

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS



FEATURES

- Fast response time.
- Low leakage current.
- Excellent voltage & energy ratio.
- Low standby power and no follow on current.
- High performance in surge current handing capability.
- High performance in clamping voltage characteristics.
- RoHS Compliant.

ORDERING CODE

VDR 10 D 471 K B L
(1) (2) (3) (4) (5) (6) (7) (8)

(1) Metal Oxide Varistors

(2) Element Size

- 05: Ø5mm
- 07: Ø7mm
- 10: Ø10mm
- 14: Ø14mm
- 20: Ø20mm

(3) Type: D: Disk

(4) Varistor Voltage

(5) Tolerance

(6) Packaging

(7) Lead Form

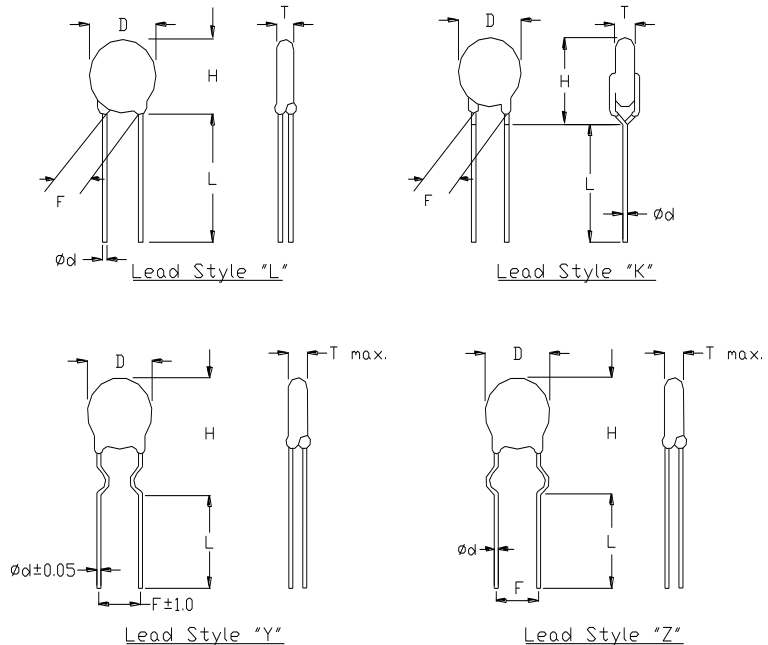
(8) Surge/Energy

J: High Surge/Energy

Blank: Standard Surge/Energy

※Please refer to complete Ordering Code document (VDR-Ord) for more ordering options.

Lead Style



Dimensions

Dia Code	Ø 5mm	Ø 7mm	Ø 10mm	Ø 14mm	Ø 20mm	Ø 25mm	Ø 32mm
D max.	7.0	9.0	12.5	17.0	22.0	27.0	34.0
d(±0.05)	0.6	0.6	0.8	0.8	1.0	1.0	1.2
F(±0.8)	5.0	5.0	7.5	7.5	10.0	10.0	10.0
L min.	20.0	15.0	20.0	20.0	20.0	20.0	25.0
H max. (L) Style	9.0	12.0	17.0	18.0	25.0	31.0	39.0
H max. (K, Y, Z) Style	12.0	15.0	20.0	21.0	28.0	34.0	41.0

Option

- 'L' type lead wire is the standard product; please contact us for other lead type requirements.

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T Thickness (max.)

Part code	D05	D07	D10	D14	D20	D25	D32
182K				12.5	12.5	12.5	12.5
152K				11.0	11.0	11.0	11.0
112K				7.8	8.5	8.5	8.5
102K				7.6	7.8	7.8	7.8
911K				7.2	7.6	7.6	7.6
821K				6.9	6.8	7.2	7.2
781K				-	-	6.8	6.8
751K	6.5	6.5	6.5	6.5	6.5	6.5	6.5
681K	6.4	6.4	6.4	6.4	6.4	6.4	6.4
821K	6.4	6.4	6.8	7.2	6.4	6.4	6.4
561K	6.2	6.2	6.5	6.2	6.2	6.2	6.2
511K	5.8	5.8	6.5	5.8	5.8	5.8	5.8
471K	5.6	5.6	5.6	6.5	5.6	5.6	5.6
431K	5.3	5.3	5.3	6.2	5.3	5.3	5.3
391K	5.1	5.1	5.1	5.8	5.1	5.1	5.1
361K	5.0	5.0	5.0	5.7	5.0	5.0	5.0
331K	4.8	4.8	4.8	5.6	4.8	4.8	4.8
301K	4.7	4.7	4.7	6.3	4.8	4.7	4.7
271K	4.5	4.5	4.5	5.2	4.5	4.5	4.5
241K	4.3	4.3	4.3	5.0	4.3	4.3	4.3
221K	4.2	4.2	4.2	4.9	4.1	4.2	4.2
201K	4.1	4.1	4.1	4.8	4.1	4.1	4.1
181K	4.1	4.1	4.1	4.8	4.1	-	-
151K	4.8	4.8	4.8	5.2	4.5	-	-
121K	4.5	4.5	4.5	4.7	4.5	-	-
101K	4.3	4.3	4.3	4.9	4.3	-	-
820K	4.1	4.1	4.1	4.5	4.1	-	-
680K	4.5	4.5	4.1	5.3	4.1	-	-
560K	4.5	4.5	4.1	5.1	4.1	-	-
470K	4.1	4.5	4.5	5.0	4.5	-	-
390K	4.1	4.5	4.5	4.9	4.5	-	-
330K	3.9	4.5	4.2	5.0	4.2 4.0 4.0 4.0	-	-
270K	3.9	4.5	4.0	4.8		-	-
220K	3.8	4.5	4.0	4.7		-	-
180L	3.8	4.5	4.0	4.6		-	-

