

SMD Varistors

MLV; Standard Series



Construction

- Multilayer technology
- Termination: nickel barrier (CT series) or silver palladium (CN series) or silver platinum (only for CN0402 ... K2)
- No plastic or epoxy encapsulation assures better than UL 94 V-0 flammability rating

Features

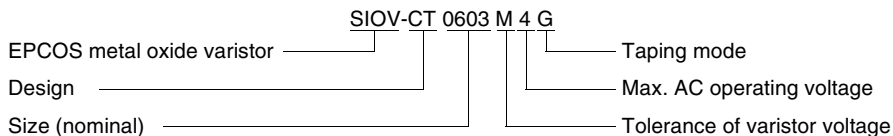
- Sizes 0402 ... 2220
- Surge currents up to 1200 A
- Operating temperatures up to 125 °C
- Good solderability
- Suitable for ESD protection
- Bidirectional clamping
- Types with controlled capacitance available
- PSpice models

Taping

- Supply on 8/12-mm tape, for tape dimensions see pages 154/155, for reel dimensions and packing units see page 157, chapter "SMD Varistors: Taping"

Type designation

Detailed description of coding system on page 39, chapter "General Technical Information"



General technical data

| | | | |
|--|-------------------------------|--------------------|-----------------------------|
| Climatic category | 55/125/56 (55/85/56) | | in acc. with IEC 60068-1 |
| LCT | – 55 °C | | |
| UCT | + 85 °C (CT/CN0402 ... 0603) | | |
| | + 125 °C (CT/CN0805 ... 2220) | | |
| Damp heat, steady state (93 % r.h., 40 °C) | 56 days | | in acc. with IEC 60068-2-3 |
| Operating temperature | – 55 ... + 85 °C | CT/CN0402 ... 0603 | in acc. with CECC 42 000 |
| | – 55 ... + 125 °C | CT/CN0805 ... 2220 | in acc. with CECC 42 000 |
| Storage temperature ¹⁾ | – 55 ... + 150 °C | CT/CN0805 ... 2220 | |
| | – 55 ... + 125 °C | CT/CN0402 ... 0603 | |
| Response time | < 0,5 ns | | |
| Solderability | 235 °C, 2 s | | in acc. with IEC 60068-2-58 |
| Resistance to soldering heat | 260 °C, 10 s | | in acc. with IEC 60068-2-58 |

1) For mounted parts (storage conditions for unused parts on reel see page 38, chapter "General Technical Information")


SMD Varistors
Standard – Nickel Barrier Termination (available upon request)
Maximum ratings (0402 ... 0603: $T_A = 85\text{ }^\circ\text{C}$; 0805 ... 2220: $T_A = 125\text{ }^\circ\text{C}$)

| Type | Ordering code | V_{RMS} | V_{DC} | i_{max} 8/20 μs | W_{max} (2 ms) | P_{max} |
|-------------|-----------------|-----------|----------|---------------------------------|---------------------|-----------|
| SIOV- | | V | V | A | J | W |
| CT0603M4G | B72500T0040M060 | 4 | 5,5 | 30 | 0,1 | 0,003 |
| CT0805M4G | B72510T0040M062 | 4 | 5,5 | 100 | 0,1 | 0,005 |
| CT1206M4G | B72520T0040M062 | 4 | 5,5 | 150 | 0,3 | 0,008 |
| CT1210M4G | B72530T0040M062 | 4 | 5,5 | 250 | 0,4 | 0,010 |
| CT1812M4G | B72580T0040M062 | 4 | 5,5 | 500 | 0,8 | 0,015 |
| CT2220M4G | B72540T0040M062 | 4 | 5,5 | 1000 | 1,4 | 0,020 |
| CT0603M6G | B72500T0060M060 | 6 | 8 | 30 | 0,1 | 0,003 |
| CT0805M6G | B72510T0060M062 | 6 | 8 | 120 | 0,2 | 0,005 |
| CT0805M6CCG | B72510T5060M062 | 6 | 8 | 120 | 0,2 | 0,005 |
| CT1206M6G | B72520T0060M062 | 6 | 8 | 200 | 0,4 | 0,008 |
| CT1210M6G | B72530T0060M062 | 6 | 8 | 300 | 0,7 | 0,010 |
| CT1812M6G | B72580T0060M062 | 6 | 8 | 500 | 1,0 | 0,015 |
| CT2220M6G | B72540T0060M062 | 6 | 8 | 1200 | 3,6 | 0,020 |
| CT0603M7G | B72500T0070M060 | 7 | 9 | 30 | 0,1 | 0,003 |
| CT0603L8G | B72500T0080L060 | 8 | 11 | 30 | 0,1 | 0,003 |
| CT0805L8G | B72510T0080L062 | 8 | 11 | 120 | 0,2 | 0,005 |
| CT1206L8G | B72520T0080L062 | 8 | 11 | 200 | 0,5 | 0,008 |
| CT1210L8G | B72530T0080L062 | 8 | 11 | 400 | 1,0 | 0,010 |
| CT1812L8G | B72580T0080L062 | 8 | 11 | 800 | 1,8 | 0,015 |
| CT2220L8G | B72540T0080L062 | 8 | 11 | 1200 | 4,2 | 0,020 |
| CT0603K11G | B72500T0110K060 | 11 | 14 | 30 | 0,2 | 0,003 |
| CT0805K11G | B72510T0110K062 | 11 | 14 | 120 | 0,2 | 0,005 |
| CT1206K11G | B72520T0110K062 | 11 | 14 | 200 | 0,5 | 0,008 |
| CT1210K11G | B72530T0110K062 | 11 | 14 | 400 | 1,2 | 0,010 |
| CT1812K11G | B72580T0110K062 | 11 | 14 | 800 | 1,9 | 0,015 |
| CT2220K11G | B72540T0110K062 | 11 | 14 | 1200 | 5,4 | 0,020 |
| CT0402L14G | B72590T0140L060 | 14 | 16 | 10 | 0,01 | 0,003 |
| CT0603K14G | B72500T0140K060 | 14 | 18 | 30 | 0,2 | 0,003 |
| CT0805K14G | B72510T0140K062 | 14 | 18 | 120 | 0,3 | 0,005 |
| CT1206K14G | B72520T0140K062 | 14 | 18 | 200 | 0,5 | 0,008 |
| CT1210K14G | B72530T0140K062 | 14 | 18 | 400 | 1,5 | 0,010 |
| CT1812K14G | B72580T0140K062 | 14 | 18 | 800 | 2,3 | 0,015 |
| CT2220K14G | B72540T0140K062 | 14 | 18 | 1200 | 5,8 | 0,020 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


