



## Description

The ZV Series of low voltage leaded multilayer varistors (MLVs) is designed to protect sensitive electronics devices operating in the low voltage region against high voltage / current surges. They offer excellent transient energy absorption due to improved energy volume distribution and power dissipation. Low voltage MLVs cover a wide DC operating voltage range from 3 to 56V.

## Features

- AC operating voltage (Vrms) from 2V to 40V
- DC operating voltage (Vdc) from 3V to 56V
- 5 model sizes available 05, 07, 10, 10, 14, 20
- Available with straight or crimped leads
- Broad range of current and energy handling capabilities
- +125°C continuous operating temperature (+150°C for ZVY)
- Dimensional and weight savings on PC board
- Bi-directional, lower clamping voltages than disc type varistors

## Applications

- Suppression of inductive switching or other transient events at the circuit board level
- Provides on-board transient voltage protection for ICs and transistors
- Used to help achieve electromagnetic compliance of end products
- Replace larger TVS Zener diodes in many applications

## General Technical Data

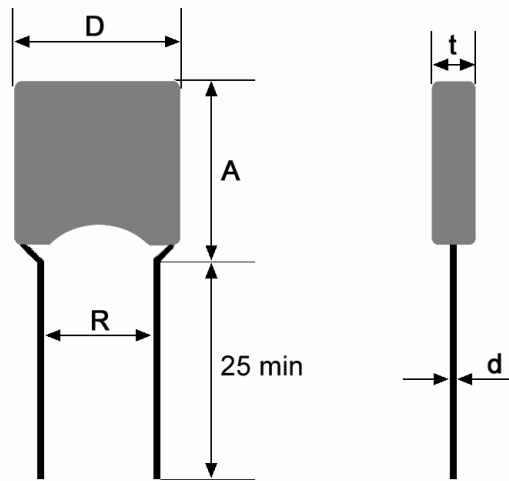
Operating Temperature - ZV	-40°C to +125°C	In accordance with CECC 42 000
Operating Temperature - ZVY	-40°C to +150°C	
Storage Temperature Range	-40°C to +150°C	
Threshold Voltage Temperature Coefficient	<-0.05%/°C	
Insulation Resistance	>1Gohm	
Isolation Voltage Capability	>1kV	
Response Time	< 25 nS	

## How to Order

ZV		1		14		K		10		R	
SEI Type		Lead style		Vrms		Tolerance		Chip Size		Packaging	
<b>SEI Type</b>	<b>Description</b>	<b>Model size</b>	<b>Version</b>		<b>Code</b>	<b>Tolerance</b>	<b>Size (mm)</b>		<b>Code</b>	<b>Description</b>	
ZV	Standard	05, 07, 10	1 = Outward Crimped Leads		K	10%	05		B	Bulk	
ZVY	High Temp	14	1 = Straight Leads		L	15%	07		R	Reel	
		14	5 = Straight Leads, Kinked		M	20%	10		A	Ammo Pack	
		20	1 = Inward Crimped Leads				14				
							20				

## Standard Packaging Options / Quantities

Series	Voltage Range (Vrms)	Model Size	Packaging options 7mm, 10mm, 14mm, 20mm, and 23mm		
			B = Bulk; R = Reel; A = Ammo Pack		
			B	R	A
ZV, ZVY	2 – 40	05	2,000	2,000	2,000
	2 – 40	07	1,500	2,000	2,000
	2 – 40	10	1,000	1,500	1,000
	2 – 40	14	700	1,500	1,000
	2 – 40	20	500	1,500	800



## Device Ratings and Dimensions

Part Number	V <sub>RMS</sub> (volts)	V <sub>DC</sub> (volts)	V <sub>N</sub> (volts)	V <sub>C</sub> (volts)	I <sub>C</sub> (amps)	W <sub>MAX</sub> (joules)	P <sub>MAX</sub> (watts)	I <sub>p</sub> (amps)	C <sub>TYP</sub> (pF)	D <sub>MAX</sub> (mm)	t <sub>MAX</sub> (mm)	R (mm)	d (mm)	h <sub>MAX</sub> (mm)
ZV 2 M 05	2	3	4	10	1	0.1	0.005	100	1,300	5	7	5	0.6	4.5
ZV 4 M 05	4	5.5	8	14	1	0.1	0.005	100	1,100	5	7	5	0.6	4.5
ZV 6 M 05	6	8	11	21	1	0.2	0.005	400	900	5	7	5	0.6	4.5
ZV 8 M 05	8	11	15	25	1	0.2	0.005	100	700	5	7	5	0.6	4.5
ZV 11 M 05	11	14	18	33	1	0.3	0.005	100	500	5	7	5	0.6	4.5
ZV 14 M 05	14	18	22	38	1	0.4	0.005	100	400	5	7	5	0.6	4.5
ZV 17 M 05	17	22	27	44	1	0.5	0.005	100	340	5	7	5	0.6	4.5
ZV 20 M 05	20	26	33	54	1	0.6	0.005	100	300	5	7	5	0.6	4.5
ZV 25 M 05	25	31	39	65	1	0.7	0.005	100	510	5	7	5	0.6	4.5
ZV 30 M 05	30	38	47	77	1	0.9	0.005	100	450	5	7	5	0.6	4.5
ZV 35 M 05	35	45	56	90	1	1.2	0.005	100	410	5	7	5	0.6	4.5
ZV 40 M 05	40	56	68	110	1	1.4	0.005	100	370	5	7	5	0.6	4.5

