



## Features

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

## Applications

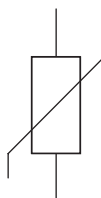
- Power supplies
- Power systems
- Line voltage
- Telecom systems
- White goods / appliances

# MOV-07DxxxK Series - Metal Oxide Varistor

## General Information

The MOV-07DxxxK Series of 7 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                            | $P_W$     |      |      | 0.25 | 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     | Max. Energy        | Max. Cap. |
|-----------------|-----------------------------|------|-----------------------|------|------|-------------------------|---------------------------|-----------------------|--------------------|-----------|
|                 | r.m.s.                      | d.c. | Min.                  | Nom. | Max. | (8/20 $\mu\text{s}$ )   |                           | (8/20 $\mu\text{s}$ ) | (J)                | (pF)      |
|                 |                             |      |                       |      |      | Class Current (A)       | Max. Clamping Voltage (V) | One Time              | 8/20 $\mu\text{s}$ | 1 kHz     |
| MOV-07D180K     | 11                          | 14   | 16                    | 18   | 20   | 2.5                     | 36                        | 250                   | 0.9                | 2800      |
| MOV-07D220K     | 14                          | 18   | 20                    | 22   | 24   | 2.5                     | 43                        | 250                   | 1.1                | 2300      |
| MOV-07D270K     | 17                          | 18   | 24                    | 27   | 30   | 2.5                     | 53                        | 250                   | 1.4                | 1800      |
| MOV-07D330K     | 20                          | 26   | 30                    | 33   | 36   | 2.5                     | 65                        | 250                   | 1.7                | 1250      |
| MOV-07D390K     | 25                          | 31   | 35                    | 39   | 43   | 2.5                     | 77                        | 250                   | 2.1                | 1300      |
| MOV-07D470K     | 30                          | 38   | 42                    | 47   | 52   | 2.5                     | 93                        | 250                   | 2.5                | 1100      |
| MOV-07D560K     | 35                          | 45   | 50                    | 56   | 62   | 2.5                     | 110                       | 250                   | 3.1                | 890       |
| MOV-07D680K     | 40                          | 56   | 61                    | 68   | 75   | 2.5                     | 135                       | 250                   | 3.6                | 740       |
| MOV-07D820K     | 50                          | 65   | 74                    | 82   | 90   | 10                      | 135                       | 1200                  | 5.5                | 600       |
| MOV-07D101K     | 60                          | 85   | 90                    | 100  | 110  | 10                      | 165                       | 1200                  | 6.5                | 500       |
| MOV-07D121K     | 75                          | 100  | 108                   | 120  | 132  | 10                      | 200                       | 1200                  | 7.8                | 420       |
| MOV-07D151K     | 95                          | 125  | 135                   | 150  | 165  | 10                      | 250                       | 1200                  | 9.7                | 330       |
| MOV-07D181K     | 115                         | 150  | 162                   | 180  | 198  | 10                      | 300                       | 1200                  | 11.7               | 280       |
| MOV-07D201K     | 130                         | 170  | 185                   | 200  | 225  | 10                      | 340                       | 1200                  | 13                 | 250       |
| MOV-07D221K     | 140                         | 180  | 198                   | 220  | 242  | 10                      | 360                       | 1200                  | 14                 | 230       |
| MOV-07D241K     | 150                         | 200  | 216                   | 240  | 264  | 10                      | 395                       | 1200                  | 15                 | 210       |
| MOV-07D271K     | 175                         | 225  | 243                   | 270  | 297  | 10                      | 455                       | 1200                  | 18                 | 185       |
| MOV-07D301K     | 190                         | 250  | 270                   | 300  | 330  | 10                      | 500                       | 1200                  | 20                 | 165       |
| MOV-07D331K     | 210                         | 275  | 297                   | 330  | 363  | 10                      | 550                       | 1200                  | 23                 | 150       |
| MOV-07D361K     | 230                         | 300  | 324                   | 360  | 396  | 10                      | 595                       | 1200                  | 25                 | 140       |
| MOV-07D391K     | 250                         | 320  | 351                   | 390  | 429  | 10                      | 650                       | 1200                  | 25                 | 130       |
| MOV-07D431K     | 275                         | 350  | 387                   | 430  | 473  | 10                      | 710                       | 1200                  | 28                 | 115       |
| MOV-07D471K     | 300                         | 385  | 423                   | 470  | 517  | 10                      | 775                       | 1200                  | 30                 | 105       |
| MOV-07D511K     | 320                         | 415  | 459                   | 510  | 561  | 10                      | 845                       | 1200                  | 30                 | 100       |
| MOV-07D561K     | 350                         | 460  | 504                   | 560  | 616  | 10                      | 925                       | 1200                  | 30                 | 90        |
| MOV-07D621K     | 385                         | 505  | 558                   | 620  | 682  | 10                      | 1025                      | 1200                  | 33                 | 80        |
| MOV-07D681K     | 420                         | 560  | 612                   | 680  | 748  | 10                      | 1120                      | 1200                  | 33                 | 75        |
| MOV-07D751K     | 460                         | 620  | 675                   | 750  | 825  | 10                      | 1240                      | 1200                  | 38                 | 70        |
| MOV-07D781K     | 480                         | 640  | 702                   | 780  | 858  | 10                      | 1290                      | 1200                  | 38                 | 70        |
| MOV-07D821K     | 510                         | 675  | 738                   | 820  | 902  | 10                      | 1355                      | 1200                  | 40                 | 60        |

