



## Features

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

## Applications

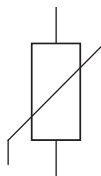
- Power supplies
- Power systems
- Line voltage
- Telecom systems
- White goods / appliances

## MOV-14DxxxK Series - Metal Oxide Varistor

### General Information

The MOV-14DxxxK Series of 14 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 1800 V and  $V_{rms}$  voltages from 11 V to 1100 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   | +105 | $^\circ\text{C}$     |
| Storage Temperature                      | $T_{STG}$ | -40  | 25   | +125 | $^\circ\text{C}$     |
| Rated Wattage                            | $P_W$     |      |      | 0.60 | 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 (8/20 $\mu\text{s}$ ) |                           | Max. Peak Current (8/20 $\mu\text{s}$ ) | Max. Energy (J)    | Typ. Cap. (pF) |
|-----------------|-----------------------------|------|-----------------------|------|------|-----------------------------------------------|---------------------------|-----------------------------------------|--------------------|----------------|
|                 | r.m.s.                      | d.c. | Min.                  | Nom. | Max. | Class Current (A)                             | Max. Clamping Voltage (V) | One Time                                | 8/20 $\mu\text{s}$ | 1 kHz          |
|                 |                             |      |                       |      |      |                                               |                           |                                         |                    |                |
| MOV-14D180K     | 11                          | 14   | 16                    | 18   | 20   | 10                                            | 36                        | 1000                                    | 4.0                | 14400          |
| MOV-14D220K     | 14                          | 18   | 20                    | 22   | 24   | 10                                            | 43                        | 1000                                    | 5.0                | 12000          |
| MOV-14D270K     | 17                          | 22   | 24                    | 27   | 30   | 10                                            | 53                        | 1000                                    | 6.0                | 9840           |
| MOV-14D330K     | 20                          | 26   | 30                    | 33   | 36   | 10                                            | 65                        | 1000                                    | 7.5                | 8640           |
| MOV-14D390K     | 25                          | 31   | 35                    | 39   | 43   | 10                                            | 77                        | 1000                                    | 8.6                | 7680           |
| MOV-14D470K     | 30                          | 38   | 42                    | 47   | 52   | 10                                            | 93                        | 1000                                    | 10.0               | 7200           |
| MOV-14D560K     | 35                          | 45   | 50                    | 56   | 62   | 10                                            | 110                       | 1000                                    | 11.0               | 6960           |
| MOV-14D680K     | 40                          | 56   | 61                    | 68   | 75   | 10                                            | 135                       | 1000                                    | 14.0               | 6240           |
| MOV-14D820K     | 50                          | 65   | 74                    | 82   | 90   | 50                                            | 135                       | 4500                                    | 22.0               | 3000           |
| MOV-14D101K     | 60                          | 85   | 90                    | 100  | 110  | 50                                            | 165                       | 4500                                    | 28.0               | 2400           |
| MOV-14D121K     | 75                          | 100  | 108                   | 120  | 132  | 50                                            | 200                       | 4500                                    | 32.0               | 2040           |
| MOV-14D151K     | 95                          | 125  | 135                   | 150  | 165  | 50                                            | 250                       | 4500                                    | 40.0               | 1560           |
| MOV-14D181K     | 115                         | 150  | 162                   | 180  | 198  | 50                                            | 300                       | 4500                                    | 50.0               | 1320           |
| MOV-14D201K     | 130                         | 170  | 185                   | 200  | 225  | 50                                            | 340                       | 4500                                    | 57.0               | 1200           |
| MOV-14D221K     | 140                         | 180  | 198                   | 220  | 242  | 50                                            | 360                       | 4500                                    | 60.0               | 1080           |
| MOV-14D241K     | 150                         | 200  | 216                   | 240  | 264  | 50                                            | 395                       | 4500                                    | 63.0               | 996            |
| MOV-14D271K     | 175                         | 225  | 243                   | 270  | 297  | 50                                            | 455                       | 4500                                    | 70.0               | 888            |
| MOV-14D301K     | 190                         | 250  | 270                   | 300  | 330  | 50                                            | 500                       | 4500                                    | 77.0               | 804            |
| MOV-14D331K     | 210                         | 275  | 297                   | 330  | 363  | 50                                            | 550                       | 4500                                    | 85.0               | 732            |
| MOV-14D361K     | 230                         | 300  | 324                   | 360  | 396  | 50                                            | 595                       | 4500                                    | 93.0               | 672            |
| MOV-14D391K     | 250                         | 320  | 351                   | 390  | 429  | 50                                            | 650                       | 4500                                    | 100.0              | 612            |
| MOV-14D431K     | 275                         | 350  | 387                   | 430  | 473  | 50                                            | 710                       | 4500                                    | 115.0              | 552            |
| MOV-14D471K     | 300                         | 385  | 423                   | 470  | 517  | 50                                            | 775                       | 4500                                    | 125.0              | 516            |
| MOV-14D511K     | 320                         | 415  | 459                   | 510  | 561  | 50                                            | 845                       | 4500                                    | 125.0              | 468            |
| MOV-14D561K     | 350                         | 460  | 504                   | 560  | 616  | 50                                            | 925                       | 4500                                    | 125.0              | 432            |
| MOV-14D621K     | 385                         | 505  | 558                   | 620  | 682  | 50                                            | 1025                      | 4500                                    | 125.0              | 384            |
| MOV-14D681K     | 420                         | 560  | 612                   | 680  | 748  | 50                                            | 1120                      | 4500                                    | 130.0              | 360            |
| MOV-14D751K     | 460                         | 615  | 675                   | 750  | 825  | 50                                            | 1240                      | 4500                                    | 143.0              | 324            |
| MOV-14D781K     | 485                         | 640  | 702                   | 780  | 858  | 50                                            | 1290                      | 4500                                    | 148.0              | 312            |
| MOV-14D821K     | 510                         | 670  | 738                   | 820  | 902  | 50                                            | 1355                      | 4500                                    | 157.0              | 300            |
| MOV-14D911K     | 550                         | 745  | 819                   | 910  | 1001 | 50                                            | 1500                      | 4500                                    | 175.0              | 288            |
| MOV-14D102K     | 625                         | 825  | 900                   | 1000 | 1100 | 50                                            | 1650                      | 4500                                    | 190.0              | 264            |
| MOV-14D112K     | 680                         | 895  | 990                   | 1100 | 1210 | 50                                            | 1815                      | 4500                                    | 213.0              | 240            |
| MOV-14D152K     | 940                         | 1200 | 1350                  | 1500 | 1650 | 50                                            | 2475                      | 4500                                    | 329.0              | 180            |
| MOV-14D182K     | 1100                        | 1465 | 1620                  | 1800 | 1980 | 50                                            | 2970                      | 4500                                    | 335.0              | 156            |



