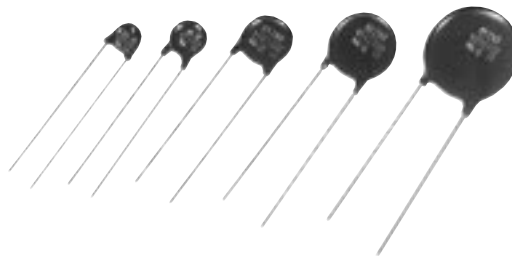


### “ZNR” Transient/Surge Absorbers

Type: **D**

Series: **V**

“ZNR” Transient/Surge Absorber, Series V, Type D is 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 overvoltage in compact size.



#### ■ Features

- Large withstanding surge current capability in compact sizes
- Large “Energy Handling Capability” absorbing transient overvoltages in compact sizes
- The wide varistor voltage range corresponds to the AC power in the world from the low voltage circuit
- All standards products which is shown below have received UL, CSA and VDE standards
  - Varistor voltage 82-150V : UL, VDE
  - Varistor voltage 200V over : UL, CSA, VDE
 (cf. Application Notes for UL/CSA, VDE recognized parts on page 141 to 142)

#### ■ 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

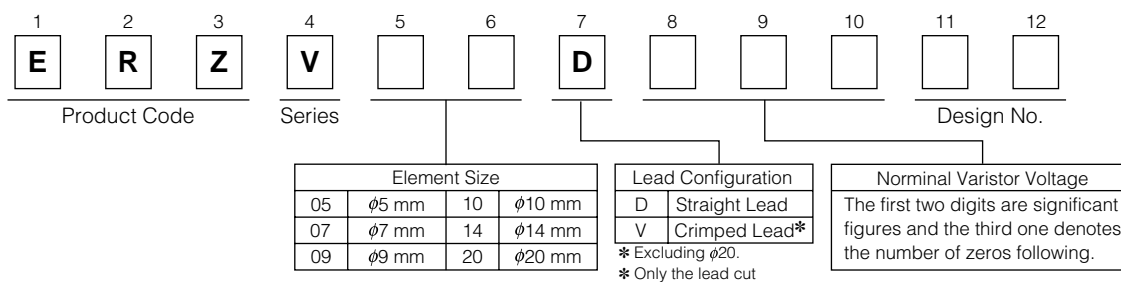
#### ■ Precautions for Handling

See Page 151 to 153

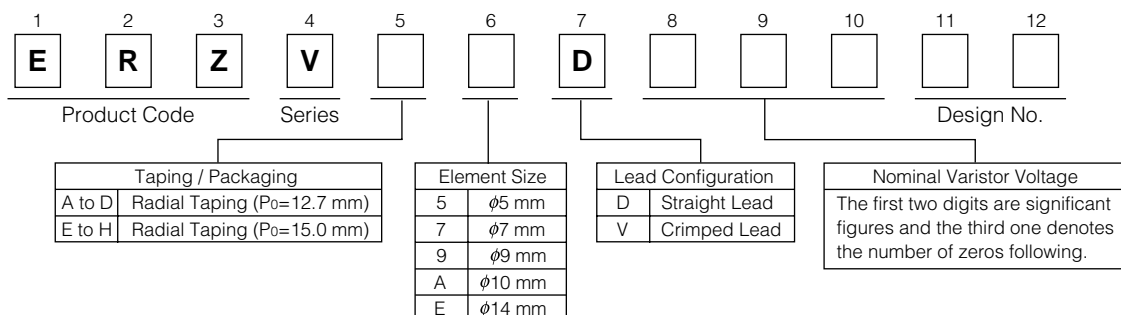
#### ■ Related Standards

- UL1414, UL1449
  - CSA C22.2 No.1 Class 2221 01
  - VDE 481106-4790-0014
  - “Type Designation(UL)”, “Part Number(CSA)”, “Style Ref. (VDE)”
- Are not registered by product Part No..  
(Refer to page 141, for the details)

