

High Energy Varistors - D32, S40, D60, D80LE Series

Description

The LE types are heavy-duty metal oxide varistors designed mainly for industrial applications. They are larger diameter versions of the conventional metal oxide varistor disc components. The LE Series has rigid terminals to handle high currents and energies. Either straight or formed terminals are available. The latter facilitates mounting onto printed circuit boards. The LE Series offers 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. The advantages of the LE version are: simple design, rigid terminals for secure mounting, high performance on limited space.



Main Features

Wide Operating Voltage Range V_{RMS}	75 V to 1100 V
Four Model Sizes Available	32 mm, 60mm, 80mm, square 33 mm
High Energy Absorption Capability W_{max} (2 ms)	120 J to 6000 J
High Peak Current Capability I_{max} (8/20 μ s)	25000 A to 100000 A
Rigid Terminals for Secure Mounting	
Other Designs Available (versions for through-hole mounting or special versions for modules with thermocouple)	
UL Specification #1449 File No.: E103662;	D32 Models prefixed by: V130, V140, V150, V175, V230, V250, V275, V300, V320, V385, V420, V440, V460, V510, V550, V625, V680, V750, V1100; followed by: LE, ME, IE, FE.
	S40 Models prefixed by: V130, V140, V150, V175, V180, V230, V250, V275, V300, V320, V385, V420, V440, V460, V510, V550, V625, V680, V750, V1100; followed by: LE, ME, IE, FE, JE or UE.

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 ... +110°C	
Electric Strength	≥ 2.5 kV	in accordance with CECC 42 000
Insulation Resistance	≥ 1.0 G Ω	in accordance with CECC 42 000
Response Time	< 25 ns	

Type Designation

V 275 S 40 L E	
VARSI Metal Oxide Varistor	Epoxy Coated Electrodes
Max. AC Operating Voltage	L Version of Contacts For Screw Mounting Other Versions Available:
Varistor Design (D round, S square)	I - straight electrodes (page 53), J - straight electrodes with hole (page 55), M - straight electrodes with hole, left handed (page 54), F - different electrode spacing (page 56)
Rated Diameter of Varistor Disc (32, 40, 60, 80)	

Table of Standard Values

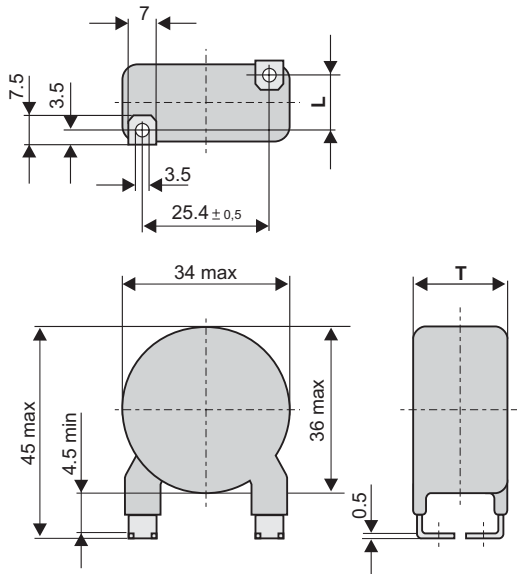
Part Number	Maximum Ratings TA = +85°C (+185°F)					Characteristics TA = +25°C (+77°F)					V - I Characteristic Page	Pulse Rating Page
	Operating Voltage		Average Power Dissipation P _{max} (W)	Permissible Peak Current I _{max} (A)	Energy Absorption W _{max} (J)	Varistor Voltage V _N (1 mA) (V)	Standard Tolerance of V _N ΔV _N (±%)	Maximum Clamping Voltage at Test Current (8/20 μs)		Typical Capacitance C (pF) f=1kHz		
	RMS Voltage V _{RMS} (V)	DC Voltage V _{DC} (V)						V _C (V)	I (A)			
V75D32LE	75	100	1.2	25000	120	120	10	200	200	9000		
V75S40LE	75	100	1.4	40000	180	120	10	200	300	13000		
V95D32LE	95	125	1.2	25000	135	150	10	250	200	8000		
V95S40LE	95	125	1.4	40000	220	150	10	250	300	11000		
V115D32LE	115	150	1.2	25000	190	180	10	300	200	6500		
V115S40LE	115	150	1.4	40000	280	180	10	300	300	8000		
V130D32LE	130	170	1.2	25000	220	205	10	340	200	4400		
V130S40LE	130	170	1.4	40000	320	205	10	340	300	5800		
V130D60LE	130	170	1.6	70000	490	205	10	340	500	15000		
V130D80LE	130	170	2.0	100000	660	205	10	340	800	28000		
V140D32LE	140	180	1.2	25000	235	220	10	360	200	4100		
V140S40LE	140	180	1.4	40000	340	220	10	360	300	5400		
V140D60LE	140	180	1.6	70000	445	220	10	360	500	12500		
V140D80LE	140	180	2.0	100000	710	220	10	360	800	26000		
V150D32LE	150	200	1.2	25000	250	240	10	395	200	3700		
V150S40LE	150	200	1.4	40000	370	240	10	395	300	5000		
V150D60LE	150	200	1.6	70000	485	240	10	395	500	11500		
V150D80LE	150	200	2.0	100000	800	240	10	395	800	23000		
V175D32LE	175	225	1.2	25000	270	270	10	455	200	3000		
V175S40LE	175	225	1.4	40000	410	270	10	455	300	4200		
V175D60LE	175	225	1.6	70000	545	270	10	455	500	9800		
V175D80LE	175	225	2.0	100000	890	270	10	455	800	20000		
V230D32LE	230	300	1.2	25000	310	360	10	595	200	2500		
V230S40LE	230	300	1.4	40000	470	360	10	595	300	3400		
V230D60LE	230	300	1.6	70000	725	360	10	595	500	8000		
V230D80LE	230	300	2.0	100000	1200	360	10	595	800	16000		
V250D32LE	250	320	1.2	25000	340	390	10	650	200	2200		
V250S40LE	250	320	1.4	40000	505	390	10	650	300	3100		
V250D60LE	250	320	1.6	70000	785	390	10	650	500	7200		
V250D80LE	250	320	2.0	100000	1300	390	10	650	800	14100		
V275D32LE	275	350	1.2	25000	370	430	10	710	200	2000		
V275S40LE	275	350	1.4	40000	565	430	10	710	300	2900		
V275D60LE	275	350	1.6	70000	870	430	10	710	500	6800		
V275D80LE	275	350	2.0	100000	1400	430	10	710	800	13000		
V300D32LE	300	385	1.2	25000	400	470	10	775	200	1900		
V300S40LE	300	385	1.4	40000	600	470	10	775	300	2700		
V300D60LE	300	385	1.6	70000	950	470	10	840	500	6300		
V300D80LE	300	385	2.0	100000	1500	470	10	755	800	12000		
V320D32LE	320	420	1.2	25000	440	510	10	840	200	1700		
V320S40LE	320	420	1.4	40000	655	510	10	840	300	2400		
V320D60LE	320	420	1.6	70000	1050	510	10	840	500	5800		
V320D80LE	320	420	2.0	100000	1600	510	10	840	800	11000		
V385D32LE	385	505	1.2	25000	560	620	10	1025	200	1400		
V385S40LE	385	505	1.4	40000	815	620	10	1025	300	2000		
V385D60LE	385	505	1.6	70000	1250	620	10	1025	500	4800		
V385D80LE	385	505	2.0	100000	2000	620	10	1025	800	9000		
V420D32LE	420	560	1.2	25000	615	680	10	1120	200	1300		
V420S40LE	420	560	1.4	40000	930	680	10	1120	300	1900		
V420D60LE	420	560	1.6	70000	1500	680	10	1120	500	4500		
V420D80LE	420	560	2.0	100000	2200	680	10	1120	800	8600		
V440D32LE	440	585	1.2	25000	630	715	10	1180	200	1250		
V440S40LE	440	585	1.4	40000	950	715	10	1180	300	1800		
V440D60LE	440	585	1.6	70000	1550	715	10	1180	500	4300		
V440D80LE	440	585	2.0	100000	2350	715	10	1180	800	8200		
V460D32LE	460	615	1.2	25000	670	750	10	1240	200	1200		
V460S40LE	460	615	1.4	40000	1010	750	10	1240	300	1700		
V460D60LE	460	615	1.6	70000	1600	750	10	1240	500	4100		
V460D80LE	460	615	2.0	100000	2500	750	10	1240	800	7800		

