



## 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:

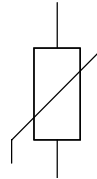


# MOV-14DxxxK Series – Metal Oxide Varistor

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

### Absolute Maximum Ratings (@ $T_A = 25\text{ }^\circ\text{C}$ 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		0.05	$\% / ^\circ\text{C}$
Response Time	$T_r$		10	25	ns
Varistor Voltage Tolerance	$V_{tol}$	-10	0	10	$\%$

### Electrical Characteristics (@ $T_A = 25\text{ }^\circ\text{C}$ 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 $\mu\text{s}$ ) One Time	Max. Energy (J) 8/20 $\mu\text{s}$	Typ. Cap. (pF) 1 kHz
	r.m.s.	d.c.	Min.	Nom.	Max.	Class Current (A)	Max. Clamping Voltage (V)			
	MOV-14D180K	11	14	16	18	20	10	36	1000	4.0
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 2015/863, Mar 31, 2015 and Annex.

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## Applications

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

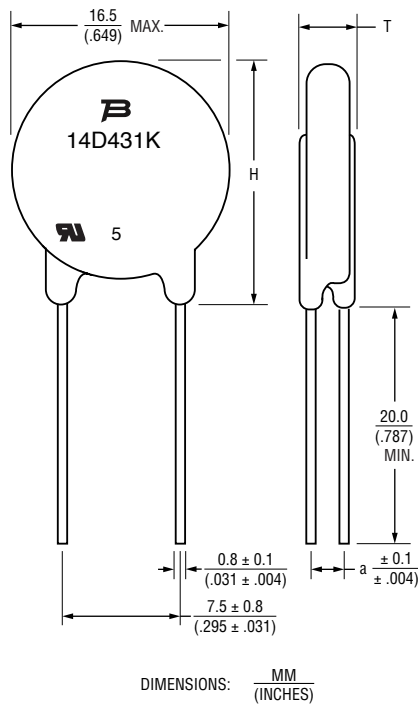
# MOV-14DxxxK Series – Metal Oxide Varistor

# BOURNS®

## Product Dimensions

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

### Straight Leads



(Kinked Product Dimensions continue on pages 3 and 4.)

Bourns Part Number	Dim T (Max.)	Dim H (Max.)	Dim a (Typ.)
MOV-14D180K	$\frac{3.8}{(.150)}$	20.0 (.787)	$\frac{1.6}{(.063)}$
MOV-14D220K	$\frac{3.9}{(.154)}$		$\frac{1.6}{(.063)}$
MOV-14D270K	$\frac{4.2}{(.165)}$		$\frac{1.7}{(.067)}$
MOV-14D330K	$\frac{3.8}{(.150)}$		$\frac{1.8}{(.071)}$
MOV-14D390K	$\frac{4.0}{(.157)}$		$\frac{1.9}{(.075)}$
MOV-14D470K	$\frac{4.2}{(.165)}$		$\frac{2.1}{(.083)}$
MOV-14D560K	$\frac{4.3}{(.169)}$		$\frac{2.3}{(.091)}$
MOV-14D680K	$\frac{4.4}{(.173)}$		$\frac{2.6}{(.102)}$
MOV-14D820K	$\frac{3.8}{(.150)}$		$\frac{1.6}{(.063)}$
MOV-14D101K	$\frac{4.0}{(.157)}$		$\frac{1.7}{(.067)}$
MOV-14D121K	$\frac{4.2}{(.165)}$		$\frac{1.7}{(.067)}$
MOV-14D151K	$\frac{4.4}{(.173)}$		$\frac{1.8}{(.071)}$
MOV-14D181K	$\frac{3.6}{(.142)}$		$\frac{1.9}{(.075)}$
MOV-14D201K	$\frac{3.8}{(.150)}$		$\frac{2.0}{(.079)}$
MOV-14D221K	$\frac{3.9}{(.154)}$		$\frac{2.1}{(.083)}$
MOV-14D241K	$\frac{4.0}{(.157)}$		$\frac{2.2}{(.087)}$
MOV-14D271K	$\frac{4.2}{(.165)}$		$\frac{2.3}{(.091)}$
MOV-14D301K	$\frac{4.4}{(.173)}$		$\frac{2.5}{(.098)}$

