



## Features

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

## Additional Information

Click these links for more information:

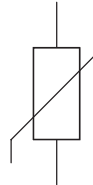


# MOV-07DxxxK Series - Metal Oxide Varistor

### 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	+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	8/20 $\mu\text{s}$	1 kHz
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. Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

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## Applications

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

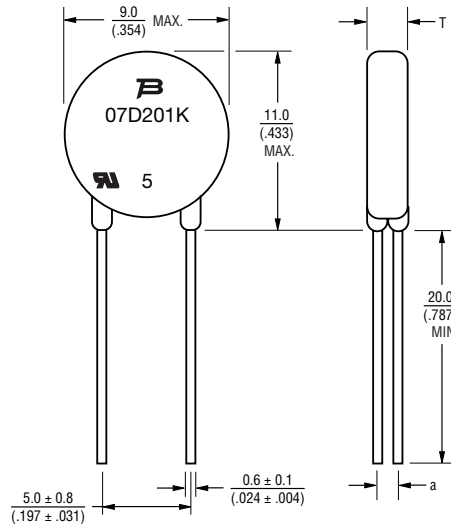
# MOV-07DxxxK Series - Metal Oxide Varistor

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## Product Dimensions

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

### Straight Leads



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

Bourns Part Number	Dim. T (Max.)	Dim. a (Typ.) ±1.0 mm
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.) ±1.0 mm
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	$\frac{5.0}{(.201)}$	$\frac{2.9}{(.114)}$
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	$\frac{6.8}{(.268)}$	$\frac{4.0}{(.157)}$

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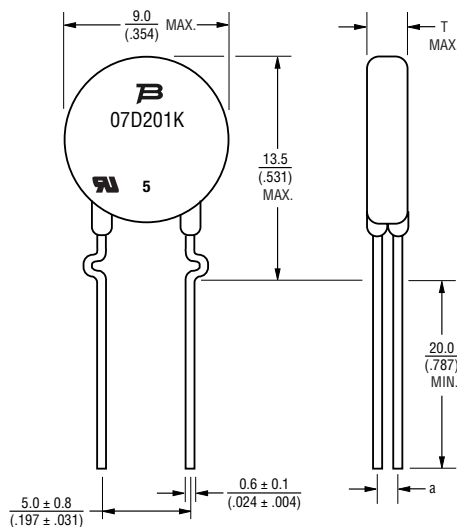
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# MOV-07DxxxK Series - Metal Oxide Varistor

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## Product Dimensions (Continued)

### Kinked Leads (Outward)



DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

Bourns Part Number	Dim. T (Max.)	Dim. a (Typ.) ±1.0 mm
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.) ±1.0 mm
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	See Kinked Leads (In-line) Configuration	See Kinked Leads (In-line) Configuration
MOV-07D681KK		
MOV-07D751KK		
MOV-07D781KK		
MOV-07D821KK		

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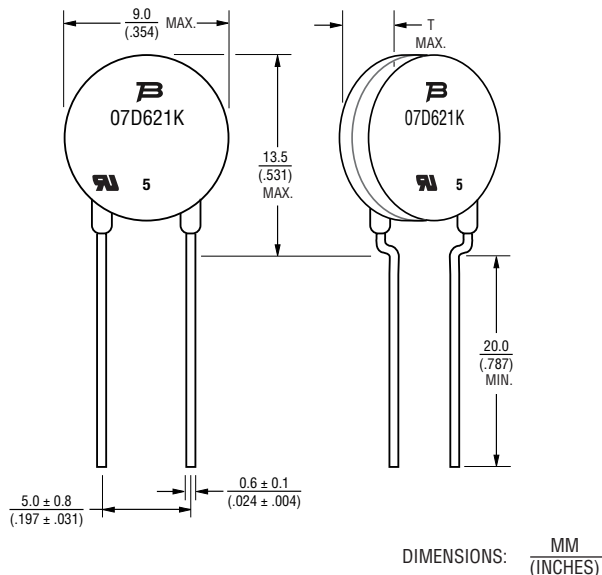
# MOV-07DxxxK Series - Metal Oxide Varistor