Table of Standard Values

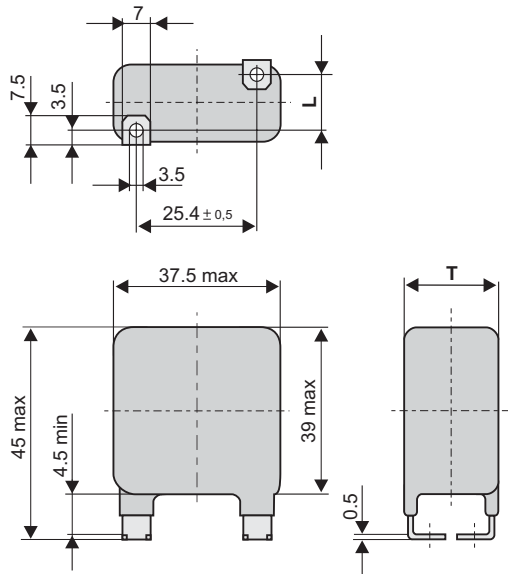
Part Number	Maximum Ratings TA =+85°C (+185°F)					Characteristics TA = +25°C (+77°F)					V - I Characteristic Page	Pulse Rating Page
	Operating Voltage		Average Power Dissipation P _{max} (W)	Permissible Peak Current (8/20 μs) I _{max} (A)	Energy Absorption (2 ms) W _{max} (J)	Varistor Voltage (1 mA) V _N (V)	Standard Tolerance of V _N ΔV _N (± %)	Maximum Clamping Voltage at Test Current (8/20 μs)		Typical Capacitance f=1kHz C (pF)		
	RMS Voltage V _{RMS} (V)	DC Voltage V _{DC} (V)						V _C (V)	I (A)			
V510D32LE	510	670	1.2	25000	690	820	10	1355	200	1100		
V510S40LE	510	670	1.4	40000	1040	820	10	1355	300	1600		
V510D60LE	510	670	1.6	70000	1650	820	10	1355	500	3800		
V510D80LE	510	670	2.0	100000	2600	820	10	1355	800	7000		
V550D32LE	550	745	1.2	25000	710	910	10	1500	200	1000		
V550S40LE	550	745	1.4	40000	1080	910	10	1500	300	1500		
V550D60LE	550	745	1.6	70000	1700	910	10	1500	500	3500		
V550D80LE	550	745	2.0	100000	3100	910	10	1500	800	6600		
V625D32LE	625	825	1.2	25000	730	1000	10	1650	200	950		
V625S40LE	625	825	1.4	40000	1100	1000	10	1650	300	1400		
V625D60LE	625	825	1.6	70000	1750	1000	10	1650	500	3200		
V625D80LE	625	825	2.0	100000	3300	1000	10	1650	800	6000		
V680D32LE	680	895	1.2	25000	780	1100	10	1815	200	850		
V680S40LE	680	895	1.4	40000	1130	1100	10	1815	300	1200		
V680D60LE	680	895	1.6	70000	1800	1100	10	1815	500	2800		
V680D80LE	680	895	2.0	100000	3600	1100	10	1815	800	5200		
V750D32LE	750	1060	1.2	25000	820	1200	10	1980	200	800		
V750S40LE	750	1060	1.4	40000	1230	1200	10	1980	300	1100		
V750D60LE	750	1060	1.6	70000	2000	1200	10	2000	500	2600		
V750D80LE	750	1060	2.0	100000	4000	1200	10	2000	800	4900		
V1100D32LE	1100	1465	1.2	25000	1200	1800	10	2970	200	600		
V1100S40LE	1100	1465	1.4	40000	1850	1800	10	2970	300	800		
V1100D60LE	1100	1465	1.6	70000	3000	1800	10	2970	500	1800		
V1100D80LE	1100	1465	2.0	100000	6000	1800	10	2970	800	3300		

