Spec. No. : 14D511K

RoHS Compliance

DAIN

Specification

Supplier B.P.IMPEX PRIVATE LIMITED

Part Name MOV

Model 14D511K

Material Number

Customer Material Number

Manufacturer			Customer		
Edition	Verified	Approved	Admit	Verified	Approved

B. P. IMPEX PVT. LTD.
206, 9/2, EAST PATEL NAGAR,
NEW DELHI-110008

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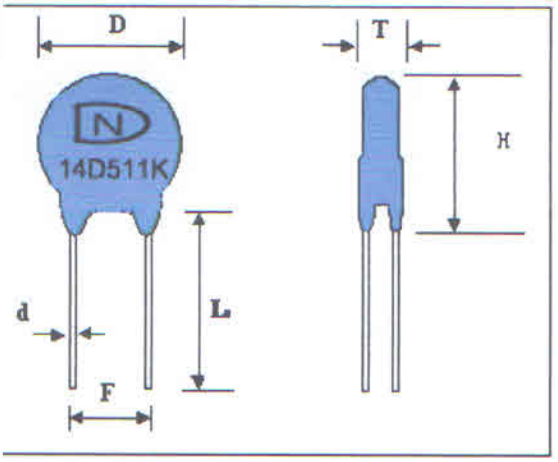
1. APPEARANCE

1-1. Dimensions (mm)



DMax: 16.0	TMax: 5.5	F: 7.5±1.0
d: 0.75±0.05	L: ≥20	HMax: 19.0

1-2. Marking

1-3.Coating

☐ No coating

■ Coating

Material

☐ PF resin

☐ Silicon

■ Epoxy

☐ Others

Color

☐ Green

☐ Red

☐ Tan

☐ Black

■ Blue

1-4. Leads

☐ Tin – plated copper wire

■ Tin-plated steel wire

■ Straight ☐ Axis-formed

☐ In-Forming ☐ Out-Forming

2.Parameters of Technology			
Varistor Voltage (V)	459--561		See Appendix Describes in Details
Rated Power (W)	0.60		See Appendix Describes in Details
Max. Claping Voltage (V)	Vc(V)	845	See Appendix Describes in Details
	Ip(A)	25	
Max. Allowable Voltage (V)	AC	320	See Appendix Describes in Details
	DC	415	
Energy (J)	10/1000us	190	See Appendix Describes in Details
	2ms	136	
Max. Peak Current(8/20us) (A)	1time	4500	See Appendix Describes in Details
	2time	2500	
Operating Temperature Range (°C)	-40°C--85°C		

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3. INSPECTION

3-1. Lot Inspection

Sampling with IEC410 / DIN ISO 2859-1 (GB/T2828.1-2003); Testing with IEC410/ DIN ISO 2859-1 (GB/T2828.1-2003)

4. STORAGE CONDITIONS

4-1.Temperature: -10℃～+40℃

4-2. Humidity: ≤70%RH

4-3. Term: ≤6 months (First-in/ First-out)

4-4. Place:

Do not exposing the components to the following conditions, otherwise, it may result in deterioration of characteristics.

1) Corrosive gas or deoxidizing gas.

2) Flammable and explosive gases.

3) Oil, water and chemical liquid.

4) Under the sunlight.

4-5. Handling after seal open: After unpacking of the minimum package, reseal it promptly or store it inside a sealed container with a drying agent.

5. WARNING

THE varistor shall not be operated beyond the specified Ratings and Environmental Conditions in the Catalog or the Specifications to prevent them from deterioration, breakdown, flaming or glowing. Following "Precautions for Safety" and "Application Notes" shall be taken in your major consideration.

5．1 Precautions for Safety

1） The temperature of the working environment of the varistor must fall in the range required by technical conditions.

2）The varistor shall not be operated exceeding the specified Max. Allowable Voltage in the Catalog or the Specification.

3) The varistor shall not be operated beyond the "Max. Peak Current Rations" in the Catalog.

4） It is recommended that the varistor shall be located 3mm away from the hest generating or combustible components.

5．2 Warning:

When the varistor are applied between alive part and a metallic chassis of equipment, following safety countermeasures shall be taken to protect human from electric shock.

1） The metallic chassis shall be earthed to the ground.

2） A protective device against electric leakage must be installed in the equipment, or alliteratively, a thermal type fuse should be attached closely to the varistor and series connected within its circuit.

3） The live part shall be equipped with a protective cover for preventing electric shock.

5.3 Applicative Notes

Protective Devices for Varistor precause measures are to be taken against the accident damage.

1) In case of "Across the Line Use", the Varistor shall be protected by connecting a ground fault circuit interrupter of fusing.in series to the devices.

