

**SURGE SUPPRESSOR  
METAL OXIDE VARISTOR  
NEC-MOV SERIES**

NV100D05 ~ NV470D05  
 NV100D07 ~ NV470D07  
 NV082D10 ~ NV910D10  
 NV082D14 ~ NV910D14  
 NV100D19 ~ NV910D19

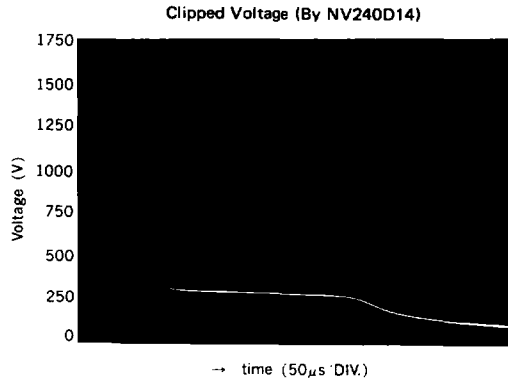
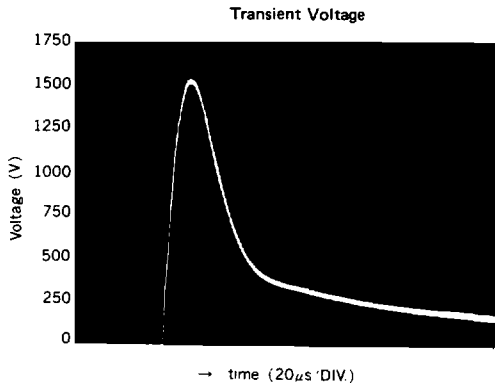
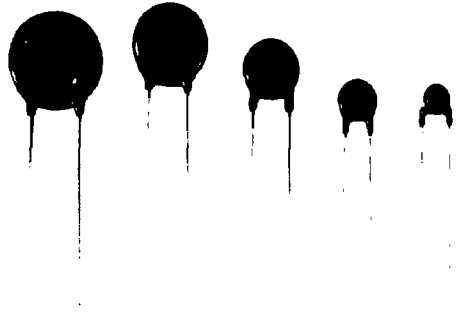
The NEC-MOV series are the best device for transient voltage protection. When exposed to high transient voltage the NEC-MOV's impedance changes from a very high value to a very low conducting value thus clamping the transient voltage to a safe level. Therefore NEC-MOV protects many electric equipment from surge voltage and keep a safe drive.

**FEATURES**

- Excellent transient voltage suppression characteristics.
- High surge current.
- Fast response time. (< 50 ns)
- V-I characteristics are the same in both polarity.

**APPLICATIONS**

- Protects equipment against failures by transient surge voltage.



Outline Drawing (Unit : mm)

Type Number	D(MAX.)	H(MAX.)	T(MAX.)	W
NV100D05	7.0	10.0	4.3	1.2
NV120D05	7.0	10.0	4.3	1.3
NV150D05	7.0	10.0	4.5	1.5
NV200D05	7.0	10.0	5.0	1.7
NV220D05	7.0	10.0	5.0	1.8
NV240D05	7.0	10.0	5.3	1.9
NV270D05	7.0	10.0	5.3	2.1
NV360D05	7.5	10.5	6.0	2.6
NV390D05	7.5	10.5	6.0	2.7
NV430D05	7.5	10.5	6.5	2.9
NV470D05	7.5	10.5	6.5	3.1

Type Number	D(MAX.)	H(MAX.)	T(MAX.)	W
NV100D07	9.0	12.0	4.3	1.2
NV120D07	9.0	12.0	4.3	1.3
NV150D07	9.0	12.0	4.5	1.5
NV200D07	9.0	12.0	5.0	1.7
NV220D07	9.0	12.0	5.0	1.8
NV240D07	9.0	12.0	5.3	1.9
NV270D07	9.0	12.0	5.3	2.1
NV360D07	9.5	12.5	6.0	2.6
NV390D07	9.5	12.5	6.0	2.7
NV430D07	9.5	12.5	6.5	2.9
NV470D07	9.5	12.5	6.5	3.1

