

# Radial Lead Varistor (MOV)

## 07D Series

### Description

The 07D 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 1.75KA (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 820V
- 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)

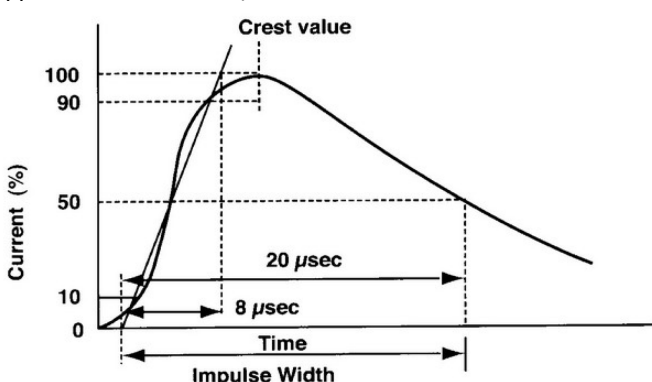
Type Number		Maximum Allowable voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current				Maximum Energy (10/1000µs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V <sub>AC</sub> (V)	V <sub>DC</sub> (V)	V <sub>1mA</sub> (V)	I <sub>P</sub> (A)	V <sub>C</sub> (V)	I(A) Standard		I(A) High Surge		(J) Standard	(J) High Surge	(W)	@1KHZ (pf)
							1 Time	2 Times	1 Time	2 Times				
07D180K	07D180KJ	11	14	18(15~21.6)	2.5	36	250	125	500	250	0.9	2.0	0.02	2800
07D220K	07D220KJ	14	18	22(19.5~26)	2.5	43	250	125	500	250	1.1	2.4	0.02	2300
07D270K	07D270KJ	17	22	27(24~30)	2.5	53	250	125	500	250	1.4	3.0	0.02	1800
07D330K	07D330KJ	20	26	33(29.5~36.5)	2.5	66	250	125	500	250	1.7	3.5	0.02	1500
07D390K	07D390KJ	25	31	39(35~43)	2.5	77	250	125	500	250	2.1	4.0	0.02	1300
07D470K	07D470KJ	30	38	47(42~54)	2.5	93	250	125	500	250	2.5	5.0	0.02	1100
07D560K	07D560KJ	35	45	56(50~62)	2.5	110	250	125	500	250	3.1	6.0	0.02	900
07D680K	07D680KJ	40	56	68(61~75)	2.5	135	250	125	500	250	3.6	7.0	0.02	740
07D820K	07D820KJ	50	65	82(74~90)	10	135	1200	600	1750	1250	5.5	10.0	0.25	600
07D101K	07D101KJ	60	85	100(90~110)	10	165	1200	600	1750	1250	6.5	12.0	0.25	500
07D121K	07D121KJ	75	100	120(108~132)	10	200	1200	600	1750	1250	7.8	13.0	0.25	420
07D151K	07D151KJ	95	125	150(135~165)	10	250	1200	600	1750	1250	9.7	13.0	0.25	330
07D181K	07D181KJ	115	150	180(162~198)	10	300	1200	600	1750	1250	11.7	16.0	0.25	280
07D201K	07D201KJ	130	170	200(180~220)	10	340	1200	600	1750	1250	13.0	17.0	0.25	250
07D221K	07D221KJ	140	180	220(198~242)	10	360	1200	600	1750	1250	14.0	19.0	0.25	230
07D241K	07D241KJ	150	200	240(216~264)	10	395	1200	600	1750	1250	15.0	21.0	0.25	210
07D271K	07D271KJ	175	225	270(243~297)	10	455	1200	600	1750	1250	18.0	24.0	0.25	185
07D301K	07D301KJ	190	250	300(270~330)	10	500	1200	600	1750	1250	20.0	26.0	0.25	165
07D331K	07D331KJ	210	275	330(297~363)	10	550	1200	600	1750	1250	23.0	28.0	0.25	150
07D361K	07D361KJ	230	300	360(324~396)	10	595	1200	600	1750	1250	25.0	32.0	0.25	140
07D391K	07D391KJ	250	320	390(351~429)	10	650	1200	600	1750	1250	25.0	35.0	0.25	130
07D431K	07D431KJ	275	350	430(387~473)	10	710	1200	600	1750	1250	28.0	40.0	0.25	115
07D471K	07D471KJ	300	335	470(423~517)	10	775	1200	600	1750	1250	30.0	42.0	0.25	105
07D511K	07D511KJ	320	415	510(459~561)	10	845	1200	600	1750	1250	30.0	45.0	0.25	100
07D561K	07D561KJ	350	460	560(504~616)	10	925	1200	600	1750	1250	30.0	49.0	0.25	90
07D621K	07D621KJ	385	505	620(558~682)	10	1025	1200	600	1750	1250	33.0	55.0	0.25	80
07D681K	07D681KJ	420	560	680(612~748)	10	1120	1200	600	1750	1250	33.0	60.0	0.25	75
07D751K	07D751KJ	460	615	750(675~825)	10	1240	1200	600	1750	1250	67.2	65.0	0.25	70
07D781K	07D781KJ	485	640	780(702~858)	10	1290	1200	600	1750	1250	67.2	65.0	0.25	70
07D821K	07D821KJ	510	670	820(738~902)	10	1355	1200	600	1750	1250	67.2	70.0	0.25	60

