

# Multilayer Chip Varistor – SDV Series

Operating Temp. : -55°C~+125°C



## FEATURES

- SMD type suitable for high density mounting
- Excellent clamping ratio and quick response time (<0.5ns)
- Excellent solderability (Ni, Sn plating)

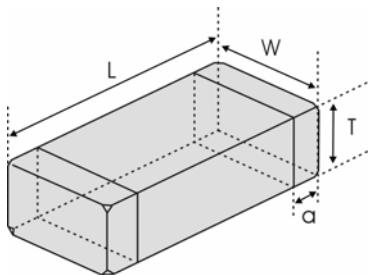
## APPLICATIONS

- Transient voltage protection for IC and transistor
- ESD and I/O protection
- EFT and burst protection
- Portable equipment protection, such as mobile phone, PDA, etc.

## PRODUCT IDENTIFICATION

<u>SDV</u> ①	<u>1608</u> ②	<u>A</u> ③	<u>180</u> ④	<u>C121</u> ⑤	<u>N</u> ⑥	<u>P</u> ⑦	<u>T</u> ⑧	<u>F</u> ⑨																																																												
<table border="1"> <tr><th colspan="2">Type</th></tr> <tr><td>SDV</td><td>Chip Varistor</td></tr> </table>	Type		SDV	Chip Varistor	<table border="1"> <tr><th colspan="2">External Dimensions (L×W) (mm)</th></tr> <tr><td>0603 [0201]</td><td>0.6×0.3</td></tr> <tr><td>1005 [0402]</td><td>1.0×0.5</td></tr> <tr><td>1608 [0603]</td><td>1.6×0.8</td></tr> <tr><td>2012 [0805]</td><td>2.0×1.25</td></tr> </table>	External Dimensions (L×W) (mm)		0603 [0201]	0.6×0.3	1005 [0402]	1.0×0.5	1608 [0603]	1.6×0.8	2012 [0805]	2.0×1.25	<table border="1"> <tr><th colspan="2">Feature Code</th></tr> <tr><td>A</td><td>For General Use</td></tr> <tr><td>E</td><td>For ESD</td></tr> <tr><td>H</td><td>For High Speed</td></tr> <tr><td>S</td><td>For Special Request</td></tr> </table>	Feature Code		A	For General Use	E	For ESD	H	For High Speed	S	For Special Request	<table border="1"> <tr><th colspan="2">Maximum Continuous Working Voltage</th></tr> <tr><th>Example</th><th>Nominal Value</th></tr> <tr><td>5R5</td><td>5.5V</td></tr> <tr><td>180</td><td>18V</td></tr> </table>	Maximum Continuous Working Voltage		Example	Nominal Value	5R5	5.5V	180	18V	<table border="1"> <tr><th colspan="2">Capacitance @1MHz</th></tr> <tr><th>Example</th><th>Nominal Value</th></tr> <tr><td>C121</td><td>120pF</td></tr> <tr><td>C152</td><td>1500pF</td></tr> </table>	Capacitance @1MHz		Example	Nominal Value	C121	120pF	C152	1500pF	<table border="1"> <tr><th colspan="2">Tolerance of Capacitance</th></tr> <tr><td>N</td><td>±30%</td></tr> <tr><td>Y</td><td>+100%~-50%</td></tr> <tr><td>G</td><td>Maximum</td></tr> </table>	Tolerance of Capacitance		N	±30%	Y	+100%~-50%	G	Maximum	<table border="1"> <tr><th colspan="2">Terminal Code</th></tr> <tr><td>P</td><td>Ni, Sn Plating</td></tr> </table>	Terminal Code		P	Ni, Sn Plating	<table border="1"> <tr><th colspan="2">Packing</th></tr> <tr><td>T</td><td>Tape &amp; Reel</td></tr> </table>	Packing		T	Tape & Reel	<table border="1"> <tr><th colspan="2">Hazardous Substance Free Products</th></tr> <tr><td>F</td><td></td></tr> </table>	Hazardous Substance Free Products		F	
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## SHAPE AND DIMENSIONS



Unit: mm [inch]

