



## 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

Click these links for more information:

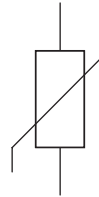


# MOV-10DxxxK Series - Metal Oxide Varistor

### 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

Standard	ITU-T K.20, K.21, K.45
MOV-10D201K MOV-10D361K MOV-10D391K MOV-10D431K	Will pass 600 V rms, 600 $\Omega$ , 1 A, 0.2 s, 5 cycles, 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 (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-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)

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## Applications

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

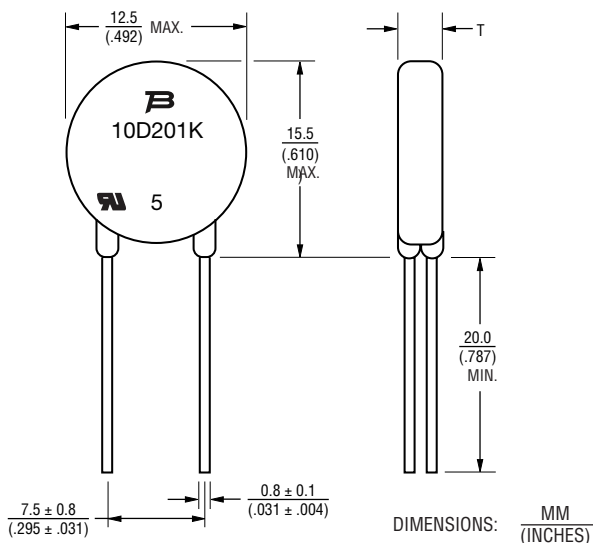
# MOV-10DxxxK Series - Metal Oxide Varistor

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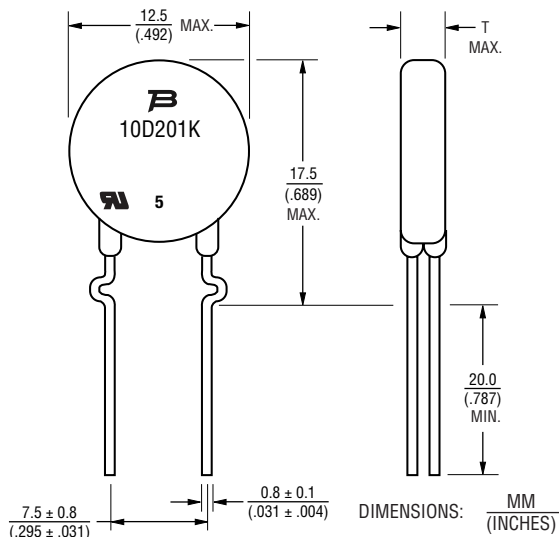
## Product Dimensions

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.)
MOV-10D180K	$\frac{3.8}{(.150)}$
MOV-10D220K	$\frac{3.9}{(.154)}$
MOV-10D270K	$\frac{4.2}{(.165)}$
MOV-10D330K	$\frac{3.8}{(.150)}$
MOV-10D390K	$\frac{4.0}{(.157)}$
MOV-10D470K	$\frac{4.2}{(.165)}$
MOV-10D560K	$\frac{4.3}{(.169)}$
MOV-10D680K	$\frac{4.4}{(.173)}$
MOV-10D820K	$\frac{3.8}{(.150)}$
MOV-10D101K	$\frac{4.0}{(.157)}$
MOV-10D121K	$\frac{4.2}{(.165)}$
MOV-10D151K	$\frac{4.4}{(.173)}$
MOV-10D181K	$\frac{3.6}{(.142)}$
MOV-10D201K	$\frac{3.8}{(.150)}$
MOV-10D221K	$\frac{3.9}{(.154)}$

Bourns Part Number	Dim. T (Max.)
MOV-10D241K	$\frac{4.0}{(.157)}$
MOV-10D271K	$\frac{4.2}{(.165)}$
MOV-10D301K	$\frac{4.4}{(.173)}$
MOV-10D331K	$\frac{4.6}{(.181)}$
MOV-10D361K	$\frac{4.8}{(.189)}$
MOV-10D391K	$\frac{5.0}{(.197)}$
MOV-10D431K	$\frac{5.2}{(.205)}$
MOV-10D471K	$\frac{5.4}{(.213)}$
MOV-10D511K	$\frac{5.5}{(.217)}$
MOV-10D561K	$\frac{5.9}{(.232)}$
MOV-10D621K	$\frac{6.2}{(.244)}$
MOV-10D681K	$\frac{6.4}{(.252)}$
MOV-10D751K	$\frac{6.6}{(.260)}$
MOV-10D781K	$\frac{6.8}{(.268)}$
MOV-10D821K	$\frac{7.2}{(.283)}$

