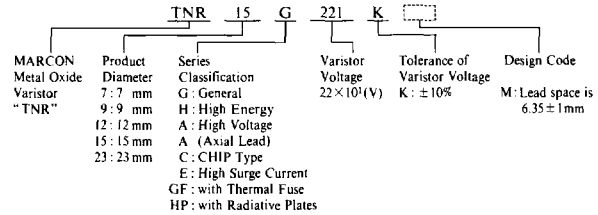




METAL OXIDE VARISTORS TNR®

Marcon TNR Metal Oxide Varistors are voltage dependent, symmetrical resistors which perform in a manner similar to back-to-back zener diodes in circuit protective functions and offer advantages in performance and economics. When exposed to high energy voltage transients, the varistor impedance changes from a very high standby value to a very low conducting value thus clamping the transient voltage to a safe level. The dangerous energy of the incoming high voltage pulse is absorbed by the TNR varistor, thus protecting voltage sensitive circuit components.



● TNR Features

1. Excellent transient voltage suppression
2. High discharge current capability
3. Wide range of voltage ratings
4. Symmetrical V-I characteristics(Non Polarity)
5. Instantaneous response
6. Steady operation for repeating surge
7. Low temperature coefficient
8. High reliability
9. UL recognized(G series)

● Applications

1. Electronic instrument protection
2. Telephone system protection
3. Relay contact point protection
4. Rectification diode protection
5. SCR protection
6. Reduction of abnormal voltage in high voltage current
7. Switching transistor protection
8. Reduction of switching surge in electromagnetic brake
9. Prevention of error in digital circuit
10. Reduction of noise from an abnormal voltage

G-SERIES (Disc Type, Radial Lead)



Operating temp. range: -40~+85°C
Storage temp. range: -50~+125°C

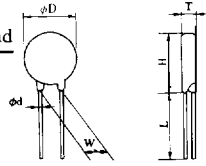
UL STANDARD 1414 FILE No.E 65426
UL STANDARD 1449 FILE No.E 95427

Model Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20μs)	Maximum Energy (2msec.)	Rated Wattage	Clamping Voltage		Capacitance (Typical) 1kHz	Varistor Voltage	
	AC.(Vrms)	DC.(V)	(A)	(J)	(W)	(A)	(V)	(pF)	V0.1mA (V)	
TNR7G180K	10	14	100/1Time	0.3	0.01	1	40	2,200	18(16~20)	
TNR7G220K	14	18		0.4			48	1,800	22(20~24)	
TNR7G270K	17	22		0.5			60	1,500	27(24~30)	
TNR7G330K	20	26		0.6			73	1,300	33(30~36)	
TNR7G390K	25	30		0.8			86	1,150	39(35~43)	
TNR7G470K	30	37		1.0			104	980	47(42~52)	
TNR7G560K	35	44	1.1	123	840	56(50~62)				
TNR7G680K	40	55	1.3	150	720	68(61~75)				
TNR7G820K	50	65	400/1Time	2.0	0.1	5	145	260	82(74~90)	
TNR7G101K	60	85		2.0			175	200	100(90~110)	
TNR7G121K	75	100		3.0			210	170	120(108~132)	
TNR7G151K	95	125		3.0			260	140	150(135~165)	
TNR7G181K	110	145		4.0			325	120	180(162~198)	
TNR7G201K	130	170		5.0			355	110	200(180~220)	
TNR7G221K	140	180		5.0			380	105	220(198~242)	
TNR7G241K	150	200		250/2Times			5.0	415	98	240(216~264)
TNR7G271K	175	225					6.0	475	88	270(243~297)
TNR7G331K	210	270					8.0	600	76	330(297~363)
TNR7G361K	230	300					8.0	620	71	360(324~396)
TNR7G391K	250	320					8.0	675	67	390(351~429)
TNR7G431K	275	350					10.0	745	60	430(387~473)
TNR7G471K	300	385					10.0	810	57	470(423~517)
	AC.(Vrms)	DC.(V)	(A)		(J)	(W)	(A)	(V)	(pF)	V1mA (V)
TNR9G150K	8	12	250/1Time	0.6	0.02	2	30	5,800	15(13~17)	
TNR9G180K	10	14		0.8			35	5,400	18(16~20)	
TNR9G220K	14	18		1.0			43	4,900	22(20~24)	
TNR9G270K	17	22		1.0			53	4,200	27(24~30)	
TNR9G330K	20	26		1.2			65	3,500	33(30~36)	
TNR9G390K	25	30		1.5			77	3,100	39(35~43)	
TNR9G470K	30	37		1.8			93	2,600	47(42~52)	
TNR9G560K	35	44		2.2			110	2,300	56(50~62)	
TNR9G680K	40	55		2.5			135	1,900	68(61~75)	
TNR9G820K	50	65		1,200/1Time			4.0	0.2	10	135
TNR9G101K	65	85	4.0		165	530	100(90~110)			
TNR9G121K	75	100	5.0		195	460	120(108~132)			
TNR9G151K	90	125	6.0		245	380	150(135~165)			
TNR9G181K	110	145	8.0		295	335	180(162~198)			
TNR9G201K	130	170	10.0		330	310	200(180~220)			
TNR9G221K	140	180	10.0		360	280	220(198~242)			
TNR9G241K	155	200	10.0		390	270	240(216~264)			
TNR9G271K	170	225	600/2Times		12.0	440	245			270(243~297)
TNR9G331K	210	270			15.0	540	210			330(297~363)
TNR9G361K	230	300			16.0	590	200			360(324~396)
TNR9G391K	255	320			17.0	640	185			390(351~429)
TNR9G431K	275	350			20.0	700	170			430(387~473)
TNR9G471K	300	385			20.0	765	160			470(423~517)