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 05D Standard & High Surge

Spec. Part No.	Varistor Voltage V 0.1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V5A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR05D751K	750	(675-825)	460	615	1240	Standard 400 High Surge 800	Standard 200 High Surge 600	0.1	22.4 / 32.0	30
VDR05D681K	680	(612-748)	420	560	1120				21.0 / 29.0	35
VDR05D621K	620	(558-682)	385	505	1025				21.0 / 25.0	40
VDR05D561K	560	(504-616)	350	460	920				19.6 / 23.0	45
VDR05D511K	510	(459-561)	320	415	845				19.6 / 21.0	50
VDR05D471K	470	(423-517)	300	385	775				18.2 / 20.8	55
VDR05D431K	430	(387-473)	275	350	710				16.8 / 20.0	60
VDR05D391K	390	(351-429)	250	320	650				15.4 / 17.0	65
VDR05D361K	360	(324-396)	230	300	595				14.0 / 16.0	70
VDR05D331K	330	(297-363)	210	275	550				14.0 / 14.5	75
VDR05D301K	300	(270-330)	190	250	500				11.8 / 14.0	85
VDR05D271K	270	(243-297)	175	225	455				10.5 / 13.0	95
VDR05D241K	240	(216-264)	150	200	395				9.8 / 11.0	100
VDR05D221K	220	(198-242)	140	180	360				8.8 / 9.0	110
VDR05D201K	200	(180-220)	130	170	330				7.7 / 8.7	125
VDR05D181K	180	(162-198)	115	150	300				5.6 / 8.0	140
VDR05D151K	150	(135-165)	95	125	250				4.2 / 7.0	165
VDR05D121K	120	(108-132)	75	100	200				4.2 / 5.0	210
VDR05D101K	100	(90-110)	60	85	165				2.8 / 4.0	250
VDR05D820K	82	(74-90)	50	65	135	2.6 / 3.8	300			
Spec. Part No.	Varistor Voltage V 0.1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V1A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR05D680K	68	(61-75)	40	56	135	Standard 100 High Surge 250	Standard 50 High Surge 125	0.01	1.8 / 2/2	370
VDR05D560K	56	(50-62)	35	45	110				1.5 / 1.8	450
VDR05D470K	47	(42-52)	30	38	93				1.4 / 1.5	530
VDR05D390K	39	(35-43)	25	31	77				1.1 / 1.2	640
VDR05D330K	33	(30-36)	20	26	65				0.8 / 1.1	760
VDR05D270K	27	(24-30)	17	22	53				0.7 / 0.9	930
VDR05D220K	22	(24-30)	14	18	43				0.6 / 0.7	1150
VDR05D180L	18	(20-24)	11	14	38				0.4 / 0.6	1400

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 07D Standard & High Surge

Spec. Part No.	Varistor Voltage V 0.1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V10A (V)	1 Time (A)	2Times (A)	(W)	(J)	(pF)
VDR07D821K	820	(738-902)	510	670	1355	Standard 1200 High Surge 1750	Standard 600 High Surge 1250	0.25	72.0 / 87.0	60
VDR07D751K	750	(675-825)	460	615	1240				67.2 / 80.0	65
VDR07D681K	680	(612-748)	420	560	1120				62.5 / 75.0	75
VDR07D621K	620	(558-682)	385	505	1025				61.6 / 68.0	80
VDR07D561K	560	(504-616)	350	460	920				58.0 / 61.0	90
VDR07D511K	510	(459-561)	320	415	845				57.0 / 58.0	100
VDR07D471K	470	(423-517)	300	385	775				56.0 / 57.0	105
VDR07D431K	430	(387-473)	275	350	710				50.4 / 51.0	115
VDR07D391K	390	(351-429)	250	320	650				46.2 / 47.0	130
VDR07D361K	360	(324-396)	230	300	595				42.0 / 43.0	140
VDR07D331K	330	(297-363)	210	275	550				37.8 / 38.0	150
VDR07D301K	300	(270-330)	190	250	500				35.0 / 36.0	165
VDR07D271K	270	(243-297)	175	225	455				32.2 / 33.0	185
VDR07D241K	240	(216-264)	150	200	395				28.0 / 30.0	210
VDR07D221K	220	(198-242)	140	180	360				28.0 / 30.0	230
VDR07D201K	200	(180-220)	130	170	330				25.2 / 27.0	250
VDR07D181K	180	(162-198)	115	150	300				18.2 / 22.0	280
VDR07D151K	150	(135-165)	95	125	250				16.8 / 17.0	330
VDR07D121K	120	(108-132)	75	100	200				14.0 / 14.2	420
VDR07D101K	100	(90-110)	60	85	165				11.6 / 12.0	500
VDR07D820K	82	(74-90)	50	65	135	9.8 / 10.0	600			
Spec. Part No.	Varistor Voltage V 0.1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V10A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR07D680K	68	(61-75)	40	56	135	Standard 250 High Surge 500	Standard 125 High Surge 250	0.02	7.2 / 7.5	370
VDR07D560K	56	(50-62)	35	45	110				6.2 / 6.5	450
VDR07D470K	47	(42-52)	30	38	93				5.0 / 5.2	530
VDR07D390K	39	(35-43)	25	31	77				4.2 / 4.6	640
VDR07D330K	33	(30-36)	20	26	65				3.5 / 4.0	760
VDR07D270K	27	(24-30)	17	22	53				2.8 / 3.0	930
VDR07D220K	22	(20-24)	14	18	43				2.4 / 2.8	1150
VDR07D180L	18	(15-21)	10	14	38				2.1 / 2.4	1400

