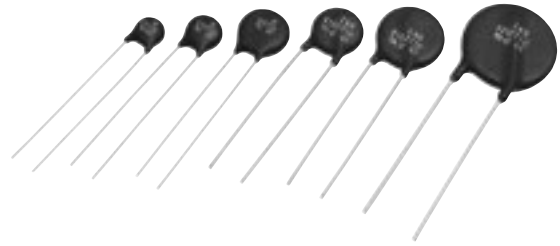


"ZNR" Transient/Surge Absorbers

Type: **D**

Series: **V**

"ZNR" Transient/Surge Absorber, Series V, Type D features large surge current and energy handling capability for absorbing transient overvoltage in a compact size.



■ Features

- Large withstanding surge current capability in compact sizes
- Large "Energy Handling Capability" absorbing transient overvoltages in compact sizes
- Wide range of varistor voltages
- The standard products 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 322 to 323)
 RoHS compliant

■ Related Standards

- UL1414, UL1449
- CSA C22.2 No.1 Class 2221 01
 VDE CECC42000, CECC42200, CECC42201, IEC61051
- "Type Designation(UL)", "Part Number(CSA)", "Style Ref. (VDE)"
 Are not registered by product Part No..
 (Refer to page 322, for the details)

■ Recommended Applications

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

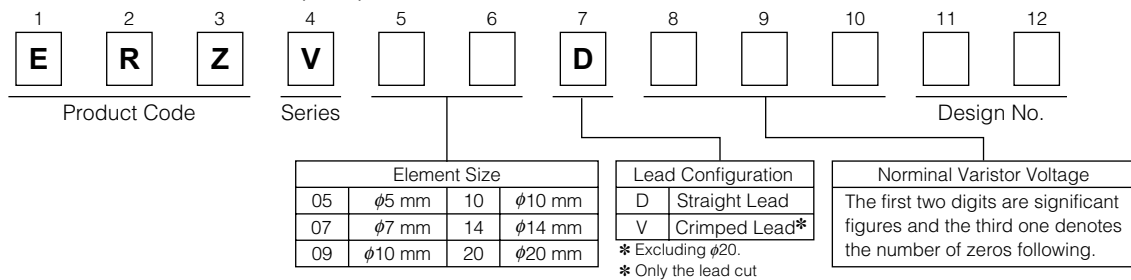
■ Handling Precautions

Please see Pages 335 to 337

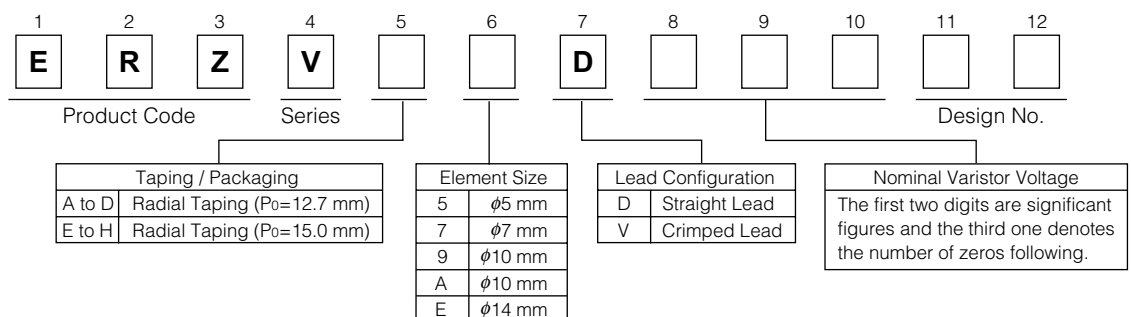
■ Minimum Quantity / Packing Unit

Please see Page 360

■ Explanation of Part Numbers (Bulk)



■ Explanation of Part Numbers (Taping)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

Reference Guide to Standard Products

| Part No. | Varistor Voltage* | Maximum Allowable Voltage | | Clamping Voltage @8/20μs | | Maximum Energy (J) | | Maximum Peak Current @8/20μs(A) | | Recommended Applications |
|------------|-------------------|---------------------------|--------|--------------------------|--------------------|--------------------|------|---------------------------------|---------|--|
| | (V) | ACrms (V) | DC (V) | max.(V) | I _p (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 | |
| 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 | |

* Measuring Current of Varistor Voltage 5 Series : 0.1 mA, Others: 1 mA

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

Reference Guide to Standard Products

| Part No. | Varistor Voltage* | Maximum Allowable Voltage | | Clamping Voltage @8/20 μ s | | Maximum Energy (J) | | Maximum Peak Current @8/20 μ s(A) | | Recommended Applications | |
|------------|-------------------|---------------------------|--------|--------------------------------|--------------------|--------------------|------|---------------------------------------|---------|--|--|
| | (V) | ACrms (V) | DC (V) | max.(V) | I _p (A) | 10/1000 μ s | 2 ms | 1 time | 2 times | | |
| ERZV05D101 | 100 (90–110) | 60 | 85 | 175 | 5 | 4 | 3 | 800 | 600 | Telephone, Communication Line (DC 48 V) | |
| 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 | |
| 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 | | Telephone Line Applications, (250 V Insulation Resistance Test Applicable) |
| 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 | | |

* Measuring Current of Varistor Voltage 5 Series : 0.1 mA, Others: 1 mA

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

Reference Guide to Standard Products

| Part No. | Varistor Voltage* | Maximum Allowable Voltage | | Clamping Voltage @8/20 μ s | | Maximum Energy (J) | | Maximum Peak Current @8/20 μ s(A) | | Recommended Applications |
|--------------|---------------------|---------------------------|--------|--------------------------------|--------------------|--------------------|------|---------------------------------------|---------|---|
| | (V) | ACrms (V) | DC (V) | max.(V) | I _p (A) | 10/1000 μ s | 2 ms | 1 time | 2 times | |
| ERZV05D391 | 390 (351–429) | 250 | 320 | 675 | 5 | 17 | 12 | 800 | 600 | AC 100 V to 120 V, Line–Line Applications |
| 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 | |
| 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 | AC 100 to 240 V, Line–Line Applications AC 100 to 240 V, Line–Ground Applications |
| 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 | AC 100 to 240 V, Line–Line Applications AC 100 to 240 V, Line–Ground Applications |
| 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 500 V 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 | AC 380 V, Line–Line and Line–Ground Applications (For DC 500 V Insulating Test) |
| 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 500 V 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 500 V 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 | AC 480 V, Line–Line and Line–Ground Applications (For DC 500 V Insulating Test) |
| 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 1200 V Withstanding Test) |
| ERZV14D182CS | | | | 2970 | 50 | 510 | 360 | 5000 | 4500 | |
| ERZV20D182 | | | | 2970 | 100 | 1020 | 720 | 7500 | 6500 | |

* Measuring Current of Varistor Voltage 5 Series : 0.1 mA, Others: 1 mA

Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

5 Series

■ Ratings and Characteristics

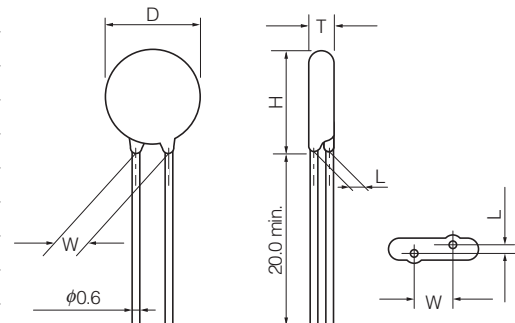
● Operating Temperature Range : -40 to 85 °C ● Storage Temperature Range : -40 to 125 °C

| Part No. | Varistor Voltage | Maximum Allowable Voltage | | Clamping Voltage (max.) **I _p | Rated Power | Maximum Energy | | Maximum Peak Current (8/20 μs) | | Capacitance (max.) @1 kHz (pF) |
|------------|-------------------------|---------------------------|--------|---|-------------|----------------|--------|--------------------------------|---------|-----------------------------------|
| | | | | | | (10/1000 μs) | (2 ms) | 1 time | 2 times | |
| | V _{0.1 mA} (V) | ACrms (V) | DC (V) | (V) | (W) | (J) | (J) | (A) | (A) | |
| ERZV05D180 | 18(16 to 20) | 11 | 14 | 40 | 0.01 | 0.6 | 0.4 | 250 | 125 | 1600 |
| ERZV05D220 | 22(20 to 24) | 14 | 18 | 48 | 0.01 | 0.7 | 0.5 | 250 | 125 | 1500 |
| ERZV05D270 | 27(24 to 30) | 17 | 22 | 60 | 0.01 | 0.9 | 0.7 | 250 | 125 | 1450 |
| ERZV05D330 | 33(30 to 36) | 20 | 26 | 73 | 0.01 | 1.1 | 0.8 | 250 | 125 | 1400 |
| ERZV05D390 | 39(35 to 43) | 25 | 31 | 86 | 0.01 | 1.2 | 0.9 | 250 | 125 | 700 |
| ERZV05D470 | 47(42 to 52) | 30 | 38 | 104 | 0.01 | 1.5 | 1.1 | 250 | 125 | 650 |
| ERZV05D560 | 56(50 to 62) | 35 | 45 | 123 | 0.01 | 1.8 | 1.3 | 250 | 125 | 600 |
| ERZV05D680 | 68(61 to 75) | 40 | 56 | 150 | 0.01 | 2.2 | 1.6 | 250 | 125 | 580 |
| ERZV05D820 | 82(74 to 90) | 50 | 65 | 145 | 0.1 | 3.5 | 2.5 | 800 | 600 | 460 |
| ERZV05D101 | 100(90 to 110) | 60 | 85 | 175 | 0.1 | 4.0 | 3.0 | 800 | 600 | 400 |
| ERZV05D121 | 120(108 to 132) | 75 | 100 | 210 | 0.1 | 5.0 | 3.5 | 800 | 600 | 350 |
| ERZV05D151 | 150(135 to 165) | 95 | 125 | 260 | 0.1 | 6.5 | 4.5 | 800 | 600 | 300 |
| ERZV05D201 | 200(185 to 225) | 130 | 170 | 355 | 0.1 | 8.5 | 6.0 | 800 | 600 | 120 |
| ERZV05D221 | 220(198 to 242) | 140 | 180 | 380 | 0.1 | 9.0 | 6.5 | 800 | 600 | 110 |
| ERZV05D241 | 240(216 to 264) | 150 | 200 | 415 | 0.1 | 10.5 | 7.5 | 800 | 600 | 100 |
| ERZV05D271 | 270(247 to 303) | 175 | 225 | 475 | 0.1 | 11.0 | 8.0 | 800 | 600 | 90* |
| ERZV05D331 | 330(297 to 363) | 210 | 270 | 570 | 0.1 | 13.0 | 9.5 | 800 | 600 | 80* |
| ERZV05D361 | 360(324 to 396) | 230 | 300 | 620 | 0.1 | 16.0 | 11.0 | 800 | 600 | 80* |
| ERZV05D391 | 390(351 to 429) | 250 | 320 | 675 | 0.1 | 17.0 | 12.0 | 800 | 600 | 80* |
| ERZV05D431 | 430(387 to 473) | 275 | 350 | 745 | 0.1 | 20.0 | 13.5 | 800 | 600 | 70* |
| ERZV05D471 | 470(423 to 517) | 300 | 385 | 810 | 0.1 | 21.0 | 15.0 | 800 | 600 | 60* |

* Measured at 1 MHz **I_p Measuring current of clamping voltage 180 to 680 : 1 A, 820 to 471 : 5 A

■ Dimensions in mm (not to scale) * Refer to page 320 to 321 about leads cut type and taping.

| Part No. | D max. | T max. | W±1.0 | H max. | L±1.0 |
|------------|--------|--------|-------|--------|-------|
| ERZV05D180 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D220 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D270 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D330 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D390 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D470 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D560 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D680 | 7.0 | 4.5 | 5.0 | 10.0 | 1.5 |
| ERZV05D820 | 7.0 | 4.1 | 5.0 | 10.0 | 1.4 |
| ERZV05D101 | 7.0 | 4.3 | 5.0 | 10.0 | 1.6 |
| ERZV05D121 | 7.0 | 4.5 | 5.0 | 10.0 | 1.8 |
| ERZV05D151 | 7.0 | 4.8 | 5.0 | 10.0 | 2.1 |
| ERZV05D201 | 7.0 | 4.4 | 5.0 | 10.0 | 1.7 |
| ERZV05D221 | 7.0 | 4.5 | 5.0 | 10.0 | 1.8 |
| ERZV05D241 | 7.0 | 4.6 | 5.0 | 10.0 | 1.9 |
| ERZV05D271 | 7.0 | 4.8 | 5.0 | 10.0 | 2.1 |
| ERZV05D331 | 7.0 | 5.1 | 5.0 | 10.0 | 2.4 |
| ERZV05D361 | 7.0 | 5.3 | 5.0 | 10.0 | 2.5 |
| ERZV05D391 | 7.0 | 5.4 | 5.0 | 10.0 | 2.7 |
| ERZV05D431 | 7.0 | 5.6 | 5.0 | 10.0 | 2.9 |
| ERZV05D471 | 7.0 | 5.8 | 5.0 | 10.0 | 3.1 |

