

# Radial Lead Varistor (MOV)

## 14D Series

### Description

The 14D series radial leaded varistors provides an ideal circuit protection solution for lower DC voltage applications by offering higher surge ratings than ever before available in such small discs.

The maximum peak surge current rating can reach up to 6KA (8/20  $\mu$ s pulse) to protect against high peak surges, including indirect lightning strike interference, system switching transients and abnormal fast transients from the power source.



### Features

- u Wide operating voltage (V1mA) range from 8V to 1800V
- u Fast responding to transient over-voltage
- u Large absorbing transient energy capability
- u Low clamping ratio and no following-on current
- u Meets MSL level 1, per J-STD-020

### Applicable

- u Transistor, diode, IC, thyristor or triac semiconductor protection
- u Surge protection in consumer electronics
- u Surge protection in industrial electronics
- u Surge protection in electronic home appliances, gas and petroleum appliances
- u Relay and electromagnetic valve surge absorption

### General Characteristics

<b>Material</b>	No Radioactive Material
<b>Operating Temperature</b>	-55~85°C
<b>Storage Temperature</b>	-55~125°C
<b>Body</b>	Nickel Plated
<b>Leads</b>	Tin Plated
<b>Devices with No lead</b>	Nickel Plated

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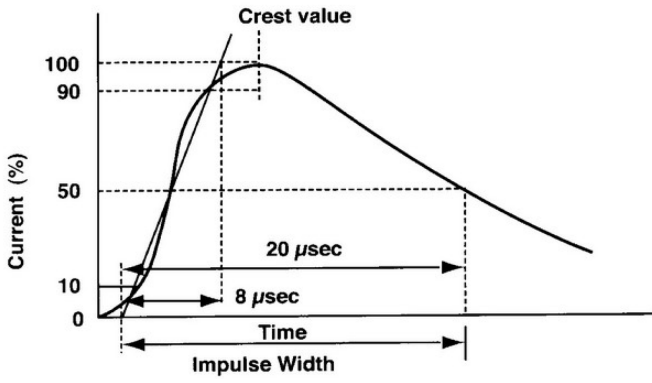
### Specifications – General Characteristics (25±5° C)