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 10D Standard & High Surge

Spec. Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V25A (V)	1 Time (A)	2Times (A)	(W)	(J)	(pF)
VDR10D112K	1100	(990-1210)	680	895	1815	Standard 2500	Standard 1250	0.4	133 / 155	90
VDR10D102K	1000	(900-1100)	625	825	1650				131 / 140	100
VDR10D911K	910	(819-1001)	550	745	1500				128 / 134	110
VDR10D821K	820	(738-902)	510	670	1355				122 / 125	120
VDR10D781K	780	(702-858)	485	640	1290				118 / 120	130
VDR10D751K	750	(675-825)	460	615	1240				110 / 118	130
VDR10D681K	680	(612-748)	420	560	1120				104 / 108	150
VDR10D621K	620	(558-682)	385	505	1025				102 / 106	160
VDR10D561K	560	(504-616)	350	460	920				100 / 104	180
VDR10D511K	510	(459-561)	320	415	845				98 / 102	200
VDR10D471K	470	(423-517)	300	385	775				96 / 100	210
VDR10D431K	430	(387-473)	275	350	710				88.2 / 89.0	230
VDR10D391K	390	(351-429)	250	320	650				81.2 / 82.0	260
VDR10D361K	360	(324-396)	230	300	595				74.2 / 75.0	280
VDR10D331K	330	(297-363)	210	275	550				68.6 / 69.0	300
VDR10D301K	300	(270-330)	190	250	500				63.0 / 63.5	330
VDR10D271K	270	(243-297)	175	225	455				57.4 / 58.0	370
VDR10D241K	240	(216-264)	150	200	395				50.4 / 51.0	420
VDR10D221K	220	(198-242)	140	180	360				46.2 / 46.5	450
VDR10D201K	200	(180-220)	130	170	340				42.0 / 42.5	500
VDR10D181K	180	(162-198)	115	150	300	30.8 / 38.0	560			
VDR10D151K	150	(135-165)	95	125	250	25.2 / 26.0	670			
VDR10D121K	120	(108-132)	75	100	200	21.0 / 21.5	830			
VDR10D101K	100	(90-110)	60	85	165	18.2 / 18.5	1000			
VDR10D820K	82	(74-90)	50	65	135	16.8 / 17.0	1200			

Spec. Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V5A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR10D680K	68	(61-75)	40	56	135	Standard 500	Standard2 250	0.05	15.4 / 16	1500
VDR10D560K	56	(50-62)	35	45	110				12.9 / 13	1800
VDR10D470K	47	(42-52)	30	38	93				10.8 / 11	2100
VDR10D390K	39	(35-43)	25	31	77				9.1 / 9.5	2600
VDR10D330K	33	(30-36)	20	26	65				7.4 / 8.0	3000
VDR10D270K	27	(24-30)	17	22	53				6.0 / 6.5	3700
VDR10D220K	22	(20-24)	14	18	43				4.5 / 5.0	4500
VDR10D180L	18	(15-21)	10	14	38				2.8 / 3.0	5600

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 14D Standard & High Surge

Spec Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V50A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR14D182K	1800	(1620-1980)	1000	1465	2970	Standard 4500 High Surge 6000	Standard 2500 High Surge 5000	0.6	336 / 510	110
VDR14D152K	1500	(1350-1650)	900	1200	2475				266 / 420	130
VDR14D112K	1100	(990-1210)	680	895	1815				217 / 310	180
VDR14D102K	1000	(900-1100)	625	825	1650				212 / 280	200
VDR14D911K	910	(819-1001)	550	745	1500				208 / 255	220
VDR14D821K	820	(738-902)	510	670	1355				203 / 235	240
VDR14D781K	780	(702-858)	485	640	1290				190 / 211	260
VDR14D751K	750	(675-825)	460	615	1240				180 / 210	270
VDR14D681K	680	(612-748)	420	560	1120				160 / 190	290
VDR14D621K	620	(558-682)	385	505	1025				155 / 188	320
VDR14D561K	560	(504-616)	350	460	920				150 / 186	360
VDR14D511K	510	(459-561)	320	415	845				148 / 180	390
VDR14D471K	470	(423-517)	300	385	775				147 / 175	430
VDR14D431K	430	(387-473)	275	350	710				145 / 155	460
VDR14D391K	390	(351-429)	250	320	650				135 / 140	510
VDR14D361K	360	(324-396)	230	300	595				123 / 130	560
VDR14D331K	330	(297-363)	210	275	550				112 / 115	610
VDR14D301K	300	(270-330)	190	250	500				103 / 105	670
VDR14D271K	270	(243-297)	175	225	455				84.0 / 94.0	740
VDR14D241K	240	(216-264)	150	200	395				82.6 / 86.0	830
VDR14D221K	220	(198-242)	140	180	360	79.8 / 80.16	900			
VDR14D201K	200	(180-220)	130	170	330	75.2 / 78.6	1000			
VDR14D181K	180	(162-198)	115	150	300	58.8 / 74.0	1100			
VDR14D151K	150	(135-165)	95	125	250	51.8 / 53.0	1300			
VDR14D121K	120	(108-132)	75	100	200	40.6 / 42.0	1700			
VDR14D101K	100	(90-110)	60	85	165	33.6 / 35.0	2000			
VDR14D820K	82	(74-90)	50	65	135	29.4 / 30.0	2400			

Spec Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V10A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR14D680K	68	(61-75)	40	56	135	Standard 1000 High Surge 2000	Standard 500 High Surge 1000	0.1	23.8 / 24.0	2900
VDR14D560K	56	(50-62)	35	45	110				19.6 / 20	3600
VDR14D470K	47	(42-52)	30	38	93				16.8 / 17.0	4300
VDR14D390K	39	(35-43)	25	31	77				13.2 / 13.0	5100
VDR14D330K	33	(30-36)	20	26	65				12.3 / 12.5	6100
VDR14D270K	27	(24-30)	17	22	53				9.7 / 10.0	7400
VDR14D220K	22	(20-24)	14	18	43				7.6 / 8.0	9100
VDR14D180L	18	(15-21)	10	14	38				6.6 / 7.0	11100