Type Number	D(MAX.)	H(MAX.)	T(MAX.)	W
NV082D10	12.0	15.0	3.5	1.3
NV100D10	12.0	15.0	4.3	1.4
NV120D10	12.0	15.0	4.3	1.5
NV150D10	12.0	15.0	4.5	1.7
NV200D10	12.0	15.0	5.0	1.9
NV220D10	12.0	15.0	5.0	2.0
NV240D10	12.0	15.0	5.3	2.1
NV270D10	12.0	15.0	5.3	2.3
NV360D10	12.5	15.5	6.0	2.8
NV390D10	12.5	15.5	6.0	2.9
NV430D10	12.5	15.5	6.5	3.1
NV470D10	12.5	15.5	6.5	3.3
NV620D10	12.5	15.5	7.5	4.1
NV680D10	12.5	15.5	8.0	4.5
NV750D10	12.5	15.5	8.5	4.8
NV780D10	12.5	15.5	8.5	5.0
NV820D10	12.5	15.5	9.0	5.2
NV910D10	12.5	15.5	9.5	5.6

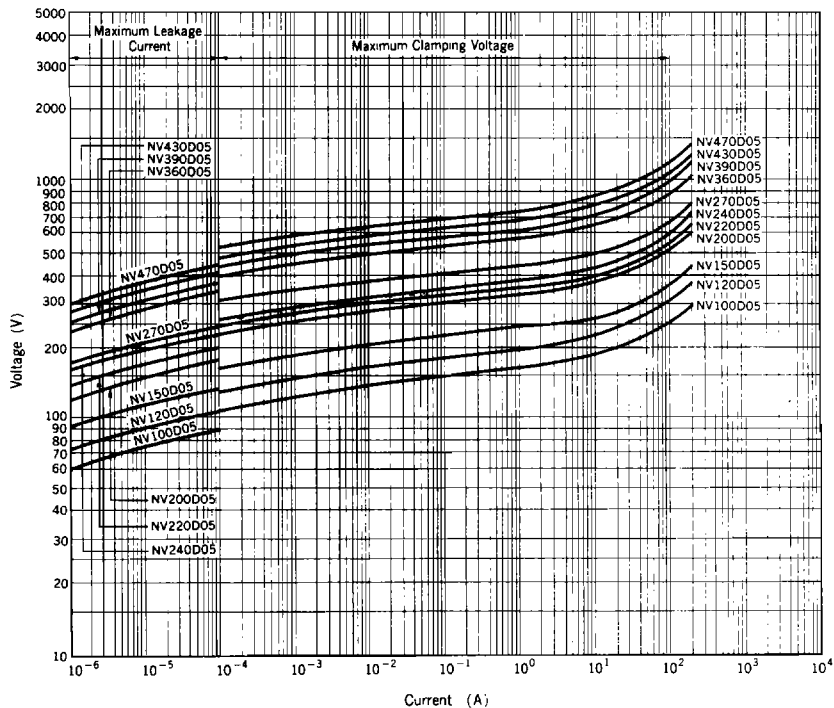
Type Number	D(MAX.)	H(MAX.)	T(MAX.)	W
NV082D14	16.0	21.0	3.5	1.3
NV100D14	16.0	21.0	4.3	1.4
NV120D14	16.0	21.0	4.3	1.5
NV150D14	16.0	21.0	4.5	1.7
NV200D14	16.0	21.0	5.0	1.9
NV220D14	16.0	21.0	5.0	2.0
NV240D14	16.0	21.0	5.3	2.1
NV270D14	16.0	21.0	5.3	2.3
NV360D14	16.5	21.5	6.0	2.8
NV390D14	16.5	21.5	6.0	2.9
NV430D14	16.5	21.5	6.5	3.1
NV470D14	16.5	21.5	6.5	3.3
NV620D14	16.5	21.5	7.5	4.1
NV680D14	16.5	21.5	8.0	4.5
NV750D14	16.5	21.5	8.5	4.8
NV780D14	16.5	21.5	8.5	5.0
NV820D14	16.5	21.5	9.0	5.2
NV910D14	16.5	21.5	9.5	5.6