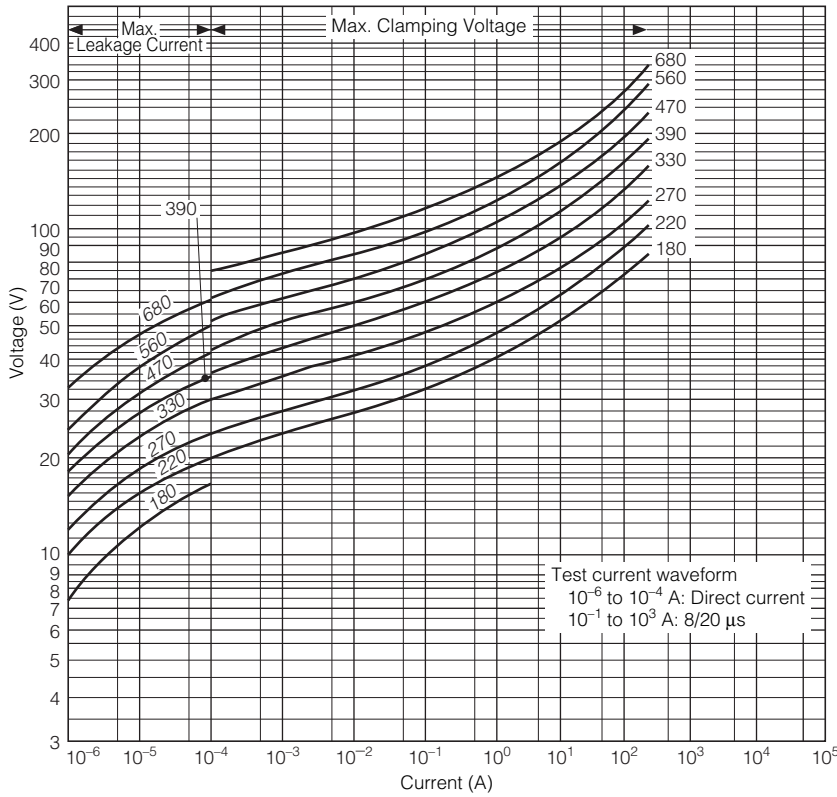


Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

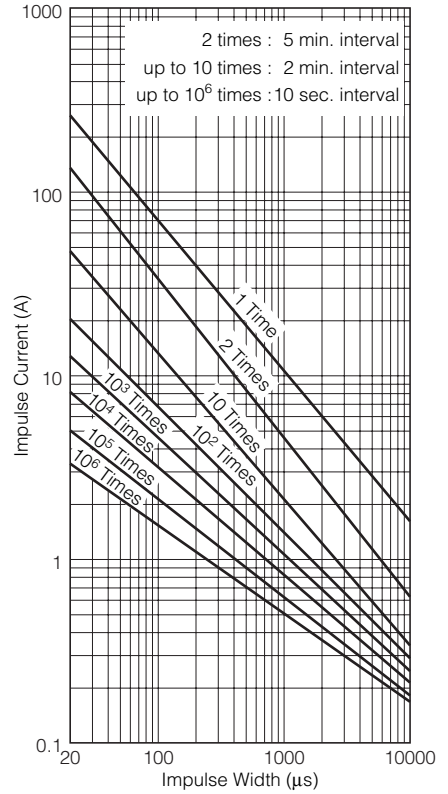
Typical Characteristics Voltage vs. Current

Impulse Derating (Relation between impulse width and impulse current multiple)

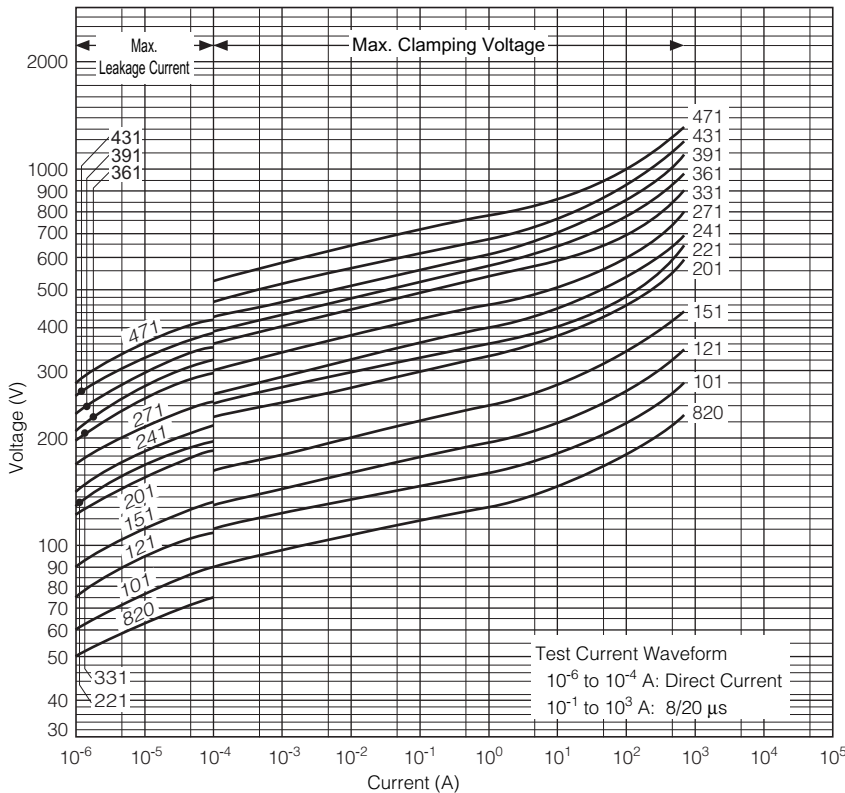
ERZV05D180 to ERZV05D680



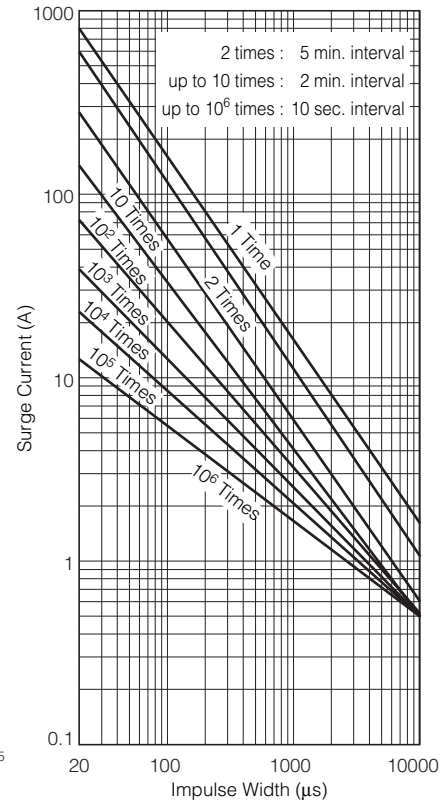
ERZV05D180 to ERZV05D680



ERZV05D820 to ERZV05D471



ERZV05D820 to ERZV05D471



7 Series

■ Ratings and Characteristics

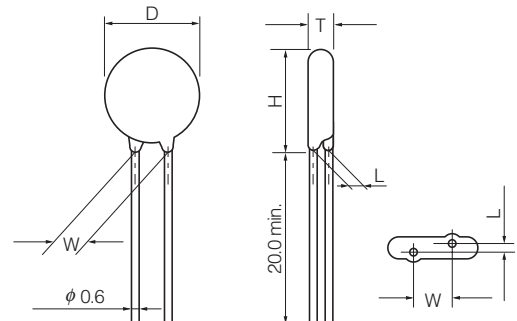
● Operating Temperature Range: -40 to 85 °C ● Storage Temperature Range: -40 to 125 °C

| Part No. | Varistor Voltage | Maximum Allowable Voltage | | Clamping Voltage (max.) **I _p | Rated Power (W) | Maximum Energy | | Maximum Peak Current (8/20 μs) | | Capacitance (max.) @1 kHz (pF) |
|------------|-----------------------|---------------------------|--------|---|-----------------|----------------|--------|--------------------------------|---------|-----------------------------------|
| | | | | | | (10/1000 μs) | (2 ms) | 1 time | 2 times | |
| | V _{1 mA} (V) | ACrms (V) | DC (V) | (V) | (J) | (J) | (A) | (A) | | |
| ERZV07D180 | 18(16 to 20) | 11 | 14 | 36 | 0.02 | 1.1 | 0.9 | 500 | 250 | 3800 |
| ERZV07D220 | 22(20 to 24) | 14 | 18 | 43 | 0.02 | 1.3 | 1.1 | 500 | 250 | 3600 |
| ERZV07D270 | 27(24 to 30) | 17 | 22 | 53 | 0.02 | 1.6 | 1.3 | 500 | 250 | 3400 |
| ERZV07D330 | 33(30 to 36) | 20 | 26 | 65 | 0.02 | 2.0 | 1.6 | 500 | 250 | 2900 |
| ERZV07D390 | 39(35 to 43) | 25 | 31 | 77 | 0.02 | 2.4 | 1.9 | 500 | 250 | 1600 |
| ERZV07D470 | 47(42 to 52) | 30 | 38 | 93 | 0.02 | 2.8 | 2.3 | 500 | 250 | 1550 |
| ERZV07D560 | 56(50 to 62) | 35 | 45 | 110 | 0.02 | 3.4 | 2.7 | 500 | 250 | 1500 |
| ERZV07D680 | 68(61 to 75) | 40 | 56 | 135 | 0.02 | 4.1 | 3.3 | 500 | 250 | 1200 |
| ERZV07D820 | 82(74 to 90) | 50 | 65 | 135 | 0.25 | 7 | 5 | 1750 | 1250 | 810 |
| ERZV07D101 | 100(90 to 110) | 60 | 85 | 165 | 0.25 | 8.5 | 6 | 1750 | 1250 | 700 |
| ERZV07D121 | 120(108 to 132) | 75 | 100 | 200 | 0.25 | 10 | 7 | 1750 | 1250 | 590 |
| ERZV07D151 | 150(135 to 165) | 95 | 125 | 250 | 0.25 | 13 | 9 | 1750 | 1250 | 500 |
| ERZV07D201 | 200(185 to 225) | 130 | 170 | 340 | 0.25 | 17.5 | 12.5 | 1750 | 1250 | 200 |
| ERZV07D221 | 220(198 to 242) | 140 | 180 | 360 | 0.25 | 19 | 13.5 | 1750 | 1250 | 190 |
| ERZV07D241 | 240(216 to 264) | 150 | 200 | 395 | 0.25 | 21 | 15 | 1750 | 1250 | 170 |
| ERZV07D271 | 270(247 to 303) | 175 | 225 | 455 | 0.25 | 24 | 17 | 1750 | 1250 | 150 |
| ERZV07D331 | 330(297 to 363) | 210 | 270 | 545 | 0.25 | 28 | 20 | 1750 | 1250 | 130 |
| ERZV07D361 | 360(324 to 396) | 230 | 300 | 595 | 0.25 | 32 | 23 | 1750 | 1250 | 130 |
| ERZV07D391 | 390(351 to 429) | 250 | 320 | 650 | 0.25 | 35 | 25 | 1750 | 1250 | 130 |
| ERZV07D431 | 430(387 to 473) | 275 | 350 | 710 | 0.25 | 40 | 27.5 | 1750 | 1250 | 120 |
| ERZV07D471 | 470(423 to 517) | 300 | 385 | 775 | 0.25 | 42 | 30 | 1750 | 1250 | 100 |
| ERZV07D511 | 510(459 to 561) | 320 | 410 | 845 | 0.25 | 45 | 32 | 1750 | 1250 | 90* |

* Measured at 1 MHz **I_p Measuring current of clamping voltage 180 to 680 : 25 A, 820 tp 511 : 10 A

■ Dimensions in mm (not to scale) * Refer to page 320 to 321 about leads cut type and taping.

