

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

**Part Number:** MOV-07D680KKTR

**Manufacturer:** Bourns Inc.

**Package:** Disc 7mm

**Availability:** Please confirm with sales

**Product Page:**

<https://antrexco.com/product/details/bourns-inc/mov-07d680kktr.html>

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### Contact Information

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**Note:**

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.



## Features

- High voltage and current rating
- Straight and kinked lead styles available
- Bidirectional
- Surge protection
- Fast response time
- RoHS compliant\*
- Agency listing: US

## Additional Information

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## 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 | <a href="#">E313168</a> |

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

| Parameter                                | Symbol    | Min. | Typ. | Max. | Unit                 |
|------------------------------------------|-----------|------|------|------|----------------------|
| Operating Temperature                    | $T_{OPR}$ | -40  | 25   | +105 | $^\circ\text{C}$     |
| Storage Temperature                      | $T_{STG}$ | -40  | 25   | +125 | $^\circ\text{C}$     |
| Rated Wattage                            | $P_w$     |      |      | 0.25 | Watt                 |
| Varistor Voltage Temperature Coefficient | $V_{TC}$  | 0    |      | 0.05 | % / $^\circ\text{C}$ |
| 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 | Typ. 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              |             |           |
| MOV-07D180K     | 11                          | 14   | 16                    | 18   | 20   | 2.5                     | 36                        | 250                   | 0.9         | 3840      |
| MOV-07D220K     | 14                          | 18   | 20                    | 22   | 24   | 2.5                     | 43                        | 250                   | 1.1         | 3360      |
| MOV-07D270K     | 17                          | 22   | 24                    | 27   | 30   | 2.5                     | 53                        | 250                   | 1.4         | 3120      |
| MOV-07D330K     | 20                          | 26   | 30                    | 33   | 36   | 2.5                     | 65                        | 250                   | 1.7         | 2640      |
| MOV-07D390K     | 25                          | 31   | 35                    | 39   | 43   | 2.5                     | 77                        | 250                   | 2.1         | 2400      |
| MOV-07D470K     | 30                          | 38   | 42                    | 47   | 52   | 2.5                     | 93                        | 250                   | 2.5         | 1680      |
| MOV-07D560K     | 35                          | 45   | 50                    | 56   | 62   | 2.5                     | 110                       | 250                   | 3.1         | 1440      |
| MOV-07D680K     | 40                          | 56   | 61                    | 68   | 75   | 2.5                     | 135                       | 250                   | 3.6         | 1200      |
| MOV-07D820K     | 50                          | 65   | 74                    | 82   | 90   | 10                      | 135                       | 1200                  | 5.5         | 720       |
| MOV-07D101K     | 60                          | 85   | 90                    | 100  | 110  | 10                      | 165                       | 1200                  | 6.5         | 600       |
| MOV-07D121K     | 75                          | 100  | 108                   | 120  | 132  | 10                      | 200                       | 1200                  | 7.8         | 504       |
| MOV-07D151K     | 95                          | 125  | 135                   | 150  | 165  | 10                      | 250                       | 1200                  | 9.7         | 396       |
| MOV-07D181K     | 115                         | 150  | 162                   | 180  | 198  | 10                      | 300                       | 1200                  | 11.7        | 336       |
| MOV-07D201K     | 130                         | 170  | 185                   | 200  | 225  | 10                      | 340                       | 1200                  | 13          | 300       |
| MOV-07D221K     | 140                         | 180  | 198                   | 220  | 242  | 10                      | 360                       | 1200                  | 14          | 276       |
| MOV-07D241K     | 150                         | 200  | 216                   | 240  | 264  | 10                      | 395                       | 1200                  | 15          | 252       |
| MOV-07D271K     | 175                         | 225  | 243                   | 270  | 297  | 10                      | 455                       | 1200                  | 18          | 222       |
| MOV-07D301K     | 190                         | 250  | 270                   | 300  | 330  | 10                      | 500                       | 1200                  | 20          | 198       |
| MOV-07D331K     | 210                         | 275  | 297                   | 330  | 363  | 10                      | 550                       | 1200                  | 23          | 180       |
| MOV-07D361K     | 230                         | 300  | 324                   | 360  | 396  | 10                      | 595                       | 1200                  | 25          | 168       |
| MOV-07D391K     | 250                         | 320  | 351                   | 390  | 429  | 10                      | 650                       | 1200                  | 25          | 156       |
| MOV-07D431K     | 275                         | 350  | 387                   | 430  | 473  | 10                      | 710                       | 1200                  | 28          | 138       |
| MOV-07D471K     | 300                         | 385  | 423                   | 470  | 517  | 10                      | 775                       | 1200                  | 30          | 126       |
| MOV-07D511K     | 320                         | 415  | 459                   | 510  | 561  | 10                      | 845                       | 1200                  | 30          | 120       |
| MOV-07D561K     | 350                         | 460  | 504                   | 560  | 616  | 10                      | 925                       | 1200                  | 30          | 108       |
| MOV-07D621K     | 385                         | 505  | 558                   | 620  | 682  | 10                      | 1025                      | 1200                  | 33          | 96        |
| MOV-07D681K     | 420                         | 560  | 612                   | 680  | 748  | 10                      | 1120                      | 1200                  | 33          | 90        |
| MOV-07D751K     | 460                         | 620  | 675                   | 750  | 825  | 10                      | 1240                      | 1200                  | 38          | 84        |
| MOV-07D781K     | 480                         | 640  | 702                   | 780  | 858  | 10                      | 1290                      | 1200                  | 38          | 84        |
| MOV-07D821K     | 510                         | 675  | 738                   | 820  | 902  | 10                      | 1355                      | 1200                  | 40          | 72        |



