

# 厚膜網絡電阻器

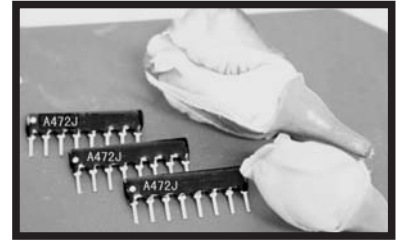
## THICK FILM NETWORK RESISTOR

### 厚膜網絡電阻器

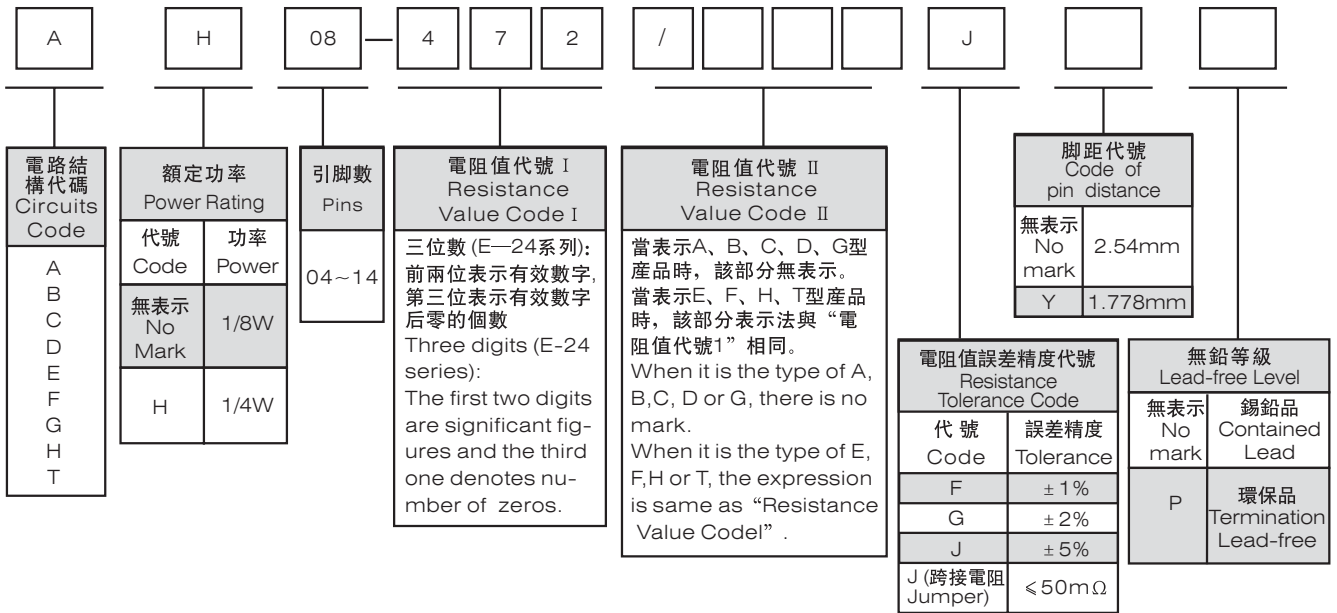
#### THICK FILM NETWORK RESISTOR

#### ● 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

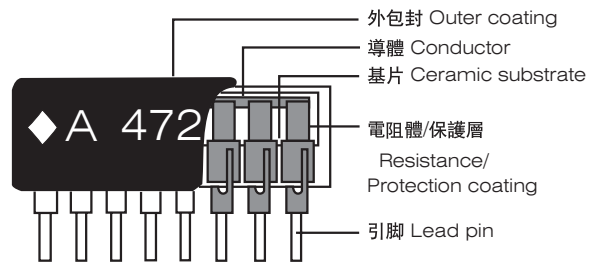


#### ● 結構圖和外形尺寸

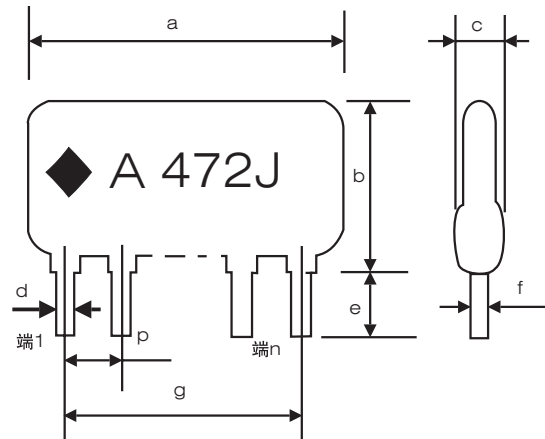
#### CONSTRUCTION AND DIMENSIONS

單位 unit:mm

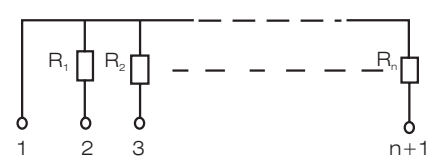
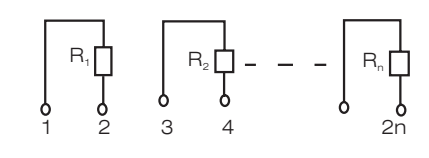
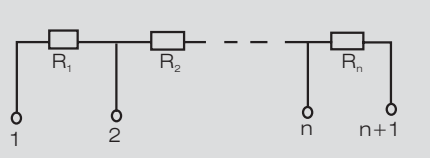
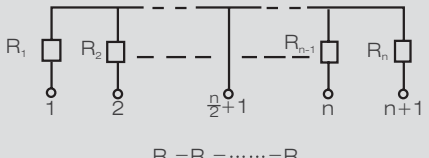