METAL OXIDE VARISTORS TNR®

G-SERIES (Disk Type, Radial Lead)



unit : mm

	φD	H Max.	T Max.	L Min.	φd	W ± 1
TNR7G180K	7 ± 1	11	5	25	0.5	5
TNR7G271K						
TNR7G331K						
TNR7G471K			7			
TNR9G150K						
TNR9G271K	9 ± 1	13	5	25	0.5	5
TNR9G331K						
TNR9G471K			7			
TNR12G150K	13.5	16.5	5			
TNR12G271K						
TNR12G331K	14	17.0	7	25	0.8	7.5
TNR12G681K						
TNR12G751K						
TNR12G102K			8.5			
TNR12G112K						
TNR12G122K	15	18	9			
TNR12G122K			10			
TNR12G152K			12			
TNR12G182K	16	19	14			
TNR15G150K						
TNR15G271K	15 ± 1	19	5	25	0.8	7.5
TNR15G331K						
TNR15G681K			7			
TNR15G751K			17Max.			
TNR15G102K			20			
TNR15G112K	18Max.	21	9			
TNR15G122K			10.5			
TNR15G152K	19Max.	22	12.5			
TNR15G182K			14.5			
TNR23G180K						
TNR23G271K	24	27	5			
TNR23G331K						
TNR23G681K	25	28	7	25	0.8	10
TNR23G751K						
TNR23G102K			8.5			
TNR23G112K						
TNR23G122K						
TNR23G152K	26	29	9.5			
TNR23G122K			11			
TNR23G152K			13			
TNR23G182K	27	30	15			

