

# High Energy Suppressor Discs - D & S Series

## Description

The D and S Series High Energy Suppressor Discs are heavy-duty metal oxide varistors designed for special applications where unique contacts are required. They offer excellent surge protection for use in industrial and consumer electrical equipment, power distribution control equipment, security/fire alarm systems, railroad equipment, switchboards, computers, telecommunications, power supplies and motor controls in transportation, oil drilling and mining equipment. The advantages of the D and S Series are: good solderability (Ag), passivation with glass (on request), stacking possibility (Al electrodes).



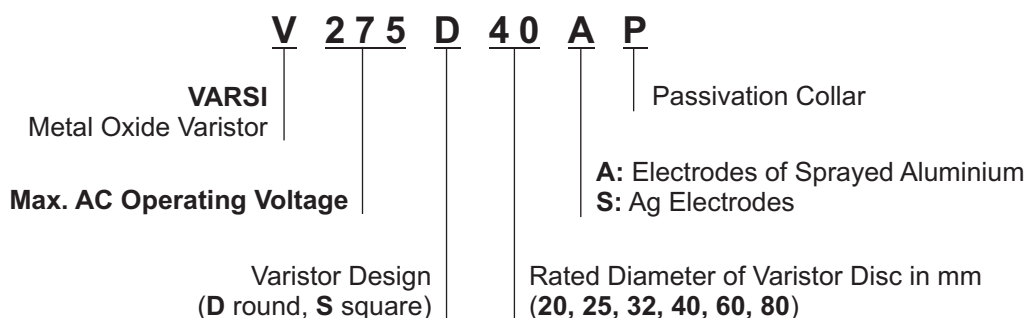
## Main Features

Wide Operating Voltage Range $V_{RMS}$	75 V to 1100 V
Seven Model Sizes Available	25 mm, 32 mm, 40 mm, 60 mm, 80 mm, square 20 mm, 33 mm
High Energy Absorption Capability $W_{max}(2\text{ ms})$	80 J to 6000 J
High Peak Current Capability $I_{max}(8/20\ \mu\text{s})$	15000 A to 100000 A
Silver or Aluminium Electrode Finish	
Versions with Glass Passivation	

## General Technical Data

Climatic Category	40/85/56	in accordance with IEC 68-1
LCT	-40°C	
UCT	+85°C	
Damp Heat, Steady State (93% r.h., 40°C)	56 days	in accordance with IEC 68-2-3
Operating Temperature	-40 ... +85°C	in accordance with CECC 42 000
Storage Temperature	-40 ... +125°C	
Response Time	< 25 ns	