Type	L	W	T	a
SDV0603 [0201]	0.6±0.05 [.024±.002]	0.3±0.05 [.012±.002]	0.3±0.05 [.012±.002]	0.15±0.05 [.006±.002]
SDV1005 [0402]	1.0±0.15 [.039±.006]	0.5±0.15 [.020±.006]	0.5±0.15 [.020±.006]	0.25±0.1 [.010±.004]
SDV1608 [0603]	1.6±0.15 [.063±.006]	0.8±0.15 [.031±.006]	0.8±0.15 [.031±.006]	0.3±0.2 [.012±.008]
SDV2012 [0805]	2.0±0.2 [.079±.008]	1.25±0.2 [.049±.008]	0.85±0.2 [.033±.008]	0.5±0.3 [.020±.012]

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# SPECIFICATIONS

## SDV1005A TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1005A5R5C181□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	180
SDV1005A5R5C231□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	230
SDV1005A5R5C361□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	360
SDV1005A090C121□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	120
SDV1005A090C151□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	150
SDV1005A090C231□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	230
SDV1005A140C121□PTF	14.0	10.0	16.0-22.0	30	39	0.05	20	120

## SDV1608A TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1608A5R5C121□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	120
SDV1608A5R5C141□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	140
SDV1608A5R5C231□PTF	5.5	4.0	10.0-14.0	18	23	0.1	30	230
SDV1608A5R5C361□PTF	5.5	4.0	10.0-14.0	18	23	0.1	30	360
SDV1608A5R5C551□PTF	5.5	4.0	10.0-14.0	18	23	0.1	30	550
SDV1608A5R5C821□PTF	5.5	4.0	10.0-14.0	18	23	0.1	30	820
SDV1608A090C121□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	120
SDV1608A090C141□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	140
SDV1608A090C201□PTF	9.0	6.4	11.0-16.0	20	26	0.1	30	200
SDV1608A090C231□PTF	9.0	6.4	11.0-16.0	20	26	0.1	30	230
SDV1608A090C361□PTF	9.0	6.4	11.0-16.0	20	26	0.1	30	360
SDV1608A090C551□PTF	9.0	6.4	11.0-16.0	20	26	0.1	30	550
SDV1608A090C821□PTF	9.0	6.4	11.0-16.0	20	26	0.1	30	820
SDV1608A140C121□PTF	14.0	10.0	16.0-22.0	30	39	0.05	20	120
SDV1608A140C141□PTF	14.0	10.0	16.0-22.0	30	39	0.05	20	140
SDV1608A140C251□PTF	14.0	10.0	16.0-22.0	30	39	0.1	30	250
SDV1608A140C361□PTF	14.0	10.0	16.0-22.0	30	39	0.1	30	360
SDV1608A140C551□PTF	14.0	10.0	16.0-22.0	30	39	0.1	30	550
SDV1608A180C121□PTF	18.0	12.7	22.0-28.0	40	48	0.05	20	120
SDV1608A180C141□PTF	18.0	12.7	22.0-28.0	40	48	0.05	20	140
SDV1608A180C231□PTF	18.0	12.7	22.0-28.0	40	48	0.1	30	230
SDV1608A180C361□PTF	18.0	12.7	22.0-28.0	40	48	0.1	30	360
SDV1608A220C121□PTF	22.0	15.6	26.0-34.0	45	54	0.05	20	120
SDV1608A220C141□PTF	22.0	15.6	26.0-34.0	45	54	0.05	20	140
SDV1608A220C161□PTF	22.0	15.6	26.0-34.0	45	54	0.1	30	160
SDV1608A220C231□PTF	22.0	15.6	26.0-34.0	45	54	0.1	30	230
SDV1608A220C361□PTF	22.0	15.6	26.0-34.0	45	54	0.1	30	360
SDV1608A260C121□PTF	26.0	18.4	31.0-38.0	58	70	0.1	30	120
SDV1608A260C161□PTF	26.0	18.4	31.0-38.0	58	70	0.1	30	160
SDV1608A300C121□PTF	30.0	21.3	37.0-46.0	65	78	0.1	30	120
SDV1608A300C141□PTF	30.0	21.3	37.0-46.0	65	78	0.1	30	140