Bourns Part Number	Dim. T (Max.)
MOV-10D180KK	$\frac{3.8}{(.150)}$
MOV-10D220KK	$\frac{3.9}{(.154)}$
MOV-10D270KK	$\frac{4.2}{(.165)}$
MOV-10D330KK	$\frac{3.8}{(.150)}$
MOV-10D390KK	$\frac{4.0}{(.157)}$
MOV-10D470KK	$\frac{4.2}{(.165)}$
MOV-10D560KK	$\frac{4.3}{(.169)}$
MOV-10D680KK	$\frac{4.4}{(.173)}$
MOV-10D820KK	$\frac{3.8}{(.150)}$
MOV-10D101KK	$\frac{4.0}{(.157)}$
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MOV-10D151KK	$\frac{4.4}{(.173)}$
MOV-10D181KK	$\frac{3.6}{(.142)}$
MOV-10D201KK	$\frac{3.8}{(.150)}$
MOV-10D221KK	$\frac{3.9}{(.154)}$

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MOV-10D241KK	$\frac{4.0}{(.157)}$
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MOV-10D331KK	$\frac{4.6}{(.181)}$
MOV-10D361KK	$\frac{4.8}{(.189)}$
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MOV-10D561KK	$\frac{5.9}{(.232)}$
MOV-10D621KK	$\frac{6.2}{(.244)}$
MOV-10D681KK	$\frac{6.4}{(.252)}$
MOV-10D751KK	$\frac{6.6}{(.260)}$
MOV-10D781KK	$\frac{6.8}{(.268)}$
MOV-10D821KK	N/A See Kinked Leads (In-line) Configuration

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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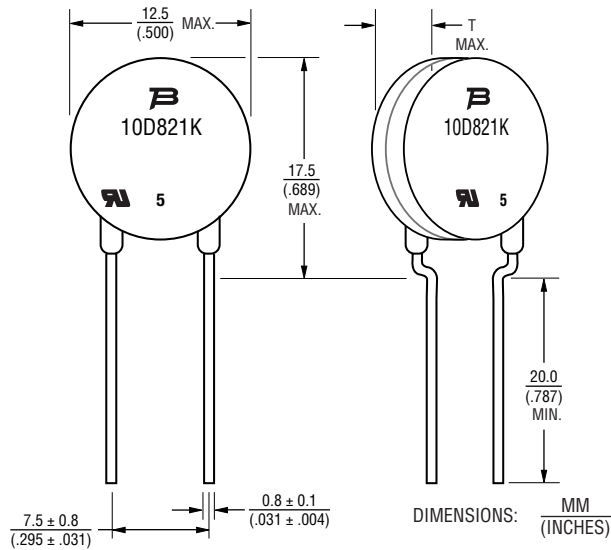
# MOV-10DxxxK Series - Metal Oxide Varistor

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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.)
MOV-10D180KK	N/A See Kinked Leads (Outward) Configuration
MOV-10D220KK	
MOV-10D270KK	
MOV-10D330KK	
MOV-10D390KK	
MOV-10D470KK	
MOV-10D560KK	
MOV-10D680KK	
MOV-10D820KK	
MOV-10D101KK	
MOV-10D121KK	
MOV-10D151KK	
MOV-10D181KK	
MOV-10D201KK	
MOV-10D221KK	

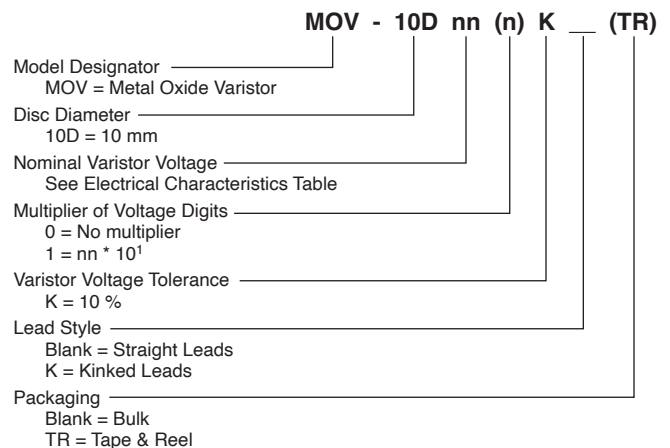
Bourns Part Number	Dim. T (Max.)
MOV-10D241KK	N/A See Kinked Leads (Outward) Configuration
MOV-10D271KK	
MOV-10D301KK	
MOV-10D331KK	
MOV-10D361KK	
MOV-10D391KK	
MOV-10D431KK	
MOV-10D471KK	
MOV-10D511KK	
MOV-10D561KK	
MOV-10D621KK	
MOV-10D681KK	
MOV-10D751KK	
MOV-10D781KK	
MOV-10D821KK	