Dimensions

V...D32LE



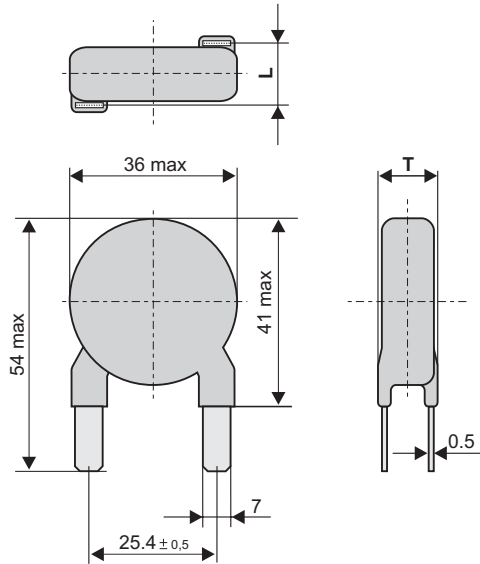
V...S40LE



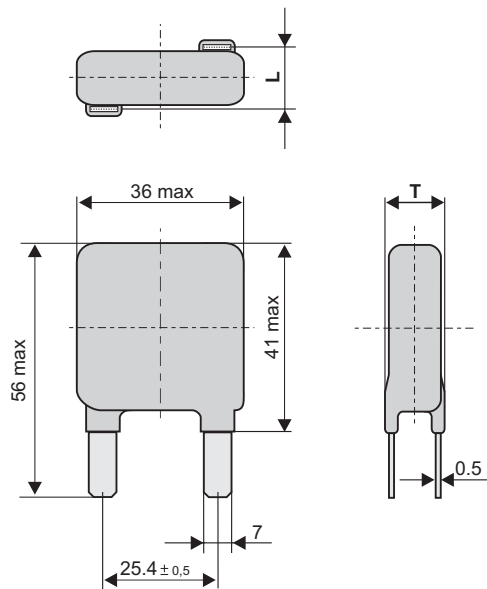
Part Number	T _{max} (mm)	L ± 1 (mm)	Approx. Weight (gr)
V75D32LE	7.0	-4.00	13
V75S40LE	7.0	-4.00	17
V95D32LE	7.3	-3.70	14
V95S40LE	7.3	-3.70	18
V115D32LE	7.6	-3.40	15
V115S40LE	7.6	-3.40	19
V130D32LE	8.0	-3.00	16
V130S40LE	8.0	-3.00	20
V140D32LE	8.1	-2.95	17
V140S40LE	8.1	-2.95	21
V150D32LE	8.2	-2.90	18
V150S40LE	8.2	-2.90	22
V175D32LE	8.6	-2.50	19
V175S40LE	8.6	-2.50	23
V230D32LE	8.9	-2.00	20
V230S40LE	8.9	-2.00	25
V250D32LE	9.1	-1.80	21
V250S40LE	9.1	-1.80	26
V275D32LE	9.3	-1.60	22
V275S40LE	9.3	-1.60	27
V300D32LE	9.6	-1.30	23
V300S40LE	9.6	-1.30	28
V320D32LE	9.8	-1.00	24
V320S40LE	9.8	-1.00	29
V385D32LE	10.6	-0.20	25
V385S40LE	10.6	-0.20	30
V420D32LE	11.0	0.20	26
V420S40LE	11.0	0.20	31
V440D32LE	11.2	0.40	27
V440S40LE	11.2	0.40	32
V460D32LE	11.4	0.60	28
V460S40LE	11.4	0.60	33
V510D32LE	12.0	1.30	29
V510S40LE	12.0	1.30	34
V550D32LE	12.4	1.50	30
V550S40LE	12.4	1.50	35
V625D32LE	13.0	2.00	35
V625S40LE	13.0	2.00	40
V680D32LE	13.5	2.60	40
V680S40LE	13.5	2.60	45
V750D32LE	14.1	3.20	45
V750S40LE	14.1	3.20	50
V1100D32LE	17.0	6.20	50
V1100S40LE	17.0	6.20	60

Dimensions

V...D32IE



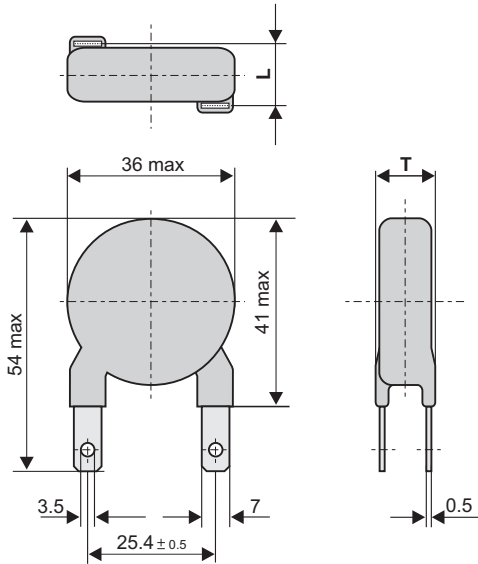
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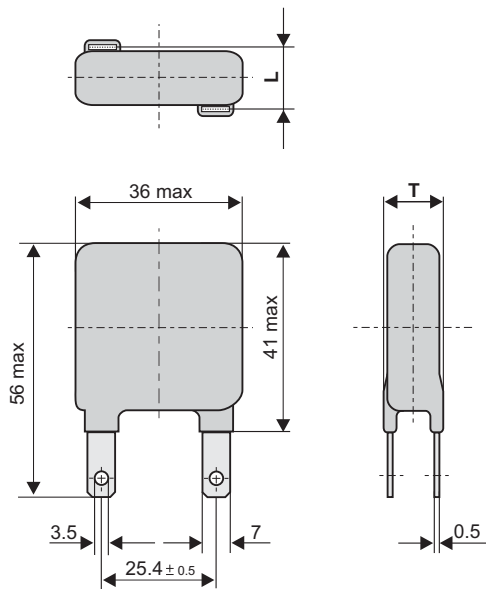
Part Number	T _{max} (mm)	L ± 1 (mm)	Approx. Weight (gr)
V75D32IE	7.0	2.50	13
V75S40IE	7.0	2.50	17
V95D32IE	7.3	2.80	14
V95S40IE	7.3	2.80	18
V115D32IE	7.6	3.10	15
V115S40IE	7.6	3.10	19
V130D32IE	8.0	3.50	16
V130S40IE	8.0	3.50	20
V140D32IE	8.1	3.55	17
V140S40IE	8.1	3.55	21
V150D32IE	8.2	3.60	18
V150S40IE	8.2	3.60	22
V175D32IE	8.6	4.00	19
V175S40IE	8.6	4.00	23
V230D32IE	8.9	4.50	20
V230S40IE	8.9	4.50	25
V250D32IE	9.1	4.70	21
V250S40IE	9.1	4.70	26
V275D32IE	9.3	4.90	22
V275S40IE	9.3	4.90	27
V300D32IE	9.6	5.20	23
V300S40IE	9.6	5.20	28
V320D32IE	9.8	5.50	24
V320S40IE	9.8	5.50	29
V385D32IE	10.6	6.30	25
V385S40IE	10.6	6.30	30
V420D32IE	11.0	6.70	26
V420S40IE	11.0	6.70	31
V440D32IE	11.2	6.90	27
V440S40IE	11.2	6.90	32
V460D32IE	11.4	7.10	28
V460S40IE	11.4	7.10	33
V510D32IE	12.0	7.80	29
V510S40IE	12.0	7.80	34
V550D32IE	12.4	8.00	30
V550S40IE	12.4	8.00	35
V625D32IE	13.0	8.50	35
V625S40IE	13.0	8.50	40
V680D32IE	13.5	9.10	40
V680S40IE	13.5	9.10	45
V750D32IE	14.1	9.70	45
V750S40IE	14.1	9.70	50
V1100D32IE	17.0	12.70	50
V1100S40IE	17.0	12.70	60

