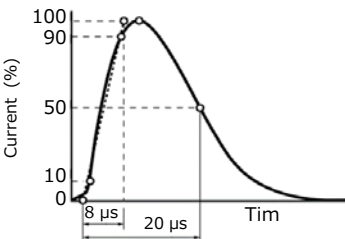


**Performance Characteristics (Series E)**

Characteristics		Test Methods/Description	Specifications																													
Standard Test Condition		Electrical measurements (initial/after tests) shall be conducted at temperature of 5 to 35 °C, relative humidity of maximum 85 %.	—																													
Varistor Voltage		The voltage between two terminals with the specified measuring current 1mA DC applied is called $V_1$ or $V_{1mA}$ . The measurement shall be made as fast as possible to avoid heat affection.	To meet the specified value.																													
Maximum Allowable Voltage		The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously.																														
Clamping Voltage		The maximum voltage between two terminals with the specified standard impulse current (8/20 $\mu$ s) illustrated below applied. 																														
Rated Power		The power that can be applied in the specified ambient temperature.																														
Maximum Energy		The maximum energy within the varistor voltage change of $\pm 10$ % when a single impulse current of 2 ms or 10/1000 $\mu$ s is applied.																														
Electrical	Maximum Peak Current (Withstanding Surge Current) 2 times	The maximum current within the varistor voltage change of $\pm 10$ % when a standard impulse current of 8/20 $\mu$ s is applied two times with an interval of 5 minutes.																														
	1 time	The maximum current within the varistor voltage change of $\pm 10$ % with a single standard impulse current of 8/20 $\mu$ s is applied.																														
Temperature Coefficient of Varistor Voltage		$\frac{V_{1mA} \text{ at } 85^\circ\text{C} - V_{1mA} \text{ at } 25^\circ\text{C}}{V_{1mA} \text{ at } 25^\circ\text{C}} \times \frac{1}{60} 100(\%/^\circ\text{C})$	0 to -0.05 %/ °C max.																													
Capacitance		Capacitance shall be measured at 1 kHz $\pm 10$ %, 1 Vrms max. (1 MHz $\pm 10$ % below 100 pF), 0 V bias and 20 $\pm 2$ °C.	To meet the specified value.																													
Withstanding Voltage (Body Insulation)		AC 1500 Vrms shall be applied between both terminals of the specimen connected together and metal foil closely wrapped round its body for 1 minute.	No breakdown																													
Impulse Life		The change of VC shall be measured after the impulse current listed below is applied 10000 or 100000 times continuously with the interval of 10 seconds at room temperature. <table border="1" data-bbox="406 1666 1181 2052"> <thead> <tr> <th rowspan="2">Item</th> <th colspan="2">Impulse Life</th> </tr> <tr> <th>( I )</th> <th>( II )</th> </tr> <tr> <th>Times</th> <td><math>\times 10^4</math> Times</td> <td><math>\times 10^5</math> Times</td> </tr> <tr> <th>Current</th> <th colspan="2">Impulse Current</th> </tr> </thead> <tbody> <tr> <td>Part No. ERZE05A201 to ERZE05A471</td> <td>50 A (8/20 <math>\mu</math>s)</td> <td>35 A (8/20 <math>\mu</math>s)</td> </tr> <tr> <td>ERZE07A201 to ERZE07A471</td> <td>100 A (8/20 <math>\mu</math>s)</td> <td>70 A (8/20 <math>\mu</math>s)</td> </tr> <tr> <td>ERZE08A201 to ERZE08A751</td> <td>150 A (8/20 <math>\mu</math>s)</td> <td>85 A (8/20 <math>\mu</math>s)</td> </tr> <tr> <td>ERZE10A201 to ERZE10A112</td> <td>170 A (8/20 <math>\mu</math>s)</td> <td>90 A (8/20 <math>\mu</math>s)</td> </tr> <tr> <td>ERZE11A201 to ERZE11A112</td> <td>200 A (8/20 <math>\mu</math>s)</td> <td>110 A (8/20 <math>\mu</math>s)</td> </tr> <tr> <td>ERZE14A201 to ERZE14A112</td> <td>250 A (8/20 <math>\mu</math>s)</td> <td>120 A (8/20 <math>\mu</math>s)</td> </tr> </tbody> </table>	Item	Impulse Life		( I )	( II )	Times	$\times 10^4$ Times	$\times 10^5$ Times	Current	Impulse Current		Part No. ERZE05A201 to ERZE05A471	50 A (8/20 $\mu$ s)	35 A (8/20 $\mu$ s)	ERZE07A201 to ERZE07A471	100 A (8/20 $\mu$ s)	70 A (8/20 $\mu$ s)	ERZE08A201 to ERZE08A751	150 A (8/20 $\mu$ s)	85 A (8/20 $\mu$ s)	ERZE10A201 to ERZE10A112	170 A (8/20 $\mu$ s)	90 A (8/20 $\mu$ s)	ERZE11A201 to ERZE11A112	200 A (8/20 $\mu$ s)	110 A (8/20 $\mu$ s)	ERZE14A201 to ERZE14A112	250 A (8/20 $\mu$ s)	120 A (8/20 $\mu$ s)	$\Delta V_{1mA}/V_{1mA} \leq 0 \text{ to } +20\%$
Item	Impulse Life																															
	( I )	( II )																														
Times	$\times 10^4$ Times	$\times 10^5$ Times																														
Current	Impulse Current																															
Part No. ERZE05A201 to ERZE05A471	50 A (8/20 $\mu$ s)	35 A (8/20 $\mu$ s)																														
ERZE07A201 to ERZE07A471	100 A (8/20 $\mu$ s)	70 A (8/20 $\mu$ s)																														
ERZE08A201 to ERZE08A751	150 A (8/20 $\mu$ s)	85 A (8/20 $\mu$ s)																														
ERZE10A201 to ERZE10A112	170 A (8/20 $\mu$ s)	90 A (8/20 $\mu$ s)																														
ERZE11A201 to ERZE11A112	200 A (8/20 $\mu$ s)	110 A (8/20 $\mu$ s)																														
ERZE14A201 to ERZE14A112	250 A (8/20 $\mu$ s)	120 A (8/20 $\mu$ s)																														

