

# ANTREX Electronics

## Electronic Components Sourcing Information

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### Product Reference Information

**Part Number:** MOV-10D560K  
**Manufacturer:** Bourns Inc.  
**Package:** Disc 10mm  
**Availability:** Please confirm with sales

**Product Page:**

<https://antrexco.com/product/details/bourns-inc/mov-10d560k.html>

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### Contact Information

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Website: <https://antrexco.com>

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New & Original Components

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Secure sourcing support for OEM / EMS projects

**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: 

## Additional Information

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

| Standard                                                 | ITU-T K.20, K.21, K.45                                                                  |
|----------------------------------------------------------|-----------------------------------------------------------------------------------------|
| MOV-10D201K<br>MOV-10D361K<br>MOV-10D391K<br>MOV-10D431K | Will pass 600 V rms, 600 $\Omega$ ,<br>1 A, 0.2 s, 5 cycles,<br>every 1 min. condition. |

### 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                            | $P_w$     |      |      | 0.40 | 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  |      | 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-10D180K     | 11                          | 14   | 16                    | 18   | 20   | 5                       | 36                        | 500                   | 2.1         | 8160      |
| MOV-10D220K     | 14                          | 18   | 20                    | 22   | 24   | 5                       | 43                        | 500                   | 2.5         | 6000      |
| MOV-10D270K     | 17                          | 22   | 24                    | 27   | 30   | 5                       | 53                        | 500                   | 3.0         | 5280      |
| MOV-10D330K     | 20                          | 26   | 30                    | 33   | 36   | 5                       | 65                        | 500                   | 4.0         | 4800      |
| MOV-10D390K     | 25                          | 31   | 35                    | 39   | 43   | 5                       | 77                        | 500                   | 4.6         | 3840      |
| MOV-10D470K     | 30                          | 38   | 42                    | 47   | 52   | 5                       | 93                        | 500                   | 5.5         | 3600      |
| MOV-10D560K     | 35                          | 45   | 50                    | 56   | 62   | 5                       | 110                       | 500                   | 7.0         | 2640      |
| MOV-10D680K     | 40                          | 56   | 61                    | 68   | 75   | 5                       | 135                       | 500                   | 8.2         | 1920      |
| MOV-10D820K     | 50                          | 65   | 74                    | 82   | 90   | 25                      | 135                       | 2500                  | 12          | 1440      |
| MOV-10D101K     | 60                          | 85   | 90                    | 100  | 110  | 25                      | 165                       | 2500                  | 15          | 1200      |
| MOV-10D121K     | 75                          | 100  | 108                   | 120  | 132  | 25                      | 200                       | 2500                  | 18          | 996       |
| MOV-10D151K     | 95                          | 125  | 135                   | 150  | 165  | 25                      | 250                       | 2500                  | 22          | 804       |
| MOV-10D181K     | 115                         | 150  | 162                   | 180  | 198  | 25                      | 300                       | 2500                  | 27          | 672       |
| MOV-10D201K     | 130                         | 170  | 185                   | 200  | 225  | 25                      | 340                       | 2500                  | 30          | 600       |
| MOV-10D221K     | 140                         | 180  | 198                   | 220  | 242  | 25                      | 360                       | 2500                  | 32          | 540       |
| MOV-10D241K     | 150                         | 200  | 216                   | 240  | 264  | 25                      | 395                       | 2500                  | 35          | 504       |
| MOV-10D271K     | 175                         | 225  | 243                   | 270  | 297  | 25                      | 455                       | 2500                  | 40          | 444       |
| MOV-10D301K     | 190                         | 250  | 270                   | 300  | 330  | 25                      | 500                       | 2500                  | 40          | 396       |
| MOV-10D331K     | 210                         | 275  | 297                   | 330  | 363  | 25                      | 550                       | 2500                  | 43          | 360       |
| MOV-10D361K     | 230                         | 300  | 324                   | 360  | 396  | 25                      | 595                       | 2500                  | 47          | 336       |
| MOV-10D391K     | 250                         | 320  | 351                   | 390  | 429  | 25                      | 650                       | 2500                  | 60          | 312       |
| MOV-10D431K     | 275                         | 350  | 387                   | 430  | 473  | 25                      | 710                       | 2500                  | 65          | 276       |
| MOV-10D471K     | 300                         | 385  | 423                   | 470  | 517  | 25                      | 775                       | 2500                  | 70          | 252       |
| MOV-10D511K     | 320                         | 415  | 459                   | 510  | 561  | 25                      | 845                       | 2500                  | 70          | 240       |
| MOV-10D561K     | 350                         | 460  | 504                   | 560  | 616  | 25                      | 925                       | 2500                  | 70          | 216       |
| MOV-10D621K     | 385                         | 505  | 558                   | 620  | 682  | 25                      | 1025                      | 2500                  | 70          | 192       |
| MOV-10D681K     | 420                         | 560  | 612                   | 680  | 748  | 25                      | 1120                      | 2500                  | 70          | 180       |
| MOV-10D751K     | 460                         | 615  | 675                   | 750  | 825  | 25                      | 1240                      | 2500                  | 75          | 156       |
| MOV-10D781K     | 485                         | 640  | 702                   | 780  | 858  | 25                      | 1290                      | 2500                  | 80          | 156       |
| MOV-10D821K     | 510                         | 670  | 738                   | 820  | 902  | 25                      | 1355                      | 2500                  | 85          | 132       |