Dimensions

V...D32ME



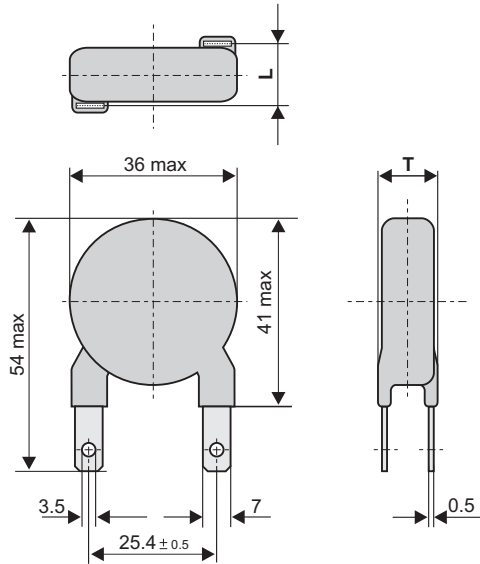
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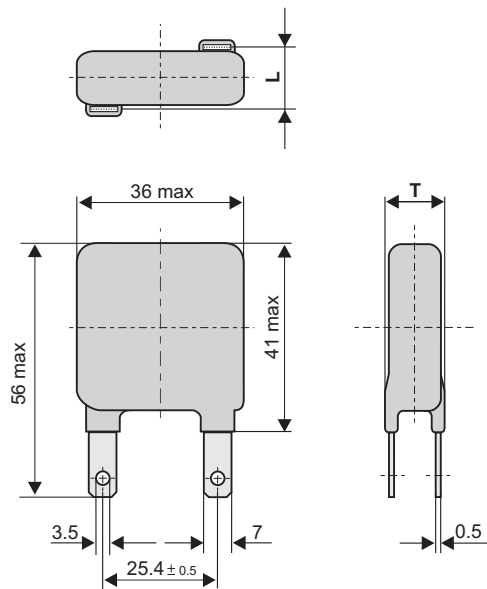
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V75D32ME	7.0	2.50	13
V75S40ME	7.0	2.50	17
V95D32ME	7.3	2.80	14
V95S40ME	7.3	2.80	18
V115D32ME	7.6	3.10	15
V115S40ME	7.6	3.10	19
V130D32ME	8.0	3.50	16
V130S40ME	8.0	3.50	20
V140D32ME	8.1	3.55	17
V140S40ME	8.1	3.55	21
V150D32ME	8.2	3.60	18
V150S40ME	8.2	3.60	22
V175D32ME	8.6	4.00	19
V175S40ME	8.6	4.00	23
V230D32ME	8.9	4.50	20
V230S40ME	8.9	4.50	25
V250D32ME	9.1	4.70	21
V250S40ME	9.1	4.70	26
V275D32ME	9.3	4.90	22
V275S40ME	9.3	4.90	27
V300D32ME	9.6	5.20	23
V300S40ME	9.6	5.20	28
V320D32ME	9.8	5.50	24
V320S40ME	9.8	5.50	29
V385D32ME	10.6	6.30	25
V385S40ME	10.6	6.30	30
V420D32ME	11.0	6.70	26
V420S40ME	11.0	6.70	31
V440D32ME	11.2	6.90	27
V440S40ME	11.2	6.90	32
V460D32ME	11.4	7.10	28
V460S40ME	11.4	7.10	33
V510D32ME	12.0	7.80	29
V510S40ME	12.0	7.80	34
V550D32ME	12.4	8.00	30
V550S40ME	12.4	8.00	35
V625D32ME	13.0	8.50	35
V625S40ME	13.0	8.50	40
V680D32ME	13.5	9.10	40
V680S40ME	13.5	9.10	45
V750D32ME	14.1	9.70	45
V750S40ME	14.1	9.70	50
V1100D32ME	17.0	12.70	50
V1100S40ME	17.0	12.70	60