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 20D Standard & High Surge

Spec. Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V100A (V)	1Times (A)	2Times (A)	(W)	(J)	(pF)
VDR20D182K	1800	(1620-1980)	1000	1465	2970	Standard 6500 High Surge 10000	Standard 4000 High Surge 7000	1.0	560 / 860	220
VDR20D152K	1500	(1350-1650)	900	1200	2475				420 / 780	260
VDR20D112K	1100	(990-1210)	680	895	1815				280 / 620	360
VDR20D102K	1000	(900-1100)	625	825	1650				270 / 560	400
VDR20D911K	910	(819-1001)	550	745	1500				260 / 510	440
VDR20D821K	820	(738-902)	510	670	1355				250 / 460	500
VDR20D781K	780	(702-858)	485	640	1290				240 / 421	510
VDR20D751K	750	(675-825)	460	615	1240				230 / 410	530
VDR20D681K	680	(612-748)	420	560	1120				224 / 382	600
VDR20D621K	620	(558-682)	385	505	1025				224 / 372	650
VDR20D561K	560	(504-616)	350	460	920				210 / 366	710
VDR20D511K	510	(459-561)	320	415	845				207 / 360	780
VDR20D471K	470	(423-517)	300	385	775				202 / 350	850
VDR20D431K	430	(387-473)	275	350	710				196 / 305	930
VDR20D391K	390	(351-429)	250	320	650				182 / 275	1000
VDR20D361K	360	(324-396)	230	300	595				168 / 255	1100
VDR20D331K	330	(297-363)	210	275	550				140 / 228	1200
VDR20D301K	300	(270-330)	190	250	500				133 / 210	1300
VDR20D271K	270	(243-297)	175	225	455				126 / 190	1500
VDR20D241K	240	(216-264)	150	200	395				112 / 168	1650
VDR20D221K	220	(198-242)	140	180	360				105 / 155	1800
VDR20D201K	200	(180-220)	130	170	330				98.0 / 140	2000
VDR20D181K	180	(162-198)	115	150	300				84.0 / 130	2200
VDR20D151K	150	(135-165)	95	125	250				70.0 / 106	2700
VDR20D121K	120	(108-132)	75	100	200				56.0 / 85.0	3300
VDR20D101K	100	(90-110)	60	85	165				42.0 / 70.0	4000
VDR20D820K	82	(74-90)	50	65	135	37.8 / 56.0	4900			
Spec. Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us Standard / High Surge	Typical Capacitance @1kHz
	(V)		ACrms (V)	DC (V)	V20A (V)	1 Time (A)	2 Times (A)	(W)	(J)	(pF)
VDR20D680K	68	(61-75)	40	56	135	Standard 2000 High Surge 3000	Standard d1000 High Surge 1000	0.2	23.8 / 49.0	5800
VDR20D560K	56	(50-62)	35	45	110				19.6 / 41.0	6500
VDR20D470K	47	(42-52)	30	38	93				16.8 / 34.0	7400
VDR20D390K	39	(35-43)	25	31	77				13.2 / 28.0	8500
VDR20D330K	33	(30-36)	20	26	65				11.2 / 24.0	10000
VDR20D270K	27	(24-30)	17	22	53				9.1 / 19.0	12000
VDR20D220K	22	(20-24)	14	18	43				7.4 / 16.0	15000
VDR20D180L	18	(15-21)	10	14	38				6.1 / 13.0	19000

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 25D Standard & High Surge

Spec. Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us High Surge	Typical Capacitance @1kHz
	(V)	(V)	ACrms (V)	DC (V)	V100A (V)	1Time (A)	1Time (A)	(W)	(J)	(pF)
VDR25D182K	1800	(1620-1980)	1000	1465	2970	Standard 15000	High Surge 20000	1.2	1090	400
VDR25D152K	1500	(1350-1650)	900	1200	2475				950	475
VDR25D112K	1100	(990-1210)	680	895	1815				720	600
VDR25D102K	1000	(900-1100)	625	825	1650				685	650
VDR25D911K	910	(819-1001)	550	745	1500				620	700
VDR25D821K	820	(738-902)	510	670	1355				570	800
VDR25D781K	780	(702-858)	485	640	1290				530	830
VDR25D751K	750	(675-825)	460	615	1240				510	850
VDR25D681K	680	(612-748)	420	560	1120				460	950
VDR25D621K	620	(558-682)	385	505	1025				450	1050
VDR25D561K	560	(504-616)	350	460	920				440	1150
VDR25D511K	510	(459-561)	320	415	845				400	1250
VDR25D471K	470	(423-517)	300	385	775				380	1400
VDR25D431K	430	(387-473)	275	350	710				360	1500
VDR25D391K	390	(351-429)	250	320	650				330	1600
VDR25D361K	360	(324-396)	230	300	595				300	1700
VDR25D331K	330	(297-363)	210	275	550				295	1900
VDR25D301K	300	(270-330)	190	250	505				275	2100
VDR25D271K	270	(243-297)	175	225	455				255	2400
VDR25D241K	240	(216-264)	150	200	395				220	2650
VDR25D221K	220	(198-242)	140	180	360	200	2900			
VDR25D201K	200	(185-225)	130	170	330	190	3200			

