

Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

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FEATURE

- Operating / Storage Temperature: -40°C ~ +105°C / -40°C +125°C
- Varistor Voltage: 18V to 1800V
- Withstanding Surge Current Rating Up to 15KA
- Various Lead Form and Spacing Options
- UL/cUL Safety Approved: Certification No: E326004
- VDE Safety Approved: Certification No: 40013638



PART NUMBERING SYSTEM

MVR 14 D 911 K O
(1) (2) (3) (4) (5) (6)

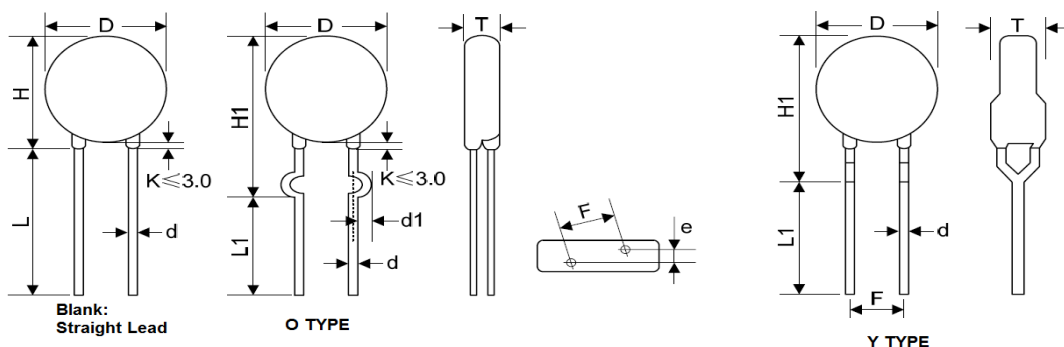


| No | Item | Digit | Description | Series Reference |
|-----|-------------------|-------|-----------------------------------|---|
| (1) | Meritek Series | MVR | Metal Oxide Varistor | Leaded Type |
| (2) | Diameter | 14 | 14: φ14mm | 5, 7, 10, 14, 20, 25 |
| (3) | Lead/Package Type | D | D: Round Disk or Dual Square Disk | S: Single Square, A: Bare |
| (4) | Voltage | 911 | 911: 910VDC | 18V~1800V |
| (5) | Tolerance | K | K: ±10% | -10% ~ +10% |
| (6) | Lead Type | O | O: Out kink | Blank: Straight, Y: Y Kink, O:Out Kink, |

ELECTRICAL CHARACTERISTICS AND DIMENSIONS REFERENCE TABLE

| MVR Series | Varistor DC Voltage @1mA | Maximun Energy (10/1Kμs) | D | H | H1 | L min | L1 min | d | d1 ± 0.4 | F |
|-----------------------|--------------------------|--------------------------|-----------|-----------|-----------|-------|--------|----------|----------|----------|
| MVR05 | 18V~750V | 0.4J~16.0J | 5.0~7.5 | 5.5~10.0 | 8.0~13.0 | 20.0 | 15.0 | 0.6±0.05 | 1.2 | 5.0±0.8 |
| MVR07 | 18V~820V | 0.9~33.0J | 7.0~9.0 | 7.5~12.0 | 9.0~13.5 | 20.0 | 15.0 | 0.6±0.05 | 1.2 | 5.0±0.8 |
| MVR10 | 18V~1.1kV | 2.1~115.0J | 10.0~12.5 | 10.5~16.0 | 13.0~17.5 | 20.0 | 15.0 | 0.8±0.05 | 1.4 | 7.5±0.8 |
| MVR14 | 18V~1.8kV | 4.0~213.0J | 13.5~16.0 | 14.5~19.0 | 17.0~21.0 | 20.0 | 15.0 | 0.8±0.05 | 1.4 | 7.5±0.8 |
| MVR20 | 18V~1.8kV | 11.0J~383J | 19.5~22.5 | 20.5~25.0 | 24.0~28.0 | 20.0 | 15.0 | 0.8±0.05 | 1.4 | 7.5±0.8 |
| | | | | | | | | 1.0±0.05 | 1.6 | 10.0±1.0 |
| MVR25 | 18V~1.8kV | 190J~770J | 25.0~28.0 | 27.0~31.5 | - | 20.0 | - | 1.0 ±0.1 | - | 10.0±1.0 |
| | | | | | | | | | | 12.5±1.0 |

(Unit: mm)



Metal Oxide Varistor Leaded Disk Type, 5~25mm

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ELECTRICAL CHARACTERISTICS – MVR05D SERIES

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| MVR05D Series | Varistor DC Voltage @1mA | | Max. Allowable Voltage | | Max. Clamping Voltage | | Withstanding Surge Current (A) | Max. Energy (10/1Kµs) (J) | Rated Power (W) | Typical Cap. @1kHz (pF) | Dimension | |
|---------------|--------------------------|---------------------|------------------------|----------------|-----------------------|------------------|-----------------------------------|------------------------------|--------------------|----------------------------|-----------|-----|
| | V _{DC} | V _{AC} | V _{DC} | V _c | I _p | T _{max} | | | | | e ±0.8 | |
| | (V) | (V _{rms}) | (V) | (V) | (A) | | | | | | | |
| MVR05D180K | 18(15~21.6) | 11 | 14 | 40 | 1 | 100 | 0.01 | 0.4 | 0.01 | 1,400 | 4.5 | 1.3 |
| MVR05D220K | 22(19.5~26) | 14 | 18 | 48 | | | | 0.5 | | 1,150 | 4.6 | 1.4 |
| MVR05D270K | 27(24~31) | 17 | 22 | 60 | | | | 0.6 | | 930 | 4.7 | 1.6 |
| MVR05D330K | 33(29.5~36.5) | 20 | 26 | 73 | | | | 0.8 | | 760 | 4.9 | 1.5 |
| MVR05D390K | 39(35~43) | 25 | 31 | 80 | | | | 0.9 | | 640 | 4.8 | 1.6 |
| MVR05D470K | 47(42~52) | 30 | 38 | 104 | | | | 1.1 | | 530 | 4.9 | 1.7 |
| MVR05D560K | 56(50~62) | 35 | 45 | 123 | | | | 1.3 | | 450 | 5.0 | 1.9 |
| MVR05D680K | 68(61~75) | 40 | 56 | 145 | | | | 1.6 | | 370 | 5.2 | 2.2 |
| MVR05D820K | 82(74~90) | 50 | 65 | 150 | | | | 2.5 | | 300 | 4.1 | 1.6 |
| MVR05D101K | 100(90~110) | 60 | 85 | 177 | 5 | 400 | 0.10 | 3.0 | 250 | 4.3 | 1.8 | |
| MVR05D121K | 120(108~132) | 75 | 100 | 210 | | | | 4.0 | 210 | 4.5 | 2.0 | |
| MVR05D151K | 150(135~165) | 95 | 125 | 260 | | | | 4.1 | 165 | 4.8 | 1.6 | |
| MVR05D181K | 180(162~198) | 115 | 150 | 320 | | | | 4.9 | 140 | 4.3 | 1.7 | |
| MVR05D201K | 200(180~220) | 130 | 170 | 355 | | | | 6.5 | 125 | 4.4 | 1.8 | |
| MVR05D221K | 220(198~242) | 140 | 180 | 380 | | | | 7.5 | 110 | 4.5 | 1.9 | |
| MVR05D241K | 240(216~264) | 150 | 200 | 415 | | | | 8.0 | 100 | 4.6 | 2.0 | |
| MVR05D271K | 270(243~297) | 175 | 225 | 475 | | | | 8.5 | 95 | 4.9 | 2.2 | |
| MVR05D301K | 300(270~330) | 190 | 250 | 520 | | | | 9.0 | 85 | 5.0 | 2.3 | |
| MVR05D331K | 330(297~363) | 210 | 275 | 570 | | | | 9.5 | 75 | 5.1 | 2.3 | |
| MVR05D361K | 360(324~396) | 230 | 300 | 620 | | | | 10.0 | 70 | 5.2 | 2.5 | |
| MVR05D391K | 390(351~429) | 250 | 320 | 675 | | | | 12.0 | 65 | 5.4 | 2.6 | |
| MVR05D431K | 430(387~473) | 275 | 350 | 745 | | | | 13.0 | 60 | 5.7 | 2.8 | |
| MVR05D471K | 470(423~517) | 300 | 385 | 810 | | | | 15.0 | 55 | 6.0 | 3.0 | |
| MVR05D511K | 510(459~561) | 320 | 415 | 845 | | | | 16.0 | 50 | 6.2 | 3.2 | |
| MVR05D561K | 560(504~616) | 350 | 460 | 920 | | | | 16.0 | 45 | 6.5 | 3.4 | |
| MVR05D621K | 620(558~682) | 385 | 505 | 1025 | 21.0 | 40 | 6.5 | 3.7 | | | | |
| MVR05D681K | 680(612~748) | 420 | 560 | 1120 | 21.0 | 35 | 6.8 | 4.0 | | | | |
| MVR05D751K | 750(675~825) | 460 | 615 | 1240 | 22.4 | 30 | 6.9 | 4.1 | | | | |

Notes:

- The tolerance of varistor voltage between 18V and 27V is more than 10%.
- Leakage Current (@83% of V_{1mA}) : IR≤50µA (180K~680K) IR≤25µA (820K~751K)