Characteristics ($T_A = 25\text{ }^\circ\text{C}$)

| Type | V_V (1 mA) V | ΔV_V (1 mA) % | Max. clamping voltage | | C_{typ} (1 kHz) pF | L_{typ} nH | Derating curve Page | V/I char- acteristic Page |
|-------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|-----------------|---------------------------|---------------------------------|
| | | | v V | i A | | | | |
| CT0603M4G | 8 | ± 20 | 19 | 1,0 | 200 | 1,0 | 238 | 266 |
| CT0805M4G | 8 | ± 20 | 19 | 1,0 | 700 | 1,5 | 238 | 267 |
| CT1206M4G | 8 | ± 20 | 17 | 1,0 | 1500 | 1,8 | 240 | 268 |
| CT1210M4G | 8 | ± 20 | 17 | 2,5 | 5000 | 1,8 | 241 | 269 |
| CT1812M4G | 8 | ± 20 | 17 | 5,0 | 10000 | 2,5 | 242 | 270 |
| CT2220M4G | 8 | ± 20 | 17 | 10,0 | 24000 | 3,0 | 245 | 271 |
| CT0603M6G | 11 | ± 20 | 27 | 1,0 | 200 | 1,0 | 238 | 266 |
| CT0805M6G | 11 | ± 20 | 27 | 1,0 | 600 | 1,5 | 239 | 267 |
| CT0805M6CCG | 11 | ± 20 | 27 | 1,0 | 1500 ¹⁾ | 1,5 | 239 | 267 |
| CT1206M6G | 11 | ± 20 | 25 | 1,0 | 1200 | 1,8 | 240 | 268 |
| CT1210M6G | 11 | ± 20 | 25 | 2,5 | 4000 | 1,8 | 241 | 269 |
| CT1812M6G | 11 | ± 20 | 25 | 5,0 | 8000 | 2,5 | 242 | 270 |
| CT2220M6G | 11 | ± 20 | 25 | 10,0 | 20000 | 3,0 | 245 | 271 |
| CT0603M7G | 12,5 | ± 20 | 30 | 1,0 | 200 | 1,0 | 238 | 266 |
| CT0603L8G | 15 | ± 15 | 33 | 1,0 | 150 | 1,0 | 238 | 266 |
| CT0805L8G | 15 | ± 15 | 33 | 1,0 | 500 | 1,5 | 239 | 267 |
| CT1206L8G | 15 | ± 15 | 30 | 1,0 | 1000 | 1,8 | 240 | 268 |
| CT1210L8G | 15 | ± 15 | 30 | 2,5 | 3000 | 1,8 | 242 | 269 |
| CT1812L8G | 15 | ± 15 | 30 | 5,0 | 6000 | 2,5 | 244 | 270 |
| CT2220L8G | 15 | ± 15 | 30 | 10,0 | 16000 | 3,0 | 245 | 271 |
| CT0603K11G | 18 | ± 10 | 35 | 1,0 | 100 | 1,0 | 238 | 266 |
| CT0805K11G | 18 | ± 10 | 35 | 1,0 | 400 | 1,5 | 239 | 267 |
| CT1206K11G | 18 | ± 10 | 33 | 1,0 | 800 | 1,8 | 240 | 268 |
| CT1210K11G | 18 | ± 10 | 33 | 2,5 | 2400 | 1,8 | 242 | 269 |
| CT1812K11G | 18 | ± 10 | 33 | 5,0 | 5000 | 2,5 | 244 | 270 |
| CT2220K11G | 18 | ± 10 | 33 | 10,0 | 12000 | 3,0 | 245 | 271 |
| CT0402L14G | 23,5 | ± 15 | 46 | 1,0 | 60 ²⁾ | 0,8 | 237 | 265 |
| CT0603K14G | 22 | ± 10 | 40 | 1,0 | 100 | 1,0 | 238 | 266 |
| CT0805K14G | 22 | ± 10 | 40 | 1,0 | 350 | 1,5 | 239 | 267 |
| CT1206K14G | 22 | ± 10 | 38 | 1,0 | 700 | 1,8 | 240 | 268 |
| CT1210K14G | 22 | ± 10 | 38 | 2,5 | 2000 | 1,8 | 242 | 269 |
| CT1812K14G | 22 | ± 10 | 38 | 5,0 | 4500 | 2,5 | 244 | 270 |
| CT2220K14G | 22 | ± 10 | 38 | 10,0 | 10000 | 3,0 | 245 | 271 |

1) C (1 MHz); ± 20%; 2) C_{typ} (1 MHz)

