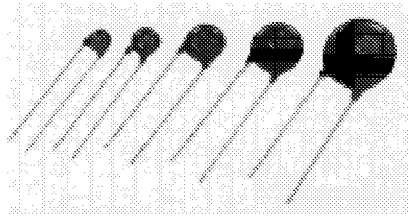
"ZNR®" Transient/Surge Absorbers (Medium and High Voltage Rating)

Series: **V**
Type: **D**



"ZNR®" Transient/Surge Absorber, Series V is newly released through our continued research in ceramic material composition of ZnO varistor and manufacturing process, featuring large surge current handling capability and energy handling capability for absorbing transient overvoltages in compact size.

■ Features (Series V)

- Improved in "Surge Current Handling Capability (@ 8/20 µs, 2 times)" by 1.6 to 3.0 times over the current "ZNRs, Series C"
- Very large "Energy Handling Capability" absorbing transient overvoltages in compact sizes
- All standards products* have received listing under both UL and CSA standards (cf. Application Notes for UL/CSA recognized components on page 32 to 33)
- Wide products range for transient/surge protection on AC 100 V to AC 480 V nominal system with the maximum peak current ratings of 600 A to 7000 A (@ 8/20 µs, 2 times)

*Except varistor voltage of 82 to 150 V under CSA recognition.

■ Related Standards

- UL1414, UL1449 and CSA C22.2 No.1 Class 2221 01
  Each type designation is not registered by Part Number.
  If you have any question on type designation, please contact and ask our office.

■ Recommended Applications

- Transistor, diode, IC, thyristor or triac semiconductor protection
- Surge protection in consumer electronics
- Surge protection in communication, measuring or controller electronics
- Surge protection in electronic home appliances, gas or petroleum appliances
- Relay or electromagnetic valve surge absorption

■ Precautions for Handling

See Page 36 to 38

■ Explanation of Part Numbers (Bulk)

1	2	3	4	5	6	7	8	9	10	11	12
E	R	Z	V			D					

Product Code | Series | Type | Design No.

Element Size			
05	φ5 mm	10	φ10 mm
07	φ7 mm	14	φ14 mm
09	φ9 mm*	20	φ20 mm

Nominal Varistor Voltage
The first two digits are significant figures and the third one denotes the number of zeros following.

* See page 20 for specifications of φ9 mm (9 Series).

■ Reference Guide to Standard Products (Series V, Type D)

Part No.	Varistor Voltage*	Maximum Allowable Voltage		Clamping Voltage at Ip (A)		Maximum Energy (Joule)		Maximum Peak Current @ 8/20 μs (A)		Recommended Applications
	DC (V)	ACrms (V)	DC (V)	max.(V)	Ip (A)	10/1000 μs	2 ms	1 time	2 times	
ERZV05D820	82 (74–90)	50	65	145	5	3.5	2.5	800	600	Telephone, Communication Line (DC 48 V)
ERZV07D820				135	10	7	5	1750	1250	
ERZV10D820				135	25	14	10	3500	2500	
ERZV14D820				135	50	28	20	6000	5000	
ERZV20D820				135	100	56	40	10000	7000	
ERZV05D101	100 (90–110)	60	85	175	5	4.0	3.0	800	600	
ERZV07D101				165	10	8.5	6.0	1750	1250	
ERZV10D101				165	25	17	12	3500	2500	
ERZV14D101				165	50	35	25	6000	5000	
ERZV20D101				165	100	70	50	10000	7000	
ERZV05D121	120 (108–132)	75	100	210	5	5.0	3.5	800	600	
ERZV07D121				200	10	10	7.0	1750	1250	
ERZV10D121				200	25	20	14.5	3500	2500	
ERZV14D121				200	50	42	30	6000	5000	
ERZV20D121				200	100	85	60	10000	7000	
ERZV05D151	150 (135–165)	95	125	260	5	6.5	4.5	800	600	
ERZV07D151				250	10	13	9.0	1750	1250	
ERZV10D151				250	25	25	18	3500	2500	
ERZV14D151				250	50	53	37.5	6000	5000	
ERZV20D151				250	100	106	75	10000	7000	
ERZV05D201	200 (185–225)	130	170	355	5	8.5	6.0	800	600	AC 100 V Line-Line Applications (Japan)
ERZV07D201				340	10	17.5	12.5	1750	1250	
ERZV10D201				340	25	35	25	3500	2500	
ERZV14D201				340	50	70	50	6000	5000	
ERZV20D201				340	100	140	100	10000	7000	
ERZV05D221	220 (198–242)	140	180	380	5	9	6.5	800	600	
ERZV07D221				360	10	19	13.5	1750	1250	
ERZV10D221				360	25	39	27.5	3500	2500	
ERZV14D221				360	50	78	55	6000	5000	
ERZV20D221				360	100	155	110	10000	7000	
ERZV05D241	240 (216–264)	150	200	415	5	10.5	7.5	800	600	AC 100 V to 120 V, Line–Line Applications (Japan, U.S., Canada)
ERZV07D241				395	10	21	15	1750	1250	
ERZV10D241				395	25	42	30	3500	2500	
ERZV14D241				395	50	84	60	6000	5000	
ERZV20D241				395	100	168	120	10000	7000	
ERZV05D271	270 (247–303)	175	225	475	5	11	8	800	600	
ERZV07D271				455	10	24	17	1750	1250	
ERZV10D271				455	25	49	35	3500	2500	
ERZV14D271				455	50	99	70	6000	5000	
ERZV20D271				455	100	190	135	10000	7000	
ERZV05D331	330 (297–363)	210	270	570	5	13.0	9.5	800	600	Telephone Line Application, (250 V Insulation Resistance Test Applicable)
ERZV07D331				545	10	28	20	1750	1250	
ERZV10D331				545	25	58	42	3500	2500	
ERZV14D331				545	50	115	80	6000	4500	
ERZV20D331				545	100	228	160	10000	6500	
ERZV05D361	360 (324–396)	230	300	620	5	16	11	800	600	
ERZV07D361				595	10	32	23	1750	1250	
ERZV10D361				595	25	65	45	3500	2500	
ERZV14D361				595	50	130	90	6000	4500	
ERZV20D361				595	100	255	180	10000	6500	
ERZV05D391	390 (351–429)	250	320	675	5	17	12	800	600	
ERZV07D391				650	10	35	25	1750	1250	
ERZV10D391				650	25	70	50	3500	2500	
ERZV14D391				650	50	140	100	6000	4500	
ERZV20D391				650	100	275	195	10000	6500	

■ Reference Guide to Standard Products (Series V, Type D)

