



Zinc Oxide Varistor

SPECIFICATION

■ TVR Series (Surge Protection)

● Features

1. Body size $\phi 5 \sim \phi 20\text{mm}$
2. Radial lead resin coated
3. Broad operating voltage
4. $-40 \sim +85^{\circ}\text{C}$ operating temperature range
5. Excellent clamping ratio
6. Low leakage current
7. Large withstanding surge current capability
8. Bidirectional and symmetrical V/I characteristics
9. Cost effective

● Recommended Applications

1. Power supply
2. Home appliance
3. Industrial equipment
4. Telecommunication or telephone system

● Approvals



- * UL 1414 Recognized (File#E186499)
- * UL 1449 Recognized (File#E173642)



- * CSA Recognized (File#97495)



- * VDE Recognized (File#5944)



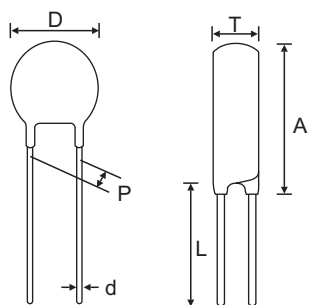
- * CQC Certificate No.CQC03001005165&CQC03001007654





● **Dimensions**

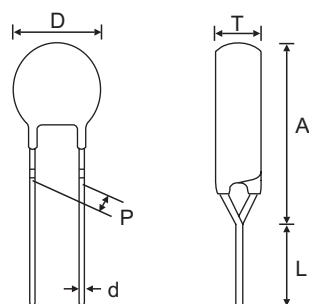
S Type (Straight Lead)



(Unit:mm)

Disc Size	D max.	L min.	d nor.	P nor.	A max.	T max.
05	7.5	30	0.6±0.02	5±1	10	Show on the characteristics
07	9.5	30	0.6±0.02	5±1	12	
10	12.5	30	0.8±0.02	7.5±1	15.5	
14	17	30	0.8±0.02	7.5±1	20	
20	23.5	26	1.0±0.02	10±1	26.5	

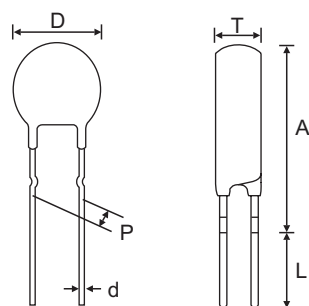
F Type (Y Kink Lead)



(Unit:mm)

Disc Size	D max.	L min.	d nor.	P nor.	A max.	T max.
05	7.5	28	0.6±0.02	5±1	12.5	Show on the characteristics
07	9.5	28	0.6±0.02	5±1	14.5	
10	12.5	26	0.8±0.02	7.5±1	19	
14	17	26	0.8±0.02	7.5±1	22.5	
20	23.5	24	1.0±0.02	10±1	29.5	

I Type (Inner Kink Lead)



(Unit:mm)

Disc Size	D max.	L min.	d nor.	P nor.	A max.	T max.
05	7.5	25	0.6±0.02	5±1	12.5	Show on the characteristics
07	9.5	25	0.6±0.02	5±1	14.5	
10	12.5	25	0.8±0.02	7.5±1	20	
14	17	25	0.8±0.02	7.5±1	22.5	
20	23.5	25	1.0±0.02	10±1	28	



