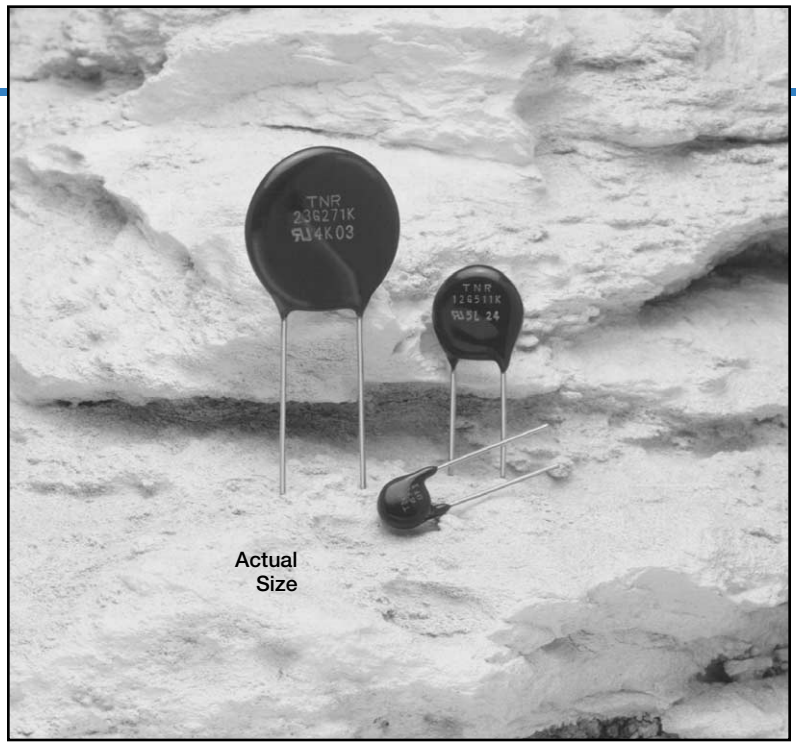
G Series

UNITED CHEMI-CON

- **Metal Oxide Varistor**
- **General Purpose**
- **UL 1414 and 1449 Approved**
- **CSA 097864 Approved**
- **+85°C Maximum Temperature**



The G series is the standard metal oxide varistor series from UCC/NCC. These MOVs are available in a wide variety of voltages and sizes, which will make them ideal in most applications where a surge protector is needed. The G series is also ideal because of the variety of UL and CSA approvals. The varistors with a 5mm or 7.5mm lead spacing are available with ammo pack taping.

Refer to the Mini-Glossary at the end of the metal oxide varistors section for additional technical information and specifications.

Summary of Specifications

- **Radial lead terminals.**
- **Operating temperature range: −40°C to +85°C.**
- **Maximum voltage range: 8 to 625VAC or 12 to 825VDC.**
- **Standard varistor voltage tolerance: ±10%**
- **Maximum energy: 0.4 to 230J depending on case size.**
- **Maximum surge current: 100 to 6,500A.**
- **Maximum case size (D×H×T): 8.0×11.0×5.0mm to 25.0×28.0×9.5mm.**

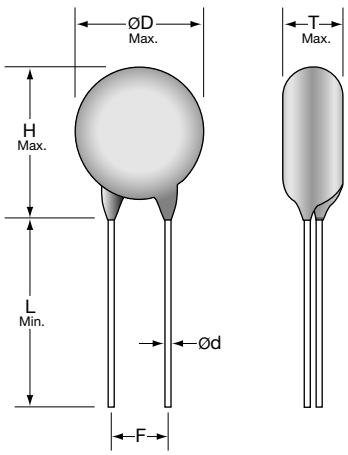
G Series

G Specifications

Item	Characteristics
Operating Temperature Range	−40 to +85°C
Storage Temperature Range	−50 to +125°C
Maximum Voltage Range	8 to 625VAC or 12 to 825VDC
Varistor Voltage	22 to 470V at 0.1mA DC for Ø7mm; 15 to 1,000V at 1mA DC for Ø9mm to Ø23mm.
Varistor Voltage Tolerance	±10% (K)
Maximum Energy	0.4 to 230 Joules at 2ms
Maximum Surge Current	100 to 6,500A at 8/20µs
Maximum Case Size (D×H×T)	8.0×11.0×5.0mm to 25.0×28.0×9.5mm
Agency Approvals	UL1414 and 1449; CSA 097864

Diagram of Dimensions

Metal Oxide Varistor/Radial Lead



Unit: mm and inches

Dimensions (mm)

Nom. Dia.	Varistor Voltage	ØD max.	H max.	T max.	L min.	Ød ±0.05	F ±1.0
7mm	≤270	8	11	5	25	0.6	5
	≥330	8	11	7	25	0.6	5
9mm	≤270	10	13	5	25	0.6	5
	≥330	10	13	7	25	0.6	5
12mm	≤270	13.5	16.5	5	25	0.8	7.5
	330-680	14	17	7.5	25	0.8	7.5
	≥820	14	17	9	25	0.8	7.5
15mm	≤270	16	19	5	25	0.8	7.5
	330-680	17	20	7.5	25	0.8	7.5
	≥820	17	20	9	25	0.8	7.5
23mm	≤270	24	27	5	25	0.8	10
	330-680	25	28	8	25	0.8	10
	≥820	25	28	9.5	25	0.8	10

Dimensions (inches)

