

Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

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FEATURE

- Operating / Storage Temperature: -40°C ~ +105°C / -40°C +125°C
- Varistor Voltage: 200V to 1100V
- Withstanding Surge Current Rating Up to 10KA
- Fast Responding to Transient Over-voltage
- Low Clamping Ratio without Follow-on Current
- UL/cUL Safety Approved: Certification No: E326004



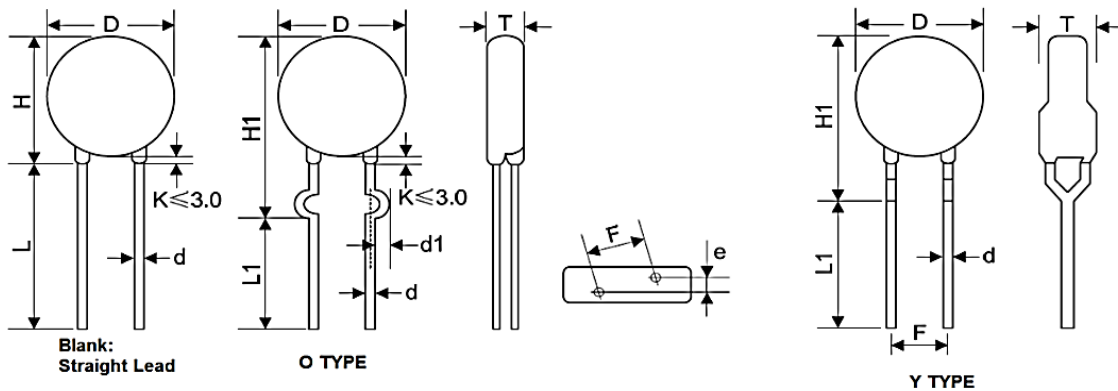
PART NUMBERING SYSTEM

MVR 20D 911K O D
(1) (2) (3) (4) (5)

No	Item	Digit	Description	
(1)	Product Code	MVR	Metal Oxide Varistor, Radial Leaded Type	
(2)	Diameter	20D	20mm	Disk Diameter, Round type
(3)	Varistor DC Voltage	911K	911: 910VDC 10%	First two digits: Significant, Third: Multiplier
(4)	Lead Type	O	O: Out kink	Blank: Straight, Y: Y Kink,
(5)	Series Code	D	D Series	5, 7, 10, 14, 18, 20 mm

DIMENSIONS

MVR Series	Varistor DC Voltage at 1mA	Maximum Energy 10/1Kµs	Disk Diameter	H Max	H1 Max	L Min	L1 Min	D ±0.05	d1 ±0.4	F ±1.0
MVR05-D	200~750V	17.5~48J	5.5~7.5	10.0	13.0	25.0	25.0	0.6	1.2	5.0
MVR07-D	200~820V	17.5~50J	7.5~9.0	12.0	15.0	25.0	25.0	0.6	1.2	5.0
MVR10-D	200~1.1KV	35~155J	10.5~14.0	17.0	20.5	25.0	25.0	0.8	1.4	7.5
MVR14-D	200~1.1KV	84~364J	13.5~17.5	20.5	23.5	25.0	25.0	0.8	1.4	7.5
MVR18-D	200~1.1KV	112~500J	18.5~23.0	26.0	27.0	25.0	25.0	0.8	1.4	7.5
MVR20-D	200~1.1KV	140~620J	19.5~25.0	28.0	31.0	25.0	25.0	1.0	1.4	10.0



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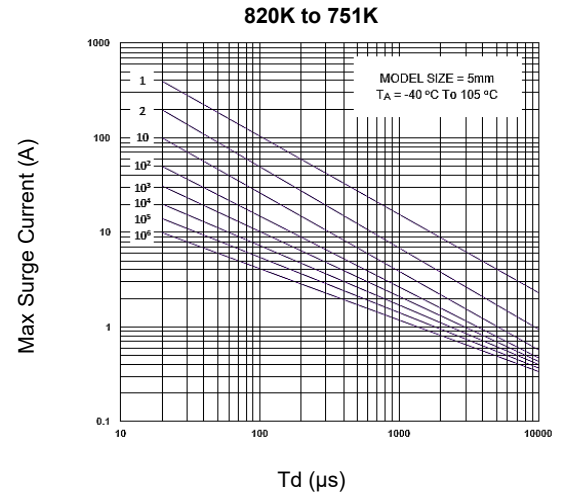
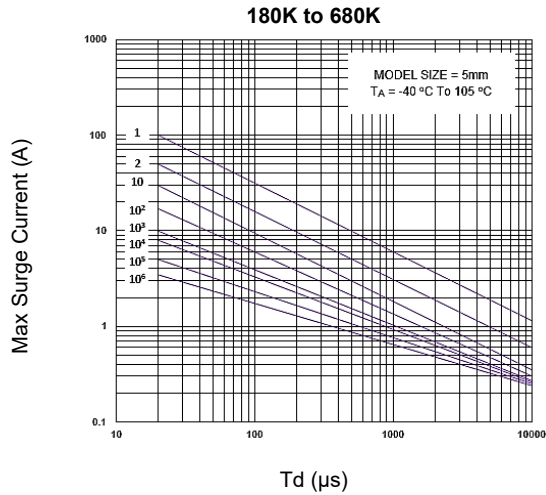
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ELECTRICAL CHARACTERISTICS – MVR05D-D SERIES

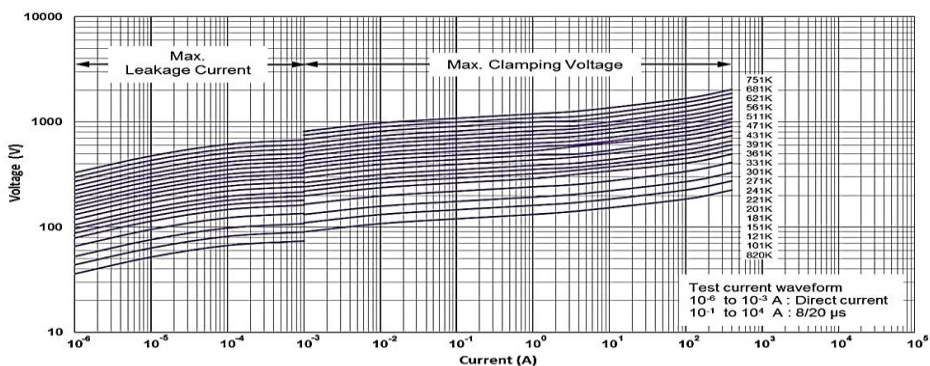
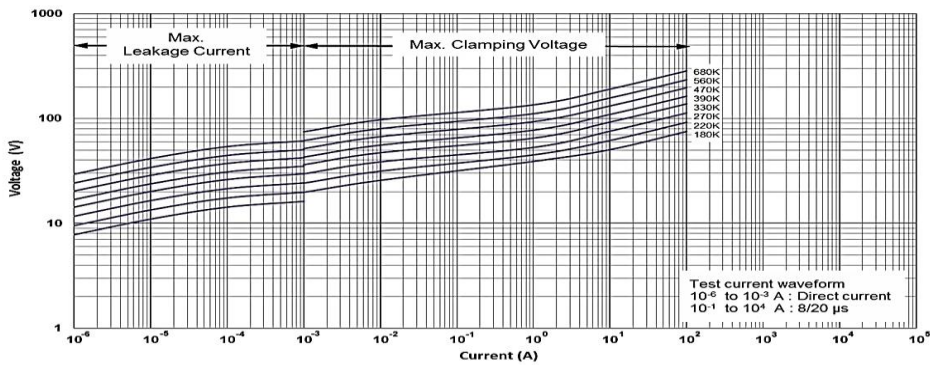
Part Number	Varistor DC Voltage	Max. Allowable Voltage		Max. Clamping Voltage		Surge Withstanding Current		Max. Energy	Rated Power	Typical Cap	Dimension	
	VDC@1mA	ACrms	VDC	Vc	IP	1 time	15 times	10/1K μ s	(W)	@1kHz	T Max	e \pm 1.0
	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(J)		(pF)		
MVR05D180KD	18(16~20)	11	14	40	1	100	100	0.4	0.01	1600	3.3	1.5
MVR05D220KD	22(20~24)	14	18	48	1	100	100	0.5	0.01	1500	3.6	1.6
MVR05D270KD	27(24~30)	17	22	60	1	100	100	0.6	0.01	1450	3.8	1.7
MVR05D330KD	33(30~36)	20	26	73	1	100	100	0.8	0.01	1400	3.3	1.6
MVR05D390KD	39(35~43)	25	31	86	1	100	100	0.9	0.01	700	3.5	1.8
MVR05D470KD	47(42~52)	30	38	104	1	100	100	1.1	0.01	650	3.7	1.9
MVR05D560KD	56(50~62)	35	45	123	1	100	100	1.3	0.01	600	4.0	2.0
MVR05D680KD	68(61~75)	40	56	150	1	100	100	1.6	0.01	580	4.3	2.2
MVR05D820KD	82(74~90)	50	65	145	5	400	250	2.5	0.1	310	3.3	1.5
MVR05D101KD	100(90~110)	60	85	175	5	400	250	3.0	0.1	290	3.6	1.5
MVR05D121KD	120(108~132)	75	100	210	5	400	250	4.0	0.1	270	3.8	1.6
MVR05D151KD	150(135~165)	95	125	260	5	400	250	4.8	0.1	240	4.1	1.8
MVR05D181KD	180(162~198)	115	150	315	5	400	250	5.9	0.1	140	3.2	1.5
MVR05D201KD	200(180~220)	130	170	355	5	400	250	6.5	0.1	120	3.3	1.5
MVR05D221KD	220(198~242)	140	180	380	5	400	250	7.0	0.1	110	3.4	1.6
MVR05D241KD	240(216~264)	150	200	415	5	400	250	8.0	0.1	110	3.5	1.7
MVR05D271KD	270(243~297)	175	225	475	5	400	250	8.5	0.1	100	3.7	1.8
MVR05D301KD	300(270~330)	195	250	505	5	400	250	9.0	0.1	100	3.9	1.9
MVR05D331KD	330(297~363)	215	275	585	5	400	250	10	0.1	90	4.0	2.0
MVR05D361KD	360(324~396)	230	300	620	5	400	250	10	0.1	80	4.1	2.1
MVR05D391KD	390(351~429)	250	320	675	5	400	250	12	0.1	80	4.2	2.3
MVR05D431KD	430(387~473)	275	350	745	5	400	250	13	0.1	70	4.4	2.4
MVR05D471KD	470(423~517)	300	385	810	5	400	250	15	0.1	70	4.6	2.5
MVR05D511KD	510(459~561)	320	410	878	5	400	250	16	0.1	65	4.8	2.6
MVR05D561KD	560(504~616)	350	460	940	5	400	250	18	0.1	65	5.0	2.8
MVR05D621KD	620(558~682)	395	510	1050	5	400	250	18	0.1	65	5.3	3.1
MVR05D681KD	680(612~748)	420	560	1120	5	400	250	18	0.1	60	5.4	3.3
MVR05D751KD	750(675~825)	460	615	1240	5	400	250	18	0.1	60	5.6	3.6