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

\*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.

Users should verify actual device performance in their specific applications.

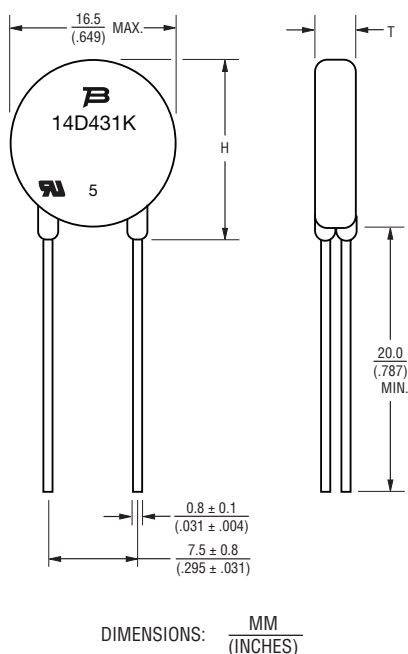
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# MOV-14DxxxK Series - Metal Oxide Varistor

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## Product Dimensions

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



## How to Order

### MOV - 14D nn (n) K (TR)

Model Designator  
MOV = Metal Oxide Varistor

Disc Diameter  
14D = 14 mm

Nominal Varistor Voltage  
See Electrical Characteristics Table

Multiplier of Voltage Digits  
0 = No multiplier  
1 = nn \* 10<sup>1</sup>  
2 = nn \* 10<sup>2</sup>

Varistor Voltage Tolerance  
K = 10 %

Packaging  
Blank = Bulk  
TR = Tape & Reel\*

Examples: MOV-14D270K = 27 V, Bulk Pack  
MOV-14D331KTR = 330 V, Tape & Reel

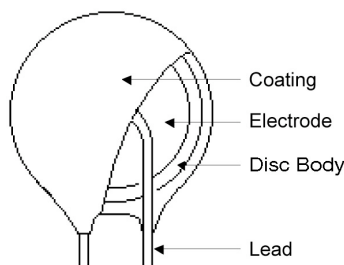
\* Models MOV-14D911K, 102K, 112K, 152K and 182K are not available in Tape & Reel packaging.

