

## ZINC OXIDE VARISTORS



VE 07/09/13/17/24

### FEATURES

- Radial lead varistors
- Wide operating voltage range from 11 V to 625 V (Vrms for VE types)
- Available in tape and reel for use with automatic insertion equipment

### GENERAL CHARACTERISTICS

Storage temperature: -40°C to +125°C  
 Max. operating temperature: +85°C  
 Response time: < 25 ns  
 Voltage coefficient temp.:  $\delta K\delta < 0.09\%/^{\circ}\text{C}$   
 Voltage proof: 2500 V  
 Epoxy coating: Flame retardant  
 UL94-VO

### MARKING

Type AC nominal voltage (EIA coding) for VE types  
 Logo UL logo (when approved)

### "M" Series Range Capability

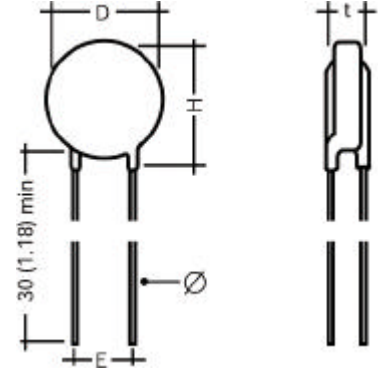
Style	Operating Voltage Vrms	Breakdown Voltage 1mA dc	Clamping Voltage	Energy Absorption (J)	Max. Peak Current Ip (A)	Typical Capacitance pF@1kHz	Mean Power Dissipation (W)
VE07	14 min. to 300 max.	22 min. to 470 max.	43 min. to 775 max.	0.3 min. to 9.0 max.	100 min. to 400 max.	40 min. to 1050 max.	0.01 min. to 0.10 max.
VE09	14 min. to 420 max.	22 min. to 680 max.	43 min. to 1720 max.	0.9 min. to 25.0 max.	250 min. to 1200 max.	80 min. to 1900 max.	0.02 min. to 0.20 max.
VE13	14 min. to 625 max.	22 min. to 1650 max.	43 min. to 1650 max.	2.0 min. to 68.0 max.	500 min. to 2500 max.	74 min. to 4000 max.	0.05 min. to 0.40 max.
VE17	14 min. to 625 max.	22 min. to 1000 max.	43 min. to 1300 max.	4.0 min. to 130.0 max.	1000 min. to 4500 max.	165 min. to 4000 max.	0.10 min. to 0.80 max.
VE24	75 min. to 625 max.	120 min. to 1650 max.	200 min. to 230.0 max.	40.0 min. to 230.0 max.	6500 max.	410 min. to 4200 max.	0.80 max.

MR VE Series: Always ordering code to be built by specifying operating voltage.

VE Series PIN codification using (Dmax, Vrms)	Maximum Operating voltage		Nom. voltage At 1 mA dc VImA nominal	Max. clamping voltage (8 x 20 μs)		Max. energy absorption (10 x 1000 μs) W (J) Number of surges		Max. permissible Peak current (8 x 20 μs) Ip (A)		Typical Capacitance F = 1kHz pF	Mean Power Dissipation W
	Vrms	VDC		Vp (V)	Ip (A)	1 surge	10	1 surge	2 surges		
VE07M00110K	11	14	18	36	1	0.3	0.15	100	50	1050	0.01
VE09M00110K				36	2.5	0.8	0.5	250	125	1900	0.02
VE07M00140K	14	18	22	43	1	0.4	0.2	100	50	1050	0.01
VE09M00140K				43	2.5	0.9	0.6	250	125	1900	0.02
VE13M00140K				43	5	2	1.3	500	250	4000	0.05
VE17M00140K				43	10	4	2.6	1000	500	4000	0.10
VE07M00170K	17	22	27	53	1	0.5	0.3	100	50	1050	0.01
VE09M00170K				53	2.5	1.1	0.7	250	125	1900	0.02
VE13M00170K				53	5	2.5	1.6	500	250	4000	0.05
VE17M00170K				53	10	4.7	3.0	1000	500	6800	0.10
VE07M00200K	20	26	33	65	1	0.6	0.3	100	50	750	0.01
VE09M00200K				65	2.5	1.3	0.9	250	125	1500	0.02
VE13M00200K				65	5	3.1	2.0	500	250	3100	0.05
VE17M00200K				65	10	5.7	4.0	1000	500	5700	0.10
VE07M00250K	25	31	39	77	1	0.7	0.4	100	50	660	0.01
VE09M00250K				77	2.5	1.0	1.0	250	125	1250	0.02
VE13M00250K				77	5	3.7	3	500	250	2800	0.05
VE17M00250K				77	10	7	5	1000	500	4600	0.10
VE07M00300K	30	38	47	93	1	0.9	0.4	100	50	580	0.01
VE09M00300K				93	2.5	2.0	1	250	125	1050	0.02
VE13M00300K				93	5	4.4	4	500	250	2150	0.05
VE17M00300K				93	10	9.0	7	1000	500	3500	0.10
VE07M00350K	35	45	56	110	1	1.1	0.4	100	50	460	0.01
VE09M00350K				110	2.5	2.5	1	250	125	850	0.02
VE13M00350K				110	5	5.4	4.4	500	250	1900	0.05
VE17M00350K				110	10	10.0	8	1000	500	3100	0.10
VE07M00400K	40	56	68	135	1	1.3	0.5	100	50	400	0.01
VE09M00400K				135	2.5	3.0	1	250	125	720	0.02
VE13M00400K				135	5	8.4	5.9	500	250	1700	0.05
VE17M00400K				135	10	13.0	8.5	1000	500	2800	0.10
VE07M00500K	50	65	82	135	5	1.8	0.6	400	200	300	0.1
VE09M00500K				135	10	4.2	1.6	1200	600	530	0.2
VE13M00500K				135	25	8.4	6	2500	1250	950	0.4
VE17M00500K				135	50	15.0	11	4500	2500	1800	0.6

### Dimensions

Type	D		H max.	millimeters	
	Ceramic diameter	Maximum coated diameter		$\phi$ +10% -0.05 (.002)	E $\pm 0.8$ (.031)
VE07	5	7	10	0.6	5.08
VE09	7	9	12	0.6	5.08
VE13*	10	13*	16	0.8*	7.62*
VE17	14	17	20	0.8	7.62
VE24	20	24	27	0.8**	7.62



### HOW TO ORDER

VE 09 M 0 0251 K DB

① ② ③ ④ ⑤ ⑥ ⑦

- Type Code:**  
VE = Selection by working voltage
- Size Code:**  
VE Series: 07, 09, 13, 17, 24
- Material Code:**  
M = Standard
- Voltage Marking Code:**  
0 = VE Series
- Voltage Code:**  
VE Series: 1st digit: zero. 2nd & 3rd digit: 2 significant figures of working voltage. 4th digit: number of significant zeros to be added.  
Example: 0750 = 75 V, 0301 = 300 V
- Tolerance Code:**  
K =  $\pm 10\%$  (contact factory for  $\pm 5\%$ )
- Packaging Code:**  
Please refer to full catalog

\* VE13: For models with  $V_{RMS}$  320 V other version/suffixes available with:  
 E = 5.08 (0.20) Suffix:  
 $\phi$  = 0.6 (.024) Bulk: HB  
 D = 12.5 (.492) max Tape: DA, DB, DC, DD, DQ, ...  
 \*\*VE24: For lead diameter = 1.0 (.039), please consult us.