

High Voltage Multilayer Chip Varistor for Surge Suppression – SVMH Series

Operating Temp. : -55°C~+125°C



FEATURES

- SMD type, small size suitable for high density mounting
- Excellent clamping ratio and strong capability of voltage surge suppression
- High voltage varistor, suitable for AC circuit

APPLICATIONS

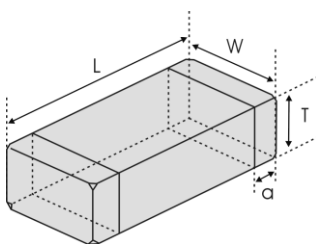
- Lightning protection and voltage surge suppression for Power supply, Network Interface, LED lighting.
- Able to replace part of leaded Varistor in situations with limited height

PRODUCT IDENTIFICATION

| <u>SVMH</u> ① | <u>2016</u> ② | <u>K</u> ③ | <u>A</u> ④ | <u>301</u> ⑤ | <u>P</u> ⑥ | <u>T</u> ⑦ | <u>501</u> ⑧ | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|---|----------------------|-------------------------|------------------------|----------------------|---|------------------------|--|--|---------------------------------|-------------|-------------|---------------|-------------|---------|-------------|--|---------------|---------|-------------|----------------|---|--|-------------------------------|--|---|------|
| ① | <table border="1"> <tr><th colspan="2">Type</th></tr> <tr><td>SVMH</td><td>Multilayer Chip Varistor for High Voltage</td></tr> </table> | | Type | | SVMH | Multilayer Chip Varistor for High Voltage | ② | <table border="1"> <tr><th colspan="2">External Dimensions (L×W) (mm)</th></tr> <tr><td>2016 [0806]</td><td>2.2×1.6</td></tr> <tr><td>3216 [1206]</td><td>3.2×1.6</td></tr> <tr><td>3225 [1210]</td><td>3.2×2.5</td></tr> <tr><td>4532 [1812]</td><td>4.6×3.2</td></tr> <tr><td>5650 [2220]</td><td>6.0×5.3</td></tr> </table> | | External Dimensions (L×W) (mm) | | 2016 [0806] | 2.2×1.6 | 3216 [1206] | 3.2×1.6 | 3225 [1210] | 3.2×2.5 | 4532 [1812] | 4.6×3.2 | 5650 [2220] | 6.0×5.3 | ③ | <table border="1"> <tr><th colspan="2">Tolerance of Varistor Voltage</th></tr> <tr><td>K</td><td>±10%</td></tr> </table> | Tolerance of Varistor Voltage | | K | ±10% |
| Type | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SVMH | Multilayer Chip Varistor for High Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | |
| External Dimensions (L×W) (mm) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2016 [0806] | 2.2×1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3216 [1206] | 3.2×1.6 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3225 [1210] | 3.2×2.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4532 [1812] | 4.6×3.2 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5650 [2220] | 6.0×5.3 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tolerance of Varistor Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| K | ±10% | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ④ | <table border="1"> <tr><th colspan="2">Type of Working Voltage</th></tr> <tr><td>A</td><td>AC Working Voltage</td></tr> </table> | | Type of Working Voltage | | A | AC Working Voltage | ⑤ | <table border="1"> <tr><th colspan="2">Max. Continuous Working Voltage</th></tr> <tr><th>Example</th><th>Nominal value</th></tr> <tr><td>301</td><td>300V</td></tr> </table> | | Max. Continuous Working Voltage | | Example | Nominal value | 301 | 300V | ⑥ | <table border="1"> <tr><th colspan="2">Terminal Code</th></tr> <tr><td>P</td><td>Ni, Sn Plating</td></tr> </table> | Terminal Code | | P | Ni, Sn Plating | | | | | | |
| Type of Working Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | AC Working Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Max. Continuous Working Voltage | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Example | Nominal value | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 301 | 300V | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Terminal Code | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| P | Ni, Sn Plating | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | ⑦ | <table border="1"> <tr><th colspan="2">Packing</th></tr> <tr><td>T</td><td>Tape & Reel</td></tr> </table> | | Packing | | T | Tape & Reel | | | | | | | | | | | | | | | | |
| Packing | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| T | Tape & Reel | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | ⑧ | <table border="1"> <tr><th colspan="2">Peak Surge Current</th></tr> <tr><td>500</td><td>50A</td></tr> <tr><td>501</td><td>500A</td></tr> </table> | | Peak Surge Current | | 500 | 50A | 501 | 500A | | | | | | | | | | | | | | |
| Peak Surge Current | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 500 | 50A | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 501 | 500A | | | | | | | | | | | | | | | | | | | | | | | | | | |

