Ⅳ. High Energy Series

1. Case type

Case type of SVR varistor is defined as cased type of varistor which is assembled into the case, and it has larger capability in surge energy than S and U-series, in the applications of electronic equipments or semiconductor devices from switching and induced lightning surges.

● Features

- Direct mounting is available on boards like a power distribution board.
- Excellent surge protection even in low clamping voltage
- Varistor voltage available: 200∼1,100V

● Recommended applications

- Surge protection in industrial power plant operations
- On/off surge absorption of relay, or electromagnetic valve
- Surge absorption in applications of broad casting, communication devices,traffic/railroad, agricultural facilities, waterworks.
- Surge protection of automatic control devices for power distribution line.

Electrical characteristics

▶D 32-series

Operating temperature range : - 40 ~ 85℃
Storage temperature range : - 40 ~ 125℃
Temperature coefficient of varistor voltage : 0 ~ - 0.05%/℃

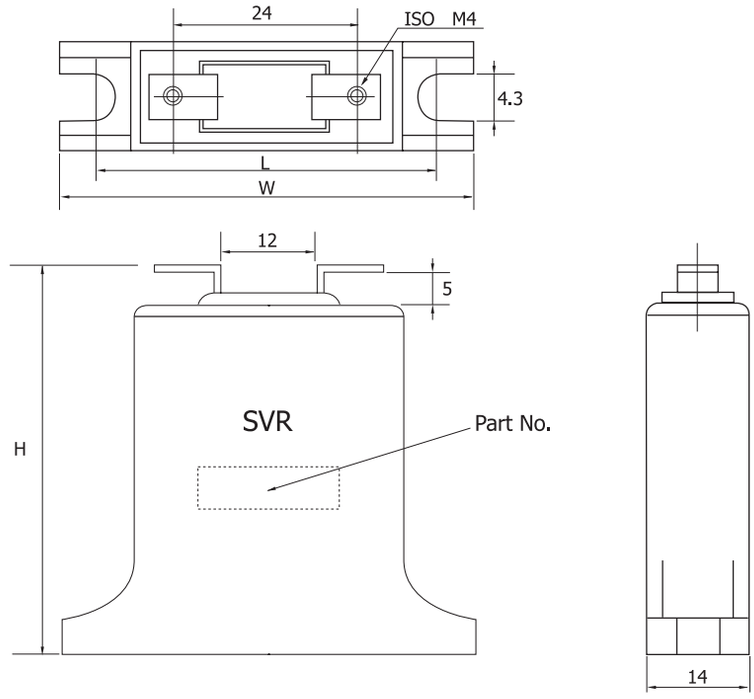
Model No.	Varistor voltage(V) (1mA)			Max. continuous voltage(V)		Max. clamping voltage		Power dissipation	Energy (10/1000μs)	Peak current (8/20μs)
	Min.	$V_{N(DC)}$	Max.	$V_{m(ac)}$	$V_{m(dc)}$	V_C(V)	I_P(A)	P_{tam}(W)	W_{max}(2ms)J	I_{tm}(A)
SVR201D32	180	200	220	130	170	340	200	1.2	210	25,000
SVR241D32	216	240	264	150	200	395	200	1.2	240	25,000
SVR271D32	247	270	297	175	225	455	200	1.2	255	25,000
SVR361D32	324	360	396	230	300	595	200	1.2	325	25,000
SVR391D32	351	390	429	250	320	650	200	1.2	350	25,000
SVR431D32	387	430	473	275	350	710	200	1.2	400	25,000
SVR471D32	423	470	517	300	385	775	200	1.2	405	25,000
SVR511D32	459	510	561	320	415	845	200	1.2	430	25,000
SVR561D32	504	560	616	350	455	925	200	1.2	490	25,000
SVR621D32	558	620	682	385	505	1,025	200	1.2	550	25,000
SVR681D32	612	680	748	420	560	1,120	200	1.2	600	25,000
SVR751D32	675	750	825	460	615	1,240	200	1.2	600	25,000
SVR781D32	702	780	858	485	640	1,290	200	1.2	600	25,000
SVR821D32	738	820	902	510	670	1,355	200	1.2	620	25,000
SVR911D32	819	910	1.001	550	745	1,500	200	1.2	620	25,000
SVR102D32	900	1,000	1,100	625	825	1,650	200	1.2	680	25,000
SVR112D32	990	1,100	1,210	680	895	1,815	200	1.2	760	25,000

▶R 34-series

Operating temperature range : -40 ~ 85℃
Storage temperature range : -40 ~ 125℃
Temperature coefficient of varistor voltage : 0 ~ -0.05%/℃

Model No.	Varistor voltage(V) (1mA)			Max. continuous voltage(V)		Max. clamping voltage		Power dissipation	Energy (10/1000μs)	Peak current (8/20μs)
	Min.	$V_{N(DC)}$	Max.	$V_{m(ac)}$	$V_{m(dc)}$	V_C(V)	I_P(A)	P_{tam}(W)	W_{max}(2ms)J	I_{tm}(A)
SVR201R34	180	200	220	130	170	340	300	1.4	310	40,000
SVR241R34	216	240	264	150	200	395	300	1.4	360	40,000
SVR271R34	247	270	297	175	225	455	300	1.4	410	40,000
SVR361R34	324	360	396	230	300	595	300	1.4	460	40,000
SVR391R34	351	390	429	250	320	650	300	1.4	490	40,000
SVR431R34	387	430	473	275	350	710	300	1.4	550	40,000
SVR471R34	423	470	517	300	385	775	300	1.4	590	40,000
SVR511R34	459	510	561	320	415	845	300	1.4	630	40,000
SVR561R34	504	560	616	350	455	925	300	1.4	720	40,000
SVR621R34	558	620	682	385	505	1,025	300	1.4	800	40,000
SVR681R34	612	680	748	420	560	1,120	300	1.4	910	40,000
SVR751R34	675	750	825	460	615	1,240	300	1.4	960	40,000
SVR781R34	702	780	858	485	640	1,290	300	1.4	960	40,000
SVR821R34	738	820	902	510	670	1,355	300	1.4	960	40,000
SVR911R34	819	910	1.001	550	745	1,500	300	1.4	960	40,000
SVR102R34	900	1,000	1,100	625	825	1,650	300	1.4	1,100	40,000
SVR112R34	990	1,100	1,210	680	895	1,815	300	1.4	1,100	40,000

