业标准尺寸生产, 小型化, 组装密度高
Industry standard size,miniature,high density assembly
- * 可靠性高, 使用寿命长, 防潮性、抗腐蚀性好
High reliability,long life excellentmoistureproof and cauterization
- * 设计灵活,可根据用户要求生产
Free design,producing according to the consumer require



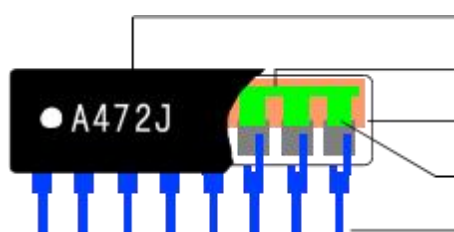
◆应用领域 Application

- * 应用于工业设备、家用电器、医疗设备以及测试与测量设备
Application to Industrial equipment, household appliances, medial equipment and test and measurement equipment

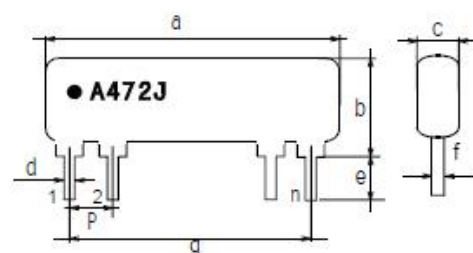
◆型号表示法 Part Number

A	H	08	473	/331	J	无表示 Blank	P	
电路结构 代码 Type Code	额定功率代号 Power Rating Code		电阻值代号 Resistance Value Code	电阻值代号 Resistance Value Code	电阻值误差精度代号 Resistance Tolerance Code		脚距代号 Code of Pin Distance	环保代号 Code of Lead-Free
A B C D E F G H T	代 号 Code	功率 Power	三位数：3 digit 例如 Example： 473=47KΩ	E、F、H、T 型产品 E, F, H, T- type product 三位数： 3 digit 例如 Example： 331=330 Ω	代 号 Code	误差精度 Tolerance	无表示 Blank	P
	无表示 Blank	1/8W			F	±1%		
					G	±2%		
	H	1/4W			J	±5%		
					J (跨接电阻)	≤50 mΩ		

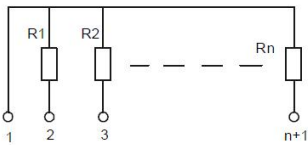
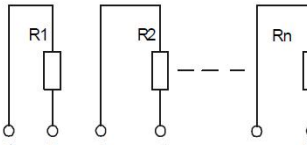
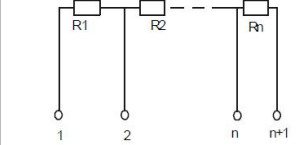
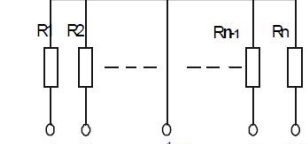
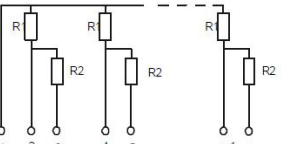
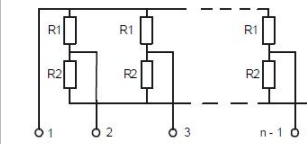
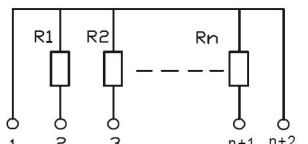
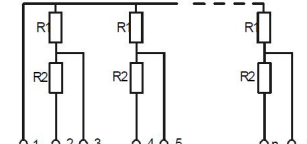
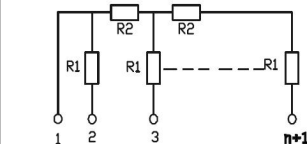
◆产品结构 Construction



- 1、外包封
Outercoating
- 2、导体
Conductor
- 3、陶瓷基片
Ceramic substrate
- 4、电阻体/保护层
Resistor Layer/Protection/ coating
- 5、引脚
Loadpin