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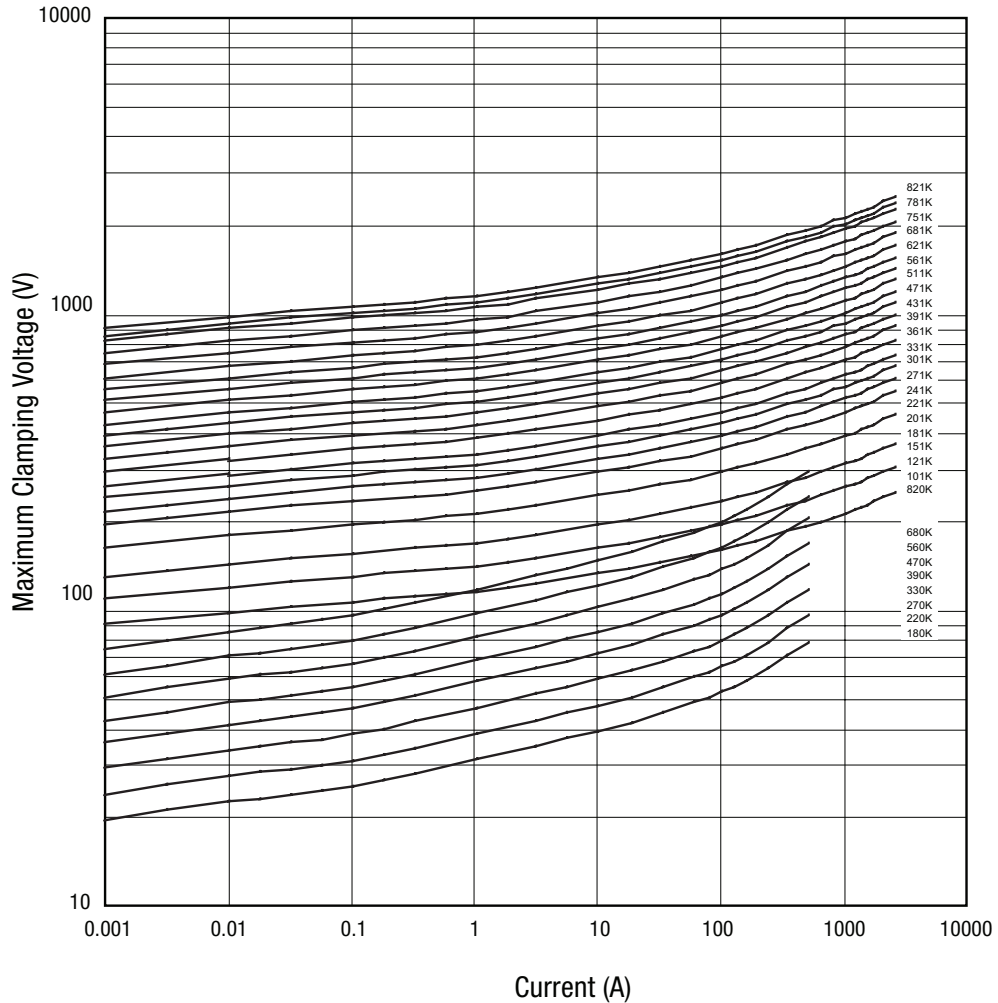
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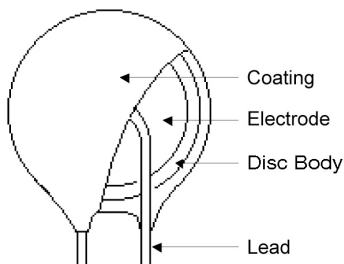
# MOV-10DxxxK Series - Metal Oxide Varistor