| Part Number | Dim. H (Max.)  | Dim. T (Max.) |
|-------------|----------------|---------------|
| MOV-14D180K | 20.0<br>(.787) | 3.8<br>(.150) |
| MOV-14D220K | 20.0<br>(.787) | 3.9<br>(.154) |
| MOV-14D270K | 20.0<br>(.787) | 4.2<br>(.165) |
| MOV-14D330K | 20.0<br>(.787) | 3.8<br>(.150) |
| MOV-14D390K | 20.0<br>(.787) | 4.0<br>(.157) |
| MOV-14D470K | 20.0<br>(.787) | 4.2<br>(.165) |
| MOV-14D560K | 20.0<br>(.787) | 4.3<br>(.169) |
| MOV-14D680K | 20.0<br>(.787) | 4.4<br>(.173) |
| MOV-14D820K | 20.0<br>(.787) | 3.8<br>(.150) |
| MOV-14D101K | 20.0<br>(.787) | 4.0<br>(.157) |
| MOV-14D121K | 20.0<br>(.787) | 4.2<br>(.165) |
| MOV-14D151K | 20.0<br>(.787) | 4.4<br>(.173) |
| MOV-14D181K | 20.0<br>(.787) | 3.6<br>(.142) |
| MOV-14D201K | 20.0<br>(.787) | 3.8<br>(.150) |
| MOV-14D221K | 20.0<br>(.787) | 3.9<br>(.154) |
| MOV-14D241K | 20.0<br>(.787) | 4.0<br>(.157) |
| MOV-14D271K | 20.0<br>(.787) | 4.2<br>(.165) |
| MOV-14D301K | 20.0<br>(.787) | 4.4<br>(.173) |

| Part Number  | Dim. H (Max.)  | Dim. T (Max.)  |
|--------------|----------------|----------------|
| MOV-14D331K  | 20.0<br>(.787) | 4.6<br>(.181)  |
| MOV-14D361K  | 20.0<br>(.787) | 4.8<br>(.189)  |
| MOV-14D391K  | 20.0<br>(.787) | 5.0<br>(.197)  |
| MOV-14D431K  | 20.0<br>(.787) | 5.2<br>(.205)  |
| MOV-14D471K  | 20.0<br>(.787) | 5.4<br>(.213)  |
| MOV-14D511K  | 20.0<br>(.787) | 5.5<br>(.217)  |
| MOV-14D561K  | 22.0<br>(.866) | 6.0<br>(.236)  |
| MOV-14D621K  | 22.0<br>(.866) | 6.4<br>(.252)  |
| MOV-14D681K  | 22.0<br>(.866) | 6.5<br>(.256)  |
| MOV-14D751K  | 22.0<br>(.866) | 6.7<br>(.264)  |
| MOV-14D781K  | 22.0<br>(.866) | 6.9<br>(.272)  |
| MOV-14D821K  | 22.0<br>(.866) | 7.3<br>(.287)  |
| MOV-14D911K* | 22.0<br>(.866) | 7.7<br>(.303)  |
| MOV-14D102K* | 22.0<br>(.866) | 8.2<br>(.323)  |
| MOV-14D112K* | 22.0<br>(.866) | 8.7<br>(.343)  |
| MOV-14D152K* | 22.0<br>(.866) | 9.7<br>(.382)  |
| MOV-14D182K* | 22.0<br>(.866) | 11.7<br>(.461) |

\* Not available in Tape & Reel packaging.

## Internal Construction



## Environmental Specifications

Moisture Sensitivity Level ..... 1  
ESD Classification (HBM)..... 6

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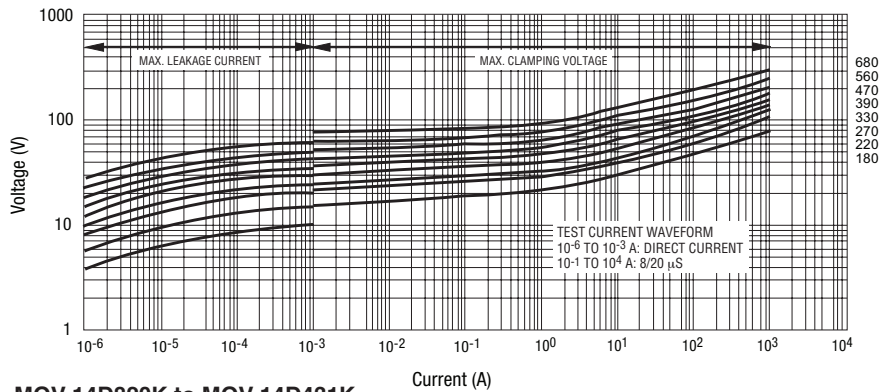
# MOV-14DxxxK Series - Metal Oxide Varistor