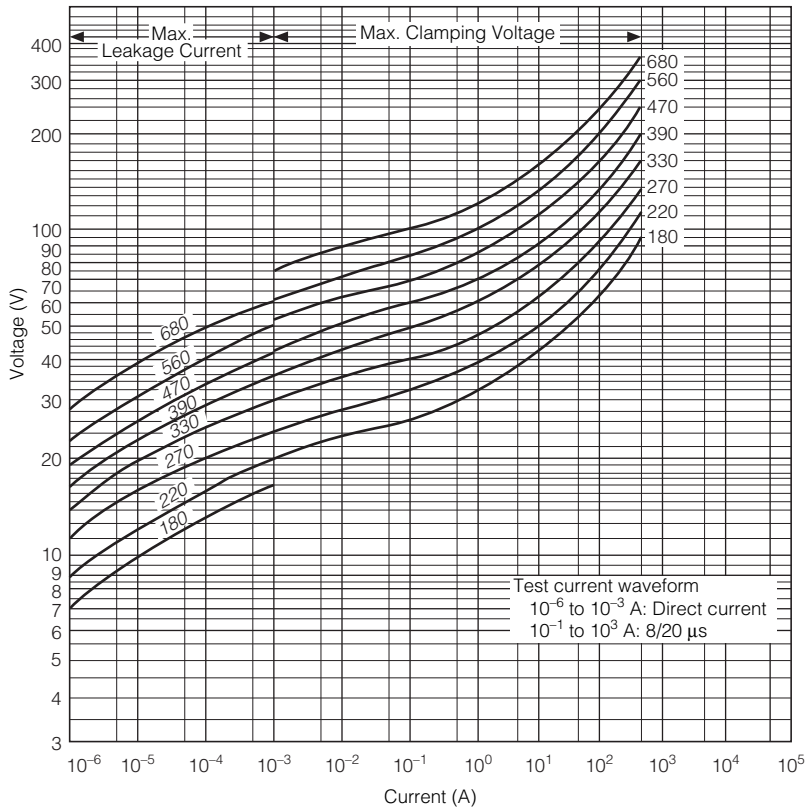
| Part No. | D max. | T max. | W±1.0 | H max. | L±1.0 |
|------------|--------|--------|-------|--------|-------|
| ERZV07D180 | 8.5 | 4.5 | 5.0 | 11.5 | 1.3 |
| ERZV07D220 | 8.5 | 4.6 | 5.0 | 11.5 | 1.4 |
| ERZV07D270 | 8.5 | 4.7 | 5.0 | 11.5 | 1.5 |
| ERZV07D330 | 8.5 | 4.9 | 5.0 | 11.5 | 1.7 |
| ERZV07D390 | 8.5 | 4.8 | 5.0 | 11.5 | 1.6 |
| ERZV07D470 | 8.5 | 4.9 | 5.0 | 11.5 | 1.7 |
| ERZV07D560 | 8.5 | 5.0 | 5.0 | 11.5 | 1.8 |
| ERZV07D680 | 8.5 | 5.2 | 5.0 | 11.5 | 2.0 |
| ERZV07D820 | 8.5 | 4.1 | 5.0 | 11.5 | 1.4 |
| ERZV07D101 | 8.5 | 4.3 | 5.0 | 11.5 | 1.6 |
| ERZV07D121 | 8.5 | 4.5 | 5.0 | 11.5 | 1.8 |
| ERZV07D151 | 8.5 | 4.8 | 5.0 | 11.5 | 2.1 |
| ERZV07D201 | 8.5 | 4.4 | 5.0 | 11.5 | 1.7 |
| ERZV07D221 | 8.5 | 4.5 | 5.0 | 11.5 | 1.8 |
| ERZV07D241 | 8.5 | 4.6 | 5.0 | 11.5 | 1.9 |
| ERZV07D271 | 8.5 | 4.8 | 5.0 | 11.5 | 2.1 |
| ERZV07D331 | 8.5 | 5.1 | 5.0 | 11.5 | 2.4 |
| ERZV07D361 | 8.5 | 5.3 | 5.0 | 11.5 | 2.5 |
| ERZV07D391 | 8.5 | 5.4 | 5.0 | 11.5 | 2.7 |
| ERZV07D431 | 8.5 | 5.6 | 5.0 | 11.5 | 2.9 |
| ERZV07D471 | 8.5 | 5.8 | 5.0 | 11.5 | 3.1 |
| ERZV07D511 | 8.5 | 6.0 | 5.0 | 11.5 | 3.3 |



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

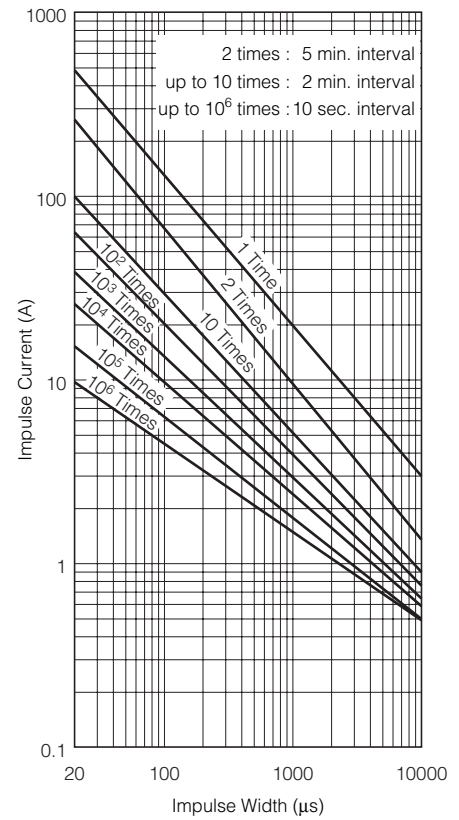
Typical Characteristics Voltage vs. Current

ERZV07D180 to ERZV07D680

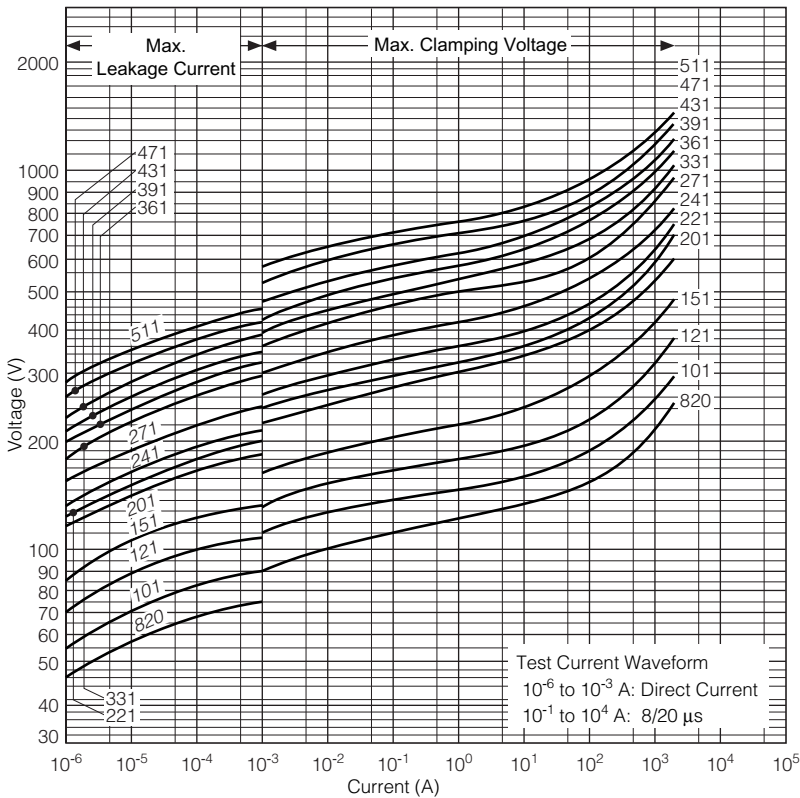


Impulse Derating (Relation between impulse width and impulse current multiple)

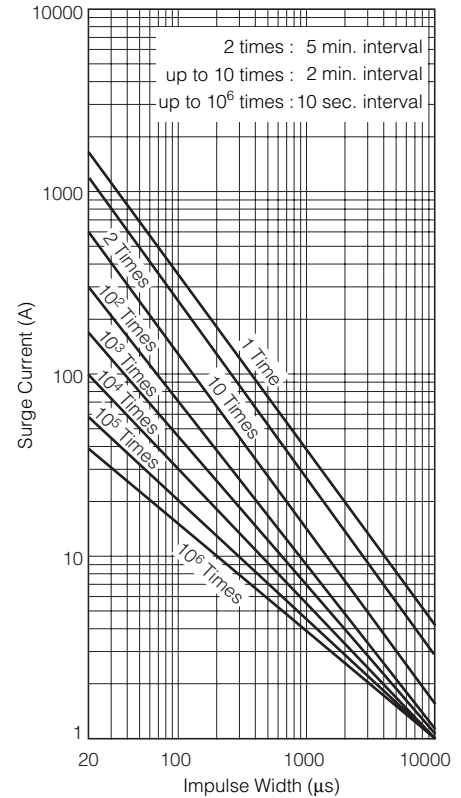
ERZV07D180 to ERZV07D680



ERZV07D820 to ERZV07D511



ERZV07D820 to ERZV07D511



9 Series

■ Ratings and Characteristics

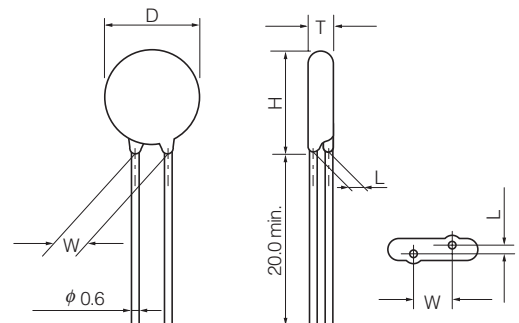
● Operating Temperature Range : -40 to 85 °C ● Storage Temperature Range : -40 to 125 °C

| Part No. | Varistor Voltage | Maximum Allowable Voltage | | Clamping Voltage (max.) *I _p | Rated Power (W) | Maximum Energy | | Maximum Peak Current (8/20 μs) | | Capacitance (max.) @1 kHz (pF) |
|------------|----------------------|---------------------------|--------|--|-----------------|------------------|------------|--------------------------------|-------------|-----------------------------------|
| | | ACrms (V) | DC (V) | | | (10/1000 μs) (J) | (2 ms) (J) | 1 time (A) | 2 times (A) | |
| | V _{1mA} (V) | | | (V) | | | | | | |
| ERZV09D180 | 18(16 to 20) | 11 | 14 | 36 | 0.05 | 2.6 | 2.2 | 1000 | 500 | 16000 |
| ERZV09D220 | 22(20 to 24) | 14 | 18 | 43 | 0.05 | 3.2 | 2.6 | 1000 | 500 | 11000 |
| ERZV09D270 | 27(24 to 30) | 17 | 22 | 53 | 0.05 | 3.9 | 3.2 | 1000 | 500 | 8000 |
| ERZV09D330 | 33(30 to 36) | 20 | 26 | 65 | 0.05 | 4.8 | 4.0 | 1000 | 500 | 6300 |
| ERZV09D390 | 39(35 to 43) | 25 | 31 | 77 | 0.05 | 5.6 | 4.7 | 1000 | 500 | 5200 |
| ERZV09D470 | 47(42 to 52) | 30 | 38 | 93 | 0.05 | 6.8 | 5.6 | 1000 | 500 | 4600 |
| ERZV09D560 | 56(50 to 62) | 35 | 45 | 110 | 0.05 | 8.1 | 6.7 | 1000 | 500 | 3750 |
| ERZV09D680 | 68(61 to 75) | 40 | 56 | 135 | 0.05 | 9.8 | 8.2 | 1000 | 500 | 2800 |
| ERZV09D820 | 82(74 to 90) | 50 | 65 | 135 | 0.4 | 14 | 10 | 3500 | 2500 | 2000 |
| ERZV09D101 | 100(90 to 110) | 60 | 85 | 165 | 0.4 | 17 | 12 | 3500 | 2500 | 1700 |
| ERZV09D121 | 120(108 to 132) | 75 | 100 | 200 | 0.4 | 20 | 14.5 | 3500 | 2500 | 1400 |
| ERZV09D151 | 150(135 to 165) | 95 | 125 | 250 | 0.4 | 25 | 18 | 3500 | 2500 | 1100 |
| ERZV09D201 | 200(185 to 225) | 130 | 170 | 340 | 0.4 | 35 | 25 | 3500 | 2500 | 430 |
| ERZV09D221 | 220(198 to 242) | 140 | 180 | 360 | 0.4 | 39 | 27.5 | 3500 | 2500 | 410 |
| ERZV09D241 | 240(216 to 264) | 150 | 200 | 395 | 0.4 | 42 | 30 | 3500 | 2500 | 380 |
| ERZV09D271 | 270(247 to 303) | 175 | 225 | 455 | 0.4 | 49 | 35 | 3500 | 2500 | 350 |
| ERZV09D331 | 330(297 to 363) | 210 | 270 | 545 | 0.4 | 58 | 42 | 3500 | 2500 | 300 |
| ERZV09D361 | 360(324 to 396) | 230 | 300 | 595 | 0.4 | 65 | 45 | 3500 | 2500 | 300 |
| ERZV09D391 | 390(351 to 429) | 250 | 320 | 650 | 0.4 | 70 | 50 | 3500 | 2500 | 300 |
| ERZV09D431 | 430(387 to 473) | 275 | 350 | 710 | 0.4 | 80 | 55 | 3500 | 2500 | 270 |
| ERZV09D471 | 470(423 to 517) | 300 | 385 | 775 | 0.4 | 85 | 60 | 3500 | 2500 | 230 |
| ERZV09D511 | 510(459 to 561) | 320 | 410 | 845 | 0.4 | 92 | 67 | 3500 | 2500 | 210 |

*I_p Measuring current of clamping voltage 180 to 680 : 5 A, 820 to 511 : 25 A

■ Dimensions in mm (not to scale) * Refer to page 320 to 321 about leads cut type and taping.

