



Multiple Pulse (MP) Disk Varistors, S20

for the Protection of Consumer and Industrial Power Supplies

Metal oxide varistors of the newly developed MP series are designed to be used in power supplies as the primary protection against low-level repetitive surge currents.

Their optimized design results in an improved derating performance over time compared to standard varistor series.

These protective components are particularly suited for applications in which repetitive surges are now specified by regulatory authorities in switch-mode power supplies, drives and general overvoltage protection modules.

The extensive range which is already recognized by UL as type 2 SPD components, respectively, and by VDE to Annex Q of IEC 60950-1 cover all standard voltage supply ratings.

SuperioR-MP series, 20 mm disk

- AC voltage range from 130 to 680 V AC
- Listed under UL 1449 3rd Edition for type 2 applications
- Tested in accordance to IEC 61051-2
- VDE certified to Annex Q of IEC 60950-1
- Suitable for industrial applications requiring compliance to UL 508C, UL 840

Options

Disk diameters of 10 and 14 mm are also available

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Technical data

Ordering code B72220P...	3131K101	3141K101	3151K101	3171K101	3211K101	3231K101	3251K101	3271K101
Type SIOV-S20K...	130E3K1	140E3K1	150E3K1	175E3K1	210E3K1	230E3K1	250E3K1	275E3K1

Dimensions

d_{max}	mm	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
h_{max}	mm	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
s_{max}	mm	5.1	5.2	5.3	5.5	5.8	6.0	6.1	6.5
$a \pm 1$	mm	2.2	2.3	2.4	2.6	2.9	3.1	3.2	3.5

Maximum ratings @ $T_A = 85^\circ\text{C}$

V_{RMS}	V	130	140	150	175	210	230	250	275
V_{DC}	V	170	180	200	225	270	300	320	350
$i_{max} @ 8/20 \mu\text{s}$	A	12000	12000	12000	12000	12000	12000	12000	12000
$W_{max} @ 2 \text{ ms}$	J	145	155	165	180	205	225	240	260
P_{max}	W	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Characteristics @ $T_A = 25^\circ\text{C}$

$V_V @ 1 \text{ mA}$	V	205	220	240	270	330	360	390	430
$\Delta V_V @ 1 \text{ mA}$	%	± 10	± 10	± 10	± 10	± 10	± 10	± 10	± 10

Maximum clamping voltage

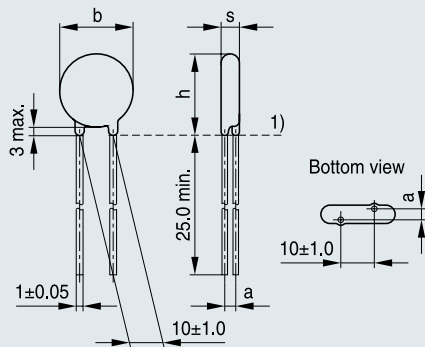
$v_c @ i_c$	V	340	360	395	455	545	595	650	710
i_c	A	100	100	100	100	100	100	100	100
$C_{typ} @ 1 \text{ kHz}$	pF	1590	1470	1375	1185	770	690	650	585

Duty cycle surge rating @ (8/20 μs)

3 kA ¹⁾	times	100	100	100	100	100	100	100	100
750 A ¹⁾	times	1600	1600	1600	1600	1600	1600	1600	1600

¹⁾ The specified current value shows the actual 8/20 μs peak current through the varistor, not the current resulting from the combination wave test.