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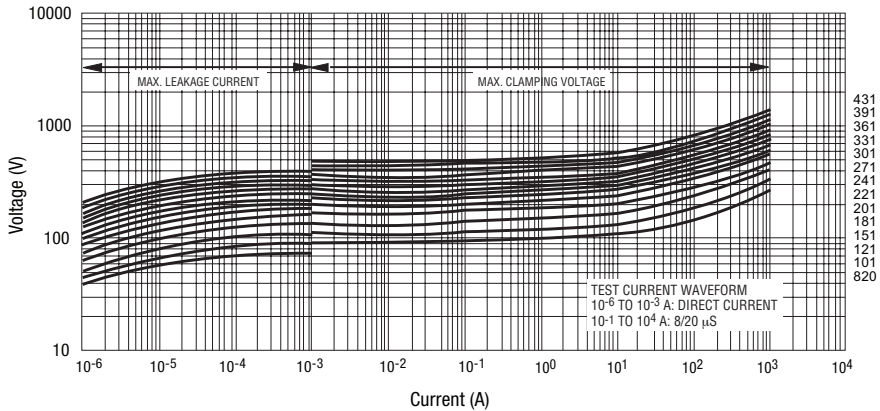
## Performance Graphs

### V-I Characteristics

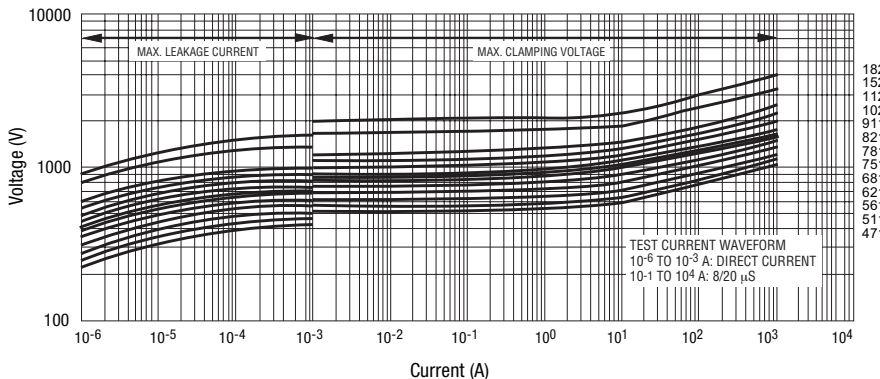
#### MOV-14D180K to MOV-14D680K



#### MOV-14D820K to MOV-14D431K



#### MOV-14D471K to MOV-14D182K



## Typical Part Marking

| Bourns Part Number | Bourns Part Marking |
|--------------------|---------------------|
| MOV-14D180K        | 14D180K             |
| MOV-14D220K        | 14D220K             |
| MOV-14D270K        | 14D270K             |
| MOV-14D330K        | 14D330K             |
| MOV-14D390K        | 14D390K             |
| MOV-14D470K        | 14D470K             |
| MOV-14D560K        | 14D560K             |
| MOV-14D680K        | 14D680K             |
| MOV-14D820K        | 14D820K             |
| MOV-14D101K        | 14D101K             |
| MOV-14D121K        | 14D121K             |
| MOV-14D151K        | 14D151K             |
| MOV-14D181K        | 14D181K             |
| MOV-14D201K        | 14D201K             |
| MOV-14D221K        | 14D221K             |
| MOV-14D241K        | 14D241K             |
| MOV-14D271K        | 14D271K             |
| MOV-14D301K        | 14D301K             |
| MOV-14D331K        | 14D331K             |
| MOV-14D361K        | 14D361K             |
| MOV-14D391K        | 14D391K             |
| MOV-14D431K        | 14D431K             |
| MOV-14D471K        | 14D471K             |
| MOV-14D511K        | 14D511K             |
| MOV-14D561K        | 14D561K             |
| MOV-14D621K        | 14D621K             |
| MOV-14D681K        | 14D681K             |
| MOV-14D751K        | 14D751K             |
| MOV-14D781K        | 14D781K             |
| MOV-14D821K        | 14D821K             |
| MOV-14D911K        | 14D911K             |
| MOV-14D102K        | 14D102K             |
| MOV-14D112K        | 14D112K             |
| MOV-14D152K        | 14D152K             |
| MOV-14D182K        | 14D182K             |

