

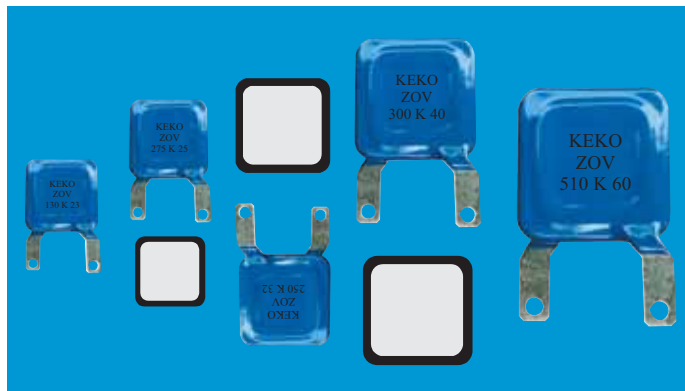
VARICON

SQUARE SHAPED HIGH ENERGY VARISTORS

ZOV SERIES

Description

ZOV Series is a series of high-energy varistors. There are two groups of these varistors. One consists of standard sized surge shaped varistors and the other one of full custom parameter designed varistors. With the other branch of ZOV Series the customer is offered the opportunity to design the optimum varistor with the minimum dimensions to satisfy his own specific application. Parameters free to be chosen are : non-standard DC/AC operating voltage, leakage current, clamping voltage, maximum surge current, energy absorption level, maximum dissipation power as well as shape, the dimensions being the function of required electrical parameters and vice-versa.



Both of these groups are offered in two versions: epoxy coated with rigid terminals and metallized varistor blocks. The first ones are designed to provide secondary surge protection in the outdoor and service entrance environment (distribution panels), in computers and also in industrial applications for motor controls and power supplies in oil-drilling, mining and transportation field. The second ones are intended for applications with special contact or installation requirements. The electrode finish of devices is solderable and can also be used with - pressure contacts for stacking applications.

Features

Standard Varistor Types

- Operating voltage range V_{rms} 60 V to 680 V.
- Operating voltage range V_{dc} 85 V to 900 V.
- 5 Model sizes available.....23 , 25, 32, 40, and 60 mm.
- Broad range of current and energy handling capabilities.
- Low limiting voltage @ $I_{max}/2$.
- + 85 °C continuous operating temperature.
- Available either as epoxy coated varistors with rigid terminals or as metallized varistor blocks.
- UL1449 & CSA C22.2 file E 221545 Section 1.
- Inhouse testing according to VDE 0675.
- Lead free components.
- In case ZOV varistor is used as metallized block without leads and coating, device ratings and characteristics are only valid for professionally soldered and coated components. Improper soldering and further manufacturing steps can lead to : change of characteristics such as reduced long term stability, reduced surge current and energy absorption capability, reduced adhesive strength of electrodes and low climatic strength. In case soldering method is dipping KEKO VARICON can minimise this problem by passivation of varistor block edges.

Full Custom Parameter Designed Varistors

- Operating voltage range V_{rms} 60 V to 680 V.
- Operating voltage range V_{dc} 85 V to 900 V.
- Indefinite number of sizes of both square and rectangular shape, the maximum one being 45 x 90 mm.
- Broad range of current and energy handling capabilities.
- + 85 °C continuous operating temperature.
- Electrical parameters free to be chosen are AC/DC operating voltage, leakage current, clamping voltage, maximum surge current, energy absorption level, maximum dissipation power and threshold voltage temperature coefficient.
- Available either as epoxy coated varistors with rigid terminals or as metallized varistor blocks.

Absolute Maximum Ratings

Continuous :

Steady State Applied Voltage :

DC Voltage Range (V_{dc})

AC Voltage Range (V_{rms})

Transient :

Peak Single Pulse Surge Current, 8/20 μ s Waveform, (I_{max})

Single Pulse Surge Energy, 10/1000 μ s Waveform (W_{max})