Nom. Dia.	Varistor Voltage	ØD max.	H max.	T max.	L min.	Ød ±0.002	F ±0.039
7mm	≤270	0.315	0.433	0.197	0.984	0.024	0.197
	≥330	0.315	0.433	0.276	0.984	0.024	0.197
9mm	≤270	0.394	0.512	0.197	0.984	0.024	0.197
	≥330	0.394	0.512	0.276	0.984	0.024	0.197
12mm	≤270	0.531	0.650	0.197	0.984	0.031	0.295
	330-680	0.551	0.669	0.295	0.984	0.031	0.295
	≥820	0.551	0.669	0.354	0.984	0.031	0.295
15mm	≤270	0.630	0.748	0.197	0.984	0.031	0.295
	330-680	0.669	0.787	0.295	0.984	0.031	0.295
	≥820	0.669	0.787	0.354	0.984	0.031	0.295
23mm	≤270	0.945	1.063	0.197	0.984	0.031	0.394
	330-680	0.984	1.102	0.315	0.984	0.031	0.394
	≥820	0.984	1.102	0.374	0.984	0.031	0.394

Part Numbering System for G Series

When ordering, always specify complete catalog number for G Series.

TNR 9 G 271 K

- K — Varistor Voltage Tolerance: K = ±10%
- 271 — Nominal Varistor Voltage: Expressed in volts. The first two digits are significant figures, and the third digit indicates the number of zeros following these figures (e.g. 270 = 27V; 271 = 270V).
- G — Series Name: Indicates Basic Varistor Style.
- 9 — Nominal Case Diameter: 7 = Ø7mm; 9 = Ø9mm; 12 = Ø12mm; 15 = Ø15mm; 23 = Ø23mm.
- TNR — TNR: Alpha Prefix for Varistors.

G Series

Varistor Standard Ratings - Radial Lead

Nom Case Diam.	Old Part Number	Global Part Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20µsec.)	Maximum Energy (2msec.)	Rated Wattage	Maximum Clamping Voltage		Capacitance (typical) at 1kHz	Varistor Voltage at 0.1mA DC
			VACrms	VDC	(A)	(J)	(W)	(A)	(V)	(pF)	(V +/- 10%)
Ø7 mm	TNR7G220K	TND07G-220KB00AAA0	14	18	100	0.4	0.01	1	48	1,800	22
	TNR7G270K	TND07G-270KB00AAA0	17	22	100	0.5	0.01	1	60	1,500	27
	TNR7G330K	TND07G-330KB00AAA0	20	26	100	0.6	0.01	1	73	1,300	33
	TNR7G390K	TND07G-390KB00AAA0	25	30	100	0.8	0.01	1	86	1,150	39
	TNR7G470K	TND07G-470KB00AAA0	30	37	100	1	0.01	1	104	980	47
	TNR7G560K	TND07G-560KB00AAA0	35	44	100	1.1	0.01	1	123	840	56
	TNR7G680K	TND07G-680KB00AAA0	40	55	100	1.3	0.01	1	150	720	68
	TNR7G820K	TND07G-820KB00AAA0	50	65	400	2	0.1	5	145	260	82
	TNR7G101K	TND07G-101KB00AAA0	60	85	400	2	0.1	5	175	200	100
	TNR7G121K	TND07G-121KB00AAA0	75	100	400	3	0.1	5	210	170	120
	TNR7G151K	TND07G-151KB00AAA0	95	125	400	3	0.1	5	260	140	150
	TNR7G181K	TND07G-181KB00AAA0	110	145	400	4	0.1	5	325	120	180
	TNR7G201K	TND07G-201KB00AAA0	130	170	400	5	0.1	5	355	110	200
	TNR7G221K	TND07G-221KB00AAA0	140	180	400	5	0.1	5	380	105	220
	TNR7G241K	TND07G-241KB00AAA0	150	200	400	5	0.1	5	415	98	240
	TNR7G271K	TND07G-271KB00AAA0	175	225	400	6	0.1	5	475	88	270
	TNR7G331K	TND07G-331KB00AAA0	210	270	400	8	0.1	5	600	76	330
	TNR7G391K	TND07G-391KB00AAA0	250	320	400	9	0.1	5	675	67	390
	TNR7G431K	TND07G-431KB00AAA0	275	350	400	10	0.1	5	745	60	430
	TNR7G471K	TND07G-471KB00AAA0	300	385	400	10	0.1	5	810	57	470

Nom Case Diam.	Old Part Number	Global Part Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20µsec.)	Maximum Energy (2msec.)	Rated Wattage	Maximum Clamping Voltage		Capacitance (typical) at 1kHz	Varistor Voltage at 0.1mA DC
			VACrms	VDC	(A)	(J)	(W)	(A)	(V)	(pF)	(V +/- 10%)
Ø9 mm	TNR9G180K	TND09G-180KB00AAA0	10	14	250	0.8	0.02	2	35	5,400	18
	TNR9G220K	TND09G-220KB00AAA0	14	18	250	1	0.02	2	43	4,900	22
	TNR9G270K	TND09G-270KB00AAA0	17	22	250	1	0.02	2	53	4,200	27
	TNR9G330K	TND09G-330KB00AAA0	20	26	250	1.2	0.02	2	65	3,500	33
	TNR9G390K	TND09G-390KB00AAA0	25	30	250	1.5	0.02	2	77	3,100	39
	TNR9G470K	TND09G-470KB00AAA0	30	37	250	1.8	0.02	2	93	2,600	47
	TNR9G560K	TND09G-560KB00AAA0	35	44	250	2.2	0.02	2	110	2,300	56
	TNR9G680K	TND09G-680KB00AAA0	40	55	250	2.5	0.02	2	135	1,900	68
	TNR9G820K	TND09G-820KB00AAA0	50	65	1,200	4	0.2	10	135	620	82
	TNR9G101K	TND09G-101KB00AAA0	60	85	1,200	4	0.2	10	165	530	100
	TNR9G121K	TND09G-121KB00AAA0	75	100	1,200	5	0.2	10	195	460	120
	TNR9G151K	TND09G-151KB00AAA0	95	125	1,200	6	0.2	10	245	380	150
	TNR9G181K	TND09G-181KB00AAA0	110	145	1,200	8	0.2	10	295	335	180
	TNR9G201K	TND09G-201KB00AAA0	130	170	1,200	10	0.2	10	330	310	200
	TNR9G221K	TND09G-221KB00AAA0	140	180	1,200	10	0.2	10	360	280	220
	TNR9G241K	TND09G-241KB00AAA0	150	200	1,200	10	0.2	10	390	270	240
	TNR9G271K	TND09G-271KB00AAA0	175	225	1,200	12	0.2	10	440	245	270
	TNR9G331K	TND09G-331KB00AAA0	210	270	1,200	15	0.2	10	540	210	330
	TNR9G391K	TND09G-391KB00AAA0	250	320	1,200	17	0.2	10	640	185	390
	TNR9G431K	TND09G-431KB00AAA0	275	350	1,200	20	0.2	10	700	170	430
	TNR9G471K	TND09G-471KB00AAA0	300	385	1,200	20	0.2	10	765	160	470