Notes: Leakage Current (@Max.Allowable V_{DC}): I_r ≤ 20 μ A

SURGE CURRENT DERATING CURVES - MVR05D-D SERIES



LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES - MVR05D-D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

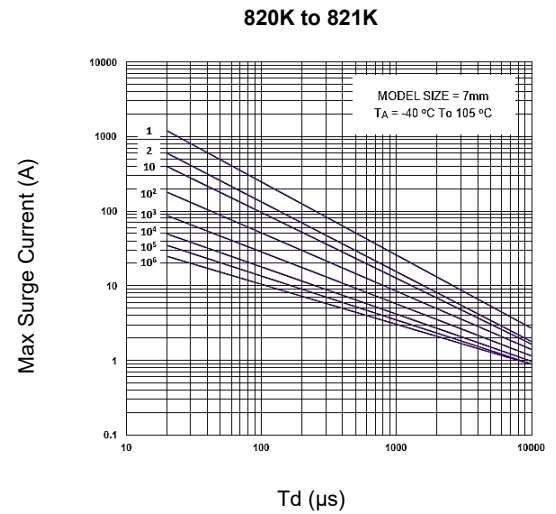
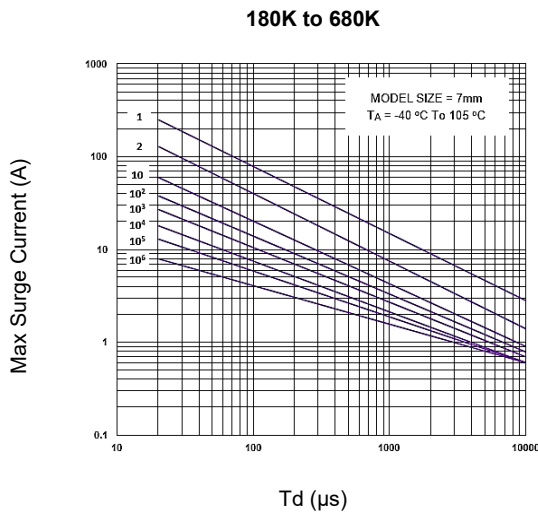
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ELECTRICAL CHARACTERISTICS – MVR07D-D SERIES

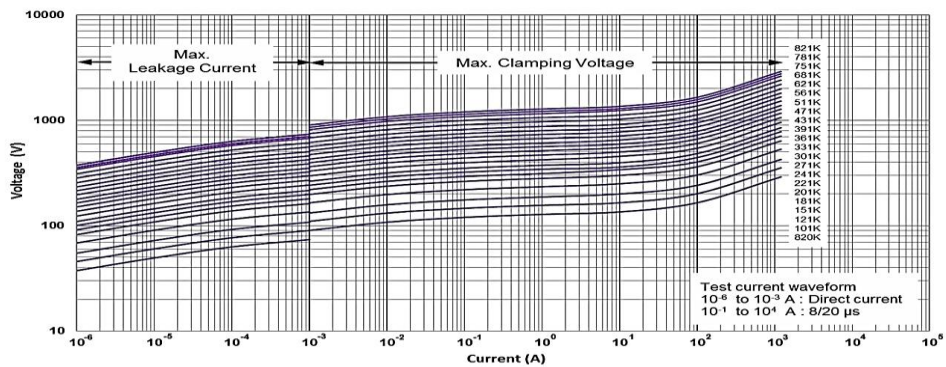
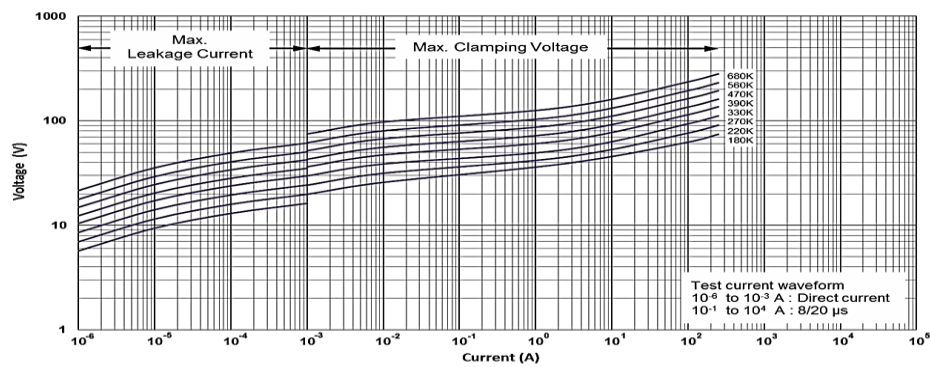
Part Number	Varistor DC Voltage	Max. Allowable Voltage		Max. Clamping Voltage		Surge Withstanding Current		Max. Energy	Rated Power	Typical Cap	Dimension	
	VDC@1mA	ACrms	VDC	Vc	IP	1 time	15 times	10/1K μ s	(W)	@1kHz	T	e
	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(J)		(pF)	Max	± 1.0
MVR07D180KD	18(16~20)	11	14	36	2.5	250	150	0.90	0.02	3800	3.5	1.5
MVR07D220KD	22(20~24)	14	18	43	2.5	250	150	1.10	0.02	3600	3.8	1.6
MVR07D270KD	27(24~30)	17	22	53	2.5	250	150	1.40	0.02	3400	4.0	1.7
MVR07D330KD	33(30~36)	20	26	65	2.5	250	150	1.70	0.02	2900	3.5	1.6
MVR07D390KD	39(35~43)	25	31	77	2.5	250	150	2.10	0.02	1600	3.7	1.8
MVR07D470KD	47(42~52)	30	38	93	2.5	250	150	2.50	0.02	1550	3.9	1.9
MVR07D560KD	56(50~62)	35	45	110	2.5	250	150	3.10	0.02	1500	4.2	2.0
MVR07D680KD	68(61~75)	40	56	135	2.5	250	150	3.60	0.02	1200	4.5	2.2
MVR07D820KD	82(74~90)	50	65	135	10	1200	500	5.50	0.25	860	3.5	1.5
MVR07D101KD	100(90~110)	60	85	165	10	1200	500	6.50	0.25	750	3.8	1.5
MVR07D121KD	120(108~132)	75	100	200	10	1200	500	7.80	0.25	530	4.0	1.6
MVR07D151KD	150(135~165)	95	125	250	10	1200	500	9.70	0.25	410	4.3	1.8
MVR07D181KD	180(162~198)	115	150	300	10	1200	500	11.7	0.25	300	3.4	1.5
MVR07D201KD	200(180~220)	130	170	340	10	1200	500	13	0.25	250	3.5	1.5
MVR07D221KD	220(198~242)	140	180	360	10	1200	500	14	0.25	250	3.6	1.6
MVR07D241KD	240(216~264)	150	200	395	10	1200	500	15	0.25	240	3.7	1.7
MVR07D271KD	270(243~297)	175	225	455	10	1200	500	18	0.25	220	3.9	1.8
MVR07D301KD	300(270~330)	195	250	500	10	1200	500	21	0.25	190	4.1	1.9
MVR07D331KD	330(297~363)	215	275	550	10	1200	500	25	0.25	180	4.2	2.0
MVR07D361KD	360(324~396)	230	300	595	10	1200	500	25	0.25	170	4.3	2.1
MVR07D391KD	390(351~429)	250	320	650	10	1200	500	25	0.25	160	4.4	2.3
MVR07D431KD	430(387~473)	275	350	710	10	1200	500	28	0.25	150	4.6	2.4
MVR07D471KD	470(423~517)	300	385	775	10	1200	500	30	0.25	130	4.8	2.5
MVR07D511KD	510(459~561)	320	410	845	10	1200	500	33	0.25	120	5.0	2.6
MVR07D561KD	560(504~616)	350	460	915	10	1200	500	33	0.25	120	5.2	2.8
MVR07D621KD	620(558~682)	395	510	1020	10	1200	500	35	0.25	120	5.5	3.1
MVR07D681KD	680(612~748)	420	560	1120	10	1200	500	35	0.25	110	5.6	3.3
MVR07D751KD	750(675~825)	465	615	1235	10	1200	500	38	0.25	100	5.8	3.6
MVR07D781KD	780(702~858)	485	640	1290	10	1200	500	40	0.25	90	6.0	3.8
MVR07D821KD	820(738~902)	510	670	1355	10	1200	500	42	0.25	90	6.3	4.0