Part No.	Varistor Voltage*	Maximum Allowable Voltage		Clamping Voltage at Ip (A)		Maximum Energy (Joule)		Maximum Peak Current @ 8/20 µs (A)		Recommended Applications
	DC (V)	ACrms (V)	DC (V)	max.(V)	Ip (A)	10/1000 µs	2 ms	1 time	2 times	
ERZV05D431	430 (387–473)	275	350	745	5	20	13.5	800	600	AC 200 V, 220 V, Line–Line and AC 100 V to 220 V, Line–Ground Applications
ERZV07D431				710	10	40	27.5	1750	1250	
ERZV10D431				710	25	80	55	3500	2500	
ERZV14D431				710	50	155	110	6000	4500	
ERZV20D431				710	100	303	215	10000	6500	
ERZV05D471	470 (423–517)	300	385	810	5	21	15	800	600	
ERZV07D471				775	10	42	30	1750	1250	
ERZV10D471				775	25	85	60	3500	2500	
ERZV14D471				775	50	175	125	6000	4500	
ERZV20D471				775	100	350	250	10000	6500	
ERZV07D511	510 (459–561)	320	410	845	10	45	32	1750	1250	AC 240 V, Line–Line Applications (U.K., Australia, Middle East Countries)
ERZV10D511				845	25	92	67	3500	2500	
ERZV14D511				845	50	190	136	6000	4500	
ERZV20D511				845	100	382	273	10000	6500	
ERZV10D621	620 (558–682)	385	505	1025	25	92	67	3500	2500	
ERZV14D621				1025	50	190	136	5000	4500	
ERZV20D621				1025	100	382	273	7500	6500	
ERZV10D681	680 (612–748)	420	560	1120	25	92	67	3500	2500	
ERZV14D681				1120	50	190	136	5000	4500	
ERZV20D681				1120	100	382	273	7500	6500	
ERZV10D751	750 (675–825)	460	615	1240	25	100	70	3500	2500	AC 380 V, LIne–Line and Line–Ground Applications
ERZV14D751				1240	50	210	150	5000	4500	
ERZV20D751				1240	100	420	300	7500	6500	
ERZV10D821	820 (738–902)	510	670	1355	25	110	80	3500	2500	
ERZV14D821				1355	50	235	165	5000	4500	
ERZV20D821				1355	100	460	325	7500	6500	
ERZV10D911	910 (819–1001)	550	745	1500	25	130	90	3500	2500	AC 415 V, Line–Line and Line–Ground Applications
ERZV14D911				1500	50	255	180	5000	4500	
ERZV20D911				1500	100	510	360	7500	6500	
ERZV10D102	1000 (900–1100)	625	825	1650	25	140	100	3500	2500	AC 480 V, Line–Line and Line–Ground Applications
ERZV14D102				1650	50	280	200	5000	4500	
ERZV20D102				1650	100	565	400	7500	6500	
ERZV10D112	1100 (990–1210)	680	895	1815	25	155	110	3500	2500	
ERZV14D112				1815	50	310	220	5000	4500	
ERZV20D112				1815	100	620	440	7500	6500	
ERZV10D182	1800 (1700–1980)	1000	1465	2970	25	247	183	3500	2500	Line–Ground Applications (For AC 1200 V Withstanding Test)
ERZV14D182				2970	50	510	360	5000	4500	
ERZV20D182				2970	100	1020	720	7500	6500	

* Measuring Current of Varistor Voltage
5 Series (ERZV05D820 to ERZV05D471): 0.1 mA
Others: 1 mA

Part No.	Rated Power (W)
ERZV05D820–ERZV05D471	0.10
ERZV07D820–ERZV07D511	0.25
ERZV10D820–ERZV10D182	0.40
ERZV14D820–ERZV14D182	0.60
ERZV20D820–ERZV20D182	1.00

- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C

5 Series

■ Ratings and Characteristics

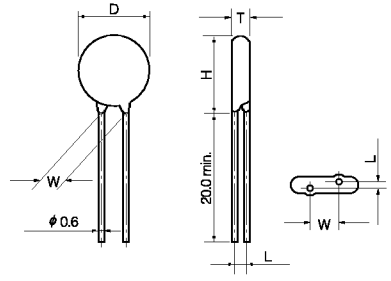
- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C
- Temperature Coefficient of Varistor Voltage: 0 to –0.05 %/°C

Part No.	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage (max.)	Rated Power	Maximum Energy		Maximum Peak Current (8/20 µs)		Capacitance (max.)
						(10/1000 µs)	(2 ms)	1 time	2 times	
	$V_{0.1\,mA}$ (V)	ACrms (V)	DC (V)	$V_{5\,A}$ (V)	(W)	(J)	(J)	(A)	(A)	@1 kHz (pF)
ERZV05D820	82(74– 90)	50	65	145	0.1	3.5	2.5	800	600	460
ERZV05D101	100(90–110)	60	85	175	0.1	4.0	3.0	800	600	400
ERZV05D121	120(108–132)	75	100	210	0.1	5.0	3.5	800	600	350
ERZV05D151	150(135–165)	95	125	260	0.1	6.5	4.5	800	600	300
ERZV05D201	200(185–225)	130	170	355	0.1	8.5	6.0	800	600	120
ERZV05D221	220(198–242)	140	180	380	0.1	9.0	6.5	800	600	110
ERZV05D241	240(216–264)	150	200	415	0.1	10.5	7.5	800	600	100
ERZV05D271	270(247–303)	175	225	475	0.1	11.0	8.0	800	600	90*
ERZV05D331	330(297–363)	210	270	570	0.1	13.0	9.5	800	600	80*
ERZV05D361	360(324–396)	230	300	620	0.1	16.0	11.0	800	600	80*
ERZV05D391	390(351–429)	250	320	675	0.1	17.0	12.0	800	600	80*
ERZV05D431	430(387–473)	275	350	745	0.1	20.0	13.5	800	600	70*
ERZV05D471	470(423–517)	300	385	810	0.1	21.0	15.0	800	600	60*

* Measured at 1 MHz

■ Dimensions in mm (not to scale)

Part No.	D max.	T max.	W	H max.	L
ERZV05D820	7.0	4.1	5±1	10.0	1.4±1.0
ERZV05D101	7.0	4.3	5±1	10.0	1.6±1.0
ERZV05D121	7.0	4.5	5±1	10.0	1.8±1.0
ERZV05D151	7.0	4.8	5±1	10.0	2.1±1.0
ERZV05D201	7.0	4.4	5±1	10.0	1.7±1.0
ERZV05D221	7.0	4.5	5±1	10.0	1.8±1.0
ERZV05D241	7.0	4.6	5±1	10.0	1.9±1.0
ERZV05D271	7.0	4.8	5±1	10.0	2.1±1.0
ERZV05D331	7.0	5.1	5±1	10.0	2.4±1.0
ERZV05D361	7.0	5.3	5±1	10.0	2.5±1.0
ERZV05D391	7.0	5.4	5±1	10.0	2.7±1.0
ERZV05D431	7.0	5.6	5±1	10.0	2.9±1.0
ERZV05D471	7.0	5.8	5±1	10.0	3.1±1.0



7 Series

■ Ratings and Characteristics

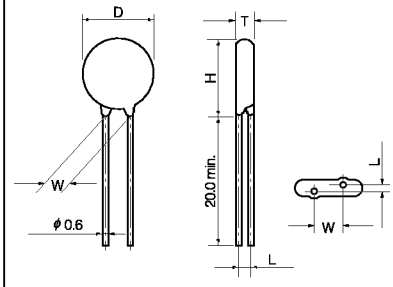
- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C
- Temperature Coefficient of Varistor Voltage: 0 to –0.05 %/°C

Part No.	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage (max.)	Rated Power	Maximum Energy		Maximum Peak Current (8/20 µs)		Capacitance (max.)
						(10/1000 µs)	(2 ms)	1 time	2 times	
	$V_{1\,mA}$ (V)	ACrms (V)	DC (V)	$V_{10\,A}$ (V)	(W)	(J)	(J)	(A)	(A)	@1 kHz (pF)
ERZV07D820	82(74– 90)	50	65	135	0.25	7	5	1750	1250	810
ERZV07D101	100(90–110)	60	85	165	0.25	8.5	6	1750	1250	700
ERZV07D121	120(108–132)	75	100	200	0.25	10	7	1750	1250	590
ERZV07D151	150(135–165)	95	125	250	0.25	13	9	1750	1250	500
ERZV07D201	200(185–225)	130	170	340	0.25	17.5	12.5	1750	1250	200
ERZV07D221	220(198–242)	140	180	360	0.25	19	13.5	1750	1250	190
ERZV07D241	240(216–264)	150	200	395	0.25	21	15	1750	1250	170
ERZV07D271	270(247–303)	175	225	455	0.25	24	17	1750	1250	150
ERZV07D331	330(297–363)	210	270	545	0.25	28	20	1750	1250	130
ERZV07D361	360(324–396)	230	300	595	0.25	32	23	1750	1250	130
ERZV07D391	390(351–429)	250	320	650	0.25	35	25	1750	1250	130
ERZV07D431	430(387–473)	275	350	710	0.25	40	27.5	1750	1250	120
ERZV07D471	470(423–517)	300	385	775	0.25	42	30	1750	1250	100
ERZV07D511	510(459–561)	320	410	845	0.25	45	32	1750	1250	90*

*Measured at 1 MHz

■ Dimensions in mm (not to scale)