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# SPECIFICATIONS

## SDV2012A TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV2012A5R5C901□PTF	5.5	4.0	10.0-14.0	18	23	0.2	60	900
SDV2012A5R5C122□PTF	5.5	4.0	10.0-14.0	18	23	0.3	120	1200
SDV2012A5R5C202□PTF	5.5	4.0	10.0-14.0	18	23	0.4	150	2000
SDV2012A090C701□PTF	9.0	6.4	11.0-16.0	20	26	0.2	60	700
SDV2012A090C102□PTF	9.0	6.4	11.0-16.0	20	26	0.3	120	1000
SDV2012A090C162□PTF	9.0	6.4	11.0-16.0	20	26	0.4	150	1600
SDV2012A140C401□PTF	14.0	10.0	16.0-22.0	30	39	0.2	60	400
SDV2012A140C701□PTF	14.0	10.0	16.0-22.0	30	39	0.3	120	700
SDV2012A140C901□PTF	14.0	10.0	16.0-22.0	30	39	0.4	150	900
SDV2012A180C301□PTF	18.0	12.7	22.0-28.0	40	49	0.2	60	300
SDV2012A180C501□PTF	18.0	12.7	22.0-28.0	40	49	0.3	120	500
SDV2012A180C701□PTF	18.0	12.7	22.0-28.0	40	49	0.4	150	700
SDV2012A220C251□PTF	22.0	15.6	26.0-34.0	45	54	0.2	60	250
SDV2012A220C401□PTF	22.0	15.6	26.0-34.0	45	54	0.3	120	400
SDV2012A220C501□PTF	22.0	15.6	26.0-34.0	45	54	0.3	120	500
SDV2012A260C251□PTF	26.0	18.4	31.0-38.0	58	67	0.2	60	250
SDV2012A260C401□PTF	26.0	18.4	31.0-38.0	58	67	0.3	120	400
SDV2012A300C181□PTF	30.0	21.3	37.0-46.0	65	74	0.2	60	180
SDV2012A300C301□PTF	30.0	21.3	37.0-46.0	65	74	0.3	120	300

## SDV0603E TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV0603E5R5C150□PTF	5.5	4.0	10.0-14.0	18	23	0.005	1	15
SDV0603E5R5C220□PTF	5.5	4.0	10.0-14.0	18	23	0.005	1	22
SDV0603E5R5C330□PTF	5.5	4.0	10.0-14.0	18	23	0.01	3	33
SDV0603E5R5C400□PTF	5.5	4.0	10.0-14.0	18	23	0.01	5	40
SDV0603E5R5C500□PTF	5.5	4.0	10.0-14.0	18	23	0.01	5	50
SDV0603E5R5C700□PTF	5.5	4.0	10.0-14.0	18	23	0.01	5	70
SDV0603E5R5C800□PTF	5.5	4.0	10.0-14.0	18	23	0.02	10	80
SDV0603E090C150□PTF	9.0	6.4	11.0-16.0	20	26	0.005	1	15
SDV0603E090C220□PTF	9.0	6.4	11.0-16.0	20	26	0.005	1	22
SDV0603E090C330□PTF	9.0	6.4	11.0-16.0	20	26	0.01	3	33
SDV0603E090C400□PTF	9.0	6.4	11.0-16.0	20	26	0.01	5	40
SDV0603E090C500□PTF	9.0	6.4	11.0-16.0	20	26	0.01	5	50
SDV0603E140C150□PTF	14.0	10.0	16.0-22.0	30	39	0.005	1	15