Notes: Leakage Current (@Max.Allowable V_{DC}): I_R ≤ 20 μ A

SURGE CURRENT DERATING CURVES - MVR07D-D SERIES



LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES - MVR07D-D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

MERITEK

ELECTRICAL CHARACTERISTICS – MVR10D-D SERIES

Part Number	Varistor DC Voltage	Max. Allowable Voltage		Max. Clamping Voltage		Surge Withstanding Current		Max. Energy	Rated Power	Typical Cap	Dimension	
		VDC@1mA	ACrms	VDC	Vc	IP	1 time				15 times	10/1K μ s
	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(J)	(pF)	Max	± 1	
MVR10D180KD	18(16~20)	11	14	36	5	500	500	2.1	0.05	16000	3.9	1.5
MVR10D220KD	22(20~24)	14	18	43	5	500	500	2.5	0.05	11000	4.2	1.6
MVR10D270KD	27(24~30)	17	22	53	5	500	500	3.0	0.05	8000	4.4	1.7
MVR10D330KD	33(30~36)	20	26	65	5	500	500	4.0	0.05	6300	3.9	1.6
MVR10D390KD	39(35~43)	25	31	77	5	500	500	4.6	0.05	5200	4.1	1.8
MVR10D470KD	47(42~52)	30	38	93	5	500	500	5.5	0.05	4600	4.3	1.9
MVR10D560KD	56(50~62)	35	45	110	5	500	500	7.0	0.05	3750	4.6	2.0
MVR10D680KD	68(61~75)	40	56	135	5	500	500	8.2	0.05	2800	4.9	2.2
MVR10D820KD	82(74~90)	50	65	135	25	2500	1000	12	0.40	1920	3.9	1.5
MVR10D101KD	100(90~110)	60	85	165	25	2500	1000	15	0.40	1800	4.2	1.5
MVR10D121KD	120(108~132)	75	100	200	25	2500	1000	18	0.40	1500	4.4	1.6
MVR10D151KD	150(135~165)	95	125	250	25	2500	1000	22	0.40	1200	4.7	1.8
MVR10D181KD	180(162~198)	115	150	300	25	2500	1000	27	0.40	620	3.8	1.5
MVR10D201KD	200(180~220)	130	170	340	25	2500	1000	30	0.40	570	3.9	1.5
MVR10D221KD	220(198~242)	140	180	360	25	2500	1000	32	0.40	560	4.0	1.6
MVR10D241KD	240(216~264)	150	200	395	25	2500	1000	35	0.40	550	4.1	1.7
MVR10D271KD	270(243~297)	175	225	455	25	2500	1000	40	0.40	530	4.2	1.8
MVR10D301KD	300(270~330)	195	250	500	25	2500	1000	42	0.40	500	4.3	1.9
MVR10D331KD	330(297~363)	215	275	550	25	2500	1000	47	0.40	450	4.5	2.0
MVR10D361KD	360(324~396)	230	300	595	25	2500	1000	47	0.40	450	4.7	2.1
MVR10D391KD	390(351~429)	250	320	650	25	2500	1000	60	0.40	430	4.8	2.3
MVR10D431KD	430(387~473)	275	350	710	25	2500	1000	65	0.40	400	5.0	2.4
MVR10D471KD	470(423~517)	300	385	775	25	2500	1000	70	0.40	300	5.2	2.5
MVR10D511KD	510(459~561)	320	410	845	25	2500	1000	70	0.40	260	5.3	2.6
MVR10D561KD	560(504~616)	350	460	915	25	2500	1000	70	0.40	200	5.5	2.8
MVR10D621KD	620(558~682)	395	510	1020	25	2500	1000	70	0.40	170	5.7	3.1
MVR10D681KD	680(612~748)	420	560	1120	25	2500	1000	70	0.40	160	5.8	3.3
MVR10D751KD	750(675~825)	465	615	1235	25	2500	1000	75	0.40	150	6.0	3.6
MVR10D781KD	780(702~858)	485	640	1290	25	2500	1000	80	0.40	150	6.3	3.8
MVR10D821KD	820(738~902)	510	670	1355	25	2500	1000	85	0.40	150	6.5	4.0
MVR10D911KD	910(819~1001)	550	745	1500	25	2500	1000	93	0.40	140	6.6	4.3
MVR10D102KD	1000(900~1100)	625	825	1650	25	2500	1000	102	0.40	140	7.0	4.6
MVR10D112KD	1100(990~1210)	680	895	1815	25	2500	1000	115	0.40	130	7.4	5.2
MVR10D182KD	1800(1620~1980)	1000	1465	2950	25	2500	1000	185	0.40	75	11.3	6.0