Part No.	D max.	T max.	W	H max.	L
ERZV07D820	8.5	4.1	5±1	11.5	1.4±1.0
ERZV07D101	8.5	4.3	5±1	11.5	1.6±1.0
ERZV07D121	8.5	4.5	5±1	11.5	1.8±1.0
ERZV07D151	8.5	4.8	5±1	11.5	2.1±1.0
ERZV07D201	8.5	4.4	5±1	11.5	1.7±1.0
ERZV07D221	8.5	4.5	5±1	11.5	1.8±1.0
ERZV07D241	8.5	4.6	5±1	11.5	1.9±1.0
ERZV07D271	8.5	4.8	5±1	11.5	2.1±1.0
ERZV07D331	8.5	5.1	5±1	11.5	2.4±1.0
ERZV07D361	8.5	5.3	5±1	11.5	2.5±1.0
ERZV07D391	8.5	5.4	5±1	11.5	2.7±1.0
ERZV07D431	8.5	5.6	5±1	11.5	2.9±1.0
ERZV07D471	8.5	5.8	5±1	11.5	3.1±1.0
ERZV07D511	8.5	6.0	5±1	11.5	3.3±1.0



9 Series **

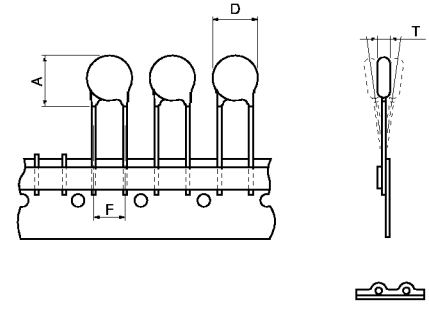
■ Ratings and Characteristics

- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C
- Temperature Coefficient of Varistor Voltage: 0 to –0.05 %/°C

Part No.	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage (max.)	Rated Power	Maximum Energy		Maximum Peak Current (8/20 µs)		Capacitance (max.)
						(10/1000 µs)	(2 ms)	1 time	2 times	
	$V_{1\,mA}$ (V)	ACrms (V)	DC (V)	$V_{25\,A}$ (V)	(W)	(J)	(J)	(A)	(A)	@1 kHz (pF)
ERZVA9D820	82(74– 90)	50	65	135	0.25	12	8.5	3000	2000	2000
ERZVA9D101	100(90–110)	60	85	165	0.25	14	10	3000	2000	1700
ERZVA9D121	120(108–132)	75	100	200	0.25	17	12	3000	2000	1400
ERZVA9D151	150(135–165)	95	125	250	0.25	21	15	3000	2000	1100
ERZVA9D201	200(185–225)	130	170	340	0.25	30	21	3000	2000	430
ERZVA9D221	220(198–242)	140	180	360	0.25	33	23	3000	2000	410
ERZVA9D241	240(216–264)	150	200	395	0.25	36	25.5	3000	2000	380
ERZVA9D271	270(247–303)	175	225	455	0.25	42	30	3000	2000	350
ERZVA9D331	330(297–363)	210	270	545	0.25	49	36	3000	2000	300
ERZVA9D361	360(324–396)	230	300	595	0.25	55	38	3000	2000	300
ERZVA9D391	390(351–429)	250	320	650	0.25	60	42.5	3000	2000	300
ERZVA9D431	430(387–473)	275	350	710	0.25	68	47	3000	2000	270
ERZVA9D471	470(423–517)	300	385	775	0.25	72	51	3000	2000	230
ERZVA9D511	510(459–561)	320	410	845	0.25	78	57	3000	2000	210

■ Dimensions in mm (not to scale)

Part No.	D max.	T max.	F	A max.
ERZVA9D820	11.5	3.8	5.0±0.5	14.0
ERZVA9D101	11.5	3.9	5.0±0.5	14.0
ERZVA9D121	11.5	4.1	5.0±0.5	14.0
ERZVA9D151	11.5	4.4	5.0±0.5	14.0
ERZVA9D201	11.5	4.1	5.0±0.5	14.0
ERZVA9D221	11.5	4.2	5.0±0.5	14.0
ERZVA9D241	11.5	4.3	5.0±0.5	14.0
ERZVA9D271	11.5	4.5	5.0±0.5	14.0
ERZVA9D331	11.5	4.8	5.0±0.5	14.0
ERZVA9D361	11.5	5.0	5.0±0.5	14.0
ERZVA9D391	11.5	5.1	5.0±0.5	14.0
ERZVA9D431	11.5	5.3	5.0±0.5	14.0
ERZVA9D471	11.5	5.6	5.0±0.5	14.0
ERZVA9D511	11.5	5.8	5.0±0.5	14.0



** 9 Series' standard products are taping style.

10 Series

■ Ratings and Characteristics

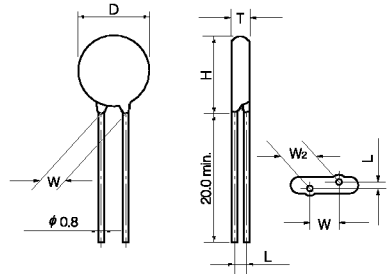
- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C
- Temperature Coefficient of Varistor Voltage: 0 to –0.05 %/°C

Part No.	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage (max.)	Rated Power	Maximum Energy		Maximum Peak Current (8/20 µs)		Capacitance (max.)
						(10/1000 µs)	(2 ms)	1 time	2 times	
	V_{1mA} (V)	ACrms (V)	DC (V)	V_{25A} (V)	(W)	(J)	(J)	(A)	(A)	@1 kHz (pF)
ERZV10D820	82(74– 90)	50	65	135	0.4	14	10	3500	2500	2000
ERZV10D101	100(90– 110)	60	85	165	0.4	17	12	3500	2500	1700
ERZV10D121	120(108– 132)	75	100	200	0.4	20	14.5	3500	2500	1400
ERZV10D151	150(135– 165)	95	125	250	0.4	25	18	3500	2500	1100
ERZV10D201	200(185– 225)	130	170	340	0.4	35	25	3500	2500	430
ERZV10D221	220(198– 242)	140	180	360	0.4	39	27.5	3500	2500	410
ERZV10D241	240(216– 264)	150	200	395	0.4	42	30	3500	2500	380
ERZV10D271	270(247– 303)	175	225	455	0.4	49	35	3500	2500	350
ERZV10D331	330(297– 363)	210	270	545	0.4	58	42	3500	2500	300
ERZV10D361	360(324– 396)	230	300	595	0.4	65	45	3500	2500	300
ERZV10D391	390(351– 429)	250	320	650	0.4	70	50	3500	2500	300
ERZV10D431	430(387– 473)	275	350	710	0.4	80	55	3500	2500	270
ERZV10D471	470(423– 517)	300	385	775	0.4	85	60	3500	2500	230
ERZV10D511	510(459– 561)	320	410	845	0.4	92	67	3500	2500	210
ERZV10D621	620(558– 682)	385	505	1025	0.4	92	67	3500	2500	190
ERZV10D681	680(612– 748)	420	560	1120	0.4	92	67	3500	2500	170
ERZV10D751	750(675– 825)	460	615	1240	0.4	100	70	3500	2500	160
ERZV10D821	820(738– 902)	510	670	1355	0.4	110	80	3500	2500	140
ERZV10D911	910(819–1001)	550	745	1500	0.4	130	90	3500	2500	120
ERZV10D102	1000(900–1100)	625	825	1650	0.4	140	100	3500	2500	110
ERZV10D112	1100(990–1210)	680	895	1815	0.4	155	110	3500	2500	110
ERZV10D182	1800(1700–1980)	1000	1465	2970	0.4	247	183	3500	2500	70*

✻ Measured at 1 MHz

■ Dimensions in mm (not to scale)

