

“ZNR” Transient/Surge Absorbers

Type: **D**
Series: **E-S1**



“ZNR” Transient/Surge Absorber, Series E-S1, improves E series products with high capability for absorbing transient overvoltage in a compact size, suitable for surge protection at high temperature.

Features

- Large withstanding surge current capability in compact sizes
- Withstanding surge current at max. 125 °C
- Large “Energy Handling Capability” absorbing transient overvoltages in compact sizes
- Wide range of varistor voltages
- RoHS compliant

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

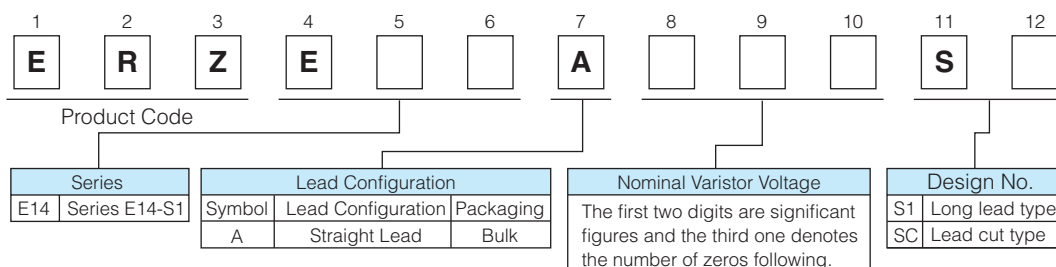
Applicable Standards

- UL1449 (VZCA2/UL, VZCA8/C-UL)
 - VDE IEC61051-1, -2, -2-2, IEC60950-1 Annex.Q, IEC62368-1 G8.2
 - CQC(GB/T10193, GB/T10194, GB4943.1, GB8898)
- Refer to “Reference Guide to Standard Products”, and “Application Note for Safety Standards” for the details