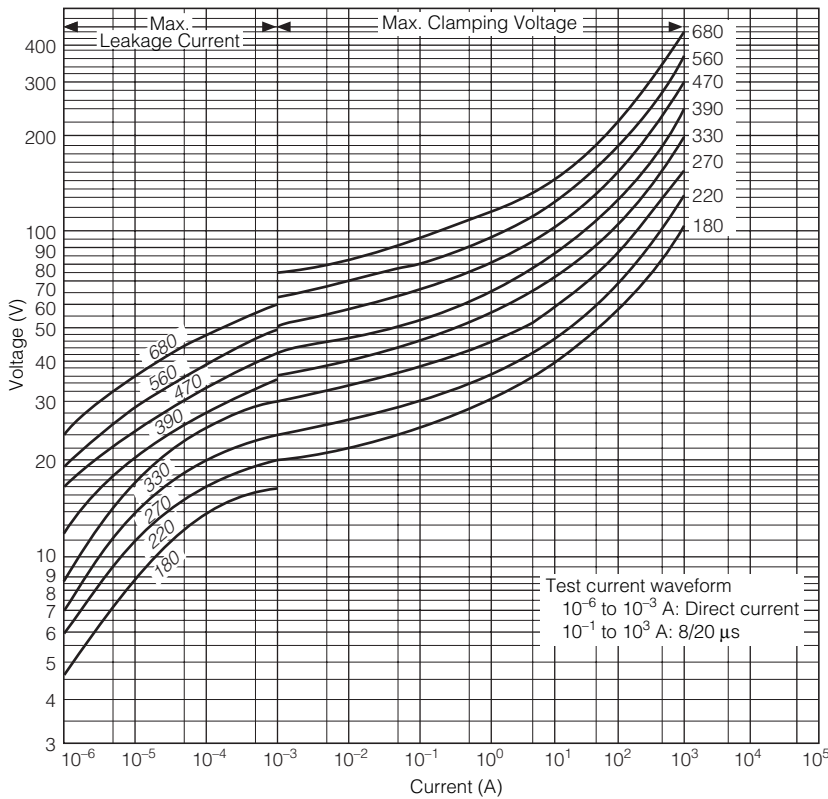
| Part No. | D max. | T max. | W±1.0 | H max. | L±1.0 |
|------------|--------|--------|-------|--------|-------|
| ERZV09D180 | 11.5 | 3.8 | 5.0 | 14.0 | 1.3 |
| ERZV09D220 | 11.5 | 4.0 | 5.0 | 14.0 | 1.4 |
| ERZV09D270 | 11.5 | 4.2 | 5.0 | 14.0 | 1.5 |
| ERZV09D330 | 11.5 | 4.5 | 5.0 | 14.0 | 1.7 |
| ERZV09D390 | 11.5 | 4.0 | 5.0 | 14.0 | 1.7 |
| ERZV09D470 | 11.5 | 4.2 | 5.0 | 14.0 | 1.8 |
| ERZV09D560 | 11.5 | 4.4 | 5.0 | 14.0 | 1.9 |
| ERZV09D680 | 11.5 | 4.5 | 5.0 | 14.0 | 2.2 |
| ERZV09D820 | 11.5 | 3.8 | 5.0 | 14.0 | 1.6 |
| ERZV09D101 | 11.5 | 3.9 | 5.0 | 14.0 | 1.8 |
| ERZV09D121 | 11.5 | 4.1 | 5.0 | 14.0 | 2.0 |
| ERZV09D151 | 11.5 | 4.4 | 5.0 | 14.0 | 2.2 |
| ERZV09D201 | 11.5 | 4.1 | 5.0 | 14.0 | 1.7 |
| ERZV09D221 | 11.5 | 4.2 | 5.0 | 14.0 | 1.8 |
| ERZV09D241 | 11.5 | 4.3 | 5.0 | 14.0 | 1.9 |
| ERZV09D271 | 11.5 | 4.5 | 5.0 | 14.0 | 2.0 |
| ERZV09D331 | 11.5 | 4.8 | 5.0 | 14.0 | 2.3 |
| ERZV09D361 | 11.5 | 5.0 | 5.0 | 14.0 | 2.5 |
| ERZV09D391 | 11.5 | 5.1 | 5.0 | 14.0 | 2.6 |
| ERZV09D431 | 11.5 | 5.3 | 5.0 | 14.0 | 2.8 |
| ERZV09D471 | 11.5 | 5.6 | 5.0 | 14.0 | 3.1 |
| ERZV09D511 | 11.5 | 5.8 | 5.0 | 14.0 | 3.2 |



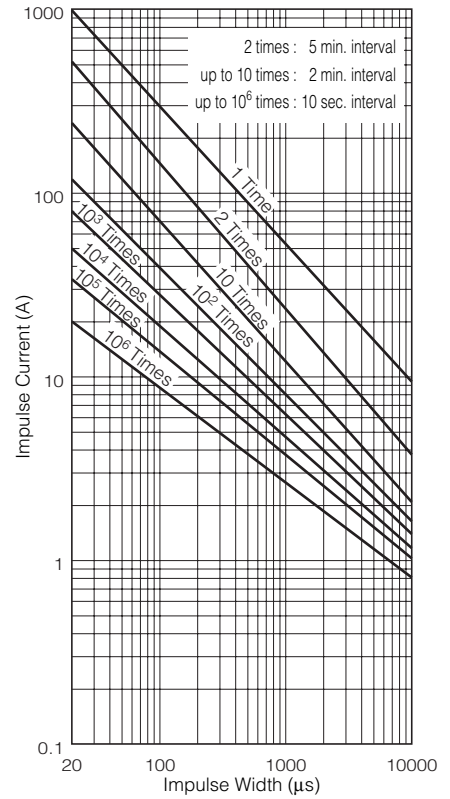
Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

Typical Characteristics Voltage vs. Current

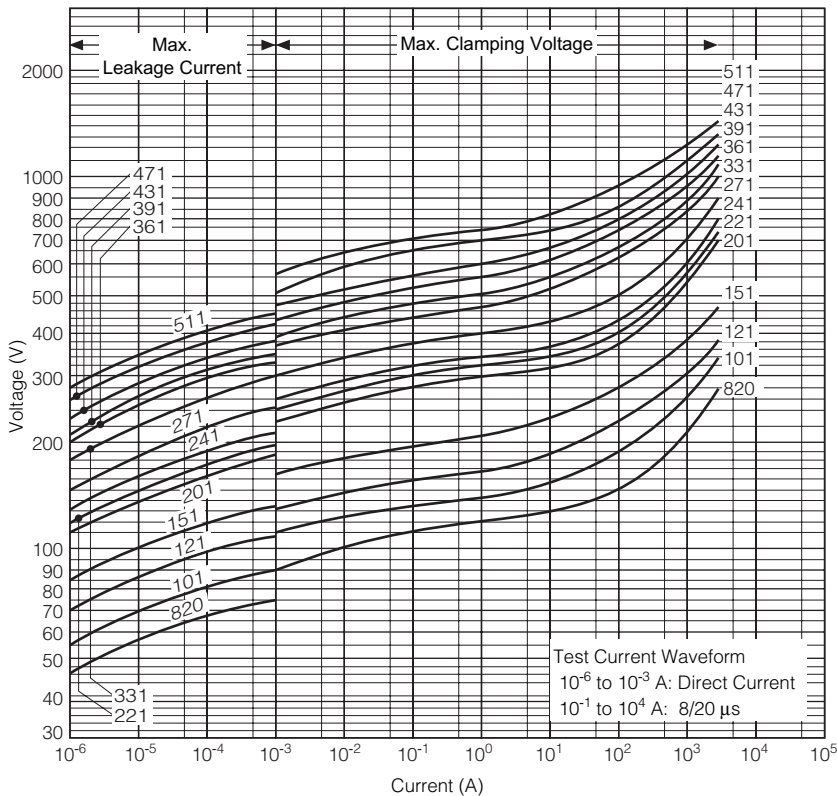
ERZV09D180 to ERZV09D680



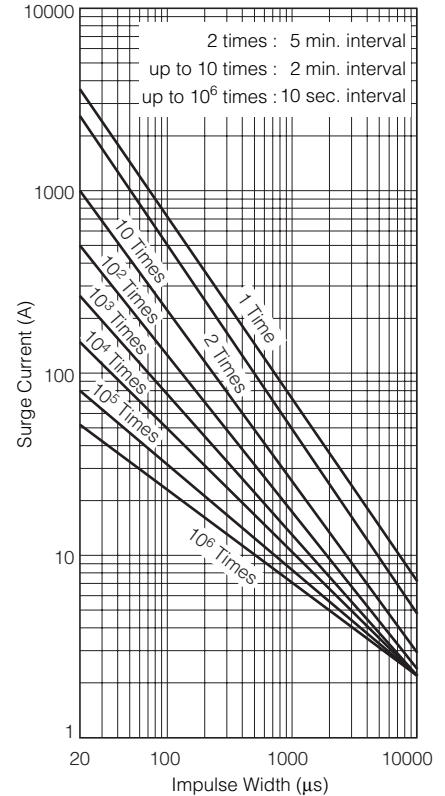
ERZV09D180 to ERZV09D680



ERZV09D820 to ERZV09D511



ERZV09D820 to ERZV09D511



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

10 Series

■ Ratings and Characteristics

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

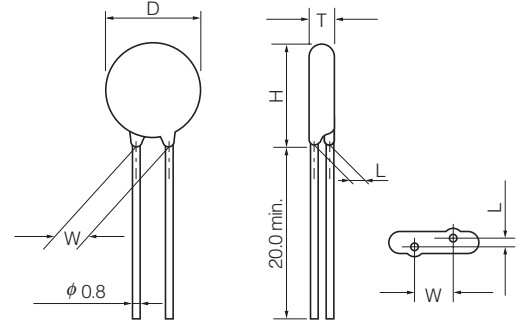
| Part No. | Varistor Voltage V _{1 mA} (V) | Maximum Allowable Voltage | | Clamping Voltage (max.) **I _p (V) | Rated Power (W) | Maximum Energy | | Maximum Peak Current (8/20 μs) | | Capacitance (max.) @1 kHz (pF) |
|--------------|---|---------------------------|--------|--|--------------------|---------------------|---------------|--------------------------------|----------------|---------------------------------------|
| | | ACrms (V) | DC (V) | | | (10/1000 μs) (J) | (2 ms) (J) | 1 time (A) | 2 times (A) | |
| ERZV10D180 | 18(16 to 20) | 11 | 14 | 36 | 0.05 | 2.6 | 2.2 | 1000 | 500 | 16000 |
| ERZV10D220 | 22(20 to 24) | 14 | 18 | 43 | 0.05 | 3.2 | 2.6 | 1000 | 500 | 11000 |
| ERZV10D270 | 27(24 to 30) | 17 | 22 | 53 | 0.05 | 3.9 | 3.2 | 1000 | 500 | 8000 |
| ERZV10D330 | 33(30 to 36) | 20 | 26 | 65 | 0.05 | 4.8 | 4.0 | 1000 | 500 | 6300 |
| ERZV10D390 | 39(35 to 43) | 25 | 31 | 77 | 0.05 | 5.6 | 4.7 | 1000 | 500 | 5200 |
| ERZV10D470 | 47(42 to 52) | 30 | 38 | 93 | 0.05 | 6.8 | 5.6 | 1000 | 500 | 4600 |
| ERZV10D560 | 56(50 to 62) | 35 | 45 | 110 | 0.05 | 8.1 | 6.7 | 1000 | 500 | 3750 |
| ERZV10D680 | 68(61 to 75) | 40 | 56 | 135 | 0.05 | 9.8 | 8.2 | 1000 | 500 | 2800 |
| ERZV10D820 | 82(74 to 90) | 50 | 65 | 135 | 0.4 | 14 | 10 | 3500 | 2500 | 2000 |
| ERZV10D101 | 100(90 to 110) | 60 | 85 | 165 | 0.4 | 17 | 12 | 3500 | 2500 | 1700 |
| ERZV10D121 | 120(108 to 132) | 75 | 100 | 200 | 0.4 | 20 | 14.5 | 3500 | 2500 | 1400 |
| ERZV10D151 | 150(135 to 165) | 95 | 125 | 250 | 0.4 | 25 | 18 | 3500 | 2500 | 1100 |
| ERZV10D201 | 200(185 to 225) | 130 | 170 | 340 | 0.4 | 35 | 25 | 3500 | 2500 | 430 |
| ERZV10D221 | 220(198 to 242) | 140 | 180 | 360 | 0.4 | 39 | 27.5 | 3500 | 2500 | 410 |
| ERZV10D241 | 240(216 to 264) | 150 | 200 | 395 | 0.4 | 42 | 30 | 3500 | 2500 | 380 |
| ERZV10D271 | 270(247 to 303) | 175 | 225 | 455 | 0.4 | 49 | 35 | 3500 | 2500 | 350 |
| ERZV10D331 | 330(297 to 363) | 210 | 270 | 545 | 0.4 | 58 | 42 | 3500 | 2500 | 300 |
| ERZV10D361 | 360(324 to 396) | 230 | 300 | 595 | 0.4 | 65 | 45 | 3500 | 2500 | 300 |
| ERZV10D391 | 390(351 to 429) | 250 | 320 | 650 | 0.4 | 70 | 50 | 3500 | 2500 | 300 |
| ERZV10D431 | 430(387 to 473) | 275 | 350 | 710 | 0.4 | 80 | 55 | 3500 | 2500 | 270 |
| ERZV10D471 | 470(423 to 517) | 300 | 385 | 775 | 0.4 | 85 | 60 | 3500 | 2500 | 230 |
| ERZV10D511 | 510(459 to 561) | 320 | 410 | 845 | 0.4 | 92 | 67 | 3500 | 2500 | 210 |
| ERZV10D621 | 620(558 to 682) | 385 | 505 | 1025 | 0.4 | 92 | 67 | 3500 | 2500 | 190 |
| ERZV10D681 | 680(612 to 748) | 420 | 560 | 1120 | 0.4 | 92 | 67 | 3500 | 2500 | 170 |
| ERZV10D751 | 750(675 to 825) | 460 | 615 | 1240 | 0.4 | 100 | 70 | 3500 | 2500 | 160 |
| ERZV10D821 | 820(738 to 902) | 510 | 670 | 1355 | 0.4 | 110 | 80 | 3500 | 2500 | 140 |
| ERZV10D911 | 910(819 to 1001) | 550 | 745 | 1500 | 0.4 | 130 | 90 | 3500 | 2500 | 120 |
| ERZV10D102 | 1000(900 to 1100) | 625 | 825 | 1650 | 0.4 | 140 | 100 | 3500 | 2500 | 110 |
| ERZV10D112 | 1100(990 to 1210) | 680 | 895 | 1815 | 0.4 | 155 | 110 | 3500 | 2500 | 110 |
| ERZV10D182CS | 1800(1700 to 1980) | 1000 | 1465 | 2970 | 0.4 | 247 | 183 | 3500 | 2500 | 70* |