ZV 2 M 07	2	3	4	10	2.5	0.2	0.008	200	5,000	7	9	5	0.6	4.5
ZV 4 M 07	4	5.5	8	14	2.5	0.3	0.008	200	4,300	7	9	5	0.6	4.5
ZV 6 M 07	6	8	11	21	2.5	0.4	0.008	200	3,200	7	9	5	0.6	4.5
ZV 8 M 07	8	11	15	25	2.5	0.5	0.008	200	1,950	7	9	5	0.6	4.5
ZV 11 M 07	11	14	18	33	2.5	0.6	0.008	200	1,300	7	9	5	0.6	4.5
ZV 14 M 07	14	18	22	38	2.5	0.8	0.008	200	950	7	9	5	0.6	4.5
ZV 17 M 07	17	22	27	44	2.5	0.9	0.008	200	740	7	9	5	0.6	4.5
ZV 20 M 07	20	26	33	54	2.5	1.2	0.008	200	620	7	9	5	0.6	4.5
ZV 25 M 07	25	31	39	65	2.5	1.4	0.008	200	1,150	7	9	5	0.6	4.5
ZV 30 M 07	30	38	47	77	2.5	1.6	0.008	200	950	7	9	5	0.6	4.5
ZV 35 M 07	35	45	56	90	2.5	2.2	0.008	200	950	7	9	5	0.6	4.5
ZV 40 M 07	40	56	68	110	2.5	2.6	0.008	200	750	7	9	5	0.6	4.5

## Device Ratings and Dimensions

Part Number	V <sub>RMS</sub> (volts)	V <sub>DC</sub> (volts)	V <sub>N</sub> (volts)	V <sub>C</sub> (volts)	I <sub>C</sub> (amps)	W <sub>MAX</sub> (joules)	P <sub>MAX</sub> (watts)	I <sub>p</sub> (amps)	C <sub>TYP</sub> (pF)	D <sub>MAX</sub> (mm)	t <sub>MAX</sub> (mm)	R (mm)	d (mm)	h <sub>MAX</sub> (mm)
ZV 4 M 10	4	5.5	8	14	5	0.4	0.01	300	5,000	7	9	5	0.6	4.5
ZV 6 M 10	6	8	11	21	5	0.8	0.01	300	4,100	7	9	5	0.6	4.5
ZV 8 M 10	8	11	15	25	5	1.1	0.01	500	3,400	7	9	5	0.6	4.5
ZV 11 M 10	11	14	18	33	5	1.7	0.01	500	2,600	7	9	5	0.6	4.5
ZV 14 M 10	14	18	22	38	5	2.2	0.01	500	2,150	7	9	5	0.6	4.5
ZV 17 M 10	17	22	27	44	5	2.6	0.01	500	1,800	7	9	5	0.6	4.5
ZV 20 M 10	20	26	33	54	5	3.2	0.01	500	1,500	7	9	5	0.6	4.5
ZV 25 M 10	25	31	39	65	5	3.8	0.01	500	1,350	7	9	5	0.6	4.5
ZV 30 M 10	30	38	47	77	5	4.4	0.01	500	1,100	7	9	5	0.6	4.5
ZV 35 M 10	35	45	56	90	5	5.4	0.01	500	1,000	7	9	5	0.6	4.5
ZV 40 M 10	40	56	68	110	5	6.4	0.01	500	820	7	9	5	0.6	4.5

ZV 4 M 14	4	5.5	8	14	10	0.8	0.015	500	10,000	8	12	5	0.6	4.5
ZV 6 M 14	6	8	11	21	10	1.0	0.015	500	7,500	8	12	5	0.6	4.5
ZV 8 M 14	8	11	15	25	10	1.9	0.015	800	6,500	8	12	5	0.6	4.5
ZV 11 M 14	11	14	18	33	10	3.3	0.015	1,000	5,100	8	12	5	0.6	4.5
ZV 14 M 14	14	18	22	38	10	4.2	0.015	1,000	4,000	8	12	5	0.6	4.5
ZV 17 M 14	17	22	27	44	10	5.2	0.015	1,000	3,500	8	12	5	0.6	4.5
ZV 20 M 14	20	26	33	54	10	6.4	0.015	1,000	3,000	8	12	5	0.6	4.5
ZV 25 M 14	25	31	39	65	10	7.2	0.015	1,000	2,500	8	12	5	0.6	4.5
ZV 30 M 14	30	38	47	77	10	9.4	0.015	1,000	2,000	8	12	5	0.6	4.5
ZV 35 M 14	35	45	56	90	10	10.2	0.015	1,000	1,450	8	12	5	0.6	4.5
ZV 40 M 14	40	56	68	110	10	13.4	0.015	1,000	1,100	8	12	5	0.6	4.5

ZV 4 M 20	4	5.5	8	14	20	1.2	0.02	1,000	19,500	9	12	5	0.6	4.5
ZV 6 M 20	6	8	11	21	20	3.8	0.02	1,000	17,000	9	12	5	0.6	4.5
ZV 8 M 20	8	11	15	25	20	4.3	0.02	1,500	16,000	9	12	5	0.6	4.5
ZV 11 M 20	11	14	18	33	20	10.5	0.02	2,000	13,000	9	12	5	0.6	4.5
ZV 14 M 20	14	18	22	38	20	12.0	0.02	2,000	10,000	9	12	5	0.6	4.5
ZV 17 M 20	17	22	27	44	20	14.2	0.02	2,000	8,000	9	12	5	0.6	4.5
ZV 20 M 20	20	26	33	54	20	18.2	0.02	2,000	6,500	9	12	5	0.6	4.5
ZV 25 M 20	25	31	39	65	20	22.4	0.02	2,000	5,000	9	12	5	0.6	4.5
ZV 30 M 20	30	38	47	77	20	25.8	0.02	2,000	4,000	9	12	5	0.6	4.5
ZV 35 M 20	35	45	56	90	20	33.4	0.02	2,000	3,000	9	12	5	0.6	4.5