## Type Designation



**Table of Standard Values**

Part Number	Maximum Ratings TA =+85°C (+185°F)					Characteristics TA = +25°C (+77°F)					V - I Characteristic Page	Pulse Rating Page
	Operating Voltage		Average Power Dissipation P <sub>max</sub> (W)	Permissible Peak Current (8/20 μs) I <sub>max</sub> (A)	Energy Absorption (2 ms) W <sub>max</sub> (J)	Varistor Voltage (1 mA) V <sub>N</sub> (V)	Standard Tolerance of V <sub>N</sub> ΔV <sub>N</sub> (± %)	Maximum Clamping Voltage at Test Current (8/20 μs)		Typical Capacitance f=1kHz C (pF)		
	RMS Voltage V <sub>RMS</sub> (V)	DC Voltage V <sub>DC</sub> (V)						V <sub>C</sub> (V)	I (A)			
V75S20	75	100	1.0	15000	80	120	10	200	150	5000		
V75D25	75	100	1.0	15000	80	120	10	200	150	5000		
V75D32	75	100	1.2	25000	120	120	10	200	200	9000		
V75D40	75	100	1.4	40000	180	120	10	200	300	13000		
V75S40	75	100	1.4	40000	180	120	10	200	300	13000		
V95S20	95	125	1.0	15000	90	150	10	250	150	4000		
V95D25	95	125	1.0	15000	90	150	10	250	150	4000		
V95D32	95	125	1.2	25000	135	150	10	250	200	8000		
V95D40	95	125	1.4	40000	220	150	10	250	300	11000		
V95S40	95	125	1.4	40000	220	150	10	250	300	11000		
V115S20	115	150	1.0	15000	130	180	10	300	150	3000		
V115D25	115	150	1.0	15000	130	180	10	300	150	3000		
V115D32	115	150	1.2	25000	190	180	10	300	200	6500		
V115D40	115	150	1.4	40000	280	180	10	300	300	8000		
V115S40	115	150	1.4	40000	280	180	10	300	300	8000		
V130S20	130	170	1.0	15000	150	205	10	340	150	2600		
V130D25	130	170	1.0	15000	150	205	10	340	150	2600		
V130D32	130	170	1.2	25000	220	205	10	340	200	4400		
V130D40	130	170	1.4	40000	320	205	10	340	300	5800		
V130S40	130	170	1.4	40000	320	205	10	340	300	5800		
V130D60	130	170	1.6	70000	490	205	10	340	500	15000		
V130D80	130	170	2.0	100000	660	205	10	340	800	28000		
V140S20	140	180	1.0	15000	155	220	10	360	150	2400		
V140D25	140	180	1.0	15000	155	220	10	360	150	2400		
V140D32	140	180	1.2	25000	235	220	10	360	200	4100		
V140D40	140	180	1.4	40000	340	220	10	360	300	5400		
V140S40	140	180	1.4	40000	340	220	10	360	300	5400		
V140D60	140	180	1.6	70000	445	220	10	360	500	12500		
V140D80	140	180	2.0	100000	710	220	10	360	800	26000		
V150S20	150	200	1.0	15000	160	240	10	395	150	2200		
V150D25	150	200	1.0	15000	160	240	10	395	150	2200		
V150D32	150	200	1.2	25000	250	240	10	395	200	3700		
V150D40	150	200	1.4	40000	370	240	10	395	300	5000		
V150S40	150	200	1.4	40000	370	240	10	395	300	5000		
V150D60	150	200	1.6	70000	485	240	10	395	500	11500		
V150D80	150	200	2.0	100000	800	240	10	395	800	23000		
V175S20	175	225	1.0	15000	170	270	10	455	150	2000		
V175D25	175	225	1.0	15000	170	270	10	455	150	2000		
V175D32	175	225	1.2	25000	270	270	10	455	200	3000		
V175D40	175	225	1.4	40000	410	270	10	455	300	4200		
V175S40	175	225	1.4	40000	410	270	10	455	300	4200		
V175D60	175	225	1.6	70000	545	270	10	455	500	9800		
V175D80	175	225	2.0	100000	890	270	10	455	800	20000		
V230S20	230	300	1.0	15000	190	360	10	595	150	1600		
V230D25	230	300	1.0	15000	190	360	10	595	150	1600		
V230D32	230	300	1.2	25000	310	360	10	595	200	2500		
V230D40	230	300	1.4	40000	470	360	10	595	300	3400		
V230S40	230	300	1.4	40000	470	360	10	595	300	3400		
V230D60	230	300	1.6	70000	725	360	10	595	500	8000		
V230D80	230	300	2.0	100000	1200	360	10	595	800	16000		