* Measured at 1 MHz **I_p Measuring current of clamping voltage 180 to 680 : 5 A, 820 to 182 : 25 A

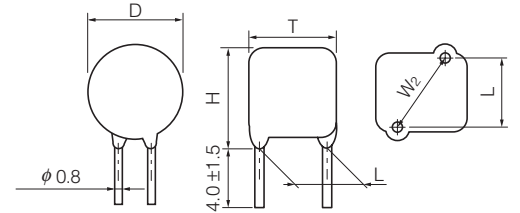
■ Dimensions in mm (not to scale) * Refer to page 320 to 321 about leads cut type and taping.

| Part No. | D max. | T max. | W±1.0 | H max. | L±1.0 |
|--------------|--------|--------|-------|--------|------------|
| ERZV10D180 | 11.5 | 4.6 | 7.5 | 14.5 | 1.3 |
| ERZV10D220 | 11.5 | 4.7 | 7.5 | 14.5 | 1.4 |
| ERZV10D270 | 11.5 | 4.8 | 7.5 | 14.5 | 1.5 |
| ERZV10D330 | 11.5 | 5.0 | 7.5 | 14.5 | 1.7 |
| ERZV10D390 | 11.5 | 4.9 | 7.5 | 14.5 | 1.6 |
| ERZV10D470 | 11.5 | 5.0 | 7.5 | 14.5 | 1.7 |
| ERZV10D560 | 11.5 | 5.1 | 7.5 | 14.5 | 1.8 |
| ERZV10D680 | 11.5 | 5.3 | 7.5 | 14.5 | 2.0 |
| ERZV10D820 | 11.5 | 4.5 | 7.5 | 14.5 | 1.6 |
| ERZV10D101 | 11.5 | 4.7 | 7.5 | 14.5 | 1.8 |
| ERZV10D121 | 11.5 | 4.9 | 7.5 | 14.5 | 2.0 |
| ERZV10D151 | 11.5 | 5.2 | 7.5 | 14.5 | 2.3 |
| ERZV10D201 | 11.5 | 4.8 | 7.5 | 14.5 | 1.9 |
| ERZV10D221 | 11.5 | 4.9 | 7.5 | 14.5 | 2.0 |
| ERZV10D241 | 11.5 | 5.0 | 7.5 | 14.5 | 2.1 |
| ERZV10D271 | 11.5 | 5.2 | 7.5 | 14.5 | 2.3 |
| ERZV10D331 | 11.5 | 5.5 | 7.5 | 14.5 | 2.6 |
| ERZV10D361 | 11.5 | 5.7 | 7.5 | 14.5 | 2.8 |
| ERZV10D391 | 11.5 | 5.8 | 7.5 | 14.5 | 2.9 |
| ERZV10D431 | 11.5 | 6.0 | 7.5 | 14.5 | 3.1 |
| ERZV10D471 | 11.5 | 6.2 | 7.5 | 14.5 | 3.3 |
| ERZV10D511 | 11.5 | 6.4 | 7.5 | 14.5 | 3.5 |
| ERZV10D621 | 12.5 | 7.1 | 7.5 | 15.5 | 4.2 |
| ERZV10D681 | 12.5 | 7.4 | 7.5 | 15.5 | 4.5 |
| ERZV10D751 | 12.5 | 7.8 | 7.5 | 15.5 | 4.9 |
| ERZV10D821 | 12.5 | 8.1 | 7.5 | 15.5 | 5.2 |
| ERZV10D911 | 12.5 | 8.6 | 7.5 | 15.5 | 5.7 |
| ERZV10D102 | 12.5 | 9.1 | 7.5 | 15.5 | 6.2 |
| ERZV10D112 | 12.5 | 9.7 | 7.5 | 15.5 | 6.8 |
| ERZV10D182CS | 13.5 | 14.4 | 11.0* | 16.5 | 10.0(±1.5) |

*: W_2

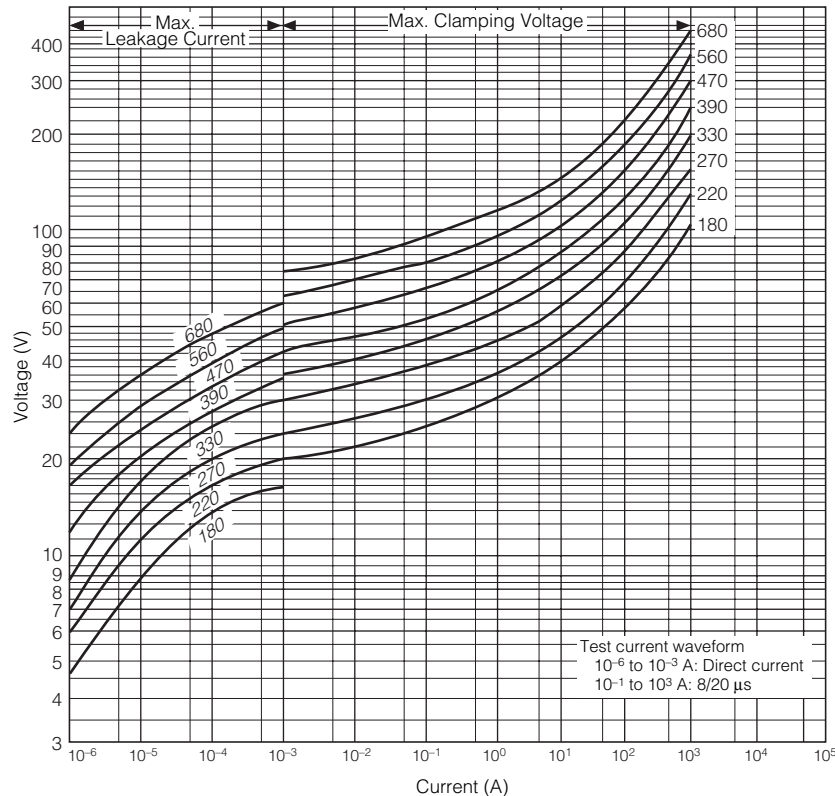


(ERZV10D182CS)



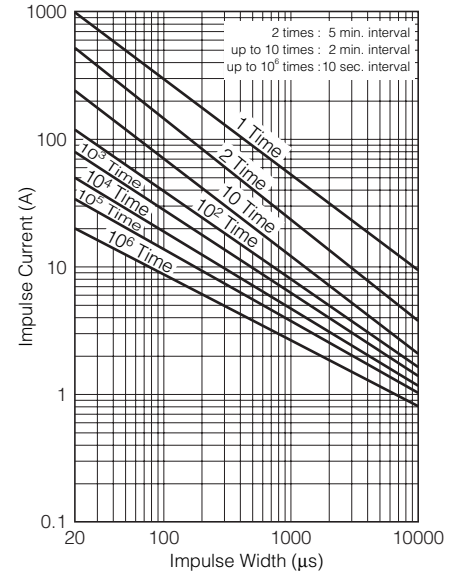
■ Typical Characteristics Voltage vs. Current

ERZV10D180 to ERZV10D680



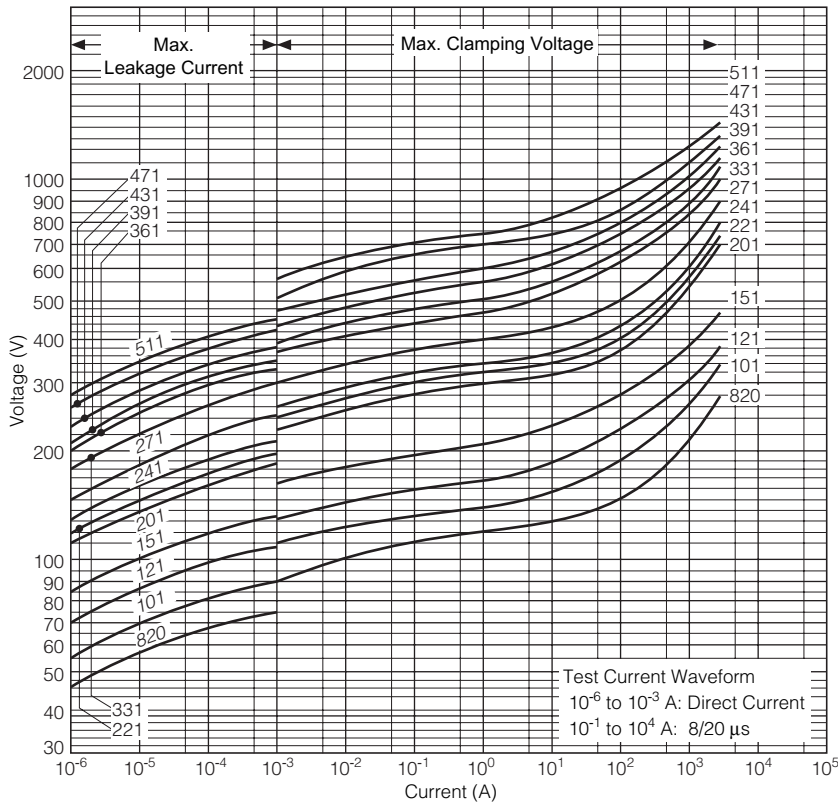
Impulse Derating (Relation between impulse width and impulse current multiple)

ERZV10D180 to ERZV10D680



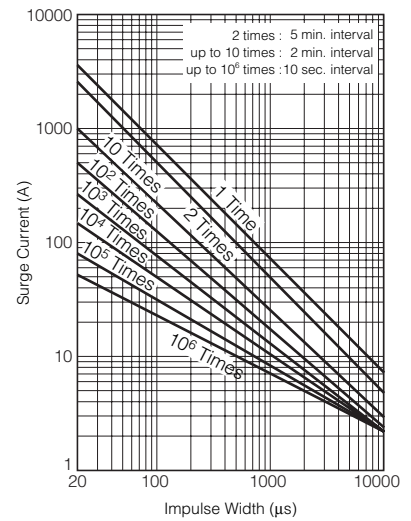
Typical Characteristics Voltage vs. Current

ERZV10D820 to ERZV10D511

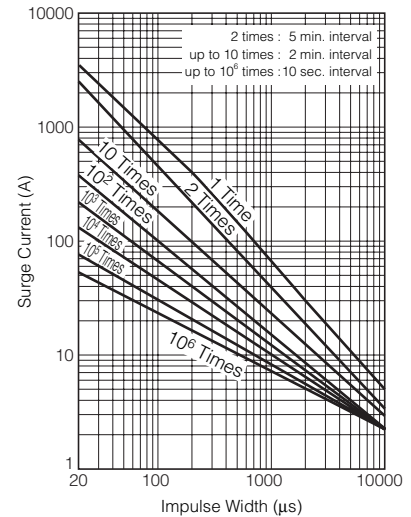


Impulse Derating (Relation between impulse width and impulse current multiple)