**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-10DxxxK 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-10D180K        | $\frac{3.8}{(.150)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D220K        | $\frac{3.9}{(.154)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D270K        | $\frac{4.2}{(.165)}$ | $\frac{1.7}{(.067)}$ |
| MOV-10D330K        | $\frac{3.8}{(.150)}$ | $\frac{1.7}{(.067)}$ |
| MOV-10D390K        | $\frac{4.0}{(.157)}$ | $\frac{1.9}{(.075)}$ |
| MOV-10D470K        | $\frac{4.2}{(.165)}$ | $\frac{2.1}{(.083)}$ |
| MOV-10D560K        | $\frac{4.3}{(.169)}$ | $\frac{2.3}{(.091)}$ |
| MOV-10D680K        | $\frac{4.4}{(.173)}$ | $\frac{2.6}{(.102)}$ |
| MOV-10D820K        | $\frac{3.8}{(.150)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D101K        | $\frac{4.0}{(.157)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D121K        | $\frac{4.2}{(.165)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D151K        | $\frac{4.4}{(.173)}$ | $\frac{1.7}{(.067)}$ |
| MOV-10D181K        | $\frac{3.6}{(.142)}$ | $\frac{1.9}{(.075)}$ |
| MOV-10D201K        | $\frac{3.8}{(.150)}$ | $\frac{1.9}{(.075)}$ |
| MOV-10D221K        | $\frac{3.9}{(.154)}$ | $\frac{2.0}{(.079)}$ |

| Bourns Part Number | Dim T (Max.)         | Dim a (Typ.)         |
|--------------------|----------------------|----------------------|
| MOV-10D241K        | $\frac{4.0}{(.157)}$ | $\frac{2.1}{(.083)}$ |
| MOV-10D271K        | $\frac{4.2}{(.165)}$ | $\frac{2.3}{(.091)}$ |
| MOV-10D301K        | $\frac{4.4}{(.173)}$ | $\frac{2.6}{(.102)}$ |
| MOV-10D331K        | $\frac{4.6}{(.181)}$ | $\frac{2.7}{(.106)}$ |
| MOV-10D361K        | $\frac{4.8}{(.189)}$ | $\frac{2.8}{(.110)}$ |
| MOV-10D391K        | $\frac{5.0}{(.197)}$ | $\frac{2.9}{(.114)}$ |
| MOV-10D431K        | $\frac{5.2}{(.205)}$ | $\frac{3.1}{(.122)}$ |
| MOV-10D471K        | $\frac{5.4}{(.213)}$ | $\frac{3.3}{(.130)}$ |
| MOV-10D511K        | $\frac{5.5}{(.217)}$ | $\frac{3.5}{(.138)}$ |
| MOV-10D561K        | $\frac{5.9}{(.232)}$ | $\frac{3.8}{(.150)}$ |
| MOV-10D621K        | $\frac{6.2}{(.244)}$ | $\frac{4.0}{(.157)}$ |
| MOV-10D681K        | $\frac{6.4}{(.252)}$ | $\frac{4.0}{(.157)}$ |
| MOV-10D751K        | $\frac{6.6}{(.260)}$ | $\frac{4.1}{(.161)}$ |
| MOV-10D781K        | $\frac{6.8}{(.268)}$ | $\frac{4.1}{(.161)}$ |
| MOV-10D821K        | $\frac{7.2}{(.283)}$ | $\frac{4.2}{(.165)}$ |