2) In case of "Line to Ground Use" the short-circuit of the varistor may not blow the current type fuse due to the grounding.

Resistance (between Line and Ground) which may cause flaming or burnout of the devices in the worst case。 Following safety countermeasures(a or b) are recommended.

a) Connecting a "leakage current circuit breaker" in series to the varistor to be protected.

b) Use current type fuses and thermal type fuse, which are them ally, coupled with the varistor each other.

5.4 Selection of Varistor Voltage Rating

1) General Precautions

In selection of Varistor Voltage Rating for line protection, following general precautions shall be taken in your consideration.

a) Maximum operating voltage shall be lower than the specified "Maximum Allowable voltage " of the varistor applied.

b) In selection of the varistor, reasonable margin is required against fluctuation of the primary line (or circuit) voltage. Special consideration must be giver to load unbalance of separately wired loads, short circuit between the live line and the neutral line or LC resonance at switching for a capacitive productive load.

2) Axross-the-Line Use(Line to Line Surge Protection) select the varistor recommended in Table 1.

NOTES: For some electric equipments working under the phase voltage, the endurance of the short –time line voltage shall be taken into consideration during the design, and for such case, please select the varistor with"*"。

3) Line to Ground Use (Line to Ground Surge Protection)selects the varistor recommended in Table1.

Table 1

Line—Line Surge Protection		Line—Ground Surge Protection	
AC100V	MYG_D271	AC100	MYG_D821
AC120V	MYG_D331	AC120	MYG_D821
AC220	MYG_D471 MYG_D511 MYG_D561 MYG_D681	AC220	MYG_D182
AC380	MYG_D821 MYG_D921	AC380	MYG_D182

NOTES:"_": varistor diameter: 05、07、10、14、20（05D、07D、10D、14D、20D）

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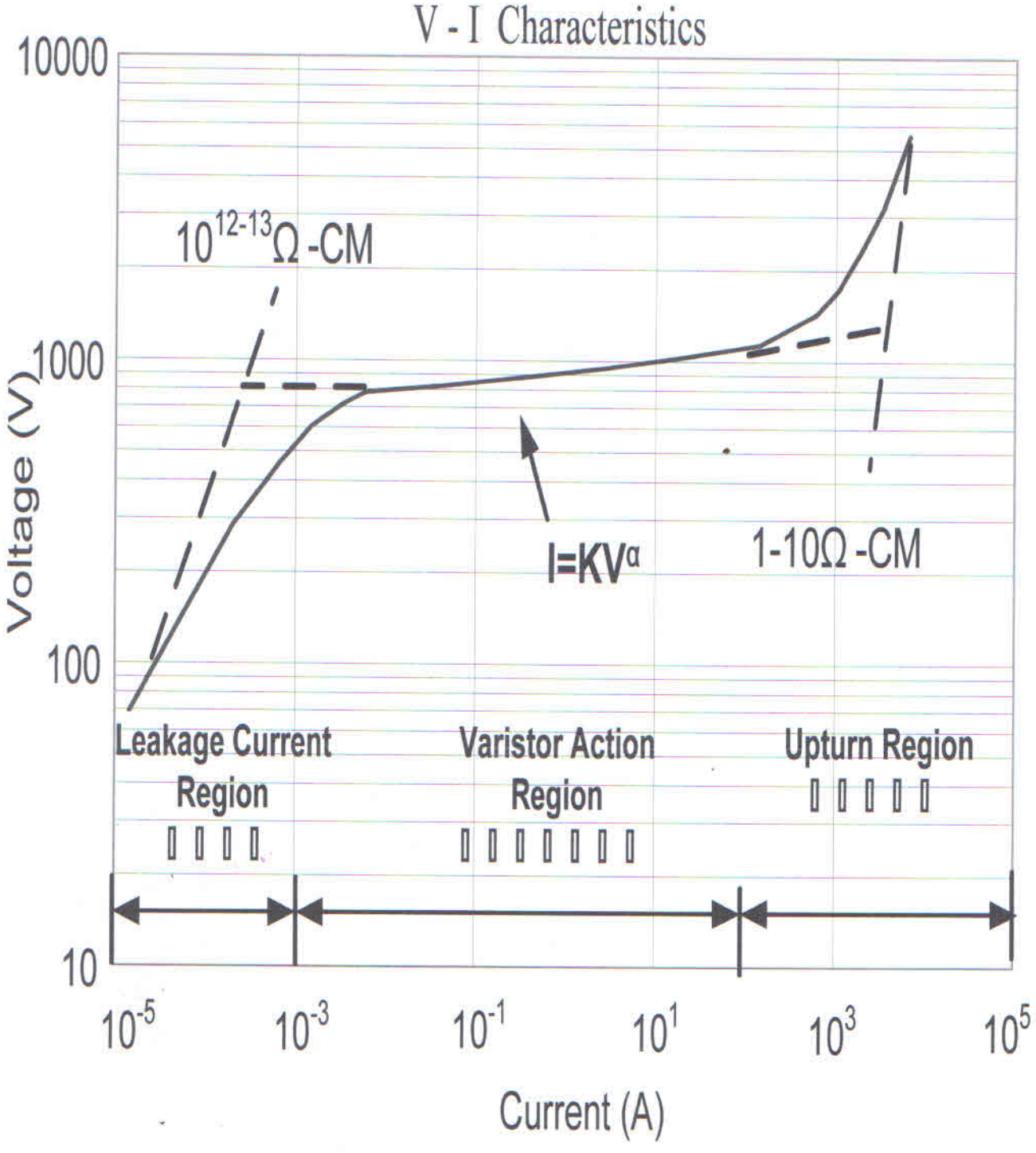
6. V/I curve V/I



