

# 厚膜網絡電阻器

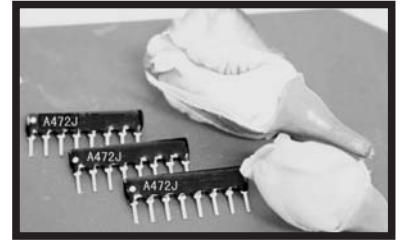
## THICK FILM NETWORK RESISTOR

### 厚膜網絡電阻器

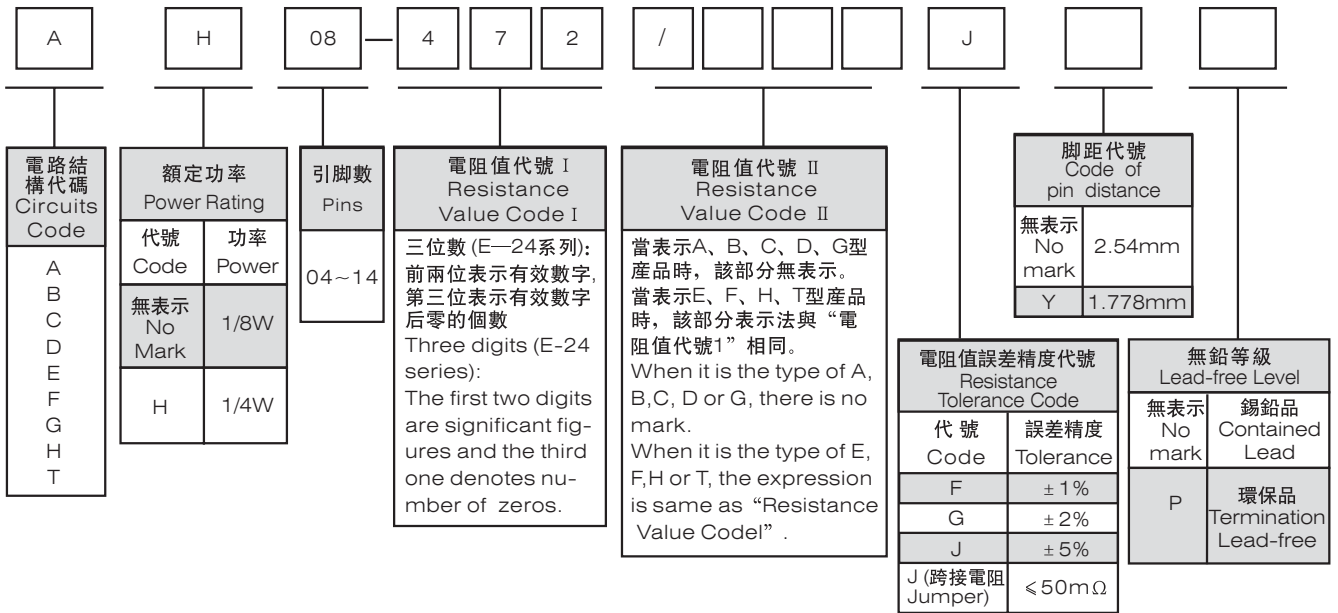
#### THICK FILM NETWORK RESISTOR

#### ● 產品簡介 BRIEF INTRODUCTION

- \* 小型化、高密度組裝
  - \* 電性能穩定，可靠性高
  - \* 可得到不同電阻值組合
  - \* 符合RoHS指令
- Miniature, high density assembly.
  - Stable electrical capability, high reliability.
  - Combinations of different ohmic value are available
  - RoHS compliant