Nom Case Diam.	Old Part Number	Global Part Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20µsec.)	Maximum Energy (2msec.)	Rated Wattage	Maximum Clamping Voltage		Capacitance (typical) at 1kHz	Varistor Voltage at 0.1mA DC
			VACrms	VDC	(A)	(J)	(W)	(A)	(V)	(pF)	(V +/- 10%)
Ø12 mm	TNR12G180K	TND12G-180KB00AAA0	10	14	500	1.5	0.05	5	35	9,000	18
	TNR12G220K	TND12G-220KB00AAA0	14	18	500	2	0.05	5	43	8,200	22
	TNR12G270K	TND12G-270KB00AAA0	17	22	500	2.5	0.05	5	53	6,900	27
	TNR12G330K	TND12G-330KB00AAA0	20	26	500	3	0.05	5	65	5,900	33
	TNR12G390K	TND12G-390KB00AAA0	25	30	500	3.5	0.05	5	77	5,100	39
	TNR12G470K	TND12G-470KB00AAA0	30	37	500	4.5	0.05	5	93	4,400	47
	TNR12G560K	TND12G-560KB00AAA0	35	44	500	5.5	0.05	5	110	3,800	56
	TNR12G680K	TND12G-680KB00AAA0	40	55	500	6.5	0.05	5	135	3,200	68
	TNR12G820K	TND12G-820KB00AAA0	50	65	2,500	8	0.4	25	135	1,200	82
	TNR12G101K	TND12G-101KB00AAA0	60	85	2,500	10	0.4	25	165	1,050	100
	TNR12G121K	TND12G-121KB00AAA0	75	100	2,500	12	0.4	25	195	910	120
	TNR12G151K	TND12G-151KB00AAA0	95	125	2,500	16	0.4	25	245	770	150
	TNR12G181K	TND12G-181KB00AAA0	110	145	2,500	18	0.4	25	295	670	180
	TNR12G201K	TND12G-201KB00AAA0	130	170	2,500	20	0.4	25	330	620	200
	TNR12G221K	TND12G-221KB00AAA0	140	180	2,500	25	0.4	25	360	570	220
	TNR12G241K	TND12G-241KB00AAA0	150	200	2,500	25	0.4	25	390	530	240
	TNR12G271K	TND12G-271KB00AAA0	175	225	2,500	30	0.4	25	440	490	270
	TNR12G331K	TND12G-331KB00AAA0	210	270	2,500	35	0.4	25	540	420	330
	TNR12G391K	TND12G-391KB00AAA0	250	320	2,500	40	0.4	25	640	370	390
	TNR12G431K	TND12G-431KB00AAA0	275	350	2,500	45	0.4	25	700	340	430
	TNR12G471K	TND12G-471KB00AAA0	300	385	2,500	45	0.4	25	765	320	470
	TNR12G561K	TND12G-561KB00AAA0	350	460	2,500	45	0.4	25	910	280	560
	TNR12G681K	TND12G-681KB00AAA0	420	560	2,500	45	0.4	25	1,110	240	680
	TNR12G821K	TND12G-821KB00AAA0	510	670	2,500	55	0.4	25	1,340	210	820
	TNR12G102K	TND12G-102KB00AAA0	625	825	2,500	65	0.4	25	1,630	180	1,000