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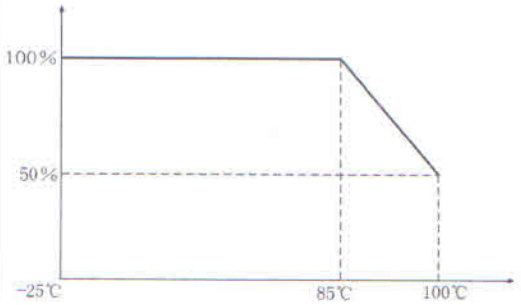
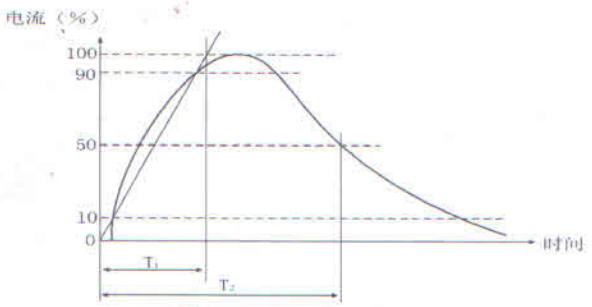
1.1 VARISTORS ELECTRICAL CHARACTERISTICS

Technical term	Test Methods Description	Test Equipment	Specifications
Varistors Voltage	The voltage between two terminals with the specified measuring current 1mA DC applied is called V1mA,The measurement shall be made as fast as possible to avoid heat affection.	MYZ-5	The usual tolerance on varistors voltage is K：±10%; L：±15%。
MAX Continuous AC or DC Voltage	 最大允许使用电压降额图 The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously in the specified operating temperature range.	MAX Continuous AC Voltage ≈0.63 multility Varistor voltage	The practical AC Voltage ≈0.45 multility Varistor voltage
Leakage current	The current passing through the varistors at the maximum continuous DC voltage.	MYZ-5	（μA） Leakage current in the ratings（μA）
MAX Clamping voltage	 8/20μS Waveform Icon The peak voltage at class current (Standing surge current waveform is 8/20μS). The class current is a peak value of current, which is 1/10 of the maximum peak current for 100 impulses at per minute for 8/20μS.	T1=8μS±10% T2=20μS±10% MYZ-5	To meet the specified value

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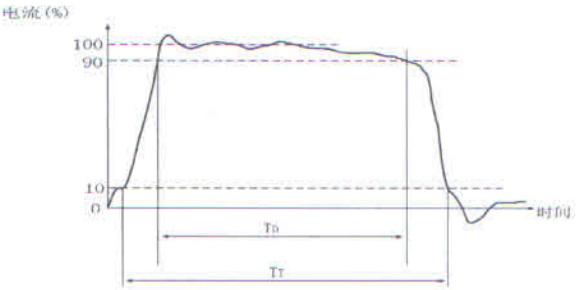
1.2 VARISTORS ELECTRICAL CHARACTERISTICS