Metal Oxide Varistor Leaded Disk Type, 5~25mm

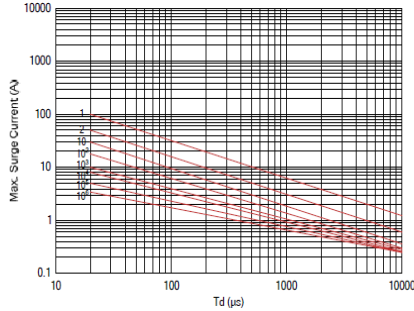
MVR Series

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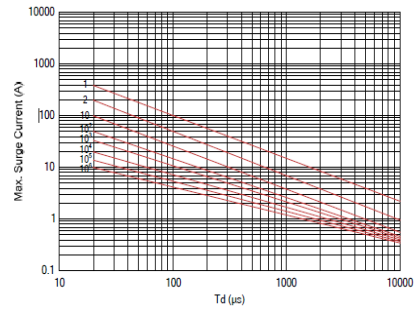
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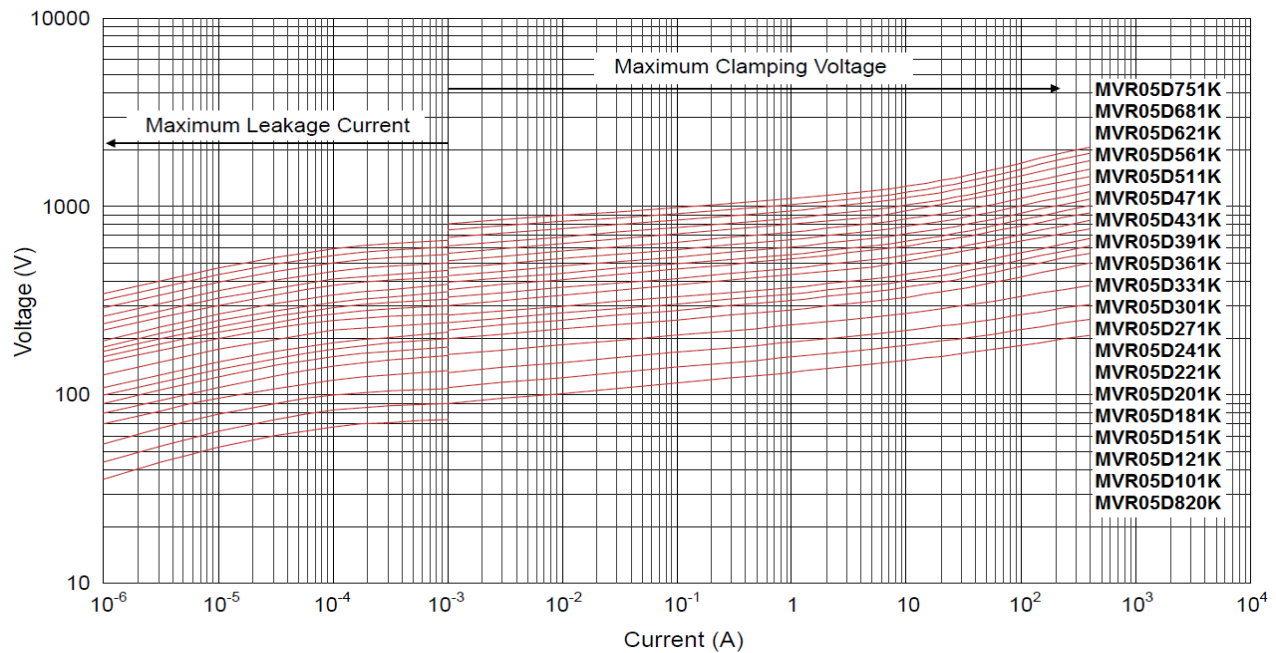
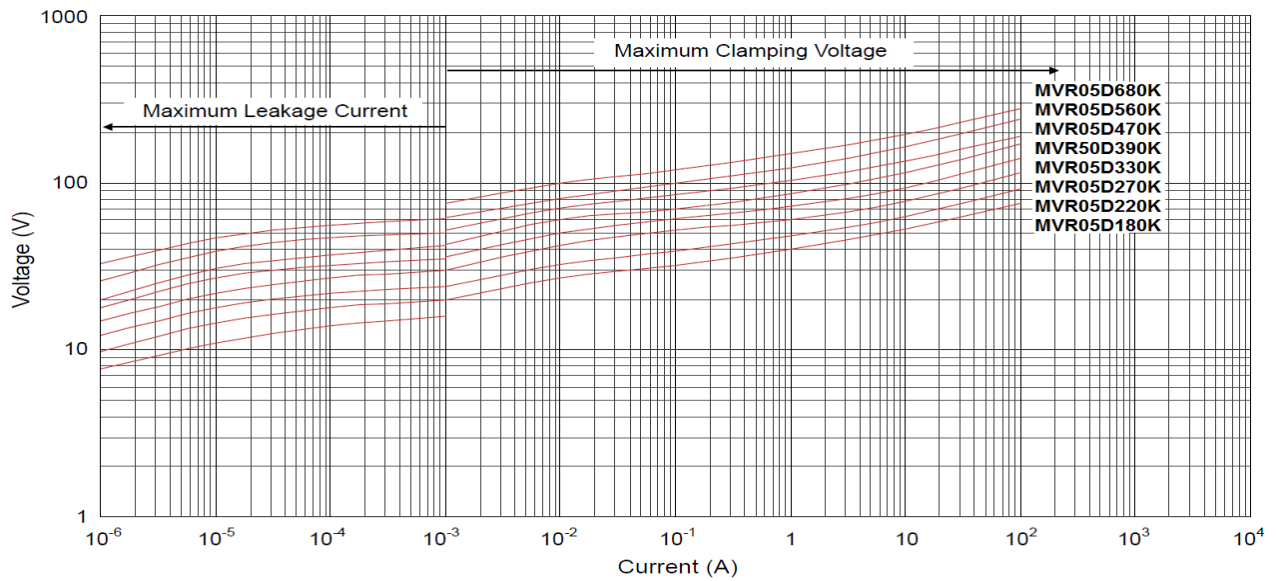
MVR05D180K ~ MVR05D680K



MVR05D820K ~ MVR05D751K



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Metal Oxide Varistor Leaded Disk Type, 5~25mm

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ELECTRICAL CHARACTERISTICS - MVR07D SERIES

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| MVR07D Series | Varistor DC Voltage @1mA | | Max. Allowable Voltage | | Max. Clamping Voltage | | Withstanding Surge Current | Max. Energy (10/1K μ s) | Rated Power | Typical Cap. @1kHz | Dimension | | | | |
|---------------|--------------------------|---------------------|------------------------|----------------|-----------------------|-------|----------------------------|-----------------------------|-------------|--------------------|-----------|-----|------|-------|-------------|
| | V _{DC} | V _{AC} | V _{DC} | V _c | I _p | (A) | | | | | (J) | (W) | (pF) | T max | e ± 0.8 |
| | (V) | (V _{rms}) | (V) | (V) | (A) | | | | | | | | | | |
| MVR07D180K | 18(15~21.6) | 11 | 14 | 36 | 2.5 | 250 | 0.9 | 0.02 | 2800 | 4.5 | 1.3 | | | | |
| MVR07D220K | 22(19.5~26) | 14 | 18 | 43 | | | | | 2300 | 4.6 | 1.4 | | | | |
| MVR07D270K | 27(24~31) | 17 | 22 | 53 | | | | | 1800 | 4.7 | 1.6 | | | | |
| MVR07D330K | 33(29.5~36.5) | 20 | 26 | 65 | | | | | 1500 | 4.9 | 1.5 | | | | |
| MVR07D390K | 39(35~43) | 25 | 31 | 77 | | | | | 1300 | 4.8 | 1.6 | | | | |
| MVR07D470K | 47(42~52) | 30 | 38 | 93 | | | | | 1100 | 4.9 | 1.7 | | | | |
| MVR07D560K | 56(50~62) | 35 | 45 | 110 | | | | | 890 | 5.0 | 1.9 | | | | |
| MVR07D680K | 68(61~75) | 40 | 56 | 135 | | | | | 740 | 5.2 | 2.2 | | | | |
| MVR07D820K | 82(74~90) | 50 | 65 | 135 | 10 | 1,200 | 5.0 | 0.25 | 600 | 4.1 | 1.6 | | | | |
| MVR07D101K | 100(90~110) | 60 | 85 | 165 | | | | | 500 | 4.3 | 1.8 | | | | |
| MVR07D121K | 120(108~132) | 75 | 100 | 200 | | | | | 420 | 4.5 | 2.0 | | | | |
| MVR07D151K | 150(135~165) | 95 | 125 | 250 | | | | | 330 | 4.8 | 1.6 | | | | |
| MVR07D181K | 180(162~198) | 115 | 150 | 300 | | | | | 280 | 4.3 | 1.7 | | | | |
| MVR07D201K | 200(180~220) | 130 | 170 | 340 | | | | | 250 | 4.4 | 1.8 | | | | |
| MVR07D221K | 220(198~242) | 140 | 180 | 360 | | | | | 230 | 4.5 | 1.9 | | | | |
| MVR07D241K | 240(216~264) | 150 | 200 | 395 | | | | | 210 | 4.6 | 2.0 | | | | |
| MVR07D271K | 270(243~297) | 175 | 225 | 455 | | | | | 185 | 4.9 | 2.2 | | | | |
| MVR07D301K | 300(270~330) | 190 | 250 | 500 | | | | | 165 | 5.0 | 2.3 | | | | |
| MVR07D331K | 330(297~363) | 210 | 275 | 550 | | | | | 150 | 5.1 | 2.3 | | | | |
| MVR07D361K | 360(324~396) | 230 | 300 | 595 | | | | | 140 | 5.2 | 2.5 | | | | |
| MVR07D391K | 390(351~429) | 250 | 320 | 650 | | | | | 130 | 5.4 | 2.6 | | | | |
| MVR07D431K | 430(387~473) | 275 | 350 | 710 | | | | | 115 | 5.7 | 2.8 | | | | |
| MVR07D471K | 470(423~517) | 300 | 385 | 775 | | | | | 105 | 6.0 | 3.0 | | | | |
| MVR07D511K | 510(459~561) | 320 | 415 | 845 | | | | | 100 | 6.2 | 3.2 | | | | |
| MVR07D561K | 560(504~616) | 350 | 460 | 925 | | | | | 90 | 6.5 | 3.4 | | | | |
| MVR07D621K | 620(558~682) | 385 | 505 | 1025 | | | | | 80 | 7.1 | 3.7 | | | | |
| MVR07D681K | 680(612~748) | 420 | 560 | 1120 | | | | | 75 | 7.3 | 4.0 | | | | |
| MVR07D751K | 750(675~825) | 460 | 615 | 1240 | | | | | 70 | 7.0 | 4.1 | | | | |
| MVR07D781K | 780(702~858) | 485 | 640 | 1290 | 70 | 7.2 | 4.2 | | | | | | | | |
| MVR07D821K | 820(738~902) | 510 | 670 | 1355 | 60 | 7.5 | 4.4 | | | | | | | | |

Notes:

- The tolerance of varistor voltage between 18V and 27V is more than 10%.
- Leakage Current (@83% of V_{1mA}) : IR \leq 50 μ A (180K~680K) IR \leq 25 μ A (820K~821K)