Bourns Part Number	Dim T (Max.)	Dim H (Max.)	Dim a (Typ.)
MOV-14D331K	$\frac{4.6}{(.181)}$	20.0 (.787)	$\frac{2.6}{(.102)}$
MOV-14D361K	$\frac{4.8}{(.189)}$		$\frac{2.6}{(.102)}$
MOV-14D391K	$\frac{5.0}{(.197)}$		$\frac{2.9}{(.114)}$
MOV-14D431K	$\frac{5.2}{(.205)}$		$\frac{3.1}{(.122)}$
MOV-14D471K	$\frac{5.4}{(.213)}$		$\frac{3.2}{(.126)}$
MOV-14D511K	$\frac{5.5}{(.217)}$		$\frac{3.5}{(.138)}$
MOV-14D561K	$\frac{6.0}{(.236)}$	22.0 (.866)	$\frac{3.8}{(.150)}$
MOV-14D621K	$\frac{6.4}{(.252)}$		$\frac{4.0}{(.157)}$
MOV-14D681K	$\frac{6.5}{(.256)}$		$\frac{4.2}{(.165)}$
MOV-14D751K	$\frac{6.7}{(.264)}$		$\frac{4.2}{(.165)}$
MOV-14D781K	$\frac{6.9}{(.272)}$		$\frac{4.4}{(.173)}$
MOV-14D821K	$\frac{7.3}{(.287)}$		$\frac{4.4}{(.173)}$
MOV-14D911K*	$\frac{7.3}{(.287)}$		$\frac{4.4}{(.173)}$
MOV-14D102K*	$\frac{8.2}{(.323)}$		$\frac{4.6}{(.181)}$
MOV-14D112K*	$\frac{8.7}{(.343)}$		$\frac{5.0}{(.197)}$
MOV-14D152K**			N/A
MOV-14D182K**		N/A	

\* Not available in Tape & Reel packaging.

\*\*Not available in Tape & Reel packaging.

Not available in Straight Lead configuration; see Kinked Leads (In-line) configuration.

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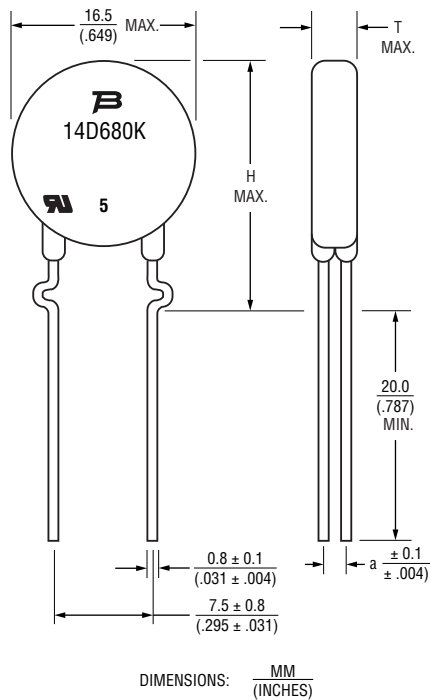
# MOV-14DxxxK Series – Metal Oxide Varistor

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## Product Dimensions (Continued)

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

### Kinked Leads (Outward)



(Kinked Lead Product Dimensions continue on page 4.)

Bourns Part Number	Dim T (Max.)	Dim H (Max.)	Dim a (Typ.)
MOV-14D180KK	$\frac{3.8}{(.150)}$	21.0 (.827)	$\frac{1.6}{(.063)}$
MOV-14D220KK	$\frac{3.9}{(.154)}$		$\frac{1.6}{(.063)}$
MOV-14D270KK	$\frac{4.2}{(.165)}$		$\frac{1.7}{(.067)}$
MOV-14D330KK	$\frac{3.8}{(.150)}$		$\frac{1.8}{(.071)}$
MOV-14D390KK	$\frac{4.0}{(.157)}$		$\frac{1.9}{(.075)}$
MOV-14D470KK	$\frac{4.2}{(.165)}$		$\frac{2.1}{(.083)}$
MOV-14D560KK	$\frac{4.3}{(.169)}$		$\frac{2.3}{(.091)}$
MOV-14D680KK	$\frac{4.4}{(.173)}$		$\frac{2.6}{(.102)}$
MOV-14D820KK	$\frac{3.8}{(.150)}$		$\frac{1.6}{(.063)}$
MOV-14D101KK	$\frac{4.0}{(.157)}$		$\frac{1.7}{(.067)}$
MOV-14D121KK	$\frac{4.2}{(.165)}$		$\frac{1.7}{(.067)}$
MOV-14D151KK	$\frac{4.4}{(.173)}$		$\frac{1.8}{(.071)}$
MOV-14D181KK	$\frac{3.6}{(.142)}$		$\frac{1.9}{(.075)}$
MOV-14D201KK	$\frac{3.8}{(.150)}$		$\frac{2.0}{(.079)}$
MOV-14D221KK	$\frac{3.9}{(.154)}$		$\frac{2.1}{(.083)}$
MOV-14D241KK	$\frac{4.0}{(.157)}$		$\frac{2.2}{(.087)}$
MOV-14D271KK	$\frac{4.2}{(.165)}$		$\frac{2.3}{(.091)}$
MOV-14D301KK	$\frac{4.4}{(.173)}$		$\frac{2.5}{(.098)}$