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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.)
MOV-07D180KK	N/A See Kinked Leads (Outward) Configuration
MOV-07D220KK	
MOV-07D270KK	
MOV-07D330KK	
MOV-07D390KK	
MOV-07D470KK	
MOV-07D560KK	
MOV-07D680KK	
MOV-07D820KK	
MOV-07D101KK	
MOV-07D121KK	
MOV-07D151KK	
MOV-07D181KK	
MOV-07D201KK	
MOV-07D221KK	

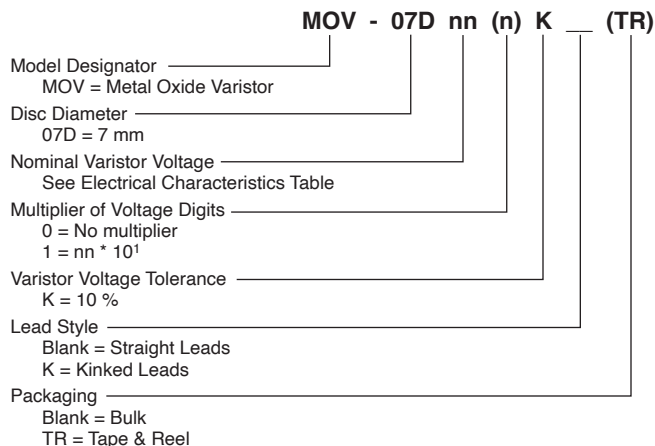
Bourns Part Number	Dim. T (Max.)	
MOV-07D241KK	N/A See Kinked Leads (Outward) Configuration	
MOV-07D271KK		
MOV-07D301KK		
MOV-07D331KK		
MOV-07D361KK		
MOV-07D391KK		
MOV-07D431KK		
MOV-07D471KK		
MOV-07D511KK		
MOV-07D561KK		
MOV-07D621KK		$\frac{5.8}{(.228)}$
MOV-07D681KK		$\frac{6.0}{(.236)}$
MOV-07D751KK		$\frac{6.2}{(.244)}$
MOV-07D781KK		$\frac{6.4}{(.252)}$
MOV-07D821KK		$\frac{6.8}{(.268)}$