Type Number	D(MAX.)	H(MAX.)	T(MAX.)	W
NV100D19	20.0	25.0	4.8	1.6
NV120D19	20.0	25.0	4.8	1.7
NV150D19	20.0	25.0	5.0	1.9
NV200D19	20.0	25.0	5.4	2.1
NV220D19	20.0	25.0	5.4	2.2
NV240D19	20.0	25.0	5.7	2.3
NV270D19	20.0	25.0	5.7	2.5
NV360D19	21.0	26.0	6.3	3.0
NV390D19	21.0	26.0	6.3	3.1
NV430D19	21.0	26.0	6.8	3.3
NV470D19	21.0	26.0	6.8	3.5
NV620D19	21.0	26.0	7.8	4.3
NV680D19	21.0	26.0	8.0	4.7
NV750D19	21.0	26.0	8.5	5.0
NV780D19	21.0	26.0	8.5	5.2
NV820D19	21.0	26.0	9.0	5.4
NV910D19	21.0	26.0	9.5	5.8

RATINGS AND CHARACTERISTICS (NV100D05 ~ NV470D05)

Type Number	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage	Energy	Peak Current	Operating Ambient Temperature	Storage Temperature	Capacitance (reference value)
	V <sub>0.1mA</sub> (±10%) (V)	ACrms (V)	DC (V)	V <sub>25A</sub> (V)	(J)	8×20 μs (A)	T <sub>opt</sub> (°C)	T <sub>stg</sub> (°C)	1 k ~ 1 MHz (pF)
NV100D05	100	60	85	175	2.0	200	-40 ~ 85	-40 ~ 125	40 ~ 150
NV120D05	120	75	100	210	2.5				
NV150D05	150	95	125	260	3.0				
NV200D05	200	130	170	355	4.0				
NV220D05	220	140	180	380	4.5				
NV240D05	240	150	200	415	5.0				
NV270D05	270	175	225	475	6.0				
NV360D05	360	230	300	620	7.5				
NV390D05	390	250	320	675	8.0				
NV430D05	430	275	350	745	9.0				
NV470D05	470	300	385	810	10.0				

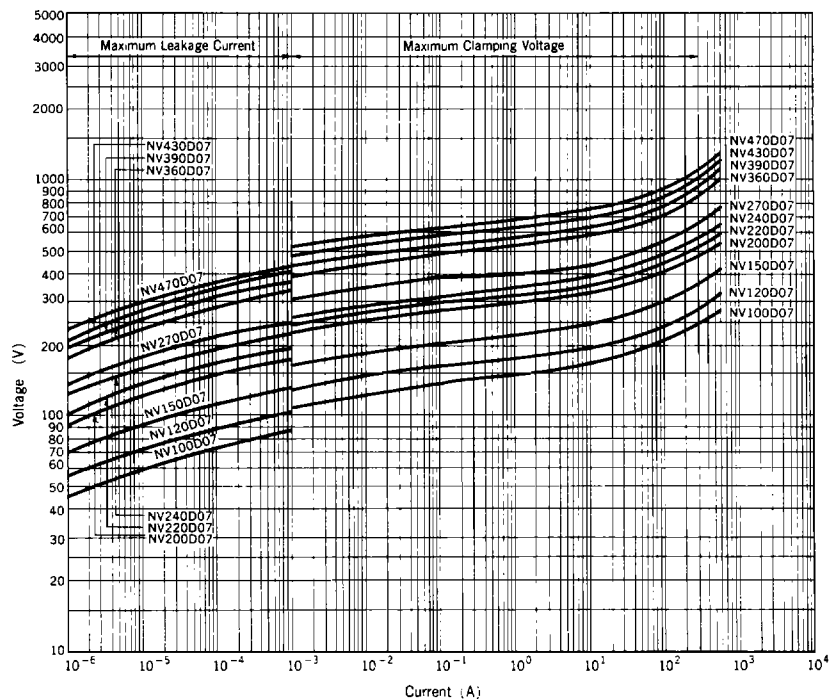
Fig. 1 V-I Characteristics



RATINGS AND CHARACTERISTICS (NV100D07 ~ NV470D07)

Type Number	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage	Energy	Peak Current	Operating Ambient Temperature	Storage Temperature	Capacitance (reference value)
	V1mA (±10%) (V)	ACrms (V)	DC (V)	V50A (V)	(J)	8 × 20 μs (A)	T <sub>opt</sub> (°C)	T <sub>stg</sub> (°C)	1 k ~ 1 MHz (pF)
NV100D07	100	60	85	165	4.5	600	-40 ~ 85	-40 ~ 125	70 ~ 250
NV120D07	120	75	100	200	5.0				
NV150D07	150	95	125	250	6.0				
NV200D07	200	130	170	340	10.0				
NV220D07	220	140	180	360	10.0				
NV240D07	240	150	200	395	10.0				
NV270D07	270	175	225	455	12.0				
NV360D07	360	230	300	595	15.0				
NV390D07	390	250	320	650	17.0				
NV430D07	430	275	350	710	20.0				
NV470D07	470	300	385	775	20.0				