**Table of Standard Values**

Part Number	Maximum Ratings TA =+85°C (+185°F)					Characteristics TA = +25°C (+77°F)					V - I Characteristic Page	Pulse Rating Page
	Operating Voltage		Average Power Dissipation P <sub>max</sub> (W)	Permissible Peak Current (8/20 μs) I <sub>max</sub> (A)	Energy Absorption (2 ms) W <sub>max</sub> (J)	Varistor Voltage (1 mA) V <sub>N</sub> (V)	Standard Tolerance of V <sub>N</sub> ΔV <sub>N</sub> (±%)	Maximum Clamping Voltage at Test Current (8/20 μs)		Typical Capacitance f=1kHz C (pF)		
	RMS Voltage V <sub>RMS</sub> (V)	DC Voltage V <sub>DC</sub> (V)						V <sub>C</sub> (V)	I (A)			
V250S20	250	320	1.0	15000	210	390	10	650	150	1400		
V250D25	250	320	1.0	15000	210	390	10	650	150	1400		
V250D32	250	320	1.2	25000	340	390	10	650	200	2200		
V250D40	250	320	1.4	40000	505	390	10	650	300	3100		
V250S40	250	320	1.4	40000	505	390	10	650	300	3100		
V250D60	250	320	1.6	70000	785	390	10	650	500	7200		
V250D80	250	320	2.0	100000	1300	390	10	650	800	14100		
V275S20	275	350	1.0	15000	230	430	10	710	150	1300		
V275D25	275	350	1.0	15000	230	430	10	710	150	1300		
V275D32	275	350	1.2	25000	370	430	10	710	200	2000		
V275D40	275	350	1.4	40000	565	430	10	710	300	2900		
V275S40	275	350	1.4	40000	565	430	10	710	300	2900		
V275D60	275	350	1.6	70000	870	430	10	710	500	6800		
V275D80	275	350	2.0	100000	1400	430	10	710	800	13000		
V300S20	300	385	1.0	15000	240	470	10	775	150	1200		
V300D25	300	385	1.0	15000	240	470	10	775	150	1200		
V300D32	300	385	1.2	25000	400	470	10	775	200	1900		
V300D40	300	385	1.4	40000	600	470	10	775	300	2700		
V300S40	300	385	1.4	40000	600	470	10	775	300	2700		
V300D60	300	385	1.6	70000	950	470	10	840	500	6300		
V300D80	300	385	2.0	100000	1500	470	10	755	800	12000		
V320S20	320	420	1.0	15000	275	510	10	840	150	1100		
V320D25	320	420	1.0	15000	275	510	10	840	150	1100		
V320D32	320	420	1.2	25000	440	510	10	840	200	1700		
V320D40	320	420	1.4	40000	655	510	10	840	300	2400		
V320S40	320	420	1.4	40000	655	510	10	840	300	2400		
V320D60	320	420	1.6	70000	1050	510	10	840	500	5800		
V320D80	320	420	2.0	100000	1600	510	10	840	800	11000		
V385S20	385	505	1.0	15000	320	620	10	1025	150	900		
V385D25	385	505	1.0	15000	320	620	10	1025	150	900		
V385D32	385	505	1.2	25000	560	620	10	1025	200	1400		
V385D40	385	505	1.4	40000	815	620	10	1025	300	2000		
V385S40	385	505	1.4	40000	815	620	10	1025	300	2000		
V385D60	385	505	1.6	70000	1250	620	10	1025	500	4800		
V385D80	385	505	2.0	100000	2000	620	10	1025	800	9000		
V420S20	420	560	1.0	15000	360	680	10	1120	150	800		
V420D25	420	560	1.0	15000	360	680	10	1120	150	800		
V420D32	420	560	1.2	25000	615	680	10	1120	200	1300		
V420D40	420	560	1.4	40000	930	680	10	1120	300	1900		
V420S40	420	560	1.4	40000	930	680	10	1120	300	1900		
V420D60	420	560	1.6	70000	1500	680	10	1120	500	4500		
V420D80	420	560	2.0	100000	2200	680	10	1120	800	8600		
V440S20	440	585	1.0	15000	380	715	10	1180	150	750		
V440D25	440	585	1.0	15000	380	715	10	1180	150	750		
V440D32	440	585	1.2	25000	630	715	10	1180	200	1250		
V440D40	440	585	1.4	40000	950	715	10	1180	300	1800		
V440S40	440	585	1.4	40000	950	715	10	1180	300	1800		
V440D60	440	585	1.6	70000	1550	715	10	1180	500	4300		
V440D80	440	585	2.0	100000	2350	715	10	1180	800	8200	--	--

