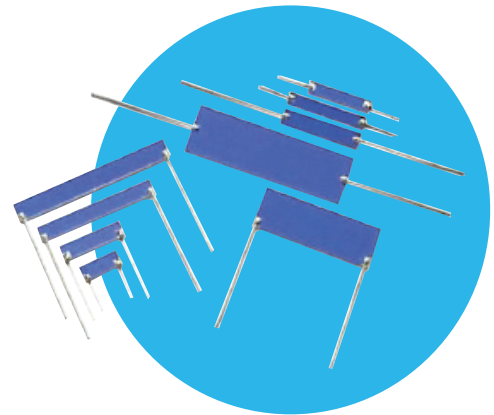



## Precision High Voltage Planar Resistors

### PHVP Series

- Voltage ratings 5 to 40kV
- Non-inductive, non-magnetic design
- Tolerance down to 0.1%
- TCR down to 15ppm/°C
- VCR down to -0.05ppm/V
- Custom design service available
- SMD versions available on request
- Gold bondable pads available
- RoHS compliant



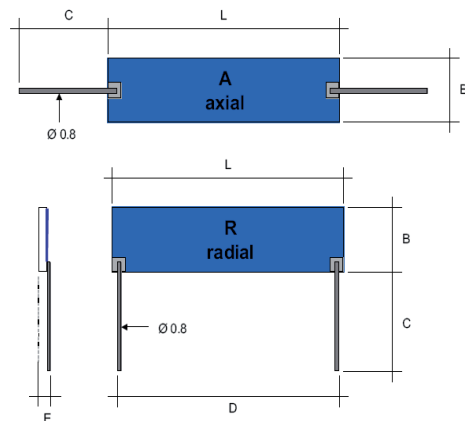
 All parts are Pb-free and comply with EU Directive 2011/65/EU (RoHS2)

### Electrical Data

	PHVP	5	7	7B	10	10B	10C	15	15B	15C	20	20B	20C	30	40
Power rating at 25°C	watts	1	0.8	1	1	1.3	2	1.5	2	3	2	3	4.5	6.5	9
Limiting element voltage in air	kV	5	7	7	10	10	10	15	15	15	20	20	20	30	40
Limiting element voltage in oil*	kV	10	14	14	20	20	20	30	30	30	40	40	40	60	80
Resistance value min	ohms	1K													
Resistance value max	ohms	3G	1G	2G5	1G5	3G5	7G	4G	5G	10G	7G	10G	20G	30G	40G
Resistance tolerance	%	≤10G: 0.1%, 0.25%, 0.5%, 1%							>10G: 0.25%, 0.5%, 1%						
TCR (25°C to 75°C)	ppm/°C	≤10G: 15, 25, 50							>10G: 25, 50						
Standard values		E24 preferred													
Ambient temperature range	°C	-55 to +200													
Insulation resistance at 500V	ohms	>10G													
Dielectric strength of insulation	volts	>1000													

### Physical Data

Dimensions in mm, weight in g						
Type	L (±0.5)	B (±0.5)	E (Max)	D (±0.5)	C (Max)	Wt. nom
PHVP5	12.7	5.08	2	10.16	10	0.22
PHVP7	20.32	3.81	2	17.78	10	0.55
PHVP7B	20.32	5.08	2.5	17.78	35	0.64
PHVP10	25.4	3.81	2	22.86	10	0.59
PHVP10B	25.4	5.08	2.5	22.86	35	0.68
PHVP10C	25.4	7.62	2.5	22.86	35	0.95
PHVP15	38.1	3.81	2	35.56	10	0.71
PHVP15B	38.1	5.08	2.5	35.56	35	0.85
PHVP15C	38.1	12.7	2.5	35.56	35	1.83
PHVP20	50.8	5.08	2	48.26	10	0.96
PHVP20B	50.8	6.35	2.5	48.26	35	1.12
PHVP20C	50.8	15.24	2.5	48.26	35	2.58
PHVP30	76.2	15.24	3	73.66	35	4.83
PHVP40	101.6	15.24	3	99.06	35	6.37



### Construction

Termination conductors and ruthenium oxide resistive material are printed in a non-inductive pattern onto the surface of a 96% alumina substrate. A screen-printed protection is then applied and terminal wires are then attached.