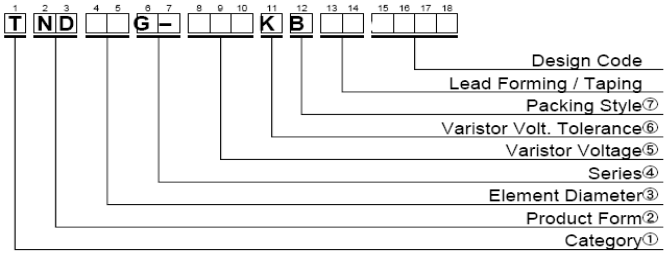
G Series

Varistor Standard Ratings - Radial Lead

Nom Case Diam.	Old Part Number	Global Part Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20µsec.)	Maximum Energy (2msec.)	Rated Wattage	Maximum Clamping Voltage		Capacitance (typical) at 1kHz	Varistor Voltage at 0.1mA DC
			VACrms	VDC	(A)	(J)	(W)	(A)	(V)	(pF)	(V +/- 10%)
Ø15 mm	TNR15G150K	TND15G-150KB00AAA0	8	12	1,000	5	0.1	10	30	12,000	15
	TNR15G180K	TND15G-180KB00AAA0	10	14	1,000	5	0.1	10	35	11,500	18
	TNR15G220K	TND15G-220KB00AAA0	14	18	1,000	5	0.1	10	43	11,000	22
	TNR15G270K	TND15G-270KB00AAA0	17	22	1,000	5	0.1	10	53	10,000	27
	TNR15G330K	TND15G-330KB00AAA0	20	26	1,000	6	0.1	10	65	8,500	33
	TNR15G390K	TND15G-390KB00AAA0	25	30	1,000	10	0.1	10	77	7,500	39
	TNR15G470K	TND15G-470KB00AAA0	30	37	1,000	10	0.1	10	93	6,500	47
	TNR15G560K	TND15G-560KB00AAA0	35	44	1,000	10	0.1	10	110	5,600	56
	TNR15G680K	TND15G-680KB00AAA0	40	55	1,000	12	0.1	10	135	4,800	68
	TNR15G820K	TND15G-820KB00AAA0	50	65	4,500	15	0.6	50	135	1,700	82
	TNR15G101K	TND15G-101KB00AAA0	60	85	4,500	20	0.6	50	165	1,470	100
	TNR15G121K	TND15G-121KB00AAA0	75	100	4,500	20	0.6	50	195	1,280	120
	TNR15G151K	TND15G-151KB00AAA1	95	125	4,500	25	0.6	50	245	1,070	150
	TNR15G181K	TND15G-181KB00AAA0	110	145	4,500	30	0.6	50	295	930	180
	TNR15G201K	TND15G-201KB00AAA0	130	170	4,500	35	0.6	50	330	850	200
	TNR15G221K	TND15G-221KB00AAA0	140	180	4,500	40	0.6	50	360	800	220
	TNR15G241K	TND15G-241KB00AAA0	150	200	4,500	40	0.6	50	390	740	240
	TNR15G271K	TND15G-271KB00AAA0	175	225	4,500	50	0.6	50	440	680	270
	TNR15G331K	TND15G-331KB00AAA0	210	270	4,500	60	0.6	50	540	590	330
	TNR15G391K	TND15G-391KB00AAA0	250	320	4,500	70	0.6	50	640	510	390
	TNR15G431K	TND15G-431KB00AAA0	275	350	4,500	75	0.6	50	700	480	430
	TNR15G471K	TND15G-471KB00AAA0	300	385	4,500	80	0.6	50	765	450	470
	TNR15G561K	TND15G-561KB00AAA0	350	460	4,500	85	0.6	50	910	390	560
	TNR15G681K	TND15G-681KB00AAA0	420	560	4,500	90	0.6	50	1,110	340	680
	TNR15G821K	TND15G-821KB00AAA0	510	670	4,500	110	0.6	50	1,340	280	820
	TNR15G102K	TND15G-102KB00AAA0	625	825	4,500	130	0.6	50	1,630	250	1,000

Nom Case Diam.	Old Part Number	Global Part Number	Maximum Applied Voltage (Continuous)		Maximum Peak Current (8/20µsec.)	Maximum Energy (2msec.)	Rated Wattage	Maximum Clamping Voltage		Capacitance (typical) at 1kHz	Varistor Voltage at 0.1mA DC
			VACrms	VDC	(A)	(J)	(W)	(A)	(V)	(pF)	(V +/- 10%)
Ø23 mm	TNR23G181K	TND23G-181KB00AAA0	110	145	6,500	60	1	100	295	2,500	180
	TNR23G201K	TND23G-201KB00AAA0	130	170	6,500	70	1	100	330	2,300	200
	TNR23G221K	TND23G-221KB00AAA0	140	180	6,500	75	1	100	360	2,150	220
	TNR23G241K	TND23G-241KB00AAA0	150	200	6,500	80	1	100	390	2,000	240
	TNR23G271K	TND23G-271KB00AAA0	175	225	6,500	90	1	100	440	1,850	270
	TNR23G331K	TND23G-331KB00AAA0	210	270	6,500	110	1	100	540	1,600	330
	TNR23G391K	TND23G-391KB00AAA0	250	320	6,500	130	1	100	640	1,400	390
	TNR23G431K	TND23G-431KB00AAA0	275	350	6,500	140	1	100	700	1,300	430
	TNR23G471K	TND23G-471KB00AAA0	300	385	6,500	150	1	100	765	1,200	470
	TNR23G561K	TND23G-561KB00AAA0	350	460	6,500	150	1.5	100	910	1,050	560
	TNR23G681K	TND23G-681KB00AAA0	420	560	6,500	160	1.5	100	1,110	900	680
	TNR23G821K	TND23G-821KB00AAA0	510	670	6,500	190	1.5	100	1,340	800	820
	TNR23G102K	TND23G-102KB00AAA0	625	825	6,500	230	1.5	100	1,630	680	1,000

◆PART NUMBERING SYSTEM



①Category	
T	Metal Oxide Varistors TNR

②Product Form	
ND	Disk Type

③Element Diameter	
05	ϕ 5 mm
07	ϕ 7 mm
09	ϕ 9 mm
10	ϕ10 mm
12	ϕ12 mm
15	ϕ15 mm
23	ϕ23 mm

④Series	
G	–G Series

⑤Varistor Voltage
The first two digits are significant figures and the third one denotes the number of following zeros.

