



## Features

- High voltage rating
- High current rating
- Bidirectional
- Surge protection
- Fast response time
- RoHS compliant\*
- Agency recognition: ®

## Applications

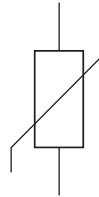
- Power supplies
- Power systems
- Line voltage
- Telecom systems
- White goods / appliances

# MOV-10DxxxK Series - Metal Oxide Varistor

### General Information

The MOV-10DxxxK Series of 10 mm radial leaded varistor devices protects against overvoltage transients such as lightning, power contact and power induction. The metal oxide varistors offer a choice of varistor voltages from 18 V to 820 V and  $V_{rms}$  voltages from 11 V to 510 V.

The devices have a high current handling, high energy absorption capability and fast response times to protect against transient faults up to rated limits.



### Industry Standard Compliance

| Standard    | UL 1449 |
|-------------|---------|
| File Number | E313168 |

### Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Parameter                                | Symbol    | Min. | Typ. | Max. | Unit                 |
|--|-----------|------|------|------|----------------------|
| Operating Temperature                    | $T_{OPR}$ | -40  | 25   | +85  | $^\circ\text{C}$     |
| Storage Temperature                      | $T_{STG}$ | -40  | 25   | +125 | $^\circ\text{C}$     |
| Rated Wattage                            | $P_w$     |      |      | 0.40 | Watt                 |
| Varistor Voltage Temperature Coefficient | $V_{TC}$  | 0    | 0.1  | 0.05 | % / $^\circ\text{C}$ |
| Response Time                            | $T_r$     |      | 10   | 25   | ns                   |
| Varistor Voltage Tolerance               | $V_{tol}$ | -10  | 0    | 10   | %                    |

### Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

| Bourns Part No. | Max. Continuous Voltage (V) |      | Voltage @ 1 mA DC (V) |      | Voltage @ Class Current |                           | Max. Peak Current<br>(8/20 $\mu\text{s}$ ) | Max. Energy<br>(J) | Max. Cap.<br>(pF) |
|-----------------|-----------------------------|------|-----------------------|------|-------------------------|---------------------------|--|--------------------|-------------------|
|                 | r.m.s.                      | d.c. | Min.                  | Max. | (8/20 $\mu\text{s}$ )   |                           |  |                    |                   |
|                 |                             |      |                       |      | Class Current (A)       | Max. Clamping Voltage (V) | One Time                                   | 8/20 $\mu\text{s}$ | 1 kHz             |
| MOV-10D180K     | 11                          | 14   | 16                    | 20   | 5                       | 36                        | 500  | 2.1                | 5600              |
| MOV-10D220K     | 14                          | 18   | 20                    | 24   | 5                       | 43                        | 500  | 2.5                | 4250              |
| MOV-10D270K     | 17                          | 18   | 24                    | 30   | 5                       | 53                        | 500  | 3.0                | 3700              |
| MOV-10D330K     | 20                          | 26   | 30                    | 36   | 5                       | 65                        | 500  | 4.0                | 3000              |
| MOV-10D390K     | 25                          | 31   | 35                    | 43   | 5                       | 77                        | 500  | 4.6                | 2400              |
| MOV-10D470K     | 30                          | 38   | 42                    | 52   | 5                       | 93                        | 500  | 5.5                | 2100              |
| MOV-10D560K     | 35                          | 45   | 50                    | 62   | 5                       | 110                       | 500  | 7.0                | 1800              |
| MOV-10D680K     | 40                          | 56   | 61                    | 75   | 5                       | 135                       | 500  | 8.2                | 1250              |
| MOV-10D820K     | 50                          | 65   | 74                    | 90   | 25                      | 135                       | 2500                                       | 12                 | 250               |
| MOV-10D101K     | 60                          | 85   | 90                    | 110  | 25                      | 165                       | 2500                                       | 15                 | 500               |
| MOV-10D121K     | 75                          | 100  | 108                   | 132  | 25                      | 200                       | 2500                                       | 18                 | 830               |
| MOV-10D151K     | 95                          | 125  | 135                   | 165  | 25                      | 250                       | 2500                                       | 22                 | 670               |
| MOV-10D181K     | 115                         | 150  | 162                   | 198  | 25                      | 300                       | 2500                                       | 27                 | 560               |
| MOV-10D201K     | 130                         | 170  | 185                   | 225  | 25                      | 340                       | 2500                                       | 30                 | 250               |
| MOV-10D221K     | 140                         | 180  | 198                   | 242  | 25                      | 360                       | 2500                                       | 32                 | 450               |
| MOV-10D241K     | 150                         | 200  | 216                   | 264  | 25                      | 395                       | 2500                                       | 35                 | 420               |
| MOV-10D271K     | 175                         | 225  | 243                   | 297  | 25                      | 455                       | 2500                                       | 40                 | 370               |
| MOV-10D301K     | 190                         | 250  | 270                   | 330  | 25                      | 500                       | 2500                                       | 40                 | 330               |
| MOV-10D331K     | 210                         | 275  | 297                   | 363  | 25                      | 550                       | 2500                                       | 43                 | 300               |
| MOV-10D361K     | 230                         | 300  | 324                   | 396  | 25                      | 595                       | 2500                                       | 47                 | 280               |
| MOV-10D391K     | 250                         | 320  | 351                   | 429  | 25                      | 650                       | 2500                                       | 60                 | 260               |
| MOV-10D431K     | 275                         | 350  | 387                   | 473  | 25                      | 710                       | 2500                                       | 65                 | 230               |
| MOV-10D471K     | 300                         | 385  | 423                   | 517  | 25                      | 775                       | 2500                                       | 70                 | 210               |
| MOV-10D511K     | 320                         | 415  | 459                   | 561  | 25                      | 845                       | 2500                                       | 70                 | 200               |
| MOV-10D561K     | 350                         | 460  | 504                   | 616  | 25                      | 925                       | 2500                                       | 70                 | 180               |
| MOV-10D621K     | 385                         | 505  | 558                   | 682  | 25                      | 1025                      | 2500                                       | 70                 | 160               |
| MOV-10D681K     | 420                         | 560  | 612                   | 748  | 25                      | 1120                      | 2500                                       | 70                 | 150               |
| MOV-10D751K     | 460                         | 620  | 675                   | 825  | 25                      | 1240                      | 2500                                       | 75                 | 130               |
| MOV-10D781K     | 480                         | 640  | 702                   | 858  | 25                      | 1290                      | 2500                                       | 80                 | 130               |
| MOV-10D821K     | 510                         | 675  | 738                   | 902  | 25                      | 1355                      | 2500                                       | 85                 | 110               |

\*RoHS Directive 2002/95/EC Jan 27 2003 including Annex. Specifications are subject to change without notice.

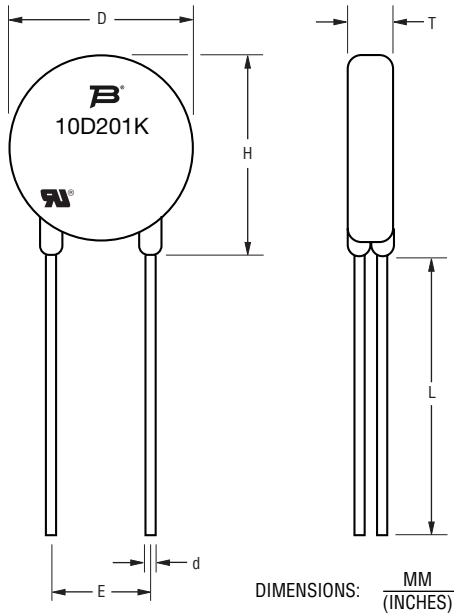
Customers should verify actual device performance in their specific applications.

# MOV-10DxxxK Series - Metal Oxide Varistor

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## Product Dimensions

This is a molded radial package with lead free 100 % Sn plating on the terminations.