Dimensional drawing



1) Seating plane to IEC 60717

VAR0665-G-E

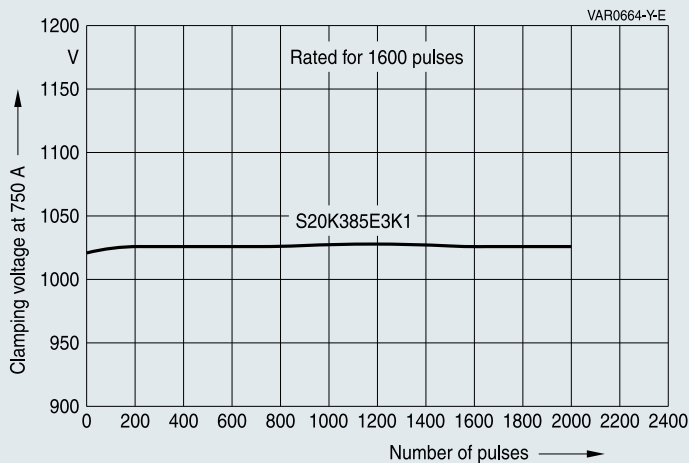
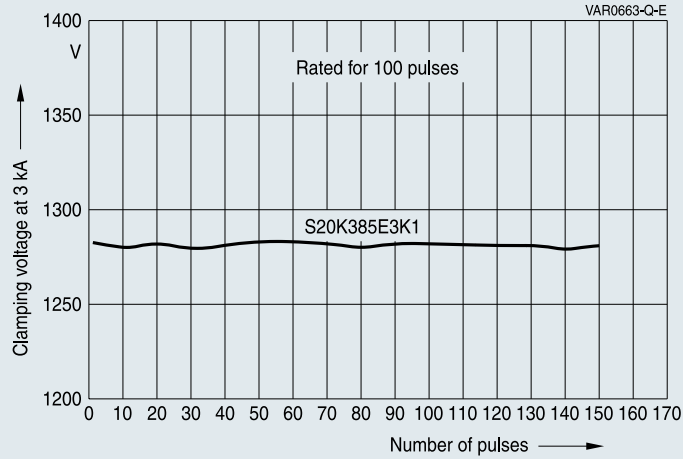
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3301K101	3321K101	3351K101	3381K101	3421K101	3461K101	3511K101	3551K101	3621K101	3681K101
300E3K1	320E3K1	350E3K1	385E3K1	420E3K1	460E3K1	510E3K1	550E3K1	625E3K1	680E3K1
22.5	22.5	22.5	22.5	22.5	22.5	23.0	23.0	23.0	23.0
27.0	27.0	27.0	27.5	27.5	27.5	28.0	28.0	28.0	28.0
6.8	6.9	7.3	8.3	8.6	8.9	9.3	9.8	10.3	10.9
3.8	3.9	4.2	4.8	5.0	5.3	5.6	6.1	6.6	7.2
300	320	350	385	420	460	510	550	625	680
385	420	460	505	560	615	670	745	825	895
12000	12000	12000	12000	12000	12000	10000	10000	10000	10000
290	320	320	320	320	370	410	450	500	540
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
470	510	560	620	680	750	820	910	1000	1100
±10	±10	±10	±10	±10	±10	±10	±10	±10	±10
775	840	910	1025	1120	1240	1355	1500	1650	1815
100	100	100	100	100	100	100	100	100	100
550	545	490	445	395	340	310	290	250	225
100	100	100	100	100	100	40	40	40	40
1600	1600	1600	1600	1600	1600	1600	1600	1600	1600

Multiple Pulse

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Typical repetitive surge current capability



Symbol and terms

Symbol	Term	Symbol	Term
C	Capacitance	V_{clamp}	Clamping voltage
C_{typ}	Typical capacitance	$V_{C, max}$	Maximum clamping voltage at specified current i_c
i	Current	V_{DC}	DC operating voltage
i_c	Current at which $V_{C, max}$ is measured	V_{max}	Maximum voltage
i_{max}	Maximum surge current (also termed peak current)	V_{RMS}	AC operating voltage, root-mean-square value
I_{nom}	Nominal discharge current	V_V	Varistor voltage
P_{max}	Maximum average power dissipation	ΔV_V	Tolerance of varistor voltage
T_A	Ambient temperature	W_{max}	Maximum energy absorption
v	Voltage	e	Lead spacing

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