As for Handling Precautions

Please see Related Information

Explanation of Part Numbers



Reference Guide to Standard Products

| Part No. | Applicable Standards | | Varistor Voltage at 1 mA (V) | Maximum Allowable Voltage | | Clamping Voltage at 8/20 μ s | | Maximum Peak Current at 8/20 μ s(A) | | | Recommended Applications |
|--------------|----------------------|-----------|------------------------------|---------------------------|--------|----------------------------------|--------------------|---|---------------|---------------|---|
| | Type Name | Approvals | | ACrms (V) | DC (V) | max.(V) | I _p (A) | 85 °C 1 time | 125 °C 1 time | 125 °C 2 time | |
| ERZE14A201S1 | E14201 | ○☆☆◇◆ | 200 (185 to 225) | 130 | 170 | 340 | 100 | 10000 | 7500 | 6500 | AC 100 V Line-Line Applications |
| ERZE14A221S1 | E14221 | ○☆☆◇◆ | 220 (198 to 242) | 140 | 180 | 360 | 100 | 10000 | 7500 | 6500 | |
| ERZE14A241S1 | E14241 | ○☆☆◇◆ | 240 (216 to 264) | 150 | 200 | 395 | 100 | 10000 | 7500 | 6500 | AC 100 V to 120 V, Line-Line Applications |
| ERZE14A271S1 | E14271 | ○☆☆◇◆ | 270 (247 to 303) | 175 | 225 | 455 | 100 | 10000 | 7500 | 6500 | |
| ERZE14A331S1 | E14331 | ○☆☆◇◆ | 330 (297 to 363) | 210 | 270 | 545 | 100 | 10000 | 7500 | 6500 | AC 100 V to 120 V, Line-Line Applications |
| ERZE14A361S1 | E14361 | ○☆☆◇◆ | 360 (324 to 396) | 230 | 300 | 595 | 100 | 10000 | 7500 | 6500 | |
| ERZE14A391S1 | E14391 | ○☆☆◇◆ | 390 (351 to 429) | 250 | 320 | 650 | 100 | 10000 | 7500 | 6500 | Telephone Line Applications, (For DC 250 V Insulation Resistance Test) |
| ERZE14A431S1 | E14431 | ○☆☆◇◆ | 430 (387 to 473) | 275 | 350 | 710 | 100 | 10000 | 7500 | 6500 | |
| ERZE14A471S1 | E14471 | ○☆☆◇◆ | 470 (423 to 517) | 300 | 385 | 775 | 100 | 10000 | 7500 | 6500 | AC 100 V to 220 V, Line-Line and Line-Ground Applications |
| ERZE14A511S1 | E14511 | ○☆☆◇◆ | 510 (459 to 561) | 320 | 410 | 845 | 100 | 10000 | 7500 | 6500 | |
| ERZE14A561S1 | E14561 | ○☆☆◇◆ | 560 (504 to 616) | 350 | 450 | 930 | 100 | 10000 | 7500 | 6500 | AC 100 V to 240 V, Line-Line and Line-Ground Applications |
| ERZE14A621S1 | E14621 | ○☆☆◇◆ | 620 (558 to 682) | 385 | 505 | 1025 | 100 | 7500 | 7500 | 6500 | |
| ERZE14A681S1 | E14681 | ○☆☆◇◆ | 680 (612 to 748) | 420 | 560 | 1120 | 100 | 7500 | 7500 | 6500 | AC 380 V, Line-Line and Line-Ground Applications (For DC 500 V Insulating Test) |
| ERZE14A751S1 | E14751 | ○☆☆◇◆ | 750 (675 to 825) | 460 | 615 | 1240 | 100 | 7500 | 7500 | 6500 | |
| ERZE14A821S1 | E14821 | ○☆☆◇◆ | 820 (738 to 902) | 510 | 670 | 1355 | 100 | 7500 | 7500 | 6500 | AC 415 V, Line-Line and Line-Ground Applications (For DC 500 V Insulating Test) |
| ERZE14A911S1 | E14911 | ○☆☆◇◆ | 910 (819 to 1001) | 550 | 745 | 1500 | 100 | 7500 | 7500 | 6500 | |
| ERZE14A102S1 | E14102 | ○☆☆◇◆ | 1000 (900 to 1100) | 625 | 825 | 1650 | 100 | 7500 | 7500 | 6500 | AC 480 V, Line-Line and Line-Ground Applications (For DC 500 V Insulating Test) |
| ERZE14A112S1 | E14112 | ○☆☆◇◆ | 1100 (990 to 1210) | 680 | 895 | 1815 | 100 | 7500 | 7500 | 6500 | |

Maximum Allowable Voltage and Maximum Peak Current at 8/20 μ s(A) at 125 °C

○ : UL1449 (VZCA2/UL, VZCA8/C-UL), ☆ : VDE (IEC61051-1, -2, -2-2), ★ : VDE (IEC60950-1 Annex.Q, IEC62368-1 G8.2),

◇ : CQC (GB/T10193, GB/T10194), ◆ : CQC (GB4943.1, GB8898)

※ Approval number (File No.) of safety regulations are subject to revision without notice. Ask factory for a copy of the latest file No.

Series E14-S1

Ratings and Characteristics

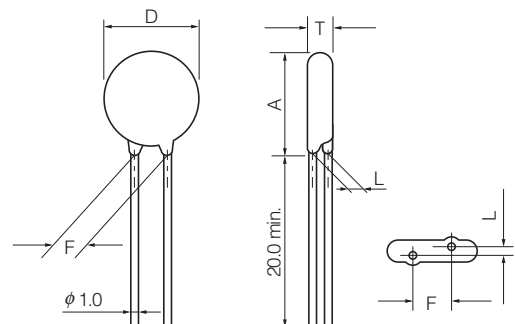
● Operating Temperature Range : -40 to 125 °C ● Storage Temperature Range : -40 to 125 °C