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

Specification – 32D Standard & High Surge

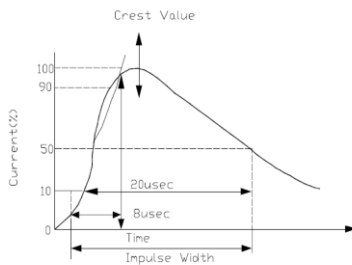
Spec. Part No.	Varistor Voltage V 1mA		Maximum Allowable Voltage		Maximum Clamping Voltage	Withstanding Surge Current (8/20us)		Rated Power	Energy 10/1000us High Surge	Typical Capacitance @1kHz
	(V)	(V)	ACrms (V)	DC (V)	V100A (V)	1Time (A)	1Time (A)	(W)	(J)	(pF)
VDR32D182K	1800	(1620-1980)	1000	1465	2970	Standard 25000	High Surge 30000	1.4	1090	650
VDR32D152K	1500	(1350-1650)	900	1200	2475				950	750
VDR32D112K	1100	(990-1210)	680	895	1815				720	1100
VDR32D102K	1000	(900-1100)	625	825	1650				685	1200
VDR32D911K	910	(819-1001)	550	745	1500				620	1300
VDR32D821K	820	(738-902)	510	670	1355				570	1800
VDR32D781K	780	(702-858)	485	640	1290				530	1900
VDR32D751K	750	(675-825)	460	615	1240				510	2000
VDR32D681K	680	(612-748)	420	560	1120				460	2200
VDR32D621K	620	(558-682)	385	505	1025				450	2400
VDR32D561K	560	(504-616)	350	460	920				440	2550
VDR32D511K	510	(459-561)	320	415	845				400	2700
VDR32D471K	470	(423-517)	300	385	775				380	2800
VDR32D431K	430	(387-473)	275	350	710				360	3100
VDR32D391K	390	(351-429)	250	320	650				330	3200
VDR32D361K	360	(324-396)	230	300	595				300	3900
VDR32D331K	330	(297-363)	210	275	550				295	4300
VDR32D301K	300	(270-330)	190	250	505				275	4550
VDR32D271K	270	(243-297)	175	225	455				255	4800
VDR32D241K	240	(216-264)	150	200	395				220	5100
VDR32D221K	220	(198-242)	140	180	360	200	5150			
VDR32D201K	200	(185-225)	130	170	330	190	5200			

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

ELECTRICAL RATINGS

Item	Test Condition/Description	Requirement																									
Varistor Voltage	The Voltage drop across the varistor when a dc test current of a 1mA is Applied to the component	To meet the specified Value																									
Maximum Allowable Voltage	The recommended maximum sine wave voltage (rms) or the maximum dc voltage can be applied continuously																										
Maximum Clamping Voltage	The maximum voltage between two terminals with the specification Standard impulse current Applied waveform: 8/20usec 																										
Rated Wattage	The maximum average power that can be dissipated within the specified ambient temperature																										
Energy	The maximum energy within the varistor voltage change of $\pm 10\%$ when one impulse is applied. Energy = K.Vc.Ip.T Where Ip is the peak current applied, Vc is the clamp voltage which results, T is the impulse duration and K is a constant. K is 1 for rectangular waveform; 1.4 for 10/1000usec.																										
Withstanding Surge Current	The maximum current within the varistor voltage change of $\pm 10\%$ With the standard impulse current (8/20usec.) applied one time.																										
Varistor Voltage Temperature Coefficient	$\frac{V_b \text{ at } 20^\circ\text{C} - V_b \text{ at } 70^\circ\text{C}}{V_b \text{ at } 20^\circ\text{C}} \times \frac{1}{50} \times 100\% (\%/^\circ\text{C})$		+0.05%/°C max																								
Surge Life	The change of Vb shall be measured after the impulse listed below Is applied 10,000times continuously with the interval of ten seconds At room temperature <table border="1" data-bbox="406 1596 1169 1921"> <tbody> <tr> <td rowspan="2">5 Series</td> <td>180L to 680K</td> <td>10A(8/20usec)</td> </tr> <tr> <td>820K to 751K</td> <td>20A(8/20usec)</td> </tr> <tr> <td rowspan="2">7 Series</td> <td>180L to 680K</td> <td>25A(8/20usec)</td> </tr> <tr> <td>820K to 821K</td> <td>50A(8/20usec)</td> </tr> <tr> <td rowspan="2">10 Series</td> <td>180L to 680K</td> <td>50A(8/20usec)</td> </tr> <tr> <td>820K to 182K</td> <td>100A(8/20usec)</td> </tr> <tr> <td rowspan="2">14 Series</td> <td>180L to 680K</td> <td>75A(8/20usec)</td> </tr> <tr> <td>820K to 182K</td> <td>150A(8/20usec)</td> </tr> <tr> <td rowspan="2">20 Series</td> <td>180L to 680K</td> <td>100A(8/20usec)</td> </tr> <tr> <td>201K to 821K</td> <td>200A(8/20usec)</td> </tr> </tbody> </table>	5 Series	180L to 680K	10A(8/20usec)	820K to 751K	20A(8/20usec)	7 Series	180L to 680K	25A(8/20usec)	820K to 821K	50A(8/20usec)	10 Series	180L to 680K	50A(8/20usec)	820K to 182K	100A(8/20usec)	14 Series	180L to 680K	75A(8/20usec)	820K to 182K	150A(8/20usec)	20 Series	180L to 680K	100A(8/20usec)	201K to 821K	200A(8/20usec)	$\frac{\Delta V_b}{V_b} \leq \pm 10\%$
5 Series	180L to 680K		10A(8/20usec)																								
	820K to 751K	20A(8/20usec)																									
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10 Series	180L to 680K	50A(8/20usec)																									
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	820K to 182K	150A(8/20usec)																									
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	201K to 821K	200A(8/20usec)																									

