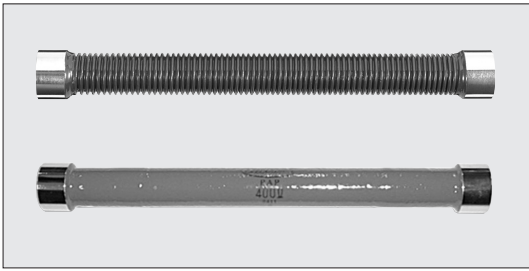


# HIGH VOLTAGE POWER RESISTORS



## PSN·PV·PSO·PN·PWW·PAP | High Voltage Power Resistors

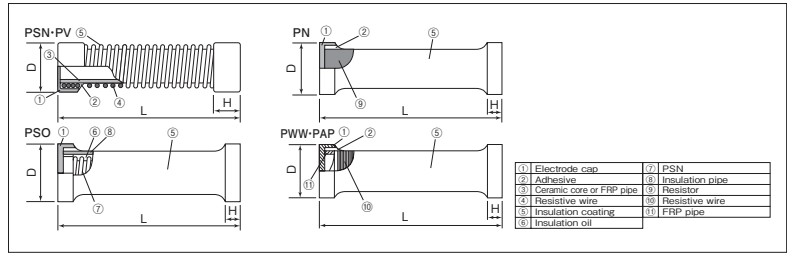


Body color : Red  
Marking : Alphanumeric

### ■ Features

- PSN can respond to high voltage and high power with a wide resistance range of  $500\Omega \sim 6G\Omega$ .
- PSO is made completely moisture preventive to be PSN that can be used under high moisture environment.
- PN is a non-inductive type and can be used for high frequency.
- PWW and PAP type are non-inductive wire wound resistors.
- PWW resistors have the same shapes as PSN and can be used for a low resistance area that cannot be produced with PSN resistors.
- PAP resistors are non-inductive wire wound resistors with inductance lessened than PWW can be used for pulse wave measurement, impulse generators, etc.
- Products with Pb free symbol "F" meet EU-RoHS requirement. EU-RoHS regulation is not intended for lead in brass.

### ■ Construction



### ■ Applications

- Resistors for charging and discharging for high voltage, resistors for surge absorption, and protective resistors at the time of a short-circuit.
- Voltage Equalizing Resistors at the time of using and connecting diodes and capacitors in series.
- Dividers for DC voltage and for measuring lightning and switching impulses.

### ■ Precautions for Use

- Impulse withstanding voltage is specified for waveform of  $1/40\mu s$  or  $1.2/50\mu s$  as a standard. Please inquire of us in advance when using other than the standard waveform, since the specified value may change, depending on time constant or length of wave tail.
- Use the components under less dusty places, as continual applying of high voltage makes dust adhere to the surface of the resistors and causes surface leakage and corona. Also periodic cleaning of the surface of resistors is needed.
- Use them at 50% or under of the rated power for stable use for a long time.
- Do not touch the resistors with high resistance value by hand to prevent surface-leakage current.
- Set the products away from near electric conductors 1cm or over per 3kVd.c. to avoid occurrence of corona and short-circuit by discharge, if there are electric conductors near to.
- Take care that the resistors may become instable in resistance value by absorption of humidity when they are stored or used in high humidity environment.

### ■ Type Designation

Example

PSN	PSN	0.5	CP	F	A	105	J
Product Code	Power Rating	Cap <sup>#1</sup>	RoHS	Holder <sup>#2</sup>	Nominal Resistance	Resistance Tolerance	
	0.5:2W 1:5W 2:10W 3:25W 4:50W 5:125W 6:250W	C M CP		Nil: No holder A B	3 digits	J: ±5% K: ±10% M: ±20%	

PSO	PSO	1	C	F	105	J
Product Code	Power Rating	Cap <sup>#1</sup>	RoHS	Nominal Resistance	Resistance Tolerance	
	1:4W 2:8W 3:20W 4:40W 5:100W 6:200W	C		3 digits	J: ±5% K: ±10% M: ±20%	