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# SPECIFICATIONS

## SDV1005E TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1005E5R5C180□PTF	5.5	4.0	10.0-14.0	18	23	0.005	3	18
SDV1005E5R5C300□PTF	5.5	4.0	10.0-14.0	18	23	0.005	5	30
SDV1005E5R5C400□PTF	5.5	4.0	10.0-14.0	18	23	0.005	5	40
SDV1005E5R5C500□PTF	5.5	4.0	10.0-14.0	18	23	0.01	10	50
SDV1005E5R5C700□PTF	5.5	4.0	10.0-14.0	18	23	0.01	10	70
SDV1005E5R5C800□PTF	5.5	4.0	10.0-14.0	18	23	0.02	10	80
SDV1005E5R5C101□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	100
SDV1005E090C180□PTF	9.0	6.4	11.0-16.0	20	26	0.005	3	18
SDV1005E090C300□PTF	9.0	6.4	11.0-16.0	20	26	0.005	5	30
SDV1005E090C500□PTF	9.0	6.4	11.0-16.0	20	26	0.01	10	50
SDV1005E090C800□PTF	9.0	6.4	11.0-16.0	20	26	0.02	15	80
SDV1005E090C101□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	100
SDV1005E140C180□PTF	14.0	10.0	16.0-22.0	30	39	0.005	3	18
SDV1005E140C300□PTF	14.0	10.0	16.0-22.0	30	39	0.01	5	30
SDV1005E140C500□PTF	14.0	10.0	16.0-22.0	30	39	0.02	10	50
SDV1005E140C800□PTF	14.0	10.0	16.0-22.0	30	39	0.03	15	80
SDV1005E140C101□PTF	14.0	10.0	16.0-22.0	30	39	0.05	20	100
SDV1005E180C150□PTF	18.0	12.7	22.0-28.0	40	48	0.005	2	15
SDV1005E180C180□PTF	18.0	12.7	22.0-28.0	40	48	0.01	5	18
SDV1005E180C300□PTF	18.0	12.7	22.0-28.0	40	48	0.02	10	30
SDV1005E180C500□PTF	18.0	12.7	22.0-28.0	40	48	0.02	10	50
SDV1005E180C800□PTF	18.0	12.7	22.0-28.0	40	48	0.03	15	80
SDV1005E220C150□PTF	22.0	15.6	26.0-34.0	45	54	0.005	2	15
SDV1005E220C180□PTF	22.0	15.6	26.0-34.0	45	54	0.01	5	18
SDV1005E220C300□PTF	22.0	15.6	26.0-34.0	45	54	0.02	10	30
SDV1005E220C500□PTF	22.0	15.6	26.0-34.0	45	54	0.02	10	50
SDV1005E260C180□PTF	26.0	18.4	31.0-38.0	58	70	0.02	5	18
SDV1005E260C300□PTF	26.0	18.4	31.0-38.0	58	70	0.03	10	30
SDV1005E260C500□PTF	26.0	18.4	31.0-38.0	58	70	0.03	10	50

## SDV1608E TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1608E5R5C180□PTF	5.5	4.0	10.0-14.0	18	23	0.005	3	18
SDV1608E5R5C300□PTF	5.5	4.0	10.0-14.0	18	23	0.005	5	30
SDV1608E5R5C500□PTF	5.5	4.0	10.0-14.0	18	23	0.01	10	50
SDV1608E5R5C800□PTF	5.5	4.0	10.0-14.0	18	23	0.02	10	80
SDV1608E5R5C101□PTF	5.5	4.0	10.0-14.0	18	23	0.05	20	100
SDV1608E090C180□PTF	9.0	6.4	11.0-16.0	20	26	0.005	3	18
SDV1608E090C300□PTF	9.0	6.4	11.0-16.0	20	26	0.005	5	30
SDV1608E090C500□PTF	9.0	6.4	11.0-16.0	20	26	0.01	10	50

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# SPECIFICATIONS

## SDV1608E TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1608E090C800□PTF	9.0	6.4	11.0-16.0	20	26	0.02	15	80
SDV1608E090C101□PTF	9.0	6.4	11.0-16.0	20	26	0.05	20	100
SDV1608E140C180□PTF	14.0	10.0	16.0-22.0	30	39	0.005	3	18
SDV1608E140C300□PTF	14.0	10.0	16.0-22.0	30	39	0.01	5	30
SDV1608E140C500□PTF	14.0	10.0	16.0-22.0	30	39	0.02	10	50
SDV1608E140C800□PTF	14.0	10.0	16.0-22.0	30	39	0.03	15	80
SDV1608E140C101□PTF	14.0	10.0	16.0-22.0	30	39	0.05	20	100
SDV1608E180C180□PTF	18.0	12.7	22.0-28.0	40	48	0.005	5	18
SDV1608E180C300□PTF	18.0	12.7	22.0-28.0	40	48	0.02	10	30
SDV1608E180C600□PTF	18.0	12.7	22.0-28.0	40	48	0.02	10	60
SDV1608E180C800□PTF	18.0	12.7	22.0-28.0	40	48	0.03	15	80
SDV1608E180C101□PTF	18.0	12.7	22.0-28.0	40	48	0.05	20	100
SDV1608E220C180□PTF	22.0	15.6	26.0-34.0	45	54	0.005	5	18
SDV1608E220C300□PTF	22.0	15.6	26.0-34.0	45	54	0.02	10	30
SDV1608E220C500□PTF	22.0	15.6	26.0-34.0	45	54	0.02	10	50
SDV1608E220C800□PTF	22.0	15.6	26.0-34.0	45	54	0.03	15	80
SDV1608E220C101□PTF	22.0	15.6	26.0-34.0	45	54	0.05	20	100
SDV1608E260C180□PTF	26.0	18.4	31.0-38.0	58	70	0.02	5	18
SDV1608E260C300□PTF	26.0	18.4	31.0-38.0	58	70	0.03	10	30
SDV1608E260C500□PTF	26.0	18.4	31.0-38.0	58	70	0.03	10	50