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


SMD Varistors
Standard – Nickel Barrier Termination (available upon request)
Maximum ratings (0402 ... 0603: $T_A = 85\text{ }^\circ\text{C}$; 0805 ... 2220: $T_A = 125\text{ }^\circ\text{C}$)

| Type | Ordering code | V_{RMS} | V_{DC} | i_{max} 8/20 μs A | W_{max} (2 ms) J | P_{max} W |
|--------------|-----------------|-----------|----------|--------------------------------------|--------------------------|----------------|
| SIOV- | | V | V | | | |
| CT0603K17G | B72500T0170K060 | 17 | 22 | 30 | 0,2 | 0,003 |
| CT0603K17LCG | B72500T2170K060 | 17 | 22 | 10 | 0,1 | 0,001 |
| CT0805K17G | B72510T0170K062 | 17 | 22 | 120 | 0,3 | 0,005 |
| CT0805K17LCG | B72510T2170K062 | 17 | 22 | 30 | 0,1 | 0,004 |
| CT1206K17G | B72520T0170K062 | 17 | 22 | 200 | 0,6 | 0,008 |
| CT1210K17G | B72530T0170K062 | 17 | 22 | 400 | 1,7 | 0,010 |
| CT1812K17G | B72580T0170K062 | 17 | 22 | 800 | 2,7 | 0,015 |
| CT2220K17G | B72540T0170K062 | 17 | 22 | 1200 | 7,2 | 0,020 |
| CT0603K20G | B72500T0200K060 | 20 | 26 | 30 | 0,2 | 0,003 |
| CT0805K20G | B72510T0200K062 | 20 | 26 | 80 | 0,3 | 0,005 |
| CT1206K20G | B72520T0200K062 | 20 | 26 | 200 | 0,7 | 0,008 |
| CT1210K20G | B72530T0200K062 | 20 | 26 | 400 | 1,9 | 0,010 |
| CT1812K20G | B72580T0200K062 | 20 | 26 | 800 | 3,0 | 0,015 |
| CT2220K20G | B72540T0200K062 | 20 | 26 | 1200 | 7,8 | 0,020 |
| CT0603K25G | B72500T0250K060 | 25 | 31 | 30 | 0,3 | 0,003 |
| CT0805K25G | B72510T0250K062 | 25 | 31 | 80 | 0,3 | 0,005 |
| CT1206K25G | B72520T0250K062 | 25 | 31 | 200 | 1,0 | 0,008 |
| CT1210K25G | B72530T0250K062 | 25 | 31 | 300 | 1,7 | 0,010 |
| CT1812K25G | B72580T0250K062 | 25 | 31 | 800 | 3,7 | 0,015 |
| CT2220K25G | B72540T0250K062 | 25 | 31 | 1200 | 9,6 | 0,020 |
| CT0805K30G | B72510T0300K062 | 30 | 38 | 80 | 0,3 | 0,005 |
| CT1206K30G | B72520T0300K062 | 30 | 38 | 200 | 1,1 | 0,008 |
| CT1210K30G | B72530T0300K062 | 30 | 38 | 300 | 2,0 | 0,010 |
| CT1812K30G | B72580T0300K062 | 30 | 38 | 800 | 4,2 | 0,015 |
| CT2220K30G | B72540T0300K062 | 30 | 38 | 1200 | 12,0 | 0,020 |
| CT1206K35G | B72520T0350K062 | 35 | 45 | 100 | 0,4 | 0,008 |
| CT1210K35G | B72530T0350K062 | 35 | 45 | 250 | 2,0 | 0,010 |
| CT1812K35G | B72580T0350K062 | 35 | 45 | 500 | 4,0 | 0,015 |
| CT2220K35G | B72540T0350K062 | 35 | 45 | 1000 | 7,7 | 0,020 |
| CT1206K40G | B72520T0400K062 | 40 | 56 | 100 | 0,5 | 0,008 |
| CT1210K40G | B72530T0400K062 | 40 | 56 | 250 | 2,3 | 0,010 |
| CT1812K40G | B72580T0400K062 | 40 | 56 | 500 | 4,8 | 0,015 |
| CT2220K40G | B72540T0400K062 | 40 | 56 | 1000 | 9,0 | 0,020 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


Characteristics ($T_A = 25\text{ }^\circ\text{C}$)

