

# SMD Multilayer Chip Varistor

AMCV-0402

RoHS  
Compliant



1.0 x 0.5 x 0.5 mm

## FEATURES:

- SMD type, small size suitable for high density mounting
- Excellent clamping ratio and strong capability of voltage surge suppression
- Excellent solderability (Ni, Sn plating)

## APPLICATIONS:

- Transient voltage protection and voltage surge suppression for LED lighting
- Suitable for LCD-TV, STB, Switch, Router, PLC, Security System, smart meters, mobile phones
- Suppressing Induced / switching over-voltage caused by lightning and power
- Protecting DC-DC Module, I/O ports, IC driver

## STANDARD SPECIFICATIONS:

**Operating Temperature:** -55°C ~ +125°C

**Storage Temperature:** -10°C ~ +40°C and RH 70% (Max.)

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
ACMV-0402-5R5-C180	5.5	4.0	10.0-14.0	18	23	0.005	3	18
ACMV-0402-5R5-C300	5.5	4.0	10.0-14.0	18	23	0.005	5	30
ACMV-0402-5R5-C500	5.5	4.0	10.0-14.0	18	23	0.01	10	50
ACMV-0402-5R5-C800	5.5	4.0	10.0-14.0	18	23	0.02	10	80
ACMV-0402-5R5-C101	5.5	4.0	10.0-14.0	18	23	0.05	20	100
ACMV-0402-090-C180	9.0	6.4	11.0-16.0	20	26	0.005	3	18
ACMV-0402-090-C300	9.0	6.4	11.0-16.0	20	26	0.005	5	30
ACMV-0402-090-C500	9.0	6.4	11.0-16.0	20	26	0.01	10	50
ACMV-0402-090-C800	9.0	6.4	11.0-16.0	20	26	0.02	15	80
ACMV-0402-090-C101	9.0	6.4	11.0-16.0	20	26	0.05	20	100
ACMV-0402-140-C180	14.0	10.0	16.0-22.0	30	39	0.005	3	18
ACMV-0402-140-C300	14.0	10.0	16.0-22.0	30	39	0.01	5	30
ACMV-0402-140-C500	14.0	10.0	16.0-22.0	30	39	0.02	10	50
ACMV-0402-140-C800	14.0	10.0	16.0-22.0	30	39	0.03	15	80
ACMV-0402-140-C101	14.0	10.0	16.0-22.0	30	39	0.05	20	100
ACMV-0402-180-C150	18.0	12.7	22.0-28.0	40	48	0.005	2	15
ACMV-0402-180-C180	18.0	12.7	22.0-28.0	40	48	0.01	5	18
ACMV-0402-180-C300	18.0	12.7	22.0-28.0	40	48	0.02	10	30
ACMV-0402-180-C500	18.0	12.7	22.0-28.0	40	48	0.02	10	50
ACMV-0402-180-C800	18.0	12.7	22.0-28.0	40	48	0.03	15	80
ACMV-0402-180-C101	18.0	12.7	22.0-28.0	40	48	0.05	20	100
ACMV-0402-260-C180	26.0	18.4	31.0-38.0	58	70	0.02	5	18
ACMV-0402-260-C300	26.0	18.4	31.0-38.0	58	70	0.03	10	30
ACMV-0402-260-C500	26.0	18.4	31.0-38.0	58	70	0.03	10	50

\*1: V<sub>c</sub>, Maximum peak voltage across the varistor measured at a specified pulse current and waveform.

Energy Rating	Pulse & Waveform
0.00-0.05 Joule	1A, 8/20μs
0.10 Joule	2A, 8/20μs
0.20-0.50 Joule	5A, 8/20μs

\*2: V<sub>c</sub>, Maximum peak voltage across the varistor measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8KV.

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## Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- a. Ambient Temperature:  $20 \pm 15^\circ\text{C}$
- b. Relative Humidity:  $65 \pm 20\%$
- c. Air Pressure: 86 kPa to 106 kPa

Items	Test Methods and Remarks
Varistor Voltage at 1mA DC ( $V_B$ )	Measuring current: 1mA DC Duration: 0.2 to 2 sec
Capacitance (C)	Measure source: $0.5 V_{RMS}$ Test frequency: 1MHz.
Leakage Current ( $I_L$ )	Measuring voltage: Maximum DC working voltage
Clamping Voltage ( $V_C$ )	Measuring source: 8/20us waveform, ESD waveform

## OPTIONS AND PART IDENTIFICATION:

AMCV-0402- - C -

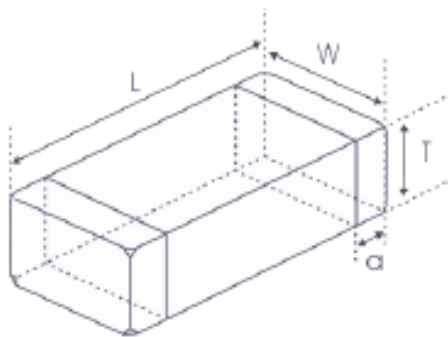
Voltage Code
Please refer to the table above

Capacitance Code
Please refer to the table above

Tolerance
N= $\pm 30\%$
Y= $+100, -50\%$
G= $+0\%, -60\%$

Packaging
T: Tape and Reel (10kpcs / reel)

## OUTLINE DIMENSION:



### Recommended Land Pattern



L	W	T	a
$1.0 \pm 0.15$	$0.5 \pm 0.15$	$0.5 \pm 0.15$	$0.25 \pm 0.1$

A	B	C
$0.45 \sim 0.55$	$0.40 \sim 0.50$	$0.45 \sim 0.55$

**Dimension: mm**

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## Materials



	Part Name	Material
1	Base Material	ZnO
2	Internal Conductor	Ag-Pd
3	Terminal Electrode	Ag (Inner layer) Ni-Sn (Outer layer)



## REFLOW PROFILE:



Preheat Condition	150 to 200 °C; 60 to 120 sec.
Allowed time above 217 °C	60 to 90 sec.
Max temperature	260 °C
Max time at max temperature	10 sec.
Solder paste	Sn/3.0Ag/0.5Cu
Allowed Reflow time	2x max.

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## TAPE & REEL:

### Packing

T: 10,000pcs / reel



A	B	P	T (max)
0.65±0.1	1.15±0.1	2.0±0.05	0.8



### Storage Conditions

- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at 40°C or less and 70% RH or less.
- The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust of harmful gas (e.g. HCl, sulfurous gas of H<sub>2</sub>S).
- Packaging material may be deformed if package are stored where they are exposed to heat of direct sunlight.
- Solderability shall be guaranteed for 6 months from the date of delivery on condition that they are stored at the environment specified in **a**. The parts that are stored more than 6 months shall be checked solderability before use.

**Dimension: mm**

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