



# Multiple Pulse (MP) Disk Varistors, S14

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 and type 3 SPD components, respectively, and by VDE to Annex Q of IEC 60950-1 cover all standard voltage supply ratings.

## AdvanceD-MP series, 14 mm disk

- AC voltage range from 130 to 680 V AC
- Listed under UL 1449 3<sup>rd</sup> 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 20 mm are also available

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## Technical data

<b>Ordering code</b>	B72214P...	2131K101	2141K101	2151K101	2171K101	2211K101	2231K101	2251K101	2271K101
<b>Type</b>	SIOV-S14K...	130E2K1	140E2K1	150E2K1	175E2K1	210E2K1	230E2K1	250E2K1	275E2K1

### Dimensions

$d_{max}$	mm	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
$h_{max}$	mm	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
$s_{max}$	mm	4.7	4.8	4.9	5.1	5.4	5.6	5.7	5.9
$a_{\pm 1}$	mm	2.0	2.1	2.2	2.4	2.7	2.9	3.0	3.2

### Maximum ratings @ TA = 85 °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 $\mu s$	A	6000	6000	6000	6000	6000	6000	6000	6000
$W_{max}$ @ 2 ms	J	60	65	70	80	95	105	115	130
$P_{max}$	W	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6

### Characteristics @ TA = 25 °C

$V_V$ @ 1 mA	V	205	220	240	270	330	360	390	430
$\Delta V_V$ @ 1 mA	%	$\pm 10$	$\pm 10$	$\pm 10$	$\pm 10$	$\pm 10$	$\pm 10$	$\pm 10$	$\pm 10$

### Maximum clamping voltage

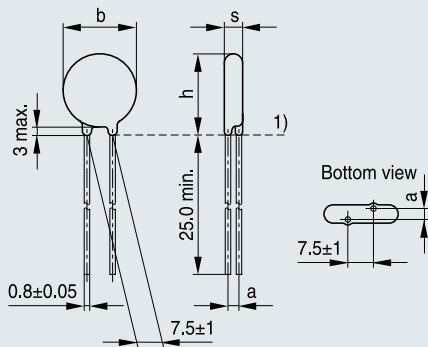
$v_c$ @ $i_c$	V	340	360	395	455	545	595	650	710
$i_c$	A	50	50	50	50	50	50	50	50
$C_{typ}$ @ 1 kHz	pF	760	715	670	575	375	340	320	290

### Duty cycle surge rating @ (8/20 $\mu s$ )

3 kA <sup>1)</sup>	times	40	40	40	40	40	40	40	40
750 A <sup>1)</sup>	times	800	800	800	800	800	800	800	800

<sup>1)</sup> The specified current value shows the actual 8/20  $\mu s$  peak current through the varistor, not the current resulting from the combination wave test.

## Dimensional drawing



1) Seating plane to IEC 60717

VAR0660-S-E

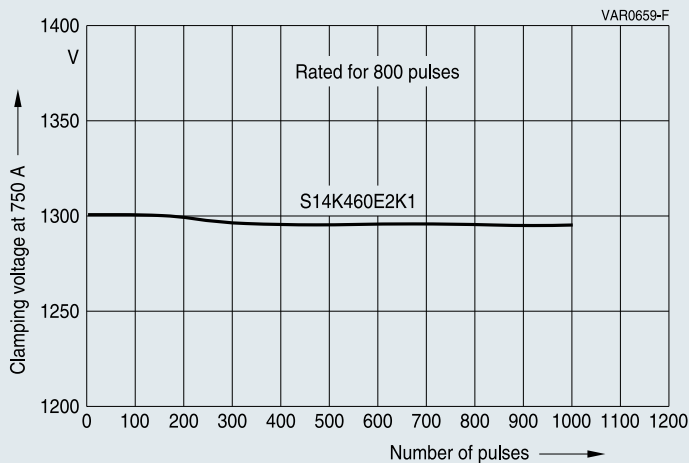
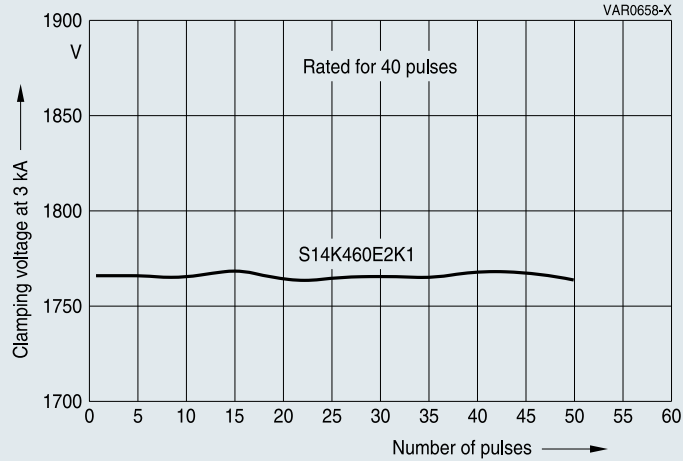
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2301K101	2321K101	2351K101	2381K101	2421K101	2461K101	2511K101	2551K101	2621K101	2681K101
300E2K1	320E2K1	350E2K1	385E2K1	420E2K1	460E2K1	510E2K1	550E2K1	625E2K1	680E2K1
16.0	16.0	16.5	16.5	16.5	16.5	17.0	17.0	17.0	17.0
20.0	20.0	20.5	20.5	20.5	20.5	21.0	21.0	21.0	21.0
6.1	6.3	6.7	7.7	8.2	8.5	8.9	9.4	9.9	10.5
3.5	3.7	4.1	4.4	4.7	5.1	5.4	5.9	6.4	7.0
300	320	350	385	420	460	510	550	625	680
385	420	460	505	560	615	670	745	825	895
6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
140	150	165	180	190	200	200	220	240	260
0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
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
50	50	50	50	50	50	50	50	50	50
285	280	260	240	210	180	170	155	140	130
40	40	40	40	40	40	15	15	15	15
800	800	800	800	800	800	500	500	500	500

Multiple Pulse

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## Typical repetitive surge current capability



## Symbol and terms

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

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