| Bourns Part Number | Dim T (Max.)         | Dim a (Typ.)         |
|--------------------|----------------------|----------------------|
| MOV-10D180KK       | $\frac{3.8}{(.150)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D220KK       | $\frac{3.9}{(.154)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D270KK       | $\frac{4.2}{(.165)}$ | $\frac{1.7}{(.067)}$ |
| MOV-10D330KK       | $\frac{3.8}{(.150)}$ | $\frac{1.7}{(.067)}$ |
| MOV-10D390KK       | $\frac{4.0}{(.157)}$ | $\frac{1.9}{(.075)}$ |
| MOV-10D470KK       | $\frac{4.2}{(.165)}$ | $\frac{2.1}{(.083)}$ |
| MOV-10D560KK       | $\frac{4.3}{(.169)}$ | $\frac{2.3}{(.091)}$ |
| MOV-10D680KK       | $\frac{4.4}{(.173)}$ | $\frac{2.6}{(.102)}$ |
| MOV-10D820KK       | $\frac{3.8}{(.150)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D101KK       | $\frac{4.0}{(.157)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D121KK       | $\frac{4.2}{(.165)}$ | $\frac{1.6}{(.063)}$ |
| MOV-10D151KK       | $\frac{4.4}{(.173)}$ | $\frac{1.7}{(.067)}$ |
| MOV-10D181KK       | $\frac{3.6}{(.142)}$ | $\frac{1.9}{(.075)}$ |
| MOV-10D201KK       | $\frac{3.8}{(.150)}$ | $\frac{1.9}{(.075)}$ |
| MOV-10D221KK       | $\frac{3.9}{(.154)}$ | $\frac{2.0}{(.079)}$ |

| Bourns Part Number | Dim T (Max.)                                    | Dim a (Typ.)         |
|--------------------|-------------------------------------------------|----------------------|
| MOV-10D241KK       | $\frac{4.0}{(.157)}$                            | $\frac{2.1}{(.083)}$ |
| MOV-10D271KK       | $\frac{4.2}{(.165)}$                            | $\frac{2.3}{(.091)}$ |
| MOV-10D301KK       | $\frac{4.4}{(.173)}$                            | $\frac{2.6}{(.102)}$ |
| MOV-10D331KK       | $\frac{4.6}{(.181)}$                            | $\frac{2.7}{(.106)}$ |
| MOV-10D361KK       | $\frac{4.8}{(.189)}$                            | $\frac{2.8}{(.110)}$ |
| MOV-10D391KK       | $\frac{5.0}{(.197)}$                            | $\frac{2.9}{(.114)}$ |
| MOV-10D431KK       | $\frac{5.2}{(.205)}$                            | $\frac{3.1}{(.122)}$ |
| MOV-10D471KK       | $\frac{5.4}{(.213)}$                            | $\frac{3.3}{(.130)}$ |
| MOV-10D511KK       | $\frac{5.5}{(.217)}$                            | $\frac{3.5}{(.138)}$ |
| MOV-10D561KK       | $\frac{5.9}{(.232)}$                            | $\frac{3.8}{(.150)}$ |
| MOV-10D621KK       | $\frac{6.2}{(.244)}$                            | $\frac{4.0}{(.157)}$ |
| MOV-10D681KK       | $\frac{6.4}{(.252)}$                            | $\frac{4.0}{(.157)}$ |
| MOV-10D751KK       | $\frac{6.6}{(.260)}$                            | $\frac{4.1}{(.161)}$ |
| MOV-10D781KK       | $\frac{6.8}{(.268)}$                            | $\frac{4.1}{(.161)}$ |
| MOV-10D821KK       | N/A<br>See Kinked Leads (In-line) Configuration |                      |

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# MOV-10DxxxK 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-10D180KK       | N/A<br>See Kinked Leads (Outward) Configuration | MOV-10D241KK       | N/A<br>See Kinked Leads (Outward) Configuration |
| MOV-10D220KK       |                                                 | MOV-10D271KK       |                                                 |
| MOV-10D270KK       |                                                 | MOV-10D301KK       |                                                 |
| MOV-10D330KK       |                                                 | MOV-10D331KK       |                                                 |
| MOV-10D390KK       |                                                 | MOV-10D361KK       |                                                 |
| MOV-10D470KK       |                                                 | MOV-10D391KK       |                                                 |
| MOV-10D560KK       |                                                 | MOV-10D431KK       |                                                 |
| MOV-10D680KK       |                                                 | MOV-10D471KK       |                                                 |
| MOV-10D820KK       |                                                 | MOV-10D511KK       |                                                 |
| MOV-10D101KK       |                                                 | MOV-10D561KK       |                                                 |
| MOV-10D121KK       |                                                 | MOV-10D621KK       |                                                 |
| MOV-10D151KK       |                                                 | MOV-10D681KK       |                                                 |
| MOV-10D181KK       |                                                 | MOV-10D751KK       |                                                 |
| MOV-10D201KK       |                                                 | MOV-10D781KK       |                                                 |
| MOV-10D221KK       |                                                 | MOV-10D821KK       |                                                 |
|                    |                                                 |                    | 7.2<br>(.283)                                   |