| Type | V_V (1 mA) V | ΔV_V (1 mA) % | Max. clamping voltage | | C_{typ} (1 kHz) pF | L_{typ} nH | Derating curve Page | V/I char- acteristic Page |
|--------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|-----------------|---------------------------|---------------------------------|
| | | | v V | i A | | | | |
| CT0603K17G | 27 | ± 10 | 46 | 1,0 | 100 | 1,0 | 238 | 266 |
| CT0603K17LCG | 27 | ± 10 | 50 | 1,0 | < 50 | 1,0 | 237 | 266 |
| CT0805K17G | 27 | ± 10 | 46 | 1,0 | 400 | 1,5 | 239 | 267 |
| CT0805K17LCG | 27 | +22/-8 ¹⁾ | 50 | 1,0 | < 100 | 1,0 | 238 | 267 |
| CT1206K17G | 27 | ± 10 | 44 | 1,0 | 650 | 1,8 | 240 | 268 |
| CT1210K17G | 27 | ± 10 | 44 | 2,5 | 1800 | 1,8 | 242 | 269 |
| CT1812K17G | 27 | ± 10 | 44 | 5,0 | 4000 | 2,5 | 244 | 270 |
| CT2220K17G | 27 | ± 10 | 44 | 10,0 | 9000 | 3,0 | 245 | 271 |
| CT0603K20G | 33 | ± 10 | 56 | 1,0 | 90 | 1,0 | 238 | 266 |
| CT0805K20G | 33 | ± 10 | 56 | 1,0 | 300 | 1,5 | 239 | 267 |
| CT1206K20G | 33 | ± 10 | 54 | 1,0 | 600 | 1,8 | 240 | 268 |
| CT1210K20G | 33 | ± 10 | 54 | 2,5 | 1500 | 1,8 | 242 | 269 |
| CT1812K20G | 33 | ± 10 | 54 | 5,0 | 3000 | 2,5 | 244 | 270 |
| CT2220K20G | 33 | ± 10 | 54 | 10,0 | 7000 | 3,0 | 245 | 271 |
| CT0603K25G | 39 | ± 10 | 67 | 1,0 | 90 ²⁾ | 1,0 | 238 | 266 |
| CT0805K25G | 39 | ± 10 | 67 | 1,0 | 250 | 1,5 | 239 | 267 |
| CT1206K25G | 39 | ± 10 | 65 | 1,0 | 550 | 1,8 | 240 | 268 |
| CT1210K25G | 39 | ± 10 | 65 | 2,5 | 1200 | 1,8 | 241 | 269 |
| CT1812K25G | 39 | ± 10 | 65 | 5,0 | 2500 | 2,5 | 244 | 270 |
| CT2220K25G | 39 | ± 10 | 65 | 10,0 | 5000 | 3,0 | 245 | 271 |
| CT0805K30G | 47 | ± 10 | 77 | 1,0 | 200 | 1,0 | 239 | 267 |
| CT1206K30G | 47 | ± 10 | 77 | 1,0 | 500 | 1,8 | 240 | 268 |
| CT1210K30G | 47 | ± 10 | 77 | 2,5 | 1000 | 1,8 | 241 | 269 |
| CT1812K30G | 47 | ± 10 | 77 | 5,0 | 2000 | 2,5 | 244 | 270 |
| CT2220K30G | 47 | ± 10 | 77 | 10,0 | 4000 | 3,0 | 245 | 271 |
| CT1206K35G | 56 | ± 10 | 90 | 1,0 | 200 | 1,8 | 238 | 268 |
| CT1210K35G | 56 | ± 10 | 90 | 2,5 | 600 | 1,8 | 241 | 269 |
| CT1812K35G | 56 | ± 10 | 90 | 5,0 | 1200 | 2,5 | 242 | 270 |
| CT2220K35G | 56 | ± 10 | 90 | 10,0 | 2500 | 3,0 | 245 | 271 |
| CT1206K40G | 68 | ± 10 | 110 | 1,0 | 250 | 1,8 | 238 | 268 |
| CT1210K40G | 68 | ± 10 | 110 | 2,5 | 500 | 1,8 | 241 | 269 |
| CT1812K40G | 68 | ± 10 | 110 | 5,0 | 1000 | 2,5 | 242 | 270 |
| CT2220K40G | 68 | ± 10 | 110 | 10,0 | 2000 | 3,0 | 245 | 271 |

1) Tolerance differs from standard; 2) C_{typ} (1 MHz)

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


SMD Varistors
Standard – Nickel Barrier Termination (available upon request)
Maximum ratings (0402 ... 0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

| Type | Ordering code | V_{RMS} | V_{DC} | i_{max} 8/20 μ s A | W_{max} (2 ms) J | P_{max} W |
|------------|-----------------|-----------|----------|--------------------------------|--------------------------|----------------|
| SIOV- | | V | V | | | |
| CT1206K50G | B72520T0500K062 | 50 | 65 | 100 | 0,6 | 0,008 |
| CT1210K50G | B72530T0500K062 | 50 | 65 | 200 | 1,6 | 0,010 |
| CT1812K50G | B72580T0500K062 | 50 | 65 | 400 | 4,5 | 0,015 |
| CT2220K50G | B72540T0500K062 | 50 | 65 | 800 | 5,6 | 0,020 |
| CT1206K60G | B72520T0600K062 | 60 | 85 | 100 | 0,7 | 0,008 |
| CT1210K60G | B72530T0600K062 | 60 | 85 | 200 | 2,0 | 0,010 |
| CT1812K60G | B72580T0600K062 | 60 | 85 | 400 | 5,8 | 0,015 |
| CT2220K60G | B72540T0600K062 | 60 | 85 | 800 | 6,8 | 0,020 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


Characteristics ($T_A = 25\text{ °C}$)

| Type | V_V (1 mA) V | ΔV_V (1 mA) % | Max. clamping voltage | | C_{typ} (1 kHz) pF | L_{typ} nH | Derating curve Page | V/I char- acteristic Page |
|------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|-----------------|---------------------------|---------------------------------|
| | | | v V | i A | | | | |
| CT1206K50G | 82 | ± 10 | 135 | 1,0 | 120 | 1,8 | 238 | 268 |
| CT1210K50G | 82 | ± 10 | 135 | 2,5 | 250 | 1,8 | 240 | 269 |
| CT1812K50G | 82 | ± 10 | 135 | 5,0 | 500 | 2,5 | 242 | 270 |
| CT2220K50G | 82 | ± 10 | 135 | 10,0 | 1000 | 3,0 | 244 | 271 |
| CT1206K60G | 100 | ± 10 | 165 | 1,0 | 100 | 1,8 | 238 | 268 |
| CT1210K60G | 100 | ± 10 | 165 | 2,5 | 200 | 1,8 | 240 | 269 |
| CT1812K60G | 100 | ± 10 | 165 | 5,0 | 400 | 2,5 | 242 | 270 |
| CT2220K60G | 100 | ± 10 | 165 | 10,0 | 800 | 3,0 | 244 | 271 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