Technical term	Test Methods Description	Test Equipment	Specifications
Energy	(J) =k * Ip * Vc * 10^{-6} k — 2000 μ S, k=2000; 10/1000 μ S k=1391; Ip — 2000 μ S 10/1000 μ S; Vc —2000 u S 10/1000 μ S The maximum energy within the varistor voltage change of ±10% when one impulse of 2000μS or 10/1000 μ S is applied. For the 2mS waveform: J=2*Ip* Vc*10^{-3} For the 10/1000 μ S waveform: J=1391*Ip* Vc*10^{-6} Where J -- Energy absorbed in joules. Ip -- Maximum let-through current in amps. Vc-- Measured clamping voltage in volts.  2000 μ S 方波波形图示	2000 μ S: TD=2000 ± 10% μ S TT≤3000 μ S MYZ-5 10/1000 M s T1=10 ± 10% μ S T2=1000 ± 100 10% μ S	Varistor without the appearance of damage See specification tables. Δ V1mA /V1mA≤10%.
Maximum Peak current	The maximum current within the varistors voltage change of ±10% with the standard impulse current (8/20 μ S) applied one time.	MYZ-5	See specification tables. Δ V1mA /V1mA≤10%.
Varistors voltage Temperature Coefficient	$\frac{U1mA\ (85℃) - U1mA\ (25℃)}{U1mA\ (25℃)} \times \frac{1}{60} \times 100\%$	THS-A5P-150	≤-0. 05 %/℃
Capacitance	Typical value measured at 1Vrms and test frequency of 1kHz	CY 2646A	See specification tables.

Standard test condition Temperature: 15℃-35℃; Relative humidity: 45%-75%; Air pressure: 86 Pa~106kPa .

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2. VARISTORS TECHNOLOGIC & MECHANICAL CHARACTERISTICS

Technical term	Test Methods Description	Test Equipment	Specifications
Solder ability	After dipping the terminals to a depth of immersion 3.5-0.5 mm from the body in a soldering bath temperature 235℃±5℃ for 2± 0.5seconds, the terminal shall be visually examined.	Tin Stove	Approximately 95% of the terminals shall be covered with solder uniformly.
Resistance to soldering heat	After each lead shall be dipped into a solder bath having a temperature 260℃±5℃,to a point 2.0 to 2.5mm from the body of the unit. Using shielding. Board(t=1.5mm) ,be NEWd there for specified time (5D series: 5±1 seconds and other series:10 s),and then be stored at room temperature and humidity for 1 to 2 hours. The change of V1mA and mechanical damages are examined.	Tin Stove	No outstanding damage. ΔV1mA /V1mA≤±5%.
Solvent resistance of marking	Solvent: alcohol Rubbing material: cotton wool Thereafter, visual examination and the change of V1mA shall be examined.	Tampons Alcohol	Legible marking.
Component Solvent resistance	Solvent:70±5% and F113+30±5% strang third mellow mixture, Solvent temperature:23^{+5}℃, 5±0.5Min. Recovery: 4hours. Thereafter, visual examination and the change of V1mA shall be examined.	MYZ-5	No outstanding damage. △V1mA /V1mA≤±5%.
Robustness of terminations tensile bending	After gradually applying the force specified below and keeping the unit fixed for ten seconds. The terminal shall be visually examined for and damage. Lead diameter (mm): 0.6 0.8 1.0 Force (N): 1 10 20	MYZ-5	No outstanding damage. △V1mA /V1mA≤±5%.
vibration	Subjected to simple harmonic motion of 0.75mm amplitude 1.5mm maximum total excursion between limits of 10-55Hz.Frequency scan shall be traversed in one minute, This motion shall then be applied for period of two hours in each of three mutually perpendicular directions. The change shall be measured and meet the requirement with no outstanding damage.	Collision Taiwan	No outstanding damage. ΔV1mA /V1mA≤±5%.