**WARNING**  
Cancer and Reproductive Harm  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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## Applications

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

## 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.

#### Straight Leads



#### Kinked Leads (Outward)



| Bourns Part Number | Dim T (Max.)         | Dim a (Typ.)         |
|--------------------|----------------------|----------------------|
| MOV-07D180K        | $\frac{3.4}{(.134)}$ | $\frac{1.4}{(.055)}$ |
| MOV-07D220K        | $\frac{3.5}{(.138)}$ | $\frac{1.4}{(.055)}$ |
| MOV-07D270K        | $\frac{3.8}{(.150)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D330K        | $\frac{3.4}{(.134)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D390K        | $\frac{3.6}{(.142)}$ | $\frac{1.7}{(.067)}$ |
| MOV-07D470K        | $\frac{3.8}{(.150)}$ | $\frac{1.9}{(.075)}$ |
| MOV-07D560K        | $\frac{3.9}{(.154)}$ | $\frac{2.1}{(.083)}$ |
| MOV-07D680K        | $\frac{4.0}{(.157)}$ | $\frac{2.4}{(.094)}$ |
| MOV-07D820K        | $\frac{3.4}{(.134)}$ | $\frac{1.4}{(.055)}$ |
| MOV-07D101K        | $\frac{3.6}{(.142)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D121K        | $\frac{3.8}{(.150)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D151K        | $\frac{4.0}{(.157)}$ | $\frac{1.6}{(.063)}$ |
| MOV-07D181K        | $\frac{3.2}{(.126)}$ | $\frac{1.7}{(.067)}$ |
| MOV-07D201K        | $\frac{3.4}{(.134)}$ | $\frac{1.7}{(.067)}$ |
| MOV-07D221K        | $\frac{3.5}{(.138)}$ | $\frac{1.8}{(.071)}$ |