## 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             |

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

## How to Order



### Examples:

MOV-10D270K = 27 V, Straight Leads, Bulk Pack

MOV-10D331KKTR = 330 V, Kinked Leads (Outward), Tape & Reel

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# MOV-10DxxxK Series – Metal Oxide Varistor

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## Performance Graphs

### V-I Characteristics



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# MOV-10DxxxK 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-10DxxxK Series – Metal Oxide Varistor

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## Packaging Information

### TAPE & REEL - Straight Leads



| Item                                  | Symbol | 10 mm Disc                              |
|---------------------------------------|--------|-----------------------------------------|
| Reel Outside Diameter                 | RD     | $\frac{355}{(13.98)}$                   |
| Reel Inner Diameter                   | RD1    | $\frac{30}{(1.181)}$                    |
| Tape Width                            | RW     | $\frac{55}{(2.16)}$                     |
| Reel Width                            | RW1    | $\frac{63}{(2.48)}$ max.                |
| Pitch of Component                    | P      | $\frac{25.4 \pm 1.0}{(1.00 \pm 0.04)}$  |
| Feed Hole Pitch                       | P0     | $\frac{12.7 \pm 0.2}{(0.50 \pm 0.008)}$ |
| Feed Hole Center to Pitch             | P1     | $\frac{8.95 \pm 0.7}{(0.352 \pm 0.03)}$ |
| Feed Hole Center to Component Center  | P2     | $\frac{12.7 \pm 0.7}{(0.50 \pm 0.03)}$  |
| Lead to Lead Distance                 | F      | $\frac{7.50 \pm 0.8}{(0.30 \pm 0.03)}$  |
| Component Alignment                   | Δh     | $\frac{2.0}{(0.79)}$ 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      | $\frac{19.0 \pm 1.0}{(0.75 \pm 0.04)}$  |
| Component Height                      | H1     | $\frac{36.0}{(1.42)}$ 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 (10D180K – 10D361K) | -      | 1000                                    |
| Quantity per Reel (10D391K – 10D821K) | -      | 500                                     |

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# MOV-10DxxxK Series – Metal Oxide Varistor

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## Packaging Information (Continued)

### TAPE & REEL - Kinked Leads



| Item                                     | Symbol     | 10 mm Disc                              |
|------------------------------------------|------------|-----------------------------------------|
| Reel Outside Diameter                    | RD         | $\frac{355}{(13.98)}$                   |
| Reel Inner Diameter                      | RD1        | $\frac{30}{(1.181)}$                    |
| Tape Width                               | RW         | $\frac{55}{(2.16)}$                     |
| Reel Width                               | RW1        | $\frac{63}{(2.48)}$ max.                |
| Pitch of Component                       | P          | $\frac{25.4 \pm 1.0}{(1.00 \pm 0.04)}$  |
| Feed Hole Pitch                          | P0         | $\frac{12.7 \pm 0.2}{(0.50 \pm 0.008)}$ |
| Feed Hole Center to Pitch                | P1         | $\frac{8.95 \pm 0.7}{(0.352 \pm 0.03)}$ |
| Feed Hole Center to Component Center     | P2         | $\frac{12.7 \pm 0.7}{(0.50 \pm 0.03)}$  |
| Lead to Lead Distance                    | F          | $\frac{7.50 \pm 0.8}{(0.30 \pm 0.03)}$  |
| Component Alignment                      | $\Delta h$ | $\frac{2.0}{(0.79)}$ 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 Component Top to Kinked Base | H          | $\frac{17.5}{(0.69)}$ max.              |
| Seating Plane Height                     | H0         | $\frac{16.0 \pm 0.5}{(0.63 \pm 0.02)}$  |
| Component Height                         | H1         | $\frac{36.0}{(1.42)}$ 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 (10D180KK – 10D361KK)  | -          | 1000                                    |
| Quantity per Reel (10D391KK – 10D821KK)  | -          | 500                                     |

### BULK



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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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