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

Specifications are subject to change without notice.

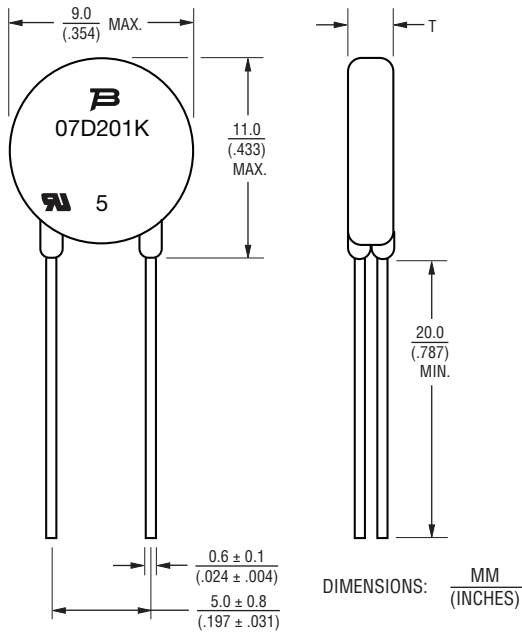
Customers should verify actual device performance in their specific applications.

# MOV-07DxxxK Series - Metal Oxide Varistor

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## Product Dimensions

This is an RoHS compliant molded radial package with 100 % Sn plating on the terminations.



| Bourns Part Number | Dim. T (Max.) |
|--------------------|---------------|
| MOV-07D180K        | 3.4<br>(.134) |
| MOV-07D220K        | 3.5<br>(.138) |
| MOV-07D270K        | 3.8<br>(.150) |
| MOV-07D330K        | 3.4<br>(.134) |
| MOV-07D390K        | 3.6<br>(.142) |
| MOV-07D470K        | 3.8<br>(.150) |
| MOV-07D560K        | 3.9<br>(.154) |
| MOV-07D680K        | 4.0<br>(.157) |
| MOV-07D820K        | 3.4<br>(.134) |
| MOV-07D101K        | 3.6<br>(.142) |
| MOV-07D121K        | 3.8<br>(.150) |
| MOV-07D151K        | 4.0<br>(.157) |
| MOV-07D181K        | 3.2<br>(.126) |
| MOV-07D201K        | 3.4<br>(.134) |
| MOV-07D221K        | 3.5<br>(.138) |