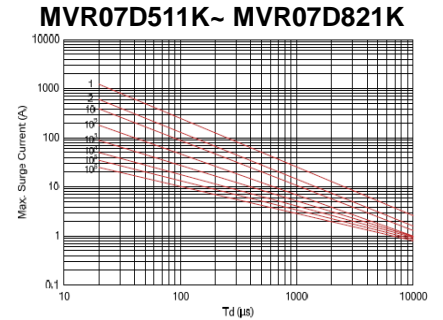
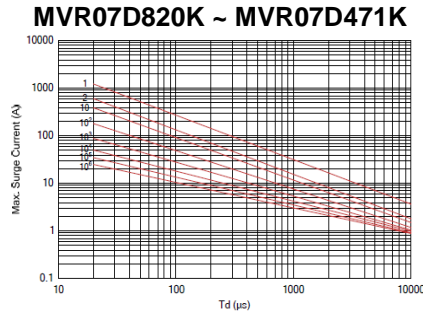
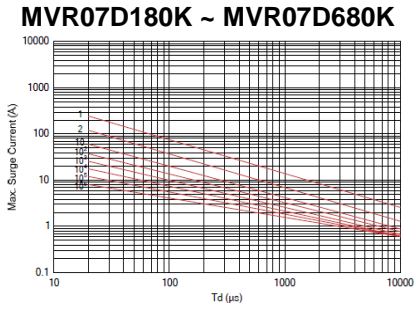
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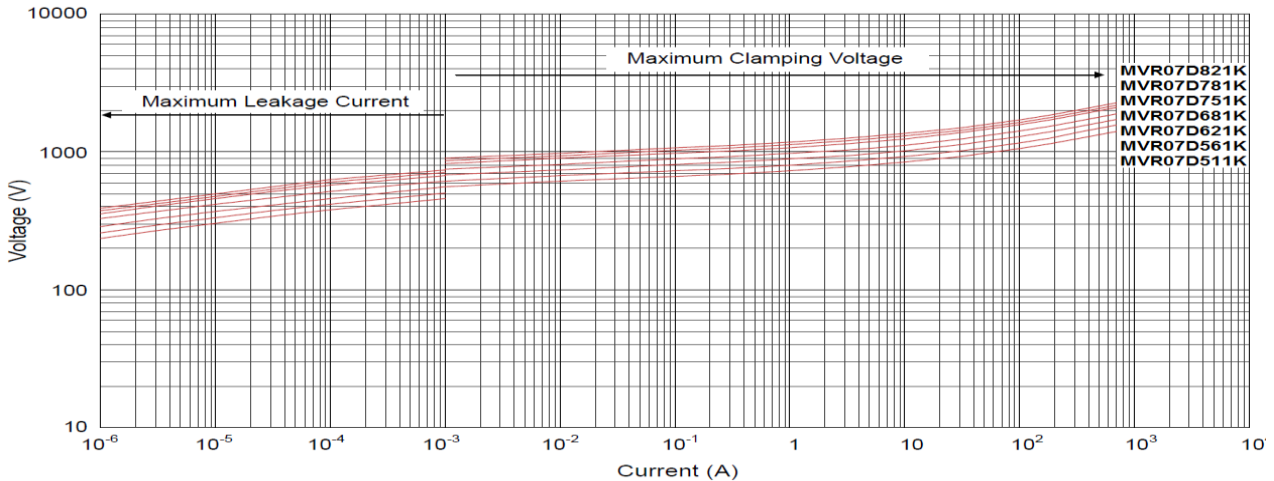
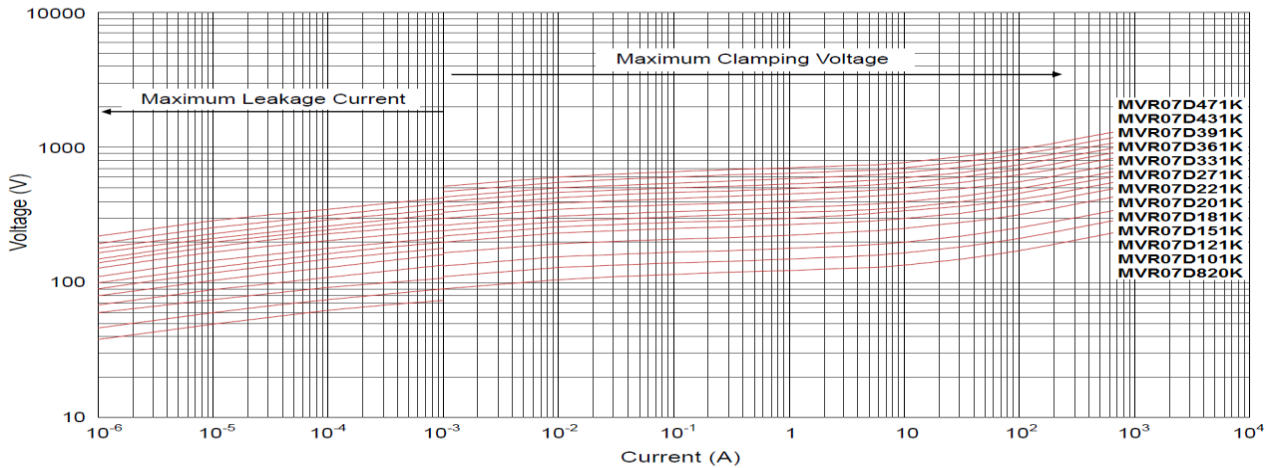
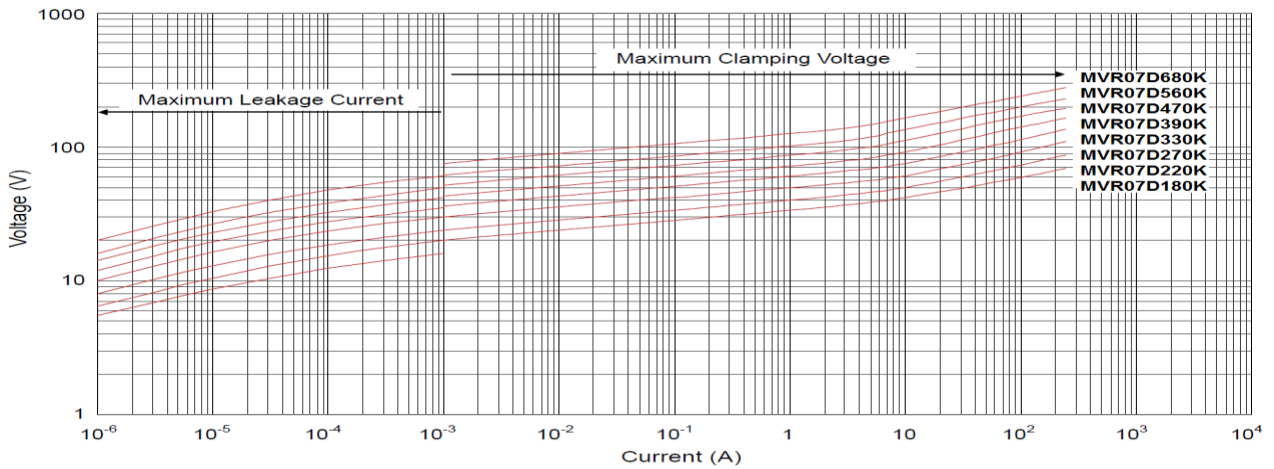
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Metal Oxide Varistor Leaded Disk Type, 5~25mm

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ELECTRICAL CHARACTERISTICS - MVR10D SERIES

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| MVR10D Series | Varistor DC Voltage @1mA | | Max. Allowable Voltage | | Max. Clamping Voltage | | Withstanding Surge Current (A) | Max. Energy (10/1Kµs) (J) | Rated Power (W) | Typical Cap. @1kHz (pF) | Dimension | |
|---------------|--------------------------|---------------------|------------------------|----------------|-----------------------|------------------|-----------------------------------|------------------------------|--------------------|----------------------------|-----------|--|
| | V _{DC} | V _{AC} | V _{DC} | V _c | I _p | T _{max} | | | | | e ±0.8 | |
| | (V) | (V _{rms}) | (V) | (V) | (A) | | | | | | | |
| MVR10D180K | 18(15~21.6) | 11 | 14 | 36 | 5 | 500 | 2.1 | 0.05 | 5600 | 4.6 | 1.5 | |
| MVR10D220K | 22(19.5~26) | 14 | 18 | 43 | | | 2.5 | | 4500 | 4.7 | 1.6 | |
| MVR10D270K | 27(24~31) | 17 | 22 | 53 | | | 3.0 | | 3700 | 4.8 | 1.8 | |
| MVR10D330K | 33(29.5~36.5) | 20 | 26 | 65 | | | 4.0 | | 3000 | 5.0 | 1.7 | |
| MVR10D390K | 39(35~43) | 25 | 31 | 77 | | | 4.6 | | 2400 | 5.3 | 1.8 | |
| MVR10D470K | 47(42~52) | 30 | 38 | 93 | | | 5.5 | | 2100 | 5.4 | 1.9 | |
| MVR10D560K | 56(50~62) | 35 | 45 | 110 | | | 7.0 | | 1800 | 5.5 | 2.1 | |
| MVR10D680K | 68(61~75) | 40 | 56 | 135 | | | 8.2 | | 1500 | 5.6 | 2.4 | |
| MVR10D820K | 82(74~90) | 50 | 65 | 135 | 25 | 2,500 | 12.0 | 0.4 | 1200 | 4.7 | 1.8 | |
| MVR10D101K | 100(90~110) | 60 | 85 | 165 | | | 15.0 | | 1000 | 4.9 | 2.0 | |
| MVR10D121K | 120(108~132) | 75 | 100 | 200 | | | 18.0 | | 830 | 5.1 | 2.2 | |
| MVR10D151K | 150(135~165) | 95 | 125 | 250 | | | 22.0 | | 670 | 5.4 | 1.8 | |
| MVR10D181K | 180(162~198) | 115 | 150 | 300 | | | 27.0 | | 560 | 4.8 | 1.9 | |
| MVR10D201K | 200(180~220) | 130 | 170 | 340 | | | 30.0 | | 500 | 5.0 | 2.0 | |
| MVR10D221K | 220(198~242) | 140 | 180 | 360 | | | 32.0 | | 450 | 5.1 | 2.1 | |
| MVR10D241K | 240(216~264) | 150 | 200 | 395 | | | 35.0 | | 420 | 5.2 | 2.2 | |
| MVR10D271K | 270(243~297) | 175 | 225 | 455 | | | 40.0 | | 370 | 5.4 | 2.4 | |
| MVR10D301K | 300(270~330) | 190 | 250 | 500 | | | 40.0 | | 330 | 5.5 | 2.5 | |
| MVR10D331K | 330(297~363) | 210 | 275 | 550 | | | 43.0 | | 300 | 5.8 | 2.5 | |
| MVR10D361K | 360(324~396) | 230 | 300 | 595 | | | 47.0 | | 280 | 6.0 | 2.7 | |
| MVR10D391K | 390(351~429) | 250 | 320 | 650 | | | 60.0 | | 260 | 6.2 | 2.8 | |
| MVR10D431K | 430(387~473) | 275 | 350 | 710 | | | 65.0 | | 230 | 6.5 | 3.0 | |
| MVR10D471K | 470(423~517) | 300 | 385 | 775 | | | 67.0 | | 210 | 6.7 | 3.2 | |
| MVR10D511K | 510(459~561) | 320 | 415 | 845 | | | 69.0 | | 200 | 6.8 | 3.4 | |
| MVR10D561K | 560(504~616) | 350 | 460 | 925 | | | 70.0 | | 180 | 7.0 | 3.6 | |
| MVR10D621K | 620(558~682) | 385 | 505 | 1025 | | | 72.0 | | 160 | 7.3 | 3.9 | |
| MVR10D681K | 680(612~748) | 420 | 560 | 1120 | | | 75.0 | | 150 | 7.6 | 4.2 | |
| MVR10D751K | 750(675~825) | 460 | 615 | 1240 | | | 77.0 | | 130 | 8.0 | 4.3 | |
| MVR10D781K | 780(702~858) | 485 | 640 | 1290 | 80.0 | 130 | 8.1 | 4.4 | | | | |
| MVR10D821K | 820(738~902) | 510 | 670 | 1355 | 85.0 | 120 | 8.3 | 4.6 | | | | |
| MVR10D911K | 910(819~1001) | 550 | 745 | 1500 | 93.0 | 110 | 8.8 | 5.0 | | | | |
| MVR10D102K | 1000(900~1100) | 625 | 825 | 1650 | 102.0 | 100 | 9.3 | 5.0 | | | | |
| MVR10D112K | 1100(990~1210) | 680 | 895 | 1815 | 115.0 | 90 | 9.9 | 5.4 | | | | |

Notes:

- The tolerance of varistor voltage between 18V and 27V is more than 10%.
- Leakage Current (@83% of V_{1mA}) : IR≤50µA (180K~680K) IR≤25µA (820K~112K)

