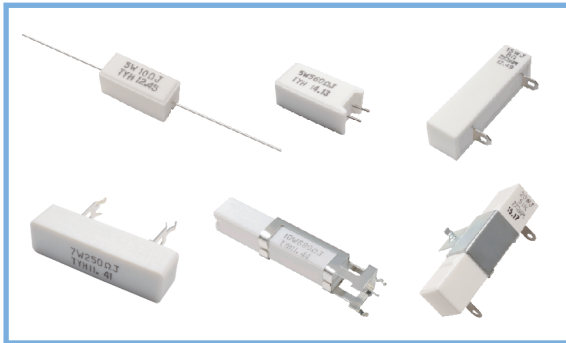


## CEMENT RESISTORS

### 水泥電阻器



#### Features

1. Small dimension, excellent stability in high temperature, resistant to humidity and shock.
2. Completely insulated character suitable for printed circuit board.
3. Super heat dissipation : small linear temperature coefficient.
4. Instant overload capability : low noise figures and low annual shift on resistance values.

#### 特色

1. 體積小，耐震，耐溼及良好散熱，低價格。
2. 完全絕緣，適用於印刷電路板。
3. 散熱性佳，溫度係數小且呈線性變化。
4. 耐短時間超負載；低雜音，阻值經年無變化。

## 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	$\pm 5\%$ (J) or $\pm 1\%$ (F)	-
溫度係數 Resistance Temp. Coeff.	$\pm 300$ ppm / $^{\circ}\text{C}$ ; $< 1\Omega$ : $\pm 600$ ppm/ $^{\circ}\text{C}$	-55 $^{\circ}\text{C}$ ~ 155 $^{\circ}\text{C}$
額定負載 Power Rating Load	Surface temp. 275 $^{\circ}\text{C}$ Max. 最高表面溫度 275 $^{\circ}\text{C}$ , $\Delta R/R \leq \pm 2\%$	Rated voltage for 30 minutes 額定電壓 / 30分鐘
短時間過負載 Short Time Overload	$\pm 2\%$	10 times(power film : 5 times) of rated wattage for 5 seconds. 10 倍額定功率(皮膜型:5倍額定功率) / 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	AC 1000V for 1 minutes 施加 AC 1000V 電壓 1 分鐘
絕緣電阻 Insulation Resistance	1,000M $\Omega$	DC 500V megger
端子強度 Terminal Strength	No evidence of mechanical damage. 無機械性能損壞現象	4.5 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 $\pm$ 0.5seconds

## 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	$\Delta R/R \leq \pm 1\%$	-55 $^{\circ}\text{C}$ ( 30 min.) $\rightarrow$ Room Temp.( 3 min.) $\rightarrow$ +155 $^{\circ}\text{C}$ ( 30 min.) $\rightarrow$ Room Temp.( 3 min.) / ( 5 cycles)
負載壽命 Load Life	$\Delta R/R \leq \pm 5\%$	Rated power load 90 minutes ON 30 minutes OFF 70 $^{\circ}\text{C}$ 1000 hours
耐濕壽命 Moisture-proof Load Life	$\Delta R/R \leq \pm 5\%$	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.

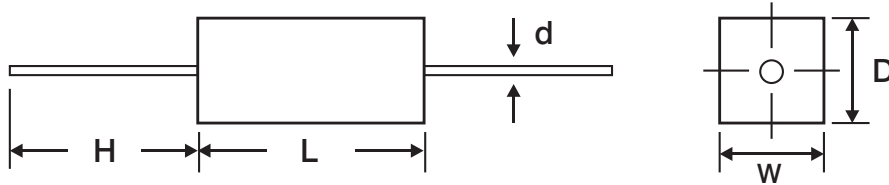
※ 參考規格 Reference Standards  
JIS C 5201-1

## Dimensions

### 尺寸

#### Axial Leded Type SQP Series

#### 軸式導線型 SQP 系列



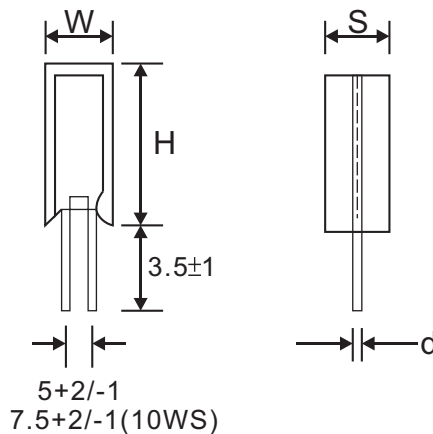
Unit : mm

Rated Wattage	W±1	D±1	L±1.5	H±3	d±0.1	Resistance(Ω)		Max.Working Voltage
						Wire Wound	Power Film	
2W	7	7	18	23	0.65	0.1~100	101~10K	150V
3W	8	8	22	35	0.8	0.1~150	151~33K	350V
5W	10	9	22	35	0.8	0.1~150	151~50K	350V
7W	10	9	35	35	0.8	0.1~430	431~50K	500V
10W	10	9	48	35	0.8	0.1~470	471~50K	750V
15W	12.5	11.5	48	35	0.8	0.5~600	601~150K	1000V
20W · 25W	14	13.5	60	35	0.8	0.5~1K	1.1K~150K	1000V

**Note:** 1. Max. Overload Voltage is 2 times of Max. Working Voltage.  
2. Max. Working Voltage is applying for all SQ types.