PV	PV	0.5	CP	F		105	J
Product Code	Power Rating	Cap <sup>#1</sup>	RoHS	Holder <sup>#2</sup>	Nominal Resistance	Resistance Tolerance	
	0.5:2W 1:4W 2:7W 5:12W 8:20W	C M CP		Nil: No holder A B	3 digits	J: ±5% K: ±10% M: ±20%	

PN	PN	1	CP	F	105	J
Product Code	Power Rating	Cap <sup>#1</sup>	RoHS	Nominal Resistance	Resistance Tolerance	
	0.5:1.5W 1:3W 2:6W 3:9W 4:12W	C M CP		3 digits	J: ±5% K: ±10% M: ±20%	

PWW·PAP	PWW	3	M	F	A	102	J
Product Code	Power Rating	Cap <sup>#1</sup>	RoHS	Holder <sup>#2</sup>	Nominal Resistance	Resistance Tolerance	
PWW PAP	3:25W 4:50W 5:100W 6:200W	M		Nil: No holder A B	3 digits	J: ±5% K: ±10% M: ±20%	

※2 See next page for detail.

※1 Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

P series resistors use brass for the electrode cap. Lead in brass is a substance not subject to the EU-RoHS (exemption 6(c)), but please note that it exceeds the threshold of the EU-REACH (Reach 19th SVHC list).

## Ratings

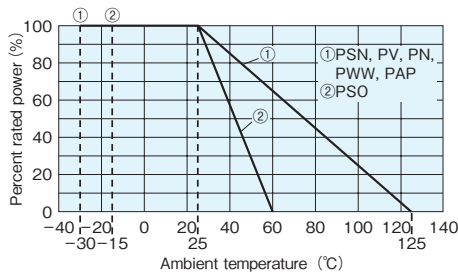
Type	Power Rating (W)	Resistance Range (Ω)	T.C.R. (×10 <sup>-7</sup> /K)	Max. Working Voltage	Impulse Withstand Voltage	Operating Temperature Range	Energy Rating 1 time/5 min.	Dimensions (mm)			Weight (g) (1pcs)	
								J : ±5% K : ±10% M : ±20% (E24 <sup>*3</sup> )	L	D±0.5		H (Nominal)
PSN-0.5	2	500~500M	±1500: +25°C/-15°C ±1000: +25°C/+85°C (R<1GΩ)	15kV	20kV	-30°C~+125°C	50J	50±2	17.5	10	20	
PSN-1	5	1k~1G		30kV	40kV		125J	100±2			30	
PSN-2	10	2k~2G		60kV	80kV		400J	200±2	85			
PSN-3	25	3k~3G		90kV	120kV		1.8kJ	300±2	250			
PSN-4	50	4k~4G		120kV	160kV		4.0kJ	400±3	600			
PSN-5	125	5k~5G		150kV	200kV		9.0kJ	500±3	800			
PSN-6	250	6k~6G	300kV	400kV	20.0kJ	1000±5	1350					
PV-0.5	2	500~500M	±3000 (R≥1GΩ)	24kV	32kV	-30°C~+125°C	45J	80±2	9.5	8	12	
PV-1	4	1k~1G		45kV	60kV		90J	150±2			23	
PV-2	7	1.5k~1.5G		75kV	100kV		270J	17.5	10	45		
PV-5	12	2.5k~2.5G					650J	24	15	105		
PV-8	20	2.5k~2.5G					950J	33	20	220		
PSO-1	4	1k~1G					30kV	40kV	100J	105±5	28	150
PSO-2	8	2k~2G	60kV	80kV	320J	205±5	38	370				
PSO-3	20	3k~3G	90kV	120kV	1.5kJ	320±5	46	760				
PSO-4	40	4k~4G	120kV	160kV	3.2kJ	420±5	65	1900				
PSO-5	100	5k~5G	150kV	200kV	7.2kJ	530±5	80	3500				
PSO-6	200	6k~6G	300kV	400kV	16.0kJ	1050±5	80	6200				
PN-0.5	1.5	50~500k	±200	-	20kV	-30°C~+125°C	35J	50±2	17	12	25	
PN-1	3	100~1M			40kV		70J	100±2			55	
PN-2	6	200~2M			80kV		130J	200±2			80	
PN-3	9	300~3M			120kV		200J	300±2			100	
PN-4	12	400~4M			160kV		270J	400±2			125	
PWW-3	25	10~800			120kV		2kJ~5kJ	300±2			33	310
PWW-4	50	15~1.5k	160kV	4kJ~12kJ	400±3	45	660					
PWW-5	100	25~2.5k	200kV	7kJ~20kJ	500±3	62	1300					
PWW-6	200	50~5k	400kV	14kJ~40kJ	1000±5	62	2700					
PAP-3	25	10~400	-	-	120kV	-30°C~+125°C	1kJ~2kJ	300±2	20	25	250	
PAP-4	50	10~800			160kV		1.5kJ~4kJ	400±3			45	510
PAP-5	100	15~1k			200kV		3.5kJ~10kJ	500±3			62	960
PAP-6	200	25~2k			400kV		7kJ~25kJ	1000±5			62	1850