#### ■ Explanation of Part Numbers (Bulk)



#### ■ Explanation of Part Numbers (Taping)



### Reference Guide to Standard Products (ERZV○D180 to ERZV○D680)

Part No.	Varistor Voltage*	Maximum Allowable Voltage		Clamping Voltage @ 8/20μs		Maximum Energy (Joule)		Maximum Peak Current @ 8/20μs (A)		Recommended Applications
	(V)	ACrms (V)	DC (V)	max.(V)	I <sub>p</sub> (A)	10/1000 μs	2 ms	1 time	2 times	
ERZV05D180	18 (16–20)	11	14	40	1	0.6	0.4	250	125	For the low voltage circuit
ERZV07D180				36	2.5	1.1	0.9	500	250	
ERZV09D180				36	5	2.6	2.2	1000	500	
ERZV10D180				36	5	2.6	2.2	1000	500	
ERZV14D180				36	10	5.2	4.3	2000	1000	
ERZV20D180				36	20	13	12	3000	2000	
ERZV05D220	22 (20–24)	14	18	48	1	0.7	0.5	250	125	
ERZV07D220				43	2.5	1.3	1.1	500	250	
ERZV09D220				43	5	3.2	2.6	1000	500	
ERZV10D220				43	5	3.2	2.6	1000	500	
ERZV14D220				43	10	6.3	5.3	2000	1000	
ERZV20D220				43	20	16	14	3000	2000	
ERZV05D270	27 (24–30)	17	22	60	1	0.9	0.7	250	125	
ERZV07D270				53	2.5	1.6	1.3	500	250	
ERZV09D270				53	5	3.9	3.2	1000	500	
ERZV10D270				53	5	3.9	3.2	1000	500	
ERZV14D270				53	10	7.8	6.5	2000	1000	
ERZV20D270				53	20	19	17	3000	2000	
ERZV05D330	33 (30–36)	20	26	73	1	1.1	0.8	250	125	
ERZV07D330				65	2.5	2.0	1.6	500	250	
ERZV09D330				65	5	4.8	4.0	1000	500	
ERZV10D330				65	5	4.8	4.0	1000	500	
ERZV14D330				65	10	9.5	7.9	2000	1000	
ERZV20D330				65	20	24	21	3000	2000	
ERZV05D390	39 (35–43)	25	31	86	1	1.2	0.9	250	125	
ERZV07D390				77	2.5	2.4	1.9	500	250	
ERZV09D390				77	5	5.6	4.7	1000	500	
ERZV10D390				77	5	5.6	4.7	1000	500	
ERZV14D390				77	10	11	9.4	2000	1000	
ERZV20D390				77	20	28	25	3000	2000	
ERZV05D470	47 (42–52)	30	38	104	1	1.5	1.1	250	125	
ERZV07D470				93	2.5	2.8	2.3	500	250	
ERZV09D470				93	5	6.8	5.6	1000	500	
ERZV10D470				93	5	6.8	5.6	1000	500	
ERZV14D470				93	10	14	11	2000	1000	
ERZV20D470				93	20	34	30	3000	2000	
ERZV05D560	56 (50–62)	35	45	123	1	1.8	1.3	250	125	
ERZV07D560				110	2.5	3.4	2.7	500	250	
ERZV09D560				110	5	8.1	6.7	1000	500	
ERZV10D560				110	5	8.1	6.7	1000	500	
ERZV14D560				110	10	16	13	2000	1000	
ERZV20D560				110	20	41	36	3000	2000	
ERZV05D680	68 (61–75)	40	56	150	1	2.2	1.6	250	125	
ERZV07D680				135	2.5	4.1	3.3	500	250	
ERZV09D680				135	5	9.8	8.2	1000	500	
ERZV10D680				135	5	9.8	8.2	1000	500	
ERZV14D680				135	10	20	16	2000	1000	
ERZV20D680				135	20	49	44	3000	2000	