#### Radial Leded Type SQM Series

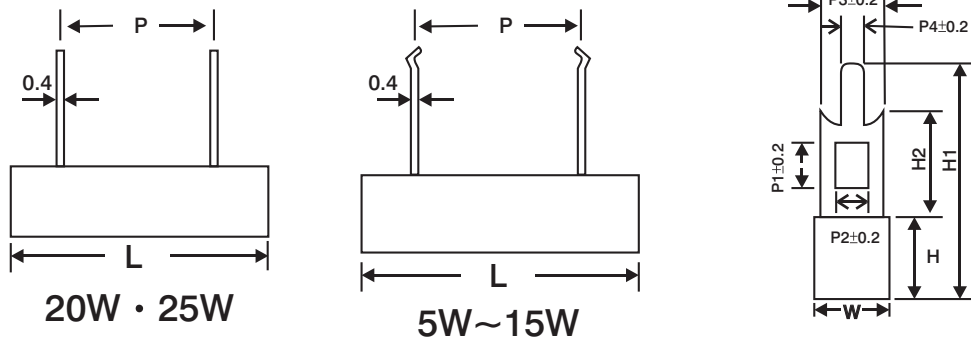
#### 立式導線型 SQM 系列



Unit : mm

Rated Wattage	H±1.5	W±1	S±1	d±0.1	Resistance(Ω)		Max.Working Voltage
					Wire Wound	Power Film	
1W	10	10	5	0.6	0.1 ~ 47	48 ~ 10K	150V
2W	20	11	7	0.65	0.1 ~ 82	83 ~ 10K	150V
3W	25	12	8	0.8	0.1 ~ 150	151 ~ 50K	350V
5W	25	13	9	0.8	0.1 ~ 150	151 ~ 50K	350V
7W	39	13	9	0.8	0.1 ~ 430	431 ~ 50K	500V
10WS	35	16	12	0.8	0.1 ~ 300	301 ~ 100K	750V
10W	52	13	9	0.8	0.1 ~ 470	471 ~ 75K	750V

## Radial Terminal Type SQZ Series (立式端子型 SQZ 系列)



Unit : mm

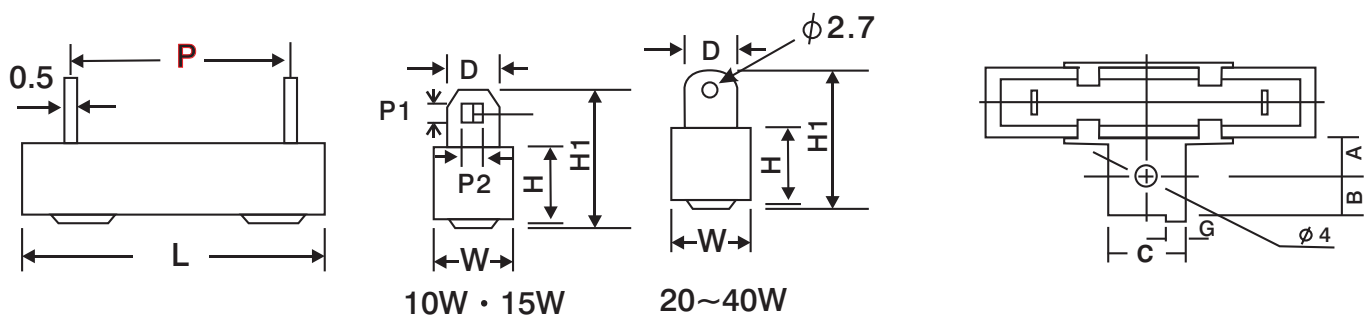
Rated Wattage	L±1.5	W±1	H±1	P±1.5	P1	P2	P3	P4	H1±1	H2±1	Resistance Range(Ω)	
											Wire Wound	Power Film
5WS	25	10	10	9.5	4.2	2	5	1.5	25	10	0.1~130	131~50K
5W	28	10	10	15	4.2	2	5(5)(7.5)	1.5	25(30)(40)	10(15)(25)	0.1~130	131~50K
7W	36	10	10	20	4.2	2	5(5)(7.5)	1.5	25(30)(40)	10(15)(25)	0.1~430	431~50K
10W	48	10	9	32	4.2	2	5(5)(7.5)	1.5	25(30)(40)	10(15)(25)	0.2~470	471~50K
15W	48	12.5	12	32	4.2	2	5	1.5	27	10	1~600	601~150K
20W · 25W	60	15	13	42	7	5	10	2.7	32	15	1~1K	1.1K~150K

## Radial Terminal Type SQH Series (立式端子型 SQH 系列)

## SQHG Series(With metal mounting basket) SQHG 系列 (帶安裝金屬架)

SQH type :

SQHG type :