SMD Varistors
Standard – Silver Palladium Termination (0402: Silver Platinum)
Maximum ratings (0402 ... 0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

| Type | Ordering code | V_{RMS} | V_{DC} | i_{max} 8/20 μ s A | W_{max} (2 ms) J | P_{max} W |
|--------------|-----------------|-----------|----------|--------------------------------|--------------------------|----------------|
| SIOV- | | V | V | | | |
| CN0603M4G | B72500V0040M060 | 4 | 5,5 | 30 | 0,1 | 0,003 |
| CN0805M4G | B72510V0040M062 | 4 | 5,5 | 100 | 0,1 | 0,005 |
| CN1206M4G | B72520V0040M062 | 4 | 5,5 | 150 | 0,3 | 0,008 |
| CN1210M4G | B72530V0040M062 | 4 | 5,5 | 250 | 0,4 | 0,010 |
| CN1812M4G | B72580V0040M062 | 4 | 5,5 | 500 | 0,8 | 0,015 |
| CN2220M4G | B72540V0040M062 | 4 | 5,5 | 1000 | 1,4 | 0,020 |
| CN0603M6G | B72500V0060M060 | 6 | 8 | 30 | 0,1 | 0,003 |
| CN0805M6G | B72510V0060M062 | 6 | 8 | 120 | 0,2 | 0,005 |
| CN0805M6CCG | B72510V5060M062 | 6 | 8 | 120 | 0,2 | 0,005 |
| CN1206M6G | B72520V0060M062 | 6 | 8 | 200 | 0,4 | 0,008 |
| CN1210M6G | B72530V0060M062 | 6 | 8 | 300 | 0,7 | 0,010 |
| CN1812M6G | B72580V0060M062 | 6 | 8 | 500 | 1,0 | 0,015 |
| CN2220M6G | B72540V0060M062 | 6 | 8 | 1200 | 3,6 | 0,020 |
| CN0603M7G | B72500V0070M060 | 7 | 9 | 30 | 0,1 | 0,003 |
| CN0603L8G | B72500V0080L060 | 8 | 11 | 30 | 0,1 | 0,003 |
| CN0805L8G | B72510V0080L062 | 8 | 11 | 120 | 0,2 | 0,005 |
| CN1206L8G | B72520V0080L062 | 8 | 11 | 200 | 0,5 | 0,008 |
| CN1210L8G | B72530V0080L062 | 8 | 11 | 400 | 1,0 | 0,010 |
| CN1812L8G | B72580V0080L062 | 8 | 11 | 800 | 1,8 | 0,015 |
| CN2220L8G | B72540V0080L062 | 8 | 11 | 1200 | 4,2 | 0,020 |
| CN0603K11G | B72500V0110K060 | 11 | 14 | 30 | 0,2 | 0,003 |
| CN0805K11G | B72510V0110K062 | 11 | 14 | 120 | 0,2 | 0,005 |
| CN1206K11G | B72520V0110K062 | 11 | 14 | 200 | 0,5 | 0,008 |
| CN1210K11G | B72530V0110K062 | 11 | 14 | 400 | 1,2 | 0,010 |
| CN1812K11G | B72580V0110K062 | 11 | 14 | 800 | 1,9 | 0,015 |
| CN2220K11G | B72540V0110K062 | 11 | 14 | 1200 | 5,4 | 0,020 |
| CN0402L14GK2 | B72592V0140L060 | 14 | 16 | 10 | 0,01 | 0,003 |
| CN0603K14G | B72500V0140K060 | 14 | 18 | 30 | 0,2 | 0,003 |
| CN0805K14G | B72510V0140K062 | 14 | 18 | 120 | 0,3 | 0,005 |
| CN1206K14G | B72520V0140K062 | 14 | 18 | 200 | 0,5 | 0,008 |
| CN1210K14G | B72530V0140K062 | 14 | 18 | 400 | 1,5 | 0,010 |
| CN1812K14G | B72580V0140K062 | 14 | 18 | 800 | 2,3 | 0,015 |
| CN2220K14G | B72540V0140K062 | 14 | 18 | 1200 | 5,8 | 0,020 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


Characteristics ($T_A = 25\text{ }^\circ\text{C}$)