⑥Varistor Volt. Tolerance	
K	±10%

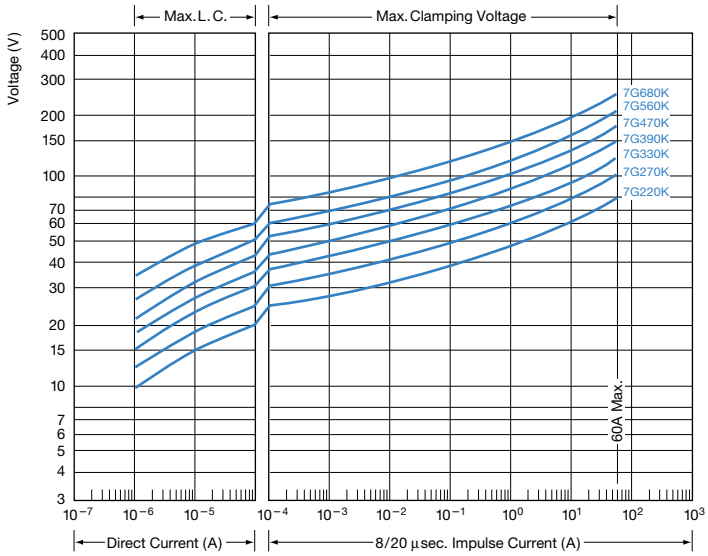
⑦Packing Style	
B	Bulk
T	Taping

G
METAL OXIDE VARISTOR

Varistor Volt-Ampere and Pulse Lifetime Characteristics

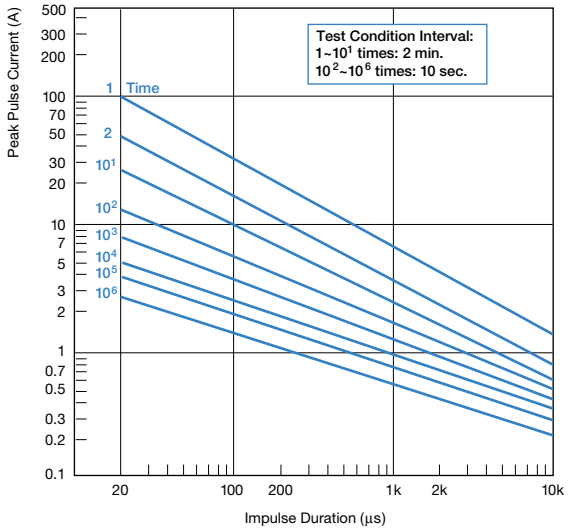
V-I Curve-7mm Nominal Diameter

TNR7G220K~TNR7G680K at +20°C



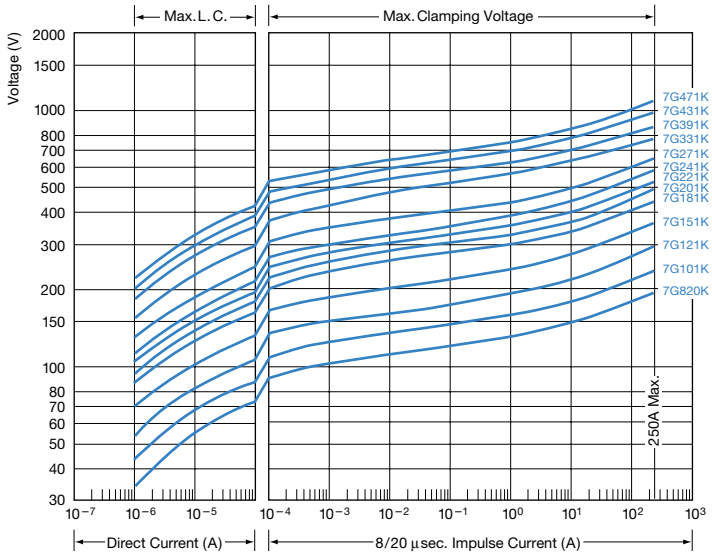
Pulse Lifetime Ratings-7mm Nominal Diameter