● Characteristics

Part No.	Normal Varistor Voltage	Max. Allowable Voltage		Max. Clamping Voltage(8/20 μ s)		Max. Surge Current (8/20 μ s)	Max. Energy (10/1000 μ s)	Rated Power	Reference Capacitance @1KHz	Thickness
	V _{1mA} (V)	V _{AC(ms)} (V)	V _{DC} (V)	V _p (V)	I _p (A)	I _{max} (A)	W _{max} (J)	P (W)	C (PF)	T _{max} (mm)
TVR 05180	18	11	14	40	1	100	0.4	0.01	1300	3.9
TVR 07180	18	11	14	36	2.5	250	0.9	0.02	2400	3.9
TVR 10180	18	11	14	36	5	500	2.1	0.05	4500	4.3
TVR 14180	18	11	14	36	10	1000	4	0.1	10000	4.3
TVR 20180	18	11	14	36	20	2000	11	0.2	19000	4.7
TVR 05220	22	14	18	48	1	100	0.5	0.01	1000	4.1
TVR 07220	22	14	18	43	2.5	250	1.1	0.02	2000	4.1
TVR 10220	22	14	18	43	5	500	2.5	0.05	3500	4.5
TVR 14220	22	14	18	43	10	1000	5	0.1	8500	4.5
TVR 20220	22	14	18	43	20	2000	14	0.2	16000	4.9
TVR 05270	27	17	22	60	1	100	0.6	0.01	850	4.3
TVR 07270	27	17	22	53	2.5	250	1.4	0.02	1600	4.3
TVR 10270	27	17	22	53	5	500	3	0.05	3000	4.7
TVR 14270	27	17	22	53	10	1000	6	0.1	7000	4.7
TVR 20270	27	17	22	53	20	2000	18	0.2	14500	5.1
TVR 05330	33	20	26	73	1	100	0.8	0.01	700	4.5
TVR 07330	33	20	26	65	2.5	250	1.7	0.02	1300	4.5
TVR 10330	33	20	26	65	5	500	4	0.05	2500	4.9
TVR 14330	33	20	26	65	10	1000	7.5	0.1	6000	4.9
TVR 20330	33	20	26	65	20	2000	23	0.2	13000	5.3
TVR 05390	39	25	31	86	1	100	0.9	0.01	600	4
TVR 07390	39	25	31	77	2.5	250	2.1	0.02	1200	4
TVR 10390	39	25	31	77	5	500	4.6	0.05	2000	4.4
TVR 14390	39	25	31	77	10	1000	8.6	0.1	4800	4.4
TVR 20390	39	25	31	77	20	2000	26	0.2	12000	4.8
TVR 05470	47	30	38	104	1	100	1.1	0.01	500	4.1
TVR 07470	47	30	38	93	2.5	250	2.5	0.02	1100	4.1
TVR 10470	47	30	38	93	5	500	5.5	0.05	1500	4.5
TVR 14470	47	30	38	93	10	1000	10	0.1	3800	4.5
TVR 20470	47	30	38	93	20	2000	33	0.2	11000	4.9
TVR 05560	56	35	45	123	1	100	1.3	0.01	400	4.3
TVR 07560	56	35	45	110	2.5	250	3.1	0.02	1000	4.3
TVR 10560	56	35	45	110	5	500	7	0.05	1350	4.7
TVR 14560	56	35	45	110	10	1000	11	0.1	3300	4.7
TVR 20560	56	35	45	110	20	2000	41	0.2	9000	5.1
TVR 05680	68	40	56	150	1	100	1.6	0.01	330	4.6
TVR 07680	68	40	56	135	2.5	250	3.6	0.02	850	4.6
TVR 10680	68	40	56	135	5	500	8.2	0.05	1250	5
TVR 14680	68	40	56	135	10	1000	14	0.1	2700	5
TVR 20680	68	40	56	135	20	2000	46	0.2	7500	5.4
TVR 05820	82	50	65	145	5	400	2.5	0.1	250	4
TVR 07820	82	50	65	135	10	1200	5.5	0.25	460	4
TVR 10820	82	50	65	135	25	2500	12	0.4	1000	4.4
TVR 14820	82	50	65	135	50	4500	22	0.6	2100	4.4
TVR 20820	82	50	65	135	100	6500	48	1	4800	4.8
TVR 05101	100	60	85	175	5	400	3	0.1	230	4.2
TVR 07101	100	60	85	165	10	1200	6.5	0.25	420	4.2
TVR 10101	100	60	85	165	25	2500	15	0.4	920	4.6
TVR 14101	100	60	85	165	50	4500	28	0.6	1900	4.6
TVR 20101	100	60	85	165	100	6500	51	1	3900	5



