

# Multilayer Chip Varistors **multicomp**<sup>PRO</sup>



## Features:

- Multilayer fabrication technology
- -55°C to 125°C operating temperature range
- Operating voltage range  $V_M$  (DC) at 5.5V to 85V
- Able to withstand ESD test of IEC-61000-4-2
- Bi-directional clamping characteristic

## Description:

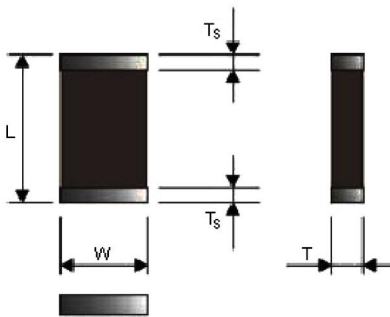
This multilayer chip varistor is a family of transient voltage surge suppression products. Today, electronic circuits are becoming smaller and more sensitive to external interference. These multilayer chip varistors are designed to protect components from destruction of transients and ESD (Electronic Static Discharge). The wide operating voltage and energy range make these multilayer chip varistors suitable for numerous applications on I/O protection, Vcc protection, Keyboard protection, LCD protection, Sensor protection etc. Manufactured by multilayer fabrication technology providing excellent voltage clamping ability and is supplied in leadless, surface mount form, compatible with modern reflow and wave soldering procedures

## Applications:

Protection of cellular phones, PDA, High Speed Data Line etc

ESD Protection for components sensitive to IEC 61000-4-2, Provides Circuit Board Transient Voltage Protection for Transistors

Protection of Video and Audio Ports



## Dimensions:

Size	MCVZ0402	MCVZ0603	MCVZ0805	MCVZ1206
L	1 ±0.1	1.6 ±0.15	2 ±0.2	3.2 ±0.2
W	0.5 ±0.1	0.8 ±0.15	1.25 ±0.2	1.6 ±0.2
T	0.5 ±0.1	0.8 ±0.15	0.8 ±0.2	0.8 ±0.1 mm* 1.1 ±0.2 mm**
Ts	0.25 ±0.15	0.35 ±0.15	0.5 ±0.2	0.65 ±0.25

Dimensions : Millimetres

Terminal electrode : Ni / Sn electrode

**Note :** \* means MCVZ1206 5.5V DC to 22V DC items

\*\* means MCVZ1206 26V DC to 85V DC items

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## Electrical Data:

Item	General Specification
Continuous Rating: Steady State Applied Voltage: DC voltage Range (VMDC) AC voltage Range (VMDC RMS)	5.5V to 85V 4V to 60V
Transient Rating: Non-Repetitive Surge Current (8 / 20is) Non-Repetitive Surge Energy, 10 / 1,000is Waveform, (WTM) Operating Ambient Temperature Range (TA) Storage Temperature Range (TSTG) Temperature Coefficient ( $\Delta V$ ) of clamping Voltage (VC) at Specified Test Current	20 A to 100 A 0.05 J to 1 J -55°C to 125°C -55°C to 150°C <0.01 % / °C

## Standard Testing Condition:

Unless otherwise specified

Temperature : 15 to 35°C  
Humidity : 25% RH to 85% RH  
Atmospheric Pressure : 86kPa to 106kPa

## Specifications:

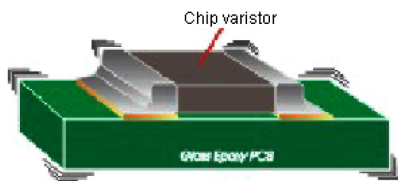
### 1. Electrical Reliability

Test item	Test Condition / Test Method	Specification														
High temperature storage	+125 $\pm$ 3°C for 1,000 hours Measurement to be made after keeping at room temperature for 24 $\pm$ 2 hours	$\Delta V$ at 1 mA <10%														
Low temperature storage	+40 $\pm$ 3°C for 1,000 hours Measurement to be made after keeping at room temperature for 24 $\pm$ 2 hours															
Humidity storage	40 $\pm$ 2°C, 90 to 95% RH for 500 hours Measurement to be made after keeping at room temperature for 24 $\pm$ 2 hours															
Temperature cycles	<p><b>Times : 5 cycles</b></p> <table> <tr> <th>Step</th><th>Temperature (°C)</th><th>Time (minimum)</th></tr> <tr> <td>1</td><td>-55 <math>\pm</math>3</td><td>30 <math>\pm</math>3</td></tr> <tr> <td>2</td><td>Room temperature</td><td>2 to 3</td></tr> <tr> <td>3</td><td>+125°C 3°C</td><td>30 <math>\pm</math>2</td></tr> <tr> <td>4</td><td>Room temperature</td><td>2 to 3</td></tr> </table> <p>Measurement to be made after keeping at room temperature for 24 <math>\pm</math>2 hours</p>		Step	Temperature (°C)	Time (minimum)	1	-55 $\pm$ 3	30 $\pm$ 3	2	Room temperature	2 to 3	3	+125°C 3°C	30 $\pm$ 2	4	Room temperature
Step	Temperature (°C)	Time (minimum)														
1	-55 $\pm$ 3	30 $\pm$ 3														
2	Room temperature	2 to 3														
3	+125°C 3°C	30 $\pm$ 2														
4	Room temperature	2 to 3														
Solderability	Solder temperature : 230 $\pm$ 5°C Immersion time : 2 $\pm$ 0.5 seconds Immersion and emersion rates : 25 mm / s	Minimum 90% electrode shall be covered with solder														
Resistance to Soldering Heat	Pre-heating :120 to 150°C, 60 seconds Solder temperature : 260 $\pm$ 5°C Immersion time : 10 $\pm$ 1 seconds Measurement to be made after keeping at room temperature for 24 $\pm$ 2 hours	$\Delta V$ at 1 mA <10% Disappearance of electrode due to immersion into solder shall not exceed 25% of edges of each electrode														