Part No.	D max.	T max.	W	H max.	L
ERZV10D820	11.5	4.5	7.5±1.0	14.5	1.6±1.0
ERZV10D101	11.5	4.7	7.5±1.0	14.5	1.8±1.0
ERZV10D121	11.5	4.9	7.5±1.0	14.5	2.0±1.0
ERZV10D151	11.5	5.2	7.5±1.0	14.5	2.3±1.0
ERZV10D201	11.5	4.8	7.5±1.0	14.5	1.9±1.0
ERZV10D221	11.5	4.9	7.5±1.0	14.5	2.0±1.0
ERZV10D241	11.5	5.0	7.5±1.0	14.5	2.1±1.0
ERZV10D271	11.5	5.2	7.5±1.0	14.5	2.3±1.0
ERZV10D331	11.5	5.5	7.5±1.0	14.5	2.6±1.0
ERZV10D361	11.5	5.7	7.5±1.0	14.5	2.8±1.0
ERZV10D391	11.5	5.8	7.5±1.0	14.5	2.9±1.0
ERZV10D431	11.5	6.0	7.5±1.0	14.5	3.1±1.0
ERZV10D471	11.5	6.2	7.5±1.0	14.5	3.3±1.0
ERZV10D511	11.5	6.4	7.5±1.0	14.5	3.5±1.0
ERZV10D621	12.5	7.1	7.5±1.0	15.5	4.2±1.0
ERZV10D681	12.5	7.4	7.5±1.0	15.5	4.5±1.0
ERZV10D751	12.5	7.8	7.5±1.0	15.5	4.9±1.0
ERZV10D821	12.5	8.1	7.5±1.0	15.5	5.2±1.0
ERZV10D911	12.5	8.6	7.5±1.0	15.5	5.7±1.0
ERZV10D102	12.5	9.1	7.5±1.0	15.5	6.2±1.0
ERZV10D112	12.5	9.7	7.5±1.0	15.5	6.8±1.0
ERZV10D182	13.5	14.4	11.0±1.0*	16.5	10.0±1.5



✻: W_2

✻✻ ERZV10D182CS is recommended type (lead length is 4.0±1.5mm).

14 Series

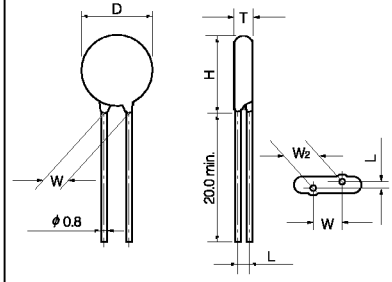
■ Ratings and Characteristics

- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C
- Temperature Coefficient of Varistor Voltage: 0 to –0.05 %/°C

Part No.	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage (max.)	Rated Power	Maximum Energy		Maximum Peak Current (8/20 µs)		Capacitance (max.)
						(10/1000 µs)	(2 ms)	1 time	2 times	
	$V_{1\,mA}$ (V)	ACrms (V)	DC (V)	$V_{50\,A}$ (V)	(W)	(J)	(J)	(A)	(A)	@1 kHz (pF)
ERZV14D820	82(74– 90)	50	65	135	0.6	28	20	6000	5000	3700
ERZV14D101	100(90– 110)	60	85	165	0.6	35	25	6000	5000	3200
ERZV14D121	120(108– 132)	75	100	200	0.6	42	30	6000	5000	2700
ERZV14D151	150(135– 165)	95	125	250	0.6	53	37.5	6000	5000	2200
ERZV14D201	200(185– 225)	130	170	340	0.6	70	50	6000	5000	770
ERZV14D221	220(198– 242)	140	180	360	0.6	78	55	6000	5000	740
ERZV14D241	240(216– 264)	150	200	395	0.6	84	60	6000	5000	700
ERZV14D271	270(247– 303)	175	225	455	0.6	99	70	6000	5000	640
ERZV14D331	330(297– 363)	210	270	545	0.6	115	80	6000	4500	580
ERZV14D361	360(324– 396)	230	300	595	0.6	130	90	6000	4500	540
ERZV14D391	390(351– 429)	250	320	650	0.6	140	100	6000	4500	500
ERZV14D431	430(387– 473)	275	350	710	0.6	155	110	6000	4500	450
ERZV14D471	470(423– 517)	300	385	775	0.6	175	125	6000	4500	400
ERZV14D511	510(459– 561)	320	410	845	0.6	190	136	6000	4500	350
ERZV14D621	620(558– 682)	385	505	1025	0.6	190	136	5000	4500	330
ERZV14D681	680(612– 748)	420	560	1120	0.6	190	136	5000	4500	320
ERZV14D751	750(675– 825)	460	615	1240	0.6	210	150	5000	4500	310
ERZV14D821	820(738– 902)	510	670	1355	0.6	235	165	5000	4500	280
ERZV14D911	910(819–1001)	550	745	1500	0.6	255	180	5000	4500	250
ERZV14D102	1000(900–1100)	625	825	1650	0.6	280	200	5000	4500	230
ERZV14D112	1100(990–1210)	680	895	1815	0.6	310	220	5000	4500	210
ERZV14D182	1800(1700–1980)	1000	1465	2970	0.6	510	360	5000	4500	120

■ Dimensions in mm (not to scale)

Part No.	D max.	T max.	W	H max.	L
ERZV14D820	15.5	4.5	7.5±1.0	18.5	1.6±1.0
ERZV14D101	15.5	4.7	7.5±1.0	18.5	1.8±1.0
ERZV14D121	15.5	4.9	7.5±1.0	18.5	2.0±1.0
ERZV14D151	15.5	5.2	7.5±1.0	18.5	2.3±1.0
ERZV14D201	15.5	4.8	7.5±1.0	18.5	1.9±1.0
ERZV14D221	15.5	4.9	7.5±1.0	18.5	2.0±1.0
ERZV14D241	15.5	5.0	7.5±1.0	18.5	2.1±1.0
ERZV14D271	15.5	5.2	7.5±1.0	18.5	2.3±1.0
ERZV14D331	15.5	5.5	7.5±1.0	18.5	2.6±1.0
ERZV14D361	15.5	5.7	7.5±1.0	18.5	2.8±1.0
ERZV14D391	15.5	5.8	7.5±1.0	18.5	2.9±1.0
ERZV14D431	15.5	6.0	7.5±1.0	18.5	3.1±1.0
ERZV14D471	15.5	6.2	7.5±1.0	18.5	3.3±1.0
ERZV14D511	15.5	6.4	7.5±1.0	18.5	3.5±1.0
ERZV14D621	16.0	7.1	7.5±1.0	19.0	4.2±1.0
ERZV14D681	16.0	7.4	7.5±1.0	19.0	4.5±1.0
ERZV14D751	16.0	7.8	7.5±1.0	19.0	4.9±1.0
ERZV14D821	16.0	8.1	7.5±1.0	19.0	5.2±1.0
ERZV14D911	16.0	8.6	7.5±1.0	19.0	5.7±1.0
ERZV14D102	16.0	9.1	7.5±1.0	19.0	6.2±1.0
ERZV14D112	16.0	9.7	7.5±1.0	19.0	6.8±1.0
ERZV14D182	17.0	14.4	15.0±1.0*	20.5	10.5±2.0



*: W_2

**: ERZV14D182CS is recommended type (lead length is 4.0±1.5mm).

20 Series

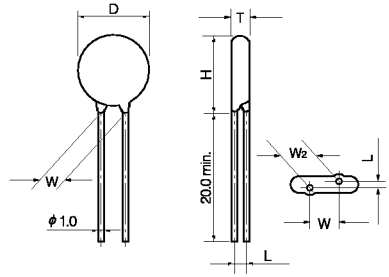
■ Ratings and Characteristics

- Operating Temperature Range: –40 to 85 °C
- Storage Temperature Range: –40 to 125 °C
- Temperature Coefficient of Varistor Voltage: 0 to –0.05 %/°C