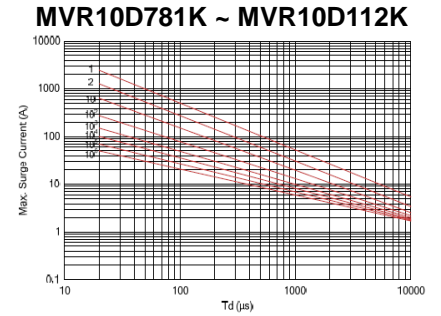
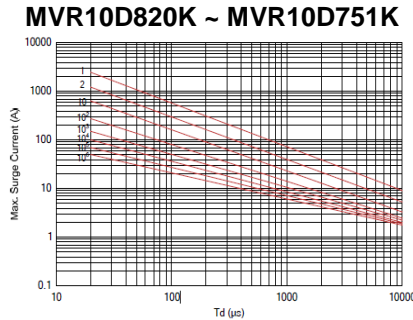
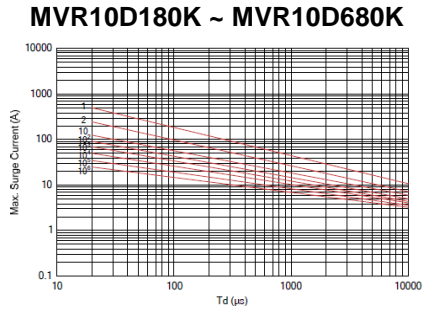
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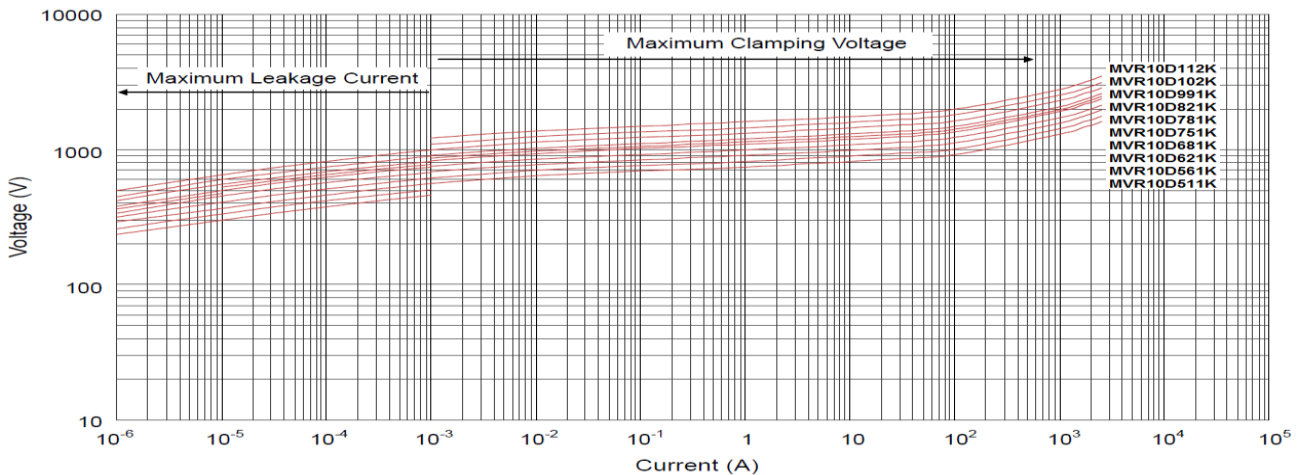
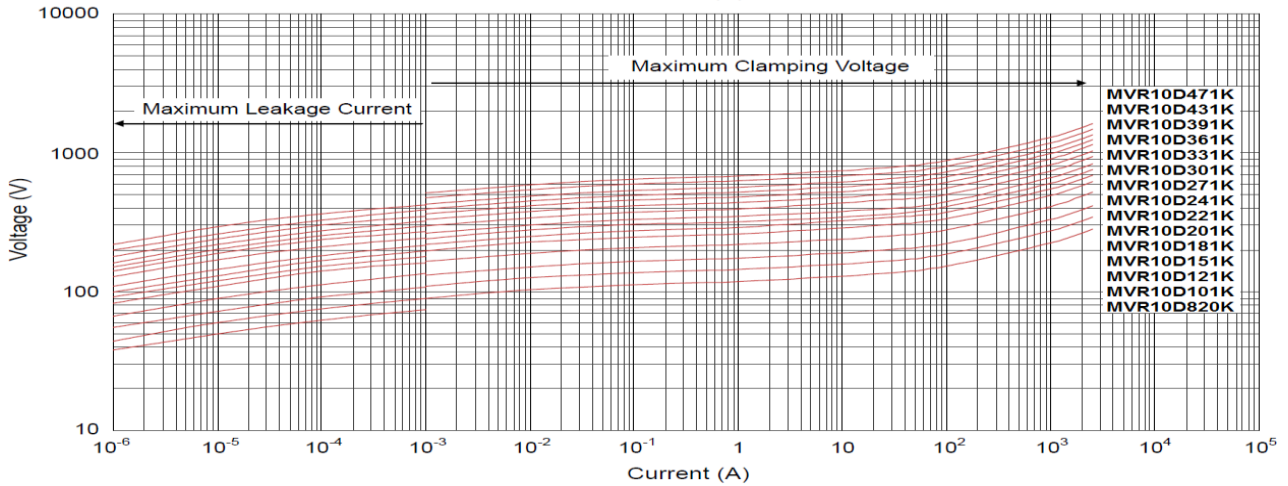
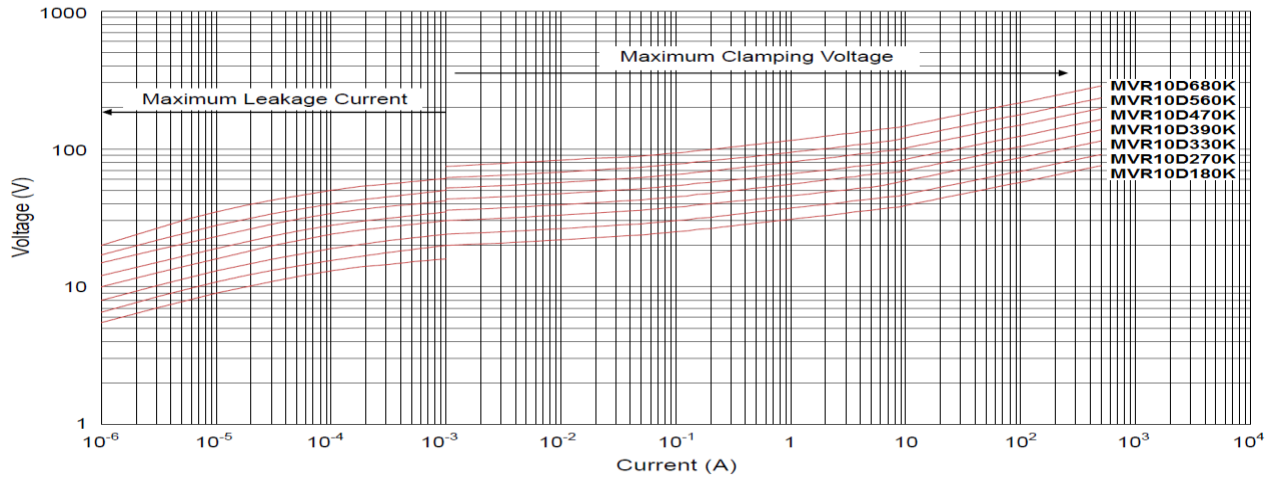
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ELECTRICAL CHARACTERISTICS - MVR14D SERIES

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| MVR14D Series | Varistor DC Voltage @1mA | | Max. Allowable Voltage | | Max. Clamping Voltage | | Withstanding Surge Current (A) | Max. Energy (10/1Kµs) (J) | Rated Power (W) | Typical Cap. @1kHz (pF) | Dimension | |
|---------------|--------------------------|---------------------|------------------------|----------------|-----------------------|------------------|-----------------------------------|------------------------------|--------------------|----------------------------|-----------|-----|
| | V _{DC} | V _{AC} | V _{DC} | V _c | I _P | T _{max} | | | | | e ±0.8 | |
| | (V) | (V _{rms}) | (V) | (V) | (A) | | | | | | | |
| MVR14D180K | 18(15~21.6) | 11 | 14 | 36 | 10 | 1,000 | 0.1 | 4.0 | 0.1 | 11100 | 3.9 | 1.5 |
| MVR14D220K | 22(19.5~26) | 14 | 18 | 43 | | | | 5.0 | | 9100 | 4.0 | 1.6 |
| MVR14D270K | 27(24~31) | 17 | 22 | 53 | | | | 6.0 | | 7400 | 4.1 | 1.8 |
| MVR14D330K | 33(29.5~36.5) | 20 | 26 | 65 | | | | 7.5 | | 6100 | 4.3 | 1.7 |
| MVR14D390K | 39(35~43) | 25 | 31 | 77 | | | | 8.6 | | 5100 | 4.1 | 1.8 |
| MVR14D470K | 47(42~52) | 30 | 38 | 93 | | | | 10.0 | | 4300 | 4.3 | 1.9 |
| MVR14D560K | 56(50~62) | 35 | 45 | 110 | | | | 11.0 | | 3600 | 4.6 | 2.1 |
| MVR14D680K | 68(61~75) | 40 | 56 | 135 | | | | 14.0 | | 2900 | 4.8 | 2.4 |
| MVR14D820K | 82(74~90) | 50 | 65 | 135 | | | | 22.0 | | 2400 | 4.1 | 1.8 |
| MVR14D101K | 100(90~110) | 60 | 85 | 165 | | | | 28.0 | | 2000 | 4.2 | 2.0 |
| MVR14D121K | 120(108~132) | 75 | 100 | 200 | | | | 32.0 | | 1700 | 4.4 | 2.2 |
| MVR14D151K | 150(135~165) | 95 | 125 | 250 | | | | 40.0 | | 1300 | 4.1 | 1.8 |
| MVR14D181K | 180(162~198) | 115 | 150 | 300 | | | | 50.0 | | 1100 | 4.2 | 1.9 |
| MVR14D201K | 200(180~220) | 130 | 170 | 340 | | | | 57.0 | | 1000 | 4.3 | 2.0 |
| MVR14D221K | 220(198~242) | 140 | 180 | 360 | 60.0 | 900 | 4.4 | 2.1 | | | | |
| MVR14D241K | 240(216~264) | 150 | 200 | 395 | 63.0 | 830 | 4.5 | 2.2 | | | | |
| MVR14D271K | 270(243~297) | 175 | 225 | 455 | 70.0 | 740 | 4.6 | 2.4 | | | | |
| MVR14D301K | 300(270~330) | 190 | 250 | 500 | 77.0 | 670 | 4.6 | 2.5 | | | | |
| MVR14D331K | 330(297~363) | 210 | 275 | 550 | 85.0 | 610 | 5.0 | 2.5 | | | | |
| MVR14D361K | 360(324~396) | 230 | 300 | 595 | 93.0 | 560 | 5.2 | 2.7 | | | | |
| MVR14D391K | 390(351~429) | 250 | 320 | 650 | 100 | 510 | 5.4 | 2.8 | | | | |
| MVR14D431K | 430(387~473) | 275 | 350 | 710 | 115 | 460 | 5.6 | 3.0 | | | | |
| MVR14D471k | 470(423~517) | 300 | 385 | 775 | 125 | 430 | 5.8 | 3.2 | | | | |
| MVR14D511K | 510(459~561) | 320 | 415 | 845 | 125 | 390 | 6.1 | 3.4 | | | | |
| MVR14D561K | 560(504~616) | 350 | 460 | 925 | 125 | 360 | 6.4 | 3.6 | | | | |
| MVR14D621K | 620(558~682) | 385 | 505 | 1025 | 125 | 320 | 6.8 | 3.9 | | | | |
| MVR14D681K | 680(621~748) | 420 | 560 | 1120 | 130 | 290 | 7.1 | 4.2 | | | | |
| MVR14D751K | 750(675~825) | 460 | 615 | 1240 | 143 | 270 | 7.2 | 4.3 | | | | |
| MVR14D781K | 780(702~858) | 485 | 640 | 1290 | 148 | 260 | 7.3 | 4.4 | | | | |
| MVR14D821K | 820(738~902) | 510 | 670 | 1355 | 157 | 240 | 7.5 | 4.6 | | | | |
| MVR14D911K | 910(819~1001) | 550 | 745 | 1500 | 175 | 220 | 7.5 | 5.0 | | | | |
| MVR14D102K | 1000(900~1100) | 625 | 825 | 1650 | 190 | 200 | 8.0 | 5.0 | | | | |
| MVR14D112K | 1100(990~1210) | 680 | 895 | 1815 | 213 | 180 | 8.5 | 5.4 | | | | |
| MVR14D122K | 1200(1080~1320) | 750 | 990 | 1980 | 232 | 160 | 9.0 | 5.8 | | | | |
| MVR14D142K | 1400(1260~1540) | 880 | 1140 | 2310 | 238 | 150 | 10.5 | 6.6 | | | | |
| MVR14D162K | 1600(1440~1760) | 1000 | 1280 | 2640 | 243 | 140 | 11.0 | 7.4 | | | | |
| MVR14D182K | 1800(1620~1980) | 1100 | 1465 | 2970 | 250 | 130 | 12.0 | 8.2 | | | | |