\* Not available in Tape & Reel packaging.

Bourns Part Number	Dim T (Max.)	Dim H (Max.)	Dim a (Typ.)
MOV-14D331KK	$\frac{4.6}{(.181)}$	21.0 (.827)	$\frac{2.6}{(.102)}$
MOV-14D361KK	$\frac{4.8}{(.189)}$		$\frac{2.6}{(.102)}$
MOV-14D391KK	$\frac{5.0}{(.197)}$		$\frac{2.9}{(.114)}$
MOV-14D431KK	$\frac{5.2}{(.205)}$		$\frac{3.1}{(.122)}$
MOV-14D471KK	$\frac{5.4}{(.213)}$		$\frac{3.2}{(.126)}$
MOV-14D511KK	$\frac{5.5}{(.217)}$		$\frac{3.5}{(.138)}$
MOV-14D561KK	$\frac{6.0}{(.236)}$	23.0 (.905)	$\frac{3.8}{(.150)}$
MOV-14D621KK	$\frac{6.4}{(.252)}$		$\frac{4.0}{(.157)}$
MOV-14D681KK	$\frac{6.5}{(.256)}$		$\frac{4.2}{(.165)}$
MOV-14D751KK	$\frac{6.7}{(.264)}$		$\frac{4.2}{(.165)}$
MOV-14D781KK	$\frac{6.9}{(.272)}$		$\frac{4.4}{(.173)}$
MOV-14D821KK			N/A  See Kinked Leads (In-line) Configuration
MOV-14D911KK*			
MOV-14D102KK*			
MOV-14D112KK*			
MOV-14D152KK*			
MOV-14D182KK*			

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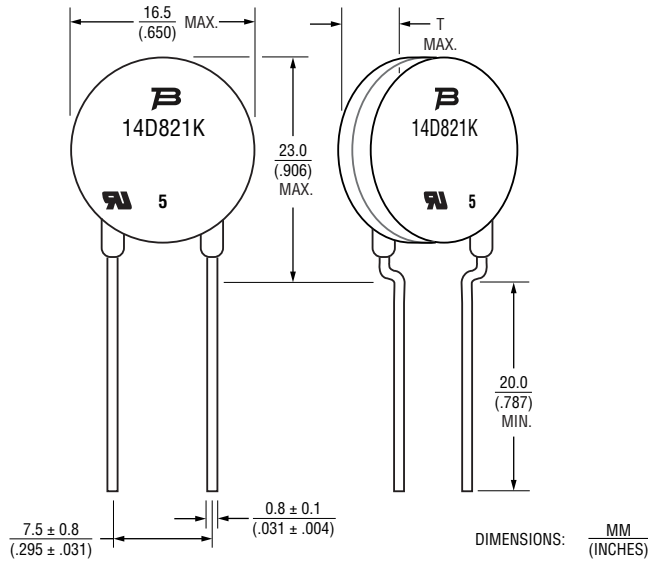
# MOV-14DxxxK Series – Metal Oxide Varistor

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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-14D180KK	N/A See Kinked Leads (Outward) Configuration
MOV-14D220KK	
MOV-14D270KK	
MOV-14D330KK	
MOV-14D390KK	
MOV-14D470KK	
MOV-14D560KK	
MOV-14D680KK	
MOV-14D820KK	
MOV-14D101KK	
MOV-14D121KK	
MOV-14D151KK	
MOV-14D181KK	
MOV-14D201KK	
MOV-14D221KK	
MOV-14D241KK	
MOV-14D271KK	
MOV-14D301KK	

Bourns Part Number	Dim T (Max.)	
MOV-14D331KK	N/A See Kinked Leads (Outward) Configuration	
MOV-14D361KK		
MOV-14D391KK		
MOV-14D431KK		
MOV-14D471KK		
MOV-14D511KK		
MOV-14D561KK		
MOV-14D621KK		
MOV-14D681KK		
MOV-14D751KK		
MOV-14D781KK		
MOV-14D821KK		$\frac{7.3}{(.287)}$
MOV-14D911KK*		$\frac{7.7}{(.303)}$
MOV-14D102KK*		$\frac{8.2}{(.323)}$
MOV-14D112KK*		$\frac{8.7}{(.343)}$
MOV-14D152KK*		$\frac{11.0}{(.433)}$
MOV-14D182KK*		$\frac{12.6}{(.496)}$

\* Not available in Tape & Reel packaging.

