

# 厚膜網絡電阻器

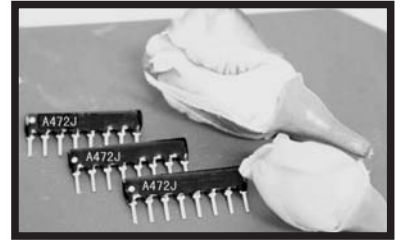
## THICK FILM NETWORK RESISTOR

### 厚膜網絡電阻器

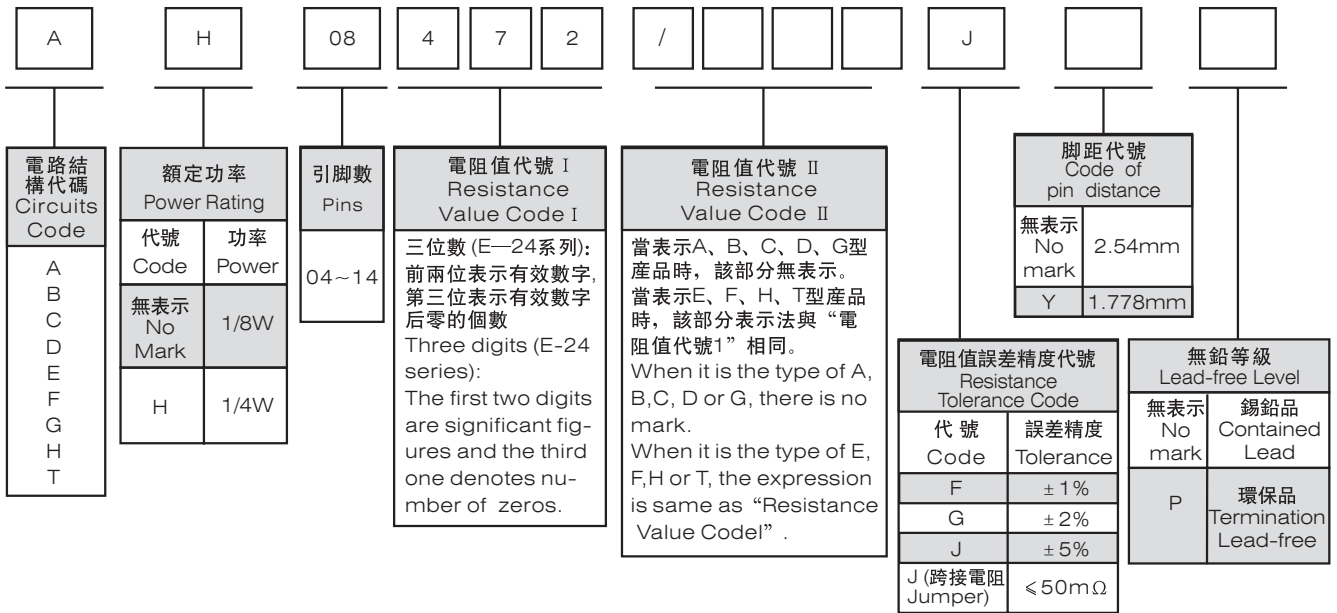
#### THICK FILM NETWORK RESISTOR

#### ● 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

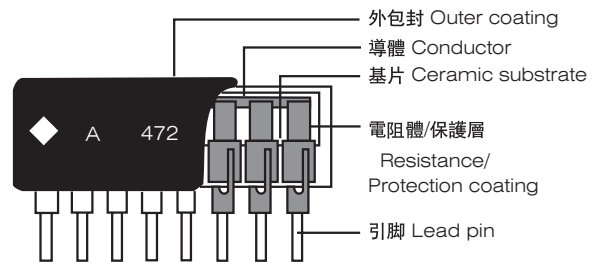


#### ● 結構圖和外形尺寸

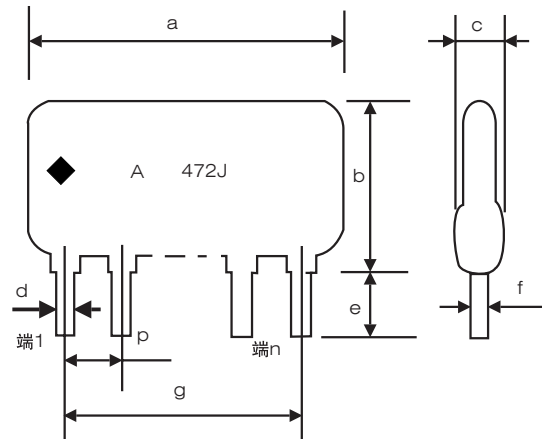
#### CONSTRUCTION AND DIMENSIONS

單位 unit:mm

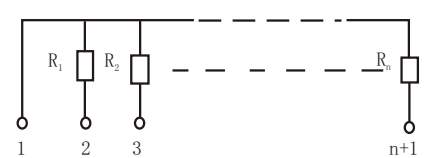
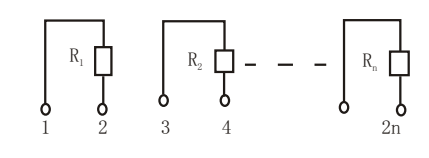
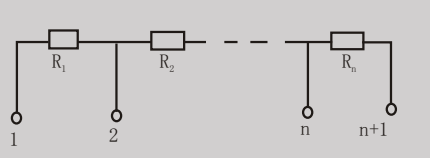
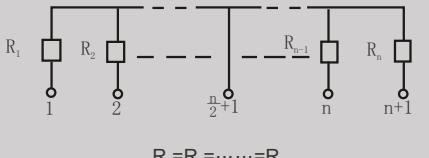
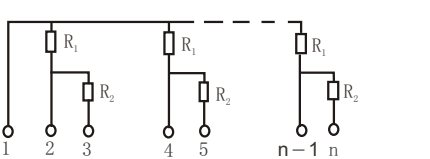