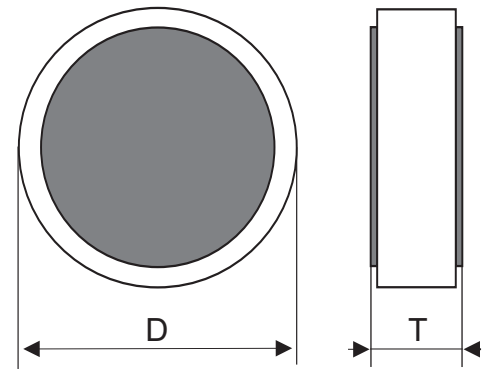
**Table of Standard Values**

Part Number	Maximum Ratings TA = +85°C (+185°F)					Characteristics TA = +25°C (+77°F)					V - I Characteristic Page	Pulse Rating Page
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	RMS Voltage V <sub>RMS</sub> (V)	DC Voltage V <sub>DC</sub> (V)						V <sub>C</sub> (V)	I (A)			
V460S20	460	615	1.0	15000	390	750	10	1240	150	700		
V460D25	460	615	1.0	15000	390	750	10	1240	150	700		
V460D32	460	615	1.2	25000	670	750	10	1240	200	1200		
V460D40	460	615	1.4	40000	1010	750	10	1240	300	1700		
V460S40	460	615	1.4	40000	1010	750	10	1240	300	1700		
V460D60	460	615	1.6	70000	1600	750	10	1240	500	4100		
V460D80	460	615	2.0	100000	2500	750	10	1240	800	7800		
V510S20	510	670	1.0	15000	410	820	10	1355	150	650		
V510D25	510	670	1.0	15000	410	820	10	1355	150	650		
V510D32	510	670	1.2	25000	690	820	10	1355	200	1100		
V510D40	510	670	1.4	40000	1040	820	10	1355	300	1600		
V510S40	510	670	1.4	40000	1040	820	10	1355	300	1600		
V510D60	510	670	1.6	70000	1650	820	10	1355	500	4800		
V510D80	510	670	2.0	100000	2600	820	10	1355	800	7000		
V550S20	550	745	1.0	15000	425	910	10	1500	150	600		
V550D25	550	745	1.0	15000	425	910	10	1500	150	600		
V550D32	550	745	1.2	25000	710	910	10	1500	200	1000		
V550D40	550	745	1.4	40000	1080	910	10	1500	300	1500		
V550S40	550	745	1.4	40000	1080	910	10	1500	300	1500		
V550D60	550	745	1.6	70000	1700	910	10	1500	500	3500		
V550D80	550	745	2.0	100000	3100	910	10	1500	800	6600		
V625D32	625	825	1.2	25000	730	1000	10	1650	200	950		
V625D40	625	825	1.4	40000	1100	1000	10	1650	300	1400		
V625S40	625	825	1.4	40000	1100	1000	10	1650	300	1400		
V625D60	625	825	1.6	70000	1750	1000	10	1650	500	3200		
V625D80	625	825	2.0	100000	3300	1000	10	1650	800	6000		
V680D32	680	895	1.2	25000	780	1100	10	1815	200	850		
V680D40	680	895	1.4	40000	1130	1100	10	1815	300	1200		
V680S40	680	895	1.4	40000	1130	1100	10	1815	300	1200		
V680D60	680	895	1.6	70000	1800	1100	10	1815	500	2800		
V680D80	680	895	2.0	100000	3600	1100	10	1815	800	5200		
V750D32	750	1060	1.2	25000	820	1200	10	2000	200	800		
V750D40	750	1060	1.4	40000	1230	1200	10	2000	300	1100		
V750S40	750	1060	1.4	40000	1230	1200	10	2000	300	1100		
V750D60	750	1060	1.6	70000	2000	1200	10	2000	500	2600		
V750D80	750	1060	2.0	100000	4000	1200	10	2000	800	4900		
V1100D32	1100	1465	1.2	25000	1200	1800	10	2970	200	600		
V1100D40	1100	1465	1.4	40000	1850	1800	10	2970	300	800		
V1100S40	1100	1465	1.4	40000	1850	1800	10	2970	300	800		
V1100D60	1100	1465	1.6	70000	3000	1800	10	2970	500	1800		
V1100D80	1100	1465	2.0	100000	6000	1800	10	2970	800	3300		

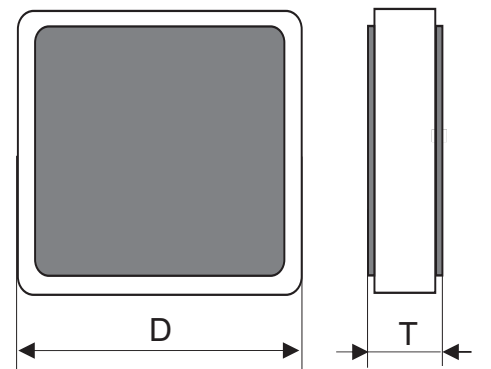
Dimensions

T mm (±1)	D S20 mm (±1)	D D25 mm (±1)	D D32 mm (±1)	D S40 mm (±1)	D D40 mm (±1)	D D60 mm (±1)	D D80 mm (±1)	Part Number
1.4	20	25	32	33	40	60	80	V130D,S
1.6	20	25	32	33	40	60	80	V140D,S
2.4	20	25	32	33	40	60	80	V150D,S
2.5	20	25	32	33	40	60	80	V175D,S
2.7	20	25	32	33	40	60	80	V230D,S
3.1	20	25	32	33	40	60	80	V250D,S
2.7	20	25	32	33	40	60	80	V275D,S
2.9	20	25	32	33	40	60	80	V300D,S
3.1	20	25	32	33	40	60	80	V320D,S
3.7	20	25	32	33	40	60	80	V385D,S
4.0	20	25	32	33	40	60	80	V420D,S
4.2	20	25	32	33	40	60	80	V440D,S
4.4	20	25	32	33	40	60	80	V460D,S
4.9	20	25	32	33	40	60	80	V510D,S
5.3	20	25	32	33	40	60	80	V550D,S
6.0	20	25	32	33	40	60	80	V625D,S
6.6	20	25	32	33	40	60	80	V680D,S
7.2	20	25	32	33	40	60	80	V750D,S
10.6	20	25	32	33	40	60	80	V1100D,S

Type D ..