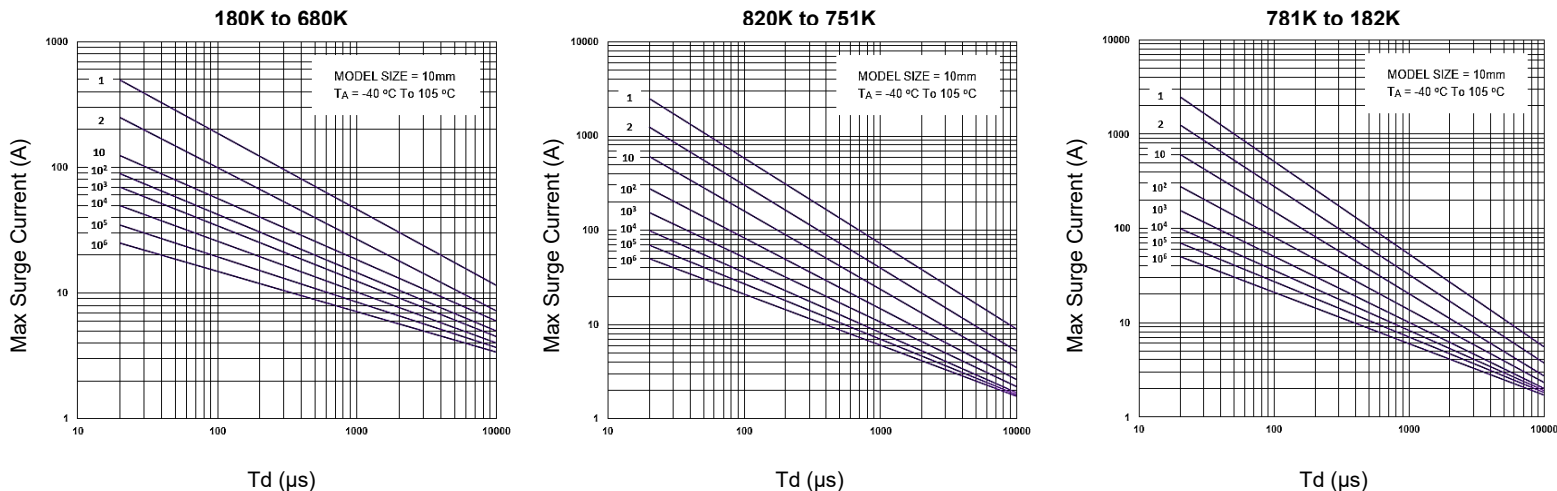
Notes: Leakage Current (@Max.Allowable V_{DC}):I_r≤20 μ A

Metal Oxide Varistor Leaded Disk Type, 5~20mm

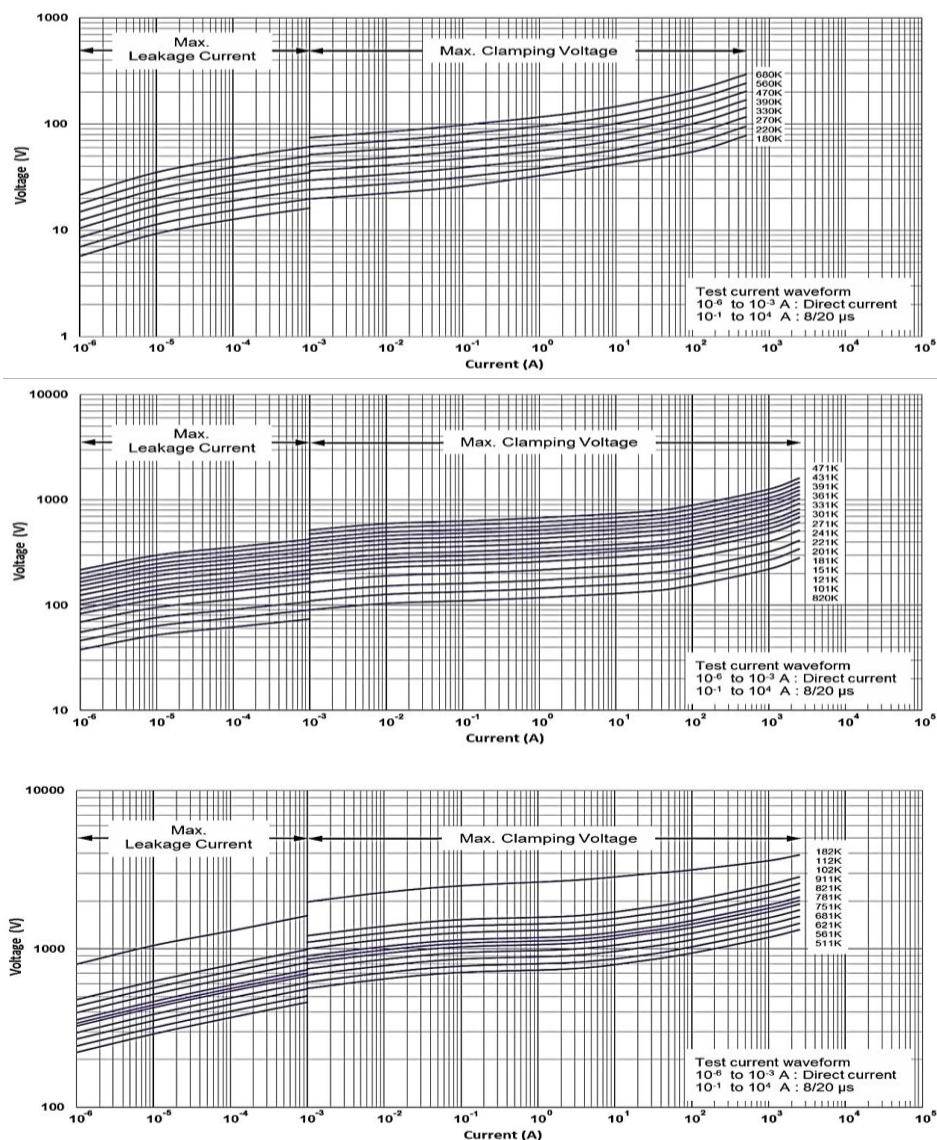
MVR-D Series

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SURGE CURRENT DERATING CURVES – MVR10D-D SERIES



LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES – MVR10D-D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

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ELECTRICAL CHARACTERISTICS – MVR14D-D SERIES

Part Number	Varistor DC Voltage	Max. Allowable Voltage		Max. Clamping Voltage		Surge Withstanding Current		Max. Energy	Rated Power	Typical Cap	Dimension	
		VDC@1mA	ACrms	VDC	Vc	IP	1 time				15 times	10/1K μ s
	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(J)	(pF)	Max	± 1	
MVR14D180KD	18(16~20)	11	14	36	10	1000	1000	4.0	0.1	25000	4.0	1.5
MVR14D220KD	22(20~24)	14	18	43	10	1000	1000	5.0	0.1	20000	4.3	1.6
MVR14D270KD	27(24~30)	17	22	53	10	1000	1000	6.0	0.1	16000	4.5	1.7
MVR14D330KD	33(30~36)	20	26	65	10	1000	1000	7.5	0.1	12200	4.0	1.6
MVR14D390KD	39(35~43)	25	31	77	10	1000	1000	8.6	0.1	7000	4.2	1.8
MVR14D470KD	47(42~52)	30	38	93	10	1000	1000	10	0.1	6750	4.4	1.9
MVR14D560KD	56(50~62)	35	45	110	10	1000	1000	11	0.1	6500	4.7	2.0
MVR14D680KD	68(61~75)	40	56	135	10	1000	1000	14	0.1	5500	5.0	2.2
MVR14D820KD	82(74~90)	50	65	135	50	4500	3000	22	0.6	4300	4.0	1.5
MVR14D101KD	100(90~110)	60	85	165	50	4500	3000	28	0.6	3500	4.3	1.5
MVR14D121KD	120(108~132)	75	100	200	50	4500	3000	32	0.6	2500	4.5	1.6
MVR14D151KD	150(135~165)	95	125	250	50	4500	3000	40	0.6	2100	4.8	1.8
MVR14D181KD	180(162~198)	115	150	300	50	4500	3000	52	0.6	1250	3.9	1.5
MVR14D201KD	200(180~220)	130	170	340	50	4500	3000	57	0.6	1150	4.0	1.5
MVR14D221KD	220(198~242)	140	180	360	50	4500	3000	60	0.6	1100	4.1	1.6
MVR14D241KD	240(216~264)	150	200	395	50	4500	3000	63	0.6	1050	4.2	1.7
MVR14D271KD	270(243~297)	175	225	455	50	4500	3000	70	0.6	1000	4.3	1.8
MVR14D301KD	300(270~330)	195	250	500	50	4500	3000	78	0.6	900	4.4	1.9
MVR14D331KD	330(297~363)	215	275	550	50	4500	3000	93	0.6	850	4.6	2.0
MVR14D361KD	360(324~396)	230	300	595	50	4500	3000	93	0.6	800	4.8	2.1
MVR14D391KD	390(351~429)	250	320	650	50	4500	3000	100	0.6	800	4.9	2.3
MVR14D431KD	430(387~473)	275	350	710	50	4500	3000	115	0.6	650	5.1	2.4
MVR14D471KD	470(423~517)	300	385	775	50	4500	3000	125	0.6	550	5.3	2.5
MVR14D511KD	510(459~561)	320	410	845	50	4500	3000	125	0.6	450	5.4	2.6
MVR14D561KD	560(504~616)	350	460	915	50	4500	3000	125	0.6	400	5.6	2.8
MVR14D621KD	620(558~682)	395	510	1020	50	4500	3000	125	0.6	350	5.8	3.1
MVR14D681KD	680(612~748)	420	560	1120	50	4500	3000	130	0.6	350	5.9	3.3
MVR14D751KD	750(675~825)	465	615	1235	50	4500	3000	143	0.6	330	6.1	3.6
MVR14D781KD	780(702~858)	485	640	1290	50	4500	3000	148	0.6	330	6.4	3.8
MVR14D821KD	820(738~902)	510	670	1355	50	4500	3000	157	0.6	330	6.6	4.0
MVR14D911KD	910(819~1001)	550	745	1500	50	4500	3000	175	0.6	300	6.7	4.3
MVR14D102KD	1000(900~1100)	625	825	1650	50	4500	3000	190	0.6	300	7.1	4.6
MVR14D112KD	1100(990~1210)	680	895	1815	50	4500	3000	213	0.6	200	7.5	5.2
MVR14D182KD	1800(1620~1980)	1000	1465	2950	50	4500	2000	354	0.6	150	11.5	6.0