Rated Ambient Temperature : +25°C

Rated voltage = √(Power Rating × Resistance value) or Max. working voltage, whichever is lower.

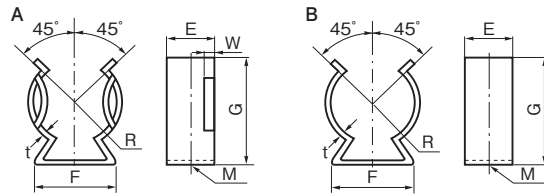
\*3 Please ask of us about resistance other than E24 series.

## Derating Curve



For resistors operated at an ambient temperature of 25°C or higher, the power shall be derated in accordance with the above derating curve.

## Holder Dimensions (PSN · PV · PWW · PAP) (mm)



Type	R	E	F	G	M	t	W
PSN-0.5·PSN-1 · PV-2	8.5	11	16	24	φ4.2	0.8	1.5±0.5
PSN-2·PV-5	11.5	15	18	32			
PSN-3·PV-8·PWW-3·PAP-3	16	18	24	40	φ6.5	1.5	2.0±1.0
PSN-4·PWW-4·PAP-4	22	20	36	59			
PSN-5.6·PWW-5.6·PAP-5.6	30	25	46	74			

## Cap Dimensions (mm)

Cap Shape	C			M				CP		C			
	D	d	φD	D	M	K	A	d	ℓ	D	M	ℓ <sub>1</sub>	ℓ <sub>2</sub>
PSN-0.5·PSN-1 · PV-2	17.5	7	17.5	3	2	7	7	1.0	90	-	-	-	-
PSN-2·PV-5	24	12	24	4	2	10	10	1.2	120	-	-	-	-
PSN-3·PV-8·PWW-3·PAP-3	33	14	33	5	4	14	14	-	-	-	-	-	-
PSN-4·PWW-4·PAP-4	-	-	45	6	4	16	16	-	-	-	-	-	-
PSN-5.6·PWW-5.6·PAP-5.6	-	-	62	8	7	26	26	-	-	-	-	-	-
PV-0.5·PV-1	9.5	Without hole	-	-	-	-	-	0.9	90	-	-	-	-
PN-0.5	17	Without hole	-	-	-	-	-	1.0	90	-	-	-	-
PN-1	-	-	17	4	-	-	-	1.2	120	-	-	-	-
PN-2~PN-4	-	-	-	-	-	-	-	-	-	-	-	-	-
PSO-1	-	-	-	-	-	-	-	-	-	28	4	8	-
PSO-2	-	-	-	-	-	-	-	-	-	38	6	10	-
PSO-3	-	-	-	-	-	-	-	-	-	46	8	-	15
PSO-4	-	-	-	-	-	-	-	-	-	65	10	-	20
PSO-5,6	-	-	-	-	-	-	-	-	-	80	12	-	25