| Type | V_V (1 mA) V | ΔV_V (1 mA) % | Max. clamping voltage | | C_{typ} (1 kHz) pF | L_{typ} nH | Derating curve Page | V/I char- acteristic Page |
|--------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|-----------------|---------------------------|---------------------------------|
| | | | v V | i A | | | | |
| CN0603M4G | 8 | ± 20 | 19 | 1,0 | 200 | 1,0 | 238 | 266 |
| CN0805M4G | 8 | ± 20 | 19 | 1,0 | 700 | 1,5 | 238 | 267 |
| CN1206M4G | 8 | ± 20 | 17 | 1,0 | 1500 | 1,8 | 240 | 268 |
| CN1210M4G | 8 | ± 20 | 17 | 2,5 | 5000 | 1,8 | 241 | 269 |
| CN1812M4G | 8 | ± 20 | 17 | 5,0 | 10000 | 2,5 | 242 | 270 |
| CN2220M4G | 8 | ± 20 | 17 | 10,0 | 24000 | 3,0 | 245 | 271 |
| CN0603M6G | 11 | ± 20 | 27 | 1,0 | 200 | 1,0 | 238 | 266 |
| CN0805M6G | 11 | ± 20 | 27 | 1,0 | 600 | 1,5 | 239 | 267 |
| CN0805M6CCG | 11 | ± 20 | 27 | 1,0 | 1500 ¹⁾ | 1,5 | 239 | 267 |
| CN1206M6G | 11 | ± 20 | 25 | 1,0 | 1200 | 1,8 | 240 | 268 |
| CN1210M6G | 11 | ± 20 | 25 | 2,5 | 4000 | 1,8 | 241 | 269 |
| CN1812M6G | 11 | ± 20 | 25 | 5,0 | 8000 | 2,5 | 242 | 270 |
| CN2220M6G | 11 | ± 20 | 25 | 10,0 | 20000 | 3,0 | 245 | 271 |
| CN0603M7G | 12,5 | ± 20 | 30 | 1,0 | 200 | 1,0 | 238 | 266 |
| CN0603L8G | 15 | ± 15 | 33 | 1,0 | 150 | 1,0 | 238 | 266 |
| CN0805L8G | 15 | ± 15 | 33 | 1,0 | 500 | 1,5 | 239 | 267 |
| CN1206L8G | 15 | ± 15 | 30 | 1,0 | 1000 | 1,8 | 240 | 268 |
| CN1210L8G | 15 | ± 15 | 30 | 2,5 | 3000 | 1,8 | 242 | 269 |
| CN1812L8G | 15 | ± 15 | 30 | 5,0 | 6000 | 2,5 | 244 | 270 |
| CN2220L8G | 15 | ± 15 | 30 | 10,0 | 16000 | 3,0 | 245 | 271 |
| CN0603K11G | 18 | ± 10 | 35 | 1,0 | 100 | 1,0 | 238 | 266 |
| CN0805K11G | 18 | ± 10 | 35 | 1,0 | 400 | 1,5 | 239 | 267 |
| CN1206K11G | 18 | ± 10 | 33 | 1,0 | 800 | 1,8 | 240 | 268 |
| CN1210K11G | 18 | ± 10 | 33 | 2,5 | 2400 | 1,8 | 242 | 269 |
| CN1812K11G | 18 | ± 10 | 33 | 5,0 | 5000 | 2,5 | 244 | 270 |
| CN2220K11G | 18 | ± 10 | 33 | 10,0 | 12000 | 3,0 | 245 | 271 |
| CN0402L14GK2 | 23,5 | ± 15 | 46 | 1,0 | 60 ²⁾ | 0,8 | 237 | 265 |
| CN0603K14G | 22 | ± 10 | 40 | 1,0 | 100 | 1,0 | 238 | 266 |
| CN0805K14G | 22 | ± 10 | 40 | 1,0 | 350 | 1,5 | 239 | 267 |
| CN1206K14G | 22 | ± 10 | 38 | 1,0 | 700 | 1,8 | 240 | 268 |
| CN1210K14G | 22 | ± 10 | 38 | 2,5 | 2000 | 1,8 | 242 | 269 |
| CN1812K14G | 22 | ± 10 | 38 | 5,0 | 4500 | 2,5 | 244 | 270 |
| CN2220K14G | 22 | ± 10 | 38 | 10,0 | 10000 | 3,0 | 245 | 271 |

1) C (1 MHz); ± 20%; 2) C_{typ} (1 MHz)

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


SMD Varistors
Standard – Silver Palladium Termination (0402: Silver Platinum)
Maximum ratings (0402 ... 0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

| Type | Ordering code | V_{RMS} | V_{DC} | i_{max} 8/20 μ s A | W_{max} (2 ms) J | P_{max} W |
|--------------|-----------------|-----------|----------|--------------------------------|--------------------------|----------------|
| SIOV- | | V | V | | | |
| CN0603K17G | B72500V0170K060 | 17 | 22 | 30 | 0,2 | 0,003 |
| CN0603K17LCG | B72500V2170K060 | 17 | 22 | 10 | 0,1 | 0,001 |
| CN0805K17G | B72510V0170K062 | 17 | 22 | 120 | 0,3 | 0,005 |
| CN0805K17LCG | B72510V2170K062 | 17 | 22 | 30 | 0,1 | 0,004 |
| CN1206K17G | B72520V0170K062 | 17 | 22 | 200 | 0,6 | 0,008 |
| CN1210K17G | B72530V0170K062 | 17 | 22 | 400 | 1,7 | 0,010 |
| CN1812K17G | B72580V0170K062 | 17 | 22 | 800 | 2,7 | 0,015 |
| CN2220K17G | B72540V0170K062 | 17 | 22 | 1200 | 7,2 | 0,020 |
| CN0603K20G | B72500V0200K060 | 20 | 26 | 30 | 0,3 | 0,003 |
| CN0805K20G | B72510V0200K062 | 20 | 26 | 80 | 0,3 | 0,005 |
| CN1206K20G | B72520V0200K062 | 20 | 26 | 200 | 0,7 | 0,008 |
| CN1210K20G | B72530V0200K062 | 20 | 26 | 400 | 1,9 | 0,010 |
| CN1812K20G | B72580V0200K062 | 20 | 26 | 800 | 3,0 | 0,015 |
| CN2220K20G | B72540V0200K062 | 20 | 26 | 1200 | 7,8 | 0,020 |
| CN0603K25G | B72500V0250K060 | 25 | 31 | 30 | 0,3 | 0,003 |
| CN0805K25G | B72510V0250K062 | 25 | 31 | 80 | 0,3 | 0,005 |
| CN1206K25G | B72520V0250K062 | 25 | 31 | 200 | 1,0 | 0,008 |
| CN1210K25G | B72530V0250K062 | 25 | 31 | 300 | 1,7 | 0,010 |
| CN1812K25G | B72580V0250K062 | 25 | 31 | 800 | 3,7 | 0,015 |
| CN2220K25G | B72540V0250K062 | 25 | 31 | 1200 | 9,6 | 0,020 |
| CN0805K30G | B72510V0300K062 | 30 | 38 | 80 | 0,3 | 0,005 |
| CN1206K30G | B72520V0300K062 | 30 | 38 | 200 | 1,1 | 0,008 |
| CN1210K30G | B72530V0300K062 | 30 | 38 | 300 | 2,0 | 0,010 |
| CN1812K30G | B72580V0300K062 | 30 | 38 | 800 | 4,2 | 0,015 |
| CN2220K30G | B72540V0300K062 | 30 | 38 | 1200 | 12,0 | 0,020 |
| CN1206K35G | B72520V0350K062 | 35 | 45 | 100 | 0,4 | 0,008 |
| CN1210K35G | B72530V0350K062 | 35 | 45 | 250 | 2,0 | 0,010 |
| CN1812K35G | B72580V0350K062 | 35 | 45 | 500 | 4,0 | 0,015 |
| CN2220K35G | B72540V0350K062 | 35 | 45 | 1000 | 7,7 | 0,020 |
| CN1206K40G | B72520V0400K062 | 40 | 56 | 100 | 0,5 | 0,008 |
| CN1210K40G | B72530V0400K062 | 40 | 56 | 250 | 2,3 | 0,010 |
| CN1812K40G | B72580V0400K062 | 40 | 56 | 500 | 4,8 | 0,015 |
| CN2220K40G | B72540V0400K062 | 40 | 56 | 1000 | 9,0 | 0,020 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


