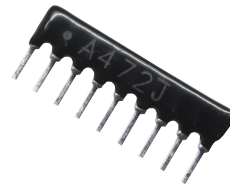


■ 厚膜網絡電阻器 Thick Film Network Resistor

● 特點 Features

- * 按工業標準尺寸生產，小型化，組裝密度高
Industry standard size, miniature, high density assembly
- * 可靠性高，使用壽命長，防潮性、抗腐蝕性好
High reliability, long life excellent moistureproof and cauterization
- * 設計靈活，可根據用戶要求生產
Free design, producing according to the consumer require



● 應用領域 Application

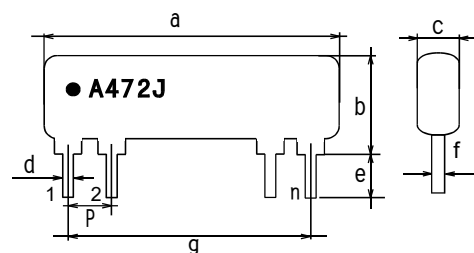
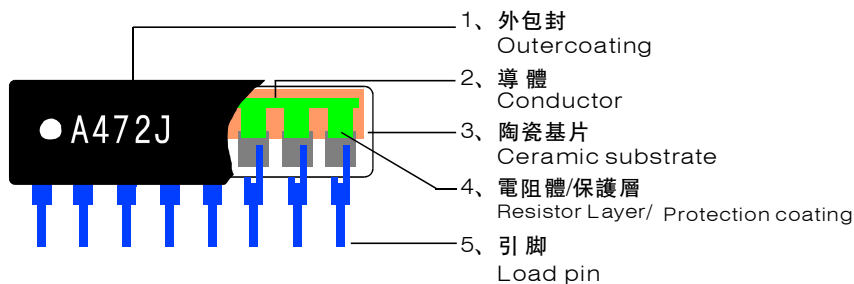
應用于工業設備、家用電器、醫療設備以及測試與測量設備

Application to Industrial equipment, household appliances, medical equipment and test and measurement equipment

● 品名構成 Type Designation

A	H	08	473	/331	J	Y	P				
電路結構代碼 Type Code	額定功率代號 Power Rating Code		引脚數 Pins	電阻值代號 Resistance Value Code	電阻值代號 Resistance Value Code	電阻值誤差精度代號 Resistance Tolerance Code		腳距代號 Code of Pin Distance		環保代號 Code of Lead-Free	
A B C D E F G H T	代號 Code	功率 Power	04 ~ 14	三位數: 3 digit 例如Example: 473=47KΩ	E、F、H、 T型產品 E、F、H、T- type product 三位數: 3 digit 例如 Example: 331=330Ω	代號 Code	誤差精度 Tolerance	無表示 Blank	2.54 mm	P	環保品 Environmental
	無表示 Blank	1/8W				F	±1%				
	H	1/4W				G	±2%	J	±5%		

