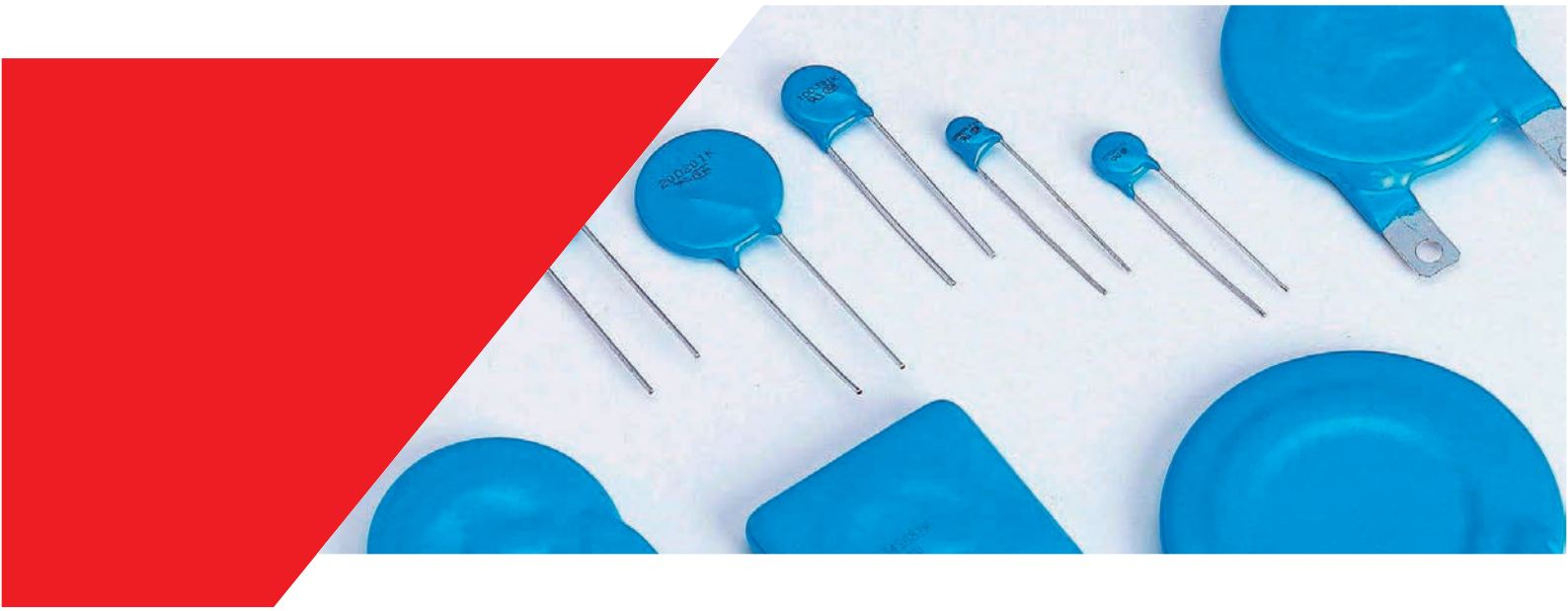
ELECTRONICS



Metal Oxide Varistors

20D Series

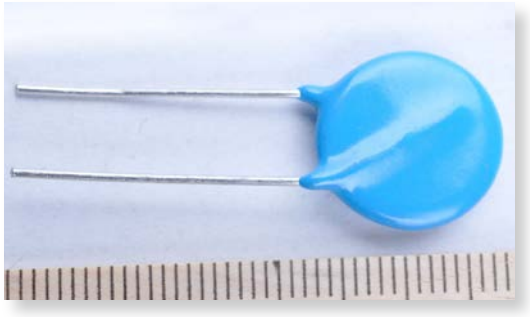
361° Circuit Protection System

Specifications are subject to change without notice.

Metal Oxide Varistors - 20D Series

Features

1. Wide operating voltage (V1mA) range from 8V to 1800V.
2. Fast responding to transient over-voltage.
3. Large absorbing transient energy capability.
4. Low clamping ratio and no following-on current.



General Information

The MOV-20DxxxK Series of 20mm 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 Vrms voltages from 11 V to 1000 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.