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

ENVIRONMENTAL RATINGS

Item	Test Condition / Description	Requirement														
Dry Heat Load	The specimen shall be applied continuously the maximum allowable Voltage at the specified conditions for specified period and then Stored at room temperature and normal humidity for 24±2 hours. Thereafter the change of Vb and mechanical damage shall be Examined. Ambient temp: 85±2°C Period: 1000±24 hours	No remarkable Mechanical damage $\frac{\Delta V_b}{V_b} \leq \pm 10\%$														
Damp Heat Load	The specimen shall be applied continuously the maximum allowable Voltage at the specified conditions for specified period and then Stored at room temperature and normal humidity for 24±2 hours. Thereafter the change of Vb and mechanical damage shall be Examined. Ambient condition: 40±2°C, 90 to 95% RH Period: 1000±24 hours															
Temperature Cycle	Condition the specimen to each temperature from step 1 to step 4 in This order for the period shown in the table of specifications the change of Vb and mechanical damage shall be examined after 24±2 hours. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temp(°C)</th> <th>Period(minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30</td> </tr> <tr> <td>2</td> <td>Room Temp</td> <td>15</td> </tr> <tr> <td>3</td> <td>+85±2</td> <td>30</td> </tr> <tr> <td>4</td> <td>Room Temp</td> <td>15</td> </tr> </tbody> </table> <p style="margin-left: 20px;">5 cycles</p>		Step	Temp(°C)	Period(minutes)	1	-40±3	30	2	Room Temp	15	3	+85±2	30	4	Room Temp
Step	Temp(°C)	Period(minutes)														
1	-40±3	30														
2	Room Temp	15														
3	+85±2	30														
4	Room Temp	15														

MECHANICAL RATINGS

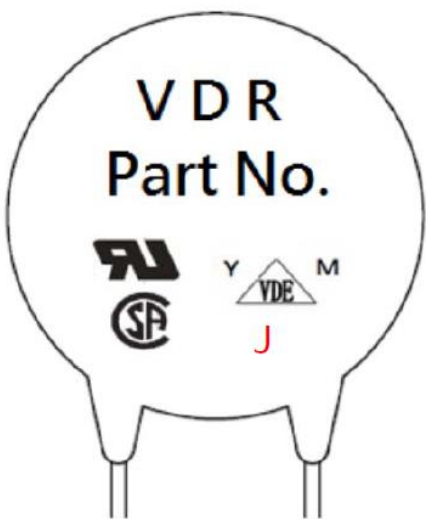
Item	Test Condition / Description	Requirement								
Terminal Pull Strength	After gradually applying the load specified below and keeping the Unit fixed for ten seconds, the terminal shall be visually examined For any damage. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Terminal diameter</th> <th>Load</th> </tr> </thead> <tbody> <tr> <td>0.6mm(.024")</td> <td>0.5kg(1.1Ibs)</td> </tr> <tr> <td>0.8mm(.031")</td> <td>1.0kg(2.2Ibs)</td> </tr> <tr> <td>1.0mm(.039")</td> <td>2.0kg(4.4Ibs)</td> </tr> </tbody> </table>	Terminal diameter	Load	0.6mm(.024")	0.5kg(1.1Ibs)	0.8mm(.031")	1.0kg(2.2Ibs)	1.0mm(.039")	2.0kg(4.4Ibs)	No remarkable Mechanical damage
Terminal diameter	Load									
0.6mm(.024")	0.5kg(1.1Ibs)									
0.8mm(.031")	1.0kg(2.2Ibs)									
1.0mm(.039")	2.0kg(4.4Ibs)									
Terminal Bending Strength	The unit shall be secured with its terminal kept vertical and the Weight specified below is applied in the axial direction. The terminal Shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position. The damage of the terminal shall be visually examined. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Terminal diameter</th> <th>Load</th> </tr> </thead> <tbody> <tr> <td>0.6mm(.024")</td> <td>0.25kg(0.55Ibs)</td> </tr> <tr> <td>0.8mm(.031")</td> <td>0.5kg(1.1Ibs)</td> </tr> <tr> <td>1.0mm(.039")</td> <td>1.0kg(2.2Ibs)</td> </tr> </tbody> </table>	Terminal diameter	Load	0.6mm(.024")	0.25kg(0.55Ibs)	0.8mm(.031")	0.5kg(1.1Ibs)	1.0mm(.039")	1.0kg(2.2Ibs)	
Terminal diameter	Load									
0.6mm(.024")	0.25kg(0.55Ibs)									
0.8mm(.031")	0.5kg(1.1Ibs)									
1.0mm(.039")	1.0kg(2.2Ibs)									
Solderability	After dipping the terminal to a depth of approximately 3mm from the specimen in a soldering bath of 260°C for 3±0.5 seconds. There after the terminal shall be visually examined.	Approximately 90% of The terminal shall be covered with new solder uniformly.								
Resistance to Soldering Heat	After preheating the specimen, the specimen shall be completely immersed into a soldering bath having a temperature of 300±5°C for 3±0.5 seconds. There after the change of Vb and mechanical damage shall be examined.	No remarkable mechanical damage $\frac{\Delta V_b}{V_b} \leq \pm 10\%$								

VDR Series

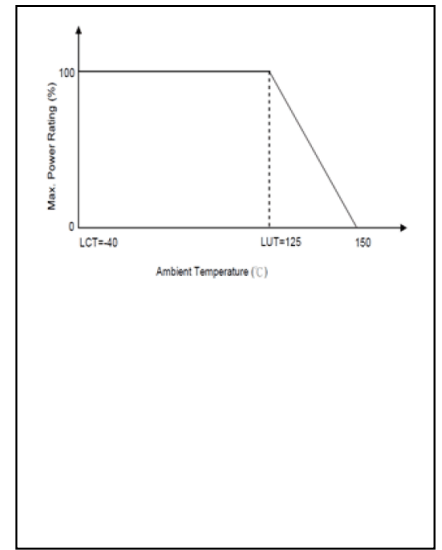
Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