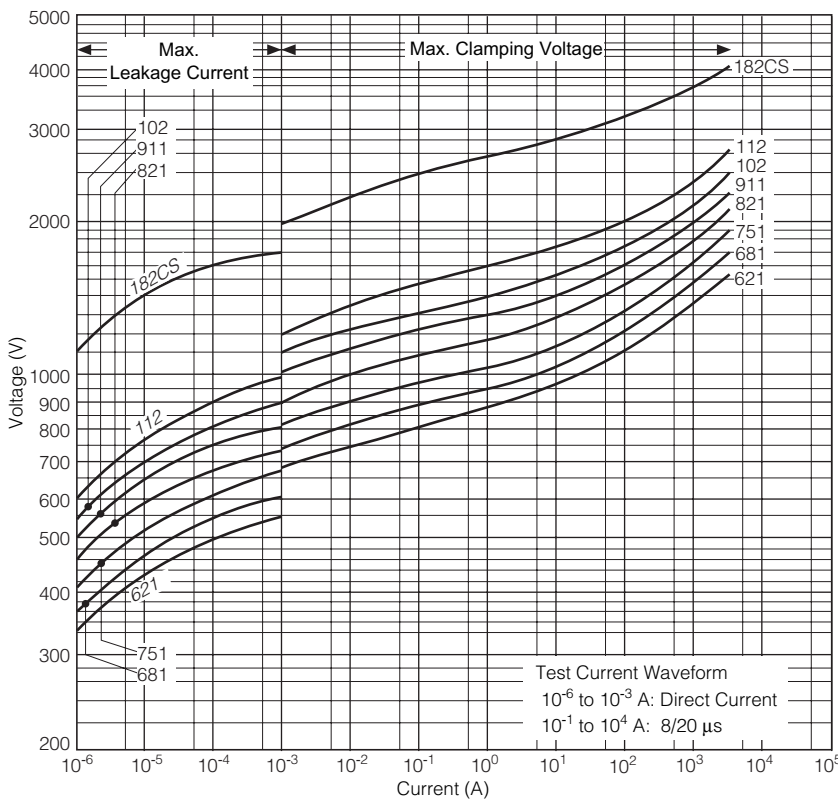
ERZV10D820 to ERZV10D511



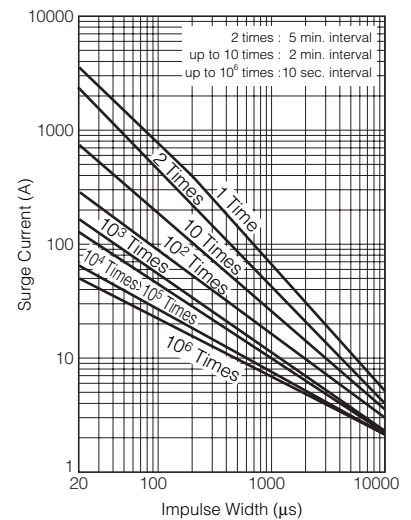
ERZV10D621 to ERZV10D112



ERZV10D621 to ERZV10D182CS



ERZV10D182CS



14 Series

■ Ratings and Characteristics

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

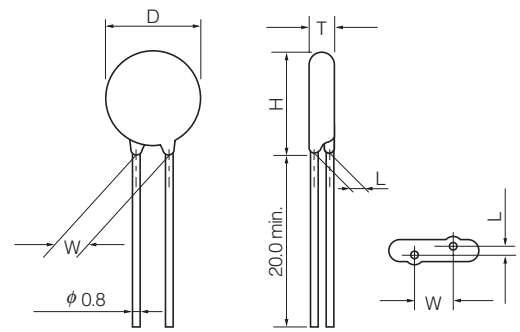
| Part No. | Varistor Voltage V _{1 mA} (V) | Maximum Allowable Voltage | | Clamping Voltage (max.) *I _p (V) | Rated Power (W) | Maximum Energy | | Maximum Peak Current (8/20 μs) | | Capacitance (max.) @1 kHz (pF) |
|--------------|---|---------------------------|--------|---|--------------------|---------------------|---------------|--------------------------------|----------------|---------------------------------------|
| | | ACrms (V) | DC (V) | | | (10/1000 μs) (J) | (2 ms) (J) | 1 time (A) | 2 times (A) | |
| ERZV14D180 | 18(16 to 20) | 11 | 14 | 36 | 0.1 | 5.2 | 4.3 | 2000 | 1000 | 25000 |
| ERZV14D220 | 22(20 to 24) | 14 | 18 | 43 | 0.1 | 6.3 | 5.3 | 2000 | 1000 | 20000 |
| ERZV14D270 | 27(24 to 30) | 17 | 22 | 53 | 0.1 | 7.8 | 6.5 | 2000 | 1000 | 16000 |
| ERZV14D330 | 33(30 to 36) | 20 | 26 | 65 | 0.1 | 9.5 | 7.9 | 2000 | 1000 | 12200 |
| ERZV14D390 | 39(35 to 43) | 25 | 31 | 77 | 0.1 | 11 | 9.4 | 2000 | 1000 | 7000 |
| ERZV14D470 | 47(42 to 52) | 30 | 38 | 93 | 0.1 | 14 | 11 | 2000 | 1000 | 6750 |
| ERZV14D560 | 56(50 to 62) | 35 | 45 | 110 | 0.1 | 16 | 13 | 2000 | 1000 | 6500 |
| ERZV14D680 | 68(61 to 75) | 40 | 56 | 135 | 0.1 | 20 | 16 | 2000 | 1000 | 5500 |
| ERZV14D820 | 82(74 to 90) | 50 | 65 | 135 | 0.6 | 28 | 20 | 6000 | 5000 | 3700 |
| ERZV14D101 | 100(90 to 110) | 60 | 85 | 165 | 0.6 | 35 | 25 | 6000 | 5000 | 3200 |
| ERZV14D121 | 120(108 to 132) | 75 | 100 | 200 | 0.6 | 42 | 30 | 6000 | 5000 | 2700 |
| ERZV14D151 | 150(135 to 165) | 95 | 125 | 250 | 0.6 | 53 | 37.5 | 6000 | 5000 | 2200 |
| ERZV14D201 | 200(185 to 225) | 130 | 170 | 340 | 0.6 | 70 | 50 | 6000 | 5000 | 770 |
| ERZV14D221 | 220(198 to 242) | 140 | 180 | 360 | 0.6 | 78 | 55 | 6000 | 5000 | 740 |
| ERZV14D241 | 240(216 to 264) | 150 | 200 | 395 | 0.6 | 84 | 60 | 6000 | 5000 | 700 |
| ERZV14D271 | 270(247 to 303) | 175 | 225 | 455 | 0.6 | 99 | 70 | 6000 | 5000 | 640 |
| ERZV14D331 | 330(297 to 363) | 210 | 270 | 545 | 0.6 | 115 | 80 | 6000 | 4500 | 580 |
| ERZV14D361 | 360(324 to 396) | 230 | 300 | 595 | 0.6 | 130 | 90 | 6000 | 4500 | 540 |
| ERZV14D391 | 390(351 to 429) | 250 | 320 | 650 | 0.6 | 140 | 100 | 6000 | 4500 | 500 |
| ERZV14D431 | 430(387 to 473) | 275 | 350 | 710 | 0.6 | 155 | 110 | 6000 | 4500 | 450 |
| ERZV14D471 | 470(423 to 517) | 300 | 385 | 775 | 0.6 | 175 | 125 | 6000 | 4500 | 400 |
| ERZV14D511 | 510(459 to 561) | 320 | 410 | 845 | 0.6 | 190 | 136 | 6000 | 4500 | 350 |
| ERZV14D621 | 620(558 to 682) | 385 | 505 | 1025 | 0.6 | 190 | 136 | 5000 | 4500 | 330 |
| ERZV14D681 | 680(612 to 748) | 420 | 560 | 1120 | 0.6 | 190 | 136 | 5000 | 4500 | 320 |
| ERZV14D751 | 750(675 to 825) | 460 | 615 | 1240 | 0.6 | 210 | 150 | 5000 | 4500 | 310 |
| ERZV14D821 | 820(738 to 902) | 510 | 670 | 1355 | 0.6 | 235 | 165 | 5000 | 4500 | 280 |
| ERZV14D911 | 910(819 to 1001) | 550 | 745 | 1500 | 0.6 | 255 | 180 | 5000 | 4500 | 250 |
| ERZV14D102 | 1000(900 to 1100) | 625 | 825 | 1650 | 0.6 | 280 | 200 | 5000 | 4500 | 230 |
| ERZV14D112 | 1100(990 to 1210) | 680 | 895 | 1815 | 0.6 | 310 | 220 | 5000 | 4500 | 210 |
| ERZV14D182CS | 1800(1700 to 1980) | 1000 | 1465 | 2970 | 0.6 | 510 | 360 | 5000 | 4500 | 120 |

*I_p Measuring current of clamping voltage 180 to 680 : 10 A, 820 to 182 : 50 A

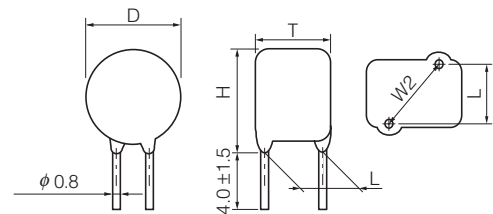
■ Dimensions in mm (not to scale) * Refer to page 320 to 321 about leads cut type and taping.

| Part No. | D max. | T max. | W±1.0 | H max. | L±1.0 |
|--------------|--------|--------|-------|--------|------------|
| ERZV14D180 | 15.5 | 4.6 | 7.5 | 18.5 | 1.3 |
| ERZV14D220 | 15.5 | 4.7 | 7.5 | 18.5 | 1.4 |
| ERZV14D270 | 15.5 | 4.8 | 7.5 | 18.5 | 1.5 |
| ERZV14D330 | 15.5 | 5.0 | 7.5 | 18.5 | 1.7 |
| ERZV14D390 | 15.5 | 4.9 | 7.5 | 18.5 | 1.6 |
| ERZV14D470 | 15.5 | 5.0 | 7.5 | 18.5 | 1.7 |
| ERZV14D560 | 15.5 | 5.1 | 7.5 | 18.5 | 1.8 |
| ERZV14D680 | 15.5 | 5.3 | 7.5 | 18.5 | 2.0 |
| ERZV14D820 | 15.5 | 4.5 | 7.5 | 18.5 | 1.6 |
| ERZV14D101 | 15.5 | 4.7 | 7.5 | 18.5 | 1.8 |
| ERZV14D121 | 15.5 | 4.9 | 7.5 | 18.5 | 2.0 |
| ERZV14D151 | 15.5 | 5.2 | 7.5 | 18.5 | 2.3 |
| ERZV14D201 | 15.5 | 4.8 | 7.5 | 18.5 | 1.9 |
| ERZV14D221 | 15.5 | 4.9 | 7.5 | 18.5 | 2.0 |
| ERZV14D241 | 15.5 | 5.0 | 7.5 | 18.5 | 2.1 |
| ERZV14D271 | 15.5 | 5.2 | 7.5 | 18.5 | 2.3 |
| ERZV14D331 | 15.5 | 5.5 | 7.5 | 18.5 | 2.6 |
| ERZV14D361 | 15.5 | 5.7 | 7.5 | 18.5 | 2.8 |
| ERZV14D391 | 15.5 | 5.8 | 7.5 | 18.5 | 2.9 |
| ERZV14D431 | 15.5 | 6.0 | 7.5 | 18.5 | 3.1 |
| ERZV14D471 | 15.5 | 6.2 | 7.5 | 18.5 | 3.3 |
| ERZV14D511 | 15.5 | 6.4 | 7.5 | 18.5 | 3.5 |
| ERZV14D621 | 16.0 | 7.1 | 7.5 | 19.0 | 4.2 |
| ERZV14D681 | 16.0 | 7.4 | 7.5 | 19.0 | 4.5 |
| ERZV14D751 | 16.0 | 7.8 | 7.5 | 19.0 | 4.9 |
| ERZV14D821 | 16.0 | 8.1 | 7.5 | 19.0 | 5.2 |
| ERZV14D911 | 16.0 | 8.6 | 7.5 | 19.0 | 5.7 |
| ERZV14D102 | 16.0 | 9.1 | 7.5 | 19.0 | 6.2 |
| ERZV14D112 | 16.0 | 9.7 | 7.5 | 19.0 | 6.8 |
| ERZV14D182CS | 17.0 | 14.4 | 15.0* | 20.5 | 10.5(±2.0) |

*: W₂

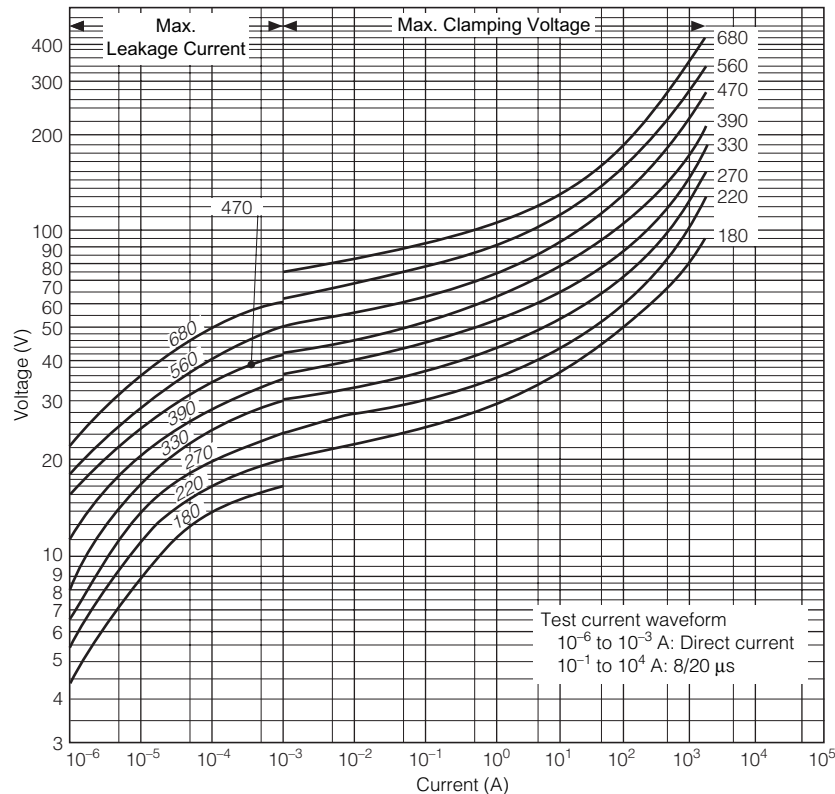


(ERZV14D182CS)



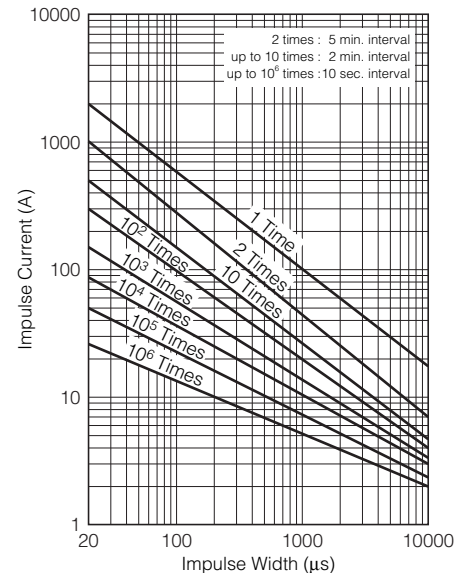
■ Typical Characteristics Voltage vs. Current