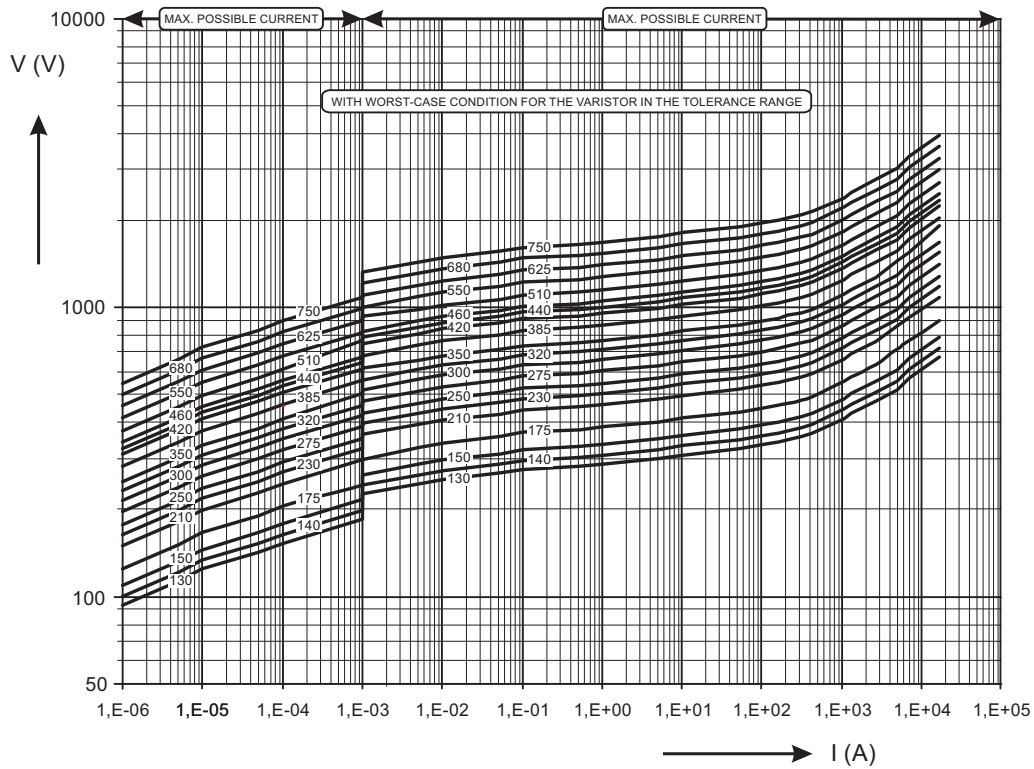


Type S ..