TNR7G220K~TNR7G680K



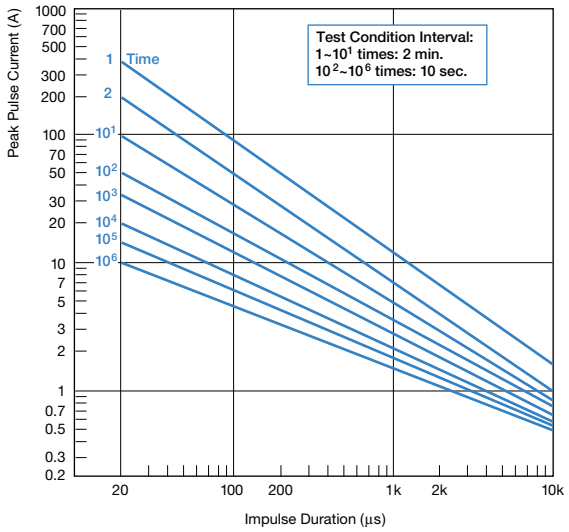
V-I Curve-7mm Nominal Diameter

TNR7G820K~TNR7G471K at +20°C



Pulse Lifetime Ratings-7mm Nominal Diameter

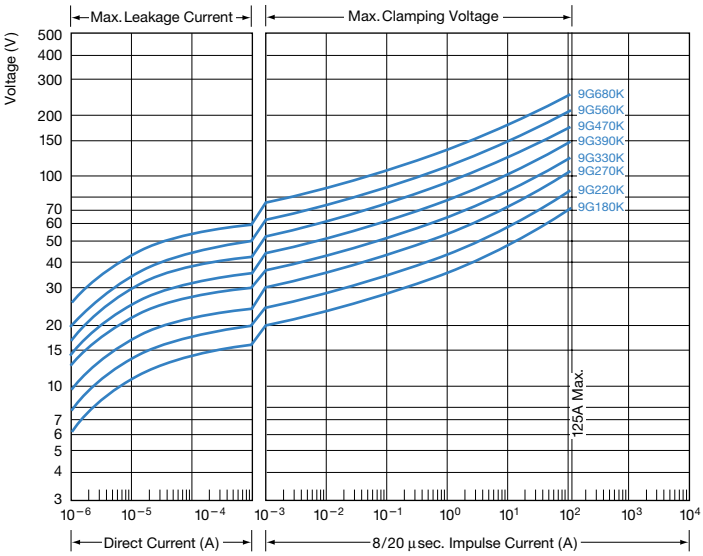
TNR7G820K~TNR7G471K



Varistor Volt-Ampere and Pulse Lifetime Characteristics

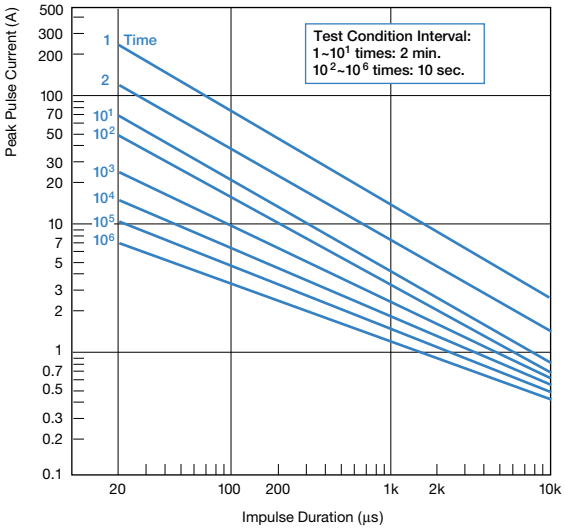
V-I Curve-9mm Nominal Diameter

TNR9G180K~TNR9G680K at +20°C



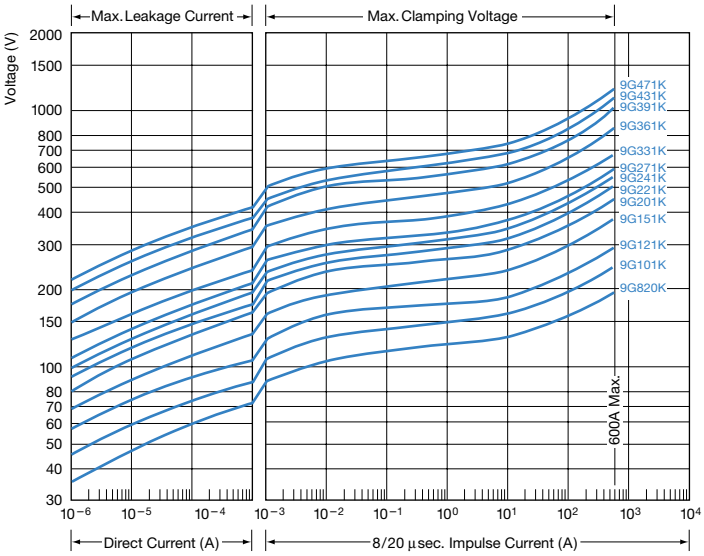
Pulse Lifetime Ratings-9mm Nominal Diameter

