

■ Performance Characteristics (Type E)

Characteristics		Test Methods/Description		Specifications															
Standard Test Condition		Electrical characteristics shall be measured at following conditions (Temperature: 5 to 35 °C, Humidity: Max. 85 %)		_____															
Electrical	Varistor Voltage	The voltage between two terminals with the specified measuring current C_{mA} DC applied is called V_c or $V_{C_{mA}}$. The measurement shall be made as fast as possible to avoid heat affection.		To meet the specified value.															
	Maximum Allowable Voltage	The maximum sinusoidal wave voltage (rms) or the maximum DC voltage that can be applied continuously.																	
	Clamping Voltage	The maximum voltage between two terminals with the specified standard impulse current (8/20 μ s).																	
	Rated Power	The maximum power that can be applied within the specified ambient temperature.																	
	Energy	The maximum energy within the varistor voltage change of ± 10 % when one impulse of 2 ms is applied.																	
	Maximum Peak Current	2 times	The maximum current within the varistor voltage change of ± 10 % with the standard impulse current (8/20 μ s) applied two times with an interval of 5 minutes.																
		1 time	The maximum current within the varistor voltage change of ± 10 % with the standard impulse current (8/20 μ s) applied one time.																
	Temperature Coefficient of Varistor Voltage	$\frac{V_c \text{ at } 70^\circ\text{C} - V_c \text{ at } 20^\circ\text{C}}{V_c \text{ at } 20^\circ\text{C}} \times \frac{1}{50} \times 100 (\%/^\circ\text{C})$			0 to -0.05 %/ $^\circ\text{C}$ max.														
	Impulse Life	The change of V_c shall be measured after the impulse listed below is applied 10000 times continuously with the interval of ten seconds at room temperature.			$\Delta V_{1\text{mA}}/V_{1\text{mA}} < \pm 10$ %														
			<table border="1"> <tr> <td>20 Series</td> <td>200 A (8/20 μs)</td> </tr> <tr> <td>32 Series</td> <td>300 A (8/20 μs)</td> </tr> </table>			20 Series	200 A (8/20 μ s)	32 Series	300 A (8/20 μ s)										
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Withstanding Voltage (Body Insulation)	The commercial frequency voltage of AC 2.5 kV shall be applied between terminals and the bottom of the unit for one minute.		No remarkable damage																
Mechanical	Robustness of Terminations (Tensile)	After gradually applying the load of 49 N (5 kgf) and keeping the unit fixed for 10 seconds in an axial direction, the terminal shall be visually examined for any damage.		No remarkable damage															
	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 damage of the terminals is visually examined.																	
Environmental	Dry Heat/ High Temperature Storage	<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature ($^\circ\text{C}$)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25_{-3}^0</td> <td>30_{0}^{+3}</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>3 max.</td> </tr> <tr> <td>3</td> <td>85_{0}^{+3}</td> <td>30_{0}^{+3}</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>3 max.</td> </tr> </tbody> </table>		Step	Temperature ($^\circ\text{C}$)	Period (minutes)	1	-25_{-3}^0	30_{0}^{+3}	2	Room Temp.	3 max.	3	85_{0}^{+3}	30_{0}^{+3}	4	Room Temp.	3 max.	$\Delta V_{1\text{mA}}/V_{1\text{mA}} < \pm 5$ %
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Temperature Cycle	The temperature cycle shown below shall be repeated five times and then stored at room temperature and humidity for one to two hours. The change of V_c and mechanical damage shall be examined.		No remarkable damage $\Delta V_{1\text{mA}}/V_{1\text{mA}} < \pm 5$ %																
Dry Heat Load/ High Temperature Load	After being continuously applied the Maximum Allowable Voltage at 85 ± 5 $^\circ\text{C}$ for 500 hours, the specimen shall be stored at room temperature and humidity for one to two hours. Thereafter, the change of V_c shall be measured.		$\Delta V_{1\text{mA}}/V_{1\text{mA}} < \pm 10$ %																
Damp Heat/Humidity (Steady State)	The specimen shall be subjected to 40 ± 2 $^\circ\text{C}$, 90 to 95 %RH for 1000 hours without load and then stored at room temperature and humidity for one to two hours. Thereafter, the change of V_c shall be measured.		$\Delta V_{1\text{mA}}/V_{1\text{mA}} < \pm 5$ %																