| STD Part No. | Varistor Voltage | Maximum Allowable Voltage | | Clamping Voltage (max.) *Ip | Rated Power | Maximum Energy | | Maximum Peak Current (8/20 μs) | | | Capacitance (max.) at 1 kHz (pF) |
|----------------------|-------------------|---------------------------|-----|-----------------------------|-------------|----------------|--------|--------------------------------|------------------|------------------|-------------------------------------|
| | | | | | | (10/1000 μs) | (2 ms) | 85 °C 1 time | 125 °C 1 time | 125 °C 2 time | |
| | | | | | | (J) | (J) | (A) | (A) | (A) | |
| V _{1mA} (V) | ACrms (V) | DC (V) | (V) | (W) | (J) | (J) | (A) | (A) | (A) | | |
| ERZE14A201S1 | 200(185 to 225) | 130 | 170 | 340 | 1.0 | 140 | 100 | 10000 | 7500 | 6500 | 1300 |
| ERZE14A221S1 | 220(198 to 242) | 140 | 180 | 360 | 1.0 | 155 | 110 | 10000 | 7500 | 6500 | 1200 |
| ERZE14A241S1 | 240(216 to 264) | 150 | 200 | 395 | 1.0 | 168 | 120 | 10000 | 7500 | 6500 | 1100 |
| ERZE14A271S1 | 270(247 to 303) | 175 | 225 | 455 | 1.0 | 190 | 135 | 10000 | 7500 | 6500 | 1000 |
| ERZE14A331S1 | 330(297 to 363) | 210 | 270 | 545 | 1.0 | 228 | 160 | 10000 | 7500 | 6500 | 900 |
| ERZE14A361S1 | 360(324 to 396) | 230 | 300 | 595 | 1.0 | 255 | 180 | 10000 | 7500 | 6500 | 900 |
| ERZE14A391S1 | 390(351 to 429) | 250 | 320 | 650 | 1.0 | 275 | 195 | 10000 | 7500 | 6500 | 800 |
| ERZE14A431S1 | 430(387 to 473) | 275 | 350 | 710 | 1.0 | 303 | 215 | 10000 | 7500 | 6500 | 800 |
| ERZE14A471S1 | 470(423 to 517) | 300 | 385 | 775 | 1.0 | 350 | 250 | 10000 | 7500 | 6500 | 750 |
| ERZE14A511S1 | 510(459 to 561) | 320 | 410 | 845 | 1.0 | 382 | 273 | 10000 | 7500 | 6500 | 700 |
| ERZE14A561S1 | 560(504 to 616) | 350 | 450 | 930 | 1.0 | 382 | 273 | 10000 | 7500 | 6500 | 700 |
| ERZE14A621S1 | 620(558 to 682) | 385 | 505 | 1025 | 1.0 | 382 | 273 | 7500 | 7500 | 6500 | 650 |
| ERZE14A681S1 | 680(612 to 748) | 420 | 560 | 1120 | 1.0 | 382 | 273 | 7500 | 7500 | 6500 | 600 |
| ERZE14A751S1 | 750(675 to 825) | 460 | 615 | 1240 | 1.0 | 420 | 300 | 7500 | 7500 | 6500 | 530 |
| ERZE14A821S1 | 820(738 to 902) | 510 | 670 | 1355 | 1.0 | 460 | 325 | 7500 | 7500 | 6500 | 500 |
| ERZE14A911S1 | 910(819 to 1001) | 550 | 745 | 1500 | 1.0 | 510 | 360 | 7500 | 7500 | 6500 | 400 |
| ERZE14A102S1 | 1000(900 to 1100) | 625 | 825 | 1650 | 1.0 | 565 | 400 | 7500 | 7500 | 6500 | 400 |
| ERZE14A112S1 | 1100(990 to 1210) | 680 | 895 | 1815 | 1.0 | 620 | 440 | 7500 | 7500 | 6500 | 350 |

*Ip Measuring current of clamping voltage : 100 A

Dimensions in mm (not to scale)