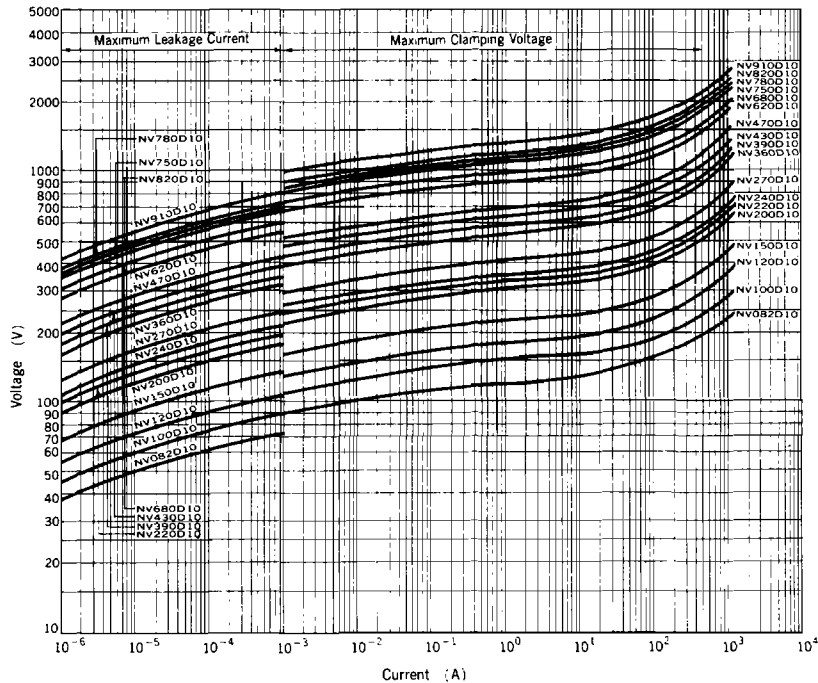
Fig. 2 V-I Characteristics



RATINGS AND CHARACTERISTICS (NV082D10 ~ NV910D10)

Type Number	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage	Energy	Peak Current 8 x 20 $\mu$ s (A)	Operating Ambient Temperature T <sub>opt</sub> (°C)	Storage Temperature T <sub>stg</sub> (°C)	Capacitance (reference value) 1 k ~ 1 MHz (pF)
	V1mA ( $\pm$ 10%) (V)	ACrms (V)	DC (V)	V25A (V)	(J)				
NV082D10	82	50	65	135	8	1250	-40 ~ 85	-40 ~ 125	250 ~ 800
NV100D10	100	60	85	165	10				
NV120D10	120	75	100	200	12				
NV150D10	150	95	125	250	16				
NV200D10	200	130	170	340	20				
NV220D10	220	140	180	360	23				
NV240D10	240	150	200	395	25				
NV270D10	270	175	225	455	30				
NV360D10	360	230	300	595	35				
NV390D10	390	250	320	650	40				
NV430D10	430	275	350	710	45				
NV470D10	470	300	385	775	45				
NV620D10	620	385	505	1025	45				
NV680D10	680	420	560	1120	45				
NV750D10	750	460	615	1240	50				
NV780D10	780	485	640	1290	50				
NV820D10	820	510	670	1355	55				
NV910D10	910	550	745	1500	60				