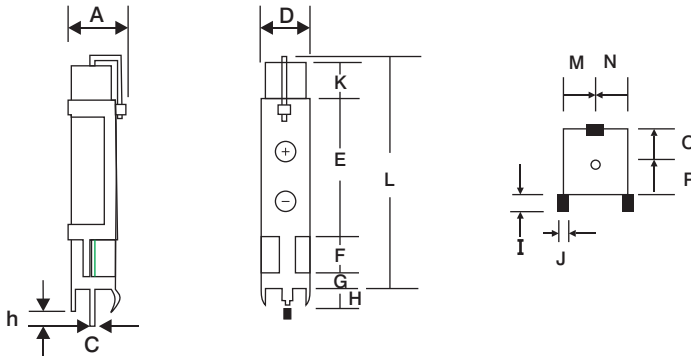


Unit : mm

Rated Wattage	W±1	H±1	L ±1.5	P	H1±1	D±0.5	P1±0.2	P2±0.2	A±0.5	B±0.5	C±0.5	G±0.5	Resistance Range(Ω)	
													Wire Wound	Power Film
10W	10	9	48	32±1	21	5	2.5	1.7	8	5	12	3	0.5~600	601~50K
15W	12.5	11.5	48	32±1	21	5	2.5	1.7	8	5.5	12	3	1~600	601~150K
20W	14.5	13.5	60	42±1	24	6	-	-	8	5.5	12	3	1~1K	1.1K~150K
30W	19	19	75	55±2	31	7.5	-	-	10.5	8	18	3.5	1~2K	-
40W	19	19	90	67±2	31	7.5	-	-	10.5	8	18	3.5	1~2K	-

## Radial Leaded Type SPS Series

### 立式導線型 SPS 系列



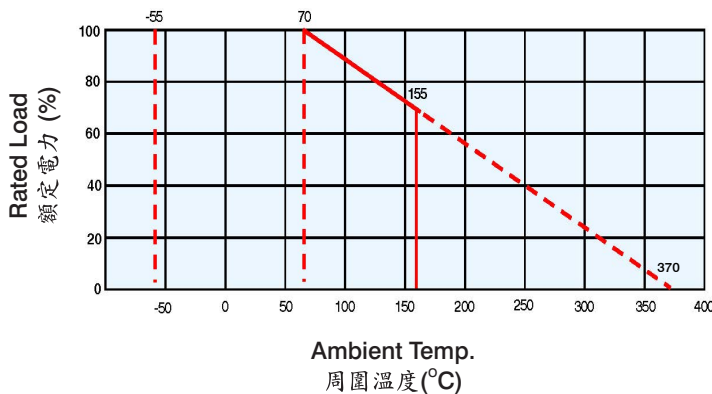
Unit : mm

Rated Wattage	A	C	D	E	F	G	H	I	J	K	L	M	N	O	P	h	Resistance Range(Ω)	
	±1	±0.1	±1	±0.5	±0.5	±0.2	±0.3	±0.1	±0.1	±1	±1.5	±0.5	±0.5	±0.5	±0.5	±0.5	Wire Wound	Power Film
7W	12	0.8	11	28	7	3	4	1.5	0.5	7.5	46	5	5	5	5	2	0.1~430	431~50K
10W	12	0.8	11	28	7	3	4	1.5	0.5	20	60	5	5	5	5	2	0.1~470	471~50K

## Derating Curve

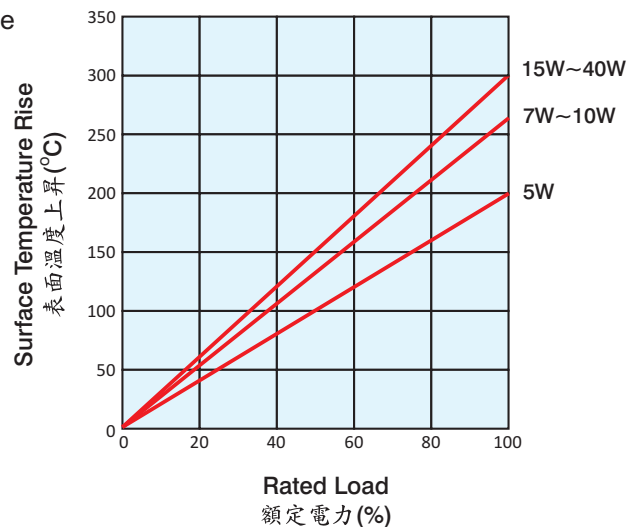
### 電力輕減曲線

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, Type Form, Rated Wattage, Nominal Resistance and Tolerance. e.g.

SQ    M    5W    10R    J  
a.    b.    c.    d.    e.

- a. : Type(種類) : Cement Resistors are called "SQ".
- b. : Type Form(樣式) : Upon the shape of type form there are "P" form, "M" form, "Z" form, and "H" form.
- c. : Rated Wattage(額定電力) : Shown by "W", such as 1W, 2W, 3W, 5W,....40W.
- d. : Nominal Resistance(公稱電阻值) : 10Ω.
- e. : Tolerance(容許誤差): F = ±1% , J = ±5% .