ERZV14D180 to ERZV14D680



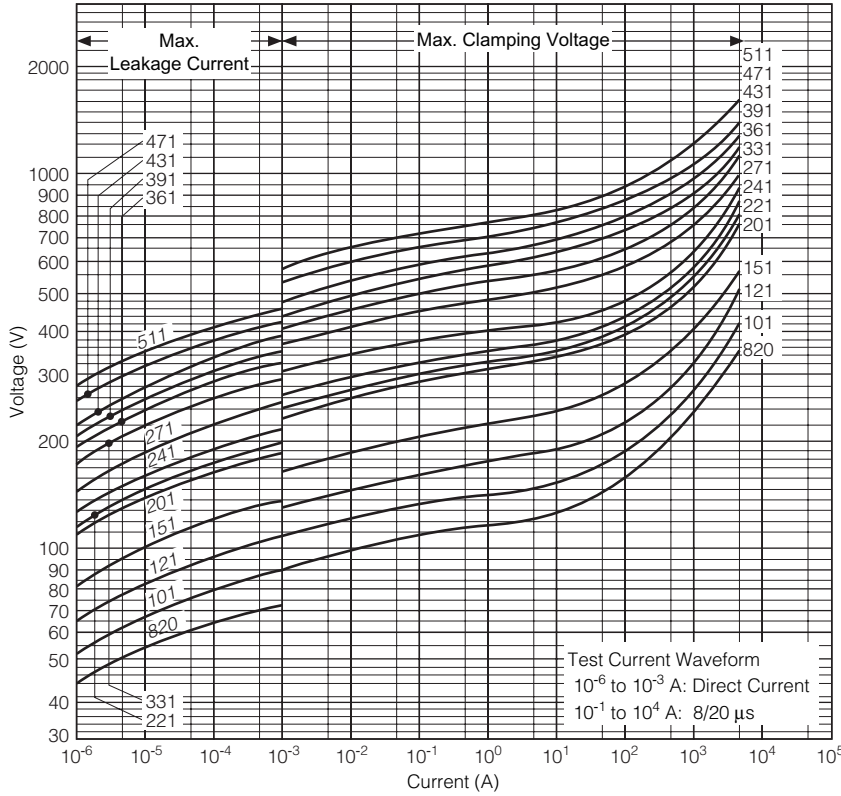
Impulse Derating (Relation between impulse width and impulse current multiple)

ERZV14D180 to ERZV14D680



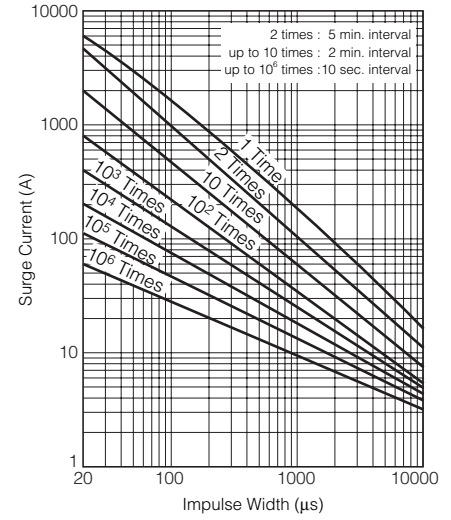
Typical Characteristics Voltage vs. Current

ERZV14D820 to ERZV14D511

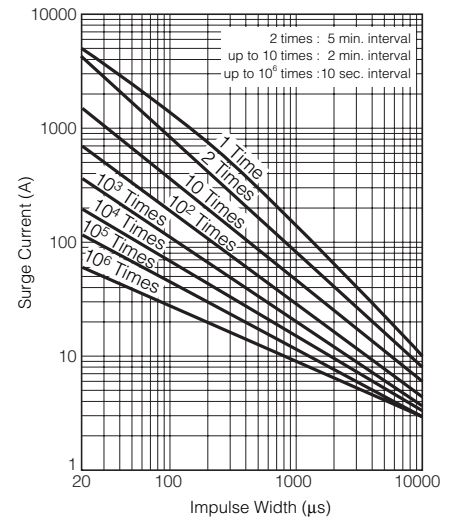


Impulse Derating (Relation between impulse width and impulse current multiple)

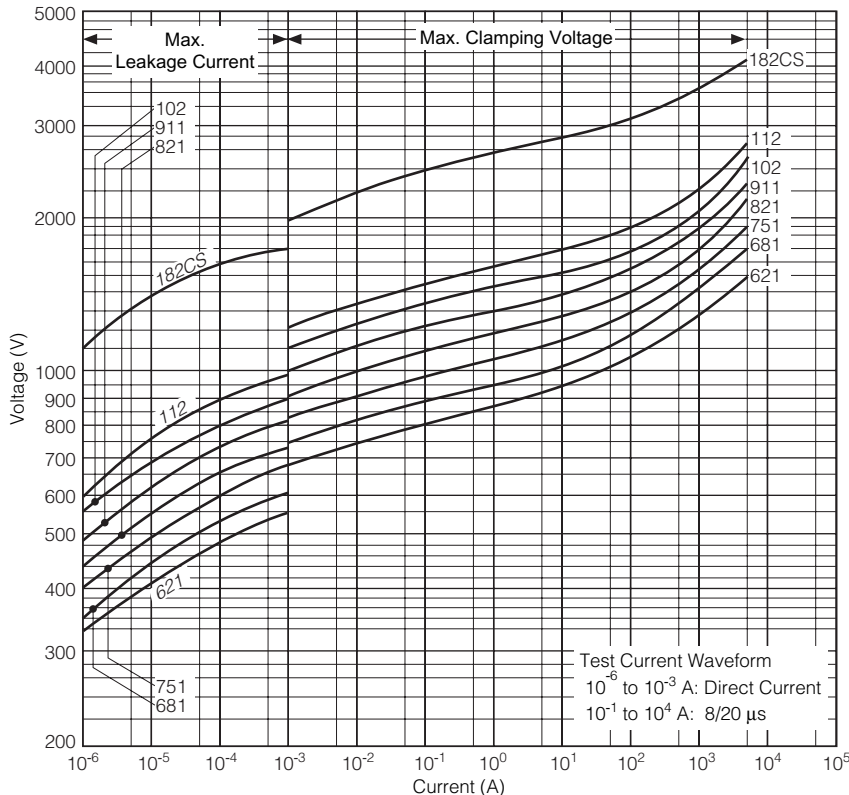
ERZV14D820 to ERZV14D511



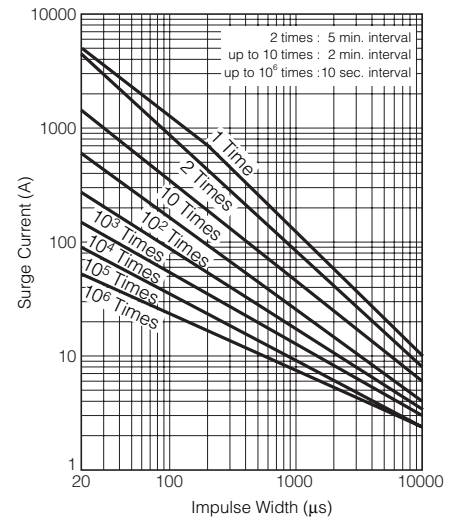
ERZV14D621 to ERZV14D112



ERZV14D621 to ERZV14D182CS



ERZV14D182CS



20 Series

■ Ratings and Characteristics

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

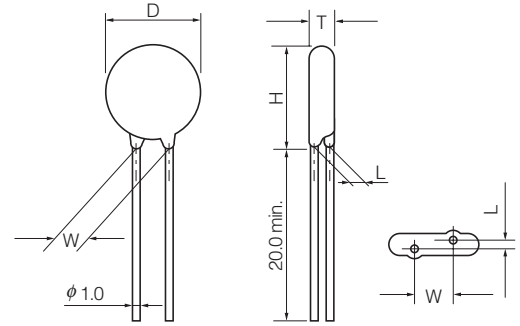
| Part No. | Varistor Voltage V _{1 mA} (V) | Maximum Allowable Voltage | | Clamping Voltage (max.) *I _p (V) | Rated Power (W) | Maximum Energy | | Maximum Peak Current (8/20 μs) | | Capacitance (max.) @1 kHz (pF) |
|------------|---|---------------------------|--------|---|--------------------|---------------------|---------------|--------------------------------|----------------|---------------------------------------|
| | | ACrms (V) | DC (V) | | | (10/1000 μs) (J) | (2 ms) (J) | 1 time (A) | 2 times (A) | |
| ERZV20D180 | 18(16 to 20) | 11 | 14 | 36 | 0.2 | 13 | 12 | 3000 | 2000 | 40000 |
| ERZV20D220 | 22(20 to 24) | 14 | 18 | 43 | 0.2 | 16 | 14 | 3000 | 2000 | 30000 |
| ERZV20D270 | 27(24 to 30) | 17 | 22 | 53 | 0.2 | 19 | 17 | 3000 | 2000 | 24500 |
| ERZV20D330 | 33(30 to 36) | 20 | 26 | 65 | 0.2 | 24 | 21 | 3000 | 2000 | 20000 |
| ERZV20D390 | 39(35 to 43) | 25 | 31 | 77 | 0.2 | 28 | 25 | 3000 | 2000 | 13800 |
| ERZV20D470 | 47(42 to 52) | 30 | 38 | 93 | 0.2 | 34 | 30 | 3000 | 2000 | 13500 |
| ERZV20D560 | 56(50 to 62) | 35 | 45 | 110 | 0.2 | 41 | 36 | 3000 | 2000 | 12200 |
| ERZV20D680 | 68(61 to 75) | 40 | 56 | 135 | 0.2 | 49 | 44 | 3000 | 2000 | 11500 |
| ERZV20D820 | 82(74 to 90) | 50 | 65 | 135 | 1.0 | 56 | 40 | 10000 | 7000 | 7500 |
| ERZV20D101 | 100(90 to 110) | 60 | 85 | 165 | 1.0 | 70 | 50 | 10000 | 7000 | 6500 |
| ERZV20D121 | 120(108 to 132) | 75 | 100 | 200 | 1.0 | 85 | 60 | 10000 | 7000 | 5500 |
| ERZV20D151 | 150(135 to 165) | 95 | 125 | 250 | 1.0 | 106 | 75 | 10000 | 7000 | 4500 |
| ERZV20D201 | 200(185 to 225) | 130 | 170 | 340 | 1.0 | 140 | 100 | 10000 | 7000 | 1700 |
| ERZV20D221 | 220(198 to 242) | 140 | 180 | 360 | 1.0 | 155 | 110 | 10000 | 7000 | 1600 |
| ERZV20D241 | 240(216 to 264) | 150 | 200 | 395 | 1.0 | 168 | 120 | 10000 | 7000 | 1500 |
| ERZV20D271 | 270(247 to 303) | 175 | 225 | 455 | 1.0 | 190 | 135 | 10000 | 7000 | 1300 |
| ERZV20D331 | 330(297 to 363) | 210 | 270 | 545 | 1.0 | 228 | 160 | 10000 | 6500 | 1100 |
| ERZV20D361 | 360(324 to 396) | 230 | 300 | 595 | 1.0 | 255 | 180 | 10000 | 6500 | 1100 |
| ERZV20D391 | 390(351 to 429) | 250 | 320 | 650 | 1.0 | 275 | 195 | 10000 | 6500 | 1100 |
| ERZV20D431 | 430(387 to 473) | 275 | 350 | 710 | 1.0 | 303 | 215 | 10000 | 6500 | 1000 |
| ERZV20D471 | 470(423 to 517) | 300 | 385 | 775 | 1.0 | 350 | 250 | 10000 | 6500 | 900 |
| ERZV20D511 | 510(459 to 561) | 320 | 410 | 845 | 1.0 | 382 | 273 | 10000 | 6500 | 800 |
| ERZV20D621 | 620(to 558 to 682) | 385 | 505 | 1025 | 1.0 | 382 | 273 | 7500 | 6500 | 700 |
| ERZV20D681 | 680(612 to 748) | 420 | 560 | 1120 | 1.0 | 382 | 273 | 7500 | 6500 | 650 |
| ERZV20D751 | 750(675 to 825) | 460 | 615 | 1240 | 1.0 | 420 | 300 | 7500 | 6500 | 600 |
| ERZV20D821 | 820(738 to 902) | 510 | 670 | 1355 | 1.0 | 460 | 325 | 7500 | 6500 | 530 |
| ERZV20D911 | 910(819 to 1001) | 550 | 745 | 1500 | 1.0 | 510 | 360 | 7500 | 6500 | 500 |
| ERZV20D102 | 1000(900 to 1100) | 625 | 825 | 1650 | 1.0 | 565 | 400 | 7500 | 6500 | 450 |
| ERZV20D112 | 1100(990 to 1210) | 680 | 895 | 1815 | 1.0 | 620 | 440 | 7500 | 6500 | 400 |
| ERZV20D182 | 1800(1700 to 1980) | 1000 | 1465 | 2970 | 1.0 | 1020 | 720 | 7500 | 6500 | 250 |