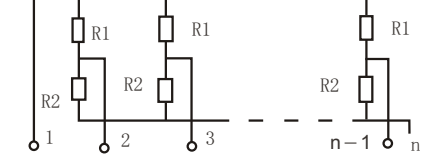
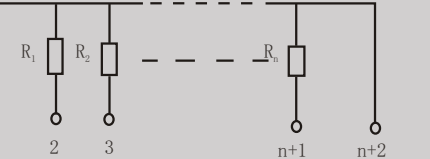
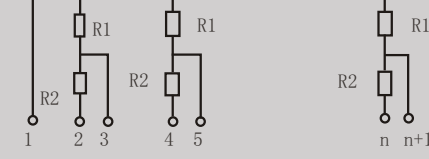
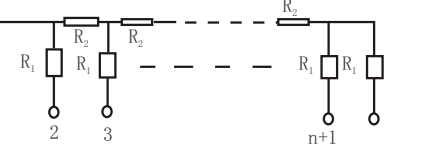
代號 Code	常規尺寸 Normal dimension		特殊尺寸 Special dimension	
a	2.54 × (n-1) + 2.50max		1.778 × (n-1) + 3.20max	
b	A、B、C、D、E、F、G、H 型 Type	5.08max	A、B、C、D、E、F、G、H 型 Type	5.08max
	T 型 Type	8.50max	T 型 Type	8.50max
c	3.00max		3.00max	
d	0.50 ± 0.1		0.50 ± 0.1	
e	3.50 ± 0.5		3.50 ± 0.5	
f	0.25 ± 0.1		0.30 ± 0.1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



注:白色菱形標記為第一脚  
Note: The white diamond marking 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