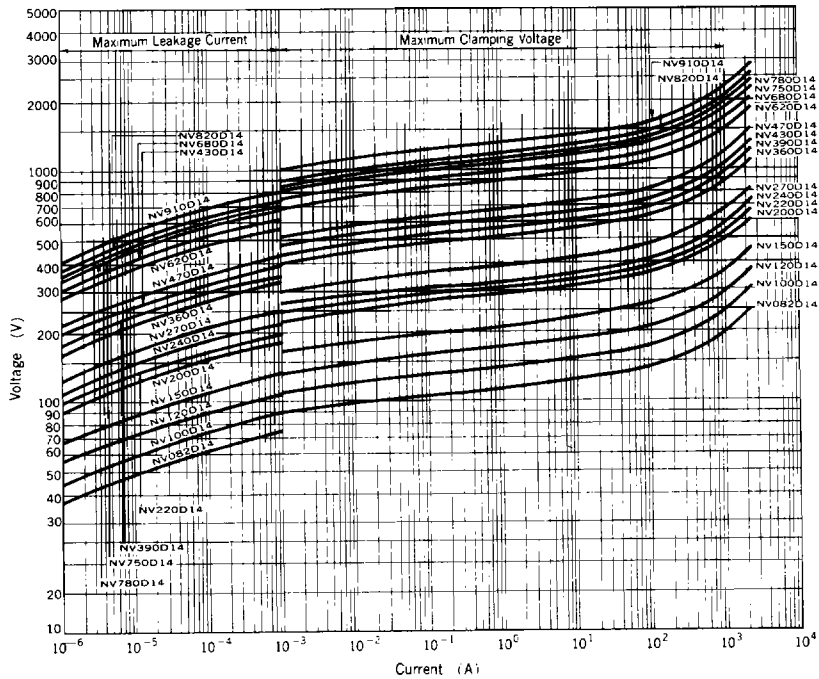
Fig. 3 V-I Characteristics



RATINGS AND CHARACTERISTICS (NV082D14 ~ NV910D14)

Type Number	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage	Energy	Peak Current	Operating Ambient Temperature	Storage Temperature	Capacitance (reference value)
	V1mA (±10%) (V)	ACrms (V)	DC (V)	V50A (V)	(J)	8 x 20 μs (A)	T <sub>opt</sub> (°C)	T <sub>stg</sub> (°C)	1k ~ 1 MHz (pF)
NV082D14	82	50	65	135	14	2500	-40 ~ 85	-40 ~ 125	100 ~ 1000
NV100D14	100	60	85	165	18				
NV120D14	120	75	100	200	20				
NV150D14	150	95	125	250	25				
NV200D14	200	130	170	340	35				
NV220D14	220	140	180	360	40				
NV240D14	240	150	200	395	40				
NV270D14	270	175	225	455	50				
NV360D14	360	230	300	595	65				
NV390D14	390	250	320	650	70				
NV430D14	430	275	350	710	75				
NV470D14	470	300	385	775	80				
NV620D14	620	385	505	1025	85				
NV680D14	680	420	560	1120	90				
NV750D14	750	460	615	1240	100				
NV780D14	780	485	640	1290	105				
NV820D14	820	510	670	1355	110				
NV910D14	910	550	745	1500	120				

Fig. 4 V-I Characteristics



RATINGS AND CHARACTERISTICS (NV100D19 ~ NV910D19)

Type Number	Varistor Voltage	Maximum Allowable Voltage		Clamping Voltage	Energy	Peak Current	Operating Ambient Temperature	Storage Temperature	Capacitance (reference value)
	V1mA (±10%) (V)	ACrms (V)	DC (V)	V100A (V)	(J)	8x20 μs (A)	T <sub>opt</sub> (°C)	T <sub>stg</sub> (°C)	1k ~ 1MHz (pF)
NV100D19	100	60	85	165	19	3000	-40 ~ 85	-40 ~ 125	300 ~ 2000
NV120D19	120	75	100	200	21				
NV150D19	150	95	125	250	27				
NV200D19	200	130	170	340	37				
NV220D19	220	140	180	360	42				
NV240D19	240	150	200	395	42				
NV270D19	270	175	225	455	52				
NV360D19	360	230	300	595	68				
NV390D19	390	250	320	650	73				
NV430D19	430	275	350	710	80				
NV470D19	470	300	385	775	90				
NV620D19	620	385	505	1025	100				
NV680D19	680	420	560	1120	110				
NV750D19	750	460	615	1240	120				
NV780D19	780	485	640	1290	130				
NV820D19	820	510	670	1355	140				
NV910D19	910	550	745	1500	150				