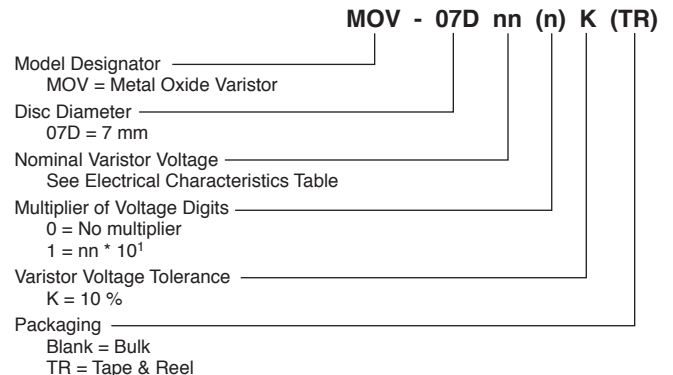
| Bourns Part Number | Dim. T (Max.) |
|--------------------|---------------|
| MOV-07D241K        | 3.6<br>(.142) |
| MOV-07D271K        | 3.8<br>(.150) |
| MOV-07D301K        | 4.0<br>(.157) |
| MOV-07D331K        | 4.2<br>(.165) |
| MOV-07D361K        | 4.4<br>(.173) |
| MOV-07D391K        | 4.6<br>(.181) |
| MOV-07D431K        | 4.8<br>(.189) |
| MOV-07D471K        | 5.0<br>(.197) |
| MOV-07D511K        | 5.1<br>(.201) |
| MOV-07D561K        | 5.4<br>(.213) |
| MOV-07D621K        | 5.8<br>(.228) |
| MOV-07D681K        | 6.0<br>(.236) |
| MOV-07D751K        | 6.2<br>(.244) |
| MOV-07D781K        | 6.4<br>(.252) |
| MOV-07D821K        | 6.8<br>(.268) |

## Typical Part Marking

| Bourns Part Number | Bourns Part Marking |
|--------------------|---------------------|
| MOV-07D180K        | 07D180K             |
| MOV-07D220K        | 07D220K             |
| MOV-07D270K        | 07D270K             |
| MOV-07D330K        | 07D330K             |
| MOV-07D390K        | 07D390K             |
| MOV-07D470K        | 07D470K             |
| MOV-07D560K        | 07D560K             |
| MOV-07D680K        | 07D680K             |
| MOV-07D820K        | 07D820K             |
| MOV-07D101K        | 07D101K             |
| MOV-07D121K        | 07D121K             |
| MOV-07D151K        | 07D151K             |
| MOV-07D181K        | 07D181K             |
| MOV-07D201K        | 07D201K             |
| MOV-07D221K        | 07D221K             |
| MOV-07D241K        | 07D241K             |
| MOV-07D271K        | 07D271K             |
| MOV-07D301K        | 07D301K             |
| MOV-07D331K        | 07D331K             |
| MOV-07D361K        | 07D361K             |
| MOV-07D391K        | 07D391K             |
| MOV-07D431K        | 07D431K             |
| MOV-07D471K        | 07D471K             |
| MOV-07D511K        | 07D511K             |
| MOV-07D561K        | 07D561K             |
| MOV-07D621K        | 07D621K             |
| MOV-07D681K        | 07D681K             |
| MOV-07D751K        | 07D751K             |
| MOV-07D781K        | 07D781K             |
| MOV-07D821K        | 07D821K             |

NOTE: The "5" marking on MOV products is for traceability of production assembly for quality assurance compliance.