Remark: Voltage>33V, K is ±10%

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### Electrical Rating

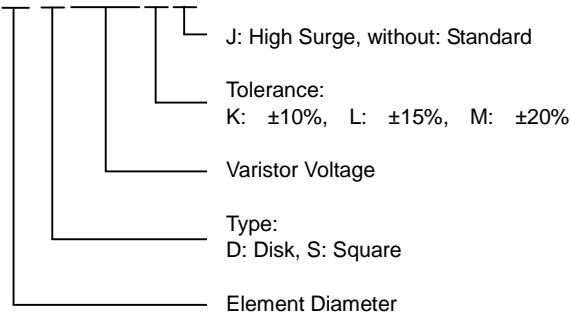
Item	Test Condition / Description	Requirement																									
<b>Maximum Allowable Voltage</b>	The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.																										
<b>Varistor Voltage</b>	The voltage between two terminals with the specified measuring current 1mA.DC applied is call V <sub>b</sub> .																										
<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 Current</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 V<sub>b</sub> 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="367 1500 1165 1904"> <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)	ΔV <sub>b</sub> / V <sub>b</sub> ≤ ±10%
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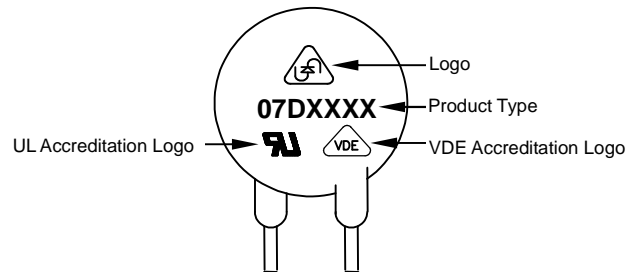
## 07D Series

### Part Numbering

#### 07 D XXX K J



### Part Marking



### Packaging Information

Part Number	Quantity	Packaging Option	Packaging Specification
07DXXXXX	1000	Plastic bag	Bulk Pack

### Package Dimensions Unit: mm

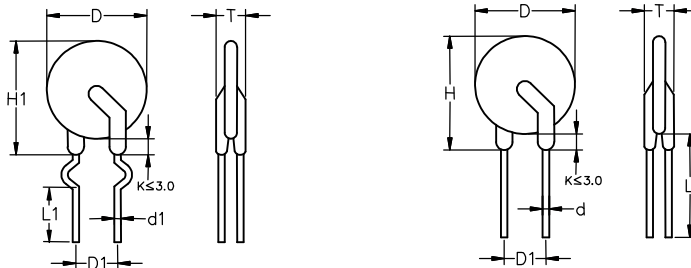


TABLE1

Symbol	Dimensions
H(max.)	12.0
H1(max.)	13.5
L(min.)	20.0
L1(min.)	15.0
D(max.)	9.0
D1( $\pm 0.8$ )	5.0
T(max.)	TABLE2
d( $\pm 0.05$ )	0.6
d1( $\pm 0.4$ )	1.2

TABLE2

Model	T(max.)	Model	T(max.)
180K	4.50	241K	4.60
220K	4.60	271K	4.90
270K	4.70	301K	5.00
330K	4.90	331K	5.10
390K	4.80	361K	5.20
470K	4.90	391K	5.40
560K	5.00	431K	5.70
680K	5.20	471K	6.00
820K	4.10	511K	6.20
101K	4.30	561K	6.50
121K	4.50	621K	7.10
151K	4.80	681K	7.30
181K	4.30	751K	7.06
201K	4.40	781K	7.24
221K	4.50	821K	7.28