## 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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# MOV-14DxxxK Series – Metal Oxide Varistor

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## 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 %

Lead Style \_\_\_\_\_  
Blank = Straight Leads    K = Kinked Leads

Packaging \_\_\_\_\_  
Blank = Bulk    TR = Tape & Reel\*

### Examples:

MOV-14D270K .....27 V, Straight Leads, Bulk Pack

MOV-14D680KKTR .....68 V, Kinked (Outward) Leads, Tape & Reel

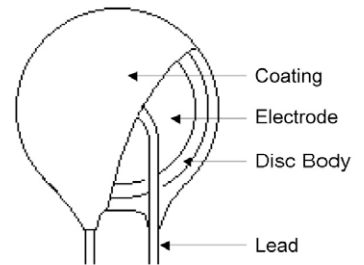
MOV-14D152KK .....1500 V, Kinked (In-line) Leads, Bulk Pack

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

## Environmental Specifications

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

## Internal Construction



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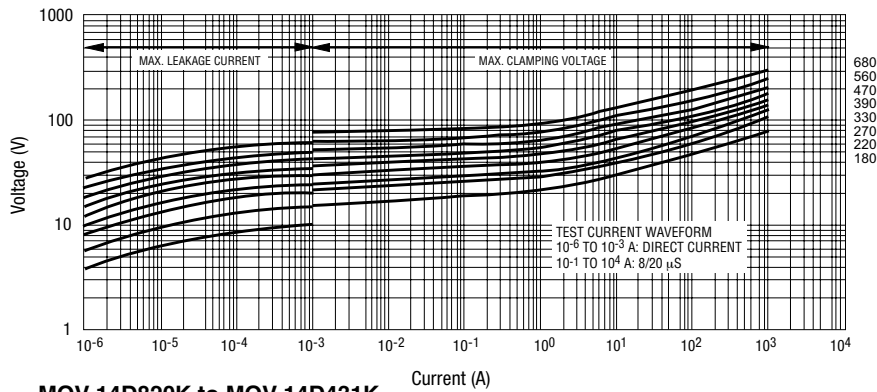
# MOV-14DxxxK Series – Metal Oxide Varistor