*I_p Measuring current of clamping voltage 180 to 680 : 20 A, 820 to 182 : 100 A

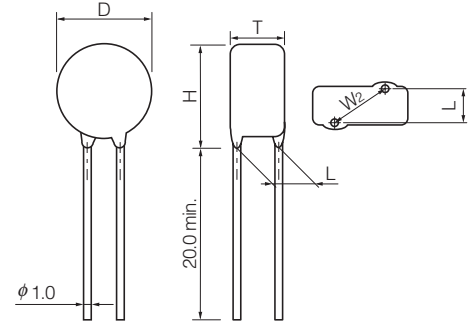
■ Dimensions in mm (not to scale) * Refer to page 320 to 321 about leads cut type and taping.

| Part No. | D max. | T max. | W±1.0 | H max. | L±1.0 |
|------------|--------|--------|-------|--------|------------|
| ERZV20D180 | 21.5 | 5.1 | 10.0 | 24.5 | 1.5 |
| ERZV20D220 | 21.5 | 5.2 | 10.0 | 24.5 | 1.6 |
| ERZV20D270 | 21.5 | 5.3 | 10.0 | 24.5 | 1.7 |
| ERZV20D330 | 21.5 | 5.5 | 10.0 | 24.5 | 1.9 |
| ERZV20D390 | 21.5 | 5.5 | 10.0 | 24.5 | 1.9 |
| ERZV20D470 | 21.5 | 5.6 | 10.0 | 24.5 | 2.0 |
| ERZV20D560 | 21.5 | 5.7 | 10.0 | 24.5 | 2.1 |
| ERZV20D680 | 21.5 | 5.8 | 10.0 | 24.5 | 2.2 |
| ERZV20D820 | 21.5 | 4.9 | 10.0 | 24.5 | 1.8 |
| ERZV20D101 | 21.5 | 5.1 | 10.0 | 24.5 | 2.0 |
| ERZV20D121 | 21.5 | 5.3 | 10.0 | 24.5 | 2.2 |
| ERZV20D151 | 21.5 | 5.6 | 10.0 | 24.5 | 2.5 |
| ERZV20D201 | 21.5 | 5.2 | 10.0 | 24.5 | 2.1 |
| ERZV20D221 | 21.5 | 5.3 | 10.0 | 24.5 | 2.2 |
| ERZV20D241 | 21.5 | 5.4 | 10.0 | 24.5 | 2.3 |
| ERZV20D271 | 21.5 | 5.6 | 10.0 | 24.5 | 2.5 |
| ERZV20D331 | 21.5 | 5.9 | 10.0 | 24.5 | 2.8 |
| ERZV20D361 | 21.5 | 6.1 | 10.0 | 24.5 | 3.0 |
| ERZV20D391 | 21.5 | 6.2 | 10.0 | 24.5 | 3.1 |
| ERZV20D431 | 21.5 | 6.4 | 10.0 | 24.5 | 3.3 |
| ERZV20D471 | 21.5 | 6.6 | 10.0 | 24.5 | 3.5 |
| ERZV20D511 | 21.5 | 6.8 | 10.0 | 24.5 | 3.7 |
| ERZV20D621 | 22.5 | 7.5 | 10.0 | 25.5 | 4.4 |
| ERZV20D681 | 22.5 | 7.8 | 10.0 | 25.5 | 4.7 |
| ERZV20D751 | 22.5 | 8.2 | 10.0 | 25.5 | 5.1 |
| ERZV20D821 | 22.5 | 8.5 | 10.0 | 25.5 | 5.4 |
| ERZV20D911 | 22.5 | 9.0 | 10.0 | 25.5 | 5.9 |
| ERZV20D102 | 22.5 | 9.5 | 10.0 | 25.5 | 6.4 |
| ERZV20D112 | 22.5 | 10.1 | 10.0 | 25.5 | 7.0 |
| ERZV20D182 | 23.5 | 14.8 | 15.0* | 28.0 | 10.7(±2.0) |

*: W₂

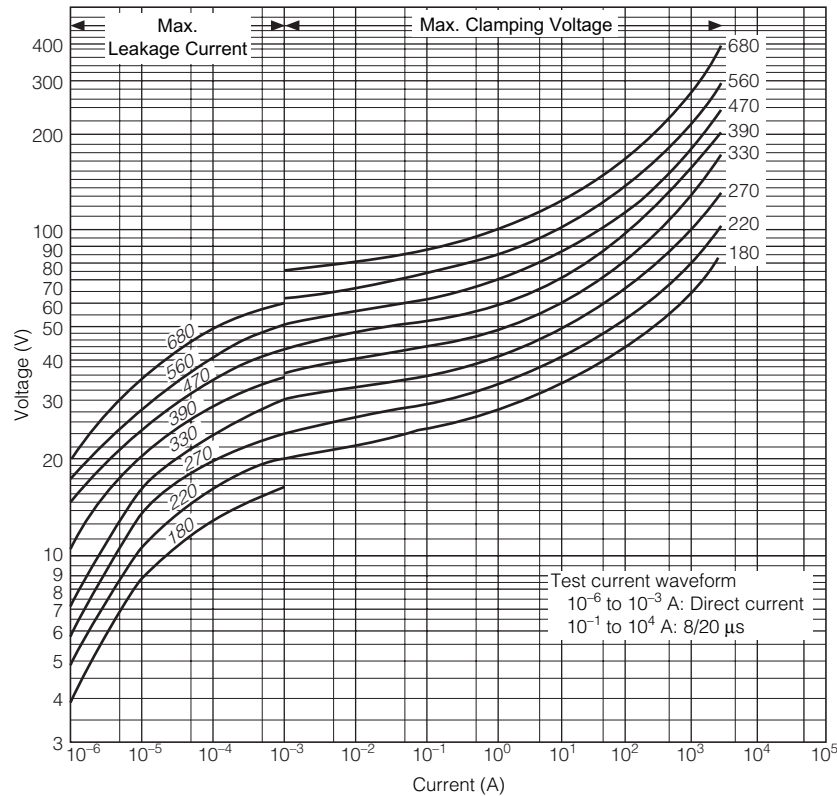


(ERZV20D182)



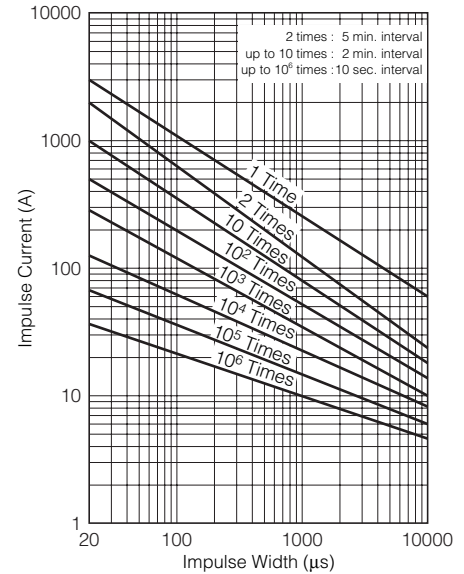
■ Typical Characteristics Voltage vs. Current

ERZV20D180 to ERZV20D680



Impulse Derating (Relation between impulse width and impulse current multiple)

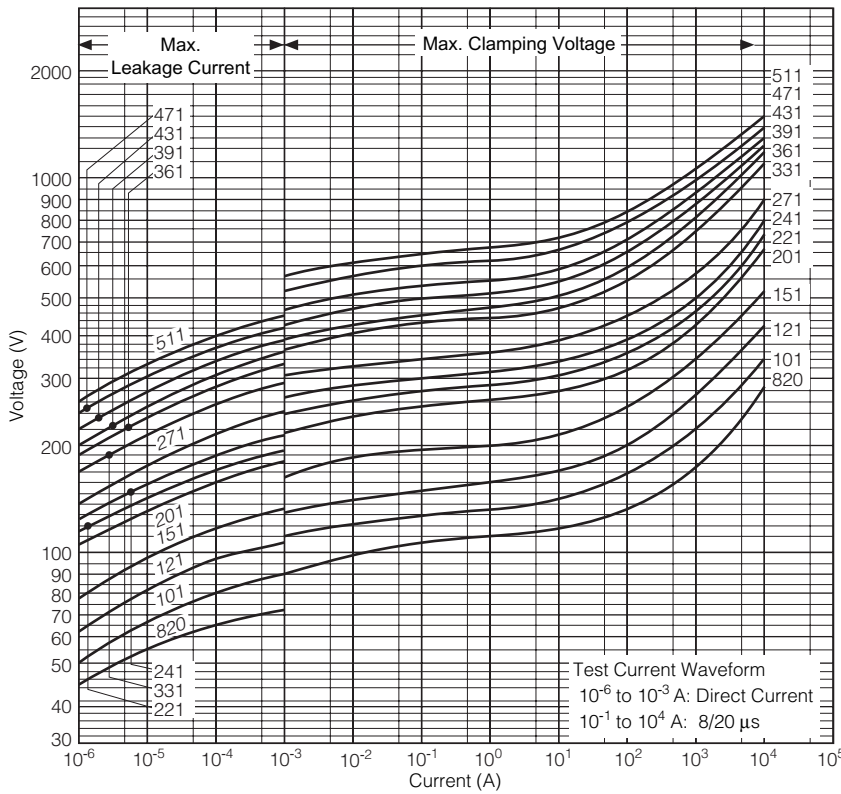
ERZV20D180 to ERZV20D680



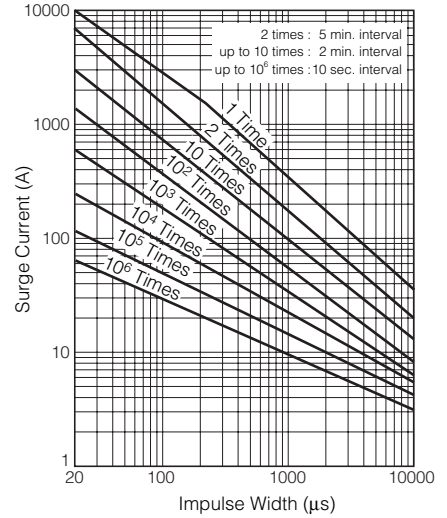
Typical Characteristics Voltage vs. Current

Impulse Derating (Relation between impulse width and impulse current multiple)

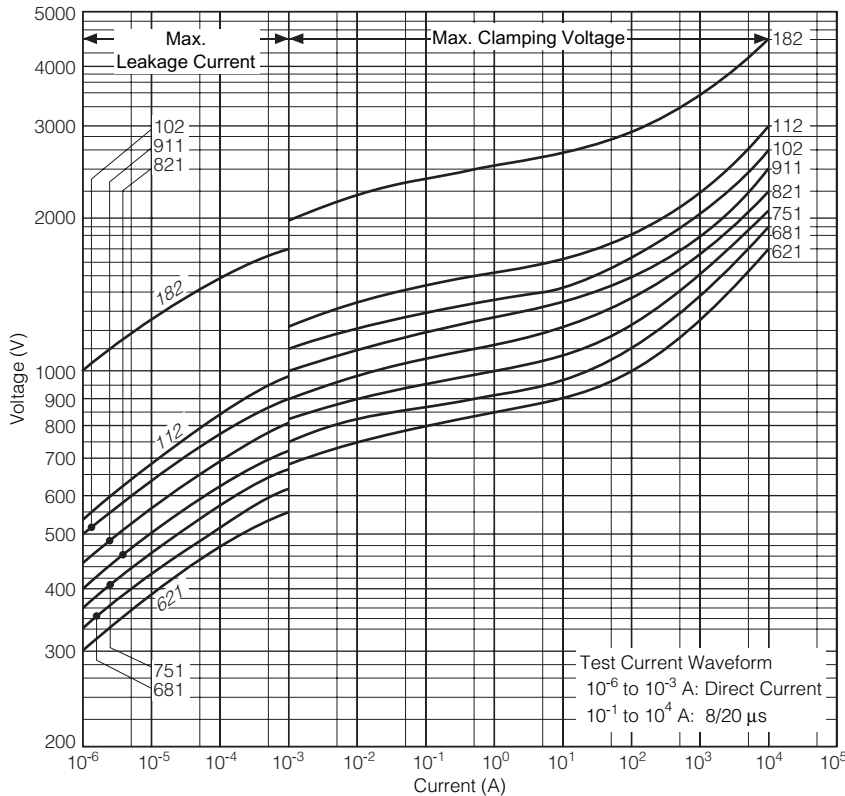
ERZV20D820 to ERZV20D511



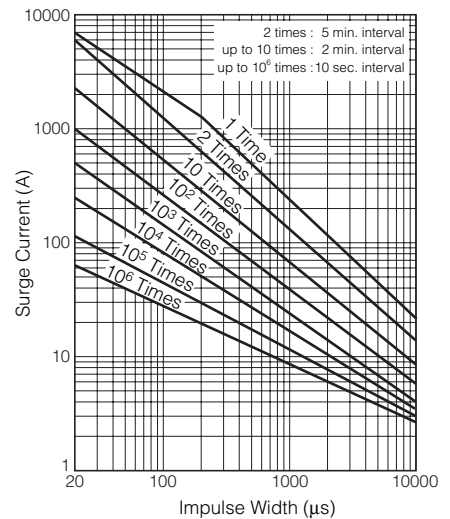
ERZV20D820 to ERZV20D511



ERZV20D621 to ERZV20D182



ERZV20D621 to ERZV20D112



ERZV20D182