## Performance Graphs



## Internal Construction



## Environmental Specifications

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

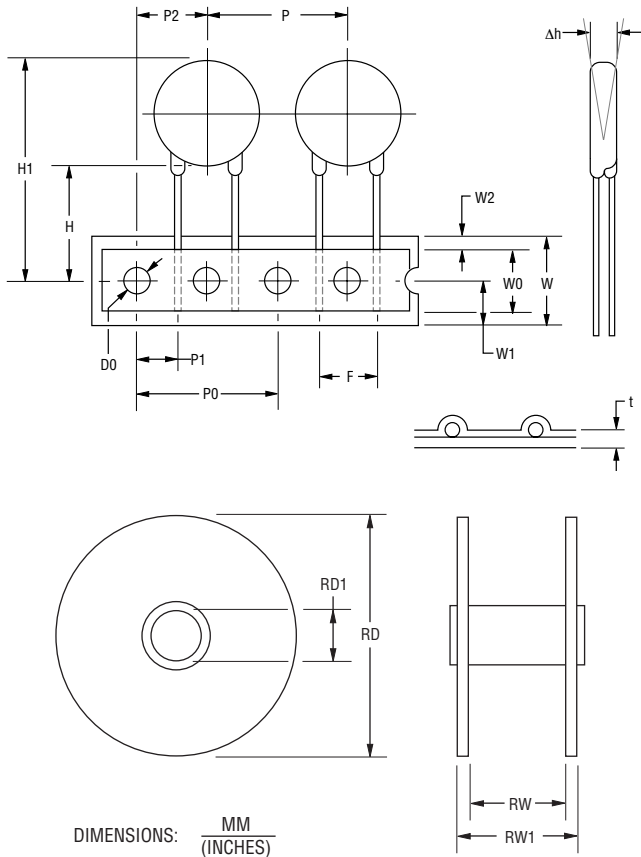
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# MOV-10DxxxK Series - Metal Oxide Varistor

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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	$\Delta h$	$\frac{2.0}{(0.79)}$ 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 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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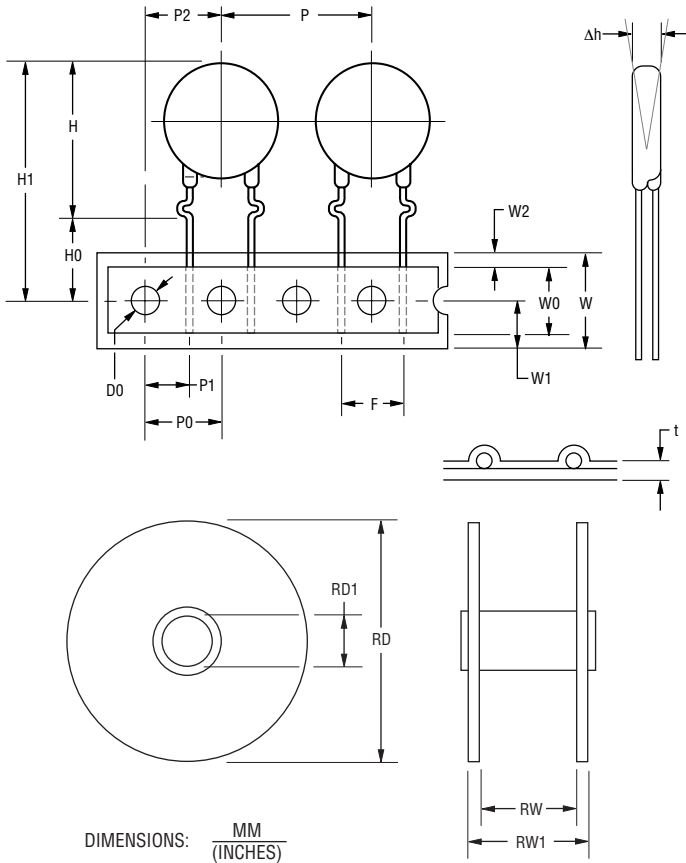
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# MOV-10DxxxK Series - Metal Oxide Varistor

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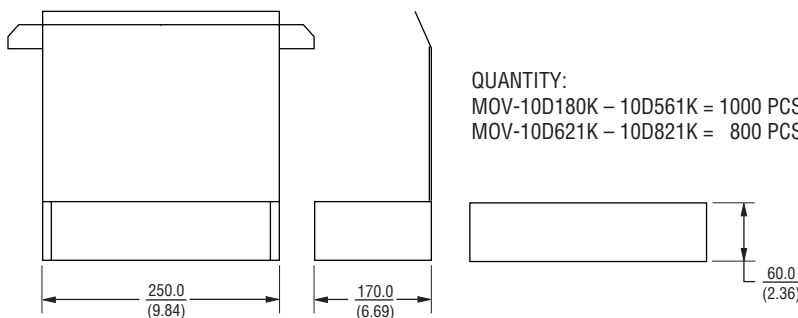
## Packaging Information (Continued)

### 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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