Model Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20μs)	Maximum Energy (2msec.)	Rated Wattage	Clamping Voltage		Capacitance (Typical) 1kHz	Varistor Voltage
	AC (Vrms)	DC (V)				(A)	(V)		
TNR12G150K	8	12		1.0			30	10,500	15(13 ~ 17)
TNR12G180K	10	14		1.5			35	9,000	18(16 ~ 20)
TNR12G220K	14	18		2.0			43	8,200	22(20 ~ 24)
TNR12G270K	17	22	500/1	2.5	0.05	5	53	6,900	27(24 ~ 30)
TNR12G330K	20	26	Time	3.0			65	5,900	33(30 ~ 36)
TNR12G390K	25	30		3.5			77	5,100	39(35 ~ 43)
TNR12G470K	30	37	250/2	4.5			93	4,400	47(42 ~ 52)
TNR12G560K	30	44	Time	5.5			110	3,800	56(50 ~ 62)
TNR12G680K	40	55		6.5			135	3,200	68(61 ~ 75)
TNR12G820K	55	65		8.0			135	1,200	82(74 ~ 90)
TNR12G101K	65	85		10.0			165	1,050	100(90 ~ 110)
TNR12G121K	70	100		12.0			195	900	120(108 ~ 132)
TNR12G151K	90	125		16.0			245	770	150(135 ~ 165)
TNR12G181K	110	145		18.0			295	670	180(162 ~ 198)
TNR12G201K	130	170		20.0			330	620	200(180 ~ 220)
TNR12G221K	145	180		25.0			360	570	220(198 ~ 242)
TNR12G241K	150	200		25.0			390	530	240(216 ~ 264)
TNR12G271K	170	225		30.0			440	490	270(243 ~ 297)
TNR12G331K	210	270		35.0			540	420	330(297 ~ 363)
TNR12G361K	235	300	2,500/1	35.0			590	400	360(324 ~ 396)
TNR12G391K	250	320	Time	40.0			640	370	390(351 ~ 429)
TNR12G431K	270	350		45.0	0.4	25	700	340	430(387 ~ 473)
TNR12G471K	305	385	1,300/2	45.0			765	320	470(423 ~ 517)
TNR12G561K	350	460	Times	45.0			910	280	560(504 ~ 616)
TNR12G621K	380	505		45.0			1,015	260	620(558 ~ 682)
TNR12G681K	420	560		45.0			1,110	240	680(612 ~ 748)
TNR12G751K	460	615		50.0			1,230	225	750(675 ~ 825)
TNR12G821K	515	670		55.0			1,340	210	820(738 ~ 902)
TNR12G911K	550	745		60.0			1,500	200	910(819 ~ 1,001)
TNR12G102K	630	825		65.0			1,630	180	1,000(900 ~ 1,100)
TNR12G112K	680	895		70.0			1,815	170	1,100(990 ~ 1,210)
TNR12G122K	720	980		75.0			1,950	160	1,200(1,080 ~ 1,320)
TNR12G152K	860	1,220		80.0			2,440	135	1,500(1,350 ~ 1,650)
TNR12G182K	1,000	1,465		85.0			2,970	115	1,800(1,620 ~ 1,980)
TNR15G150K	8	12		5.0			30	12,000	15(13 ~ 17)
TNR15G180K	10	14		5.0			35	11,500	18(16 ~ 20)
TNR15G220K	14	18	1,000/1	5.0			43	11,000	22(20 ~ 24)
TNR15G270K	17	22	Time	5.0			53	10,000	27(24 ~ 30)
TNR15G330K	20	26		6.0			65	8,500	33(30 ~ 36)
TNR15G390K	25	30	500/2	10.0	0.1	10	77	7,500	39(35 ~ 43)
TNR15G470K	30	37	Times	10.0			93	6,500	47(42 ~ 52)
TNR15G560K	35	44		10.0			110	5,600	56(50 ~ 62)
TNR15G680K	40	55		12.0			135	4,800	68(61 ~ 75)
TNR15G820K	50	65		15.0			135	1,700	82(74 ~ 90)
TNR15G101K	60	85		20.0			165	1,470	100(90 ~ 110)
TNR15G121K	75	100		20.0			195	1,280	120(108 ~ 132)
TNR15G151K	95	125		25.0			245	1,070	150(135 ~ 165)
TNR15G181K	110	145		30.0			295	930	180(162 ~ 198)