Notes: Leakage Current (@Max.Allowable V_{DC}): I_r ≤ 20 μ A

Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

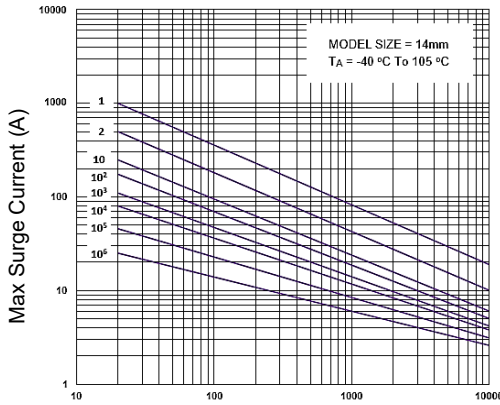
MERITEK

SURGE CURRENT DERATING CURVES – MVR14D-D SERIES

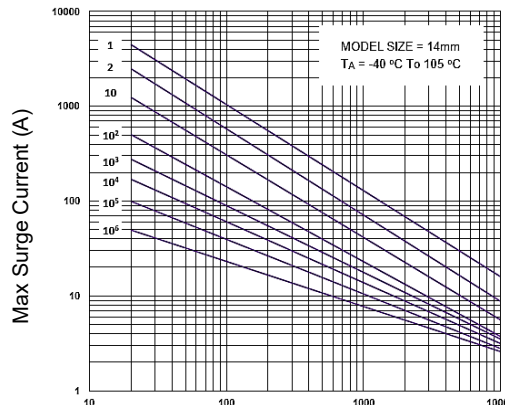
180K to 680K

820K to 751K

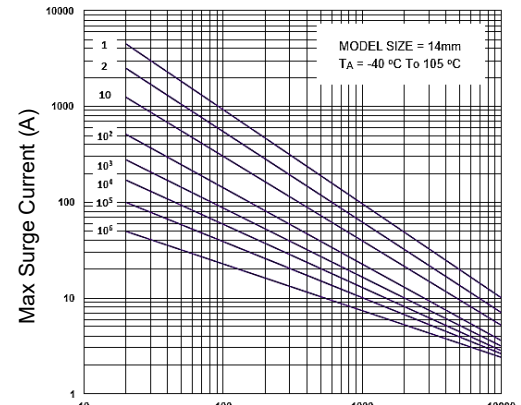
781K to 182K



Td (μs)

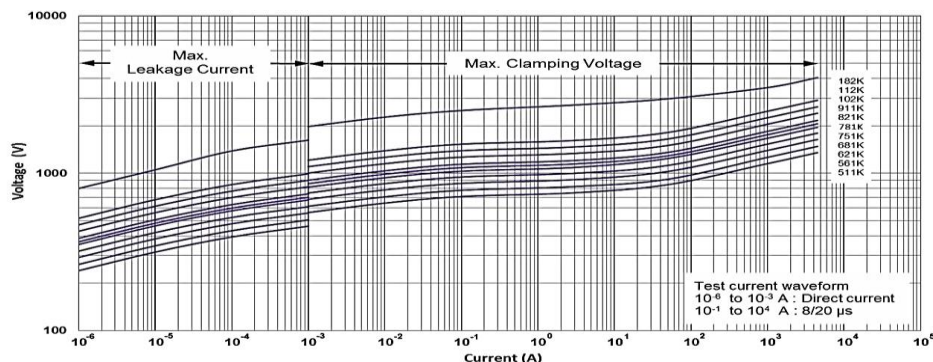
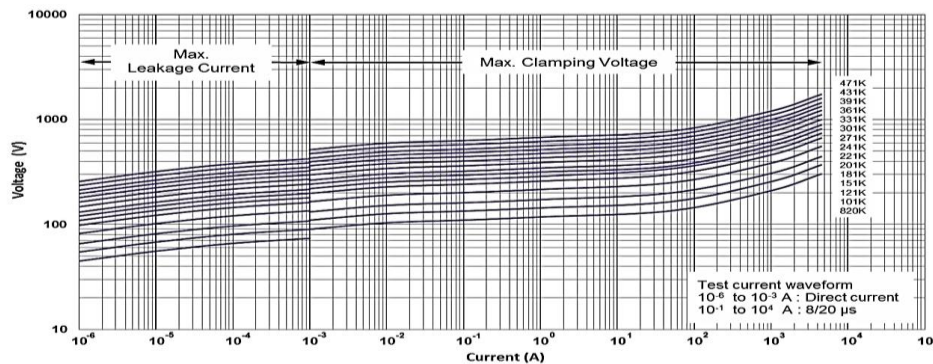
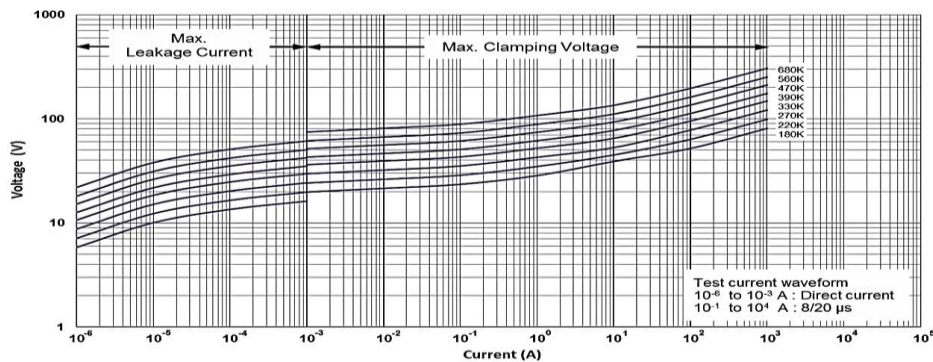


Td (μs)



Td (μs)

LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES – MVR14D-D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