Notes:

- The tolerance of varistor voltage between 18V and 27V is more than 10%.
- Varistor voltage ≥ 1200V, structure diagram is F type.
- Leakage Current (@83% of V_{1mA}) : I_R ≤ 50µA (180K~680K) ; I_R ≤ 25µA (820K~182K)

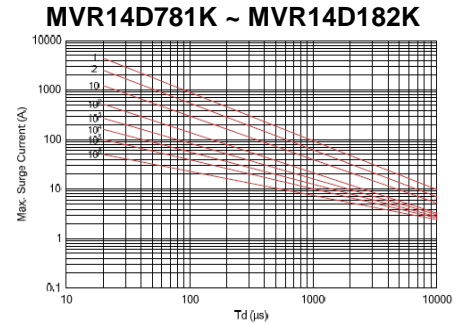
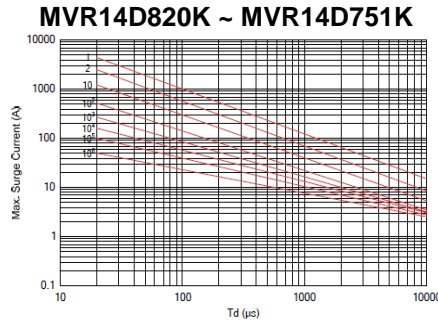
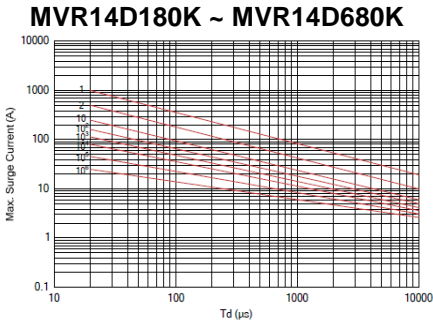
Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

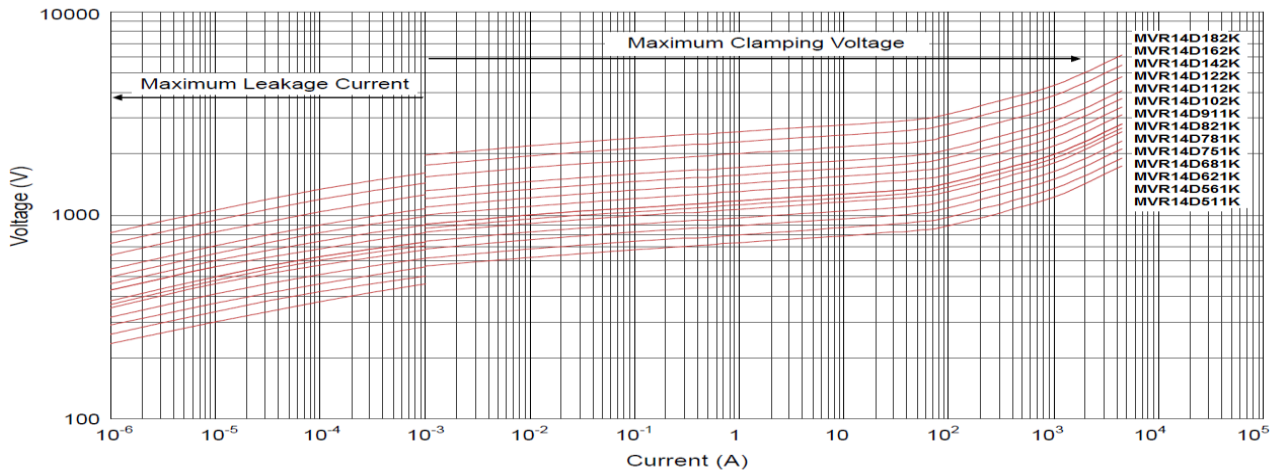
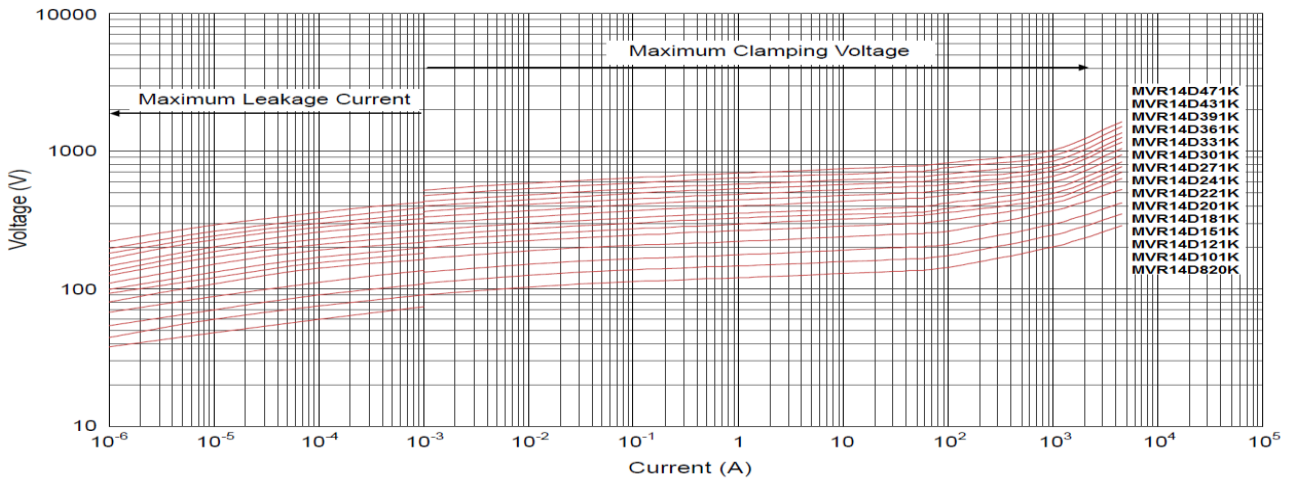
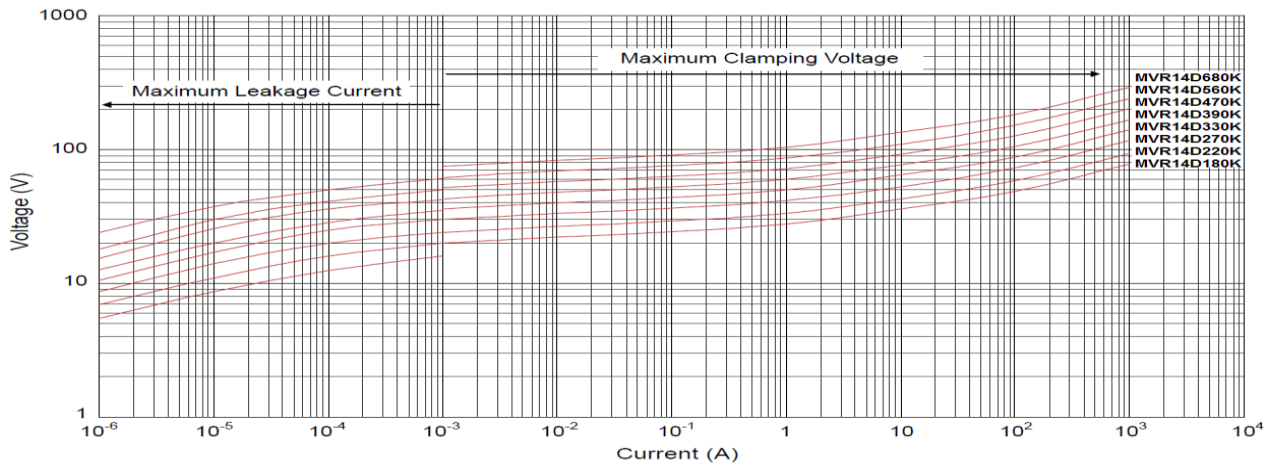
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SURGE CURRENT DERATING CURVES - MVR14D SERIES

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LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES – MVR14D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

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ELECTRICAL CHARACTERISTICS - MVR20D SERIES