TNR9G180K~TNR9G680K



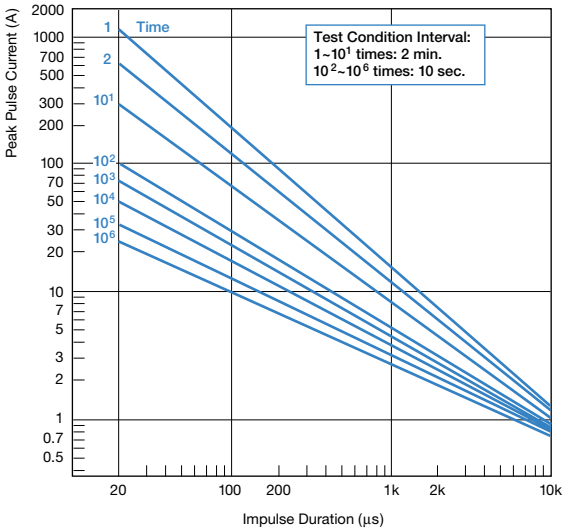
V-I Curve-9mm Nominal Diameter

TNR9G820K~TNR9G471K at +20°C



Pulse Lifetime Ratings-9mm Nominal Diameter

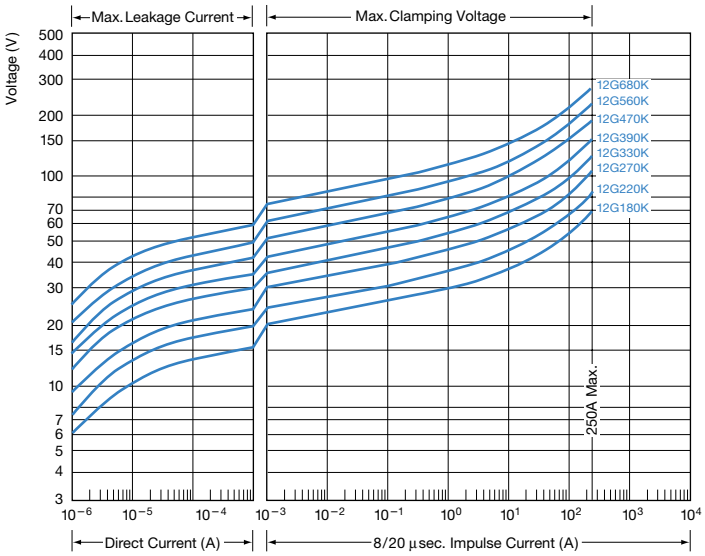
TNR9G820K~TNR9G471K



Varistor Volt-Ampere and Pulse Lifetime Characteristics

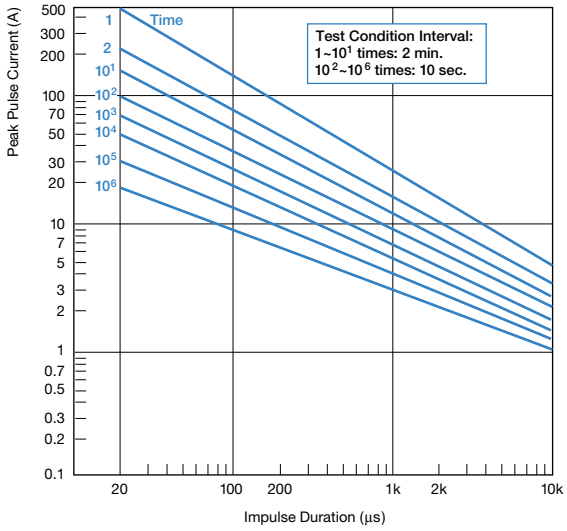
V-I Curve-12mm Nominal Diameter

TNR12G180K~TNR12G680K at +20°C



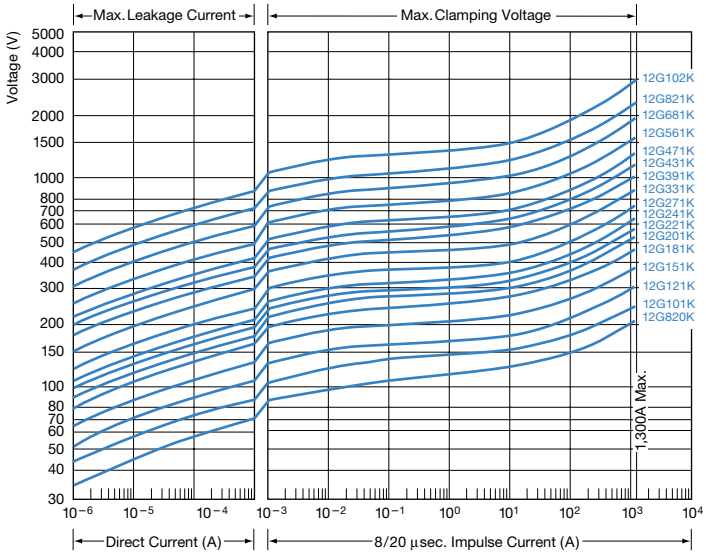
Pulse Lifetime Ratings-12mm Nominal Diameter