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ELECTRICAL CHARACTERISTICS – MVR18D-D SERIES

Part Number	Varistor DC Voltage	Max. Allowable Voltage		Max. Clamping Voltage		Surge Withstanding Current		Max. Energy	Rated Power	Typical Cap	Dimension	
	VDC@1mA	ACrms	VDC	Vc	IP	1 time	15 times	10/1K μ s	(W)	@1kHz	T	e
	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(J)		(pF)	Max	± 1
MVR18D180KD	18(16~20)	11	14	36	15	2000	2000	8.30	0.15	36400	4.2	1.5
MVR18D220KD	22(20~24)	14	18	43	15	2000	2000	10.4	0.15	27300	4.5	1.6
MVR18D270KD	27(24~30)	17	22	53	15	2000	2000	12.5	0.15	22290	4.7	1.7
MVR18D330KD	33(30~36)	20	26	65	15	2000	2000	15.6	0.15	18200	4.2	1.6
MVR18D390KD	39(35~43)	25	31	77	15	2000	2000	17.9	0.15	12250	4.4	1.8
MVR18D470KD	47(42~52)	30	38	93	15	2000	2000	20.8	0.15	12280	4.6	1.9
MVR18D560KD	56(50~62)	35	45	110	15	2000	2000	22.8	0.15	11100	4.9	2.0
MVR18D680KD	68(61~75)	40	56	135	15	2000	2000	29.1	0.15	10460	5.2	2.2
MVR18D820KD	82(74~90)	50	65	135	75	5500	5000	30.6	0.80	7460	4.2	1.5
MVR18D101KD	100(90~110)	60	85	165	75	5500	5000	38.9	0.80	7280	4.5	1.5
MVR18D121KD	120(108~132)	75	100	200	75	5500	5000	44.4	0.80	5000	4.7	1.6
MVR18D151KD	150(135~165)	95	125	250	75	5500	5000	55.6	0.80	3820	5.0	1.8
MVR18D181KD	180(162~198)	115	150	300	75	5500	5000	69.4	0.80	2270	4.1	1.5
MVR18D201KD	200(180~220)	130	170	340	75	6500	5000	79.2	0.80	2100	4.2	1.5
MVR18D221KD	220(198~242)	140	180	360	75	6500	5000	83.3	0.80	2000	4.3	1.6
MVR18D241KD	240(216~264)	150	200	395	75	6500	5000	87.5	0.80	2000	4.4	1.7
MVR18D271KD	270(243~297)	175	225	455	75	6500	5000	97.2	0.80	1910	4.5	1.8
MVR18D301KD	300(270~330)	195	250	500	75	6500	5000	101	0.80	1630	4.6	1.9
MVR18D331KD	330(297~363)	215	275	550	75	6500	5000	129	0.80	1590	4.8	2.0
MVR18D361KD	360(324~396)	230	300	595	75	6500	5000	129	0.80	1540	5.0	2.1
MVR18D391KD	390(351~429)	250	320	650	75	6500	5000	139	0.80	1270	5.1	2.3
MVR18D431KD	430(387~473)	275	350	710	75	6500	5000	160	0.80	1220	5.3	2.4
MVR18D471KD	470(423~517)	300	385	775	75	6500	5000	174	0.80	1090	5.5	2.5
MVR18D511KD	510(459~561)	320	410	845	75	6500	5000	175	0.80	950	5.6	2.6
MVR18D561KD	560(504~616)	350	460	915	75	6500	5000	178	0.80	770	5.8	2.8
MVR18D621KD	620(558~682)	395	510	1020	75	6500	5000	181	0.80	510	6.0	3.1
MVR18D681KD	680(612~748)	420	560	1120	75	6500	5000	182	0.80	500	6.1	3.3
MVR18D751KD	750(675~825)	465	615	1235	75	6500	5000	200	0.80	480	6.3	3.6
MVR18D781KD	780(702~858)	485	640	1290	75	6500	5000	207	0.80	450	6.6	3.8
MVR18D821KD	820(738~902)	510	670	1355	75	6500	5000	220	0.80	450	6.8	4.0
MVR18D911KD	910(819~1001)	550	745	1500	75	6500	5000	245	0.80	430	6.9	4.3
MVR18D102KD	1000(900~1100)	625	825	1650	75	6500	5000	266	0.80	410	7.3	4.6
MVR18D112KD	1100(990~1210)	680	895	1815	75	6500	5000	298	0.80	360	7.7	5.2

Notes: Leakage Current (@Max.Allowable V_{DC}):I_r≤20 μ A

Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

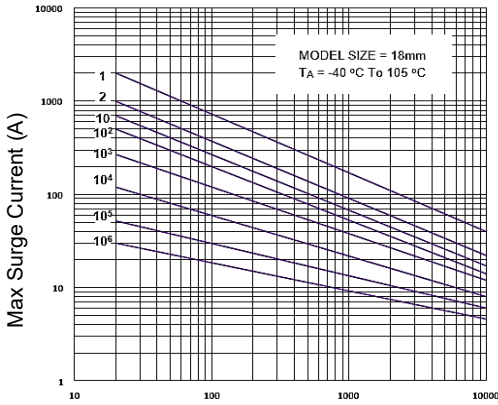
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SURGE CURRENT DERATING CURVES – MVR18D-D SERIES

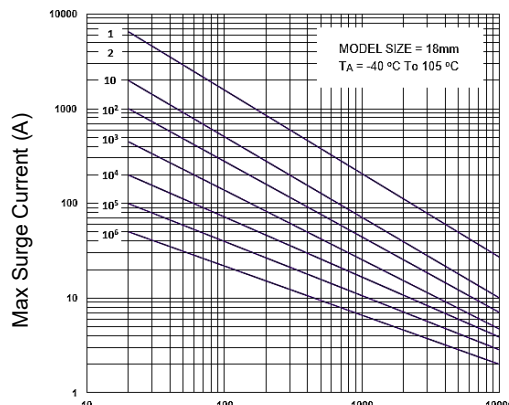
180K to 680K

820K to 751K

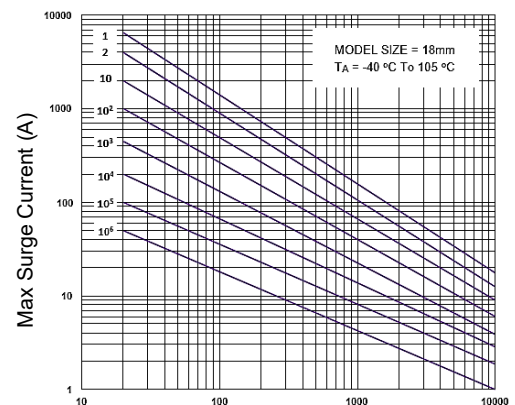
781K to 112K



Td (μs)

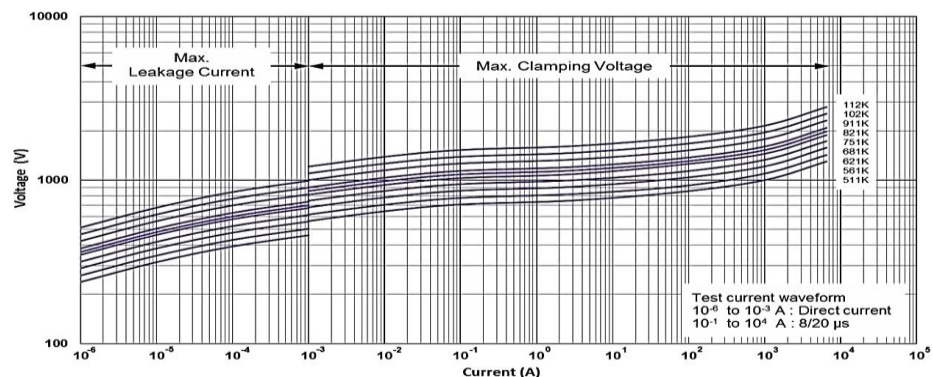
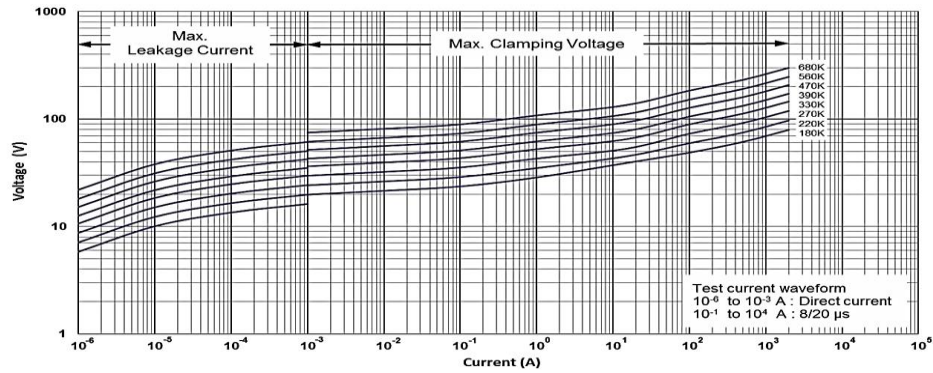
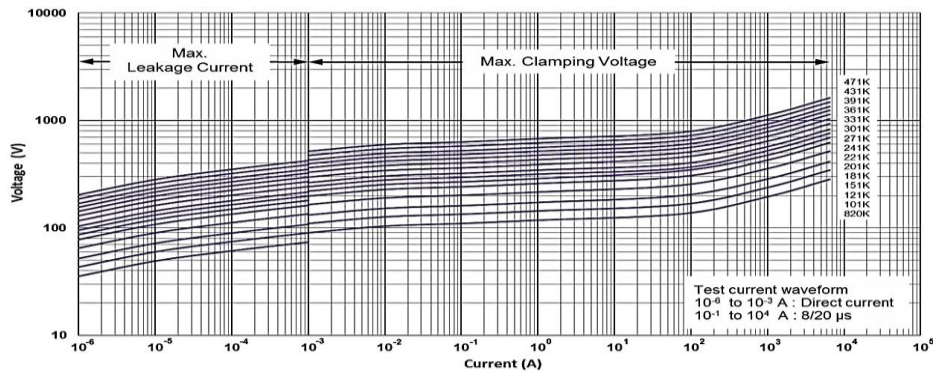