Dimensions

V...D32JE



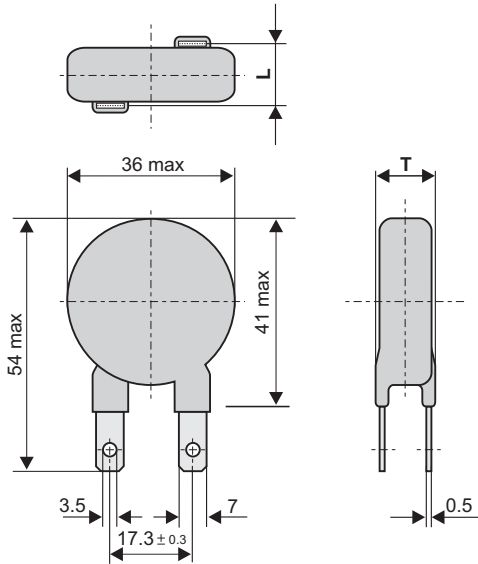
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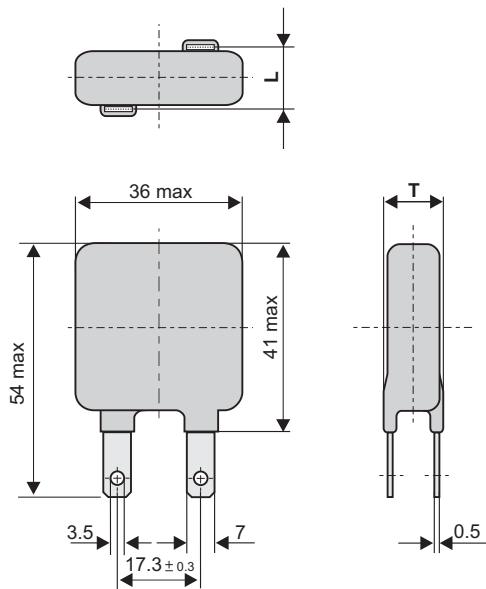
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V75D32JE	7.0	2.50	13
V75S40JE	7.0	2.50	17
V95D32JE	7.3	2.80	14
V95S40JE	7.3	2.80	18
V115D32JE	7.6	3.10	15
V115S40JE	7.6	3.10	19
V130D32JE	8.0	3.50	16
V130S40JE	8.0	3.50	20
V140D32JE	8.1	3.55	17
V140S40JE	8.1	3.55	21
V150D32JE	8.2	3.60	18
V150S40JE	8.2	3.60	22
V175D32JE	8.6	4.00	19
V175S40JE	8.6	4.00	23
V230D32JE	8.9	4.50	20
V230S40JE	8.9	4.50	25
V250D32JE	9.1	4.70	21
V250S40JE	9.1	4.70	26
V275D32JE	9.3	4.90	22
V275S40JE	9.3	4.90	27
V300D32JE	9.6	5.20	23
V300S40JE	9.6	5.20	28
V320D32JE	9.8	5.50	24
V320S40JE	9.8	5.50	29
V385D32JE	10.6	6.30	25
V385S40JE	10.6	6.30	30
V420D32JE	11.0	6.70	26
V420S40JE	11.0	6.70	31
V440D32JE	11.2	6.90	27
V440S40JE	11.2	6.90	32
V460D32JE	11.4	7.10	28
V460S40JE	11.4	7.10	33
V510D32JE	12.0	7.80	29
V510S40JE	12.0	7.80	34
V550D32JE	12.4	8.00	30
V550S40JE	12.4	8.00	35
V625D32JE	13.0	8.50	35
V625S40JE	13.0	8.50	40
V680D32JE	13.5	9.10	40
V680S40JE	13.5	9.10	45
V750D32JE	14.1	9.70	45
V750S40JE	14.1	9.70	50
V1100D32JE	17.0	12.70	50
V1100S40JE	17.0	12.70	60

Dimensions

V...D32FE



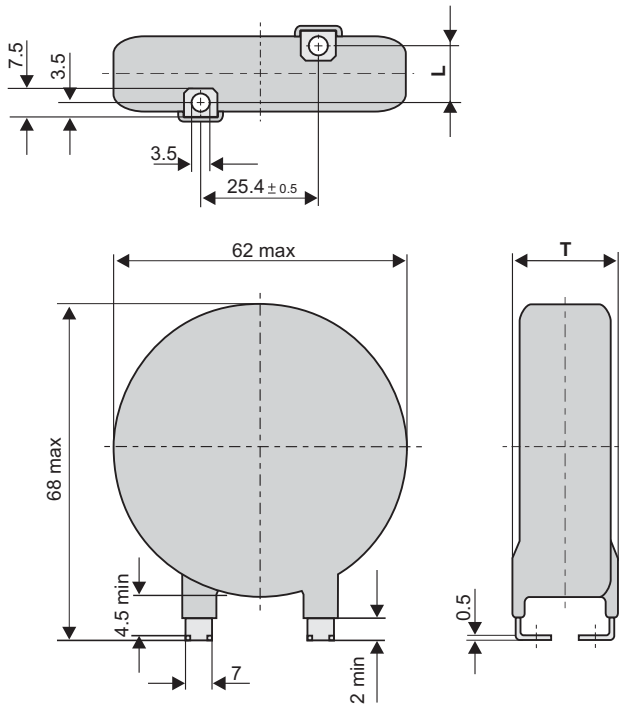
V...S40FE



Part Number	T _{max} (mm)	L ± 1 (mm)	Approx. Weight (gr)
V75D32FE	7.0	2.50	13
V75S40FE	7.0	2.50	17
V95D32FE	7.3	2.80	14
V95S40FE	7.3	2.80	18
V115D32FE	7.6	3.10	15
V115S40FE	7.6	3.10	19
V130D32FE	8.0	3.50	16
V130S40FE	8.0	3.50	20
V140D32FE	8.1	3.55	17
V140S40FE	8.1	3.55	21
V150D32FE	8.2	3.60	18
V150S40FE	8.2	3.60	22
V175D32FE	8.6	4.00	19
V175S40FE	8.6	4.00	23
V230D32FE	8.9	4.50	20
V230S40FE	8.9	4.50	25
V250D32FE	9.1	4.70	21
V250S40FE	9.1	4.70	26
V275D32FE	9.3	4.90	22
V275S40FE	9.3	4.90	27
V300D32FE	9.6	5.20	23
V300S40FE	9.6	5.20	28
V320D32FE	9.8	5.50	24
V320S40FE	9.8	5.50	29
V385D32FE	10.6	6.30	25
V385S40FE	10.6	6.30	30
V420D32FE	11.0	6.70	26
V420S40FE	11.0	6.70	31
V440D32FE	11.2	6.90	27
V440S40FE	11.2	6.90	32
V460D32FE	11.4	7.10	28
V460S40FE	11.4	7.10	33
V510D32FE	12.0	7.80	29
V510S40FE	12.0	7.80	34
V550D32FE	12.4	8.00	30
V550S40FE	12.4	8.00	35
V625D32FE	13.0	8.50	35
V625S40FE	13.0	8.50	40
V680D32FE	13.5	9.10	40
V680S40FE	13.5	9.10	45
V750D32FE	14.1	9.70	45
V750S40FE	14.1	9.70	50
V1100D32FE	17.0	12.70	50
V1100S40FE	17.0	12.70	60