General Characteristics

No Radioactive Material Storage Temperature: -55ºC to +125ºC
Operating Temperature: -55ºC to +85ºC
Body: Nickel Plated
Leads: Surface-mount, Axial Devices: Tin Plated
Devices with No Leads: Nickel Plated

Product Name

2	0	D	4	7	1	K

Disc Diameter	Type	Nominal Varistor Voltage	Varistor Voltage Tolerance
20=20MM	D: Disk	471=47*10^{1}V	K = 10 %
	S: Square		

Metal Oxide Varistors - 20D Series

Electriacl Characteristics

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)	V_{1mA}(V)	I_P(A)	V_C(V)	I(A) Standard	I(A) High Surge	(J) Standard	(J) High Surge	(W)	@1KHz(pf)
20D180K	20D180KJ	11	14	18(15~21.6)	20	36	2000	3000	11	13	0.2	28500
20D220K	20D220KJ	14	18	22(19.5~26)	20	43	2000	3000	14	16	0.2	18500
20D270K	20D270KJ	17	22	27(24~30)	20	53	2000	3000	16	19	0.2	13000
20K330K	20K330KJ	20	26	33(29.5~36.5)	20	65	2000	3000	23	24	0.2	11500
20D390K	20D390KJ	25	31	39(35~43)	20	77	2000	3000	26	28	0.2	8500
20D470K	20D470KJ	30	38	47(42~54)	20	93	2000	3000	30	34	0.2	7400
20D560K	20D560KJ	35	45	56(50~62)	20	100	2000	3000	41	41	0.2	6500
20D680K	20D680KJ	40	56	68(61~75)	20	135	2000	3000	46	49	0.2	5800
20D820K	20D820KJ	50	65	82(74~90)	100	135	6500	10000	38	56	1.0	4900
20D101K	20D101KJ	60	85	100(90~110)	100	165	6500	10000	45	70	1.0	4000
20D121K	20D121KJ	75	100	120(108~132)	100	200	6500	10000	55	85	1.0	3300
20D151K	20D151KJ	95	125	150(135~165)	100	250	6500	10000	70	106	1.0	2700
20D181K	20D181KJ	115	150	180(162~198)	100	300	6500	10000	85	130	1.0	2200
20D201K	20D201KJ	130	170	200(180~220)	100	340	6500	10000	95	140	1.0	2000
20D221K	20D221KJ	140	180	220(198~242)	100	360	6500	10000	100	155	1.0	1800
20D241K	20D241KJ	150	200	240(216~264)	100	395	6500	10000	108	168	1.0	1650
20D271K	20D271KJ	175	225	270(243~297)	100	455	6500	10000	127	190	1.0	1500
20D301K	20D301KJ	190	250	300(270~330)	100	500	6500	10000	136	210	1.0	1300
20D331K	20D331KJ	210	275	330(297~363)	100	550	6500	10000	150	228	1.0	1200
20D361K	20D361KJ	230	300	360(324~396)	100	595	6500	10000	163	255	1.0	1100
20D391K	20D391KJ	250	320	390(351~429)	100	650	6500	10000	180	275	1.0	1000
20D431K	20D431KJ	275	350	430(387~473)	100	710	6500	10000	190	305	1.0	930
20D471K	20D471KJ	300	385	470(423~517)	100	775	6500	10000	220	350	1.0	850
20D511K	20D511KJ	320	415	510(459~561)	100	845	6500	10000	220	360	1.0	780
20D561K	20D561KJ	350	460	560(504~616)	100	925	6500	10000	220	380	1.0	710
20D621K	20D621KJ	385	505	620(558~682)	100	1025	6500	10000	220	390	1.0	650
20D681K	20D681KJ	420	560	680(612~748)	100	1120	6500	10000	230	400	1.0	600
20D751K	20D751KJ	460	615	750(675~825)	100	1240	6500	10000	255	420	1.0	580
20D781K	20D781KJ	485	640	780(702~858)	100	1290	6500	10000	265	440	1.0	560
20D821K	20D821KJ	510	670	820(738~902)	100	1355	6500	10000	282	460	1.0	525
20D911K	20D911KJ	550	745	910(819~1001)	100	1500	6500	10000	310	510	1.0	495
20D102K	20D102KJ	625	825	1000(900~1100)	100	1650	6500	10000	342	565	1.0	480
20D112K	20D112KJ	680	895	1100(990~1210)	100	1815	6500	10000	383	620	1.0	460
20D122K	20D122KJ	740	975	1200(1080~1320)	100	2010	6500	10000	412	660	1.0	440
20D142K	20D142K	850	1100	1400(1260~1540)	100	2255	6500	10000	470	725	1.0	415
20D152K	20D152K	900	1220	1500(135~1650)	100	2475	6500	10000	529	815	1.0	400
20D162K	20D162KJ	1000	1280	1600(1440~1760)	100	2640	6500	10000	606	896	1.0	330
20D182K	20D182KJ	1000	1465	1800(1620~1980)	100	2970	6500	10000	625	660	1.0	320

Metal Oxide Varistors - 20D Series

Electrical Rating

Item	Test Condition / Description			Requirement
Varistor Voltage	The voltage between two terminals with the specified measuring current 1mA. DC applied is call Vb.			To meet the specified value
Maximum Allowable Voltage	The recommended maximum sine wave voltage (RMS) or the maximum DC voltage can be applied continuously.			
Rated Wattaget	The maximum average power that can be applied within the specified ambient temperature.			
IEnergy	The maximum energy within the varistor voltage change of ±10% when one impulse of10/1000μsec. 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.			$\frac{\Delta Vb}{Vb} \leqslant \pm 10\%$
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.			
	5D series	180K to 680K	10A (8/20μsec.)	
		820K to 751K	20A (8/20μsec.)	
	7Dseries	180K to 680K	25A (8/20μsec.)	
		820K to 821K	50A (8/20μsec.)	
	10D series	180K to 680K	50A (8/20μsec.)	
		820K to 182K	100A (8/20μsec.)	
	14D series	180K to 680K	75A (8/20μsec.)	
		820K to 182K	150A (8/20μsec.)	
	20D series	180K to 680K	100A (8/20μsec.)	
		820K to 182K	200A (8/20μsec.)	