Td (μs)



Td (μs)

LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES – MVR18D-D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

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ELECTRICAL CHARACTERISTICS – MVR20D-D SERIES

Part Number	Varistor DC Voltage	Max. Allowable Voltage		Max. Clamping Voltage		Surge Withstanding Current		Max. Energy	Rated Power	Typical Cap	Dimension	
	VDC@1mA	ACrms	VDC	Vc	IP	1 time	15 times	10/1K μ s	(W)	@1kHz	T	e
	(V)	(V)	(V)	(V)	(A)	(A)	(A)	(J)		(pF)	Max	± 1
MVR20D180KD	18(16~20)	11	14	36	20	2000	2000	11	0.2	40000	4.3	1.5
MVR20D220KD	22(20~24)	14	18	43	20	2000	2000	14	0.2	30000	4.6	1.6
MVR20D270KD	27(24~30)	17	22	53	20	2000	2000	18	0.2	24500	4.8	1.7
MVR20D330KD	33(30~36)	20	26	65	20	2000	2000	23	0.2	20000	4.3	1.6
MVR20D390KD	39(35~43)	25	31	77	20	2000	2000	26	0.2	13800	4.5	1.8
MVR20D470KD	47(42~52)	30	38	93	20	2000	2000	33	0.2	13500	4.7	1.9
MVR20D560KD	56(50~62)	35	45	110	20	2000	2000	41	0.2	12200	5.0	2.0
MVR20D680KD	68(61~75)	40	56	135	20	2000	2000	46	0.2	11500	5.3	2.2
MVR20D820KD	82(74~90)	50	65	135	100	6500	5000	48	1	8200	4.3	1.5
MVR20D101KD	100(90~110)	60	85	165	100	6500	5000	51	1	8000	4.6	1.5
MVR20D121KD	120(108~132)	75	100	200	100	6500	5000	55	1	5500	4.8	1.6
MVR20D151KD	150(135~165)	95	125	250	100	6500	5000	70	1	4200	5.1	1.8
MVR20D181KD	180(162~198)	115	150	300	100	6500	5000	85	1	2500	4.2	1.5
MVR20D201KD	200(180~220)	130	170	340	100	6500	5000	95	1	2300	4.3	1.5
MVR20D221KD	220(198~242)	140	180	360	100	6500	5000	100	1	2200	4.4	1.6
MVR20D241KD	240(216~264)	150	200	395	100	6500	5000	108	1	2200	4.5	1.7
MVR20D271KD	270(243~297)	175	225	455	100	6500	5000	127	1	2100	4.6	1.8
MVR20D301KD	300(270~330)	195	250	500	100	6500	5000	150	1	1800	4.7	1.9
MVR20D331KD	330(297~363)	215	275	550	100	6500	5000	163	1	1750	4.9	2.0
MVR20D361KD	360(324~396)	230	300	595	100	6500	5000	163	1	1700	5.1	2.1
MVR20D391KD	390(351~429)	250	320	650	100	6500	5000	180	1	1400	5.2	2.3
MVR20D431KD	430(387~473)	275	350	710	100	6500	5000	190	1	1350	5.4	2.4
MVR20D471KD	470(423~517)	300	385	775	100	6500	5000	220	1	1200	5.6	2.5
MVR20D511KD	510(459~561)	320	410	845	100	6500	5000	220	1	1050	5.7	2.6
MVR20D561KD	560(504~616)	350	460	915	100	6500	5000	220	1	850	5.9	2.8
MVR20D621KD	620(558~682)	395	510	1020	100	6500	5000	220	1	570	6.1	3.1
MVR20D681KD	680(612~748)	420	560	1120	100	6500	5000	230	1	550	6.2	3.3
MVR20D751KD	750(675~825)	465	615	1235	100	6500	5000	255	1	530	6.4	3.6
MVR20D781KD	780(702~858)	485	640	1290	100	6500	5000	265	1	500	6.7	3.8
MVR20D821KD	820(738~902)	510	670	1355	100	6500	5000	282	1	500	6.9	4.0
MVR20D911KD	910(819~1001)	550	745	1500	100	6500	5000	310	1	480	7.0	4.3
MVR20D102KD	1000(900~1100)	625	825	1650	100	6500	5000	342	1	460	7.4	4.6
MVR20D112KD	1100(990~1210)	680	895	1815	100	6500	5000	383	1	400	7.9	5.2
MVR20D182KD	1800(1620~1980)	1000	1465	2950	100	6500	5000	620	1	300	11.9	6.0

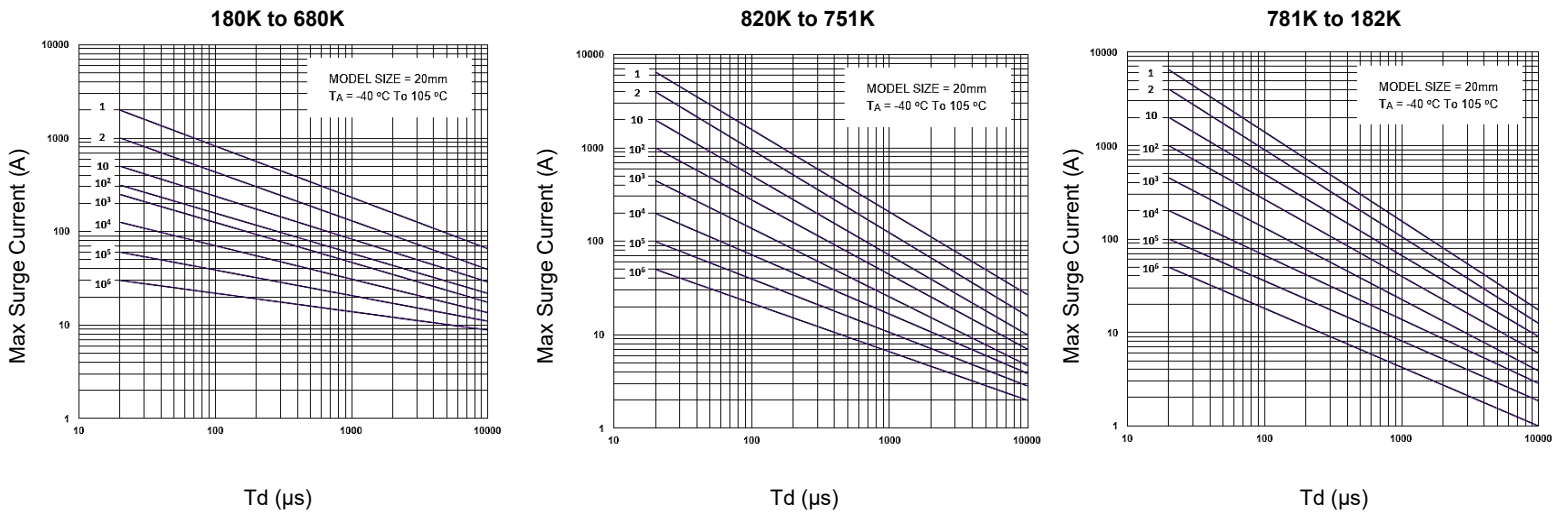
Notes: Leakage Current (@Max.Allowable V_{DC}): I_{RS} ≤ 20 μ A