Operating Ambient Temperature

Storage Temperature Range

Threshold Voltage Temperature Coefficient

Insulation Resistance*

Isolation Voltage Capability*

Response Time*

Climatic Category*

* valid in case of epoxy coated components

Standard Types

Units

Custom Designed Types

Units

85 to 900

V

85 to 900

V

60 to 680

V

60 to 680

V

18000 to 80000

A

> 5500

A/cm²

90 to 4140

J

> 400

J/cm³

-40 to +85

°C

-40 to +85

°C

-40 to +125

°C

-40 to +125

°C

< +0.05

%/°C

< +0.05

%/°C

> 1

G Ω

> 1

G Ω

> 2.5

kV

> 2.5

kV

< 25

ns

< 25

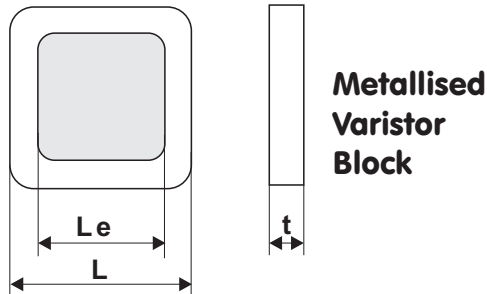
ns

40 / 85 / 56

40 / 85 / 56

Standard High Energy Varistor Types

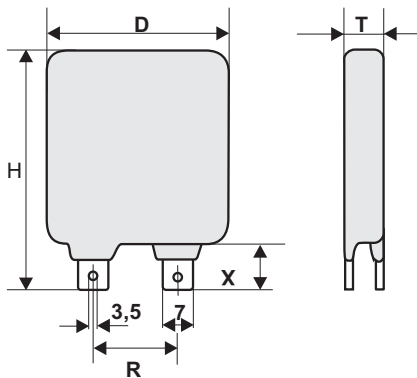
Device Ratings and Characteristics


Size Parameters

Size	L _{max} mm	L _{emax} mm
23	23	18
25	23	20
32	30	28
40	34	31
60	43	39

ZOV 60 K 23.....ZOV 275 K 60

Type	V _{rms} V	V _{dc} V	V _n @ 1 mA V	V _c @ I _c V	I _c A	W _{max} 10/1000 μs J	P max W	I _{max} 8/20 μs A	C @ 1 kHz pF	t max mm	T max mm
ZOV 60 K 23	60	85	100	165	100	90	1,0	18.000	3850	1,0	7,7
ZOV 60 K 25	60	85	100	165	150	125	1,0	20.000	4850	1,0	7,7
ZOV 60 K 32	60	85	100	165	200	250	1,2	30.000	9700	1,0	7,7
ZOV 60 K 40	60	85	100	165	300	300	1,4	45.000	12000	1,0	7,7
ZOV 75 K 23	75	100	120	200	100	100	1,0	18.000	3500	1,1	7,9
ZOV 75 K 25	75	100	120	200	150	145	1,0	20.000	4500	1,1	7,9
ZOV 75 K 32	75	100	120	200	200	280	1,2	30.000	8900	1,1	7,9
ZOV 75 K 40	75	100	120	200	300	340	1,4	45.000	11000	1,1	7,9
ZOV 95 K 23	95	125	150	250	100	135	1,0	18.000	2950	1,3	8,1
ZOV 95 K 25	95	125	150	250	150	190	1,0	20.000	3680	1,3	8,1
ZOV 95 K 32	95	125	150	250	200	380	1,2	30.000	7470	1,3	8,1
ZOV 95 K 40	95	125	150	250	300	450	1,4	45.000	9200	1,3	8,1
ZOV 130 K 23	130	170	205	340	100	180	1,0	18.000	2310	1,5	8,1
ZOV 130 K 25	130	170	205	340	150	250	1,0	20.000	2900	1,5	8,1
ZOV 130 K 32	130	170	205	340	200	500	1,2	30.000	5780	1,5	8,1
ZOV 130 K 40	130	170	205	340	300	600	1,4	45.000	7200	1,5	8,1
ZOV 130 K 60	130	170	205	340	500	960	1,6	80.000	11520	1,5	8,1
ZOV 150 K 23	150	200	240	395	100	215	1,0	18.000	1990	1,7	8,3
ZOV 150 K 25	150	200	240	395	150	300	1,0	20.000	2480	1,7	8,3
ZOV 150 K 32	150	200	240	395	200	600	1,2	30.000	4960	1,7	8,3
ZOV 150 K 40	150	200	240	395	300	720	1,4	45.000	6100	1,7	8,3
ZOV 150 K 60	150	200	240	395	500	1150	1,6	80.000	9760	1,7	8,3
ZOV 230 K 23	230	300	360	595	100	320	1,0	18.000	1320	2,4	9,0
ZOV 230 K 25	230	300	360	595	150	450	1,0	20.000	1650	2,4	9,0
ZOV 230 K 32	230	300	360	595	200	900	1,2	30.000	3300	2,4	9,0
ZOV 230 K 40	230	300	360	595	300	1080	1,4	45.000	4060	2,4	9,0
ZOV 230 K 60	230	300	360	595	500	1730	1,6	80.000	6490	2,4	9,0
ZOV 250 K 23	250	320	390	650	100	350	1,0	18.000	1220	2,6	9,2
ZOV 250 K 25	250	320	390	650	150	490	1,0	20.000	1530	2,6	9,2
ZOV 250 K 32	250	320	390	650	200	970	1,2	30.000	3050	2,6	9,2
ZOV 250 K 40	250	320	390	650	300	1160	1,4	45.000	3760	2,6	9,2
ZOV 250 K 60	250	320	390	650	500	1860	1,6	80.000	6050	2,6	9,2
ZOV 275 K 23	275	350	430	710	100	380	1,0	18.000	1100	2,8	9,4
ZOV 275 K 25	275	350	430	710	150	530	1,0	20.000	1380	2,8	9,4
ZOV 275 K 32	275	350	430	710	200	1060	1,2	30.000	2770	2,8	9,4
ZOV 275 K 40	275	350	430	710	300	1280	1,4	45.000	3400	2,8	9,4
ZOV 275 K 60	275	350	430	710	500	2050	1,6	80.000	5440	2,8	9,4