SHAPE AND DIMENSIONS

Unit: mm [inch]



| Type | L | W | T | a |
|--------------------|------------------------------------|-----------------------------------|--------------------|--------------------------|
| SVMH2016 [0806] | 2.2±0.2 [.087±.008] | 1.6+0.4/-0.2 [.063+.016/-0.08] | 2.0 Max. [.079] | 0.25~0.75 [.010~.029] |
| SVMH3216 [1206] | 3.2+0.6/-0.2 [.126+0.024/-0.08] | 1.6+0.4/-0.2 [.063+.016/-0.08] | 2.0 Max. [.079] | 0.25~0.75 [.010~.029] |
| SVMH3225 [1210] | 3.2+0.6/-0.2 [.126+0.024/-0.08] | 2.5+0.4/-0.2 [.098+.016/-0.08] | 2.6 Max. [.102] | 0.25~0.75 [.010~.029] |
| SVMH4532 [1812] | 4.6+0.6/-0.2 [.177+0.024/-0.08] | 3.5+0.5/-0.2 [.126+.020/-0.08] | 3.5 Max. [.138] | 0.30~0.80 [.012~.031] |
| SVMH5650 [2220] | 6.0+0.7/-0.3 [.236+.028/-0.12] | 5.3+0.5/-0.3 [.209+.020/-0.12] | 3.6 Max. [.142] | 0.40~0.90 [.016~.034] |

SPECIFICATIONS

SVMH2016 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|-----------|------------------|-----------------------|------|------------------------------|------------------------------|
| Test Condition | <30 μ A | | @1mA DC | 8/20 μ s | | Energy 10/1000 μ s | Peak Current 8/20 μ s |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | VWDC | VWAC | VB | VC | IC | ET | IP |
| SVMH2016KA151PT181 | 200 | 150 | 240[216-264] | 360 | 5.0 | 0.36 | 180 |
| SVMH2016KA171PT181 | 225 | 175 | 270[243-297] | 410 | 5.0 | 0.40 | 180 |
| SVMH2016KA191PT101 | 250 | 195 | 300[270-330] | 450 | 5.0 | 0.40 | 100 |
| SVMH2016KA211PT101 | 275 | 210 | 330[297-363] | 495 | 5.0 | 0.36 | 100 |
| SVMH2016KA231PT101 | 300 | 230 | 360[324-396] | 540 | 5.0 | 0.36 | 100 |
| SVMH2016KA251PT700 | 320 | 250 | 390[351-429] | 590 | 5.0 | 0.30 | 70 |
| SVMH2016KA251PT500 | 320 | 250 | 390[351-429] | 590 | 5.0 | 0.36 | 50 |
| SVMH2016KA271PT700 | 350 | 275 | 430[387-473] | 650 | 5.0 | 0.30 | 70 |
| SVMH2016KA271PT500 | 350 | 275 | 430[387-473] | 650 | 5.0 | 0.40 | 50 |
| SVMH2016KA301PT500 | 385 | 300 | 470[423-517] | 710 | 5.0 | 0.30 | 50 |
| SVMH2016KA321PT500 | 410 | 320 | 510[459-561] | 880 | 5.0 | 0.30 | 50 |

