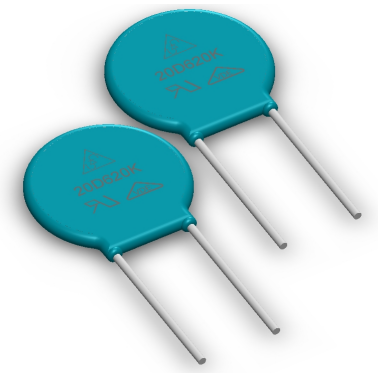
Radial Lead Varistor (MOV)

20D Series

Description

The 20D 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 10KA (8/20 μs pulse) to protect against high peak surges, including indirect lightning strike interference, system switching transients and abnormal fast transients from the power source.



Features

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

Applicable

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

General Characteristics

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

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Radial Lead Varistor (MOV)

20D Series

Specifications – General Characteristics (25±5° C)

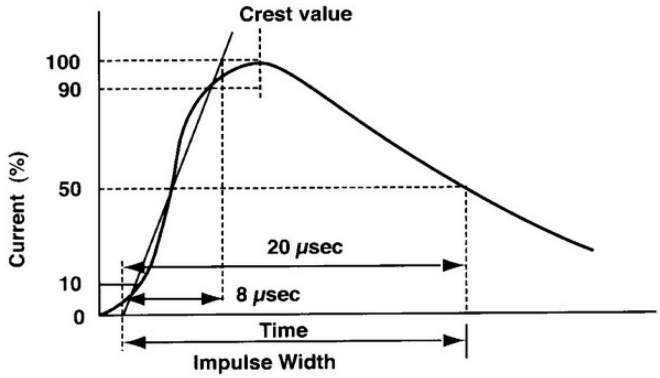
Type Number		Maximum Allowable voltage		Varistor Voltage	Maximum Clamping Voltage		Withstanding Surge Current				Maximum Energy (10/1000μs)		Rated Power	Typical Capacitance (Reference)
Standard	High Surge	V_{AC} (V)	V_{DC} (V)	V1mA (V)	I_P (A)	V_C (V)	I(A) Standard 1 Time	I(A) Standard 2 Times	I(A) High Surge 1 Time	I(A) High Surge 2 Times	(J) Standard	(J) High Surge	(W)	@1KHZ (pf)
20D180K	20D180KJ	11	14	18(15~21.6)	20	36	2000	1000	3000	1000	11	13	0.2	28500
20D220K	20D220KJ	14	18	22(19.5~26)	20	43	2000	1000	3000	1000	14	16	0.2	18500
20D270K	20D270KJ	17	22	27(24~30)	20	53	2000	1000	3000	1000	16	19	0.2	13000
20D330K	20D330KJ	20	26	33(29.5~36.5)	20	66	2000	1000	3000	1000	23	24	0.2	11500
20D390K	20D390KJ	25	31	39(35~43)	20	77	2000	1000	3000	1000	26	28	0.2	8500
20D470K	20D470KJ	30	38	47(42~54)	20	93	2000	1000	3000	1000	30	34	0.2	7400
20D560K	20D560KJ	35	45	56(50~62)	20	100	2000	1000	3000	1000	41	41	0.2	6500
20D680K	20D680KJ	40	56	68(61~75)	20	135	2000	1000	3000	1000	46	49	0.2	5800
20D820K	20D820KJ	50	65	82(74~90)	100	135	6500	4000	10000	7000	38	56	1.0	4900
20D101K	20D101KJ	60	85	100(90~110)	100	165	6500	4000	10000	7000	45	70	1.0	4000
20D121K	20D121KJ	75	100	120(108~132)	100	200	6500	4000	10000	7000	55	85	1.0	3300
20D151K	20D151KJ	95	125	150(135~165)	100	250	6500	4000	10000	7000	70	106	1.0	2700
20D181K	20D181KJ	115	150	180(162~198)	100	300	6500	4000	10000	7000	85	130	1.0	2200
20D201K	20D201KJ	130	170	200(180~220)	100	340	6500	4000	10000	7000	95	140	1.0	2000
20D221K	20D221KJ	140	180	220(198~242)	100	360	6500	4000	10000	7000	100	155	1.0	1800
20D241K	20D241KJ	150	200	240(216~264)	100	395	6500	4000	10000	7000	108	168	1.0	1650
20D271K	20D271KJ	175	225	270(243~297)	100	455	6500	4000	10000	7000	127	190	1.0	1500
20D301K	20D301KJ	190	250	300(270~330)	100	500	6500	4000	10000	7000	136	210	1.0	1300
20D331K	20D331KJ	210	275	330(297~363)	100	550	6500	4000	10000	7000	150	228	1.0	1200
20D361K	20D361KJ	230	300	360(324~396)	100	595	6500	4000	10000	7000	163	255	1.0	1100
20D391K	20D391KJ	250	320	390(351~429)	100	650	6500	4000	10000	7000	180	275	1.0	1000
20D431K	20D431KJ	275	350	430(387~473	100	710	6500	4000	10000	7000	190	305	1.0	930
20D471K	20D471KJ	300	335	470(423~517)	100	775	6500	4000	10000	7000	220	350	1.0	850
20D511K	20D511KJ	320	415	510(459~561)	100	845	6500	4000	10000	7000	220	360	1.0	780
20D561K	20D561KJ	350	460	560(504~616)	100	925	6500	4000	10000	7000	220	380	1.0	710
20D621K	20D621KJ	385	505	620(558~682)	100	1025	6500	4000	10000	7000	220	390	1.0	650
20D681K	20D681KJ	420	560	680(612~748)	100	1120	6500	4000	10000	7000	230	400	1.0	600
20D751K	20D751KJ	460	615	750(675~825)	100	1240	6500	4000	10000	7000	255	420	1.0	530
20D781K	20D781KJ	485	640	780(702~858)	100	1290	6500	4000	10000	7000	265	440	1.0	510
20D821K	20D821KJ	510	670	820(738~902)	100	1355	6500	4000	10000	7000	282	460	1.0	500
20D911K	20D911KJ	550	745	910(819~1001)	100	1500	6500	4000	10000	7000	310	510	1.0	440
20D102K	20D102KJ	625	825	1000(900~1100)	100	1650	6500	4000	10000	7000	342	565	1.0	400
20D112K	20D112KJ	680	895	1100(990~1210)	100	1814	6500	4000	10000	7000	383	620	1.0	460
20D122K	20D122KJ	750	990	1200(1080~1320)	100	1980	6500	4000	10000	7000	408	660	1.0	320
20D182K	20D182KJ	1000	1465	1800(1620~1980)	100	2970	6500	4000	10000	7000	625	660	1.0	320