High Energy Varistors - D60LE Series

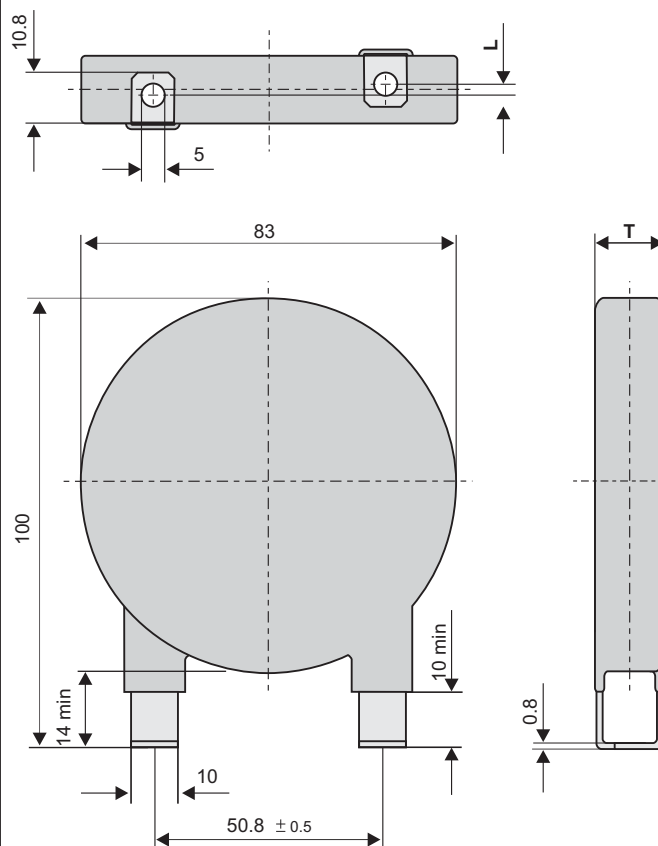
Dimensions



Part Number	T _{max} (mm)	L ± 1 (mm)	Approx. Weight (gr)
V130D60LE	8.0	-2.90	60
V140D60LE	8.1	-2.80	60
V150D60LE	8.2	-2.70	65
V175D60LE	8.6	-2.30	70
V230D60LE	8.9	-2.00	75
V250D60LE	9.1	-1.80	80
V275D60LE	9.3	-1.60	85
V300D60LE	9.6	-1.30	90
V320D60LE	9.8	-1.00	95
V385D60LE	10.6	-0.20	100
V420D60LE	11.0	0.20	105
V440D60LE	11.2	0.40	100
V460D60LE	11.4	0.60	110
V510D60LE	12.0	1.30	120
V550D60LE	12.4	1.50	130
V625D60LE	13.0	2.00	150
V680D60LE	13.5	2.60	180
V750D60LE	14.1	3.20	200
V1100D60LE	17.0	6.20	250