SVMH3216 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|-----------|------------------|-----------------------|------|------------------------------|------------------------------|
| Test Condition | <30 μ A | | @1mA DC | 8/20 μ s | | Energy 10/1000 μ s | Peak Current 8/20 μ s |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | VWDC | VWAC | VB | VC | IC | ET | IP |
| SVMH3216KA151PT301 | 200 | 150 | 240[216-264] | 360 | 5.0 | 0.9 | 300 |
| SVMH3216KA171PT301 | 225 | 175 | 270[243-297] | 410 | 5.0 | 1.0 | 300 |
| SVMH3216KA191PT201 | 250 | 195 | 300[270-330] | 450 | 5.0 | 1.0 | 200 |
| SVMH3216KA211PT201 | 275 | 210 | 330[297-363] | 495 | 5.0 | 1.0 | 200 |
| SVMH3216KA231PT201 | 300 | 230 | 360[324-396] | 540 | 5.0 | 0.9 | 200 |
| SVMH3216KA251PT101 | 320 | 250 | 390[351-429] | 590 | 5.0 | 0.9 | 100 |
| SVMH3216KA271PT101 | 350 | 275 | 430[387-473] | 650 | 5.0 | 1.0 | 100 |
| SVMH3216KA301PT101 | 385 | 300 | 470[423-517] | 710 | 5.0 | 0.5 | 100 |
| SVMH3216KA321PT101 | 410 | 320 | 510[459-561] | 880 | 5.0 | 0.5 | 100 |

SVMH3225 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|------------------|------------------|-----------------------|----------------|------------------------------|------------------------------|
| Test Condition | <30 μ A | | @1mA DC | 8/20 μ s | | Energy 10/1000 μ s | Peak Current 8/20 μ s |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | V _{WDC} | V _{WAC} | V _B | V _C | I _C | E _T | I _P |
| SVMH3225KA151PT601 | 200 | 150 | 240[216-264] | 360 | 5.0 | 1.8 | 600 |
| SVMH3225KA171PT601 | 225 | 175 | 270[243-297] | 410 | 5.0 | 2.0 | 600 |
| SVMH3225KA171PT401 | 225 | 175 | 270[243-297] | 410 | 5.0 | 2.0 | 400 |
| SVMH3225KA191PT401 | 250 | 195 | 300[270-330] | 450 | 5.0 | 2.0 | 400 |
| SVMH3225KA211PT401 | 275 | 210 | 330[297-363] | 495 | 5.0 | 1.8 | 400 |

SPECIFICATIONS

SVMH3225 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|--------|------------------|-----------------------|------|------------------------------|---------------------|
| Test Condition | <30μA | | @1mA DC | 8/20μs | | Energy 10/1000μs | Peak Current 8/20μs |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | VWDC | VWAC | VB | VC | IC | ET | IP |
| SVMH3225KA231PT401 | 300 | 230 | 360[324-396] | 540 | 5.0 | 1.8 | 400 |
| SVMH3225KA251PT201 | 320 | 250 | 390[351-429] | 590 | 5.0 | 1.8 | 200 |
| SVMH3225KA271PT201 | 350 | 275 | 430[387-473] | 650 | 5.0 | 1.8 | 200 |
| SVMH3225KA301PT201 | 385 | 300 | 470[423-517] | 710 | 5.0 | 2.0 | 200 |
| SVMH3225KA301PT301 | 385 | 300 | 470[423-517] | 710 | 5.0 | 2.0 | 300 |
| SVMH3225KA321PT151 | 410 | 320 | 510[459-561] | 880 | 5.0 | 2.0 | 150 |
| SVMH3225KA321PT251 | 410 | 320 | 510[459-561] | 880 | 5.0 | 2.0 | 250 |