Part No.	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage (max.)	Rated Power	Maximum Energy		Maximum Peak Current (8/20 µs)		Capacitance (max.)
						10/1000 µs	(2 ms)	1 time	2 times	
	$V_{1\,mA}$ (V)	ACrms (V)	DC (V)	$V_{100\,A}$ (V)	(W)	(J)	(J)	(A)	(A)	@1 kHz (pF)
ERZV20D820	82(74– 90)	50	65	135	1.0	56	40	10000	7000	7500
ERZV20D101	100(90– 110)	60	85	165	1.0	70	50	10000	7000	6500
ERZV20D121	120(108– 132)	75	100	200	1.0	85	60	10000	7000	5500
ERZV20D151	150(135– 165)	95	125	250	1.0	106	75	10000	7000	4500
ERZV20D201	200(185– 225)	130	170	340	1.0	140	100	10000	7000	1700
ERZV20D221	220(198– 242)	140	180	360	1.0	155	110	10000	7000	1600
ERZV20D241	240(216– 264)	150	200	395	1.0	168	120	10000	7000	1500
ERZV20D271	270(247– 303)	175	225	455	1.0	190	135	10000	7000	1300
ERZV20D331	330(297– 363)	210	270	545	1.0	228	160	10000	6500	1100
ERZV20D361	360(324– 396)	230	300	595	1.0	255	180	10000	6500	1100
ERZV20D391	390(351– 429)	250	320	650	1.0	275	195	10000	6500	1100
ERZV20D431	430(387– 473)	275	350	710	1.0	303	215	10000	6500	1000
ERZV20D471	470(423– 517)	300	385	775	1.0	350	250	10000	6500	900
ERZV20D511	510(459– 561)	320	410	845	1.0	382	273	10000	6500	800
ERZV20D621	620(558– 682)	385	505	1025	1.0	382	273	7500	6500	700
ERZV20D681	680(612– 748)	420	560	1120	1.0	382	273	7500	6500	650
ERZV20D751	750(675– 825)	460	615	1240	1.0	420	300	7500	6500	600
ERZV20D821	820(738– 902)	510	670	1355	1.0	460	325	7500	6500	530
ERZV20D911	910(819–1001)	550	745	1500	1.0	510	360	7500	6500	500
ERZV20D102	1000(900–1100)	625	825	1650	1.0	565	400	7500	6500	450
ERZV20D112	1100(990–1210)	680	895	1815	1.0	620	440	7500	6500	400
ERZV20D182	1800(1700–1980)	1000	1465	2970	1.0	1020	720	7500	6500	250

■ Dimensions in mm (not to scale)

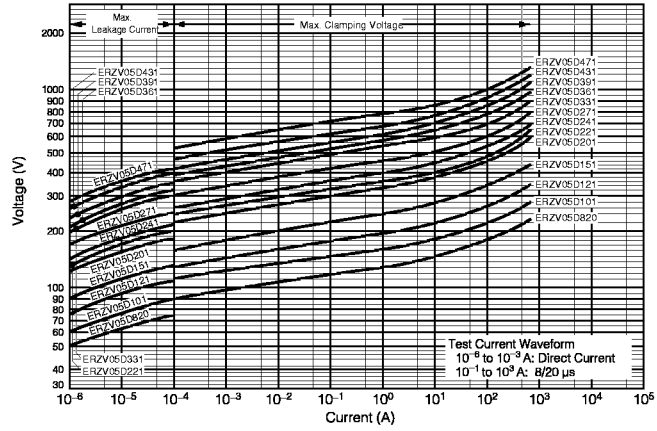
Part No.	D max.	T max.	W	H max.	L
ERZV20D820	21.5	4.9	10.0±1.0	24.5	1.8±1.0
ERZV20D101	21.5	5.1	10.0±1.0	24.5	2.0±1.0
ERZV20D121	21.5	5.3	10.0±1.0	24.5	2.2±1.0
ERZV20D151	21.5	5.6	10.0±1.0	24.5	2.5±1.0
ERZV20D201	21.5	5.2	10.0±1.0	24.5	2.1±1.0
ERZV20D221	21.5	5.3	10.0±1.0	24.5	2.2±1.0
ERZV20D241	21.5	5.4	10.0±1.0	24.5	2.3±1.0
ERZV20D271	21.5	5.6	10.0±1.0	24.5	2.5±1.0
ERZV20D331	21.5	5.9	10.0±1.0	24.5	2.8±1.0
ERZV20D361	21.5	6.1	10.0±1.0	24.5	3.0±1.0
ERZV20D391	21.5	6.2	10.0±1.0	24.5	3.1±1.0
ERZV20D431	21.5	6.4	10.0±1.0	24.5	3.3±1.0
ERZV20D471	21.5	6.6	10.0±1.0	24.5	3.5±1.0
ERZV20D511	21.5	6.8	10.0±1.0	24.5	3.7±1.0
ERZV20D621	22.5	7.5	10.0±1.0	25.5	4.4±1.0
ERZV20D681	22.5	7.8	10.0±1.0	25.5	4.7±1.0
ERZV20D751	22.5	8.2	10.0±1.0	25.5	5.1±1.0
ERZV20D821	22.5	8.5	10.0±1.0	25.5	5.4±1.0
ERZV20D911	22.5	9.0	10.0±1.0	25.5	5.9±1.0
ERZV20D102	22.5	9.5	10.0±1.0	25.5	6.4±1.0
ERZV20D112	22.5	10.1	10.0±1.0	25.5	7.0±1.0
ERZV20D182	23.5	14.8	15.0±1.0*	28.0	10.7±2.0



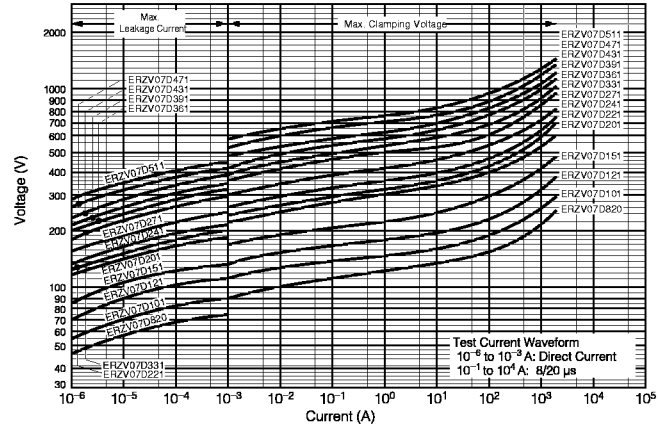
*: W_2

■ Typical Characteristics (Series V)

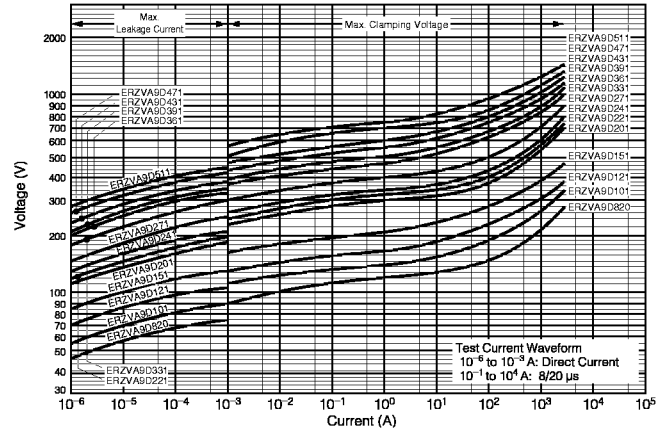
Voltage vs. Current
(ERZV05D820 to ERZV05D471)



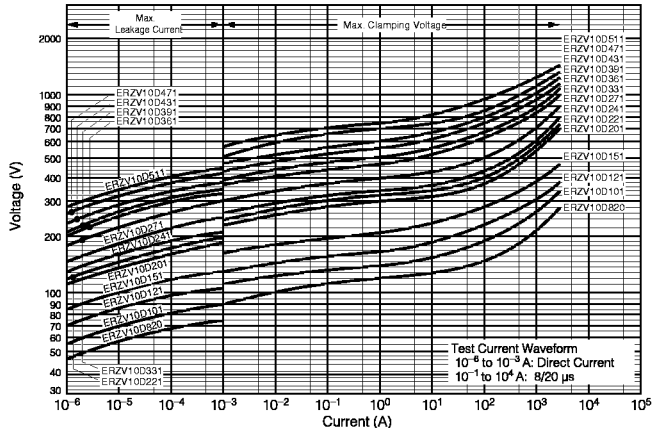
Voltage vs. Current
(ERZV07D820 to ERZV07D511)