Type Number		Maximum Allowable voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current				Maximum Energy (10/1000µs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V <sub>AC</sub> (V)	V <sub>DC</sub> (V)	V <sub>1mA</sub> (V)	I <sub>P</sub> (A)	V <sub>C</sub> (V)	I(A) Standard		I(A) High Surge		(J) Standard	(J) High Surge	(W)	@1KHZ (pF)
							1 Time	2 Times	1 Time	2 Times				
14D180K	14D180KJ	11	14	18(15~21.6)	10	36	1000	500	2000	1000	4.0	7.0	0.1	11100
14D220K	14D220KJ	14	18	22(19.5~26)	10	43	1000	500	2000	1000	5.0	8.0	0.1	9100
14D270K	14D270KJ	17	22	27(24~30)	10	53	1000	500	2000	1000	6.0	10.0	0.1	7400
14D330K	14D330KJ	20	26	33(29.5~36.5)	10	66	1000	500	2000	1000	7.5	12.0	0.1	6100
14D390K	14D390KJ	25	31	39(35~43)	10	77	1000	500	2000	1000	8.6	13.0	0.1	5100
14D470K	14D470KJ	30	38	47(42~54)	10	93	1000	500	2000	1000	10.0	17.0	0.1	4300
14D560K	14D560KJ	35	45	56(50~62)	10	100	1000	500	2000	1000	11.0	20.0	0.1	3600
14D680K	14D680KJ	40	56	68(61~75)	10	135	1000	500	2000	1000	14.0	24.0	0.1	2900
14D820K	14D820KJ	50	65	82(74~90)	50	135	4500	2500	6000	5000	22.0	27.0	0.6	2400
14D101K	14D101KJ	60	85	100(90~110)	50	165	4500	2500	6000	5000	28.0	33.0	0.6	2000
14D121K	14D121KJ	75	100	120(108~132)	50	200	4500	2500	6000	5000	32.0	40.0	0.6	1700
14D151K	14D151KJ	95	125	150(135~165)	50	250	4500	2500	6000	5000	40.0	53.0	0.6	1300
14D181K	14D181KJ	115	150	180(162~198)	50	300	4500	2500	6000	5000	50.0	60.0	0.6	1100
14D201K	14D201KJ	130	170	200(180~220)	50	340	4500	2500	6000	5000	57.0	70.0	0.6	1000
14D221K	14D221KJ	140	180	220(198~242)	50	360	4500	2500	6000	5000	60.0	78.0	0.6	900
14D241K	14D241KJ	150	200	240(216~264)	50	395	4500	2500	6000	5000	63.0	84.0	0.6	830
14D271K	14D271KJ	175	225	270(243~297)	50	455	4500	2500	6000	5000	70.0	99.0	0.6	740
14D301K	14D301KJ	190	250	300(270~330)	50	500	4500	2500	6000	5000	77.0	108	0.6	670
14D331K	14D331KJ	210	275	330(297~363)	50	550	4500	2500	6000	5000	85.0	115	0.6	610
14D361K	14D361KJ	230	300	360(324~396)	50	595	4500	2500	6000	5000	93.0	130	0.6	560
14D391K	14D391KJ	250	320	390(351~429)	50	650	4500	2500	6000	5000	100	140	0.6	510
14D431K	14D431KJ	275	350	430(387~473)	50	710	4500	2500	6000	5000	115	155	0.6	460
14D471K	14D471KJ	300	335	470(423~517)	50	775	4500	2500	6000	5000	125	175	0.6	430
14D511K	14D511KJ	320	415	510(459~561)	50	845	4500	2500	6000	5000	125	180	0.6	390
14D561K	14D561KJ	350	460	560(504~616)	50	925	4500	2500	6000	5000	125	185	0.6	360
14D621K	14D621KJ	385	505	620(558~682)	50	1025	4500	2500	6000	5000	125	190	0.6	320
14D681K	14D681KJ	420	560	680(612~748)	50	1120	4500	2500	6000	5000	130	200	0.6	290
14D751K	14D751KJ	460	615	750(675~825)	50	1240	4500	2500	6000	5000	143	210	0.6	270
14D781K	14D781KJ	485	640	780(702~858)	50	1290	4500	2500	6000	5000	148	220	0.6	260
14D821K	14D821KJ	510	670	820(738~902)	50	1355	4500	2500	6000	5000	157	235	0.6	240
14D911K	14D911KJ	550	745	910(819~1001)	50	1500	4500	2500	6000	5000	175	255	0.6	220
14D102K	14D102KJ	625	825	1000(900~1100)	50	1650	4500	2500	6000	5000	190	280	0.6	200
14D112K	14D112KJ	680	895	1100(990~1210)	50	1814	4500	2500	6000	5000	213	310	0.6	180
14D122K	14D122KJ	750	990	1200(1080~1320)	50	1980	4500	2500	6000	5000	213	310	0.6	150
14D182K	14D182KJ	1000	1465	1800(1620~1980)	50	2970	4500	2500	6000	5000	250	335	0.6	130