## Performance Characteristics (Series E)

Characteristics	Test Methods/Description	Specifications																
Mechanical	Robustness of Terminations (Tensile) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Terminal diameter</th> <th>Force</th> </tr> </thead> <tbody> <tr> <td>ø0.6 mm, ø0.8 mm</td> <td>9.8 N</td> </tr> <tr> <td>ø1.0 mm</td> <td>19.6 N</td> </tr> </tbody> </table>	Terminal diameter	Force	ø0.6 mm, ø0.8 mm	9.8 N	ø1.0 mm	19.6 N	After gradually applying the force specified below and keeping the unit fixed for 10 seconds, the terminal shall be visually examined for any damage.	No remarkable mechanical damage									
	Terminal diameter	Force																
	ø0.6 mm, ø0.8 mm	9.8 N																
	ø1.0 mm	19.6 N																
	Robustness of Terminations (Bending) <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Terminal diameter</th> <th>Force</th> </tr> </thead> <tbody> <tr> <td>ø0.6 mm, ø0.8 mm</td> <td>4.9 N</td> </tr> <tr> <td>ø1.0 mm</td> <td>9.8 N</td> </tr> </tbody> </table>	Terminal diameter	Force	ø0.6 mm, ø0.8 mm	4.9 N	ø1.0 mm	9.8 N	The unit shall be secured with its terminal kept vertical and the force specified below shall be applied in the axial direction. The terminal shall gradually be bent by 90 ° in one direction, then 90 ° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined.										
Terminal diameter	Force																	
ø0.6 mm, ø0.8 mm	4.9 N																	
ø1.0 mm	9.8 N																	
Vibration	After repeatedly applying a single harmonic vibration (amplitude: 0.75 mm, double amplitude: 1.5 mm) with 1 minute vibration frequency cycles (10 Hz to 55 Hz to 10 Hz) to each of three perpendicular directions for 2 hours. Thereafter, the unit shall be visually examined.																	
Solderability	After dipping the terminals to a depth of approximately 3 mm from the body in a soldering bath of 235±5 °C for 2±0.5 seconds, the terminal shall be visually examined.	Approximately 95 % of the terminals shall be covered with new solder uniformly.																
Resistance to Soldering Heat	After each lead shall be dipped into a solder bath having a temperature of 260±5 °C to a point 2.0 to 2.5 mm from the body of the unit, using shielding board (t=1.5 mm), be held there for 10±1 s and then be stored at room temperature and normal humidity for 1 to 2 hours. The change of $V_{CmA}$ and mechanical damages shall be examined.	$\Delta V_{1mA}/V_{1mA} \leq \pm 5 \%$																
Environmental	High Temperature Storage/Dry Heat	The specimen shall be subjected to 125±2 °C for 1000 hours in a thermostatic bath without load and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of $V_{CmA}$ shall be measured.	$\Delta V_{1mA}/V_{1mA} \leq \pm 5 \%$															
	Humidity	The specimen shall be subjected to 40±2 °C, 90 to 95 % RH for 1000 hours without load and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of $V_{CmA}$ shall be measured.	$\Delta V_{1mA}/V_{1mA} \leq \pm 5 \%$															
	Temperature Cycle	The temperature cycle shown below shall be repeated five cycles and then stored at room temperature and normal humidity for 1 to 2 hours. The change of $V_{CmA}$ and mechanical damage shall be examined. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>15±3</td> </tr> <tr> <td>3</td> <td>125±2</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>15±3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-40±3	30±3	2	Room temperature	15±3	3	125±2	30±3	4	Room temperature	15±3	$\Delta V_{1mA}/V_{1mA} \leq \pm 5 \%$ No remarkable mechanical damage
	Step	Temperature (°C)	Period (minutes)															
	1	-40±3	30±3															
2	Room temperature	15±3																
3	125±2	30±3																
4	Room temperature	15±3																
High Temperature Load/Dry Heat Load	After being continuously applied the Maximum Allowable Voltage at 85±2 °C for 1000 hours, the specimen shall be stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of $V_{CmA}$ shall be measured.	$\Delta V_{1mA}/V_{1mA} \leq \pm 10 \%$																
Damp Heat Load/ Humidity Load	The specimen shall be subjected to 40±2 °C, 90 to 95 % RH and the Maximum Allowable Voltage for 1000 hours and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of $V_{CmA}$ shall be measured.																	
Low Temperature Storage/Cold	The specimen shall be subjected to -40±2 °C without load for 1000 hours and then stored at room temperature and normal humidity for 1 to 2 hours. Thereafter, the change of $V_{CmA}$ shall be measured.	$\Delta V_{1mA}/V_{1mA} \leq \pm 5 \%$																