## How to Order



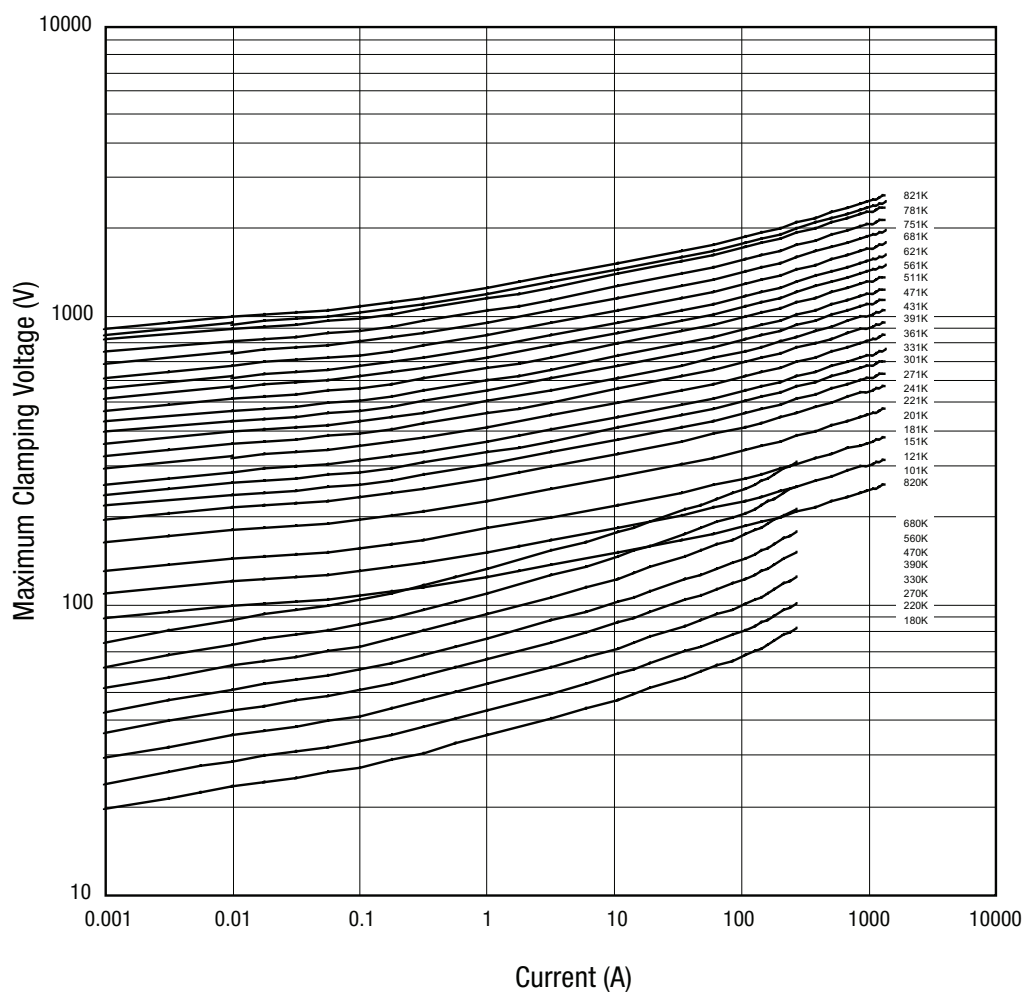
Examples: MOV-07D270K = 27 V, Bulk Pack  
MOV-07D331KTR = 330 V, Tape & Reel

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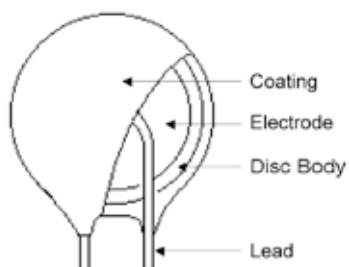
## MOV-07DxxxK Series - Metal Oxide Varistor

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### Performance Graphs



### Internal Construction



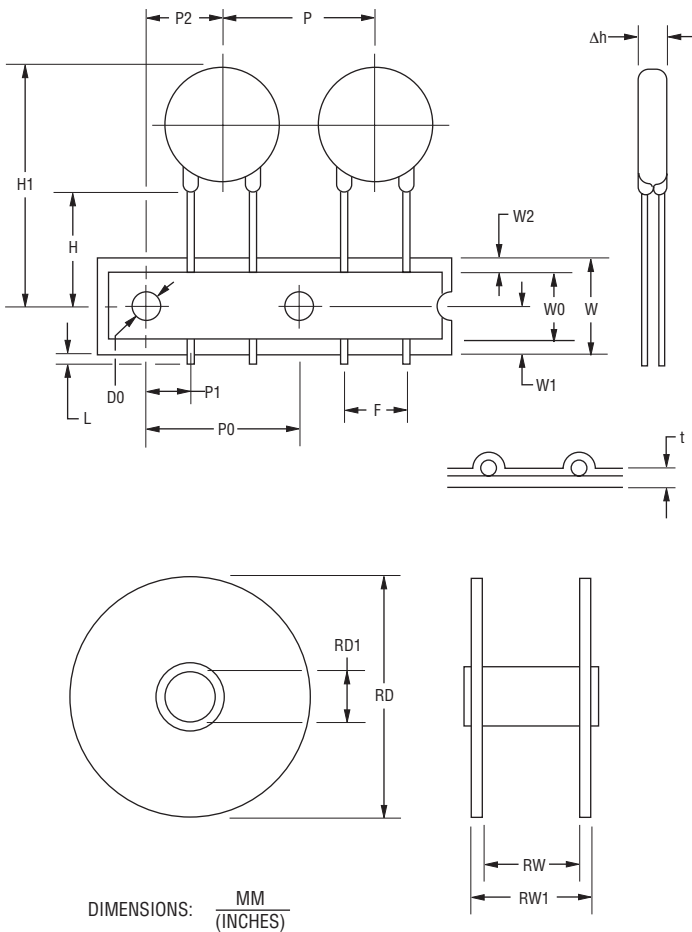
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# MOV-07DxxxK Series - Metal Oxide Varistor

