

SMD Multilayer Chip Varistor

AMCV-0402LC

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 | | | | | @0.5V _{rms} , 1MHz |
| Units | Volts | Volts | Volts | Volts | Volts | Joules | Amps | pF |
| Symbol | V _{WDC} | V _{WAC} | V _B | V _C ^{*1} | V _C ^{*2} | E _T | I _p | C |
| ACMV-0402LC-140-C100 | 14.0 | 10.0 | 16.0-22.0 | 30 | 39 | 0.005 | 2 | 10 |
| ACMV-0402LC-140-C120 | 14.0 | 10.0 | 16.0-22.0 | 30 | 39 | 0.005 | 2 | 12 |
| ACMV-0402LC-180-C050 | 18.0 | 12.7 | 22.0-28.0 | 40 | 48 | 0.005 | 2 | 5 |
| ACMV-0402LC-180-C100 | 18.0 | 12.7 | 22.0-28.0 | 40 | 48 | 0.005 | 2 | 10 |
| ACMV-0402LC-260-C030 | 26.0 | 18.4 | 31.0-38.0 | 58 | 70 | 0.003 | 1 | 3 |
| ACMV-0402LC-260-C100 | 26.0 | 18.4 | 31.0-38.0 | 58 | 70 | 0.005 | 2 | 10 |

*1: V_c, 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_c, Maximum peak voltage across the varistor measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8KV.

Test Conditions

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

- Ambient Temperature: 20±15°C
- Relative Humidity: 65±20%
- 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 |

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OPTIONS AND PART IDENTIFICATION:

AMCV-0402LC- - C -

Voltage Code
Please refer to the table above

Capacitance Code
Please refer to the table above

Tolerance
N=±30%
Y=+100%, -50%
G=+0%, -60%

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

OUTLINE DIMENSION:



| L | W | T | a |
|---------------------------|---------------------------|---------------------------|---------------------------|
| 1.0±0.15 [0.039±0.006] | 0.5±0.15 [0.020±0.006] | 0.5±0.15 [0.020±0.006] | 0.25±0.1 [0.010±0.004] |

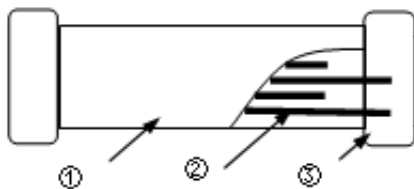
Recommended Land Pattern



| A | B | C |
|-----------|-----------|-----------|
| 0.45~0.55 | 0.40~0.50 | 0.45~0.55 |

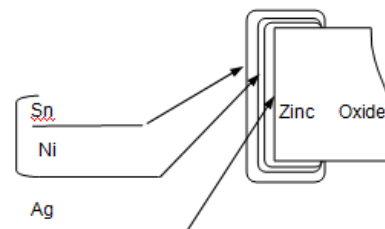
Materials

Side View



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

Top View



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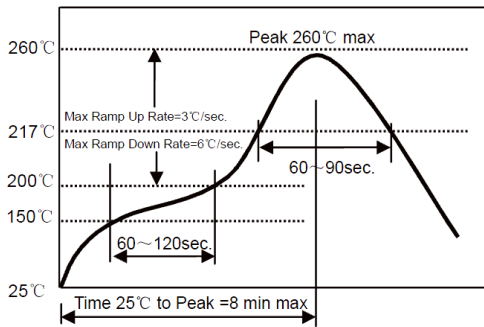
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1.0 x 0.5 x 0.5 mm

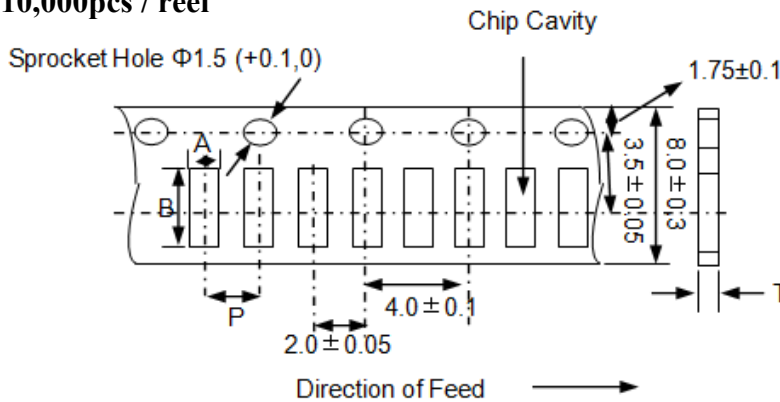
REFLOW PROFILE:



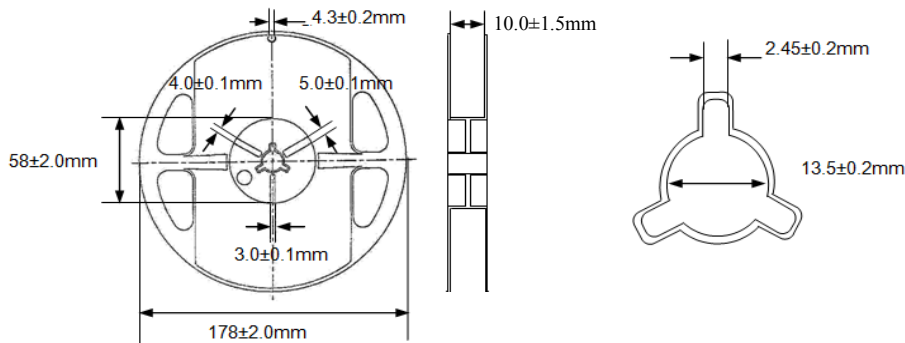
| | |
|-----------------------------|-------------------------------|
| Preheat Condition | 150 to 200 °C; 60 to 120 sec. |
| Allowed time above 217 °C | 60 to 90 sec. |
| Max temperature | 260 °C |
| Max time at max temperature | 10 sec. |
| Solder paste | Sn/3.0Ag/0.5Cu |
| Allowed Reflow time | 2x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

TAPE & REEL:

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 H₂S).
- 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 1.3. The parts that are stored more than 6 months shall be checked solderability before use.

Dimension: mm

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