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| MVR20D Series | Varistor DC Voltage @1mA | | Max. Allowable Voltage | | Max. Clamping Voltage | | Withstanding Surge Current (A) | Max. Energy (10/1Kμs) (J) | Rated Power (W) | Typical Cap. @1kHz (pF) | Dimension | |
|---------------|--------------------------|---------------------|------------------------|----------------|-----------------------|------------------|-----------------------------------|------------------------------|--------------------|----------------------------|-----------|-----|
| | V _{DC} | V _{AC} | V _{DC} | V _c | I _P | T _{max} | | | | | e ±0.8 | |
| | (V) | (V _{rms}) | (V) | (V) | (A) | | | | | | | |
| MVR20D180K | 18(15~21.6) | 11 | 14 | 36 | 20 | 2,000 | 0.2 | 11 | 28500 | 4.3 | 1.7 | |
| MVR20D220K | 22(19.5~26) | 14 | 18 | 43 | | | | 14 | | 18500 | 4.4 | 1.8 |
| MVR20D270K | 27(24~31) | 17 | 22 | 53 | | | | 16 | | 13000 | 4.6 | 2.0 |
| MVR20D330K | 33(29.5~36.5) | 20 | 26 | 65 | | | | 23 | | 11500 | 4.8 | 1.9 |
| MVR20D390K | 39(35~43) | 25 | 31 | 77 | | | | 26 | | 8500 | 4.5 | 2.0 |
| MVR20D470K | 47(42~52) | 30 | 38 | 93 | | | | 30 | | 7400 | 4.7 | 2.1 |
| MVR20D560K | 56(50~62) | 35 | 45 | 110 | | | | 41 | | 6500 | 5.0 | 2.3 |
| MVR20D680K | 68(61~75) | 40 | 56 | 135 | | | | 46 | | 5800 | 5.3 | 2.6 |
| MVR20D820K | 82(74~90) | 50 | 65 | 135 | 100 | 6,500 | 1.0 | 38 | 4900 | 4.5 | 2.0 | |
| MVR20D101K | 100(90~110) | 60 | 85 | 165 | | | | 45 | 4000 | 4.6 | 2.2 | |
| MVR20D121K | 120(108~132) | 75 | 100 | 200 | | | | 55 | 3300 | 4.8 | 2.4 | |
| MVR20D151K | 150(135~165) | 95 | 125 | 250 | | | | 70 | 2700 | 4.5 | 2.0 | |
| MVR20D181K | 180(162~198) | 115 | 150 | 300 | | | | 85 | 2200 | 4.6 | 2.1 | |
| MVR20D201K | 200(180~220) | 130 | 170 | 340 | | | | 95 | 2000 | 4.7 | 2.2 | |
| MVR20D221K | 220(198~242) | 140 | 180 | 360 | | | | 100 | 1800 | 4.8 | 2.3 | |
| MVR20D241K | 240(216~264) | 150 | 200 | 395 | | | | 108 | 1650 | 4.9 | 2.4 | |
| MVR20D271K | 270(243~297) | 175 | 225 | 455 | | | | 127 | 1500 | 5.0 | 2.6 | |
| MVR20D301K | 300(270~330) | 190 | 250 | 500 | | | | 136 | 1300 | 5.0 | 2.7 | |
| MVR20D331K | 330(297~363) | 210 | 275 | 550 | | | | 150 | 1200 | 5.2 | 2.7 | |
| MVR20D361K | 360(324~396) | 230 | 300 | 595 | | | | 163 | 1100 | 5.4 | 2.9 | |
| MVR20D391K | 390(351~429) | 250 | 320 | 650 | | | | 180 | 1000 | 5.5 | 3.0 | |
| MVR20D431K | 430(387~473) | 275 | 350 | 710 | | | | 190 | 930 | 5.7 | 3.2 | |
| MVR20D471k | 470(423~517) | 300 | 385 | 775 | | | | 220 | 850 | 6.0 | 3.4 | |
| MVR20D511K | 510(459~561) | 320 | 415 | 845 | | | | 220 | 780 | 6.2 | 3.6 | |
| MVR20D561K | 560(504~616) | 350 | 460 | 925 | | | | 220 | 710 | 6.5 | 3.8 | |
| MVR20D621K | 620(558~682) | 385 | 505 | 1025 | | | | 220 | 650 | 6.8 | 4.1 | |
| MVR20D681K | 680(612~748) | 420 | 560 | 1120 | | | | 230 | 600 | 7.1 | 4.4 | |
| MVR20D751K | 750(675~825) | 460 | 615 | 1240 | | | | 255 | 530 | 7.5 | 4.5 | |
| MVR20D781K | 780(702~858) | 485 | 640 | 1290 | | | | 265 | 510 | 7.7 | 4.6 | |
| MVR20D821K | 820(738~902) | 510 | 670 | 1355 | | | | 282 | 500 | 7.9 | 4.8 | |
| MVR20D911K | 910(819~1001) | 550 | 745 | 1500 | | | | 310 | 440 | 8.1 | 5.2 | |
| MVR20D102K | 1000(900~1100) | 625 | 825 | 1650 | | | | 342 | 400 | 8.6 | 5.2 | |
| MVR20D112K | 1100(990~1210) | 680 | 895 | 1815 | 383 | 360 | 9.1 | 5.6 | | | | |
| MVR20D122K | 1200(1080~1320) | 750 | 990 | 1980 | 408 | 350 | 9.7 | 6.0 | | | | |
| MVR20D142K | 1400(1260~1540) | 880 | 1140 | 2310 | 532 | 340 | 11.2 | 6.8 | | | | |
| MVR20D162K | 1600(1440~1760) | 1000 | 1280 | 2640 | 606 | 330 | 11.8 | 7.6 | | | | |
| MVR20D182K | 1800(1620~1980) | 1100 | 1465 | 2970 | 625 | 320 | 12.8 | 8.4 | | | | |

Notes:

- The tolerance of varistor voltage between 18V and 27V is more than 10%.
- Varistor voltage ≥ 1200V, structure diagram is F type.
- Leakage Current (@83% of V_{1mA}) : IR ≤ 50μA (180K~680K) ; IR ≤ 25μA (820K~182K)

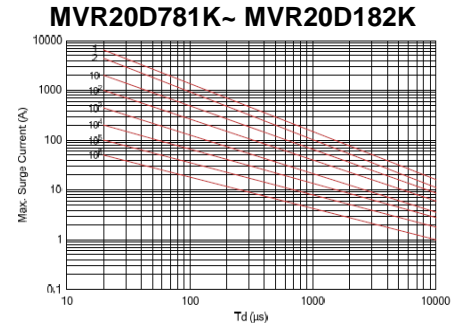
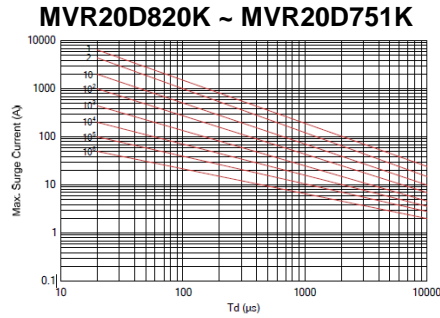
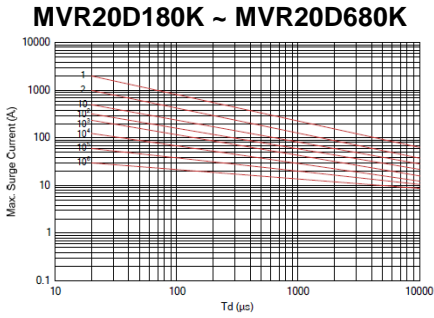
Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

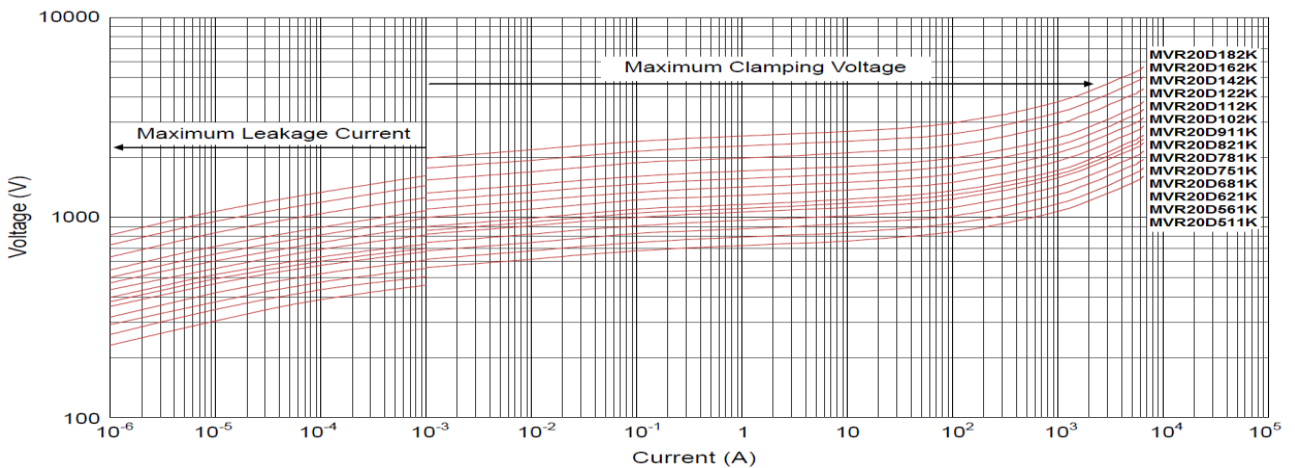
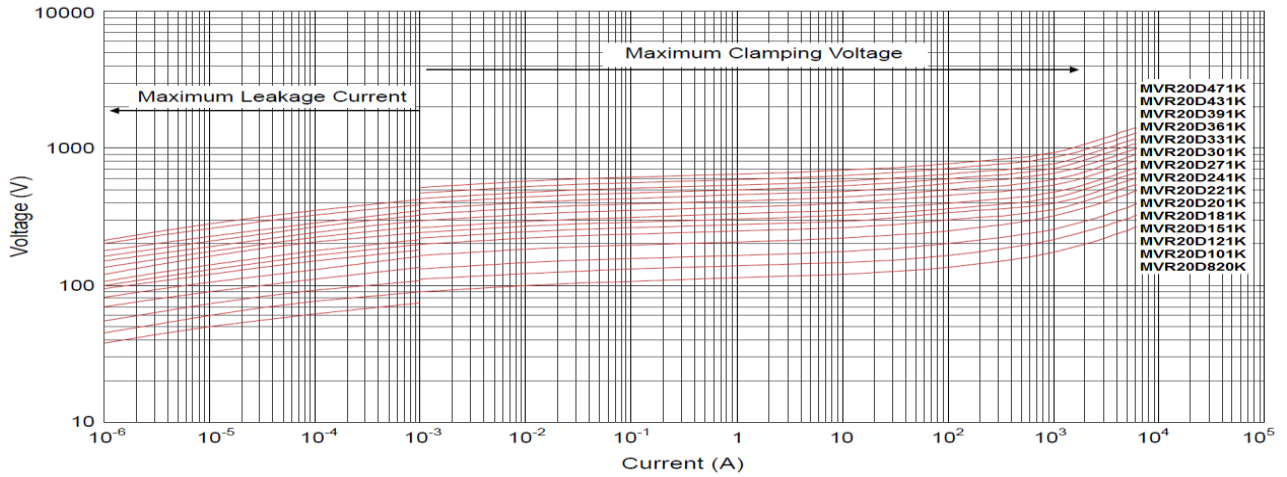
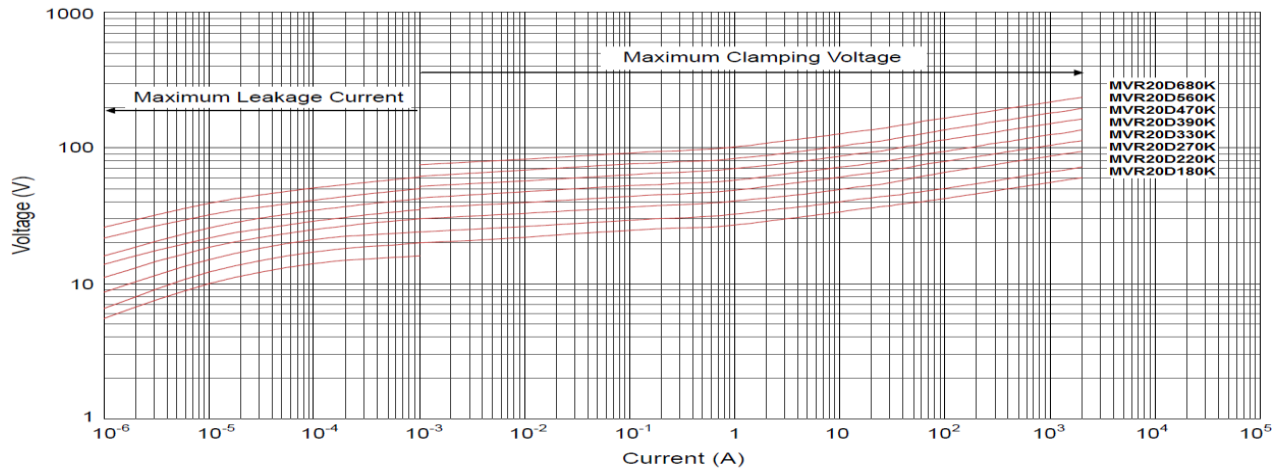
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LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES - MVR20D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