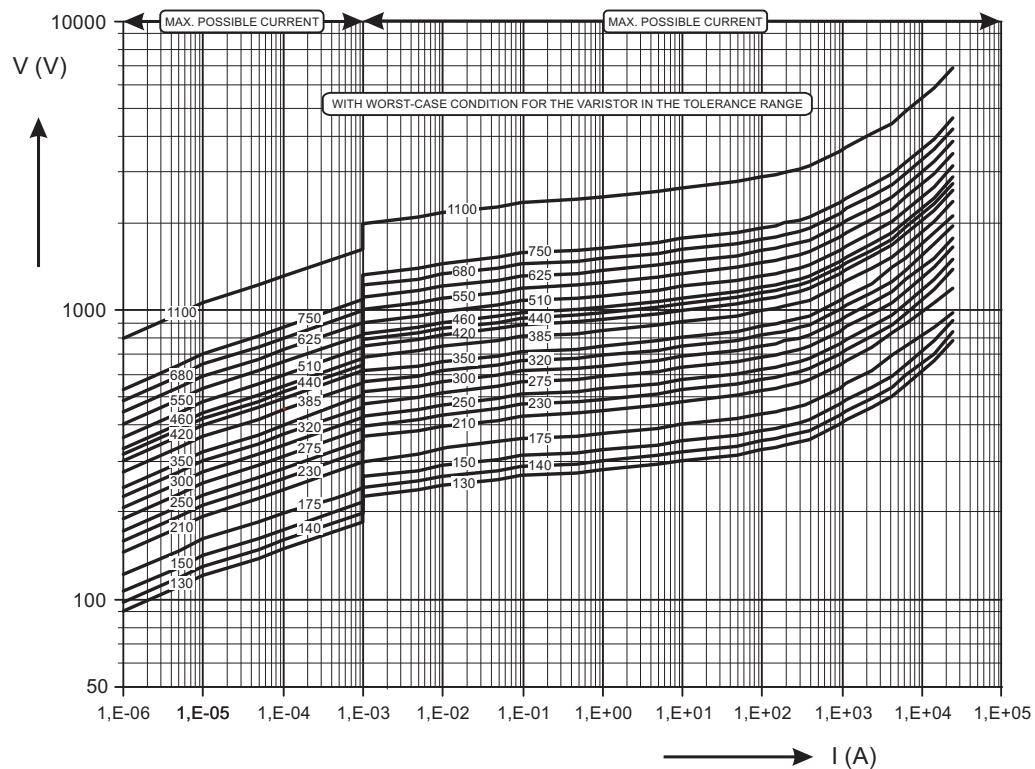


V-I Characteristics

V130-V750D25S

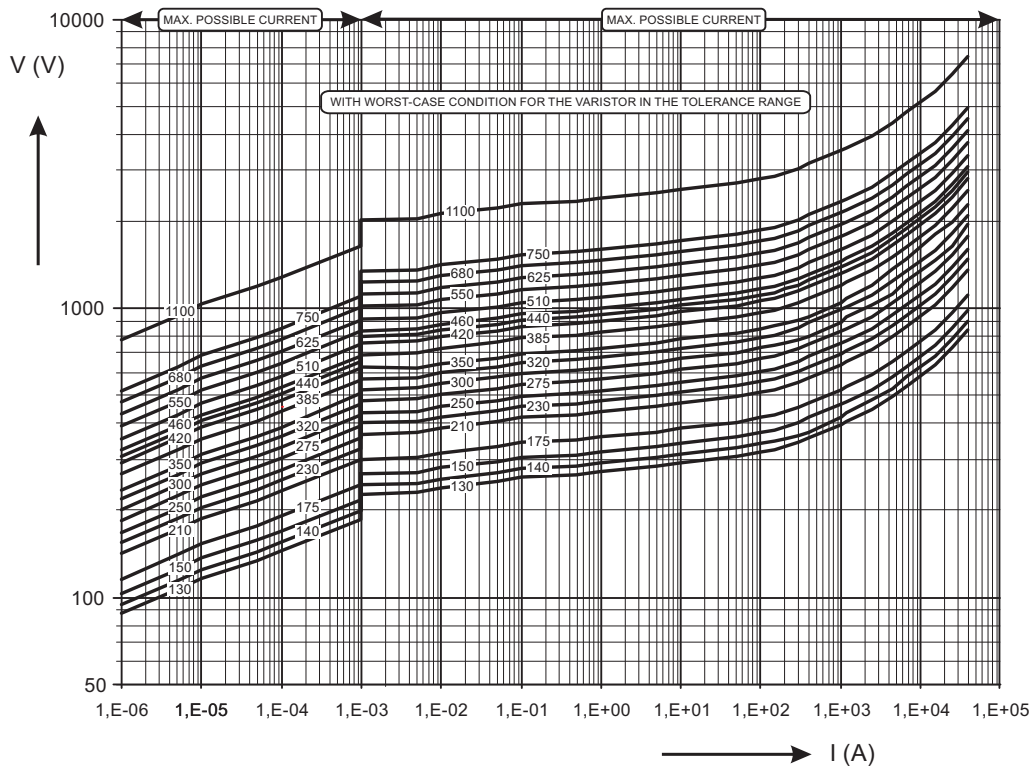


V130-V1100D32S

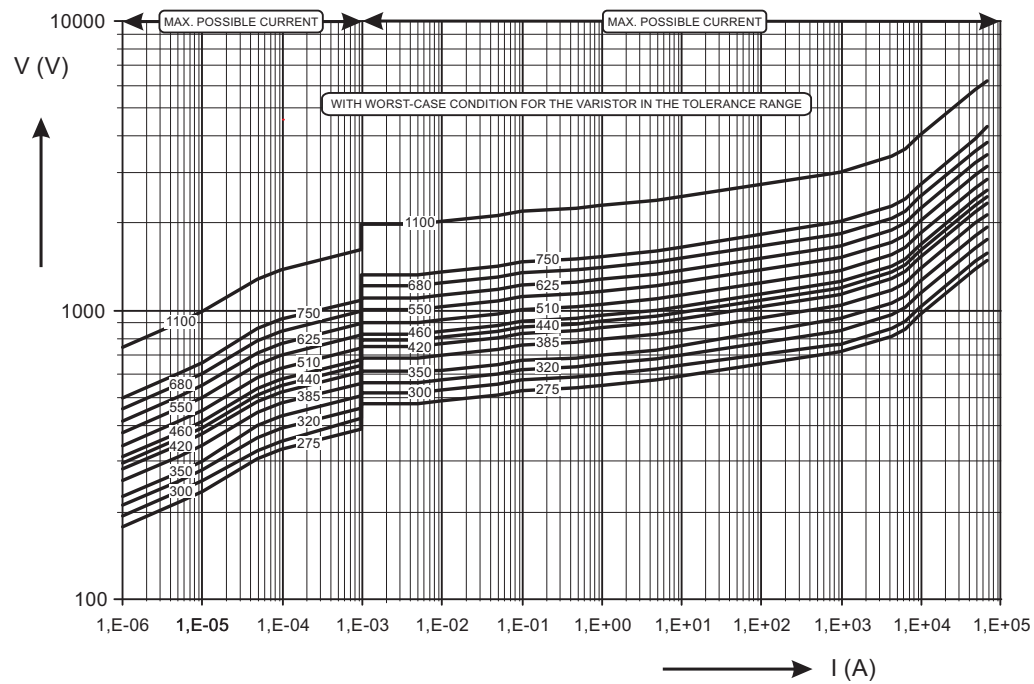


V-I Characteristics