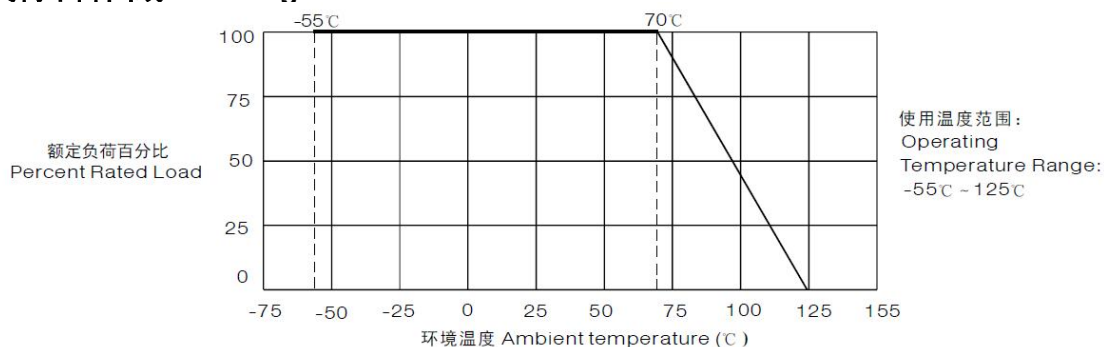
◆等效电路 Equivalent Circuit

型号 Type	等效电路 Equivalent Circuit	型号 Type	等效电路 Equivalent Circuit	型号 Type	等效电路 Equivalent Circuit
A	 $R_1 = R_2 = \dots = R_n$	B	 $R_1 = R_2 = \dots = R_n$	C	 $R_1 = R_2 = \dots = R_n$
D	 $R_1 = R_2 = \dots = R_n$	E	 $R_1 = R_2 \text{ OR } R_1 \neq R_2$	F	 $R_1 = R_2 \text{ OR } R_1 \neq R_2$
G	 $R_1 = R_2 = \dots = R_n$	H	 $R_1 = R_2 \text{ OR } R_1 \neq R_2$	T	 $R_1 = R_2 \text{ OR } R_1 \neq R_2$

◆规格尺寸 Dimensions

代号 Code	常规尺寸 Normal Dimension	
a	$2.54 \times (n-1) + 2.50 \text{max}$	
b	A、B、C、D、E、F、G、H 型 Type	5.80max
	T 型 Type	9.20max
C	3.20max	
d	0.50 ± 0.1	
e	3.50 ± 0.5	
f	0.25 ± 0.1	
g	$2.54 \times (n-1) \pm 0.3$	
P	2.54 ± 0.1	

◆负荷下降曲线 Derating Curve



注：当电阻使用的环境温度超过70℃时，其额定负荷（额定功率）按上述曲线下降。

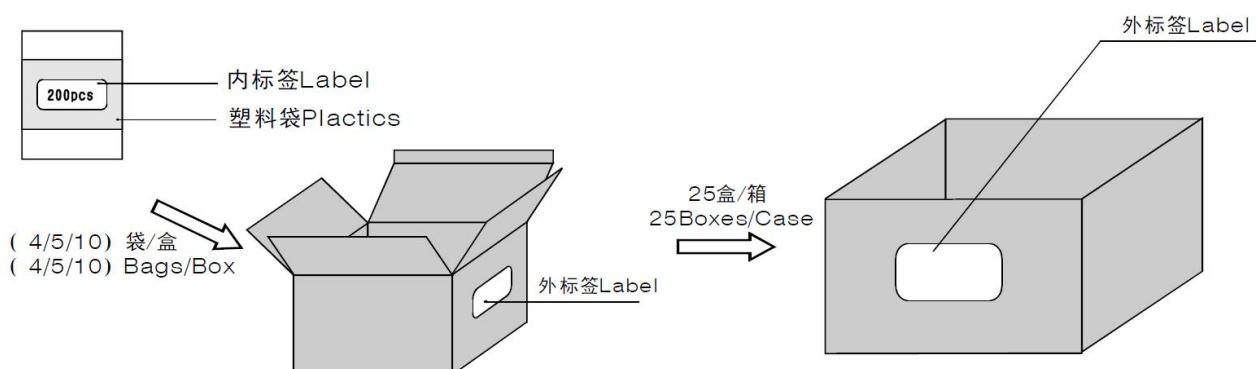
Note: For resistors operated in ambient over 70℃, rated load (rated power) shall be derated in accordance with the above figure.