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ELECTRICAL CHARACTERISTICS - MVR25D SERIES

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| MVR25D Series | Varistor DC Voltage @1mA | | Max. Allowable Voltage | | Max. Clamping Voltage | | Withstanding Surge Current (A) | Max. Energy (10/1Kμs) (J) | Rated Power (W) | Typical Cap. @1kHz (pF) | Dimension | |
|---------------|--------------------------|---------------------|------------------------|----------------|-----------------------|--------|-----------------------------------|------------------------------|--------------------|----------------------------|-----------|-----|
| | V _{DC} | V _{AC} | V _{DC} | V _c | I _p | T max | | | | | e | |
| | (V) | (V _{rms}) | (V) | (V) | (A) | | | | | | ±0.8 | |
| MVR25D180K | 18(15~21.6) | 11 | 14 | 36 | 30 | 4,500 | 0.25 | 20 | 45000 | 4.8 | 1.7 | |
| MVR25D220K | 22(19.5~26) | 14 | 18 | 43 | | | | 25 | | 29000 | 4.9 | 1.8 |
| MVR25D270K | 27(24~31) | 17 | 22 | 53 | | | | 30 | | 26500 | 5.0 | 2.0 |
| MVR25D330K | 33(29.5~36.5) | 20 | 26 | 65 | | | | 35 | | 18000 | 5.2 | 1.9 |
| MVR25D390K | 39(35~43) | 25 | 31 | 77 | | | | 40 | | 13500 | 5.5 | 2.0 |
| MVR25D470K | 47(42~52) | 30 | 38 | 93 | | | | 50 | | 11500 | 5.1 | 2.1 |
| MVR25D560K | 56(50~62) | 35 | 45 | 110 | | | | 60 | | 10500 | 5.4 | 2.3 |
| MVR25D680K | 68(61~75) | 40 | 56 | 135 | | | | 70 | | 9050 | 5.7 | 2.6 |
| MVR25D820K | 82(74~90) | 50 | 65 | 135 | 150 | 15,000 | 1.2 | 80 | 7700 | 4.5 | 2.0 | |
| MVR25D101K | 100(90~110) | 60 | 85 | 165 | | | | 100 | | 6300 | 4.6 | 2.2 |
| MVR25D121K | 120(108~132) | 75 | 100 | 200 | | | | 120 | | 5200 | 4.8 | 2.4 |
| MVR25D151K | 150(135~165) | 95 | 125 | 250 | | | | 160 | | 4300 | 4.9 | 2.0 |
| MVR25D181K | 180(162~198) | 115 | 150 | 300 | | | | 175 | | 3500 | 5.2 | 2.1 |
| MVR25D201K | 200(180~220) | 130 | 170 | 340 | | | | 190 | | 3200 | 5.2 | 2.2 |
| MVR25D221K | 220(198~242) | 140 | 180 | 360 | | | | 200 | | 2900 | 5.3 | 2.3 |
| MVR25D241K | 240(216~264) | 150 | 200 | 395 | | | | 220 | | 2650 | 5.8 | 2.4 |
| MVR25D271K | 270(243~297) | 175 | 225 | 455 | | | | 255 | | 2400 | 5.3 | 2.6 |
| MVR25D301K | 300(270~330) | 190 | 250 | 500 | | | | 275 | | 2100 | 5.5 | 2.7 |
| MVR25D331K | 330(297~363) | 210 | 275 | 550 | | | | 300 | | 1900 | 5.7 | 2.7 |
| MVR25D361K | 360(324~396) | 230 | 300 | 595 | | | | 330 | | 1750 | 5.9 | 2.9 |
| MVR25D391K | 390(351~429) | 250 | 320 | 650 | | | | 360 | | 1600 | 6.1 | 3.0 |
| MVR25D431K | 430(387~473) | 275 | 350 | 710 | | | | 380 | | 1500 | 6.4 | 3.2 |
| MVR25D471k | 470(423~517) | 300 | 385 | 775 | | | | 400 | | 1400 | 6.7 | 3.4 |
| MVR25D511K | 510(459~561) | 320 | 415 | 845 | | | | 420 | | 1250 | 7.0 | 3.6 |
| MVR25D561K | 560(504~616) | 350 | 460 | 925 | | | | 440 | | 1150 | 7.3 | 3.8 |
| MVR25D621K | 620(558~682) | 385 | 505 | 1025 | | | | 450 | | 1050 | 7.6 | 4.1 |
| MVR25D681K | 680(612~748) | 420 | 560 | 1120 | | | | 460 | | 950 | 7.8 | 4.4 |
| MVR25D751K | 750(675~825) | 460 | 615 | 1240 | | | | 510 | | 850 | 8.0 | 4.5 |
| MVR25D781K | 780(702~858) | 485 | 640 | 1290 | | | | 530 | | 850 | 8.1 | 4.6 |
| MVR25D821K | 820(738~902) | 510 | 670 | 1355 | | | | 570 | | 800 | 8.4 | 4.8 |
| MVR25D911K | 910(819~1001) | 550 | 745 | 1500 | | | | 620 | | 700 | 8.9 | 5.2 |
| MVR25D102K | 1000(900~1100) | 625 | 825 | 1650 | | | | 685 | | 650 | 9.5 | 5.2 |
| MVR25D112K | 1100(990~1210) | 680 | 895 | 1815 | 720 | 600 | 10.1 | 5.6 | | | | |
| MVR25D122K | 1200(1080~1320) | 750 | 990 | 1980 | 792 | 550 | 10.7 | 6.0 | | | | |
| MVR25D142K | 1400(1260~1540) | 880 | 1140 | 2310 | 850 | 500 | 12.6 | 6.8 | | | | |
| MVR25D162K | 1600(1440~1760) | 1000 | 1280 | 2640 | 970 | 450 | 13.2 | 7.6 | | | | |
| MVR25D182K | 1800(1620~1980) | 1100 | 1465 | 2970 | 1092 | 400 | 14.5 | 8.4 | | | | |

Notes:

- The tolerance of varistor voltage between 18V and 27V is more than 10%.
- Leakage Current (@83% of V_{1mA}) : IR≤50μA (180K~680K) ; IR≤40μA (820K~182K)

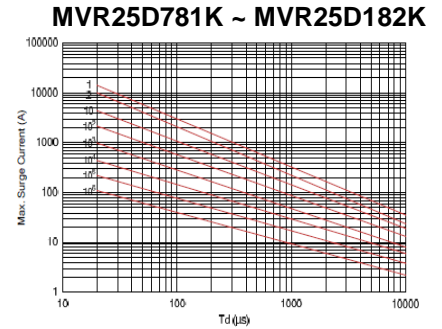
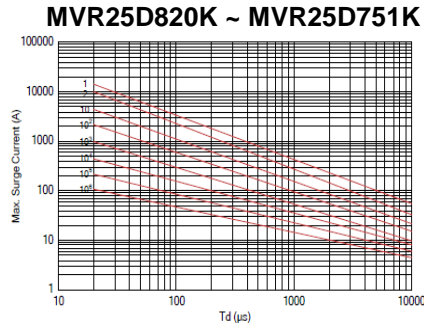
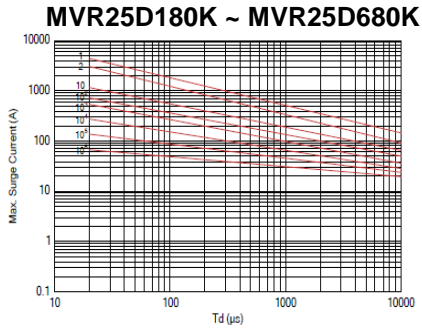
Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

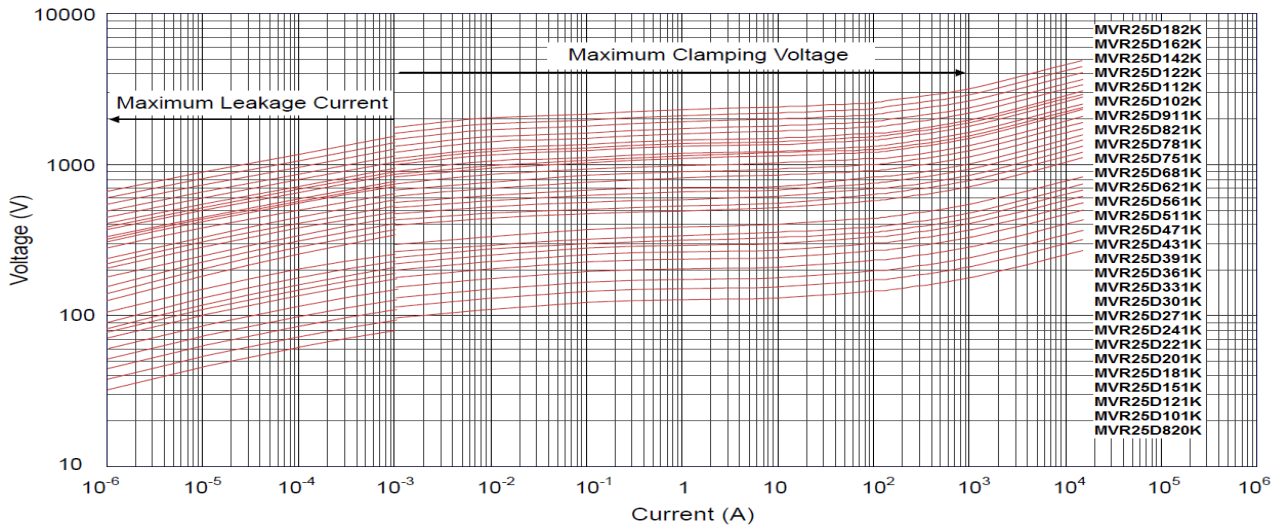
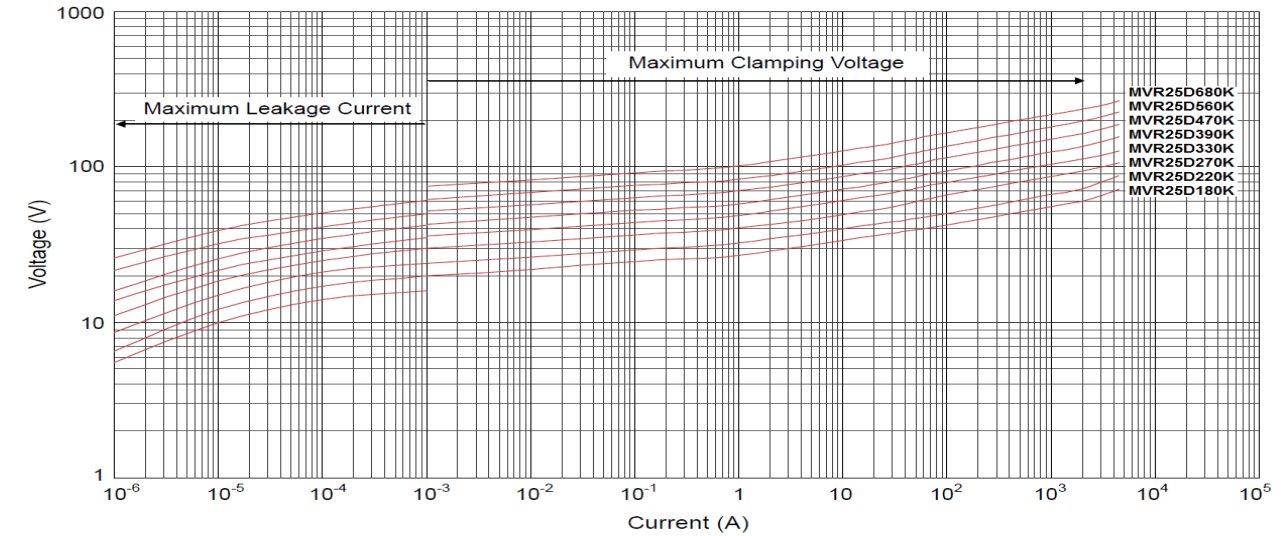
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LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES - MVR25D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