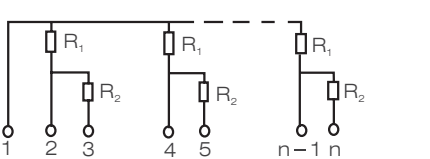
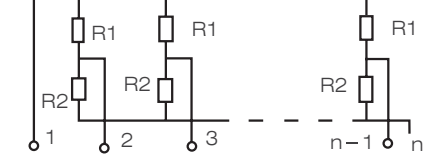
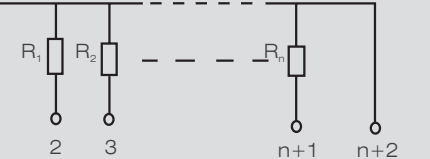
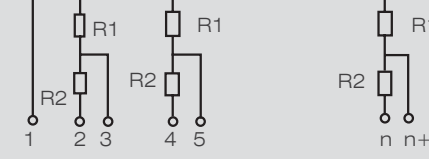
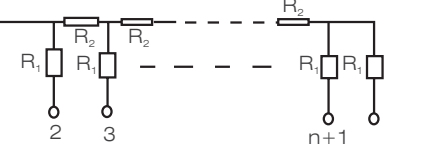
代號 Code	常規尺寸 Normal dimension		特殊尺寸 Special dimension	
a	2.54 × (n-1) + 2.50max		1.778 × (n-1) + 3.20max	
b	A、B、C、D、 E、F、G、H 型 Type	5.08max	A、B、C、D、 E、F、G、H 型 Type	5.08max
	T型 Type	8.50max	T型 Type	8.50max
c	3.00max		3.00max	
d	0.50 ± 0.1		0.50 ± 0.1	
e	3.50 ± 0.5		3.50 ± 0.5	
f	0.25 ± 0.1		0.30 ± 0.1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

