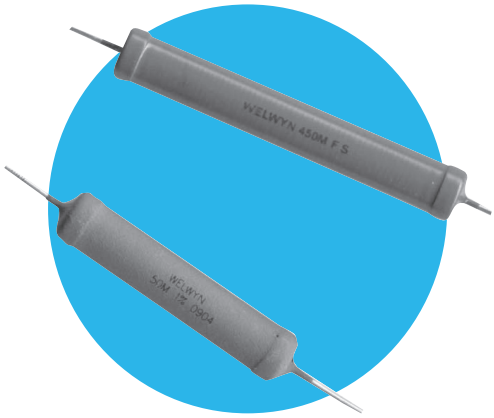
Resistors

High Voltage Non-inductive Resistors

WHVL Series

OBSOLETE

- Voltage ratings 11 to 67kV
- Non-inductive printed serpentine design
- Tolerance down to 0.1%
- TCR down to 15ppm
- VCR down to -0.04ppm/V
- Non-magnetic materials
- RoHS compliant



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

Electrical Data

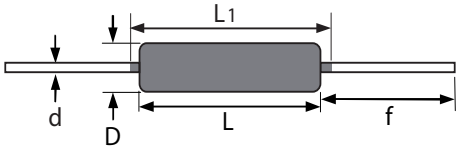
		WHVL2	WHVL3	WHVL5	WHVL7	WHVL10	WHVL12	WHVL15
Power rating at 25°C	watts	3.8	5	7.5	10	13.5	16	20
Power rating at 70°C	watts	2.9	3.8	5.6	7.5	10	12	15
Limiting element voltage in air	kV	11	14	22	33	45	54	67
Limiting element voltage in oil*	kV	22	28	44	66	90	108	134
Resistance range	ohms	1K0 – 100G						
Resistance tolerance	%	≤10G: 0.1%, 0.25%, 0.5%, 1%, 2%, 5% >10G: 0.25%, 0.5%, 1%, 2%, 5%						
TCR (25°C to 75°C)	ppm/°C	≤10G: 15, 25, 50, 100 >10G: 25, 50, 100						
Standard values		E24 preferred						
Ambient temperature range	°C	-55 to +225						
Insulation resistance at 500V	ohms	>10G						
Dielectric strength of insulation	V	>1000						

* Protection code P

Physical Data

Dimensions in mm, weight in g

Type	L (±0.5)	L1 (Max)	D (±0.5)	f (±2)	d (±0.05)	Wt. nom
WHVL2	27	33.5	8.0	37	0.8	4.5
WHVL3	37	43.5				6.3
WHVL5	52	58.5				8.1
WHVL7	77	83.5				11.8
WHVL10	102	108.5	8.3			15.3
WHVL12	122	128.5	8.5			17.7
WHVL15	152	158.5				22.5



Construction

Termination conductors and ruthenium oxide resistive material are printed in a non-inductive pattern onto the surface of a 96% alumina rod to which termination caps and terminal wires are then attached. The body of the resistor is then conformally coated either in silicone (protection code C) or in epoxy (protection code P).

Terminations

The termination wires are gold plated.

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.

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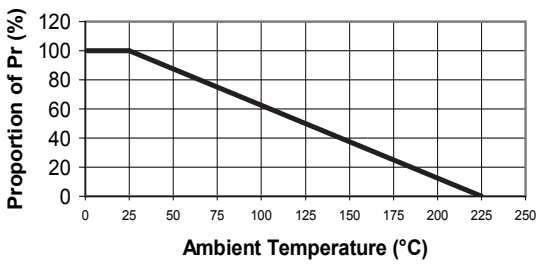
Performance Data

		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)	
WHVL2	<500M: -0.4	500M to 5G0: -0.75
WHVL3	<1G0: -0.2	1G0 to 10G: -0.4
WHVL5	<1G5: -0.15	1G5 to 15G: -0.3
WHVL7	<2G5: -0.1	2G5 to 25G: -0.15
WHVL10	<3G0: -0.08	3G0 to 30G: -0.12
WHVL12	<4G0: -0.06	4G0 to 40G: -0.1
WHVL15	<5G0: -0.04	5G0 to 50G: -0.08

Derating Curve



Application Notes

Due to the high voltage which can appear between the end cap 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_6 gas or pot them in void-free silicone compound to reduce corona or surface tracking. The epoxy protection, code P, is suitable for these applications.
The axial termination should not be bent closer than twice the diameter of the terminal wire from the resistor body.

Ordering Procedure

Example: WHVL10 with conformal coat at 100 megohms, 1% tolerance & ±50ppm/°C TCR:

W H V L 1 0 C C – 1 0 0 M F B

Type

Size

Protection

C	Silicone	Standard, for use in air
P	Epoxy	Low outgasing, for use in oil or SF_6

TCR

Y	15ppm/°C	C	50ppm/°C
D	25ppm/°C	Z	100ppm/°C

Value (use IEC62 code)

Tolerance (use IEC62 code)

C	0.25%	F	1%	J	5%
B	0.1%	D	0.5%	G	2%

Packing

A	WHVL2, 3 & 5	Tape & Ammo
B	WHVL7, 10, 12 & 15	Bulk Pack

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

TT Electronics:

WHVL5PC-560MCB WHVL2PY-50KFB WHVL2PY-40MFB WHVL15PZ-1M5JB WHVL2PY-100GC WHVL15PZ-3M0JB HVP15D-100MFB006 HVP20D-100MFB004