1) Shapes and dimensions



Dimension	W(mm)	H(mm)	L(mm)
SVROOOD32	61±1	55±1	51±1
SVROOOR34	61±1	55±1	51±1

2) Performance characteristics

<table>
<tr><th colspan="2">Characteristics</th><th>Test methods/Description</th><th>Specifications</th></tr>
<tr><td colspan="2">Standard test condition</td><td>Unless otherwise specified, electrical characteristics shall be measured at following conditions (Temp. : 5 to 35℃, Humidity : 45 to 85% RH, Atmospheric Pressure : 860 to 1060hPa)</td><td>–</td></tr>
<tr><td rowspan="8">Electrical</td><td>Varistor voltage</td><td>The voltage between two terminals with the specified measuring current $I_{N(DC)}$ applied is called V_C or $V_{N(DC)}$. The measurement shall be made as fast as possible to avoid heat affection.</td><td rowspan="6">To meet the specified value.</td></tr>
<tr><td>Max. continuous voltage</td><td>The maximum rms voltage or the maximum dc voltage that can be applied continuously.</td></tr>
<tr><td>Max. clamping voltage</td><td>The maximum voltage between two terminals with the specified standard impulse current(8/20㎲).</td></tr>
<tr><td>Rated Power</td><td>The maximum power that can be applied within the specified ambient temperature.</td></tr>
<tr><td>Energy</td><td>The maximum energy within the varistor voltage change of ± 10% when a single impulse current of 10/1000㎲ is applied.</td></tr>
<tr><td>Max. peak current</td><td>The maximum current within the varistor voltage change of ± 10% with the standard impulse current(8/20㎲) applied.</td></tr>
<tr><td>Temperature coefficient of varistor voltage</td><td>$\frac{V_{N(DC)} \text{ at } 85℃ - V_{N(DC)} \text{ at } 25℃}{V_{N(DC)} \text{ at } 25℃} \times \frac{1}{60} \times 100(\%/℃)$</td><td>0 to – 0.05 %/℃ max.</td></tr>
<tr><td>Impulse life</td><td>The change of $V_{N(DC)}$ shall be measured after the impulse listed below is applied 10,000 times continuously with the interval of ten seconds at room temperature.
32ø 300A (8/20㎲)
R34 500A (8/20㎲)</td><td>$\Delta V_{N(DC)} / V_{N(DC)} \leq \pm 10\%$</td></tr>
<tr><td>Withstanding voltage (Body insulation)</td><td>The commercial frequency voltage of ac 2.5kV shall be applied between terminals and the bottom of the unit for one minute.</td><td>No remarkable damage.</td></tr>
<tr><td rowspan="2">Mechanical</td><td>Robustness of terminals (tensile)</td><td>After gradually applying the load of 49N(5kgf) and keeping the unit fixed for 10 seconds in an axial direction, the terminal shall be visually examined for any damage.</td><td rowspan="2">No remarkable damage.</td></tr>
<tr><td>Vibration</td><td>After repeatedly applying a single harmonic vibration(amplitude: 0.75mm, double amplitude: 1.5mm) with 1 minute vibration frequency cycles (10Hz to 55Hz to 10Hz) to each of three perpendicular directions for 2 hours. Thereafter, the unit shall be visually examined.</td></tr>
<tr><td rowspan="4">Environmental</td><td>Temperature cycle</td><td>The temperature cycles shown below shall be repeated five times and then stored at room temperature and normal humidity for one to two hours. The change of $V_{N(DC)}$ and mechanical damage shall be examined.
Step | Temperature(℃) | Period(minutes)
1 | -25_{-3}^{0} | $30\ ^{+3}_{0}$
2 | Room temp. | Max. 3
3 | $85\ ^{+3}_{0}$ | $30\ ^{+3}_{0}$
4 | Room temp. | Max. 3</td><td>No remarkable damage.
$\Delta V_{N(DC)} / V_{N(DC)} \leq \pm 5\%$</td></tr>
<tr><td>Dry heat/ High temperature storage</td><td>The specimen shall be subjected to 110±3℃ for 500 hours in a thermostatic bath without load and then stored at room temperature and normal humidity for one to two hours. Thereafter, the change of $V_{N(DC)}$ shall be measured.</td><td>$\Delta V_{N(DC)} / V_{N(DC)} \leq \pm 5\%$</td></tr>
<tr><td>Dry heat load/ High temperature load</td><td>After being continuously applied the maximum continuous voltage at 85±5℃ for 500 hours, the specimen shall be stored at room temperature and normal humidity for one to two hours. Thereafter, the change of $V_{N(DC)}$ shall be measured.</td><td>$\Delta V_{N(DC)} / V_{N(DC)} \leq \pm 10\%$</td></tr>
<tr><td>Damp heat/ Humidity (Steady state)</td><td>The specimen shall be subjected to 40±8℃, 90 to 95%RH for 1,000 hours without load and then stored at room temperature and normal humidity for one to two hours. Thereafter, the change of $V_{N(DC)}$ shall be measured.</td><td>$\Delta V_{N(DC)} / V_{N(DC)} \leq \pm 5\%$</td></tr>
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