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	V _{1mA} (V)	V _{AC(ms)} (V)	V _{DC} (V)	V _p (V)	I _p (A)	I _{max} (A)	W _{max} (J)	P (W)	C (PF)	T _{max} (mm)
TVR 05121	120	75	100	210	5	400	4	0.1	210	4.4
TVR 07121	120	75	100	200	10	1200	7.8	0.25	380	4.4
TVR 10121	120	75	100	200	25	2500	18	0.4	830	4.8
TVR 14121	120	75	100	200	50	4500	32	0.6	1700	4.8
TVR 20121	120	75	100	200	100	6500	55	1	3300	5.2
TVR 05151	150	95	125	260	5	400	4.8	0.1	190	4.7
TVR 07151	150	95	125	250	10	1200	9.7	0.25	350	4.7
TVR 10151	150	95	125	250	25	2500	22	0.4	760	5.1
TVR 14151	150	95	125	250	50	4500	40	0.6	940	5.1
TVR 20151	150	95	125	250	100	6500	70	1	1950	5.5
TVR 05181	180	115	150	315	5	400	5.9	0.1	70	4.2
TVR 07181	180	115	150	300	10	1200	11.7	0.25	155	4.2
TVR 10181	180	115	150	300	25	2500	27	0.4	310	4.6
TVR 14181	180	115	150	300	50	4500	52	0.6	800	4.6
TVR 20181	180	115	150	300	100	6500	84	1	1620	5
TVR 05201	200	130	170	355	5	400	6.5	0.1	65	4.3
TVR 07201	200	130	170	340	10	1200	13	0.25	140	4.3
TVR 10201	200	130	170	340	25	2500	30	0.4	290	4.7
TVR14201	200	130	170	340	50	4500	57	0.6	700	4.7
TVR20201	200	130	170	340	100	6500	95	1	1460	5.1
TVR05221	220	140	180	380	5	400	7	0.1	60	4.4
TVR07221	220	140	180	360	10	1200	14	0.25	130	4.4
TVR10221	220	140	180	360	25	2500	32	0.4	270	4.8
TVR14221	220	140	180	360	50	4500	60	0.6	640	4.8
TVR20221	220	140	180	360	100	6500	100	1	1320	5.2
TVR05241	240	150	200	415	5	400	8	0.1	55	4.5
TVR07241	240	150	200	395	10	1200	15	0.25	120	4.5
TVR10241	240	150	200	395	25	2500	35	0.4	240	4.9
TVR14241	240	150	200	395	50	4500	63	0.6	580	4.9
TVR20241	240	150	200	395	100	6500	108	1	1200	5.3
TVR05271	270	175	225	475	5	400	8.5	0.1	50	4.7
TVR07271	270	175	225	455	10	1200	18	0.25	110	4.7
TVR10271	270	175	225	455	25	2500	40	0.4	230	5.1
TVR14271	270	175	225	455	50	4500	70	0.6	520	5.1
TVR20271	270	175	225	455	100	6500	127	1	1100	5.5
TVR05301	300	195	250	525	5	400	8.5	0.1	50	4.6
TVR07301	300	195	250	500	10	1200	21	0.25	105	4.6
TVR10301	300	195	250	500	25	2500	40	0.4	210	5
TVR14301	300	195	250	500	50	4500	78	0.6	480	5
TVR20301	300	195	250	500	100	6500	136	1	1000	5.4
TVR05331	330	215	275	585	5	400	9.2	0.1	45	4.7
TVR07331	330	215	275	550	10	1200	23	0.25	100	4.7
TVR10331	330	215	275	550	25	2500	43	0.4	200	5.1
TVR14331	330	215	275	550	50	4500	85	0.6	450	5.1
TVR20331	330	215	275	550	100	6500	150	1	950	5.5
TVR05361	360	230	300	620	5	400	10	0.1	45	4.8
TVR07361	360	230	300	595	10	1200	25	0.25	95	4.8
TVR10361	360	230	300	595	25	2500	47	0.4	190	5.2
TVR14361	360	230	300	595	50	4500	93	0.6	430	5.2
TVR20361	360	230	300	595	100	6500	163	1	900	5.6