#### ● 定貨方式 ORDER

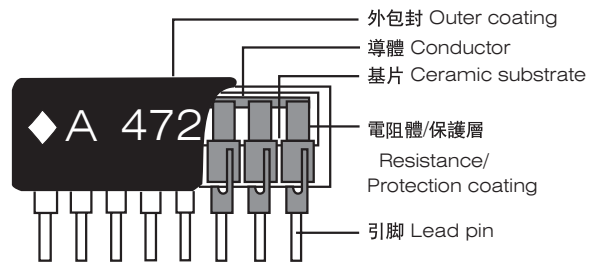


#### ● 結構圖和外形尺寸

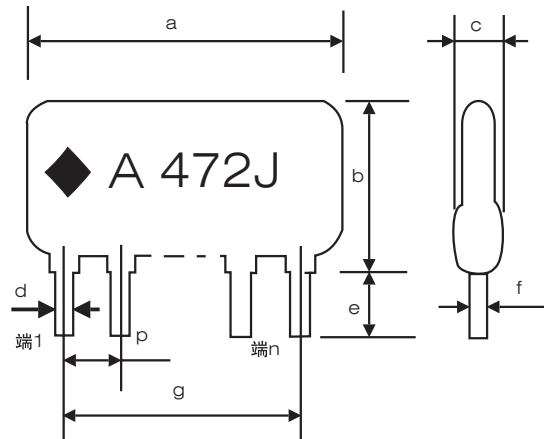
#### CONSTRUCTION AND DIMENSIONS

單位 unit:mm

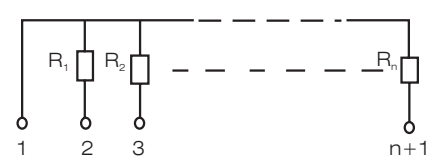
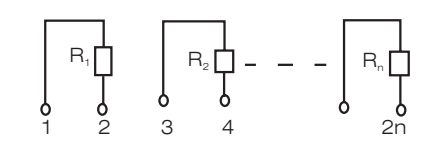
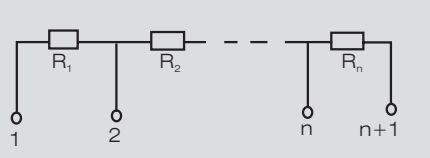
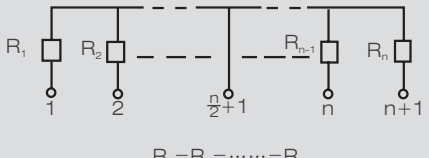
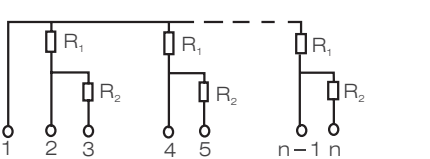
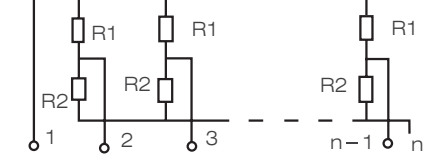
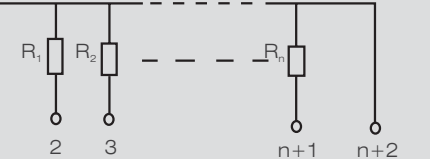
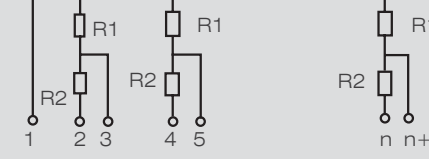
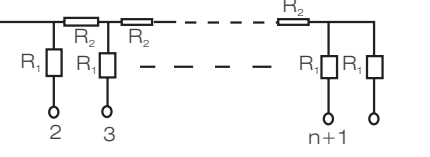
代號 Code	常規尺寸 Normal dimension		特殊尺寸 Special dimension	
a	2.54 × (n-1) + 2.50max		1.778 × (n-1) + 3.20max	
b	A、B、C、D、E、F、G、H 型 Type	5.08max	A、B、C、D、E、F、G、H 型 Type	5.08max
	T 型 Type	8.50max	T 型 Type	8.50max
c	3.00max		3.00max	
d	0.50 ± 0.1		0.50 ± 0.1	
e	3.50 ± 0.5		3.50 ± 0.5	
f	0.25 ± 0.1		0.30 ± 0.1	
g	2.54 × (n-1) ± 0.3		1.778 × (n-1) ± 0.3	
p	2.54 ± 0.1		1.778 ± 0.1	



注: 白色點標記為第一腳  
Note: The white dot means the first pin.



• 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	 <p style="text-align: center;"><math>R_1=R_2=\dots=R_n</math></p>	B	 <p style="text-align: center;"><math>R_1=R_2=\dots=R_n</math></p>
C	 <p style="text-align: center;"><math>R_1=R_2=\dots=R_n</math></p>	D	 <p style="text-align: center;"><math>R_1=R_2=\dots=R_n</math></p>
E	 <p style="text-align: center;"><math>R_1=R_2</math>或<math>R_1 \neq R_2</math></p>	F	 <p style="text-align: center;"><math>R_1=R_2</math>或<math>R_1 \neq R_2</math></p>
G	 <p style="text-align: center;"><math>R_1=R_2=\dots=R_n</math></p>	H	 <p style="text-align: center;"><math>R_1=R_2</math>或<math>R_1 \neq R_2</math></p>
T	 <p style="text-align: center;"><math>R_1=R_2</math>或<math>R_1 \neq R_2</math></p>		

