

High Voltage Thick Film Resistors

VRW Series

- VRW37 meets requirements of BS / EN / IEC 60065
- High working voltage to 10kV in compact size
- High ohmic range to 68M
- High pulse load capability
- Robust flameproof coating material
- Surface mount ZI-form option



All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU) 2015/863 (RoHS3)

Electrical Data

		VRW25	VRW37	VRW68
Power rating at 70°C	watts	0.25	0.5	1.0
Resistance range	(Ohms)	100K to 30M	100K to 30M	100K to 68M
Limiting element voltage	volts dc or ac peak	1600	3500	10000
Isolation voltage	volts	700		
TCR	ppm/°C	200		
Resistance Tolerance	%	≤10M: 1, 5 >10M: 5		1,5
Standard Values		E24 or E96		
Thermal Impedance	°C/watt	140	112	70
Ambient temperature range	°C	-55 to +155°C		

Physical Data Dimensions (mm) & Weight (g)

Type	L Max	D Max	f min	d	PCB mount centres	Min bend radius	Wt. nom
VRW25	6.2	2.5	21	0.6±0.05	10.2	0.6	0.3
VRW37	9.0	3.7	19.6	0.8±0.05	12.5	1.2	0.5
VRW68	15.5	5.0	27	0.8±0.05	20.3	1.2	1.15

Construction

Resistive thick film material is applied to high-grade ceramic rods. Tin-plated steel caps are force fitted and the termination wires are welded to the caps. The value is obtained by a helical cut in the film and finally the resistor body is protected by a cement coating.

Marking

1% tolerance resistors are colour coded with 5 bands. 2% and 5% tolerance have 4 bands. IEC62 colours are used.

Terminations

Material: Hot tin dipped copper wire
 Strength: The terminations meet the requirements of IEC 68.2.21
 Solderability: The terminations meet the requirements of IEC 115-1 Clause 4.17.3.2

Solvent Resistance

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

Flammability

The resistor coating will not burn under any condition of applied temperature or power overload.

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

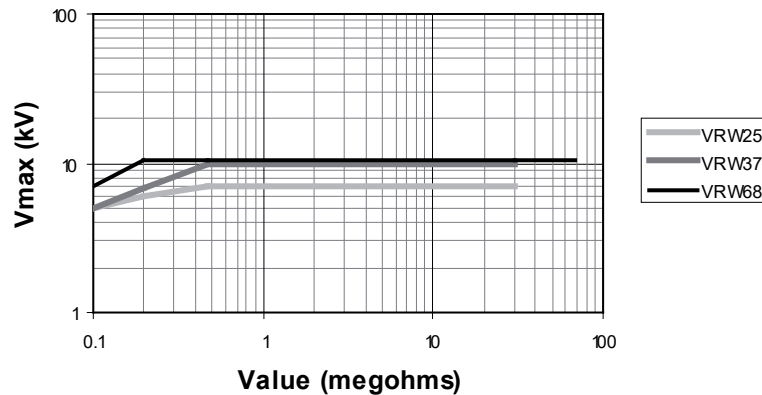
VRW Series

Performance Data

		Maximum	Typical
Load at rated voltage (1000hrs at 70°C)	ΔR%	1.5*	0.4
Derating from rated power at 70° C		zero at 155° C	
Overload (10 x 5s at 6.25 x Pr not exceeding 2 x LEV or 10kV in air)	ΔR%	2	0.15
Damp heat steady state (56 days, 40°C, ≥90% RH)	ΔR%	1.5	0.1
Climatic sequence	ΔR%	1.5	0.2
Climatic category		55/155/56	
Temperature rapid change	ΔR%	0.5	0.05
Resistance to solder heat	ΔR%	0.5	0.05
Vibration	ΔR%	0.5	0.05
Voltage Proof	volts	700 min	

* 2% for ohmic values above 24M

Pulse Performance



Maximum peak voltage in accordance with "IEC 60065 chapter 14.1"
50 discharges from a 1nF capacitor charged to V max. 12 discharges/minute.

Application Notes

1. Due to operating temperature limits imposed by some PCB materials, derating may be necessary. An estimate of the temperature rise to be expected at the center of the body can be calculated using the thermal impedance figures given under Electrical Data.

2. VRW37 can be supplied with radial, goalpost or lancet pre-formed leads- see

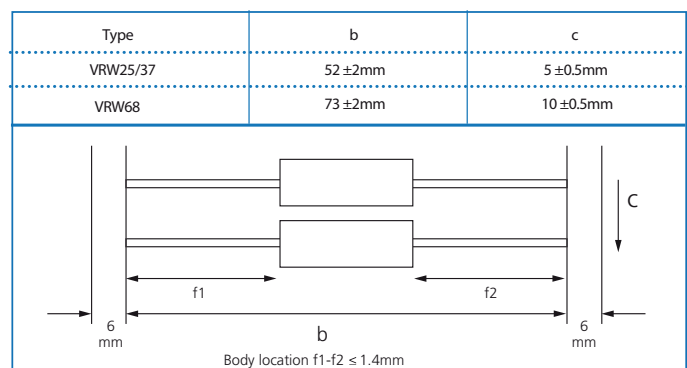
<https://www.ttelectronics.com/TTElectronics/media/ProductFiles/Resistors/ApplicationNotes/TN008-resistors-Leadform-Capability.pdf>

VRW37 is also available in ZI-form SMD format packed in blister tape- see

<https://www.ttelectronics.com/TTElectronics/media/ProductFiles/Resistors/Datasheets/ZI-form.pdf>

Packaging

Our standard packaging for VRW is taped and boxed. The critical dimensions are shown in Figure 1. The component wires will not protrude beyond the outside edge of the tapes. Alternative packaging is available by request. Pre-formed resistors are supplied loose packed in plastic bags or boxes.

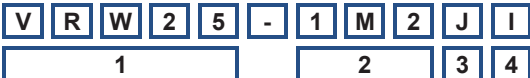


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Ordering Procedure

Example: VRW25-1M2JI (VRW25, 1.2 megohms $\pm 5\%$, Pb-free)



1 Type	2 Value	3 Tolerance	4 Packing			
VRW25	E24 = 3/4 characters	F = $\pm 1\%$	I	Ammo	VRW25	5000/box
VRW37	E96 = 3/4 characters	J = $\pm 5\%$			VRW37	2500/box
VRW68	K = kilohms M = megohms				VRW68	1000/box

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