V130-V1100D40S

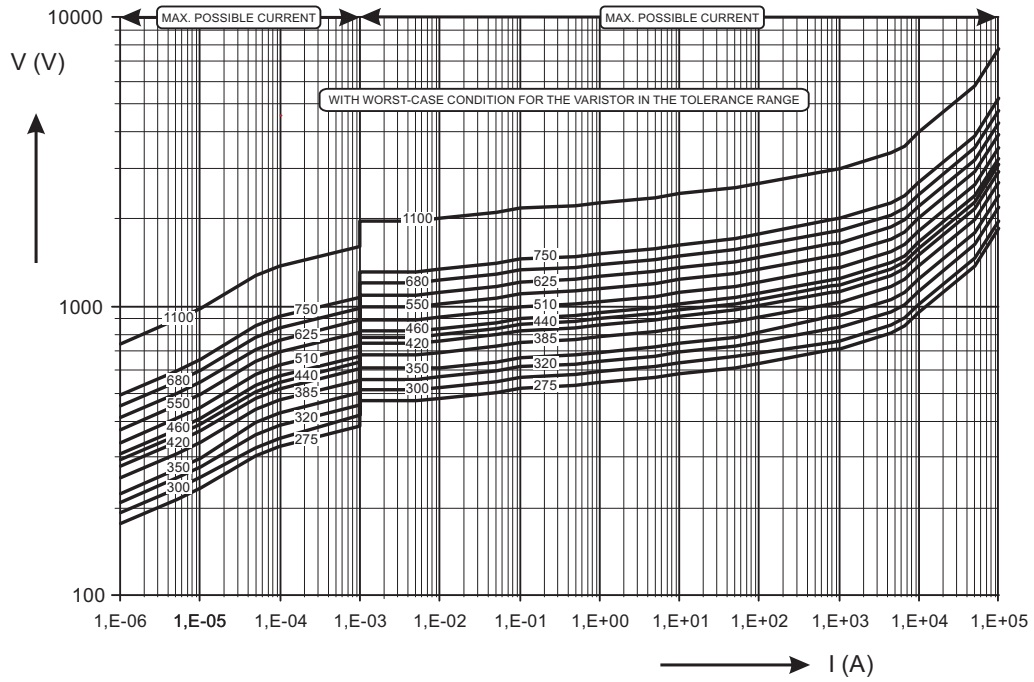


V275-V1100D60S



V-I Characteristics

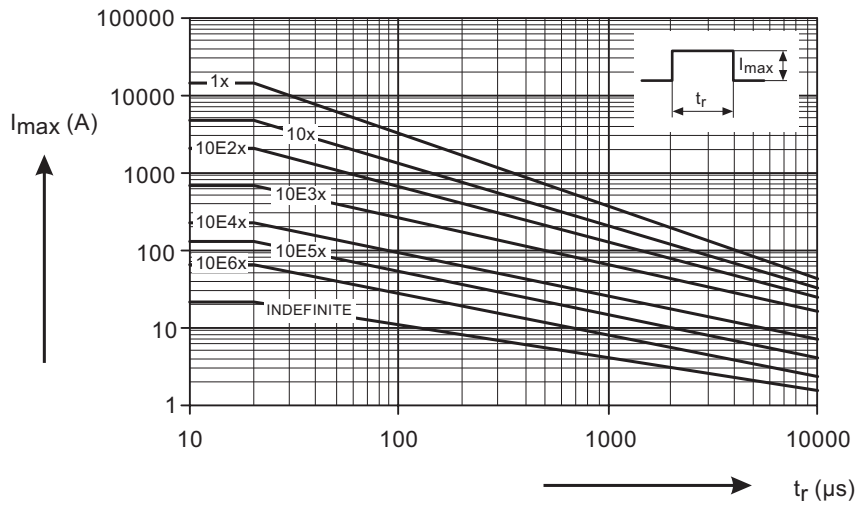
V275-V1100D80S



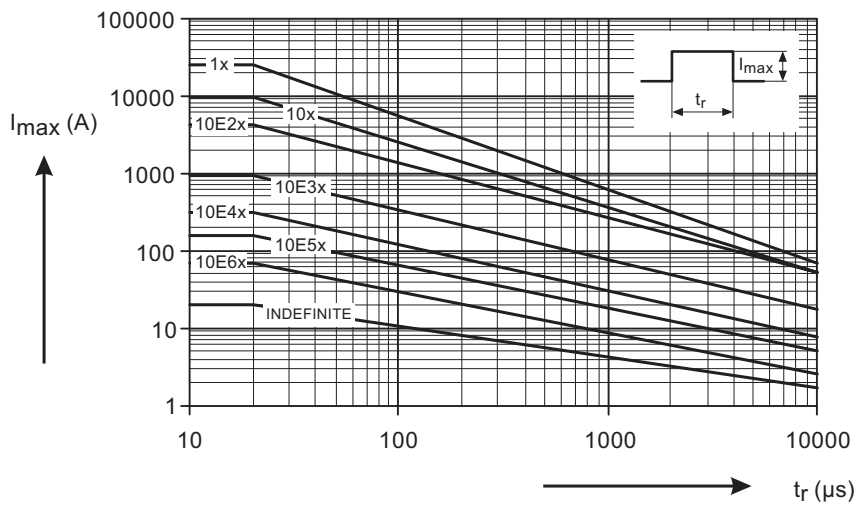


Pulse Ratings