● 結構 Construction



厚膜網絡電阻器

THICK FILM NETWORK RESISTOR

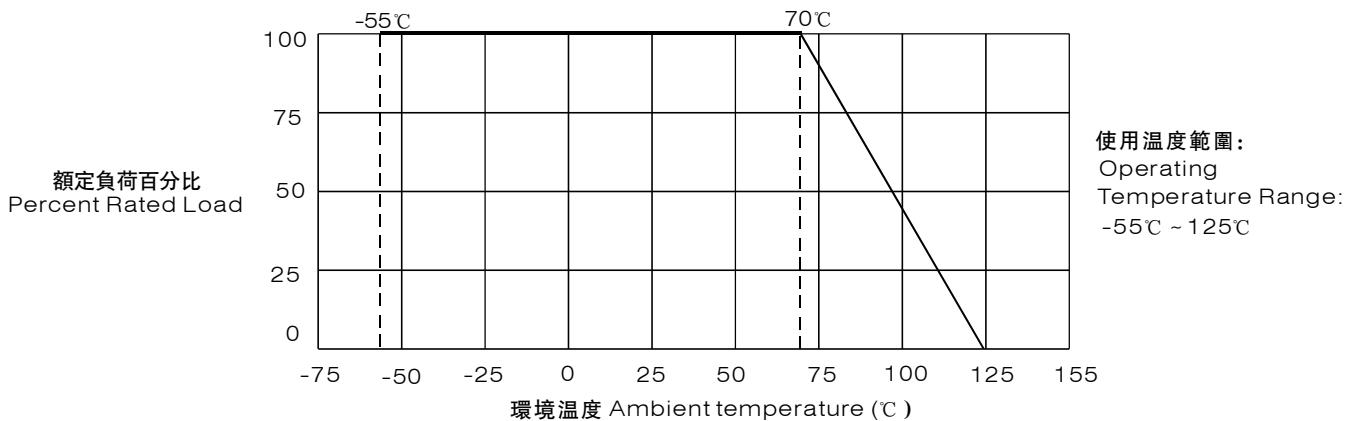
• 等效電路 Equivalent Circuit

型號 Type	等效電路 Equivalent Circuit	型號 Type	等效電路 Equivalent Circuit	型號 Type	等效電路 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	 $R_1 = R_2 \text{ OR } R_1 \neq R_2$

• 規格尺寸 Dimensions

代號 Code	常規尺寸 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	

• 負荷下降曲線 Derating Curve



注：當電阻使用的環境溫度超過70°C時，其額定負荷(額定功率)按上述曲線下降。

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

● 特性 Characteristics

試驗項目 Test Item	規定值 Standard	測試方法 Test Method
引出端強度 Terminal Strength	$ \Delta R \leq (1\%R + 0.05\Omega)$, 0Ω(跨接電阻) $ \Delta R \leq (1\%R + 0.05\Omega)$, 0Ω(Jumper resistance) $\leq 50m\Omega$	按照GB/T 8976-1996 中4.5.12條的規定執行 According to GB / T 8976-1996 in the implementation of the provisions of Article 4.5.12
可焊性 Solderability	試驗后外觀無異常，且上錫率不小於95% No abnormal appearance after the test, and the rate of not less than 95%	IEC 60115-1 4.17 在 $260 \pm 5^\circ\text{C}$ 的焊料槽內,浸入時間 2 ± 0.5 秒。Tem: $260 \pm 5^\circ\text{C}$, Time: $2 \pm 0.5\text{s}$.
耐焊接熱 Resistance to Soldering Heat	$ \Delta R \leq (1\%R + 0.05\Omega)$, 0Ω(跨接電阻) $ \Delta R \leq (1\%R + 0.05\Omega)$, 0Ω(Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.18 $270^\circ\text{C} \pm 5^\circ\text{C}$, $5\text{s} \pm 1\text{s}$
電阻溫度係數 T.C.R	在規定值內 within specified T.C.R	IEC 60115-1 4.8 $+25^\circ\text{C}/-55^\circ\text{C}/+25^\circ\text{C}/+125^\circ\text{C}/+25^\circ\text{C}$
短時間過負載 Short Time Overload	$ \Delta R \leq (2\%R + 0.05\Omega)$, 0Ω(跨接電阻) $ \Delta R \leq (2\%R + 0.05\Omega)$, 0Ω(Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.13 施加2.5倍額定電壓或最大過負荷電壓(取較小者)持續5秒 Apply 2.5 times rated voltage or Max overload voltage, whichever is lower, for 5 s.
溫度快速變化 Rapid Change of Temperature	$ \Delta R \leq (1\%R + 0.05\Omega)$, 0Ω(跨接電阻) $ \Delta R \leq (1\%R + 0.05\Omega)$, 0Ω(Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.19 -55°C (30分鐘)~常溫(5分鐘)~ 125°C (30分鐘)5個循環 -55°C (30min)~normal temperature(5min)~ 125°C (30min)5cycles
70°C持久性 Endurance at 70°C	$ \Delta R \leq (3\%R + 0.05\Omega)$, 0Ω(跨接電阻) $ \Delta R \leq (3\%R + 0.05\Omega)$, 0Ω(Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.25.1 $70^\circ\text{C} \pm 2^\circ\text{C}$, 1000小時, 額定電壓或元件極限電壓(取較小者)通1.5小時/斷0.5小時。 $70^\circ\text{C} \pm 2^\circ\text{C}$, 1000h, Rated voltage or limiting element voltage whichever is lower 1.5h ON/0.5h OFF.
穩態濕熱 Damp Heat Steady State	$ \Delta R \leq (3\%R + 0.05\Omega)$, 0Ω(跨接電阻) $ \Delta R \leq (3\%R + 0.05\Omega)$, 0Ω(Jumper resistance) $\leq 50m\Omega$	IEC 60115-1 4.24 $40^\circ\text{C} \pm 2^\circ\text{C}$, $93\% \pm 3\%RH$, 額定電壓或最大工作電壓(取較小者)通1.5小時, 斷0.5小時, 持續500小時。 Resistor should be exposed at $40^\circ\text{C} \pm 2^\circ\text{C}$, $93\% \pm 3\%RH$, 1000h and apply rated voltage or Max working voltage, whichever is lower, for 1.5h on, 0.5h off for 1000h.
上限類別溫度持久性 Endurance at Upper Category Temperature	$ \Delta R \leq (3\%R + 0.05\Omega)$, 0Ω(跨接電阻) $\leq 50m\Omega$ $ \Delta R \leq (3\%R + 0.05\Omega)$, 0Ω(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.
耐溶劑性 Component Solvent Resistance	試驗后產品外觀無異常，標志應清晰可見 No abnormal appearance of the product after the test, signs should be clearly visible	使用溶劑: 異丙醇; 溶劑溫度: $(23 \pm 2)^\circ\text{C}$; 浸泡時間: $(10 \pm 1)\text{h}$ Solvent: isopropyl alcohol; solvent temperature: $(23 \pm 2)^\circ\text{C}$; soaking time: $(10 \pm 1)\text{h}$
包封絕緣耐電壓 Coating Dielectric Withstanding Voltage	無弧光，燃燒或本體被擊穿等現象 No arc, burning or other body is the breakdown phenomenon	在引腳和包封層之間施加500VDC, 持續時間: 1min. In the encapsulation layer is applied between the pin and 500 VDC, Duration: 1min.
包封絕緣阻抗 Coating Insulation Resistance	$R \geq 100M\Omega$	在引腳和包封層之間施加500VDC, 持續時間: 1min. In the encapsulation layer is applied between the pin and 500 VDC, Duration: 1min.