Metal Oxide Varistor Leaded Disk Type, 5~20mm

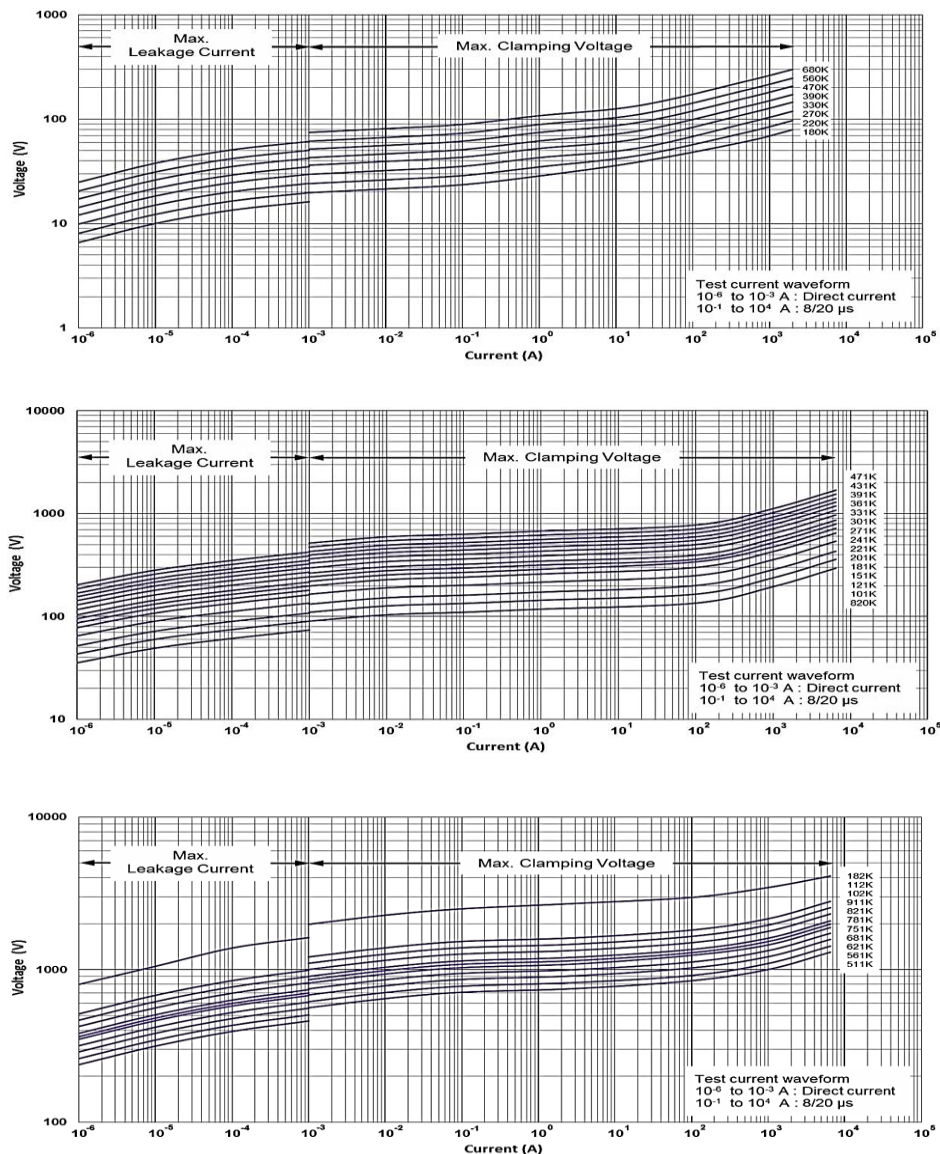
MVR-D Series

MERITEK

SURGE CURRENT DERATING CURVES – MVR20D-D SERIES



LEAKAGE CURRENT & CLAMPING VOLTAGE CURVES – MVR20D-D SERIES



Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

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RELIABILITY TEST CONDITIONS AND REQUIREMENTS

Item	Standard	Test Conditions / Method	Specifications															
Strength of Terminals Tensile	IEC 60068-2-21	Gradually apply the specified force and keep the unit fixed for 10±1s.	ΔV _{1mA} /V _{1mA} ≤5% No visible damage															
		<table border="1"> <tr> <td>Diameter (mm)</td> <td>d≤0.8</td> <td>0.8<d≤1</td> </tr> <tr> <td>Force (Kg)</td> <td>1</td> <td>2</td> </tr> </table>		Diameter (mm)	d≤0.8	0.8<d≤1	Force (Kg)	1	2									
Diameter (mm)	d≤0.8	0.8<d≤1																
Force (Kg)	1	2																
Strength of Terminals Bending	IEC 60068-2-21	Hold specimen and apply the force specified below to each lead. End the specimen to 90°, and then return to the original position. Repeat the procedure in the opposite direction.	ΔV _{1mA} /V _{1mA} ≤5% No visible damage															
		<table border="1"> <tr> <td>Diameter (mm)</td> <td>d≤0.8</td> <td>0.8<d≤1</td> </tr> <tr> <td>Force (Kg)</td> <td>0.5</td> <td>1</td> </tr> </table>		Diameter (mm)	d≤0.8	0.8<d≤1	Force (Kg)	0.5	1									
Diameter (mm)	d≤0.8	0.8<d≤1																
Force (Kg)	0.5	1																
Vibration	IEC 60068-2-6	Frequency range: 10 ~ 55 Hz, Amplitude: 0.75mm or 98 m/s ² Direction: 3 mutually perpendicular directions, 2 hrs. each.	ΔV _{1mA} /V _{1mA} ≤5% No visible damage															
Solderability	IEC 60068-2-20	Temperature: 235±5°C, Duration: 2±0.5 sec	At least 95% of Coverage															
Resistance to Soldering Heat	IEC 60068-2-20	Temperature: 260±5°C, Duration: 10±1 sec																
High Temperature Storage	IEC 60068-2-2	Temperature: 125±2°C, Duration: 1000 hrs.	ΔV _{1mA} /V _{1mA} ≤5% No visible damage															
Low Temperature Storage	IEC 60068-2-1	Temperature: -40±2°C, Duration: 1000 hrs.																
Damp Heat, Steady State	IEC 60068-2-78	Temperature: 40±2°C, 90~95%RH, Duration: 1000 hrs at max. allowable voltage	ΔV _{1mA} /V _{1mA} ≤10% No visible damage															
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles.	ΔV _{1mA} /V _{1mA} ≤5% No visible damage															
		<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5±3</td> </tr> <tr> <td>3</td> <td>125±3</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5±3</td> </tr> </tbody> </table>		Step	Temperature (°C)	Period (minutes)	1	-40±3	30±3	2	Room temperature	5±3	3	125±3	30±3	4	Room temperature	5±3
		Step		Temperature (°C)	Period (minutes)													
		1		-40±3	30±3													
		2		Room temperature	5±3													
3	125±3	30±3																
4	Room temperature	5±3																
High Temperature Load Life	MIL-STD-202 Method 108	Temperature: 105±2°C Duration: 1000 hrs. at Max allowable AC Voltage	ΔV _{1mA} /V _{1mA} ≤10% No visible damage															
Surge Life, 8/20μs	IEC 61051-1	8/20μs waveform, 10 surge currents, unipolar, interval 30secs, amplitude corresponding to max. surge current derating curves for 20μs	ΔV _{1mA} /V _{1mA} ≤10% No visible damage															
Surge Life, 10/1000μs	IEC 61051-1	10/1000μs waveform, 10 surge currents, unipolar, interval 2mins, amplitude corresponding to max. surge current derating curves for 1000μs	ΔV _{1mA} /V _{1mA} ≤10% No visible damage															
Voltage Proof	IEC 61051-1	Metal balls method, 2500 VAC 1 min	No visible damage															
Varistor Voltage Temperature Coefficient	Specification Standard	$\frac{V_{1mA} \text{ at } 85^{\circ}C - V_{1mA} \text{ at } 25^{\circ}C}{V_{1mA} \text{ at } 25^{\circ}C} \times \frac{1}{80} \times 100 (\%/^{\circ}C)$ $\frac{V_{1mA} \text{ at } -40^{\circ}C - V_{1mA} \text{ at } 25^{\circ}C}{V_{1mA} \text{ at } 25^{\circ}C} \times \frac{1}{65} \times 100 (\%/^{\circ}C)$	-05 ≤ TC ≤ 05 (%/°C)															

Metal Oxide Varistor Leaded Disk Type, 5~20mm

MVR-D Series

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SOLDERING RECOMMENDATION

Wave Soldering Process	Condition
Peak Temperature	260°C (max.)
Dipping Time	10 sec. (max.)
Soldering	1 time

Soldering Iron Process	Condition
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec. (max.)
Distance from Varistor	2 mm (min.)