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

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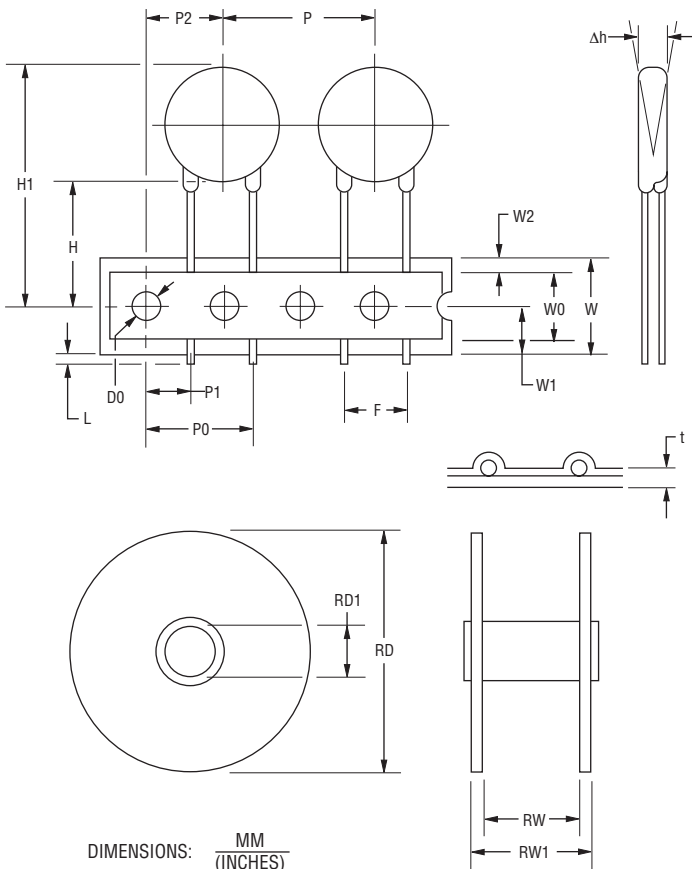
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# MOV-14DxxxK Series - Metal Oxide Varistor

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## Packaging Information

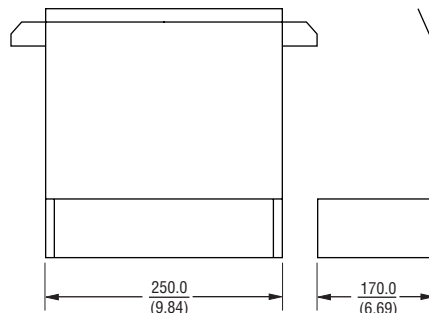
### TAPE & REEL



NOTE: Models MOV-14D911K, 102K, 112K, 152K and 182K are not available in Tape & Reel packaging.

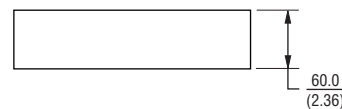
| Item                                 | Symbol | 14 mm Disc                             |
|--------------------------------------|--------|----------------------------------------|
| Reel Outside Diameter                | RD     | $\frac{355}{(13.98)}$                  |
| Reel Inner Diameter                  | RD1    | $\frac{30}{(11.81)}$                   |
| Tape Width                           | RW     | $\frac{55}{(2.165)}$                   |
| Reel Width                           | RW1    | $\frac{63}{(2.48)}$                    |
| 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     | $\frac{8.95 \pm 0.7}{(0.352 \pm 0.3)}$ |
| 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                  | Δh     | $\frac{4.0}{(0.157)} \text{ max.}$     |
| 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     | $\frac{40.0}{(1.57)} \text{ max.}$     |
| 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                    | -      | 500                                    |
| MOV-14D180K - 14D331K                | -      | 400                                    |
| MOV-14D361K - 14D821K                | -      |                                        |

### BULK



#### QUANTITY:

MOV-14D180K - MOV14D331K = 800 PCS. PER BOX  
 MOV-14D361K - MOV14D621K = 600 PCS. PER BOX  
 MOV-14D681K - MOV14D112K = 400 PCS. PER BOX  
 MOV-14D152K - MOV14D182K = 300 PCS. PER BOX



REV. 08/17

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