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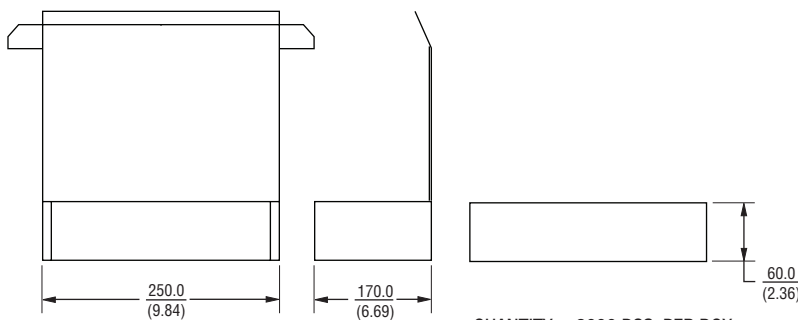
## Packaging Information

### TAPE & REEL



| Item                                  | Symbol     | 7 mm Disc                              |
|---------------------------------------|------------|----------------------------------------|
| Reel Outside Diameter                 | RD         | $\frac{355}{(13.98)}$                  |
| Reel Inner Diameter                   | RD1        | $\frac{30}{(1.181)}$                   |
| Tape Width                            | RW         | $\frac{47}{(18.50)}$                   |
| Reel Width                            | RW1        | $\frac{53}{(20.87)}$                   |
| Pitch of Component                    | P          | $\frac{12.7 \pm 1.0}{(0.50 \pm 0.04)}$ |
| Feed Hole Pitch                       | P0         | $\frac{12.7 \pm 1.0}{(0.50 \pm 0.04)}$ |
| Feed Hole Center to Pitch             | P1         | $\frac{3.85 \pm 0.7}{(0.15 \pm 0.03)}$ |
| Feed Hole Center to Component Center  | P2         | $\frac{6.35 \pm 1.0}{(0.25 \pm 0.04)}$ |
| Lead to Lead Distance                 | F          | $\frac{5.00 \pm 0.8}{(0.20 \pm 0.03)}$ |
| Component Alignment                   | $\Delta h$ | $\frac{2.0}{(0.79)} \text{ max.}$      |
| 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         | $\frac{3.0}{(0.12)} \text{ max.}$      |
| 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         | $\frac{32.0}{(1.26)} \text{ max.}$     |
| Crimp Length                          | C          | $\frac{2.60}{(0.10)} \text{ typ.}$     |
| Feed Hole Diameter                    | D0         | $\frac{4.0 \pm 0.2}{(0.16 \pm 0.08)}$  |
| Total Tape Thickness                  | t          | $\frac{0.6 \pm 0.3}{(0.02 \pm 0.01)}$  |
| Length of Clipped Height              | L          | $\frac{1.0}{(0.04)} \text{ max.}$      |
| Quantity per Reel (07D180K – 07D391K) | -          | 2000                                   |
| Quantity per Reel (07D431K – 07D821K) | -          | 1500                                   |

### BULK



REV. 10/12

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**BOURNS®**

#### Asia-Pacific:

Tel: +886-2 2562-4117

Fax: +886-2 2562-4116

#### Europe:

Tel: +41-41 768 5555

Fax: +41-41 768 5510

#### The Americas:

Tel: +1-951 781-5500

Fax: +1-951 781-5700

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➤ Address :

401 Building No.5, JiuGe Business Center, Lane 2301, Yishan Rd  
Minhang District, Shanghai , China

➤ Sales :

Direct +86 (21) 6401-6692

Email [amall@ameya360.com](mailto:amall@ameya360.com)

QQ 800077892

Skype ameyasales1 ameyasales2

➤ Customer Service :

Email [service@ameya360.com](mailto:service@ameya360.com)

➤ Partnership :

Tel +86 (21) 64016692-8333

Email [mkt@ameya360.com](mailto:mkt@ameya360.com)