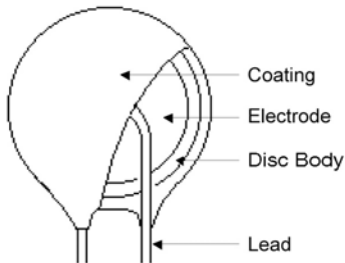


| Dimension | MOV-10D Series                        |
|-----------|---------------------------------------|
| D (Max.)  | $\frac{12.5}{(.492)}$                 |
| H (Max.)  | $\frac{15.5}{(.610)}$                 |
| T (Max.)  | $\frac{7.2}{(.281)}$                  |
| d         | $\frac{0.8 \pm 0.1}{(.031 \pm .004)}$ |
| E         | $\frac{7.5 \pm 0.8}{(.295 \pm .031)}$ |
| L (Min.)  | $\frac{20.0}{(.787)}$                 |

## Typical Part Marking

| Bourns Part Number | Bourns Part Marking |
|--------------------|---------------------|
| MOV-10D180K        | 10D180K             |
| MOV-10D220K        | 10D220K             |
| MOV-10D270K        | 10D270K             |
| MOV-10D330K        | 10D330K             |
| MOV-10D390K        | 10D390K             |
| MOV-10D470K        | 10D470K             |
| MOV-10D560K        | 10D560K             |
| MOV-10D680K        | 10D680K             |
| MOV-10D820K        | 10D820K             |
| MOV-10D101K        | 10D101K             |
| MOV-10D121K        | 10D121K             |
| MOV-10D151K        | 10D151K             |
| MOV-10D181K        | 10D181K             |
| MOV-10D201K        | 10D201K             |
| MOV-10D221K        | 10D221K             |
| MOV-10D241K        | 10D241K             |
| MOV-10D271K        | 10D271K             |
| MOV-10D301K        | 10D301K             |
| MOV-10D331K        | 10D331K             |
| MOV-10D361K        | 10D361K             |
| MOV-10D391K        | 10D391K             |
| MOV-10D431K        | 10D431K             |
| MOV-10D471K        | 10D471K             |
| MOV-10D511K        | 10D511K             |
| MOV-10D561K        | 10D561K             |
| MOV-10D621K        | 10D621K             |
| MOV-10D681K        | 10D681K             |
| MOV-10D751K        | 10D751K             |
| MOV-10D781K        | 10D781K             |
| MOV-10D821K        | 10D821K             |

