



# SMD Transient Voltage Suppressors

## Reliability Experiment

The definition and test method of Varistor's main characteristics are illustrated below:

Experiment	Test Method and Description			
<i>High Temperature Storage/ Dry Heat</i>	The specimen shall be subjected to $150 \pm 2^\circ\text{C}$ for $1000 \pm 12$ hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. Therefore, the change of varistor voltage shall be measured.			
<i>Temperature Cycle</i>	The temperature cycle of specified temperature shall be repeated five times and then stored at room temperature and humidity for one or two hours. the change of varistor voltage and mechanical damage shall be examined.	Step	Temperature	Period
		1	$-40 \pm 3$	30Min $\pm$ 3
		2	Room Temperature	1~2 hours
		3	$125 \pm 2$	30Min $\pm$ 3
4	Room Temperature	1~2 hours		
<i>High Temperature Load/ Dry Heat Load</i>	After being continuously applied the maximum allowable voltage at $125 \pm 2^\circ\text{C}$ for $1000 \pm 2$ hours, the specimen shall be stored at room temperature and humidity for one or two hours, Therefore the change of varistor voltage should be measured.			
<i>Damp Heat Load/ Humidity Load</i>	The specimen should be subjected to $40 \pm 2^\circ\text{C}$ , 90 to 95% RH and the maximum allowable voltage for 1000 hours and then stored at room temperature and humidity for one or two hours. Therefore the change of varistor voltage should be measured.			
<i>Low Temperature Storage/ Cold</i>	The specimen should be subjected to $40 \pm 2^\circ\text{C}$ without load for 1000 hours and then stored at room temperature for one or two hours. Therefore the change of varistor voltage should be measured.			
Direct contact electrostatic discharge	1.Discharge: contact electrostatic discharge; 2.Voltage $\square$ 8KV $\square$ Level4 $\square$ 3.Polarity $\square$ +, - ; 4.Number: 10 times ; 5.Interval time $\square$ 1sec			
Direct air electrostatic discharge	1.Discharge: air electrostatic discharge; 2.Voltage $\square$ 15KV $\square$ Level4 $\square$ 3.Polarity $\square$ +, -; 4.Number: 10 times; 5.Interval time $\square$ 1~ 3sec			

Due to the unpredictable nature of transients, a transient voltage suppressor may be overloaded, although it was carefully selected. Overload may result in package rupture expulsion of hot material. For this reason the TVS should be physically shielded from adjacent components. The TVS can be additionally protected by a thermal fuse which is connected to the TVS body.