Fig. 5 V-I Characteristics

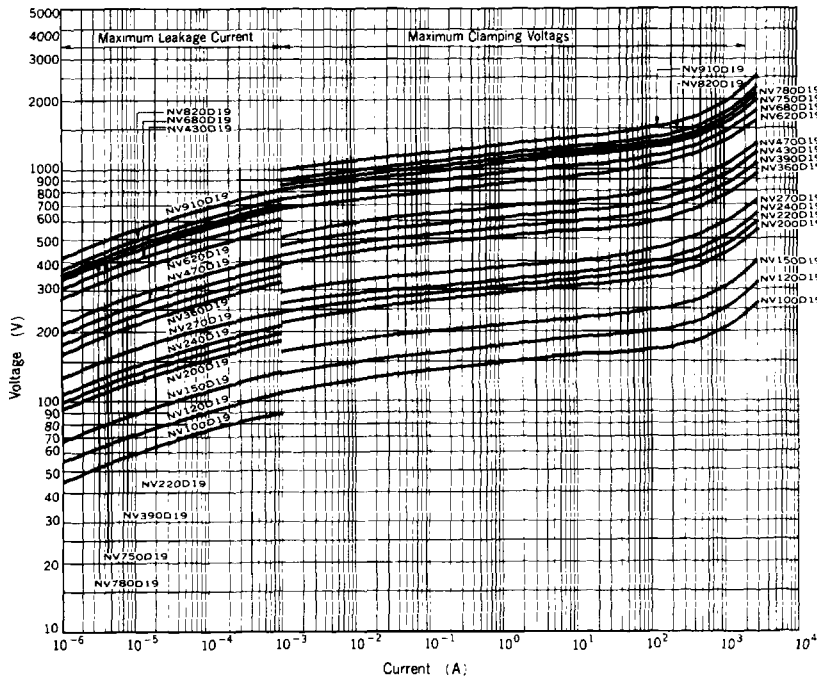


Fig. 6 Peak Current-Pulse Width Rating (Impulse Number N=2)

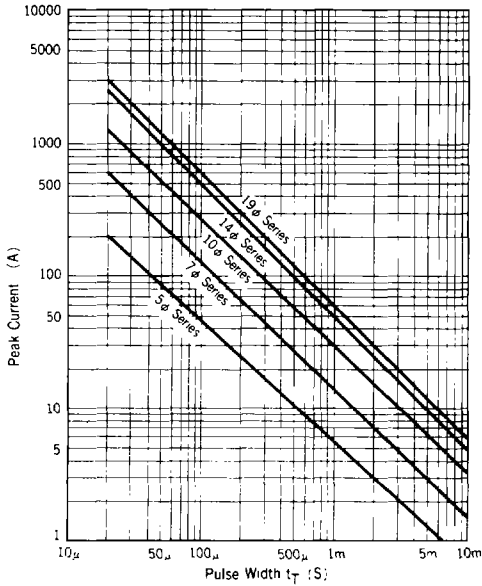


Fig. 7 Derating Curve

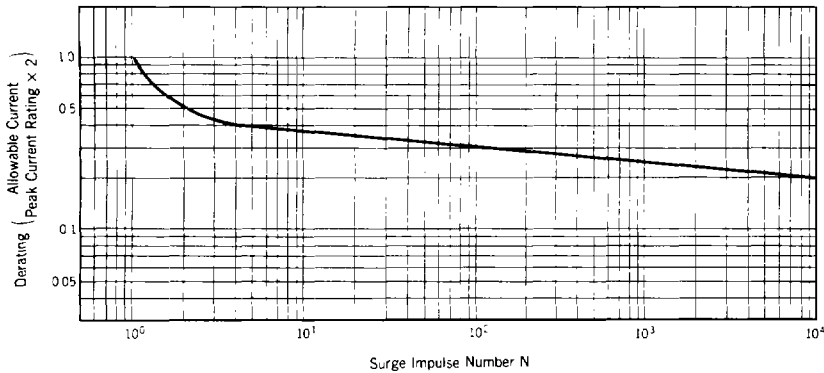
ex. 14 φ Series

Pulse width  $t_T=200\mu s$ , Impulse number  $N=10^4$

$I$  (at  $t_T=200\mu s$ ) = 250A (See Fig. 6)

Derating (at  $N=10^4$ ) = 0.2 (See Fig. 7)

Allowable current  $I = 250 \times 0.2 = 100A$



**NOTICE**

- Applied voltage should not be over the maximum ratings.
- Should the NEC-MOV be subjected to surge current and energy levels in excess of maximum ratings, it may physically fail by package rupture or explosion of material. It is recommended that protective fusing be used in a circuit.
- When the NEC-MOV are used in a high frequency circuit, notice it's capacitance and avoid to fever.