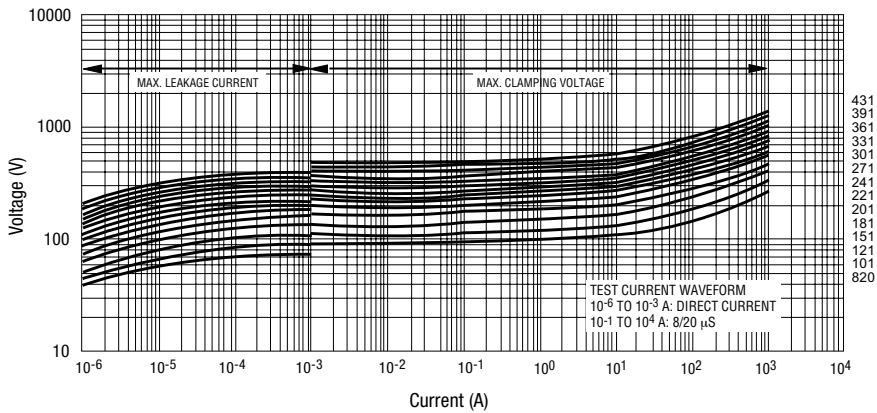
## Performance Graphs

### V-I Characteristics

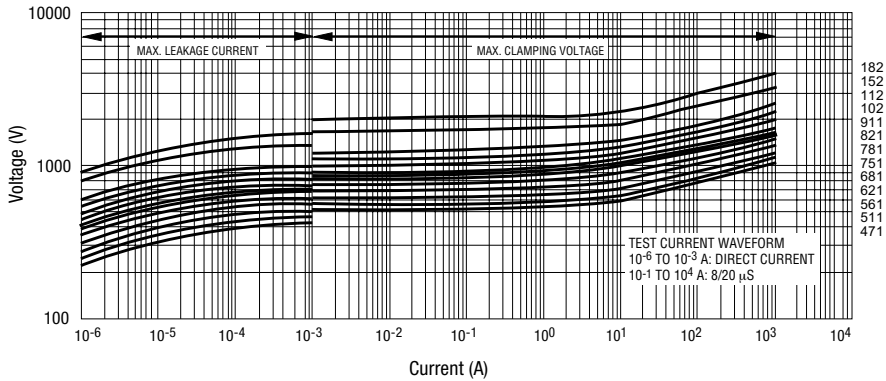
**MOV-14D180K to MOV-14D680K**



**MOV-14D820K to MOV-14D431K**



**MOV-14D471K to MOV-14D182K**



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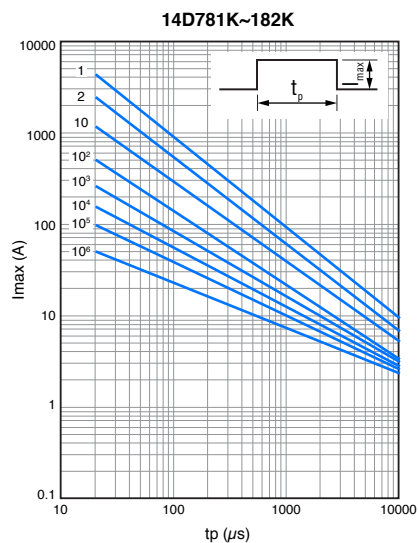
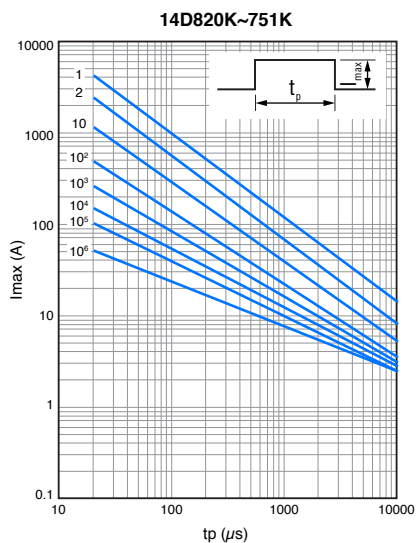
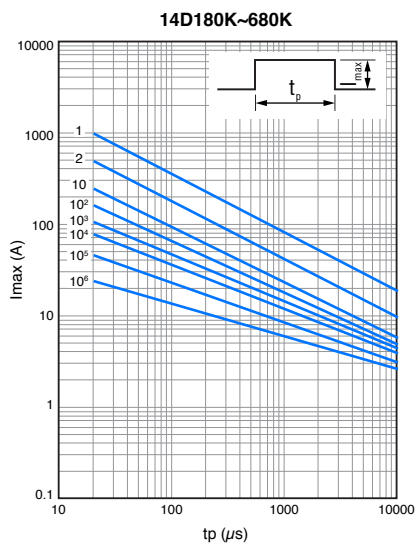
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# MOV-14DxxxK Series – Metal Oxide Varistor

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## Pulse Rating Curves



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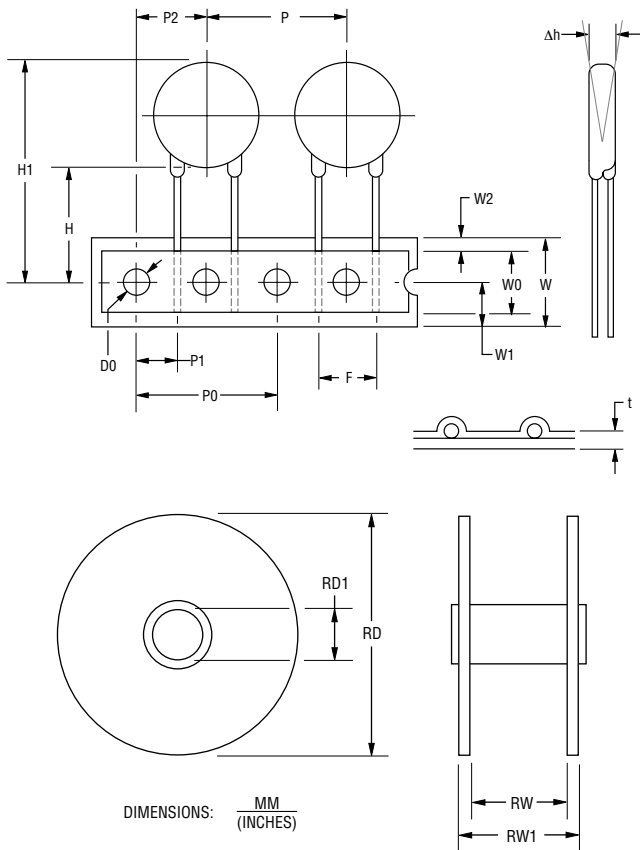
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# MOV-14DxxxK Series – Metal Oxide Varistor