SVMH4532 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|--------|------------------|-----------------------|------|------------------------------|---------------------|
| Test Condition | <30μA | | @1mA DC | 8/20μs | | Energy 10/1000μs | Peak Current 8/20μs |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | VWDC | VWAC | VB | VC | IC | ET | IP |
| SVMH4532KA151PT102 | 200 | 150 | 240[216-264] | 360 | 5.0 | 6.4 | 1200 |
| SVMH4532KA151PT801 | 200 | 150 | 240[216-264] | 360 | 5.0 | 6.4 | 800 |
| SVMH4532KA171PT102 | 225 | 175 | 270[243-297] | 410 | 5.0 | 7.2 | 1200 |
| SVMH4532KA151PT801 | 200 | 150 | 240[216-264] | 360 | 5.0 | 6.4 | 800 |
| SVMH4532KA191PT601 | 250 | 195 | 300[270-330] | 450 | 5.0 | 7.2 | 600 |
| SVMH4532KA211PT601 | 275 | 210 | 330[297-363] | 495 | 5.0 | 5.0 | 600 |
| SVMH4532KA231PT601 | 300 | 230 | 360[324-396] | 540 | 5.0 | 6.4 | 600 |
| SVMH4532KA251PT401 | 320 | 250 | 390[351-429] | 590 | 5.0 | 6.4 | 400 |
| SVMH4532KA271PT401 | 350 | 275 | 430[387-473] | 650 | 5.0 | 6.4 | 400 |
| SVMH4532KA301PT401 | 385 | 300 | 470[423-517] | 710 | 5.0 | 7.2 | 400 |
| SVMH4532KA301PT801 | 385 | 300 | 470[423-517] | 710 | 5.0 | 5.0 | 800 |
| SVMH4532KA321PT251 | 410 | 320 | 510[459-561] | 880 | 5.0 | 5.0 | 250 |
| SVMH4532KA321PT701 | 410 | 320 | 510[459-561] | 880 | 5.0 | 5.0 | 700 |

SVMH5650 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|--------|------------------|-----------------------|------|------------------------------|---------------------|
| Test Condition | <30μA | | @1mA DC | 8/20μs | | Energy 10/1000μs | Peak Current 8/20μs |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | VWDC | VWAC | VB | VC | IC | ET | IP |
| SVMH5650KA151PT152 | 200 | 150 | 240[216-264] | 395 | 10.0 | 15 | 1500 |
| SVMH5650KA171PT152 | 225 | 175 | 270[243-297] | 455 | 10.0 | 15 | 1500 |
| SVMH5650KA191PT122 | 250 | 195 | 300[270-330] | 495 | 10.0 | 15 | 1200 |
| SVMH5650KA211PT122 | 275 | 210 | 330[297-363] | 540 | 10.0 | 10 | 1200 |
| SVMH5650KA231PT122 | 300 | 230 | 360[324-396] | 595 | 10.0 | 10 | 1200 |
| SVMH5650KA251PT801 | 320 | 250 | 390[351-429] | 650 | 10.0 | 10 | 800 |
| SVMH5650KA271PT801 | 350 | 275 | 430[387-473] | 710 | 10.0 | 10 | 800 |

SPECIFICATIONS

SVMH5650 TYPE

| Part Number | Max. Working Voltage | | Varistor Voltage | Max. Clamping Voltage | | Rated Single Pulse Transient | |
|--------------------|----------------------|-----------|------------------|-----------------------|------|------------------------------|---------------------------------|
| Test Condition | <30 μ A | | @1mA DC | 8/20 μ s | | Energy 10/1000 μ s | Peak Current 8/20 μ s |
| | DC | AC RMS | | | | | |
| Units | Volts | Volts | Volts | Volts | Amps | Joules | Amps |
| Symbol | VWDC | VWAC | VB | VC | IC | ET | IP |
| SVMH5650KA301PT801 | 385 | 300 | 470[423-517] | 775 | 10.0 | 10 | 800 |
| SVMH5650KA321PT102 | 410 | 320 | 510[459-561] | 845 | 10.0 | 10 | 1000 |

※ V_{AC} : Max AC working voltage of Varistor must exceed or equal to 1.2 times that of the application circuit voltage, $V_{AC} \geq 1.2 V_n$.

※ I_P : Rated single pulse current at 8/20us of Varistor must exceed or equal to 1.2 times that of the application circuit pulse current, $I_P \geq 1.2 I_{Pn}$.