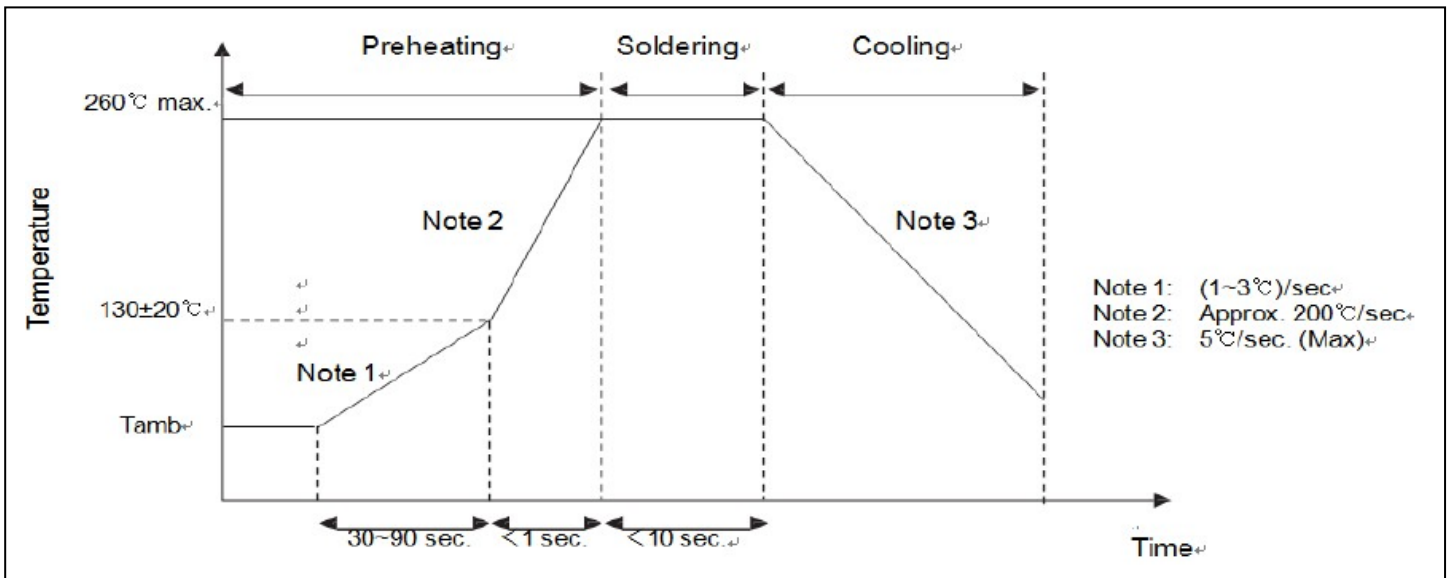
Marking

	Trademark: VDR
	Part No.: 20D471K
	Safety Mark: UL/VDE/CQC
	Date Code: Y: Year M: Month
	High Surge: J
	Standard Surge: Blank

Power Derating Curve



Soldering Recommendation Web Soldering Profile



VDR Series

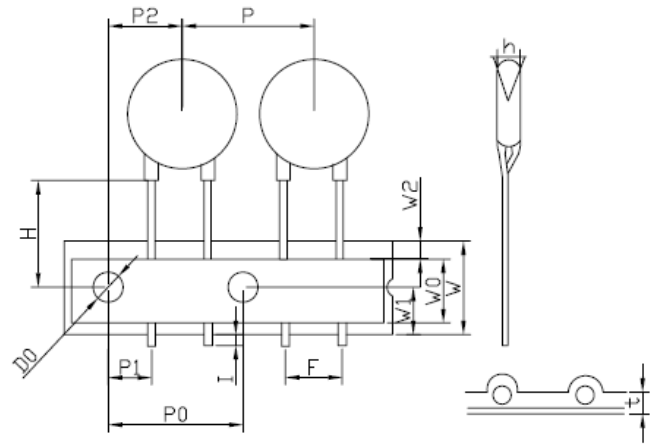
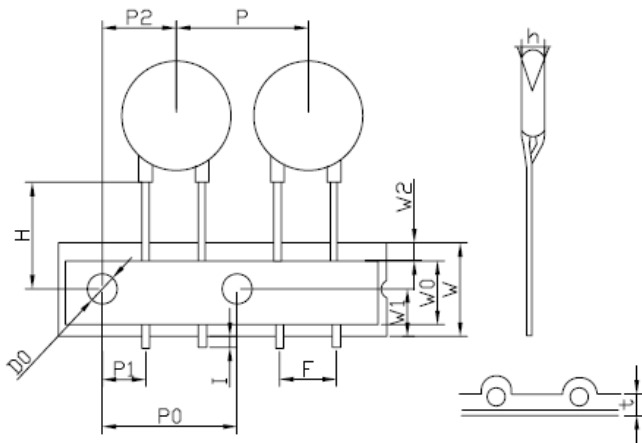
Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

TAPING SPECIFICATION

Straight Leads (05D, 07D, 10D)

Straight Leads (14D, 20D)



Symbol	Parameter	Series				
		05D	07D	10D	14D	20D
P	Pitch of Component	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	25.4±1.0
P0	Feed Hold Pitch	12.7±0.3	12.7±0.3	15.0±0.3	25.4±1.0	25.4±1.0
P1	Feed Hold Center to Lead	3.85±0.7	3.85±0.7	3.75±0.7	8.95±0.7	8.95±0.7
P2	Hold Center to Component Center	6.35±1.3	6.35±1.3	7.5±1.3	12.7±1.3	12.7±1.3
F	Lead to Lead Distance	5.0±0.5	5.0±0.5	7.5±0.5	7.5±0.5	7.5±0.5
h	Component Alignment	0±2	0±2	0±2	0±4	0±4
W	Tape Width	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0
W0	Hold Down Tape Width	12.5min	12.5min	12.5min	12.5min	12.5min
W1	Hold Position	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
W2	Hold Down Tape Position	3.0max	3.0max	3.0max	3.0max	3.0max
H	Height from Tape Center to Component	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0
I	Length of Clipped Lead	1.0max	1.0max	1.0max	1.0max	1.0max
D0	Feed Hold Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3

