

## PRECISION METAL FILM RESISTORS

### 精密型金屬皮膜電阻器



#### Features

1. Low T.C. : 25ppm、50ppm、100ppm.
2. High precision :  $\pm 0.25\%$ 、 $\pm 0.5\%$ 、 $\pm 1\%$ 、 $\pm 5\%$ .
3. Temperature stable, low noise, good reliability.
4. 0.1% / 25ppm : case by case.

#### 特色

1. 低溫度係數 : 25ppm、50ppm、100ppm。
2. 高精密度 :  $\pm 0.25\%$ 、 $\pm 0.5\%$ 、 $\pm 1\%$ 、 $\pm 5\%$ 。
3. 溫度穩定，低雜音，可靠性良好。
4. 可客製化 0.1% / 25ppm。

## ELECTRICAL AND MECHANICAL PERFORMANCE

### 電氣及機械特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
阻值容許誤差 Resistance Tolerance	$\pm 1\%$ (F) or $\pm 0.5\%$ (D)	-
溫度係數 Resistance Temp. Coeff.	$\pm 25$ ppm / $^{\circ}\text{C}$ 、 $\pm 50$ ppm / $^{\circ}\text{C}$ 、 $\pm 100$ ppm / $^{\circ}\text{C}$ 、	-65 $^{\circ}\text{C}$ ~ 175 $^{\circ}\text{C}$
額定負載 Power Rating Load	Surface temp. 175 $^{\circ}\text{C}$ Max. 最高表面溫度 175 $^{\circ}\text{C}$ , $\Delta R/R \leq \pm 1\%$	Rated voltage for 30 minutes 額定電壓 / 30分鐘
短時間過負載 Short Time Overload	$\pm 0.5\%$	2.5 times of rated voltage for 5 seconds. 2.5 倍額定電壓 / 5秒
耐電壓 Dielectric Withstanding Voltage	No evidence of mechanical damage or insulation breakdown. 無機械性能損壞及絕緣擊穿現象	Max. Overload Voltage for 1 min. 施加最高過負載電壓 1 分鐘 ( RN 1 W & 1 WL : AC 350V ; RN 1/4 WS : AC 300V )
絕緣電阻 Insulation Resistance	10,000M $\Omega$	DC 100V or 500V megger
端子強度 Terminal Strength	No evidence of mechanical damage. 無機械性能損壞現象	1 kg
焊錫性 Solder-ability	Minimum 95% coverage 焊錫面積 $\geq 95\%$	235 $\pm$ 5 $^{\circ}\text{C}$ for 2 seconds
浸錫耐熱性 Resistance to Soldering Heat	No evidence of mechanical damage. 無機械性能損壞現象, $\Delta R/R \leq \pm 1\%$	270 $\pm$ 5 $^{\circ}\text{C}$ for 10 $\pm$ 1 seconds 350 $\pm$ 10 $^{\circ}\text{C}$ for 3.5 $\pm$ 0.5 seconds

## ENVIRONMENTAL CHARACTERISTICS

### 耐環境特性

特性 Characteristics	規格值 Standards	試驗方法 Test Methods
溫度週率 Temp. Cycle	$\Delta R/R \leq \pm 0.25\%$	-65 $^{\circ}\text{C}$ ( 30 min.) $\rightarrow$ Room Temp.( 3 min.) $\rightarrow$ +175 $^{\circ}\text{C}$ ( 30 min.) $\rightarrow$ Room Temp.( 3 min.) / ( 5 cycles)
負載壽命 Load Life	$\Delta R/R \leq \pm 2\%$	Rated power load 90 minutes ON 30 minutes OFF 70 $^{\circ}\text{C}$ 1000 hours
耐濕壽命 Moisture-proof Load Life	$\Delta R/R \leq \pm 1.5\%$	Rated power load 90 minutes ON 30 minutes OFF 40 $^{\circ}\text{C}$ 95% RH 1000 hours
不燃性 Nonflammability	not flamed	16 times of rated wattage for 5 min. (RN 1W & RN 1WL).

※ 參考規格 Reference Standards  
IEC 60115-1  
JIS C 5201-1

Unit : mm

## Dimensions

### 尺寸



Rated Wattage	D±1	L±1	H±3	d±0.1	Resistance Range(Ω)	Max. Working Voltage
1/8W	1.7±0.2	3.7max.	28	0.45	10~1M	150V
1/4WS	1.7±0.2	3.7max.	28	0.45	10~1M	200V
1/4W	2.4±0.5	6.4	28	0.6	10~2M	250V
1/2WS	2.4±0.5	6.4	28	0.6	10~2M	300V
0.6W	2.4±0.5	6.4	28	0.6	10~2M	350V
1/2W	3.5	9	28	0.65	10~2M	350V
1W	4.5	11	28	0.8	10~2M	500V
1WL	5.0	15	28	0.8	10~2M	500V

- Note:**
- To prevent electric corrosion, the resistance over 100KΩ should be limited at 50V.
  - Too low or too high ohmic values can be supplied only case by case.
  - Max. Overload Voltage is 2 times of Max. Working Voltage.
  - RN 1W & RN 1WL is coated by flameproof paint.

## Derating Curve

### 電力輕減曲線

For resistors operated in ambient temperatures above 70°C, power rating must be derated in accordance with the curve below.



## Surface Temperature Rise

### 表面溫度上昇曲線



## How to order

### 訂貨方式

It is composed by Type, Rated Wattage, Nominal Resistance, Tolerance, Temperature Coefficient and Package. e.g.

RN   1/4W   10Ω   F   50ppm   T/B  
 a.        b.        c.        d.        e.        f.

- a. : Type(種類): Precision Metal Film Resistors are Called "RN".  
 b. : Rated Wattage(額定電力) : Shown by "W", such as 1/8W, 1/4WS, 1/4W, 1/2WS, 0.6W, 1/2W, 1W, 1WL.  
 c. : Nominal Resistance(公稱電阻值) : 10Ω.  
 d. : Tolerance(容許誤差): ±0.5%(D), ±1%(F).  
 e. : Temperature Coefficient (溫度係數) : ±25ppm/°C, ±50ppm/°C, Nil : ±100ppm/°C  
 f. : Package (包裝方式):  
 T/R=tape & reel (捲裝); T/B=tape in box(帶裝); Nil= Bulk(散裝).

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