TNR15G201K	130	170		35.0			330	850	200(180 ~ 220)
TNR15G221K	140	180		40.0			360	800	220(198 ~ 242)
TNR15G241K	150	200		40.0			390	740	240(216 ~ 264)
TNR15G271K	175	225		50.0			440	680	270(243 ~ 297)
TNR15G331K	210	270		60.0			540	590	330(297 ~ 363)
TNR15G361K	230	300	4,500/1	65.0			590	540	360(324 ~ 396)
TNR15G391K	250	320	Time	70.0			640	510	390(351 ~ 429)
TNR15G431K	275	350		75.0	0.6	50	700	480	430(387 ~ 473)
TNR15G471K	300	385	2,500/2	80.0			765	450	470(423 ~ 517)
TNR15G561K	350	460	Times	85.0			910	390	560(504 ~ 616)
TNR15G621K	385	505		85.0			1,015	360	620(558 ~ 682)
TNR15G681K	420	560		90.0			1,110	340	680(612 ~ 748)
TNR15G751K	460	615		100.0			1,230	310	750(675 ~ 825)
TNR15G821K	510	670		110.0			1,340	280	820(738 ~ 902)
TNR15G911K	550	745		120.0			1,500	265	910(819 ~ 1,001)
TNR15G102K	625	825		130.0			1,630	250	1,000(900 ~ 1,100)
TNR15G112K	680	895		140.0			1,815	230	1,100(990 ~ 1,210)
TNR15G122K	720	980		150.0			1,950	215	1,200(1,080 ~ 1,320)
TNR15G152K	860	1,220		160.0			2,440	185	1,500(1,350 ~ 1,650)
TNR15G182K	1,000	1,465		170.0			2,970	150	1,800(1,620 ~ 1,980)
TNR23G180K	10	14		10.0			35	31,000	18(16 ~ 20)
TNR23G220K	14	18		13.0			43	30,000	22(20 ~ 24)
TNR23G270K	17	22	2,000/1	15.0			53	27,000	27(24 ~ 30)
TNR23G330K	20	26	Time	20.0			65	23,000	33(30 ~ 36)
TNR23G390K	25	30		24.0			77	20,000	39(35 ~ 43)
TNR23G470K	30	37	1,000/2	30.0	0.2	20	93	17,500	47(42 ~ 52)
TNR23G560K	35	44	Times	35.0			110	15,000	56(50 ~ 62)
TNR23G680K	40	55		40.0			135	13,000	68(61 ~ 75)
TNR23G820K	50	65		27.0			135	4,600	82(74 ~ 90)
TNR23G101K	60	85		30.0			165	3,900	100(90 ~ 110)
TNR23G121K	75	100		40.0			195	3,400	120(108 ~ 132)
TNR23G151K	95	125		50.0			245	2,900	150(135 ~ 165)
TNR23G181K	110	145		60.0			295	2,500	180(162 ~ 198)
TNR23G201K	130	170		70.0			330	2,300	200(180 ~ 220)
TNR23G221K	140	180		75.0			360	2,150	220(198 ~ 242)
TNR23G241K	150	200		80.0			390	2,000	240(216 ~ 264)
TNR23G271K	175	225		90.0			440	1,850	270(243 ~ 297)
TNR23G331K	210	270		110.0			540	1,600	330(297 ~ 363)
TNR23G361K	230	300	6,500/1	120.0			590	1,500	360(324 ~ 396)
TNR23G391K	250	320	Time	130.0			640	1,400	390(351 ~ 429)
TNR23G431K	275	350		140.0			700	1,300	430(387 ~ 473)
TNR23G471K	300	385	4,000/2	150.0			765	1,200	470(423 ~ 517)
TNR23G561K	350	460	Times	150.0			910	1,050	560(504 ~ 616)
TNR23G621K	385	505		150.0			1,015	980	620(558 ~ 682)
TNR23G681K	420	560		160.0			1,110	900	680(612 ~ 748)
TNR23G751K	460	615		175.0			1,230	850	750(675 ~ 825)
TNR23G821K	510	670		190.0			1,340	800	820(738 ~ 902)
TNR23G911K	550	745		215.0			1,500	720	910(819 ~ 1,001)
TNR23G102K	625	825		230.0			1,630	680	1,000(900 ~ 1,100)