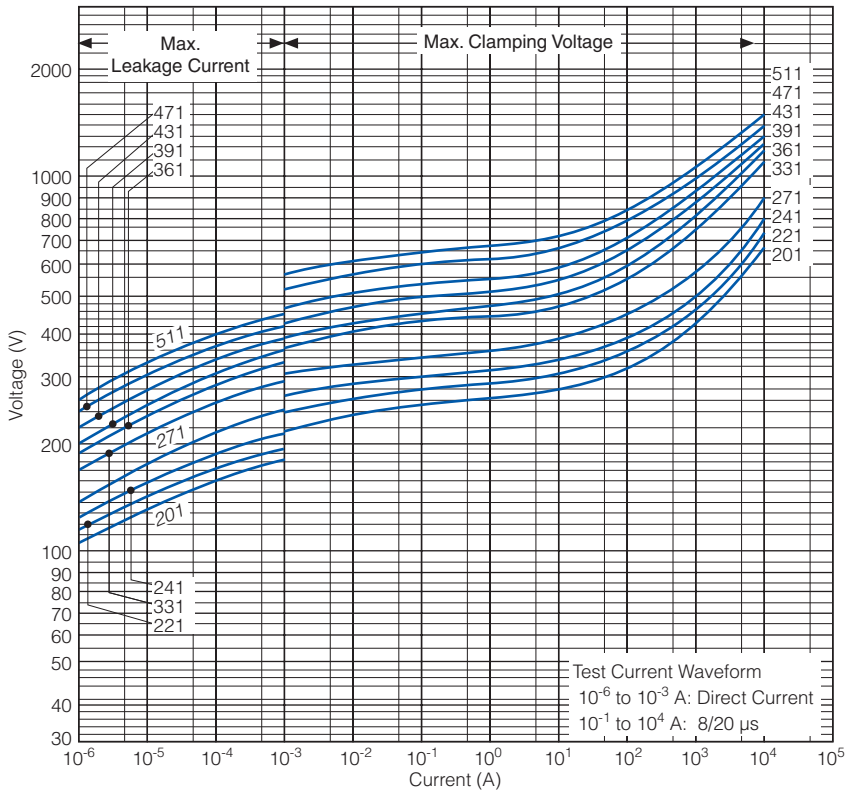
| STD Part No. | D max. | T max. | F±1.0 | A max. | L±1.0 |
|--------------|--------|--------|-------|--------|-------|
| ERZE14A201S1 | 16.5 | 5.2 | 10.0 | 20.0 | 2.1 |
| ERZE14A221S1 | 16.5 | 5.3 | 10.0 | 20.0 | 2.2 |
| ERZE14A241S1 | 16.5 | 5.4 | 10.0 | 20.0 | 2.3 |
| ERZE14A271S1 | 16.5 | 5.6 | 10.0 | 20.0 | 2.5 |
| ERZE14A331S1 | 16.5 | 5.9 | 10.0 | 20.0 | 2.8 |
| ERZE14A361S1 | 16.5 | 6.1 | 10.0 | 20.0 | 3.0 |
| ERZE14A391S1 | 16.5 | 6.2 | 10.0 | 20.0 | 3.1 |
| ERZE14A431S1 | 16.5 | 6.4 | 10.0 | 20.0 | 3.3 |
| ERZE14A471S1 | 16.5 | 6.6 | 10.0 | 20.0 | 3.5 |
| ERZE14A511S1 | 16.5 | 6.8 | 10.0 | 20.0 | 3.7 |
| ERZE14A561S1 | 16.5 | 7.2 | 10.0 | 20.0 | 4.0 |
| ERZE14A621S1 | 17.5 | 7.5 | 10.0 | 20.5 | 4.4 |
| ERZE14A681S1 | 17.5 | 7.8 | 10.0 | 20.5 | 4.7 |
| ERZE14A751S1 | 17.5 | 8.2 | 10.0 | 20.5 | 5.1 |
| ERZE14A821S1 | 17.5 | 8.5 | 10.0 | 20.5 | 5.4 |
| ERZE14A911S1 | 17.5 | 9.0 | 10.0 | 20.5 | 5.9 |
| ERZE14A102S1 | 17.5 | 9.5 | 10.0 | 20.5 | 6.4 |
| ERZE14A112S1 | 17.5 | 10.1 | 10.0 | 20.5 | 7.2 |