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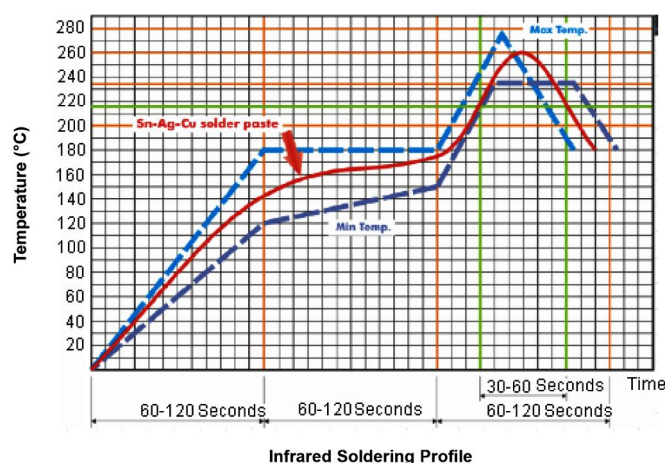
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Test item	Test Condition / Test Method	Specification
Adhesive Strength of Termination	<p>Solder chip on PCB and applied            0805 / 1206 Series : 10N (1kgf) for 10 seconds            0402 / 0603 Series : 5N (0.5kgf) for 10 seconds</p> 	No visible damage
Vibration	<p>Solder chip on PCB            Frequency : 10 Hz to 55 Hz to 10 Hz (1 minimum)            Oscillation amplitude : 1.5mm            Times : 2 hours in each of three perpendicular direction</p>	
Bending Test	The middle part of substrate shall be pressurized by means of the pressurizing rod at a rate of 1mm per second until the deflection becomes 1mm and then the pressure shall be maintained for 5 seconds	No visible damage $\Delta V$ at 1mA < 10%

## Soldering Condition:

Typical examples of soldering processes that provide reliable joints without any damage are given in figure below:



## Caution of Handling:

### Limitation of Applications

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects, which might directly cause damage to the third party's life, body or property

Aircraft equipment

Aerospace equipment

Undersea equipment

Medical equipment

Traffic signal equipment

Applications of similar complexity and / or reliability requirements to the applications listed in the above

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## Storage Condition

Products should be used in 6 months from the day of WALSIN outgoing inspection, which can be confirmed

Storage environment condition

Products should be storage in the warehouse on the following conditions

Temperature : -10 to +40°C

Humidity : 30 to 70% relative humidity

Don't keep products in corrosive gases such as sulfur, Chlorine gas or acid or it may cause oxidization of electrode, resulting in poor solderability

Products should be storage on the palette for the prevention of the influence from humidity, dust and son on

Products should be storage in the warehouse without heat shock, vibration, direct sunlight and so on

Products should be storage under the airtight packaged condition

## Part Number Table

Description	Chip Size L × W (in inches)	Style	Rated Voltage (V DC)	Capacitance Tolerance	Termination	Packing	Part Number
Varistor, 0402, 4V AC	04 × 02		5.5				MCVZ0402M050AGT
Varistor, 0402, 6V AC	04 × 02		9				MCVZ0402M090AGT
Varistor, 0402, 11V AC	04 × 02		14				MCVZ0402M140AGT
Varistor, 0603, 4V AC	06 × 03		5.5				MCVZ0603M050AGT
Varistor, 0603, 6V AC	06 × 03		9				MCVZ0603M090AGT
Varistor, 0603, 11V AC	06 × 03		14				MCVZ0603M140AGT
Varistor, 0603, 14V AC	06 × 03		18				MCVZ0603M180AGT
Varistor, 0603, 20V AC	06 × 03		26				MCVZ0603M260AGT
Varistor, 0603, 25V AC	06 × 03	Multilayer	30	Standard	Green Material	Reeled	MCVZ0603M300AGT
Varistor, 0603, 30V AC	06 × 03		38				MCVZ0603M380AGT
Varistor, 0805, 4V AC	08 × 05		5.5				MCVZ0805M050AGT
Varistor, 0805, 14V AC	08 × 05		18				MCVZ0805M180AGT
Varistor, 0805, 20V AC	08 × 05		26				MCVZ0805M260AGT
Varistor, 0805, 25V AC	08 × 05		30				MCVZ0805M300AGT
Varistor, 0805, 30V AC	08 × 05		38				MCVZ0805M380AGT
Varistor, 0805, 35V AC	08 × 05		45				MCVZ0805M450AGT
Varistor, 1206, 25V AC	12 × 06		30				MCVZ1206M300AGT
Varistor, 1206, 30V AC	12 × 06		38				MCVZ1206M380AGT
Varistor, 1206, 40V AC	12 × 06		56				MCVZ1206M560AGT
Varistor, 1206, 60V AC	12 × 06		85				MCVZ1206M850AGT

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