## Internal Construction



## How to Order

**MOV - 10D 201 K TR**

Series \_\_\_\_\_  
 MOV = Metal Oxide Varistor

Package \_\_\_\_\_  
 10D = 10 mm Disc

Varistor Voltage \_\_\_\_\_  
 201 = 200 V

Varistor Voltage Tolerance \_\_\_\_\_  
 K = 10 %

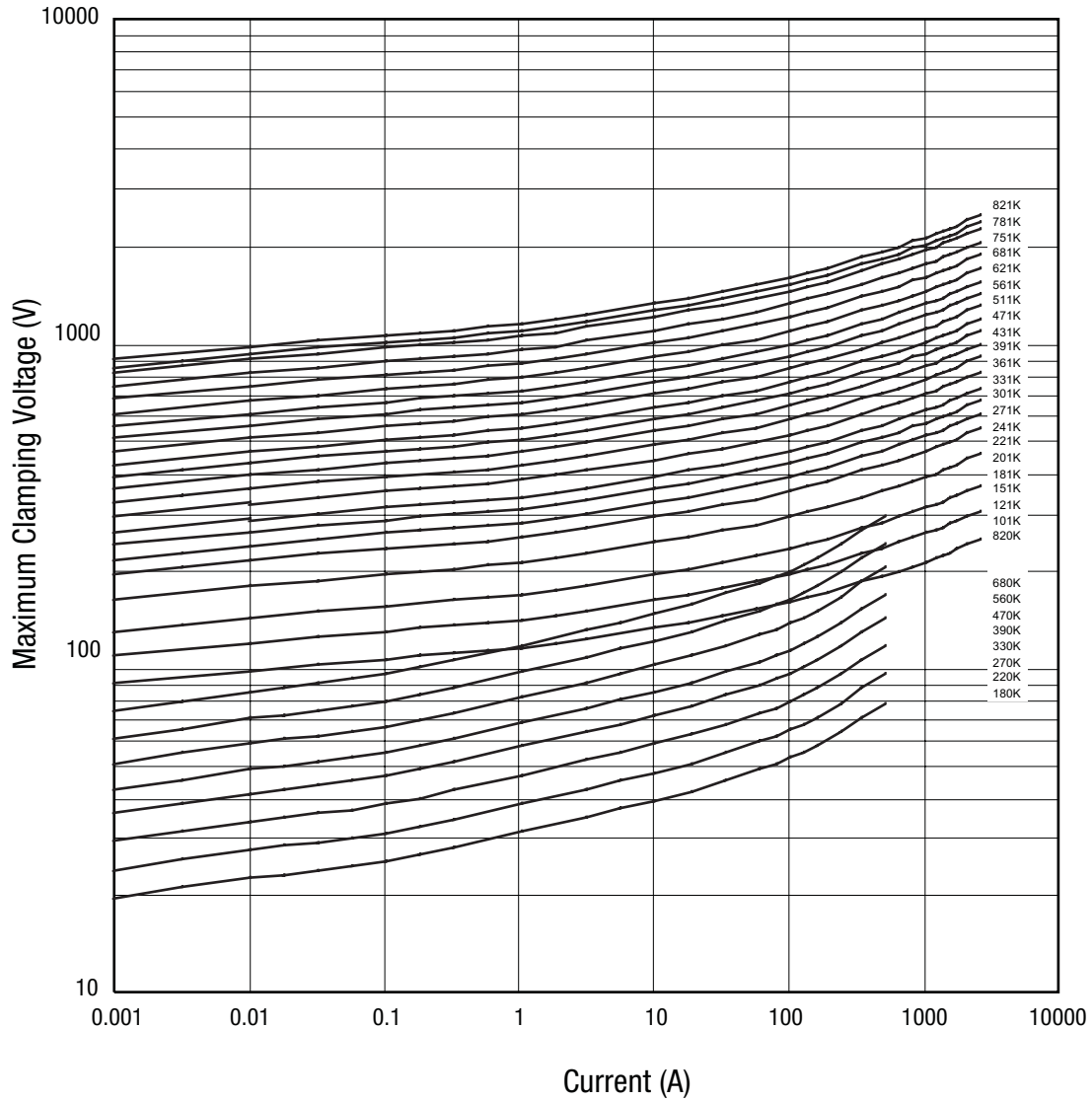
Packaging \_\_\_\_\_  
 Blank = Bulk (1000 pcs. per box)  
 TR = Tape & Reel (1000 pcs. per reel)

Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

# MOV-10DxxxK Series - Metal Oxide Varistor

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## Performance Graphs



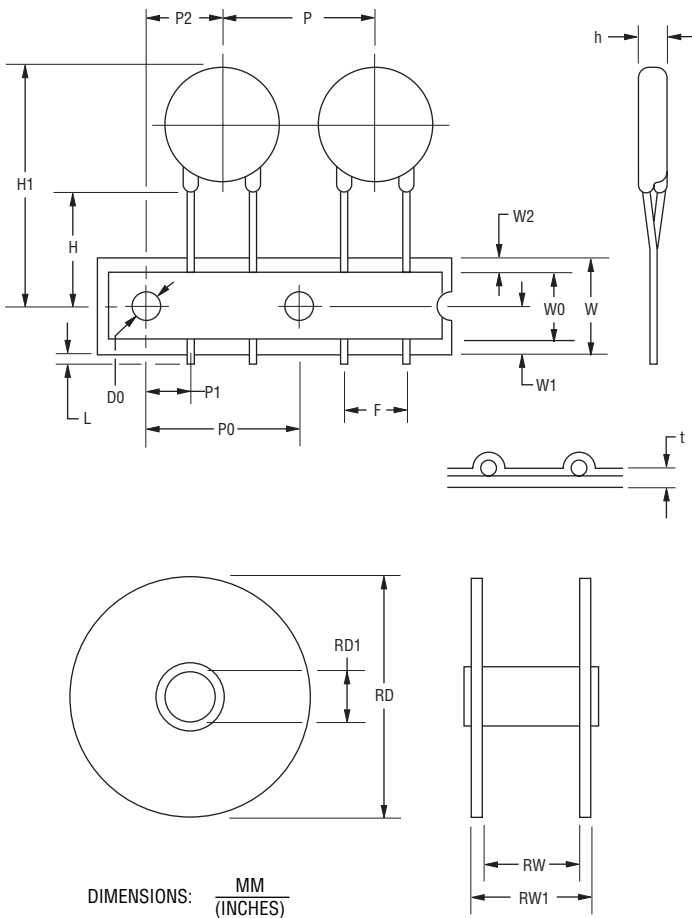
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# MOV-10DxxxK Series - Metal Oxide Varistor