## 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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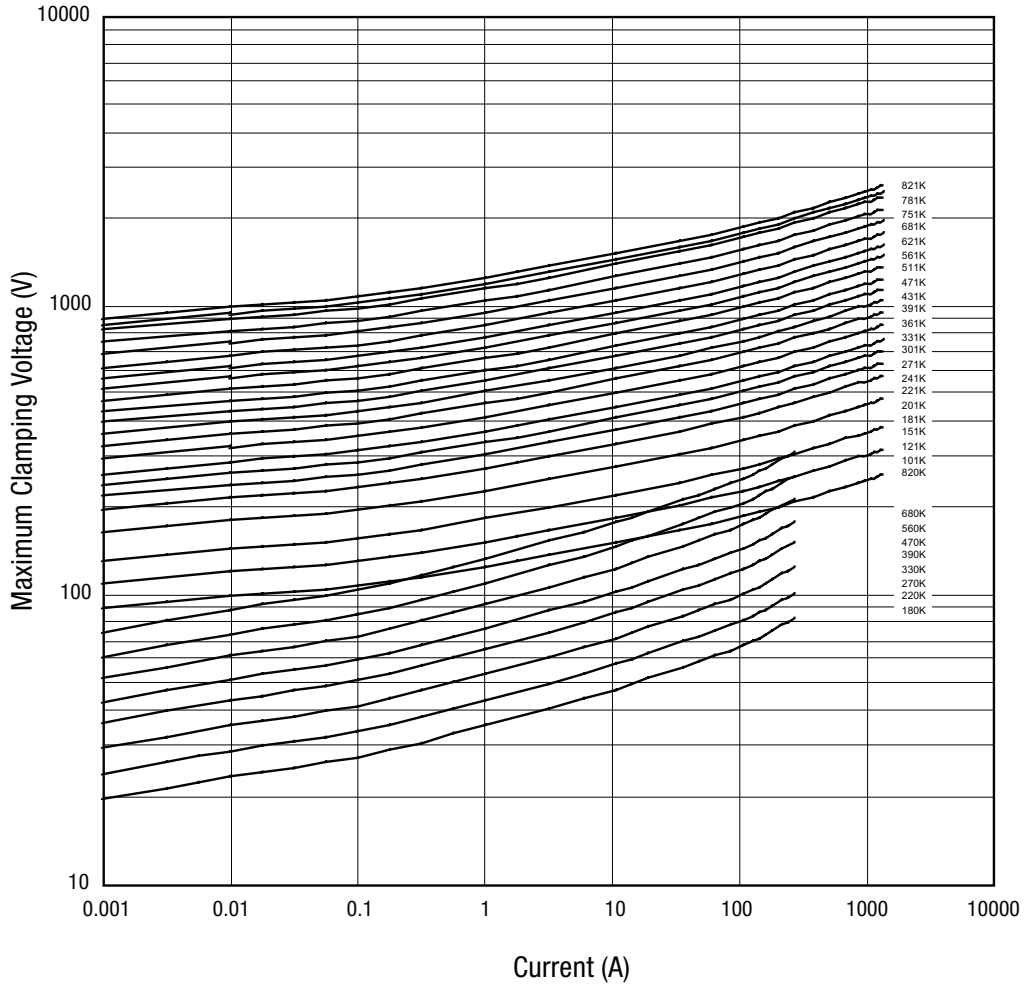
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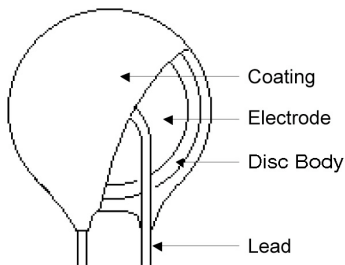
# MOV-07DxxxK Series - Metal Oxide Varistor



## Performance Graphs



## Internal Construction



## Environmental Specifications

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

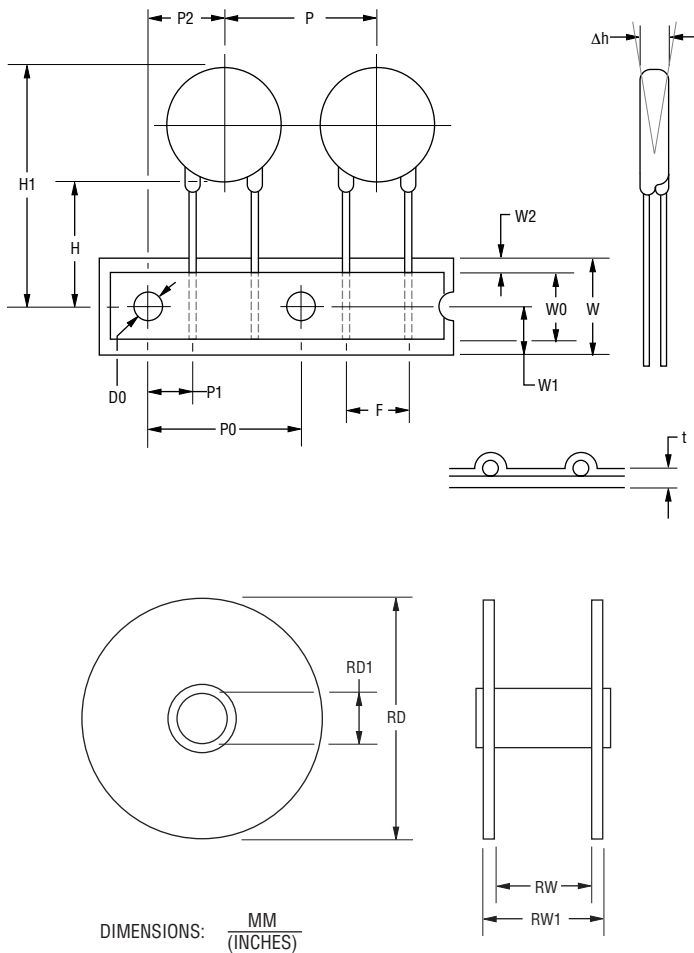
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# MOV-07DxxxK Series - Metal Oxide Varistor