**Epoxy Coated
Varistor
Block**

Size Parameters

Size	D _{max} mm	R ± 1 mm	H _{max} mm
23	25	18,5	43
25	25	18,5	43
32	35	25,4	53
40	36,5	25,4	56
60	48	25,4	66

ZOV 300 K 23 ZOV 680 K 60

Type	V _{rms} V	V _{dc} V	V _n @ 1 mA V	V _c @ I _c V	I _c A	W _{max} 10/1000 μs J	P max W	I _{max} 8/20 μs A	C @ 1 kHz pF	t max mm	T max mm
ZOV 300 K 23	300	385	470	775	100	440	1,0	18.000	1010	3,1	9,7
ZOV 300 K 25	300	385	470	775	150	615	1,0	20.000	1270	3,1	9,7
ZOV 300 K 32	300	385	470	775	200	1225	1,2	30.000	2540	3,1	9,7
ZOV 300 K 40	300	385	470	775	300	1470	1,4	45.000	3130	3,1	9,7
ZOV 300 K 60	300	385	470	775	500	2350	1,6	80.000	5000	3,1	9,7
ZOV 320 K 23	320	420	510	840	100	480	1,0	18.000	990	3,2	9,9
ZOV 320 K 25	320	420	510	840	150	680	1,0	20.000	1240	3,2	9,9
ZOV 320 K 32	320	420	510	840	200	1350	1,2	30.000	2470	3,2	9,9
ZOV 320 K 40	320	420	510	840	300	1620	1,4	45.000	3050	3,2	9,9
ZOV 320 K 60	320	420	510	840	500	2600	1,6	80.000	4880	3,2	9,9
ZOV 385 K 23	385	505	620	1025	100	500	1,0	18.000	810	3,8	10,6
ZOV 385 K 25	385	505	620	1025	150	690	1,0	20.000	1020	3,8	10,6
ZOV 385 K 32	385	505	620	1025	200	1390	1,2	30.000	2040	3,8	10,6
ZOV 385 K 40	385	505	620	1025	300	1660	1,4	45.000	2500	3,8	10,6
ZOV 385 K 60	385	505	620	1025	500	2660	1,6	80.000	4000	3,8	10,6
ZOV 420 K 23	420	560	680	1120	100	530	1,0	18.000	740	4,4	10,9
ZOV 420 K 25	420	560	680	1120	150	740	1,0	20.000	930	4,4	10,9
ZOV 420 K 32	420	560	680	1120	200	1480	1,2	30.000	1850	4,4	10,9
ZOV 420 K 40	420	560	680	1120	300	1780	1,4	45.000	2280	4,4	10,9
ZOV 420 K 60	420	560	680	1120	500	2850	1,6	80.000	3650	4,4	10,9
ZOV 460 K 23	460	615	750	1240	100	580	1,0	18.000	670	4,8	11,4
ZOV 460 K 25	460	615	750	1240	150	810	1,0	20.000	840	4,8	11,4
ZOV 460 K 32	460	615	750	1240	200	1610	1,2	30.000	1680	4,8	11,4
ZOV 460 K 40	460	615	750	1240	300	1930	1,4	45.000	2060	4,8	11,4
ZOV 460 K 60	460	615	750	1240	500	3090	1,6	80.000	3300	4,8	11,4
ZOV 510 K 23	510	670	820	1355	100	600	1,0	18.000	610	5,2	11,8
ZOV 510 K 25	510	670	820	1355	150	840	1,0	20.000	770	5,2	11,8
ZOV 510 K 32	510	670	820	1355	200	1680	1,2	30.000	1530	5,2	11,8
ZOV 510 K 40	510	670	820	1355	300	2010	1,4	45.000	1900	5,2	11,8
ZOV 510 K 60	510	670	820	1355	500	3220	1,6	80.000	3040	5,2	11,8
ZOV 550 K 23	550	745	910	1500	100	650	1,0	18.000	550	5,9	12,5
ZOV 550 K 25	550	745	910	1500	150	900	1,0	20.000	690	5,9	12,5
ZOV 550 K 32	550	745	910	1500	200	1810	1,2	30.000	1380	5,9	12,5
ZOV 550 K 40	550	745	910	1500	300	2170	1,4	45.000	1700	5,9	12,5
ZOV 550 K 60	550	745	910	1500	500	3470	1,6	80.000	2720	5,9	12,5
ZOV 680 K 23	680	895	1100	1815	100	770	1,0	18.000	460	6,9	13,5
ZOV 680 K 25	680	895	1100	1815	150	1080	1,0	20.000	570	6,9	13,5
ZOV 680 K 32	680	895	1100	1815	200	2160	1,2	30.000	1150	6,9	13,5
ZOV 680 K 40	680	895	1100	1815	300	2590	1,4	45.000	1400	6,9	13,5
ZOV 680 K 60	680	895	1100	1815	500	4140	1,6	80.000	2240	6,9	13,5