◆特性 Characteristics

试验项目 Test Item	规定值 Standard	测试方法 Test Method
引出端强度 Terminal Strength	$ \Delta R \leq (1\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $ \Delta R \leq (1\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	按照 GB/T 8976-1996 中 4.5.12 条的规定执行 According to GB / T 8976-1996 in the implementation of the provisions of Article 4.5.12
可焊性 Solderability	试验后外观无异常, 且上锡率不小于 95% No abnormal appearance after the test, and the rate of not less than 95%	IEC 60115-1 4.17 在 $260 \pm 5^\circ\text{C}$ 的焊料槽内, 浸入时间 2 ± 0.5 秒。Tem: $260 \pm 5^\circ\text{C}$, Time: $2 \pm 0.5\text{s}$.
耐焊接热 Resistance to Soldering Heat	$ \Delta R \leq (1\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $ \Delta R \leq (1\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.18 $270^\circ\text{C} \pm 5^\circ\text{C}, 5\text{s} \pm 1\text{s}$
电阻温度系数 T.C.R	在规定值内 within specified T.C.R	IEC 60115-1 4.8 $+25^\circ\text{C} / -55^\circ\text{C} / +25^\circ\text{C} / +125^\circ\text{C} / +25^\circ\text{C}$
短时间过负载 Short Time Overload	$ \Delta R \leq (2\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $ \Delta R \leq (2\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.13 施加 2.5 倍额定电压或最大过负荷电压(取较小者)持续 5 秒 Apply 2.5 times rated voltage or Max overload voltage, whichever is lower, for 5 s.
温度快速变化 Rapid Change of Temperature	$ \Delta R \leq (1\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $ \Delta R \leq (1\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.19 -55°C (30 分钟) ~ 常温 (5 分钟) ~ 125°C (30 分钟) 5 个循环 -55°C (30 min) ~ mornaltemperature (5 min) ~ 125°C (30 min) 5 cycles
70°C 耐久性 Endurance at 70°C	$ \Delta R \leq (3\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $ \Delta R \leq (3\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.25.1 $70^\circ\text{C} \pm 2^\circ\text{C}$, 1000 小时, 额定电压或元件极限电压(取较小值)通 1.5 小时/断 0.5 小时。 $70^\circ\text{C} \pm 2^\circ\text{C}$, 1000h, Rated voltage or limiting element voltage whichever is lower 1.5h ON/0.5h OFF.
稳态湿热 Damp Heat Steady State	$ \Delta R \leq (3\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $ \Delta R \leq (3\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.24 $40^\circ\text{C} \pm 2^\circ\text{C}, 93\% \pm 3\% \text{RH}$, 额定电压或最大工作电压(取较小者)通 1.5 小时, 断 0.5 小时, 持续 500 小时。 Resistor should be exposed at $40^\circ\text{C} \pm 2^\circ\text{C}, 93\% \pm 3\% \text{RH}$, 1000h and apply rated voltage or Max working voltage, whichever is lower, for 1.5h on, 0.5h off for 1000h.
上限类别温度耐久性 Endurance at Upper Category Temperature	$ \Delta R \leq (3\%R + 0.05\Omega), 0\Omega$ (跨接电阻) $\leq 50m\Omega$ $ \Delta R \leq (3\%R + 0.05\Omega), 0\Omega$ (Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.25.3 $125^\circ\text{C} \pm 2^\circ\text{C}$ 1000h Resistor should be exposed at $125^\circ\text{C} \pm 3^\circ\text{C}$ for 1000 h.
耐溶剂性 Component Solvent Resistance	试验后产品外观无异常, 标志应清晰可见 No abnormal appearance of the product after the test, signs should be clearly visible	使用溶剂: 异丙醇; 溶剂温度: $(23 \pm 2)^\circ\text{C}$; 浸泡时间: $(10 \pm 1)\text{h}$ Solvent: isopropyl alcohol; solvent temperature: $(23 \pm 2)^\circ\text{C}$; soaking time: $(10 \pm 1)\text{h}$
封装绝缘耐压 Coating Dielectric Withstanding Voltage	无弧光, 燃烧或本体被击穿等现象 No arc, burning or other body is the breakdown phenomenon	在引脚和封装层之间施加 500VDC, 持续时间: 1min. In the encapsulation layer is applied between the pin and 500 VDC, Duration: 1min.
封装绝缘阻抗 Coating Insulation Resistance	$R \geq 100M\Omega$	在引脚和封装层之间施加 500VDC, 持续时间: 1min. In the encapsulation layer is applied between the pin and 500 VDC, Duration: 1min.

◆额定值 Ratings

项 目 Item	标准 Specification
额定功率 Power Rating	1/8W(1/4W)
最大工作电压 Max.Operating Voltage	200V
最大過負荷電壓 Max.Overload Voltage	280V
跨接电阻额定电流 Jumper Rated Current	2A
电阻温度系数 Resistance Temperature Coefficient(T.C.R)	$10\Omega \leq R \leq 1M\Omega: \pm 100\text{ppm}/^\circ\text{C}$ $1\Omega \leq R < 10\Omega, 1M\Omega < R \leq 10M\Omega: \pm 250\text{ppm}/^\circ\text{C}$
阻值误差精度 Resistance Tolerance	$\pm 1\%, \pm 2\%, \pm 5\%$ 跨接电阻 Jumper: $\leq 50m\Omega$
阻值范围 Resistance Range	0Ω (跨接电阻 Jumper)、 1.0Ω - $10M\Omega$ E-24 系列
使用温度范围 Operating Temperature Range	-55°C - $+125^\circ\text{C}$
额定温度 Rated Temperature	$+70^\circ\text{C}$

◆包装 Packaging


塑料袋散包装 Bag	袋 Bag	盒 Box			箱 Case
2.54mm 脚距	200pcs	4 ~ 5 脚 Pins	6 ~ 11 脚 Pins	12 ~ 14 脚 Pins	25 Boxes Max .
		10 Bags	5Bags	4Bags	

版本 Version	日期 Date	修订内容 Revision Content	修订人 Reviser
A0	2025-10-28	-原版 The original version.	慕容群辉 qunhui Murong