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## Packaging Information

### TAPE & REEL - Straight Leads



Item	Symbol	14 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	$\frac{8.95 \pm 0.7}{(0.50 \pm 0.03)}$
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	$\Delta h$	$\frac{4.0}{(0.16)}$ 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	$\frac{40.0}{(1.57)}$ 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	-	500
MOV-14D180K – 14D331K	-	400
MOV-14D361K - 14D821K	-	400

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

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Users should verify actual device performance in their specific applications.

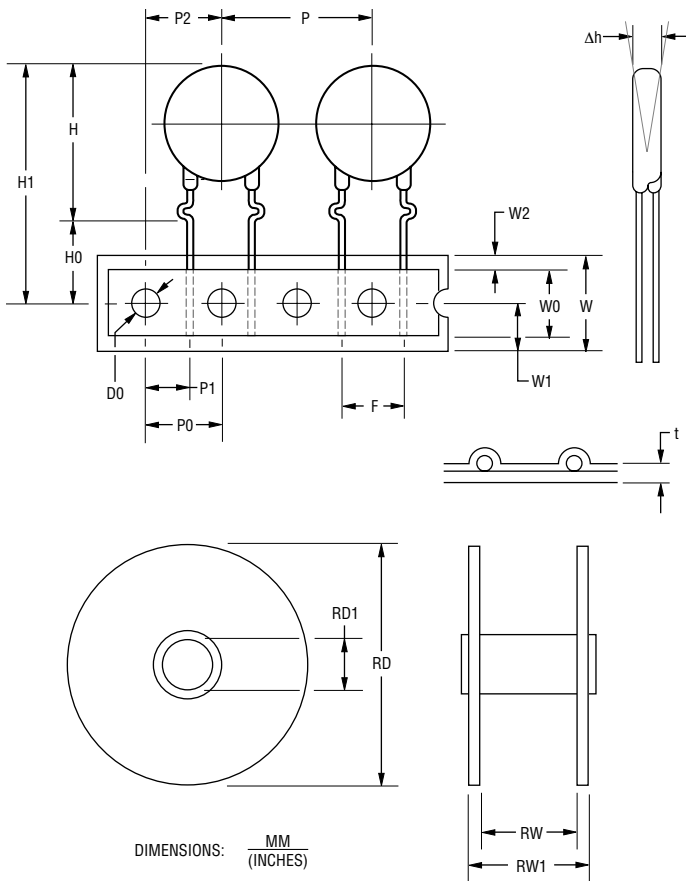
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# MOV-14DxxxK Series – Metal Oxide Varistor

# BOURNS®

## Packaging Information (Continued)

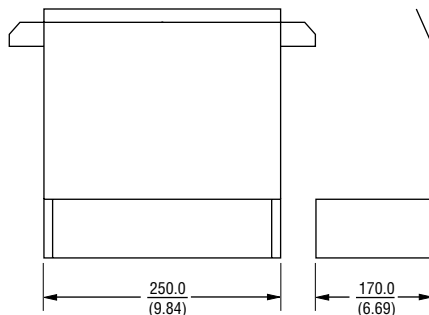
### TAPE & REEL - Kinked Leads



Item	Symbol	14 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	$\Delta h$	$\frac{4.0}{(0.157)}$ 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 (MOV-14D180KK~511KK)	H	$\frac{21.0}{(0.83)}$ max.
Height From Component Top to Kinked Base (MOV-14D561KK~821KK)	H	$\frac{23.0}{(0.91)}$ max.
Seating Plane Height	H0	$\frac{16.0 \pm 0.5}{(0.63 \pm 0.02)}$
Component Height	H1	$\frac{40.0}{(1.57)}$ 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	-	
MOV-14D180KK – 14D331KK		500
MOV-14D361KK - 14D821KK		400

NOTE: Models MOV-14D911KK, 102KK, 112KK, 152KK and 182KK are not available in Tape & Reel packaging.

### 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

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