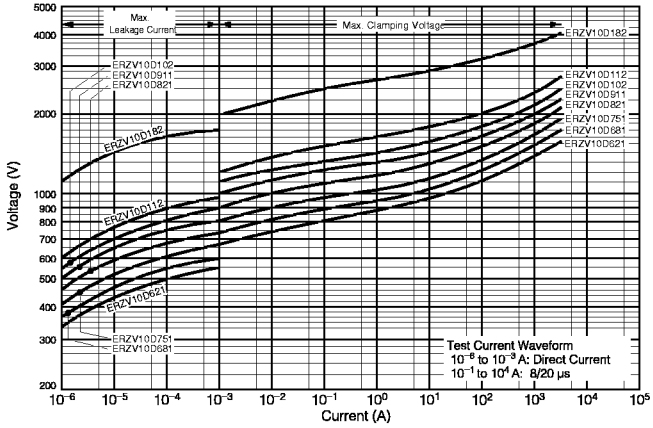
Voltage vs. Current
(ERZVA9D820 to ERZVA9D511)



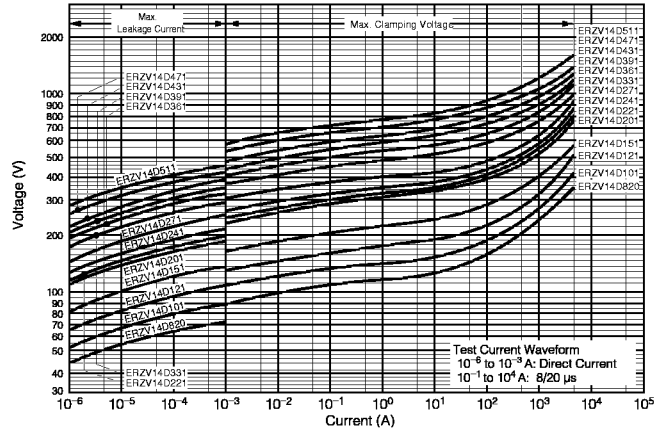
Voltage vs. Current
(ERZV10D820 to ERZV10D511)



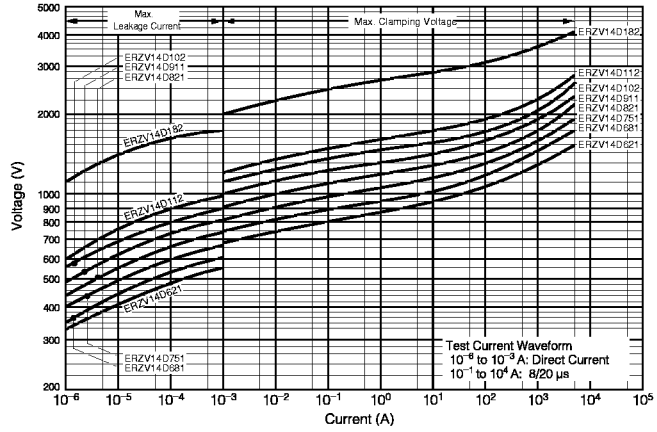
Voltage vs. Current
(ERZV10D621 to ERZV10D182)



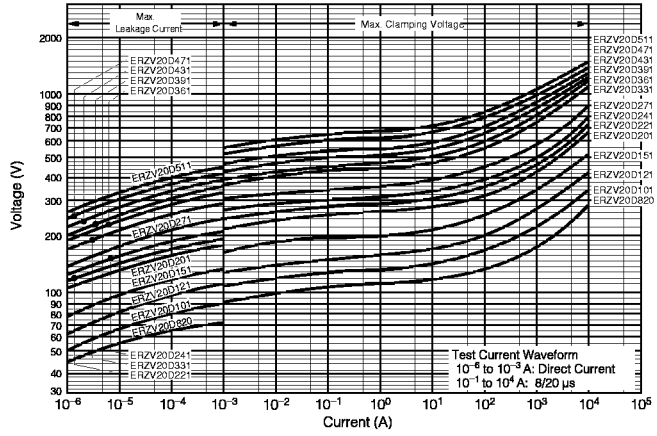
Voltage vs. Current
(ERZV14D820 to ERZV14D511)



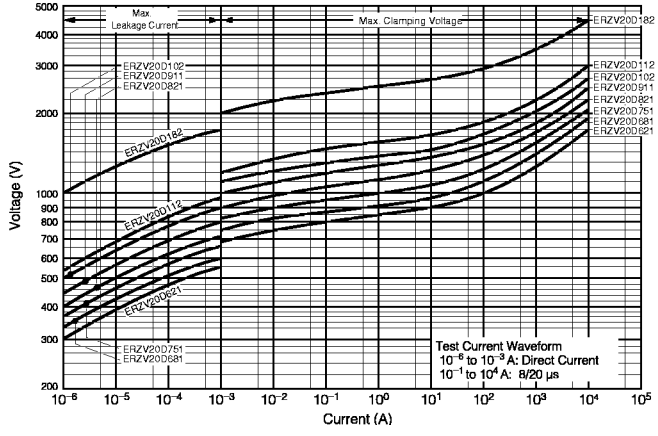
Voltage vs. Current
(ERZV14D621 to ERZV14D182)



Voltage vs. Current
(ERZV20D820 to ERZV20D511)



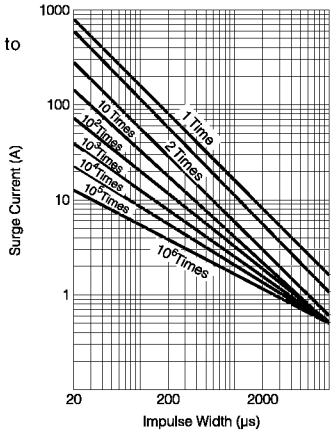
Voltage vs. Current
(ERZV20D621 to ERZV20D182)



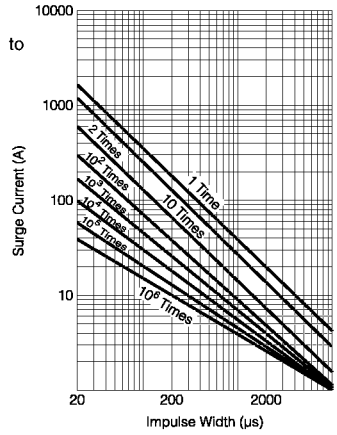
■ Impulse Deratings (Relation between impulse width and impulse repetition times)

2 times: 5 min interval
up to 10 times: 2 min interval
up to 10^6 times: 10 s interval

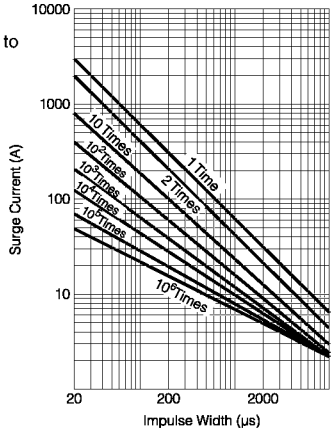
5 Series
(ERZV05D820 to ERZV05D471)



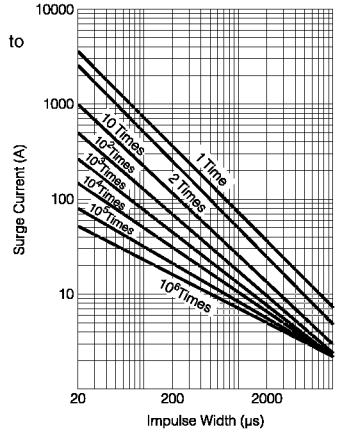
7 Series
(ERZV07D820 to ERZV07D511)



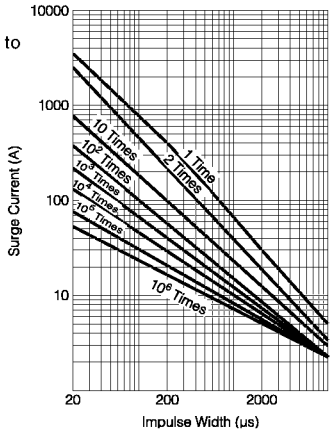
9 Series
(ERZVA9D820 to ERZVA9D511)