High Energy Varistors - D80LE Series

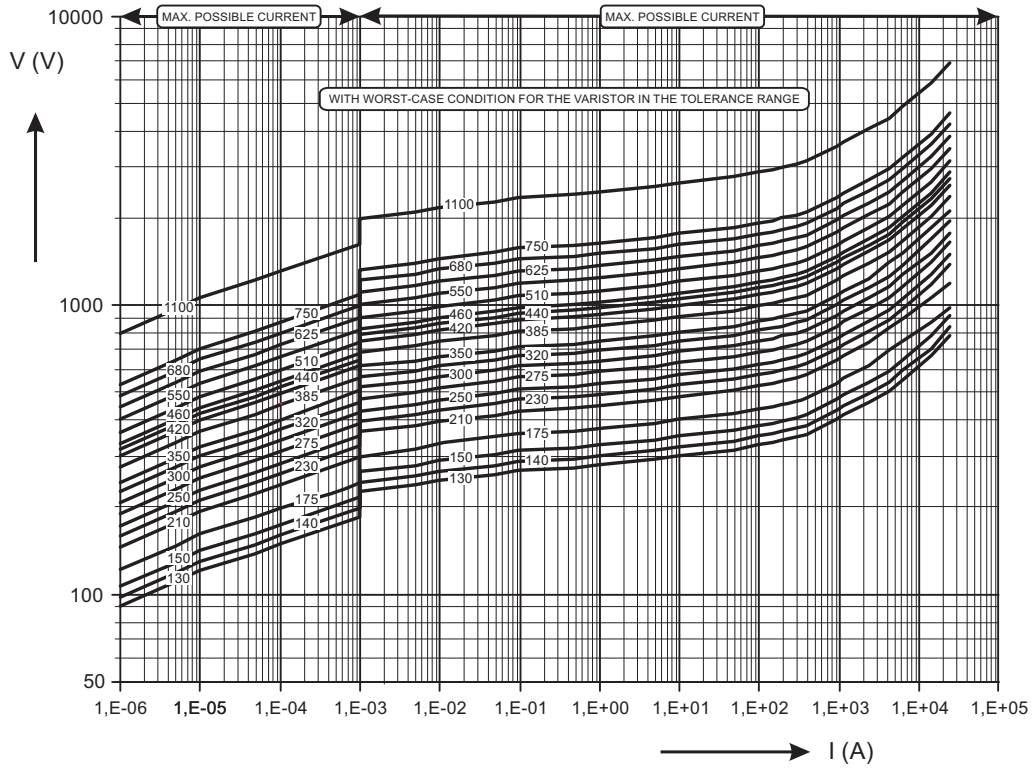
Dimensions



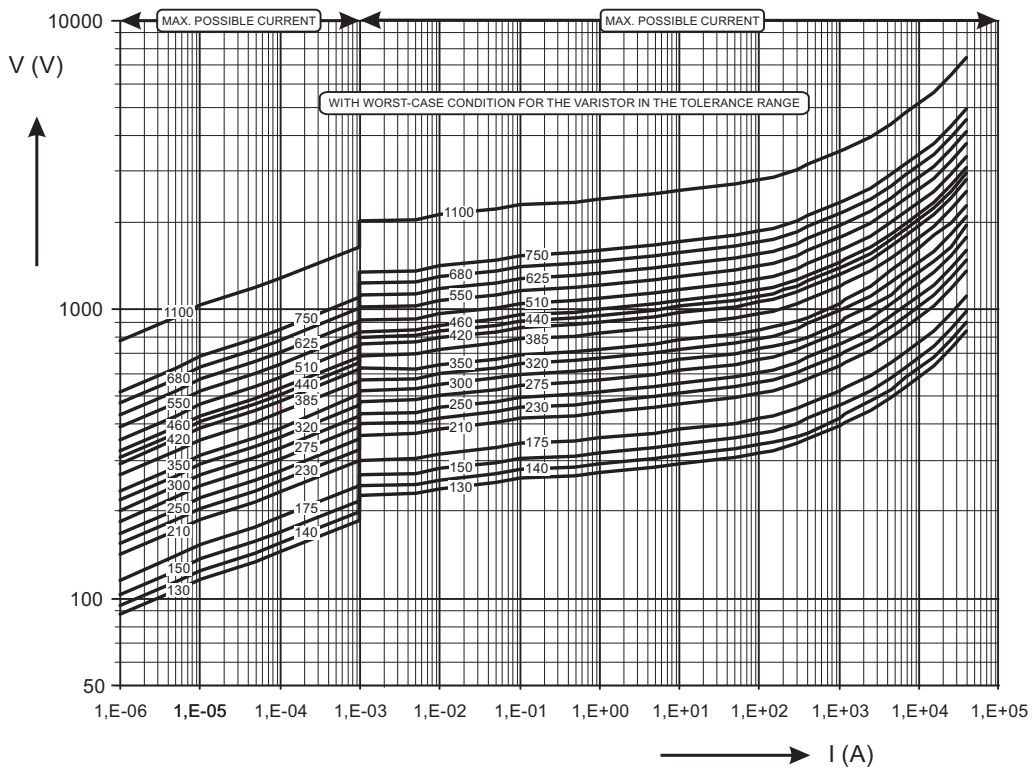
Part Number	T _{max} (mm)	L ± 1 (mm)	Approx. Weight (gr)
V130D80LE	7.0	-8.60	100
V140D80LE	7.1	-8.50	105
V150D80LE	7.2	-8.40	110
V175D80LE	7.6	-8.00	115
V230D80LE	7.9	-7.70	120
V250D80LE	7.1	-6.90	130
V275D80LE	7.3	-6.70	140
V300D80LE	7.6	-6.40	150
V320D80LE	7.8	-6.20	160
V385D80LE	8.6	-5.40	170
V420D80LE	9.0	-5.00	190
V440D80LE	9.2	-4.80	210
V460D80LE	9.4	-4.60	220
V510D80LE	10.0	-4.00	230
V550D80LE	10.4	-3.60	240
V625D80LE	11.0	-3.00	250
V680D80LE	11.5	-2.50	260
V750D80LE	12.1	-1.90	270
V1100D80LE	15.0	1.00	300