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## Packaging Information

### TAPE & REEL - Straight Leads



Item	Symbol	7 mm Disc
Reel Outside Diameter	RD	$\frac{355}{(13.98)}$
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	$\Delta h$	$\frac{2.0}{(0.79)}$ 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	$\frac{32.0}{(1.26)}$ 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 (07D180K – 07D391K)	-	2000
Quantity per Reel (07D431K – 07D561K)	-	1500
Quantity per Reel (07D621K – 07D821K)	-	1000

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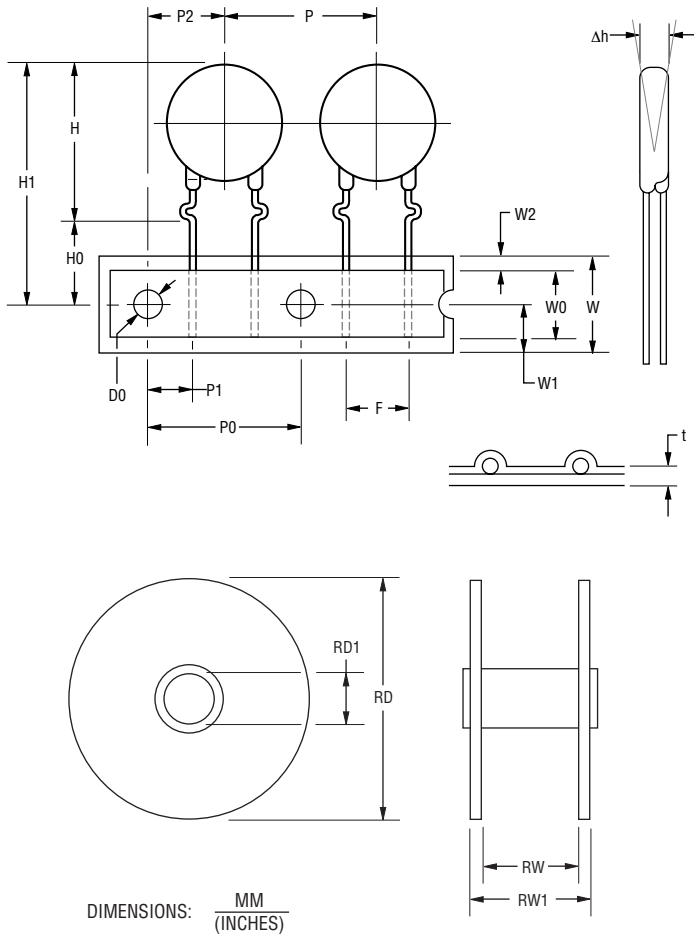
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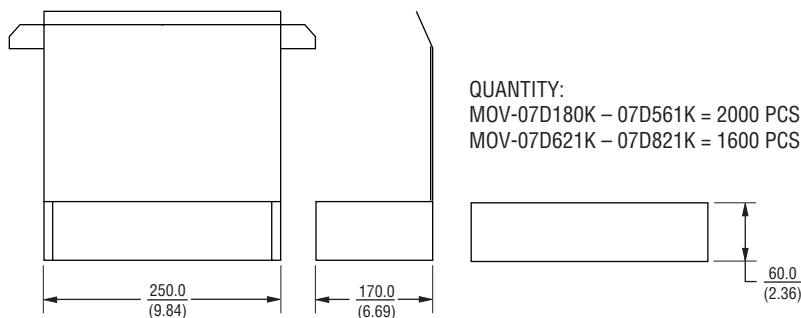
## Packaging Information (Continued)

### 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	$\Delta h$	$\frac{2.0}{(0.79)}$ 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	$\frac{13.5}{(0.53)}$ max.
Seating Plane Height	H0	$\frac{16.0 \pm 0.5}{(0.63 \pm 0.02)}$
Component Height	H1	$\frac{32.0}{(1.26)}$ 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



REV. 11/24

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