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20D Series

Electrical Rating

Item	Test Condition / Description	Requirement
Maximum Allowable Voltage	The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.	To meet the specified value
Varistor Voltage	The voltage between two terminals with the specified measuring current 1mA.DC applied is call Vb.	
Maximum Clamping Voltage	The maximum voltage between two terminals with the specification standard impulse current. Applied waveform: 8/20μs 	
Rated Wattage	The maximum average power that can be applied within the specified ambient temperature.	
Energy	The maximum energy within the varistor voltage change of ±10% when one impulse of 10/1000μs. or 2 msec. is applied.	
Withstanding Surge Current	The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20μsec.) applied one time	
Varistor Voltage Temp. Coefficient	$\frac{\text{Vb at 20°C - Vb at 70°C}}{\text{Vb at 20°C}} \times \frac{1}{50} \times 100(\%/°C)$	0.05% / °C max
Surge Life	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.	△Vb / Vb ≤ ±10%

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)

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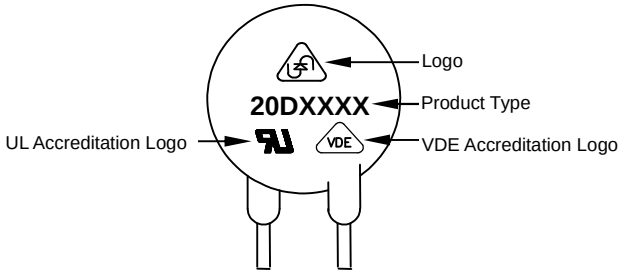
20D Series

Part Numbering

20 D XXX K J

- J: High Surge, without: Standard
- Tolerance: K: ±10%, L: ±15%, M: ±20%
- Varistor Voltage
- Type: D: Disk, S: Square
- Element Diameter

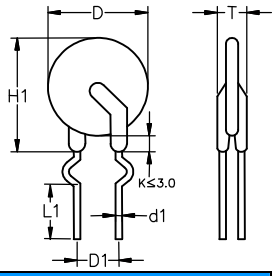
Part Marking



Packaging Information

Part Number	Quantity	Packaging Option	Packaging Specification
20DXXXXX	500	BOX	Bulk Pack

Package Dimensions Unit: mm



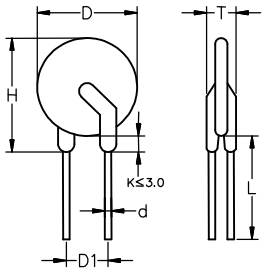


TABLE1	
Symbol	Dimensions
H(max.)	26.5
H1(max.)	28.0
L(min.)	20.0
L1(min.)	15.0
D(max.)	23.0
D1(±0.8)	7.5+0.8/10.0+1.0
T(max.)	TABLE2
d(±0.05)	0.8
d1(±0.4)	1.4

TABLE2			
Model	T(max.)	Model	T(max.)
180K	4.8	331K	5.8
220K	4.9	361K	6.0
270K	5.0	391K	6.2
330K	5.2	431K	6.5
390K	5.5	471K	6.7
470K	5.6	511K	6.9
560K	5.7	561K	7.0
680K	5.08	621K	7.2
820K	4.9	681K	7.5
101K	5.1	751K	8.2
121K	5.3	781K	5.3
151K	5.6	821K	8.5
181K	5.0	911K	9.0
201K	5.2	102K	9.5
221K	5.3	112K	10.1
241K	5.4	122K	10.6
271K	5.6	182K	13.2
301K	5.7	-	-

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