### Terminations

The termination wires are tin coated copper.

### Marking

Type reference, resistance value and tolerance are legend marked. The resistance value code conforms to IEC 62.

### Solvent Resistance

The body protection and marking are resistant to all normal industrial cleaning solvents suitable for printed circuits.

### General Note

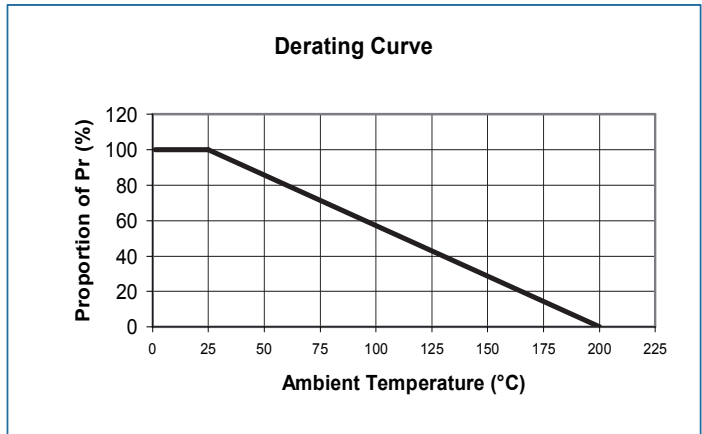
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**PHVP Series**

**Performance Data**

		Maximum	Typical
Load at rated power: 1000 hours at 25°C	ΔR%	0.25	0.1
Overload: 1.5 x rated power not exceeding LEV for 5 seconds	ΔR%	0.25	0.1
Moisture resistance: MIL Std. 202, method 106	ΔR%	0.25	0.1
Thermal shock: MIL Std. 202, method 107, condition C	ΔR%	0.2	0.1

Type	Typical VCR (ppm/V)	
PHVP5	<250M: -0.2	250M to 3G: -3.7
PHVP7	<100M: -0.8	100M to 1G0: -1.5
PHVP7B	<200M: -0.9	200M to 2.5G: -2.5
PHVP10	<150M: -0.65	150M to 1.5G: -1.2
PHVP10B	<250M: -0.7	250M to 3.5G: -1.8
PHVP10C	<500M: -0.35	500M to 7G: -0.9
PHVP15	<300M: -0.5	300M to 4G: -0.9
PHVP15B	<400M: -0.45	400M to 5G: -1.2
PHVP15C	<1G0: -0.2	1G0 to 10G: -0.4
PHVP20	<500M: -0.35	500M to 7G: -0.8
PHVP20B	<600M: -0.35	600M to 10G: -0.7
PHVP20C	<1G0: -0.1	1G0 to 20G: -0.3
PHVP30	<1.5G: -0.07	1.5G to 30G: -0.2
PHVP40	<2G: -0.05	2G to 40G: -0.15



**Application Notes**

Due to the high voltage, which can appear between the terminations and any adjacent metal part, resistors should be mounted at an adequate distance from other conductors.

For some ultra-high voltage applications it is required to immerse the components in oil or SF<sub>6</sub> gas or pot them in void-free silicone compound to reduce corona or surface tracking. The extended pad, epoxy coated version is recommended for oil immersion. The axial termination should not be bent closer than twice the diameter of the terminal wire from the resistor body.

**Ordering Procedure**

**Example: PHVP10RC-100MDI** (PHVP10, radial terminals, silicone coated, 50ppm/°C TCR, 100 megohms ±0.5%, Pb-free)



1 Type	2 Terminals	3 Coating	4 TCR (ppm/°C)	5 Value	6 Tolerance	7 Finish & Packing
PHVP5	R = radial	Omit for silicone coat (standard)	Y = ±15	3/4 characters	B = ±0.1%	I = Pb-free, bulk pack
PHVP7	A = axial		D = ±25		C = ±0.25%	
PHVP7B		XP = extended pad, epoxy coat (for oil immersion)	C = ±50	K = kilohms	D = ±0.5%	
PHVP10				M = megohms	F = ±1%	
PHVP10B				G = gigohms		
PHVP10C						
PHVP15						
PHVP15B						
PHVP15C						
PHVP20						
PHVP20B						
PHVP20C						
PHVP30						
PHVP40						

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