Metal Oxide Varistors - 20D Series

Current Energy and Power Dissipation Ratings

Should transients occur in rapid succession, the average power dissipation is the energy (watt-seconds) per pulse times the number of pulses per second. The power so developed must be within the specifications shown on the Device Ratings and Specifications Table for the specific device. The operating values of a MOV need to be derated at high temperatures as shown above. Because varistors only dissipate a relatively small amount of average power they are not suitable for repetitive applications that involve substantial amounts of average power dissipation.

Figure 1A - Power Derating for Epoxy Coated

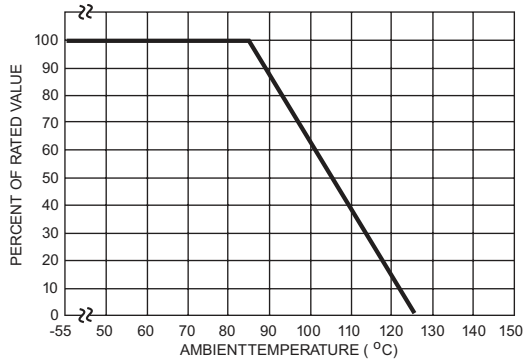
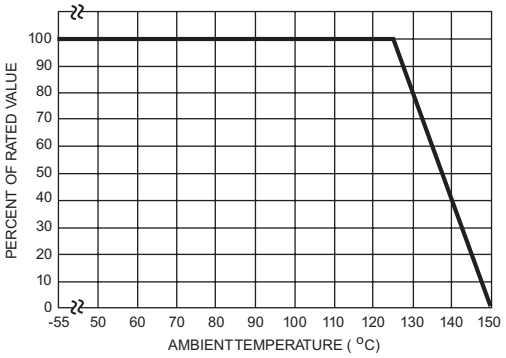


Figure 1B - Power Derating for Pholenic Coated



Peak Pulse Current Test Waveform

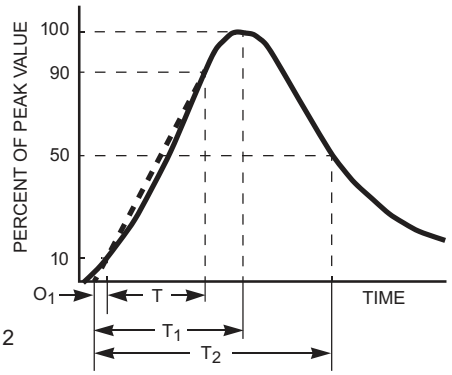


Figure 2

0_1 = Virtual Origin of Wave
T = Time from 10% to 90% of Peak
T_1 = Rise Time = 1.25 x T
T_2 = Decay Time
Example - For an 8/20 μs Current Waveform:
8μs = T_1 = Rise Time
20μs = T_2 = Decay Time

Packaging

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
20D	20.0	200	BOX	400PCS

Metal Oxide Varistors - 20D Series

Package Dimensions

Unit:mm

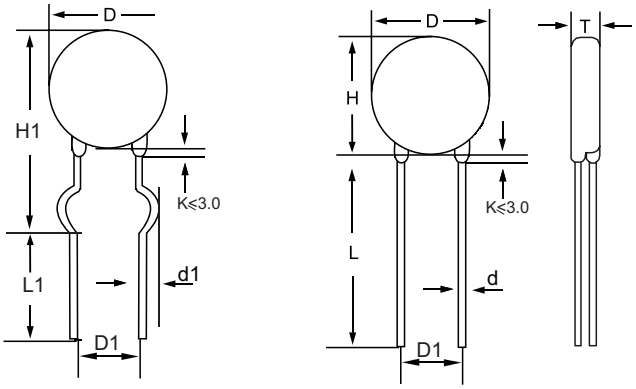


TABLE 1

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.)	TABLE 2
d(±0.05)	0.8
d1(±0.4)	1.4

TABLE 2

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

Warehouse Storage Conditions of Products

- Storage Conditions:

1. Storage Temperature: -10°C~+40°C
2. Relative Humidity:≤75%RH
3. Keep away from corrosive atmosphere and sunlight.

- Period of Storage: 1 year

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