Typical Characteristics

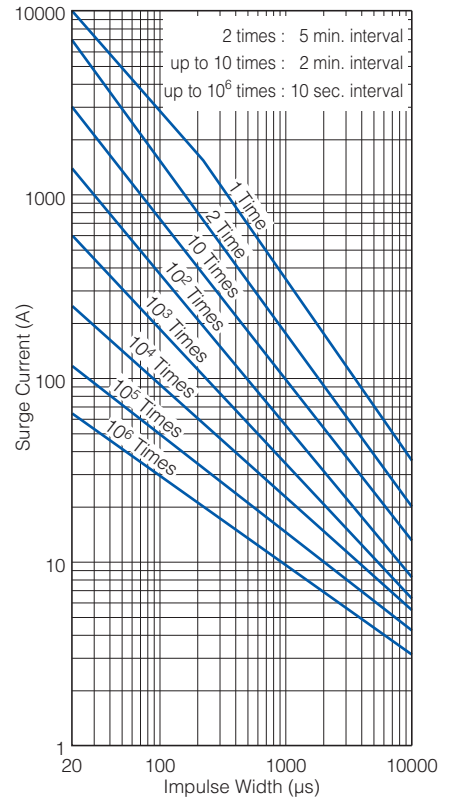
Voltage vs. Current

ERZE14A201S1 to ERZE14A511S1

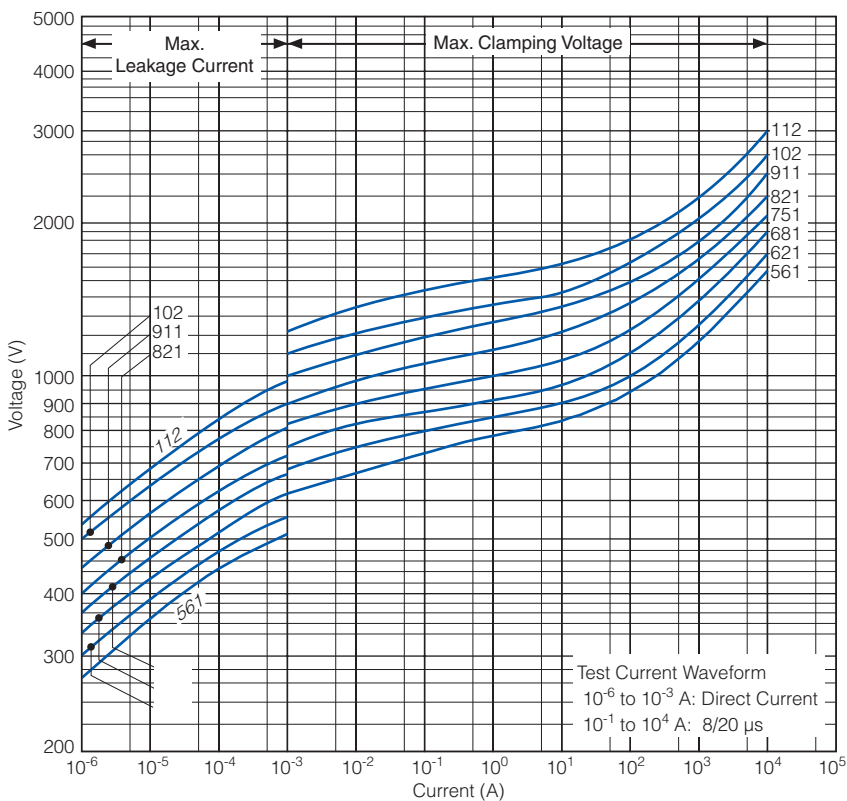


Impulse Derating (Relation between impulse width and impulse current multiple)