• 參考標準 REFERENCE STANDARD

GB/T 15654-1995  
 GB/T 2828.1-2003  
 GB/T 2829-2002

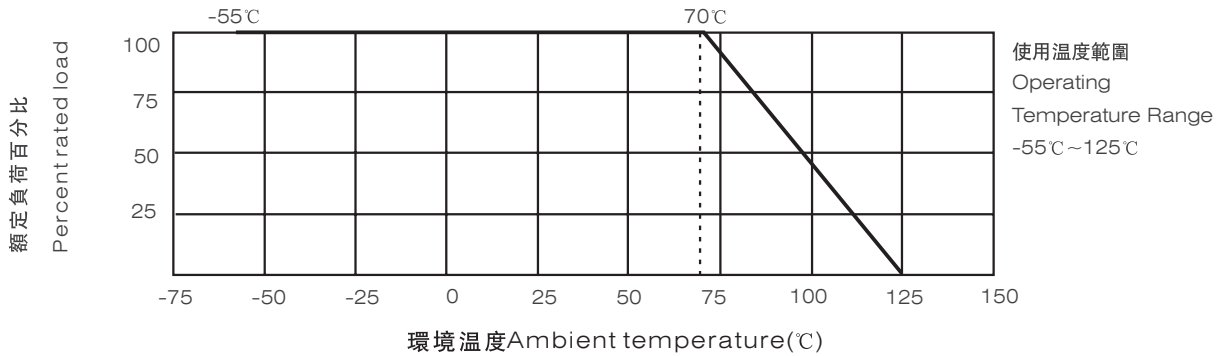
• IEC E-24 系列電阻值代碼對照表

IEC E-24 Series Resistance Cross-reference List

E-24 系列 E-24 Series ( $\times 10^n \Omega$ )  
(單位unit: 1 $\Omega$ 、10 $\Omega$ 、100 $\Omega$ 、1K $\Omega$ 、10K $\Omega$ 、100K $\Omega$ 、1M $\Omega$ )

1.0	1.5	2.2	3.3	4.7	6.8
1.1	1.6	2.4	3.6	5.1	7.5
1.2	1.8	2.7	3.9	5.6	8.2
1.3	2.0	3.0	4.3	6.2	9.1

• 負荷下降曲線 DERATING CURVE



\* 當電阻使用的環境溫度超過70°C時，其額定負荷(額定功率或額定電流)按上述曲線下降。  
For resistors operated in ambient over 70°C, rated load (power rating or current rating) shall be derated in accordance with above figure.

• 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. Working 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
電阻溫度係數 Resistance Temperature Coefficient	10 $\Omega \leq R \leq 1M\Omega$ : $\pm 100$ ppm/ $^{\circ}C$ 1 $\Omega \leq R < 10\Omega, 1M\Omega < R \leq 10M$ : $\pm 250$ ppm/ $^{\circ}C$
阻值誤差精度 Resistance Tolerance	$\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$ , 跨接電阻 Jumper: $\leq 50m\Omega$
阻值範圍 Resistance Range	0 $\Omega$ (跨接電阻 Jumper)、1.0 $\Omega \sim 10M\Omega$ E-24系列
使用溫度範圍 Operating Temperature Range	-55 $^{\circ}C \sim 125^{\circ}C$
額定溫度 Rated Temperature	+70 $^{\circ}C$

\* 注：額定電壓 =  $\sqrt{\text{額定功率} \times \text{標稱電阻值}}$  或最大工作電壓中的較小值。  
Note: Rated Voltage =  $\sqrt{\text{Power Rating} \times \text{Resistance Value}}$  or Max. Working Voltage, whichever is lower.