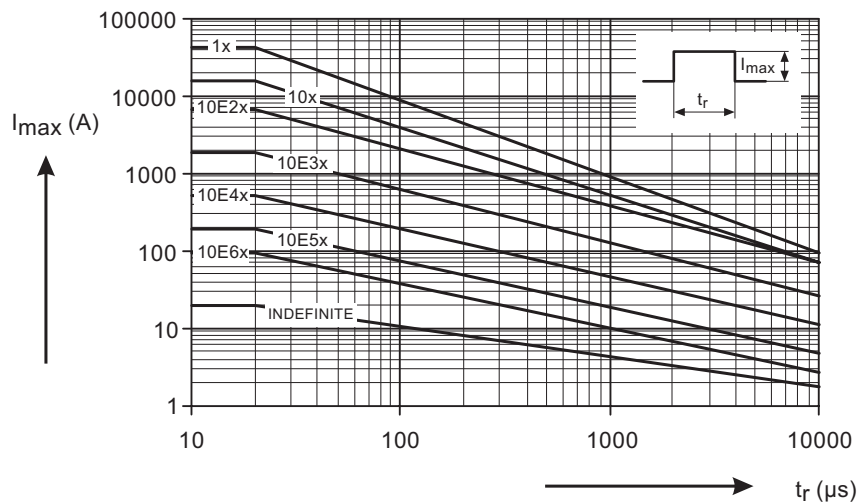
V130D25S-V750D25S



V130D32S-V1100D32S

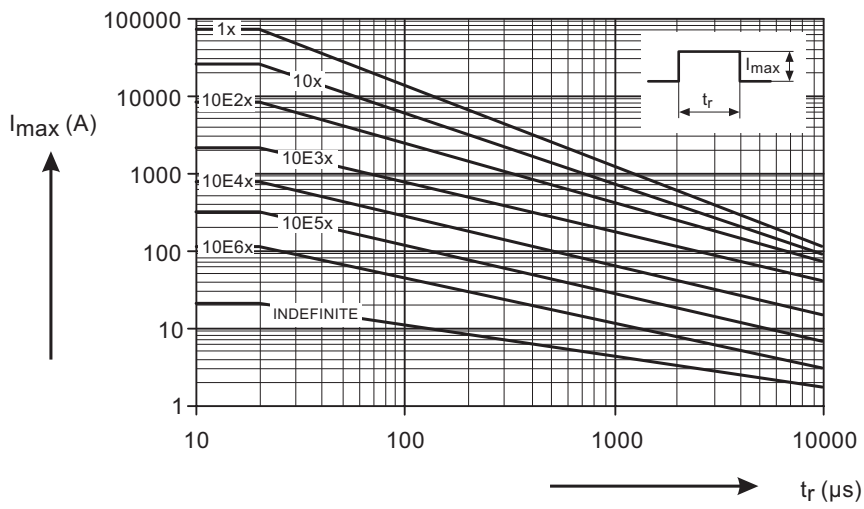


V130S, D40S-V1100S, D40S



Pulse Ratings

V275D60S-V1100D60S



V275D80S-V1100D80S