厚膜網絡電阻器

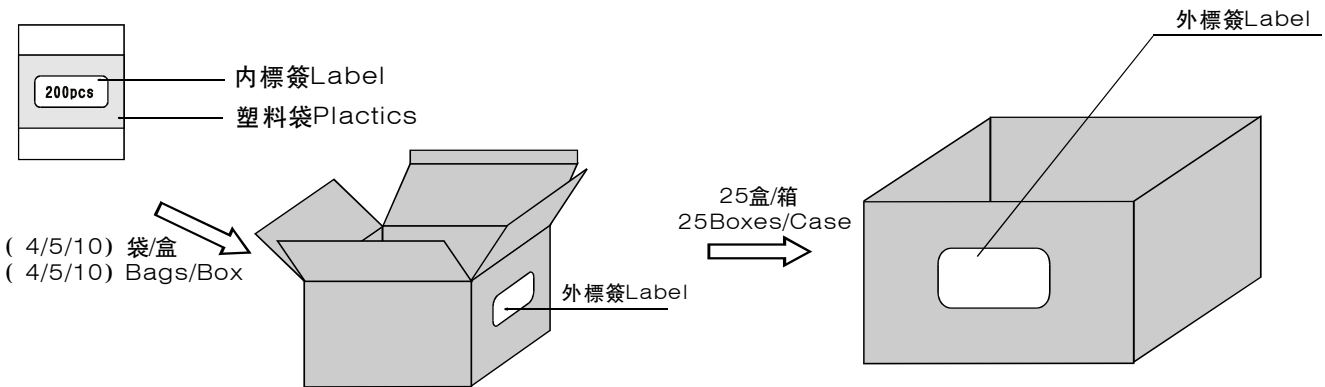
THICK FILM NETWORK RESISTOR

• 額定值 Ratings

項目 Item	標準 Specification
額定功率 Power Rating	1/8W(1/4W)
最大工作電壓 Max.Operating Voltage	200V
最大過負荷電壓 Max.Overload Voltage	280V
跨接電阻額定電流 Jumper Rated Current	2A
電阻溫度系數 Resistance Temperature Coefficient (T.C.R)	10Ω ≤ R ≤ 1MΩ: ± 100ppm/°C 1Ω ≤ R < 10Ω, 1MΩ < R ≤ 10MΩ: ± 250ppm/°C
阻值誤差精度 Resistance Tolerance	± 1% , ± 2% , ± 5% 跨接電阻Jumper: ≤ 50mΩ
阻值範圍 Resistance Range	0Ω(跨接電阻Jumper)、1.0Ω ~ 10MΩ E-24系列
使用溫度範圍 Operating Temperature Range	-55°C ~ +125°C
額定溫度 Rated Temperature	+70°C

• 包裝 Packaging

* 包裝方式 Packaging



* 包裝數量 Packaging quantity

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

■ 修訂履歷 Revision History

版本Version	日期Date	修订内容 Change Description
V2020.0	2020-06-23	- 原版 The original version.

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