Characteristics ($T_A = 25\text{ }^\circ\text{C}$)

| Type | V_V (1 mA) V | ΔV_V (1 mA) % | Max. clamping voltage | | C_{typ} (1 kHz) pF | L_{typ} nH | Derating curve Page | V/I char- acteristic Page |
|--------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|-----------------|---------------------------|---------------------------------|
| | | | v V | i A | | | | |
| CN0603K17G | 27 | ± 10 | 46 | 1,0 | 100 | 1,0 | 238 | 266 |
| CN0603K17LCG | 27 | ± 10 | 50 | 1,0 | < 50 | 1,0 | 237 | 266 |
| CN0805K17G | 27 | ± 10 | 46 | 1,0 | 400 | 1,5 | 239 | 267 |
| CN0805K17LCG | 27 | +22/-8 ¹⁾ | 50 | 1,0 | < 100 | 1,0 | 238 | 267 |
| CN1206K17G | 27 | ± 10 | 44 | 1,0 | 650 | 1,8 | 240 | 268 |
| CN1210K17G | 27 | ± 10 | 44 | 2,5 | 1800 | 1,8 | 242 | 269 |
| CN1812K17G | 27 | ± 10 | 44 | 5,0 | 4000 | 2,5 | 244 | 270 |
| CN2220K17G | 27 | ± 10 | 44 | 10,0 | 9000 | 3,0 | 245 | 271 |
| CN0603K20G | 33 | ± 10 | 56 | 1,0 | 90 | 1,0 | 238 | 266 |
| CN0805K20G | 33 | ± 10 | 56 | 1,0 | 300 | 1,5 | 239 | 267 |
| CN1206K20G | 33 | ± 10 | 54 | 1,0 | 600 | 1,8 | 240 | 268 |
| CN1210K20G | 33 | ± 10 | 54 | 2,5 | 1500 | 1,8 | 242 | 269 |
| CN1812K20G | 33 | ± 10 | 54 | 5,0 | 3000 | 2,5 | 244 | 270 |
| CN2220K20G | 33 | ± 10 | 54 | 10,0 | 7000 | 3,0 | 245 | 271 |
| CN0603K25G | 39 | ± 10 | 67 | 1,0 | 90 ²⁾ | 1,0 | 238 | 266 |
| CN0805K25G | 39 | ± 10 | 67 | 1,0 | 250 | 1,5 | 239 | 267 |
| CN1206K25G | 39 | ± 10 | 65 | 1,0 | 550 | 1,8 | 240 | 268 |
| CN1210K25G | 39 | ± 10 | 65 | 2,5 | 1200 | 1,8 | 241 | 269 |
| CN1812K25G | 39 | ± 10 | 65 | 5,0 | 2500 | 2,5 | 244 | 270 |
| CN2220K25G | 39 | ± 10 | 65 | 10,0 | 5000 | 3,0 | 245 | 271 |
| CN0805K30G | 47 | ± 10 | 77 | 1,0 | 200 | 1,0 | 239 | 267 |
| CN1206K30G | 47 | ± 10 | 77 | 1,0 | 500 | 1,8 | 240 | 268 |
| CN1210K30G | 47 | ± 10 | 77 | 2,5 | 1000 | 1,8 | 241 | 269 |
| CN1812K30G | 47 | ± 10 | 77 | 5,0 | 2000 | 2,5 | 244 | 270 |
| CN2220K30G | 47 | ± 10 | 77 | 10,0 | 4000 | 3,0 | 245 | 271 |
| CN1206K35G | 56 | ± 10 | 90 | 1,0 | 200 | 1,8 | 238 | 268 |
| CN1210K35G | 56 | ± 10 | 90 | 2,5 | 600 | 1,8 | 241 | 269 |
| CN1812K35G | 56 | ± 10 | 90 | 5,0 | 1200 | 2,5 | 242 | 270 |
| CN2220K35G | 56 | ± 10 | 90 | 10,0 | 2500 | 3,0 | 245 | 271 |
| CN1206K40G | 68 | ± 10 | 110 | 1,0 | 250 | 1,8 | 238 | 268 |
| CN1210K40G | 68 | ± 10 | 110 | 2,5 | 500 | 1,8 | 241 | 269 |
| CN1812K40G | 68 | ± 10 | 110 | 5,0 | 1000 | 2,5 | 242 | 270 |
| CN2220K40G | 68 | ± 10 | 110 | 10,0 | 2000 | 3,0 | 245 | 271 |

1) Tolerance differs from standard; 2) C_{typ} (1 MHz)