TNR12G180K~TNR12G680K



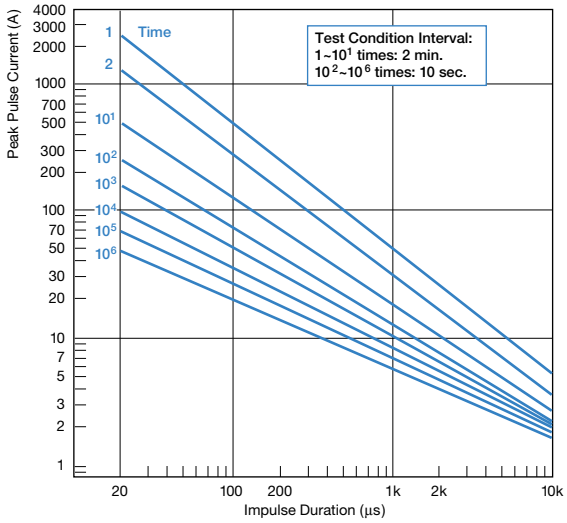
V-I Curve-12mm Nominal Diameter

TNR12G820K~TNR12G102K at +20°C



Pulse Lifetime Ratings-12mm Nominal Diameter

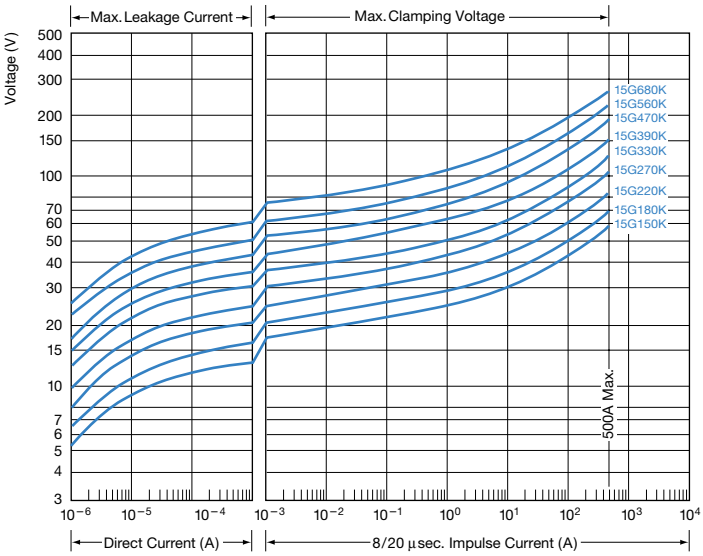
TNR12G820K~TNR12G102K



Varistor Volt-Ampere and Pulse Lifetime Characteristics

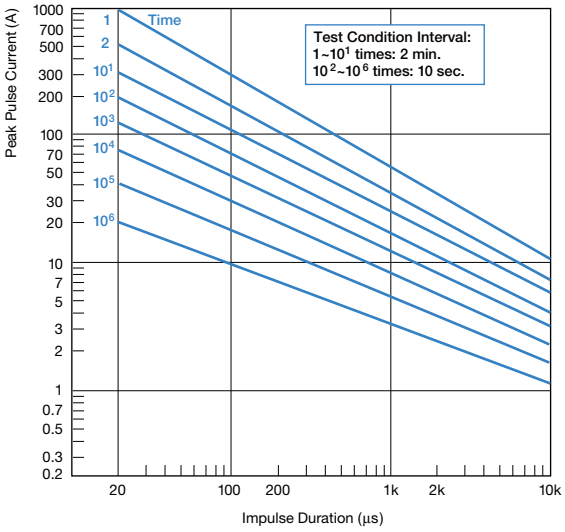
V-I Curve-15mm Nominal Diameter

TNR15G150K~TNR15G680K at +20°C



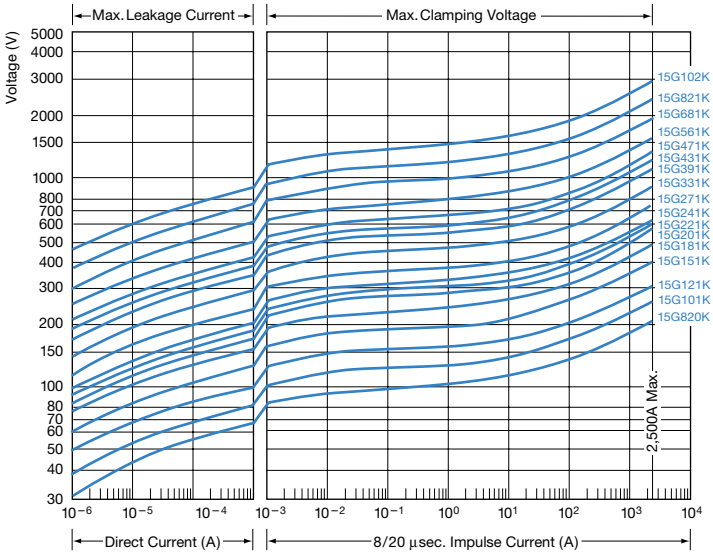
Pulse Lifetime Ratings-15mm Nominal Diameter

TNR15G150K~TNR15G680K



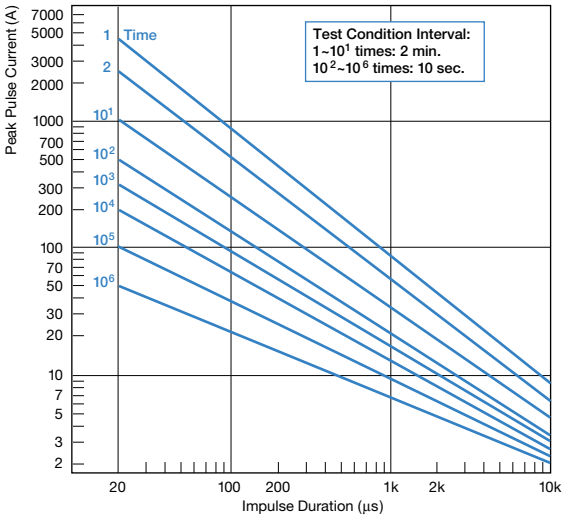
V-I Curve-15mm Nominal Diameter

TNR15G820K~TNR15G102K at +20°C



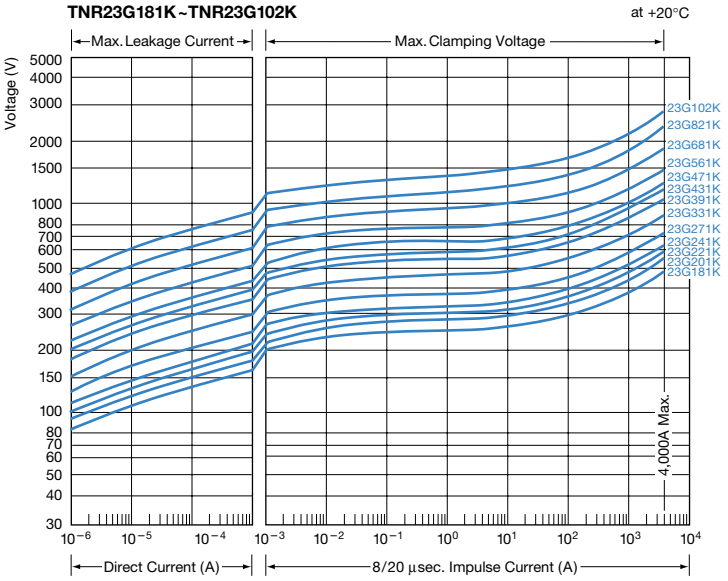
Pulse Lifetime Ratings-15mm Nominal Diameter

TNR15G820K~TNR15G102K

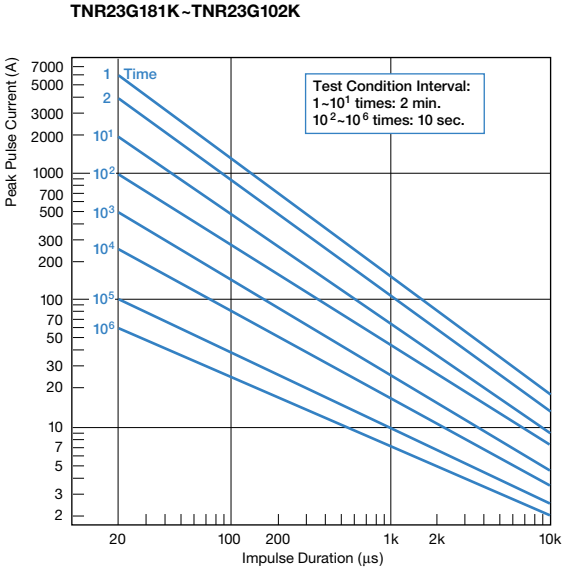


Varistor Volt-Ampere and Pulse Lifetime Characteristics

V-I Curve-23mm Nominal Diameter



Pulse Lifetime Ratings-23mm Nominal Diameter



Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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