Unit: mm

VDR Series

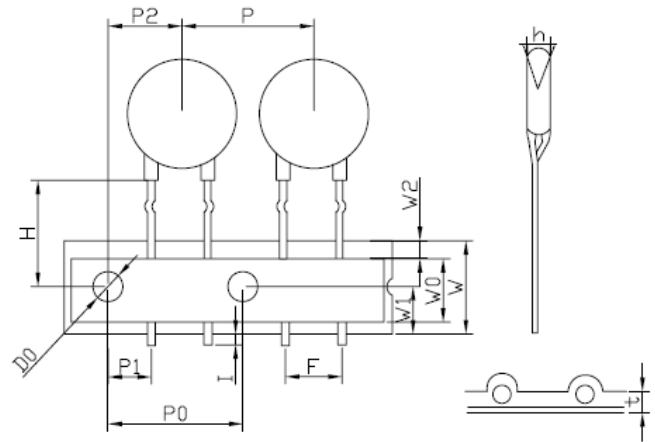
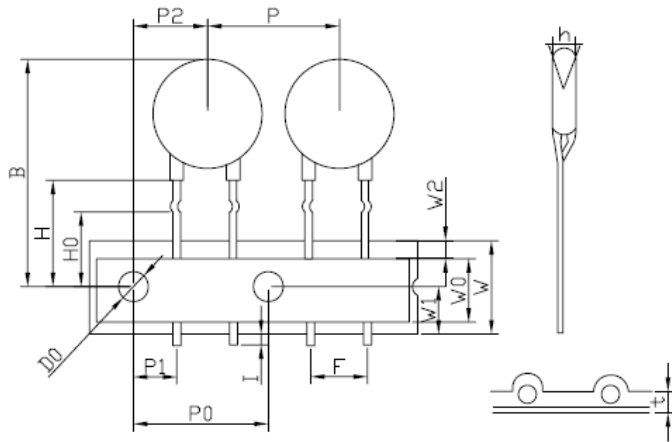
Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

TAPING SPECIFICATION

Crimped Leads (D05, D07, D10)

Crimped Leads (D14, D20)



Symbol	Parameter	Series				
		05D	07D	10D	14D	20D
P	Pitch of Component	12.7±1.0	12.7±1.0	15.0±1.0	25.4±1.0	25.4±1.0
P0	Feed Hold Pitch	12.7±0.3	12.7±0.3	15.0±0.3	25.4±1.0	25.4±1.0
P1	Feed Hold Center to Lead	3.85±0.7	3.85±0.7	3.75±0.7	8.95±0.7	8.95±0.7
P2	Hold Center to Component Center	6.35±1.3	6.35±1.3	7.5±1.3	12.7±1.3	12.7±1.3
F	Lead to Lead Distance	5.0±0.5	5.0±0.5	7.5±0.5	7.5±0.5	7.5±0.5
h	Component Alignment	0±2	0±2	0±2	0±4	0±4
W	Tape Width	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0	18.0±1.0
W0	Hold Down Tape Width	12.5min	12.5min	12.5min	12.5min	12.5min
W1	Hold Position	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5	9.0±0.5
W2	Hold Down Tape Position	3.0max	3.0max	3.0max	3.0max	3.0max
H	Height from Tape Center to Component	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0	20.0±2.0
I	Length of Clipped Lead	1.0max	1.0max	1.0max	1.0max	1.0max
D0	Feed Hold Diameter	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2	4.0±0.2
t	Total Tape Thickness	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3	0.6±0.3

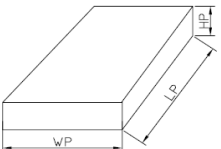
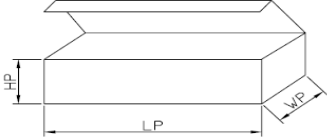
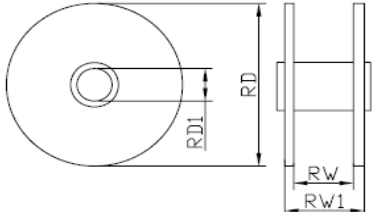
Unit: mm

VDR Series

Disc Zinc Oxide Varistors - Transient / Surge Absorber – Radial, Thru-Hole Type.

TRIGON
COMPONENTS

PACKAGING SPECIFICATIONS

Packing	Dimensions in mm	Symbol	05D	07D	10D	14D	20D
box		LP	260mm			260mm	
		WP	170mm			170mm	
		HP	60mm			60mm	
Ammo		LP	340mm			340mm	
		WP	250mm			250mm	
		HP	50mm			50mm	
Reel		RD	355mm max			355mm max	
		RD1	30±0.1mm			30±0.1mm	
		RW	45±1mm			45±1mm	
		RW1	53mm max			53mm max	

QUALITY PER PACKING METHOD

Series	05D	07D	10D	14D	20D
Box	2000	2000	1000	1000	500
Reel	2000	2000	1000	750	500
Ammo	2000	2000	1000	-	-

The QTY of each Reel and Ammo Pack will vary according to the difference of varistor voltage. PLS. double check with our sales department in advance when you place your order.

BULK SPECIFICATION

Series	Measure Quantity	Min./Plastic bag	Box(in mm)	Carton(in mm)
			D*W*H 242*206*190	D*W*H 260*440*225
05D	1,000PCS	1,000PCS	10,000PCS/10 bags	20,000PCS/2 boxes
07D	1,000PCS	1,000PCS	10,000PCS/10 bags	20,000PCS/2 boxes
10D	500PCS	500PCS	5,000PCS/10 bags	10,000PCS/2 boxes
14D	500PCS	500PCS	2,500PCS/5 bags	5,000PCS/2 boxes
20D	250PCS	250PCS	1,500PCS/6 bags	3,000PCS/2 boxes
25D	100PCS	100PCS	500PCS/5 bags	1,000PCS/2 boxes
32D	100PCS	100PCS	500PCS/5 bags	1,000PCS/2 boxes

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