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


SMD Varistors
Standard – Silver Palladium Termination (0402: Silver Platinum)
Maximum ratings (0402 ... 0603: $T_A = 85\text{ °C}$; 0805 ... 2220: $T_A = 125\text{ °C}$)

| Type | Ordering code | V_{RMS} | V_{DC} | i_{max} 8/20 μ s A | W_{max} (2 ms) J | P_{max} W |
|------------|-----------------|-----------|----------|--------------------------------|--------------------------|----------------|
| SIOV- | | V | V | | | |
| CN1206K50G | B72520V0500K062 | 50 | 65 | 100 | 0,6 | 0,008 |
| CN1210K50G | B72530V0500K062 | 50 | 65 | 200 | 1,6 | 0,010 |
| CN1812K50G | B72580V0500K062 | 50 | 65 | 400 | 4,5 | 0,015 |
| CN2220K50G | B72540V0500K062 | 50 | 65 | 800 | 5,6 | 0,020 |
| CN1206K60G | B72520V0600K062 | 60 | 85 | 100 | 0,7 | 0,008 |
| CN1210K60G | B72530V0600K062 | 60 | 85 | 200 | 2,0 | 0,010 |
| CN1812K60G | B72580V0600K062 | 60 | 85 | 400 | 5,8 | 0,015 |
| CN2220K60G | B72540V0600K062 | 60 | 85 | 800 | 6,8 | 0,020 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").


Characteristics ($T_A = 25\text{ °C}$)

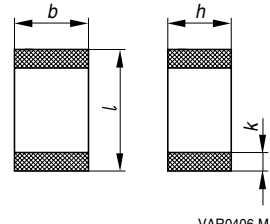
| Type | V_V (1 mA) V | ΔV_V (1 mA) % | Max. clamping voltage | | C_{typ} (1 kHz) pF | L_{typ} nH | Derating curve Page | V/I char- acteristic Page |
|------------|----------------------|-----------------------------|-----------------------|----------|----------------------------|-----------------|---------------------------|---------------------------------|
| | | | v V | i A | | | | |
| CN1206K50G | 82 | ± 10 | 135 | 1,0 | 120 | 1,8 | 238 | 268 |
| CN1210K50G | 82 | ± 10 | 135 | 2,5 | 250 | 1,8 | 240 | 269 |
| CN1812K50G | 82 | ± 10 | 135 | 5,0 | 500 | 2,5 | 242 | 270 |
| CN2220K50G | 82 | ± 10 | 135 | 10,0 | 1000 | 3,0 | 244 | 271 |
| CN1206K60G | 100 | ± 10 | 165 | 1,0 | 100 | 1,8 | 238 | 268 |
| CN1210K60G | 100 | ± 10 | 165 | 2,5 | 200 | 1,8 | 240 | 269 |
| CN1812K60G | 100 | ± 10 | 165 | 5,0 | 400 | 2,5 | 242 | 270 |
| CN2220K60G | 100 | ± 10 | 165 | 10,0 | 800 | 3,0 | 244 | 271 |

A wide range of HC, CC and LC types are available upon request (see 3.3.6, chapter "Applications").



SMD Varistors

MLV; Standard Series



Weight: < 0,2 g

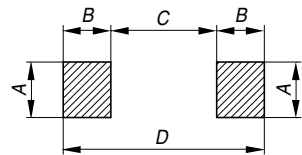
VAR0406-M

Termination acc. CECC 32101-801

Dimensions

| Type | <i>l</i> mm | <i>b</i> mm | <i>h</i> mm | <i>k</i> mm |
|----------------|----------------|----------------|----------------|----------------|
| SIOV-CT/CN0402 | 1,0 ± 0,15 | 0,50 ± 0,10 | 0,6 max. | 0,1 ... 0,3 |
| SIOV-CT/CN0603 | 1,6 ± 0,15 | 0,80 ± 0,10 | 0,9 max. | 0,1 ... 0,4 |
| SIOV-CT/CN0805 | 2,0 ± 0,20 | 1,25 ± 0,15 | 1,4 max. | 0,13 ... 0,75 |
| SIOV-CT/CN1206 | 3,2 ± 0,30 | 1,60 ± 0,20 | 1,7 max. | 0,25 ... 0,75 |
| SIOV-CT/CN1210 | 3,2 ± 0,30 | 2,50 ± 0,25 | 1,7 max. | 0,25 ... 0,75 |
| SIOV-CT/CN1812 | 4,5 ± 0,40 | 3,20 ± 0,30 | 2,5 max. | 0,25 ... 1,0 |
| SIOV-CT/CN2220 | 5,7 ± 0,40 | 5,00 ± 0,40 | 2,5 max. | 0,25 ... 1,0 |

Termination: nickel barrier (CT) or silver palladium (CN)



VAR0391-D

Recommended solder pad layout

| Type | <i>A</i> mm | <i>B</i> mm | <i>C</i> mm | <i>D</i> mm |
|----------------|----------------|----------------|----------------|----------------|
| SIOV-CT/CN0402 | 0,6 | 0,6 | 0,5 | 1,7 |
| SIOV-CT/CN0603 | 1,0 | 1,0 | 1,0 | 3,0 |
| SIOV-CT/CN0805 | 1,4 | 1,2 | 1,0 | 3,4 |
| SIOV-CT/CN1206 | 1,8 | 1,2 | 2,1 | 4,5 |
| SIOV-CT/CN1210 | 2,8 | 1,2 | 2,1 | 4,5 |
| SIOV-CT/CN1812 | 3,6 | 1,5 | 3,0 | 6,0 |
| SIOV-CT/CN2220 | 5,5 | 1,5 | 4,2 | 7,2 |

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