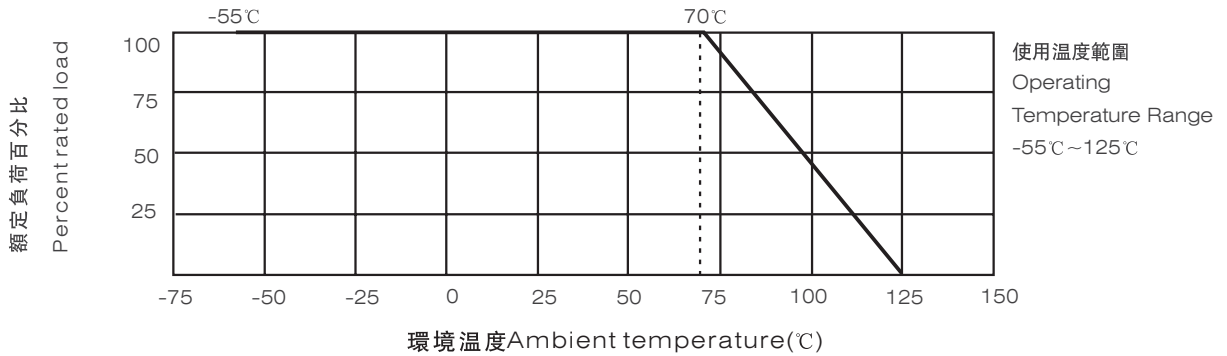
• IEC E-24 系列電阻值代碼對照表

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 $\Omega \leq R \leq 1M\Omega$ : $\pm 100\text{ppm}/^\circ\text{C}$ 1 $\Omega \leq R < 10\Omega, 1M\Omega < R \leq 10M$ : $\pm 250\text{ppm}/^\circ\text{C}$
阻值誤差精度 Resistance Tolerance	$\pm 1\%$ , $\pm 2\%$ , $\pm 5\%$ , 跨接電阻 Jumper: $\leq 50\text{m}\Omega$
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 $^\circ\text{C} \sim 125^\circ\text{C}$
額定溫度 Rated Temperature	+70 $^\circ\text{C}$

\* 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 $2.5 \times \text{Rated voltage or Max. Overload Voltage}$ , choose the lower, for 5 seconds
包封絕緣阻抗 Coating Insulation Resistance	100M $\Omega$ 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 $\geq 95\%$ 95%Cover Min	260℃ $\pm 5\text{℃}$ 2 $\pm 0.5$ 秒 260℃ $\pm 5\text{℃}$ 2 $\pm 0.5$ S
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 $\pm 1$ 小時, 溶液溫度為 23 $\pm 2\text{℃}$ Dip in isopropyl alcohol solution of 10h $\pm 1$ h the solution temperature of 23 $\pm 2\text{℃}$ .
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℃ $\pm 5\text{℃}$ 10 $\pm 1$ 秒 270℃ $\pm 5\text{℃}$ 10s $\pm 1$ s
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

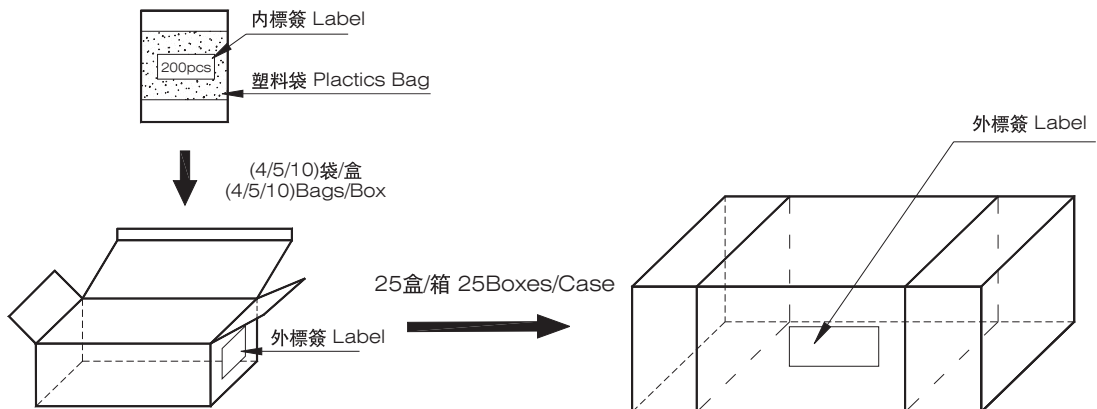
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項目 Item	標 准 Specifications	測試方法 ( GB/T 15654-1995) Test Methods ( GB/T 15654-1995)
穩態濕熱 Steady state humidity	無可見損傷, No mechanical damage $\Delta R \leq \pm ( 3.0\%R + 0.1\Omega )$ 跨接電阻 Jumper: $R \leq 100m\Omega$	$40\text{C} \pm 2\text{C}$ 90%~95%RH1000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 ± 2°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 ± 2°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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