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### Electrical Rating

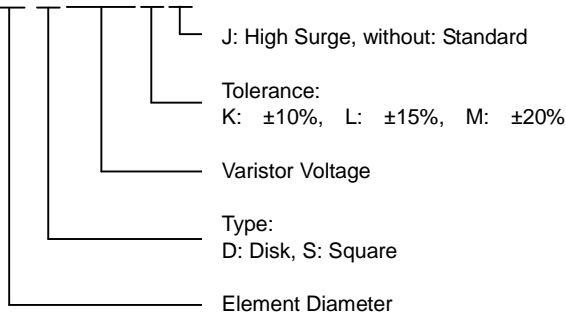
Item	Test Condition / Description	Requirement																									
<b>Maximum Allowable Voltage</b>	The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.																										
<b>Varistor Voltage</b>	The voltage between two terminals with the specified measuring current 1mA.DC applied is call Vb.																										
<b>Maximum Clamping Voltage</b>	<p>The maximum voltage between two terminals with the specification standard impulse current. Applied waveform: 8/20μs</p> 	To meet the specified value																									
<b>Rated Wattage</b>	The maximum average power that can be applied within the specified ambient temperature.																										
<b>Energy</b>	The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000μs. or 2 msec. is applied.																										
<b>Withstanding Surge</b>	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20μs) applied one time																										
<b>Varistor Voltage Temp. Coefficient</b>	$\frac{V_b \text{ at } 20^{\circ}\text{C} - V_b \text{ at } 70^{\circ}\text{C}}{V_b \text{ at } 20^{\circ}\text{C}} \times \frac{1}{50} \times 100(\% / ^{\circ}\text{C})$	0.05% / °C max																									
<b>Surge Life</b>	<p>The change of Vb shall be measured after the impulse listed below is applied 10,000 times continuously with the interval of ten seconds at room temperature.</p> <table border="1" data-bbox="363 1512 1161 1915"> <tbody> <tr> <td rowspan="2">5D Series</td> <td>180K to 680K</td> <td>10A (8/20μs)</td> </tr> <tr> <td>820K to 751K</td> <td>20A (8/20μs)</td> </tr> <tr> <td rowspan="2">7D Series</td> <td>180K to 680K</td> <td>25A (8/20μs)</td> </tr> <tr> <td>820K to 751K</td> <td>50A (8/20μs)</td> </tr> <tr> <td rowspan="2">10D Series</td> <td>180K to 680K</td> <td>50A (8/20μs)</td> </tr> <tr> <td>820K to 751K</td> <td>100A (8/20μs)</td> </tr> <tr> <td rowspan="2">14D Series</td> <td>180K to 680K</td> <td>75A (8/20μs)</td> </tr> <tr> <td>820K to 751K</td> <td>150A (8/20μs)</td> </tr> <tr> <td rowspan="2">20D Series</td> <td>180K to 680K</td> <td>100A (8/20μs)</td> </tr> <tr> <td>820K to 751K</td> <td>200A (8/20μs)</td> </tr> </tbody> </table>	5D Series	180K to 680K	10A (8/20μs)	820K to 751K	20A (8/20μs)	7D Series	180K to 680K	25A (8/20μs)	820K to 751K	50A (8/20μs)	10D Series	180K to 680K	50A (8/20μs)	820K to 751K	100A (8/20μs)	14D Series	180K to 680K	75A (8/20μs)	820K to 751K	150A (8/20μs)	20D Series	180K to 680K	100A (8/20μs)	820K to 751K	200A (8/20μs)	ΔVb / Vb ≤ ±10%
5D Series	180K to 680K		10A (8/20μs)																								
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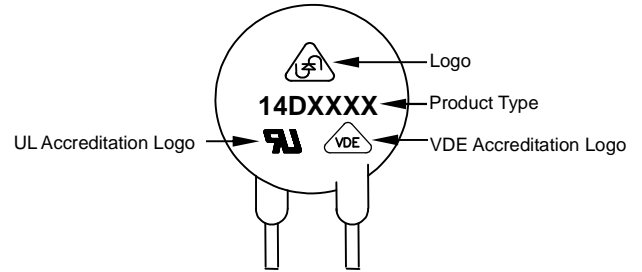
## 14D Series

### Part Numbering

#### 14 D XXX K J



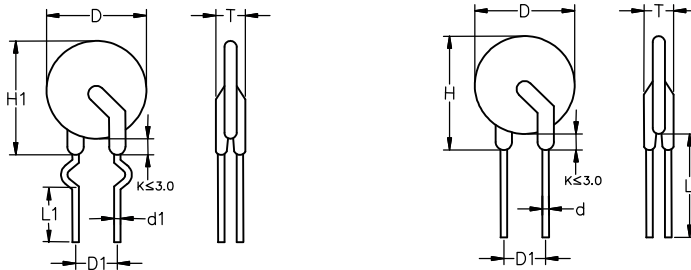
### Part Marking



### Packaging Information

Part Number	Quantity	Packaging Option	Packaging Specification
14DXXXXX	500	Plastic bag	Bulk Pack

### Package Dimensions Unit: mm



**TABLE1**

Symbol	Dimensions
H(max.)	20.0
H1(max.)	21.0
L(min.)	20.0
L1(min.)	15.0
D(max.)	16.5
D1( $\pm 0.8$ )	7.5
T(max.)	TABLE2
d( $\pm 0.05$ )	0.8
d1( $\pm 0.4$ )	1.4

**TABLE2**

Model	T(max.)	Model	T(max.)
180K	4.6	331K	5.8
220K	4.7	361K	6.0
270K	4.8	391K	6.2
330K	5.0	431K	6.5
390K	5.3	471K	6.7
470K	5.4	511K	6.8
560K	5.5	561K	7.0
680K	5.6	621K	7.3
820K	4.7	681K	7.6
101K	4.9	751K	8.0
121K	5.1	781K	8.1
151K	5.4	821K	8.3
181K	4.8	911K	8.8
201K	5.0	102K	9.3
221K	5.1	112K	9.9
241K	5.2	122K	10.4
271K	5.4	182K	13.0
301K	5.5	-	-