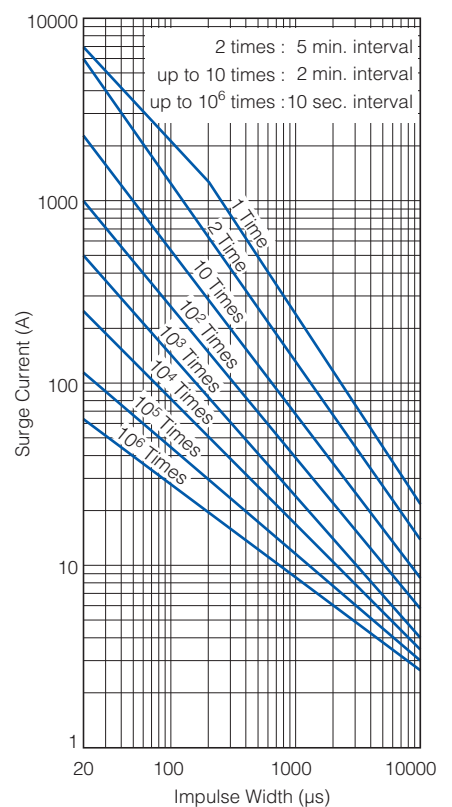
ERZE14A201S1 to ERZE14A511S1



ERZE14A561S1 to ERZE14A112S1



ERZE14A561S1 to ERZE14A112S1

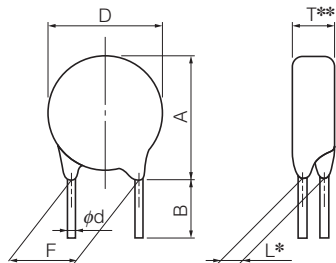


Straight Leads Cut Type (Bulk Type)

Ratings and Characteristics

* Refer to bulk standard type part no.

Dimensions in mm (not to scale)



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

Unit : mm

| Series | E14-S1 | |
|----------------------------|--|--|
| Symbol | Varistor Voltage | Varistor Voltage |
| | 201 to 561 | 621 to 112 |
| D | 16.5 max. | 17.5 max. |
| A | 20.0 max. | 20.5 max. |
| F | 10.0±1.0 | 10.0±1.0 |
| ϕd | 1.00 ^{+1.00} _{-0.05} | 1.00 ^{+1.00} _{-0.05} |
| B | 4.0±1.5 | 4.0±1.5 |
| Standard Products Part No. | ERZE14A□□□SC | |

Application Note for Safety Standards (For Series E, E-S1)

- Approvals products lists in "Reference Guide to Standard Products"
- UL and VDE : Registered in "Type Name" , it isn't registered in "Panasonic Part No."
- CQC : Registered in "Panasonic Part No."
- "Rated Voltages" are specified for UL recognized components in list shown below.

The AC Rated Voltage and Maximum Allowable Voltage

| Type Name | Maximum Allowable Voltage | | Rated Voltage (Vrms) |
|-----------|---------------------------|--------|----------------------|
| | ACrms (V) | DC (V) | UL1449 |
| E*201 | 130 | 170 | 118 |
| E*221 | 140 | 180 | 127 |
| E*241 | 150 | 200 | 136 |
| E*271 | 175 | 225 | 159 |
| E*331 | 210 | 270 | 189 |
| E*361 | 230 | 300 | 209 |
| E*391 | 250 | 320 | 227 |
| E*431 | 275 | 350 | 250 |
| E*471 | 300 | 385 | 272 |
| E*511 | 320 | 410 | 291 |
| E*561 | 350 | 450 | 320 |
| E*621 | 385 | 505 | 350 |
| E*681 | 420 | 560 | 381 |
| E*751 | 460 | 615 | 418 |
| E*821 | 510 | 670 | 463 |
| E*911 | 550 | 745 | 500 |
| E*102 | 625 | 825 | 568 |
| E*112 | 680 | 895 | 600 |

*: 5 series is blank, 7 series is 7, 8 series is 8, 10 series is 10, 11 series is 11, 14 series is 14

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