| Bourns Part Number | Dim T (Max.)         | Dim a (Typ.)         |
|--------------------|----------------------|----------------------|
| MOV-07D241K        | $\frac{3.6}{(.142)}$ | $\frac{1.9}{(.075)}$ |
| MOV-07D271K        | $\frac{3.8}{(.150)}$ | $\frac{2.0}{(.079)}$ |
| MOV-07D301K        | $\frac{4.0}{(.157)}$ | $\frac{2.1}{(.083)}$ |
| MOV-07D331K        | $\frac{4.2}{(.165)}$ | $\frac{2.2}{(.087)}$ |
| MOV-07D361K        | $\frac{4.4}{(.173)}$ | $\frac{2.3}{(.091)}$ |
| MOV-07D391K        | $\frac{4.6}{(.181)}$ | $\frac{2.5}{(.098)}$ |
| MOV-07D431K        | $\frac{4.8}{(.189)}$ | $\frac{2.7}{(.106)}$ |
| MOV-07D471K        | $\frac{5.0}{(.297)}$ | $\frac{2.9}{(.114)}$ |
| MOV-07D511K        | $\frac{5.1}{(.201)}$ | $\frac{3.1}{(.122)}$ |
| MOV-07D561K        | $\frac{5.4}{(.213)}$ | $\frac{3.3}{(.130)}$ |
| MOV-07D621K        | $\frac{5.8}{(.228)}$ | $\frac{3.4}{(.134)}$ |
| MOV-07D681K        | $\frac{6.0}{(.236)}$ | $\frac{3.6}{(.142)}$ |
| MOV-07D751K        | $\frac{6.2}{(.244)}$ | $\frac{3.7}{(.146)}$ |
| MOV-07D781K        | $\frac{6.4}{(.252)}$ | $\frac{3.8}{(.150)}$ |
| MOV-07D821K        | $\frac{6.8}{(.268)}$ | $\frac{4.0}{(.157)}$ |

| Bourns Part Number | Dim T (Max.)         | Dim a (Typ.)         |
|--------------------|----------------------|----------------------|
| MOV-07D180KK       | $\frac{3.4}{(.134)}$ | $\frac{1.4}{(.055)}$ |
| MOV-07D220KK       | $\frac{3.5}{(.138)}$ | $\frac{1.4}{(.055)}$ |
| MOV-07D270KK       | $\frac{3.8}{(.150)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D330KK       | $\frac{3.4}{(.134)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D390KK       | $\frac{3.6}{(.142)}$ | $\frac{1.7}{(.067)}$ |
| MOV-07D470KK       | $\frac{3.8}{(.150)}$ | $\frac{1.9}{(.075)}$ |
| MOV-07D560KK       | $\frac{3.9}{(.154)}$ | $\frac{2.1}{(.083)}$ |
| MOV-07D680KK       | $\frac{4.0}{(.157)}$ | $\frac{2.4}{(.094)}$ |
| MOV-07D820KK       | $\frac{3.4}{(.134)}$ | $\frac{1.4}{(.055)}$ |
| MOV-07D101KK       | $\frac{3.6}{(.142)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D121KK       | $\frac{3.8}{(.150)}$ | $\frac{1.5}{(.059)}$ |
| MOV-07D151KK       | $\frac{4.0}{(.157)}$ | $\frac{1.6}{(.063)}$ |
| MOV-07D181KK       | $\frac{3.2}{(.126)}$ | $\frac{1.7}{(.067)}$ |
| MOV-07D201KK       | $\frac{3.4}{(.134)}$ | $\frac{1.7}{(.067)}$ |
| MOV-07D221KK       | $\frac{3.5}{(.138)}$ | $\frac{1.8}{(.071)}$ |

| Bourns Part Number | Dim T (Max.)                                    | Dim a (Typ.)         |
|--------------------|-------------------------------------------------|----------------------|
| MOV-07D241KK       | $\frac{3.6}{(.142)}$                            | $\frac{1.9}{(.075)}$ |
| MOV-07D271KK       | $\frac{3.8}{(.150)}$                            | $\frac{2.0}{(.079)}$ |
| MOV-07D301KK       | $\frac{4.0}{(.157)}$                            | $\frac{2.1}{(.083)}$ |
| MOV-07D331KK       | $\frac{4.2}{(.165)}$                            | $\frac{2.2}{(.087)}$ |
| MOV-07D361KK       | $\frac{4.4}{(.173)}$                            | $\frac{2.3}{(.091)}$ |
| MOV-07D391KK       | $\frac{4.6}{(.181)}$                            | $\frac{2.5}{(.098)}$ |
| MOV-07D431KK       | $\frac{4.8}{(.189)}$                            | $\frac{2.7}{(.106)}$ |
| MOV-07D471KK       | $\frac{5.0}{(.297)}$                            | $\frac{2.9}{(.114)}$ |
| MOV-07D511KK       | $\frac{5.1}{(.201)}$                            | $\frac{3.1}{(.122)}$ |
| MOV-07D561KK       | $\frac{5.4}{(.213)}$                            | $\frac{3.3}{(.130)}$ |
| MOV-07D621KK       | N/A<br>See Kinked Leads (In-line) Configuration |                      |
| MOV-07D681KK       |                                                 |                      |
| MOV-07D751KK       |                                                 |                      |
| MOV-07D781KK       |                                                 |                      |
| MOV-07D821KK       |                                                 |                      |