\* Measuring Current of Varistor Voltage  
 5 Series (ERZV05D180 to ERZV05D680): 0.1 mA  
 Others: 1 mA

● Rated Power

Part Number	Rated Power (W)
ERZV05D180 to ERZV05D680	0.01
ERZV07D180 to ERZV07D680	0.02
ERZV09D180 to ERZV09D680	0.05
ERZV10D180 to ERZV10D680	0.05
ERZV14D180 to ERZV14D680	0.10
ERZV20D180 to ERZV20D680	0.20

● Operating Temperature Range: –40 to 85 °C

● Storage Temperature Range: –40 to 125 °C

### Reference Guide to Standard Products (ERZV○○D820 to ERZV○○D182)

Part No.	Varistor Voltage*	Maximum Allowable Voltage		Clamping Voltage @ 8/20μs		Maximum Energy (Joule)		Maximum Peak Current @ 8/20μs (A)		Recommended Applications	
	(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		
ERZV09D820				135	25	14	10	3500	2500		
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	3	800	600		
ERZV07D101				165	10	8.5	6	1750	1250		
ERZV09D101				165	25	17	12	3500	2500		
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	3.5	800	600		
ERZV07D121				200	10	10	7	1750	1250		
ERZV09D121				200	25	20	14.5	3500	2500		
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	1750	1250		
ERZV09D151				250	25	25	18	3500	2500		
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	800	600	AC 100 V Line-Line Applications	
ERZV07D201				340	10	17.5	12.5	1750	1250		
ERZV09D201				340	25	35	25	3500	2500		
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		
ERZV09D221				360	25	39	27.5	3500	2500		
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
ERZV07D241				395	10	21	15	1750	1250		
ERZV09D241				395	25	42	30	3500	2500		
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		
ERZV09D271				455	25	49	35	3500	2500		
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	9.5	800	600	AC 100 V to 120 V, Line-Line Applications  Telephone Line Application, (250 V Insulation Resistance Test Applicable)	
ERZV07D331				545	10	28	20	1750	1250		
ERZV09D331				545	25	58	42	3500	2500		
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		
ERZV09D361				595	25	65	45	3500	2500		
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		
ERZV09D391				650	25	70	50	3500	2500		
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

Part No.	Varistor Voltage*	Maximum Allowable Voltage		Clamping Voltage @ 8/20µs		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	
ERZV05D431	430 (387–473)	275	350	745	5	20	13.5	800	600	AC 100 V to 220 V, Line-Line and AC 100 V to 220 V, Line-Ground Applications
ERZV07D431				710	10	40	27.5	1750	1250	
ERZV09D431				710	25	80	55	3500	2500	
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	AC 100 V to 220 V, Line-Line and AC 100 V to 220 V, Line-Ground Applications
ERZV07D471				775	10	42	30	1750	1250	
ERZV09D471				775	25	85	60	3500	2500	
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 100 to 240 V, Line-Line Applications AC 100 to 240 V, Line-Ground Applications
ERZV09D511				845	25	92	67	3500	2500	
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 (For DC 500V Insulating Test)
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 (For DC 500V Insulating Test)
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 (For DC 500V Insulating Test)
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	
ERZV10D182CS	1800 (1700–1980)	1000	1465	2970	25	247	183	3500	2500	Line-Ground Applications (For AC 1200V Withstanding Test)
ERZV14D182CS				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

#### ● Rated Power

Part Number	Rated Power (W)
ERZV05D820 to ERZV05D471	0.10
ERZV07D820 to ERZV07D511	0.25
ERZV09D820 to ERZV09D511	0.40
ERZV10D820 to ERZV10D182CS	0.40
ERZV14D820 to ERZV14D182CS	0.60
ERZV20D820 to ERZV20D182	1.00

#### ● Operating Temperature Range: –40 to 85 °C

#### ● Storage Temperature Range: –40 to 125 °C