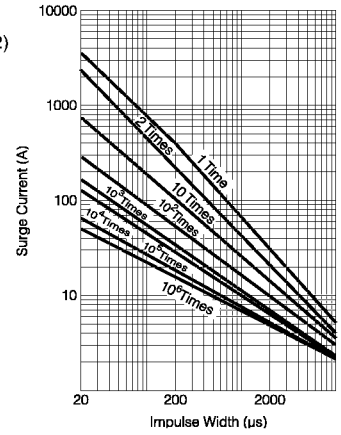
10 Series
(ERZV10D820 to ERZV10D511)



10 Series
(ERZV10D621 to ERZV10D112)



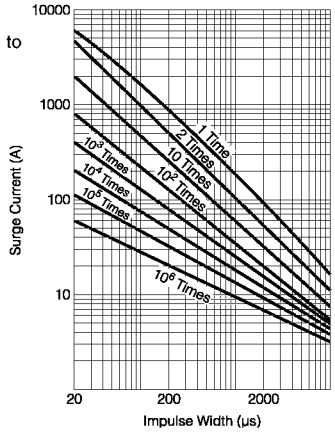
10 Series
(ERZV10D182)



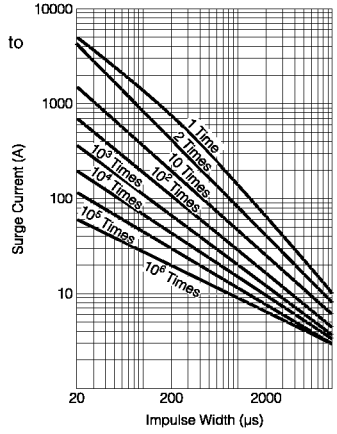
■ Impulse Deratings (Relation between impulse width and impulse repetition times)

2 times: 5 min interval
up to 10 times: 2 min interval
up to 10^6 times: 10 s interval

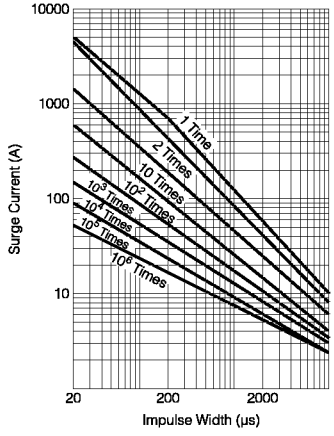
14 Series
(ERZV14D820 to ERZV14D511)



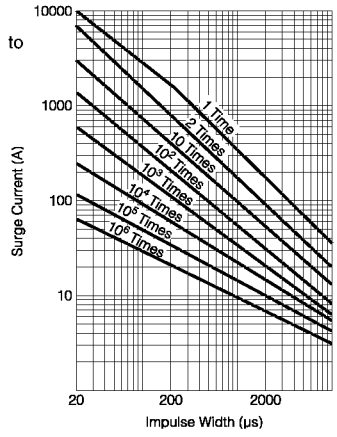
14 Series
(ERZV14D621 to ERZV14D112)



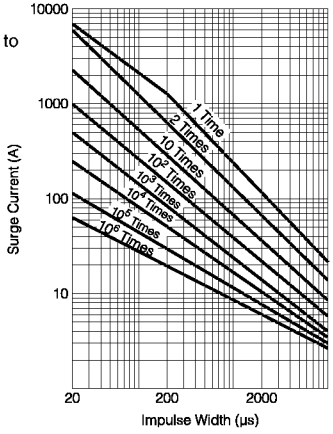
14 Series
(ERZV14D182)



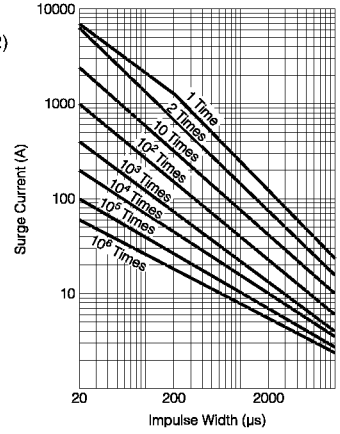
20 Series
(ERZV20D820 to ERZV20D511)



20 Series
(ERZV20D621 to ERZV20D112)

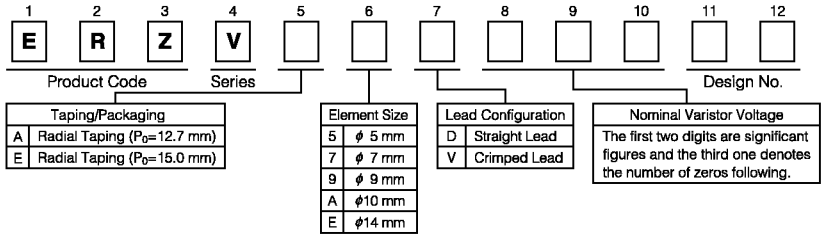


20 Series
(ERZV20D182)



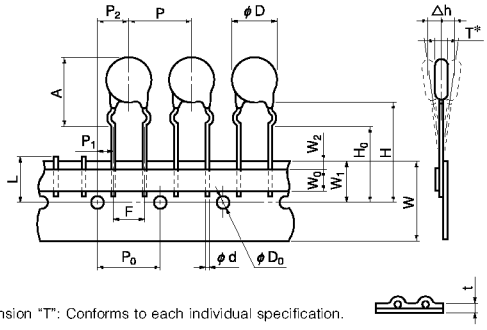
Taping Specifications for Automated Assembly

■ Exalanation of Part Numbers (Taping)



Crimped Leads and Taped

■ Taping Dimensions in mm (not to scale)



* Dimension "T": Conforms to each individual specification.

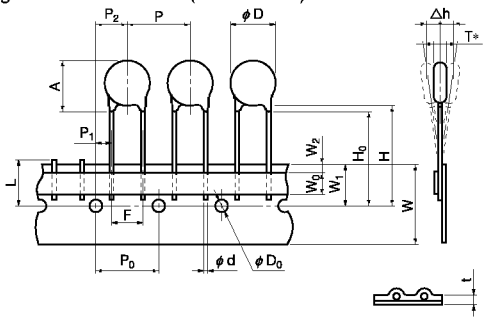
Symbol \ Type	Type I	Type II
P	12.7±1.0	15.0±1.0 or 30.0±1.0
P_0	12.7±0.3	15.0±0.3
P_1	3.85±0.70	3.75±0.70
P_2	6.35±1.30	7.5±1.3
ϕd	$0.60^{+0.06}_{-0.05}$	$0.80^{+0.06}_{-0.05}$
F	5.0±0.5	7.5±0.5
Δh	0±2	0±2
W	$18.0^{+1.0}_{-0.5}$	$18.0^{+1.0}_{-0.5}$
W_0	5.0 min.	5.0 min.
W_1	9.0±0.5	9.0±0.5
W_2	3 max.	3 max.
H	Approx. 22	Approx. 22
H_0	17.0±0.5	16.0±0.5
ϕD_0	ϕ4.0±0.2	ϕ4.0±0.2
t	0.6±0.3	0.6±0.3
L	11 max.	11 max.