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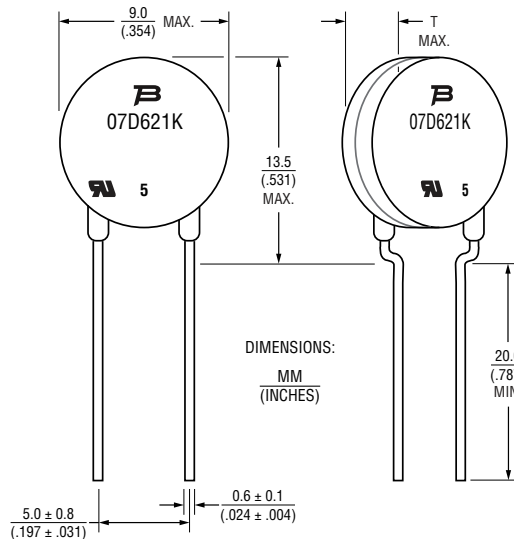
# MOV-07DxxxK Series – Metal Oxide Varistor

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## Product Dimensions (Continued)

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

### Kinked Leads (In-line)



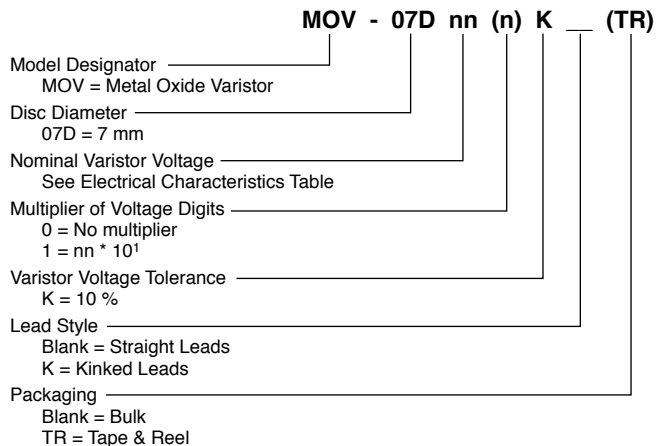
| Bourns Part Number | Dim T (Max.)                                    | Bourns Part Number | Dim T (Max.)                                    |
|--------------------|-------------------------------------------------|--------------------|-------------------------------------------------|
| MOV-07D180KK       | N/A<br>See Kinked Leads (Outward) Configuration | MOV-07D241KK       | N/A<br>See Kinked Leads (Outward) Configuration |
| MOV-07D220KK       |                                                 | MOV-07D271KK       |                                                 |
| MOV-07D270KK       |                                                 | MOV-07D301KK       |                                                 |
| MOV-07D330KK       |                                                 | MOV-07D331KK       |                                                 |
| MOV-07D390KK       |                                                 | MOV-07D361KK       |                                                 |
| MOV-07D470KK       |                                                 | MOV-07D391KK       |                                                 |
| MOV-07D560KK       |                                                 | MOV-07D431KK       |                                                 |
| MOV-07D680KK       |                                                 | MOV-07D471KK       |                                                 |
| MOV-07D820KK       |                                                 | MOV-07D511KK       |                                                 |
| MOV-07D101KK       |                                                 | MOV-07D561KK       |                                                 |
| MOV-07D121KK       |                                                 | MOV-07D621KK       | 5.8<br>(.228)                                   |
| MOV-07D151KK       |                                                 | MOV-07D681KK       | 6.0<br>(.236)                                   |
| MOV-07D181KK       |                                                 | MOV-07D751KK       | 6.2<br>(.244)                                   |
| MOV-07D201KK       |                                                 | MOV-07D781KK       | 6.4<br>(.252)                                   |
| MOV-07D221KK       |                                                 | MOV-07D821KK       | 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, Straight Leads, Bulk Pack  
 MOV-07D331KKTR = 330 V, Kinked Leads (Outward), Tape & Reel

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## MOV-07DxxxK Series – Metal Oxide Varistor

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### Performance Graphs

#### V-I Characteristics



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# MOV-07DxxxK Series – Metal Oxide Varistor