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3.1 VARISTORS SECURITY AND ENVIRONMENTAL TEST

<table>
<tr><th>Technical term</th><th>Test Methods Description</th><th>Test Equipment</th><th>Specifications</th></tr>
<tr>
<td>Surge Life</td>
<td>The change of Δ V1mA shall be measured.
After the impulse listed below is applied 10,000 times. Continuously with the interval of ten seconds at room temperature.
<table>
<tr><td rowspan="2">5D</td><td>18v--68v</td><td>2A</td></tr>
<tr><td>82v--680v</td><td>5A</td></tr>
<tr><td rowspan="2">7D</td><td>18v--68v</td><td>9A</td></tr>
<tr><td>82v--820v</td><td>18A</td></tr>
<tr><td rowspan="2">10D</td><td>18v--68v</td><td>18A</td></tr>
<tr><td>82v--1800v</td><td>35A</td></tr>
<tr><td rowspan="2">14D</td><td>18v--68v</td><td>35A</td></tr>
<tr><td>82v--1800v</td><td>75A</td></tr>
<tr><td rowspan="2">20D</td><td>18v--68v</td><td>75A</td></tr>
<tr><td>82v--1800v</td><td>150A</td></tr>
<tr><td rowspan="2">25D
以上</td><td>18v--68v</td><td>110A</td></tr>
<tr><td>82v--1800v</td><td>225A</td></tr>
</table>
</td>
<td>Pulser
MYZ-5
Varistor Three Parametic Tester</td>
<td>No outstanding damage.
Δ V1mA /V1mA ≤ ± 10%.</td>
</tr>
<tr>
<td>Temperature Cycle</td>
<td>The Varistor follows removed after Temperature cycling, in place for more than one hour at room Temperature, within 24 hours measure the varistor voltage
<table>
<tr><th>Order</th><th>Temperature</th><th>Time</th></tr>
<tr><td>1</td><td>-40±3℃</td><td>30 Min</td></tr>
<tr><td>2</td><td>Room Temp</td><td>15 Min</td></tr>
<tr><td>3</td><td>+85±2℃</td><td>30 Min</td></tr>
<tr><td>4</td><td>Room Temp</td><td>15 Min</td></tr>
</table>
Cycles 5 times
Condition the specimen to each temperature from step 1 to step 4 in this order for the period shown in the table of specifications. The change of V1mA and mechanical damage shall be examined after 24±2 hours.
<table>
<tr><th>Step</th><th>Temperature</th><th>Period</th></tr>
<tr><td>1</td><td>-40±3℃</td><td>30 Min</td></tr>
<tr><td>2</td><td>Room Temp.</td><td>15 Min</td></tr>
<tr><td>3</td><td>+85±2℃</td><td>30 Min</td></tr>
<tr><td>4</td><td>Room Temp.</td><td>15 Min</td></tr>
</table>
Cycles 5 times</td>
<td>Low Temperature Test Chamber
MYZ-5
Varistor Three Parametic Tester</td>
<td>Varistor voltage change rate≤ ± 5%.
No outstanding damage.
Δ V1mA /V1mA ≤ ± 10%.</td>
</tr>
<tr>
<td>High temperature storage / Dry heat</td>
<td>The specimen shall be subjected to 125±2℃ for 1000 hours in a drying oven without load and then stored at room temperature for 1-2 hours. The change of Vc shall be measured and meet the requirement with no outstanding damage.</td>
<td>101-ⅡAType Blast Oven
MYZ-5
Varistor three parametic Tester</td>
<td>△ Vc/ Vc≤±5%</td>
</tr>
</table>

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3.2 VARISTORS SECURITY AND ENVIRONMENTAL TEST

Technical term	Test Methods Description	Test Equipment	Specifications
Low temperature storage/ Cold	Specimen shall be subjected to an ambient of -40℃±2℃ for 1000 hours. And after the specimen shall be left at room ambient for 1-2 hours. The change of Vc shall be measured and meet the requirement. With no outstanding damage.	THS-A5P-150 Humidity Chamber MYZ-5 Varistor three parametric Tester	△ Vc/ Vc≤±5%
Humidity	The specimen shall be subjected to 40℃,90 to 95% R.H. for 1000 hours without load and then stored at room temperature for 1-2 hours. The change of Vc shall be measured and meet the requirement with no outstanding damage.	THS-A5P-150 Humidity Chamber MYZ-5 Varistor Three Parametric Tester	△ Vc/ Vc≤±5%
Damp hest load / Humidity load	After being continuously applied the maximum allowable voltage at 85±2℃,90-95% R.H for 1000 hours, the specimen shall be stored at room temperature and humidity for 1-2 hours. The change of Vc shall be measured and meet the requirement with no outstanding damage.	THS-A5P-150 Humidity Chamber ADCS AC-DC Live Test Machine MYZ-5 Varistor three parametric tester	△ Vc/ Vc≤± 10%
High temperature load / Dry heat load	After being continuously applied the maximum allowable voltage at 85±2℃ for 1000 hours, the specimen shall be stored at room temperature and humidity for 1-2 hours. The change of Vc shall be measured and meet the requirement with no outstanding damage.	101- II A Type Blast Oven ADCS AC-Dc Live Test Machine MYZ-5Varistor three parametric Tester	△ Vc/ Vc≤± 10%
Temperature cycle	Temperature cycle operation of the following table shall be repeated 5 times continuously. And then the specimen shall be left at room ambient for 1-2 hours. The change of Vc shall be measured and meet the requirement with no outstanding damage.	HLA High Temperature Cycling Tank MYZ-5 Varistor three parametric Tester	△ Vc / Vc≤± 5% No outstanding damage

Stops	Temperature	Min.	Stops	Temperature	Min.
1	-40℃±3℃	30±3	3	-125℃±2℃	30±3
2	Room temperature	15±3	4	Room temperature	15±3