■ Standard Products

Varistor Voltage (V) (Nominal) \ Type / Series		Crimped Leads & Taped: Taping Type I (P_0=12.7±0.3 mm) 5 Series Part No.	7 Series Part No.	9 Series Part No.	Taping Type II (P_0=15.0±0.3 mm) 10 Series Part No.	14 Series Part No.
82		ERZVA5V820	ERZVA7V820	ERZVA9V820	ERZVEAV820	ERZVEEV820
100		ERZVA5V101	ERZVA7V101	ERZVA9V101	ERZVEAV101	ERZVEEV101
120		ERZVA5V121	ERZVA7V121	ERZVA9V121	ERZVEAV121	ERZVEEV121
150		ERZVA5V151	ERZVA7V151	ERZVA9V151	ERZVEAV151	ERZVEEV151
200		ERZVA5V201	ERZVA7V201	ERZVA9V201	ERZVEAV201	ERZVEEV201
220		ERZVA5V221	ERZVA7V221	ERZVA9V221	ERZVEAV221	ERZVEEV221
240		ERZVA5V241	ERZVA7V241	ERZVA9V241	ERZVEAV241	ERZVEEV241
270		ERZVA5V271	ERZVA7V271	ERZVA9V271	ERZVEAV271	ERZVEEV271
330		ERZVA5V331	ERZVA7V331	ERZVA9V331	ERZVEAV331	ERZVEEV331
360		ERZVA5V361	ERZVA7V361	ERZVA9V361	ERZVEAV361	ERZVEEV361
390		ERZVA5V391	ERZVA7V391	ERZVA9V391	ERZVEAV391	ERZVEEV391
430		ERZVA5V431	ERZVA7V431	ERZVA9V431	ERZVEAV431	ERZVEEV431
470		ERZVA5V471	ERZVA7V471	ERZVA9V471	ERZVEAV471	ERZVEEV471
510		——	ERZVA7V511	ERZVA9V511	ERZVEAV511	ERZVEEV511
Dimensions in mm	ϕD	7.0 max.	8.5 max.	11.5 max.	11.5 max.	15.5 max.
	F	5.0±0.5	5.0±0.5	5.0±0.5	7.5±0.5	7.5±0.5
	ϕd	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.80^{+0.06}_{-0.05}$	$0.80^{+0.06}_{-0.05}$
	A	13.0 max.	14.5 max.	17.5 max.	17.5 max.	21.0 max.

Straight Leads and Taped

■ Taping Dimensions in mm (not to scale)



P	12.7±1.0
P_0	12.7±0.3
P_1	3.85±0.70
P_2	6.35±1.30
φd	$0.60^{+0.06}_{-0.05}$
F	5.0±0.5
Δh	0±2
W	$18.0^{+1.0}_{-0.5}$
W_0	5.0 min.
W_1	9.0±0.5
W_2	3 max.
H	Approx. 20
H_0	17.0±0.5
$φD_0$	φ4.0±0.2
t	0.6±0.3
L	11 max.

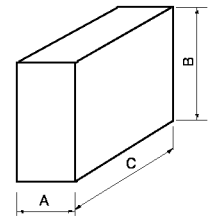
* Dimension "T": Conforms to each individual specification.

■ Standard Products

Straight Leads & Taped				
Series / Varistor Voltage (V) (Nominal)		5 Series Part No.	7 Series Part No.	9 Series Part No.
82		ERZVA5D820	ERZVA7D820	ERZVA9D820
100		ERZVA5D101	ERZVA7D101	ERZVA9D101
120		ERZVA5D121	ERZVA7D121	ERZVA9D121
150		ERZVA5D151	ERZVA7D151	ERZVA9D151
200		ERZVA5D201	ERZVA7D201	ERZVA9D201
220		ERZVA5D221	ERZVA7D221	ERZVA9D221
240		ERZVA5D241	ERZVA7D241	ERZVA9D241
270		ERZVA5D271	ERZVA7D271	ERZVA9D271
330		ERZVA5D331	ERZVA7D331	ERZVA9D331
360		ERZVA5D361	ERZVA7D361	ERZVA9D361
390		ERZVA5D391	ERZVA7D391	ERZVA9D391
430		ERZVA5D431	ERZVA7D431	ERZVA9D431
470		ERZVA5D471	ERZVA7D471	ERZVA9D471
510		——	ERZVA7D511	ERZVA9D511
Dimensions in mm	φD	7.0 max.	8.5 max.	11.5 max.
	F	5.0±0.5	5.0±0.5	5.0±0.5
	φd	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$	$0.60^{+0.06}_{-0.05}$
	A	10.0 max.	11.5 max.	14.0 max.

■ Packaging Specifications

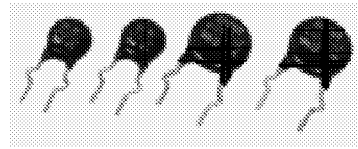
Part No.	Dimensions in mm (Packing Case)	Packing Quantity
ERZVA5V□□□ ERZVA7V□□□ ERZVA9V□□□ (Crimped Leads and Taped)	A 55 max. B 330 max. C 340 max.	1000 pcs./Box
ERZVA5D□□□ ERZVA7D□□□ ERZVA9D□□□ (Straight Leads and Taped)		1000 pcs./Box
ERZVEAV□□□	A 65 max. B 360 max. C 340 max.	1000 pcs./Box
ERZVEEV□□□ (Crimped Leads and Taped)		500 pcs./Box



■ Note

● Missing components on tape in succession shall be 3 pcs max. and total packing quantity shall be same as indications on the box.

"ZNR®" Transient/Surge Absorbers, Crimped Lead Type



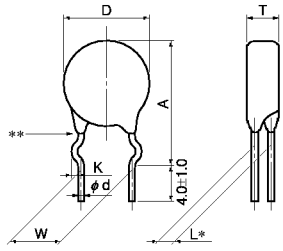
■ Explanation of Part Numbers

1	2	3	4	5	6	7	8	9	10	11	12
E	R	Z	V			V				C	S
Product Code			Series			Lead Style				Design No.	

Element Size			
05	φ5 mm	10	φ10 mm
07	φ7 mm	14	φ14 mm

Nominal Varistor Voltage
The first two digits are significant figures and the third one denotes the number of zeros following.

■ Dimensions in mm (not to scale)
Crimped Lead Type



Symbol \ Series	5 Series	7 Series	10 Series	14 Series
A	13.0 max.	14.5 max.	17.5 max.	21.0 max.
D	7.0 max.	8.5 max.	11.5 max.	15.5 max.
K	(1.2±0.4)	(1.2±0.4)	(1.4±0.4)	(1.4±0.4)
W	5.0±1.0	5.0±1.0	7.5±1.0	7.5±1.0
φd	$0.6^{+0.06}_{-0.05}$	$0.6^{+0.06}_{-0.05}$	$0.8^{+0.08}_{-0.05}$	$0.8^{+0.08}_{-0.05}$
T max.	4.1 – 5.8	4.1 – 6.0	4.5 – 6.4	4.5 – 6.4

Notes ✻ Dimension "L": Conforms to each individual specification
✻✻ Resin extensions: No resin below center of the hook

■ Standard Products

Varistor Voltage (V) (Nominal) \ Series	5 Series	7 Series	10 Series	14 Series
	Part No.	Part No.	Part No.	Part No.
82	ERZV05V820CS	ERZV07V820CS	ERZV10V820CS	ERZV14V820CS
100	ERZV05V101CS	ERZV07V101CS	ERZV10V101CS	ERZV14V101CS
120	ERZV05V121CS	ERZV07V121CS	ERZV10V121CS	ERZV14V121CS
150	ERZV05V151CS	ERZV07V151CS	ERZV10V151CS	ERZV14V151CS
200	ERZV05V201CS	ERZV07V201CS	ERZV10V201CS	ERZV14V201CS
220	ERZV05V221CS	ERZV07V221CS	ERZV10V221CS	ERZV14V221CS
240	ERZV05V241CS	ERZV07V241CS	ERZV10V241CS	ERZV14V241CS
270	ERZV05V271CS	ERZV07V271CS	ERZV10V271CS	ERZV14V271CS
330	ERZV05V331CS	ERZV07V331CS	ERZV10V331CS	ERZV14V331CS
360	ERZV05V361CS	ERZV07V361CS	ERZV10V361CS	ERZV14V361CS
390	ERZV05V391CS	ERZV07V391CS	ERZV10V391CS	ERZV14V391CS
430	ERZV05V431CS	ERZV07V431CS	ERZV10V431CS	ERZV14V431CS
470	ERZV05V471CS	ERZV07V471CS	ERZV10V471CS	ERZV14V471CS
510	——	ERZV07V511CS	ERZV10V511CS	ERZV14V511CS