• 特性 CHARACTERISTICS

項目 Item	標準 Specifications	測試方法 ( GB/T 15654-1995) Test Methods ( GB/T 15654-1995)
電阻溫度系數 T. C. R	在規定值內 Within the specified T.C.R	測定範圍: -55℃~125℃ measure between -55℃~125℃
短時間過負載 Short Time Overload	無可見損傷, No mechanical damage $\Delta R \leq \pm (2.0\%R + 0.05\Omega)$ 跨接電阻 Jumper: $R \leq 50m\Omega$	2.5倍額定電壓或最大過負荷電壓(取最小者) 保持5秒 2.5 × Rated voltage or Max. Overload Voltage, choose the lower, for 5 seconds
包封絕緣阻抗 Coating Insulation Resistance	100MΩ Min	施加 500V DC Apply 500V DC
包封絕緣耐電壓 Coating Insulation Withstand Voltage	無弧光, 燃燒及本體被擊穿 No arc, inflammation and damage	施加500V DC 保持1min Apply 500V DC 1min
可焊性 Solderability	可焊面積 ≥95% 95%Cover Min	260℃ ± 5℃ 2 ± 0.5秒 260℃ ± 5℃ 2 ± 0.5S
耐溶劑性 Resistance to Solvent	無可見損傷, No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ 跨接電阻 Jumper: $R \leq 50m\Omega$	浸入異丙醇溶液 10 ± 1小時, 溶液溫度為 23 ± 2℃ Dip in isopropyl alcohol solution of 10h ± 1 h the solution temperature of 23 ± 2 °C.
引綫強度 Pin strength	無可見損傷, No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ 跨接電阻 Jumper: $R \leq 50m\Omega$	將引綫焊接在網絡電阻的受試引出端后, 以10mm/s平挂, 拉力到500g止 Speed:10mm/s, pull strength:500g.
抗彎強度 Bending strength	無可見損傷 No mechanical damage	端子綫末端負重0.5kg,使電阻器本體與端子綫彎成90°, 保持5s, 為一個循環, 做2個循環 Force with 0.5kg on the terminal pin, between the resistor and the terminal pin is 90 degree, duration: 5s for 1 cycle, total 2 cycles
耐焊接熱 Resistance to Soldering Heat	無可見損傷, No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ 跨接電阻 Jumper: $R \leq 50m\Omega$	270℃ ± 5℃ 10 ± 1秒 270℃ ± 5℃ 10s ± 1s
溫度循環 Temperature Cycling	無可見損傷, No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ 跨接電阻 Jumper: $R \leq 50m\Omega$	-55℃ ( 30分鐘) ~常溫 ( 2~3分鐘) ~125℃ ( 30分鐘) 5個循環 -55℃ ( 30min) ~normal temperature ( 2~3min) ~125℃ ( 30min) 5cycles

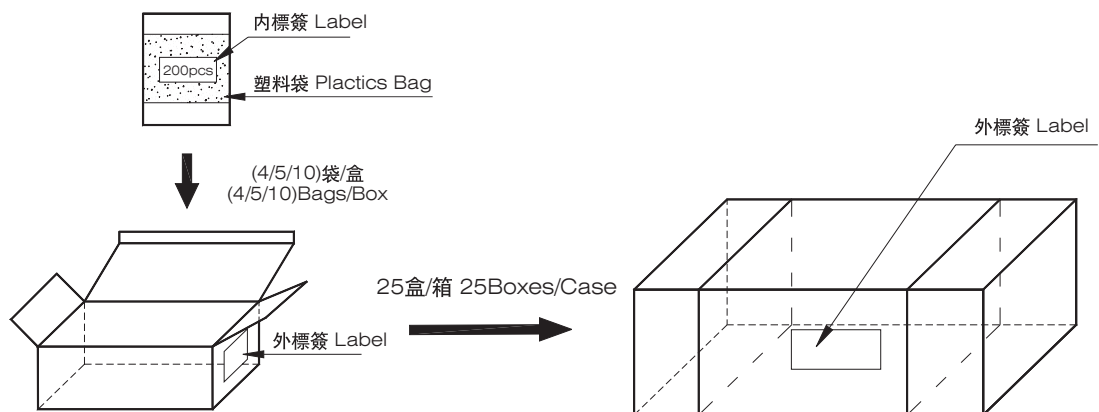
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項目 Item	標 准 Specifications	測試方法 ( GB/T 15654-1995 ) Test Methods ( GB/T 15654-1995 )
穩態濕熱 Steady state humidity	無可見損傷, No mechanical damage $\Delta R \leq \pm ( 3.0\%R + 0.1\Omega )$ 跨接電阻 Jumper: $R \leq 100m\Omega$	$40\text{C} \pm 2\text{C}$ 90%~95%RH1000小時 $40\text{C} \pm 2\text{C}$ 90%~95%RH1000h
70°C 耐久性 Load Life(70°C)	無可見損傷, No mechanical damage $\Delta R \leq \pm ( 3.0\%R + 0.1\Omega )$ 跨接電阻 Jumper: $R \leq 100m\Omega$	70°C $\pm 2\text{C}$ , 1000小時, 額定電壓或最大工作電壓兩者中的較小值, 1.5小時/斷0.5小時 70°C $\pm 2\text{C}$ , 1000h, Rated Voltage or Max. Working Voltage, whichever is lower. 1.5h on/0.5h off
上限類別溫度耐久性 Endurance at upper temperature	無可見損傷, No mechanical damage $\Delta R \leq \pm ( 3.0\%R + 0.1\Omega )$ 跨接電阻 Jumper: $R \leq 100m\Omega$	$125\text{C} \pm 2\text{C}$ 1000小時 $125\text{C} \pm 2\text{C}$ 1000h

### ● 包裝 PACKAGING

\* 包裝形式 Packaging style



\* 包裝數量 Packaging quantity

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

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