# 厚膜網絡電阻器

THICK FILM NETWORK RESISTOR

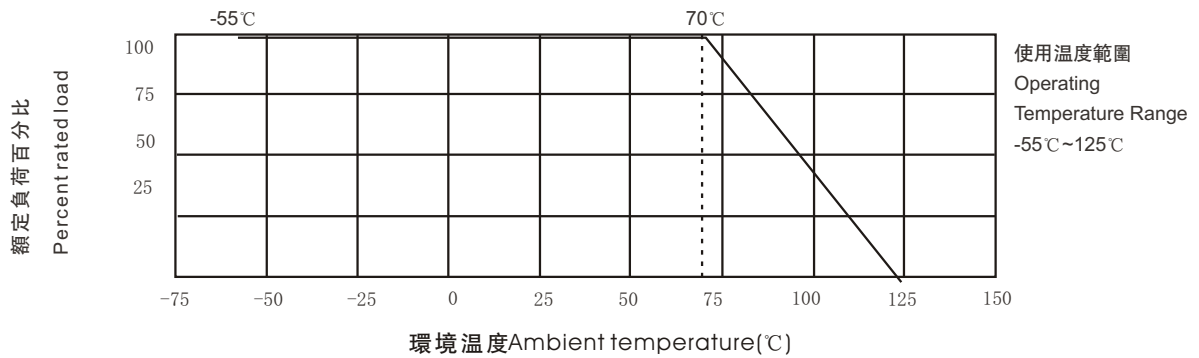
## • IEC E-24 系列電阻值代碼對照表

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 $\Omega$ : $\pm$ 100ppm/ $^{\circ}$ C 1 $\Omega$ $\leq$ R < 10 $\Omega$ , 1M $\Omega$ < R $\leq$ 10M: $\pm$ 250ppm/ $^{\circ}$ 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 $\Omega$ ~10M $\Omega$ E-24系列
使用溫度範圍 Operating Temperature Range	-55 $^{\circ}$ C~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 $2.5 \times \text{Rated voltage or Max. Overload Voltage, choose the lower, for 5 seconds}$
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	240℃ $\pm 5^\circ\text{C}$ 2 $\pm 0.5$ 秒 240℃ $\pm 5^\circ\text{C}$ 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: $R \leq 50m\Omega$	浸入三氯乙烯 10 $\pm 1$ 小時 Dip in chloroethylene for 10h $\pm 1$ h.
阻 燃 性 Resistance to inflammation	V-0	VL-94
引線強度 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: $R \leq 50m\Omega$	將引線焊接在網絡電阻的受試引出端后, 以10mm/s平掛, 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
振動試驗 vibration	無可見損傷, No mechanical damage $\Delta R \leq \pm (1.0\%R + 0.05\Omega)$ 跨接電阻 Jumper: $R \leq 50m\Omega$	10HZ $\rightarrow$ 55HZ $\rightarrow$ 10HZ 1min 內完成, 振幅1.55mm, 上述方法 X、Y、Z 三個方向各振動 2 小時 10HZ $\rightarrow$ 55HZ $\rightarrow$ 10HZ within 1 min, swing: 1.55mm, three directions for X、Y、Z for 2 hours
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℃ $\pm 5^\circ\text{C}$ 10 $\pm 1$ 秒 270℃ $\pm 5^\circ\text{C}$ 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

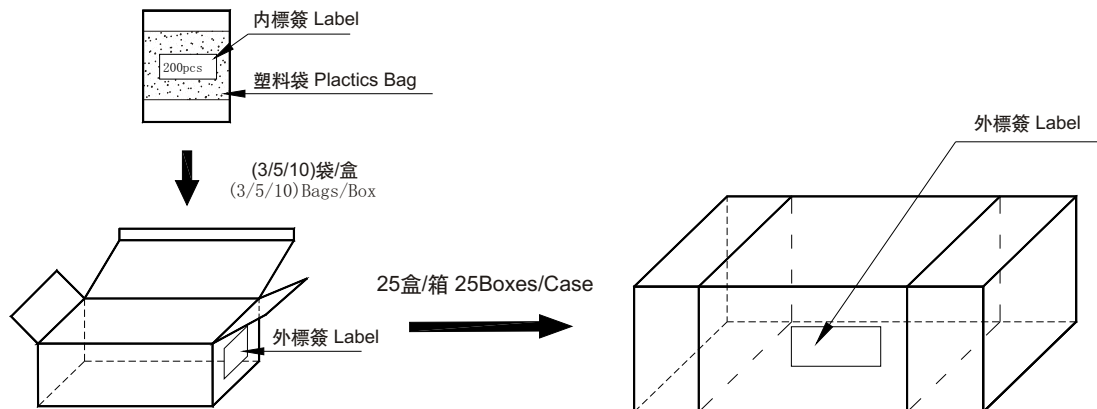
# 厚膜網絡電阻器

## THICK FILM NETWORK RESISTOR

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: $R \leq 100m\Omega$	$40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 90%~95%RH1000小時 $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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: $R \leq 100m\Omega$	$70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ , 1000小時, 額定電壓, 通1.5小時, 斷0.5小時 $70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 1000h, Rated voltage, 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: $R \leq 100m\Omega$	$125^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 1000小時 $125^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 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 脚 Pins	6~10 脚 Pins	13~14 脚 Pins	
	200pcs	10 Bags	5 Bags	3 Bags	25 boxes Max.