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## Pulse Rating Curves



## Internal Construction



## Environmental Specifications

Moisture Sensitivity Level ..... 1  
ESD Classification (HBM) ..... N/A

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# MOV-07DxxxK Series – Metal Oxide Varistor

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## Packaging Information

### TAPE & REEL - Straight Leads



| Item                                     | Symbol | 7 mm Disc                    |
|------------------------------------------|--------|------------------------------|
| Reel Outside Diameter                    | RD     | 355<br>(13.98)               |
| Reel Inner Diameter                      | RD1    | 30<br>(1.181)                |
| Tape Width                               | RW     | 47<br>(1.850)                |
| Reel Width                               | RW1    | 53<br>(2.087)                |
| Pitch of Component                       | P      | 12.7 ± 1.0<br>(0.50 ± 0.04)  |
| Feed Hole Pitch                          | P0     | 12.7 ± 0.2<br>(0.50 ± 0.008) |
| Feed Hole Center to Pitch                | P1     | 3.85 ± 0.7<br>(0.15 ± 0.03)  |
| Feed Hole Center to Component Center     | P2     | 6.35 ± 0.7<br>(0.25 ± 0.03)  |
| Lead to Lead Distance                    | F      | 5.00 ± 0.8<br>(0.20 ± 0.03)  |
| Component Alignment                      | Δh     | 2.0<br>(0.79) max.           |
| Tape Width                               | W      | 18.0 ± 0.5<br>(0.71 ± 0.02)  |
| Hole Down Tape Width                     | W0     | 12.0 ± 0.8<br>(0.47 ± 0.03)  |
| Hole Position                            | W1     | 9.0 ± 0.5<br>(0.35 ± 0.02)   |
| Hole Down Tape Position                  | W2     | 3.0<br>(0.12) max.           |
| Height From Center to Component Base     | H      | 19.0 ± 1.0<br>(0.75 ± 0.04)  |
| Component Height                         | H1     | 32.0<br>(1.26) max.          |
| Feed Hole Diameter                       | D0     | 4.0 ± 0.2<br>(0.16 ± 0.08)   |
| Total Tape Thickness                     | t      | 0.6 ± 0.3<br>(0.02 ± 0.01)   |
| Quantity per Reel<br>(07D180K – 07D391K) | -      | 2000                         |
| Quantity per Reel<br>(07D431K – 07D561K) | -      | 1500                         |
| Quantity per Reel<br>(07D621K – 07D821K) | -      | 1000                         |

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# MOV-07DxxxK Series – Metal Oxide Varistor

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## Packaging Information (Continued)

### TAPE & REEL - Kinked Leads



| 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         | $\frac{12.7 \pm 0.2}{(0.50 \pm 0.008)}$ |
| Feed Hole Center to Pitch                | P1         | $\frac{3.85 \pm 0.7}{(0.15 \pm 0.03)}$  |
| Feed Hole Center to Component Center     | P2         | $\frac{6.35 \pm 0.7}{(0.25 \pm 0.03)}$  |
| 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 Component Top to Kinked Base | H          | $\frac{13.5}{(0.53)} \text{ max.}$      |
| Seating Plane Height                     | H0         | $\frac{16.0 \pm 0.5}{(0.63 \pm 0.02)}$  |
| Component Height                         | H1         | $\frac{32.0}{(1.26)} \text{ max.}$      |
| Feed Hole Diameter                       | D0         | $\frac{4.0 \pm 0.2}{(0.16 \pm 0.08)}$   |
| Total Tape Thickness                     | t          | $\frac{0.6 \pm 0.3}{(0.02 \pm 0.01)}$   |
| Quantity per Reel (07D180KK – 07D391KK)  | -          | 2000                                    |
| Quantity per Reel (07D431KK – 07D561KK)  | -          | 1500                                    |
| Quantity per Reel (07D621KK – 07D821KK)  | -          | 1000                                    |

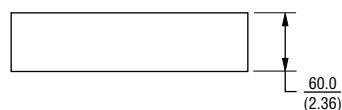
### BULK



#### QUANTITY:

MOV-07D180K – 07D561K = 2000 PCS. PER BOX

MOV-07D621K – 07D821K = 1600 PCS. PER BOX



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Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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