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RELIABILITY TEST CONDITIONS AND REQUIREMENTS

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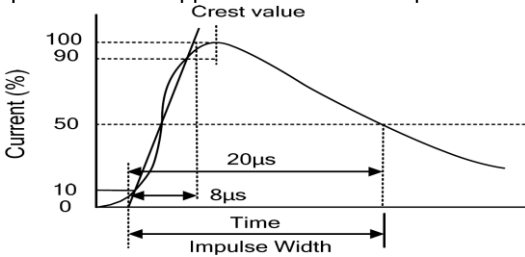
| Item | Test Conditions / Method | Specifications | | | | | | | | | | | | | | | |
|---|---|---|------------------|------------------|-----|--------------|------|--------|------------------|--|---|-------|------|---|------------------|-----|--|
| Tensile Strength of Terminals | Gradually apply the specified force and keep the unit fixed for 10±1s. <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (Kg)</th> </tr> </thead> <tbody> <tr> <td>0.5<d ≤ 0.8</td> <td>1.0</td> </tr> <tr> <td>0.8<d ≤ 1.25</td> <td>2.0</td> </tr> <tr> <td>1.25<d</td> <td>4.0</td> </tr> </tbody> </table> | Terminal diameter (mm) | Force (Kg) | 0.5<d ≤ 0.8 | 1.0 | 0.8<d ≤ 1.25 | 2.0 | 1.25<d | 4.0 | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage | | | | | | | |
| Terminal diameter (mm) | Force (Kg) | | | | | | | | | | | | | | | | |
| 0.5<d ≤ 0.8 | 1.0 | | | | | | | | | | | | | | | | |
| 0.8<d ≤ 1.25 | 2.0 | | | | | | | | | | | | | | | | |
| 1.25<d | 4.0 | | | | | | | | | | | | | | | | |
| Bending Strength of Terminals | Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, and then return to the original position. Repeat the procedure in the opposite direction. <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force (Kg)</th> </tr> </thead> <tbody> <tr> <td>0.5<d ≤ 0.8</td> <td>0.5</td> </tr> <tr> <td>0.8<d ≤ 1.25</td> <td>1.0</td> </tr> <tr> <td>1.25<d</td> <td>2.0</td> </tr> </tbody> </table> | Terminal diameter (mm) | Force (Kg) | 0.5<d ≤ 0.8 | 0.5 | 0.8<d ≤ 1.25 | 1.0 | 1.25<d | 2.0 | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage | | | | | | | |
| Terminal diameter (mm) | Force (Kg) | | | | | | | | | | | | | | | | |
| 0.5<d ≤ 0.8 | 0.5 | | | | | | | | | | | | | | | | |
| 0.8<d ≤ 1.25 | 1.0 | | | | | | | | | | | | | | | | |
| 1.25<d | 2.0 | | | | | | | | | | | | | | | | |
| Vibration | Frequency range: 10 ~ 55 Hz, Amplitude: 0.75mm or 98 m/s ² Direction: 3 mutually perpendicular directions, 2 hrs. each. | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage | | | | | | | | | | | | | | | |
| Solderability | 245±5°C , 2±0.5 sec | At least 95% of terminal electrode is covered by solder | | | | | | | | | | | | | | | |
| Resistance to Soldering Heat | 260±5°C , 10±1 sec | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage | | | | | | | | | | | | | | | |
| High Temperature Storage | 125±2°C x 1000 hrs. | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage | | | | | | | | | | | | | | | |
| Low Temperature Storage | -40±2°C x 1000 hrs. | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage | | | | | | | | | | | | | | | |
| Damp Heat, Steady State | 1000 hrs. at 40±2°C, 90 ~ 95 % RH, at max. allowable voltage | $ \Delta V_{1mA}/V_{1mA} \leq 10\%$ No visible damage | | | | | | | | | | | | | | | |
| Rapid Change of Temperature | The conditions shown below shall be repeated 5 cycles. <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5±3</td> </tr> <tr> <td>3</td> <td>125±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5±3</td> </tr> </tbody> </table> | Step | Temperature (°C) | Period (minutes) | 1 | -40±3 | 30±3 | 2 | Room temperature | 5±3 | 3 | 125±3 | 30±3 | 4 | Room temperature | 5±3 | $ \Delta V_{1mA}/V_{1mA} \leq 5\%$ No visible damage |
| Step | Temperature (°C) | Period (minutes) | | | | | | | | | | | | | | | |
| 1 | -40±3 | 30±3 | | | | | | | | | | | | | | | |
| 2 | Room temperature | 5±3 | | | | | | | | | | | | | | | |
| 3 | 125±3 | 30±3 | | | | | | | | | | | | | | | |
| 4 | Room temperature | 5±3 | | | | | | | | | | | | | | | |
| High Temperature Load Life | 1000 hrs. at 105±2°C, Max allowable AC Voltage | $ \Delta V_{1mA}/V_{1mA} \leq 10\%$ No visible damage | | | | | | | | | | | | | | | |
| Voltage Proof | Metal balls method, 2500 Vac 1 min | No visible damage | | | | | | | | | | | | | | | |
| Varistor Voltage Temp. Coefficient | $\frac{V_{1mA} \text{ at } 85^{\circ}\text{C} - V_{1mA} \text{ at } 25^{\circ}\text{C}}{V_{1mA} \text{ at } 25^{\circ}\text{C}} \times \frac{1}{80} \times 100(\%/^{\circ}\text{C})$ $\frac{V_{1mA} \text{ at } -40^{\circ}\text{C} - V_{1mA} \text{ at } 25^{\circ}\text{C}}{V_{1mA} \text{ at } 25^{\circ}\text{C}} \times \frac{1}{65} \times 100(\%/^{\circ}\text{C})$ | -0.05≤TC≤0.05(%/°C) | | | | | | | | | | | | | | | |

Metal Oxide Varistor Leaded Disk Type, 5~25mm

MVR Series

MERITEK

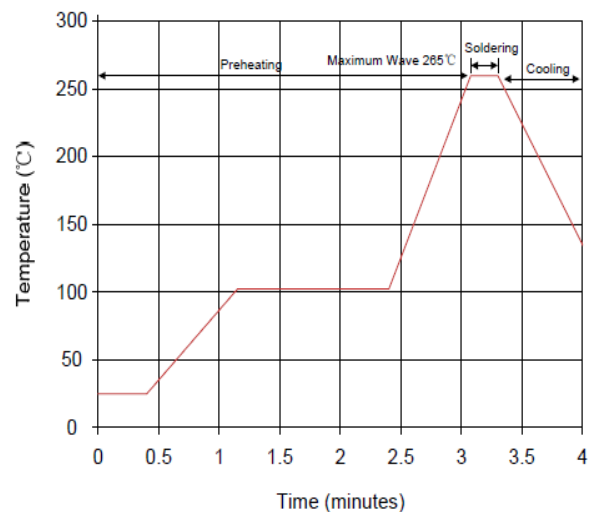
RELIABILITY TEST CONDITIONS AND REQUIREMENTS (CONTINUED) [Back To Top](#)

| Item | Test Conditions / Method | Specifications | | |
|-----------------------------------|--|---|--|--------------------------------|
| Surge Life (8/20μs) | The Varistor voltage (V_{1mA}) shall be measured after the impulse listed below is applied 10,000 times continuously with the interval of ten seconds at room temperature. | $ \Delta V_{1mA} / V_{1mA} \leq 10\%$ No visible damage | | |
| | 05D Series | | 108K to 680K 820K to 751K | 10A (8/20μs) 20A (8/20μs) |
| | 07D Series | | 180K to 680K 820K to 821K | 25A (8/20μs) 50A (8/20μs) |
| | 10D Series | | 180K to 680K 820K to 112K | 50A (8/20μs) 100A (8/20μs) |
| | 14D Series | | 180K to 680K 820K to 182K | 75A (8/20μs) 150A (8/20μs) |
| | 20D Series | | 180K to 680K 820K to 182K | 100A (8/20μs) 200A (8/20μs) |
| | Varistor Voltage | | The voltage between two terminals with the specified measuring current 1mA. DC applied is called V_{1mA} | |
| Maximum Allowable Voltage | The recommended maximum sine wave voltage (RMS) or the Maximum DC voltage can be applied continuously. | | | |
| Maximum Clamping Voltage | The maximum voltage between two terminals with the specification standard impulse current. Applied waveform: 8/20μs  | To meet the Specified Value | | |
| Rated Voltage | The maximum average power that can be applied within the specified ambient temperature. | | | |
| Energy | The maximum energy within the varistor voltage change of $\pm 10\%$ when one impulse of 10/1000μs or 2ms is applied. | | | |
| Withstanding Surge Current | The maximum current within the varistor voltage change of $\pm 10\%$ with the standard impulse current (8/20μs) applied one time. | | | |

SOLDERING RECOMMENDATION

| Wave Soldering Process | Condition |
|------------------------|------------------|
| Peak Temperature | 265°C |
| Dipping Time | 10 seconds (max) |
| Soldering | 1 Time |

| Soldering Iron Process | Condition |
|-----------------------------------|---------------|
| Temperature of Soldering Iron-tip | 360°C (max.) |
| Soldering Time | 3 sec. (max.) |
| Distance From Varistor | 2 mm (min.) |



Meritek Varistor Series: <http://www.meritekusa.com/EN/productlist/node/15>

Meritek Product Series: <http://www.meritekusa.com/EN/products>

*Specifications subject to change without notice.