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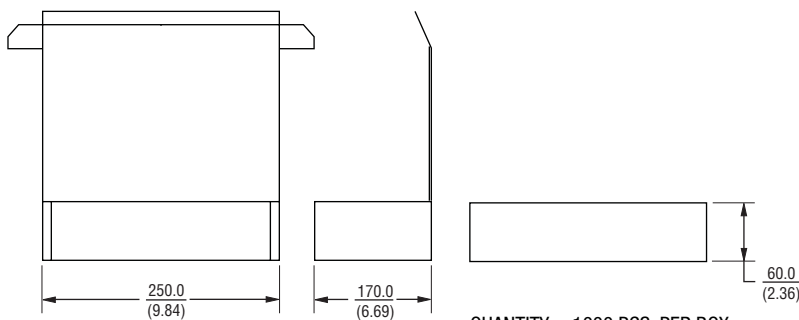
## Packaging Information

### TAPE & REEL



| Item                                  | Symbol | 10 mm Disc                             |
|---------------------------------------|--------|--|
| Reel Outside Diameter                 | RD     | $\frac{355}{(13.98)}$                  |
| Reel Inner Diameter                   | RD1    | $\frac{30}{(11.81)}$                   |
| Tape Width                            | RW     | $\frac{47}{(18.50)}$                   |
| Reel Width                            | RW1    | $\frac{53}{(20.87)}$                   |
| Pitch of Component                    | P      | $\frac{25.4 \pm 1.0}{(1.00 \pm 0.04)}$ |
| Feed Hole Pitch                       | P0     | $\frac{12.7 \pm 1.0}{(0.50 \pm 0.04)}$ |
| Feed Hole Center to Pitch             | P1     | $\frac{2.60 \pm 0.7}{(0.10 \pm 0.03)}$ |
| Feed Hole Center to Component Center  | P2     | $\frac{12.7 \pm 1.0}{(0.50 \pm 0.04)}$ |
| Lead to Lead Distance                 | F      | $\frac{7.50 \pm 0.8}{(0.30 \pm 0.03)}$ |
| Component Alignment                   | Dh     | $\frac{2.0}{(0.79)}$ max.              |
| Tape Width                            | W      | $\frac{18.0 \pm 0.5}{(0.71 \pm 0.02)}$ |
| Hole Down Tape Width                  | W0     | $\frac{12.0 \pm 0.8}{(0.47 \pm 0.03)}$ |
| Hole Position                         | W1     | $\frac{9.0 \pm 0.5}{(0.35 \pm 0.02)}$  |
| Hole Down Tape Position               | W2     | $\frac{3.0}{(0.12)}$ max.              |
| Height From Center to Component Base  | H      | $\frac{19.0 \pm 1.0}{(0.75 \pm 0.04)}$ |
| Seating Plane Height                  | H0     | $\frac{16.0 \pm 0.5}{(0.63 \pm 0.02)}$ |
| Component Height                      | H1     | $\frac{36.0}{(1.42)}$ max.             |
| Crimp Length                          | C      | $\frac{2.60}{(0.10)}$ typ.             |
| Feed Hole Diameter                    | DD     | $\frac{4.0 \pm 0.2}{(0.16 \pm 0.08)}$  |
| Total Tape Thickness                  | t      | $\frac{0.6 \pm 0.3}{(0.02 \pm 0.01)}$  |
| Length of Clipped Height              | L      | $\frac{1.0}{(0.04)}$ max.              |
| Quantity per Reel (10D180K - 10D391K) | -      | 1000                                   |
| Quantity per Reel (10D431K - 10D821K) | -      | 500                                    |

### BULK



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