V-I Characteristics

V130-V1100D32LE

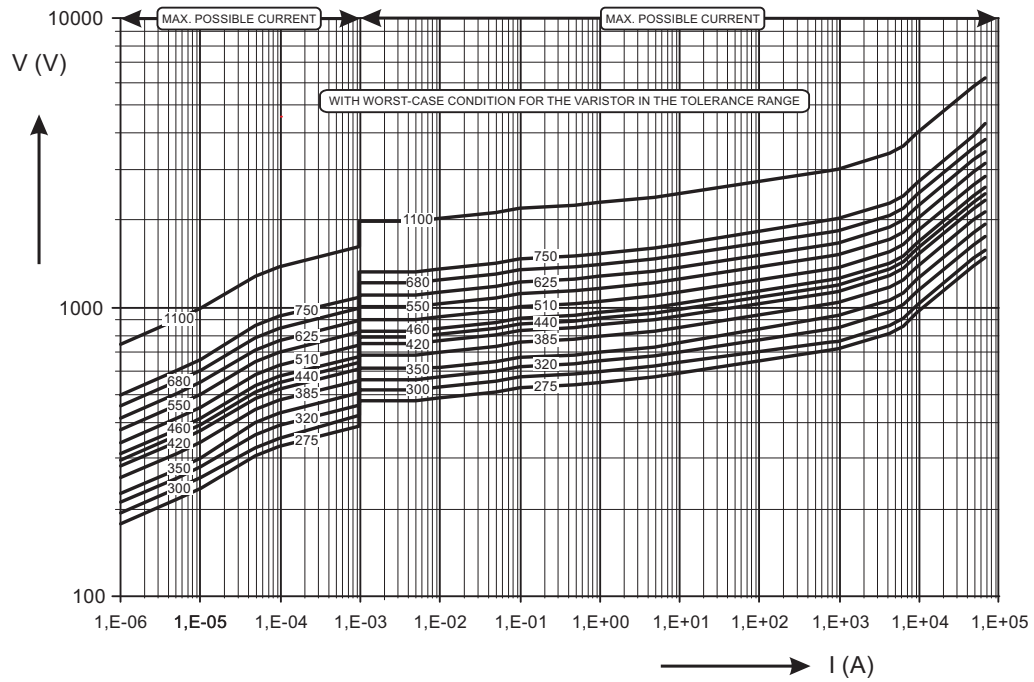


V130-V1100S40LE

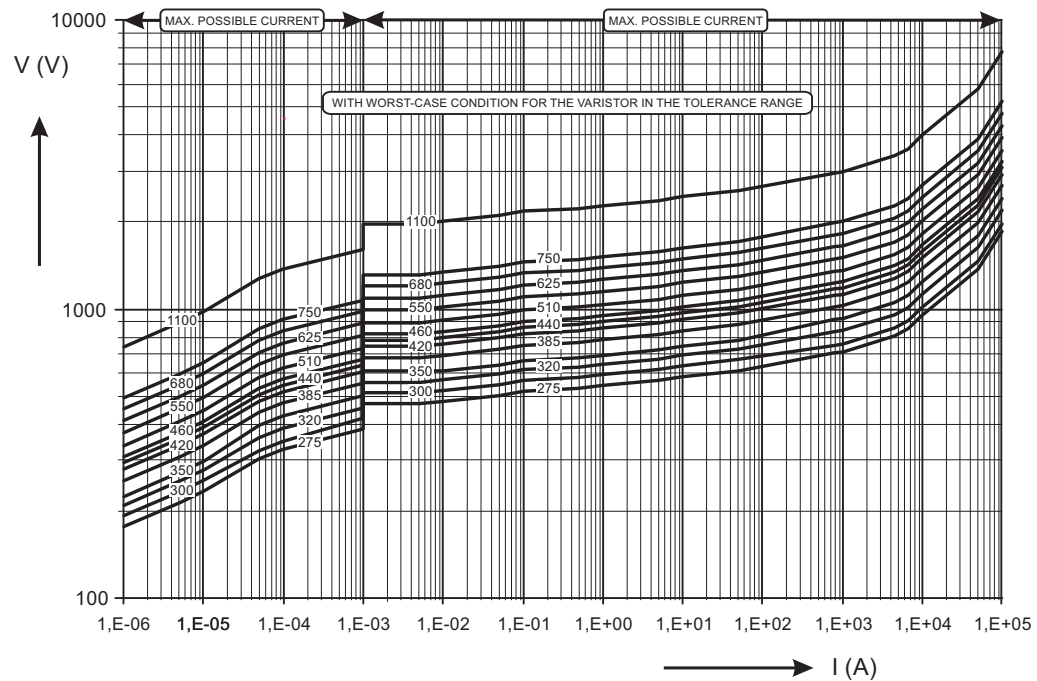


V-I Characteristics

V275-V1100D60LE

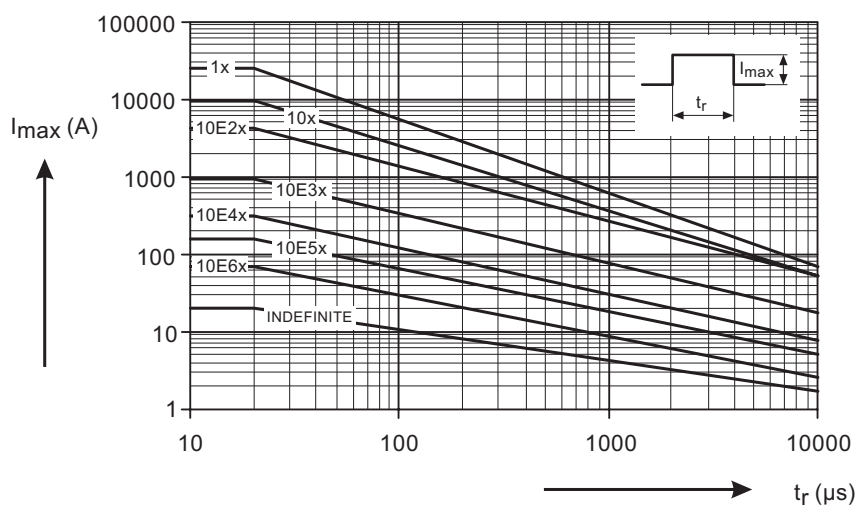


V275-V1100D80LE

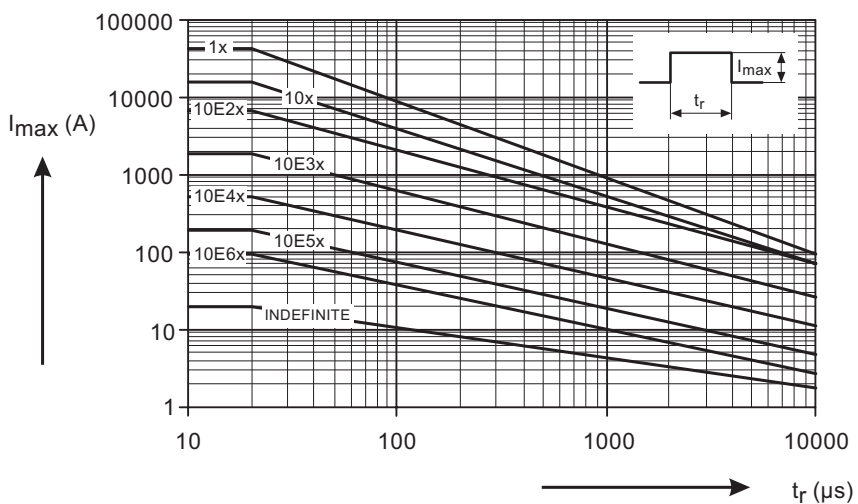


Pulse Ratings

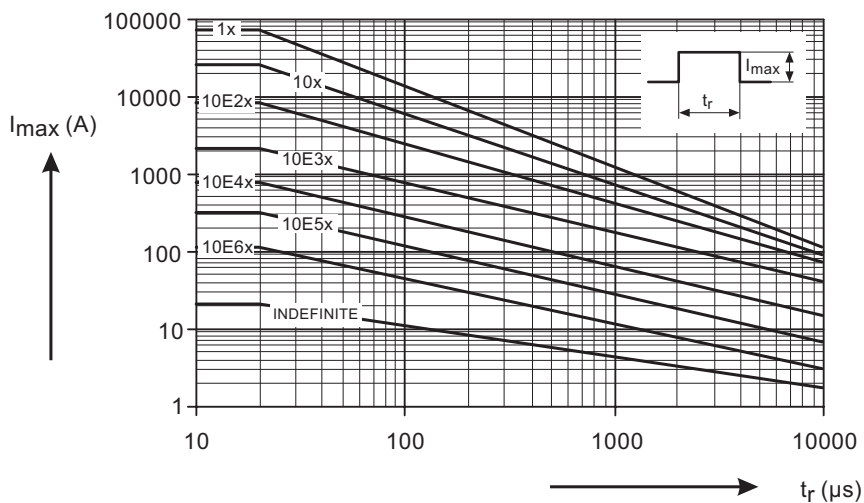
V130-V1100D32LE



V130S40-V1100S40LE;



V275-V1100D60LE



Pulse Ratings

V275-V1100D80LE