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	V _{1mA} (V)	V _{AC(ms)} (V)	V _{DC} (V)	V _p (V)	I _p (A)	I _{max} (A)	W _{max} (J)	P (W)	C (PF)	T _{max} (mm)
TVR05391	390	250	320	675	5	400	12	0.1	40	5
TVR07391	390	250	320	650	10	1200	25	0.25	85	5
TVR10391	390	250	320	650	25	2500	60	0.4	175	5.4
TVR14391	390	250	320	650	50	4500	100	0.6	390	5.4
TVR20391	390	250	320	650	100	6500	180	1	800	5.8
TVR05431	430	275	350	745	5	400	13	0.1	35	5.2
TVR07431	430	275	350	710	10	1200	28	0.25	80	5.2
TVR10431	430	275	350	710	25	2500	65	0.4	160	5.6
TVR14431	430	275	350	710	50	4500	115	0.6	370	5.6
TVR20431	430	275	350	710	100	6500	190	1	700	6
TVR05471	470	300	385	810	5	400	15	0.1	30	5.3
TVR07471	470	300	385	775	10	1200	30	0.25	70	5.3
TVR10471	470	300	385	775	25	2500	70	0.4	150	5.7
TVR14471	470	300	385	775	50	4500	125	0.6	320	5.7
TVR20471	470	300	385	775	100	6500	220	1	620	6.1
TVR07511	510	320	410	845	10	1200	33	0.25	65	5.5
TVR10511	510	320	410	845	25	2500	70	0.4	130	5.9
TVR14511	510	320	410	845	50	4500	125	0.6	290	5.9
TVR20511	510	320	410	845	100	6500	220	1	530	6.3
TVR07561	560	350	450	930	10	1200	33	0.25	60	5.7
TVR10561	560	350	450	930	25	2500	70	0.4	120	6.1
TVR14561	560	350	450	930	50	4500	125	0.6	260	6.1
TVR20561	560	350	450	930	100	6500	220	1	480	6.5
TVR07621	620	395	510	1020	10	1200	35	0.25	55	6
TVR10621	620	395	510	1020	25	2500	70	0.4	110	6.4
TVR14621	620	395	510	1020	50	4500	125	0.6	240	6.4
TVR20621	620	395	510	1020	100	6500	220	1	450	6.8
TVR07681	680	420	560	1120	10	1200	35	0.25	50	6.3
TVR10681	680	420	560	1120	25	2500	70	0.4	100	6.7
TVR14681	680	420	560	1120	50	4500	130	0.6	230	6.7
TVR20681	680	420	560	1120	100	6500	230	1	440	7.1
TVR07751	750	465	615	1235	10	1200	38	0.25	45	6.6
TVR10751	750	465	615	1235	25	2500	75	0.4	90	7
TVR14751	750	465	615	1235	50	4500	143	0.6	220	7
TVR20751	750	465	615	1235	100	6500	255	1	420	7.4
TVR07821	820	510	670	1355	10	1200	42	0.25	40	6.5
TVR10821	820	510	670	1355	25	2500	85	0.4	80	6.9
TVR14821	820	510	670	1355	50	4500	157	0.6	180	6.9
TVR20821	820	510	670	1355	100	6500	282	1	390	7.3
TVR10911	910	550	745	1500	25	2500	93	0.4	70	7.3
TVR14911	910	550	745	1500	50	4500	175	0.6	170	7.3
TVR20911	910	550	745	1500	100	6500	320	1	360	7.7
TVR10102	1000	625	825	1650	25	2500	102	0.4	65	7.7
TVR14102	1000	625	825	1650	50	4500	190	0.6	150	7.6
TVR20102	1000	625	825	1650	100	6500	342	1	330	8.1
TVR10112	1100	680	895	1815	25	2500	115	0.4	60	8.1
TVR14112	1100	680	895	1815	50	4500	213	0.6	140	8.1
TVR20112	1100	680	895	1815	100	6500	383	1	310	8.5