## SDV2012E TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV2012E5R5C180□PTF	5.5	4.0	10.0-14.0	18	23	0.005	3	18
SDV2012E180C101□PTF	18.0	12.7	22.0-28.0	40	48	0.05	20	100
SDV2012E220C101□PTF	22.0	15.6	26.0-34.0	45	54	0.05	20	100
SDV2012E260C800□PTF	26.0	18.4	31.0-38.0	58	70	0.05	20	80
SDV2012E300C500□PTF	30.0	21.3	37.0-46.0	65	78	0.05	15	50

## SDV0603H TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV0603H180C050YPTF	18.0	12.7	22.0-28.0	40	48	0.005	3	18
SDV0603H180C100□PTF	18.0	12.7	22.0-28.0	40	48	0.01	5	30
SDV0603H220C050YPTF	22.0	15.6	26.0-34.0	40	48	0.005	3	18

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# SPECIFICATIONS

## SDV0603H TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV0603H220C100□PTF	22.0	15.6	26.0-34.0	40	48	0.005	1	10
SDV0603H260C030YPTF	26.0	18.4	31.0-38.0	58	70	0.003	1	3
SDV0603H260C050YPTF	26.0	18.4	31.0-38.0	58	70	0.003	1	5

## SDV1005H TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1005H140C100□PTF	14.0	10.0	16.0-22.0	30	39	0.005	2	10
SDV1005H140C120□PTF	14.0	10.0	16.0-22.0	30	39	0.005	2	12
SDV1005H180C050YPTF	18.0	12.7	22.0-28.0	40	48	0.005	2	5
SDV1005H180C100□PTF	18.0	12.7	22.0-28.0	40	48	0.005	2	10
SDV1005H220C030YPTF	22.0	15.6	26.0-34.0	45	54	0.003	1	3
SDV1005H220C050YPTF	22.0	15.6	26.0-34.0	45	54	0.005	2	5
SDV1005H220C100□PTF	22.0	15.6	26.0-34.0	45	54	0.005	2	10
SDV1005H220C120□PTF	22.0	15.6	26.0-34.0	45	54	0.005	2	12
SDV1005H260C030YPTF	26.0	18.4	31.0-38.0	58	70	0.003	1	3
SDV1005H260C100□PTF	26.0	18.4	31.0-38.0	58	70	0.005	2	10
SDV1005H260C120□PTF	26.0	18.4	31.0-38.0	58	70	0.005	2	12

## SDV1608H TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1608H140C100□PTF	14.0	10.0	16.0-22.0	30	39	0.005	2	10
SDV1608H140C120□PTF	14.0	10.0	16.0-22.0	30	39	0.005	2	12
SDV1608H180C050YPTF	18.0	12.7	22.0-28.0	40	48	0.003	1	5
SDV1608H180C100□PTF	18.0	12.7	22.0-28.0	40	48	0.005	2	10
SDV1608H180C120□PTF	18.0	12.7	22.0-28.0	40	48	0.005	2	12
SDV1608H220C030YPTF	22.0	15.6	26.0-34.0	45	54	0.003	1	3
SDV1608H220C050YPTF	22.0	15.6	26.0-34.0	45	54	0.003	1	5
SDV1608H220C100□PTF	22.0	15.6	26.0-34.0	45	54	0.005	2	10
SDV1608H220C120□PTF	22.0	15.6	26.0-34.0	45	54	0.005	2	12
SDV1608H260C030YPTF	26.0	18.4	31.0-38.0	58	70	0.003	1	3
SDV1608H260C100□PTF	26.0	18.4	31.0-38.0	58	70	0.005	2	10
SDV1608H260C120□PTF	26.0	18.4	31.0-38.0	58	70	0.005	2	12
SDV1608H300C100□PTF	30.0	21.3	37.0-46.0	65	78	0.005	2	10
SDV1608H480C100□PTF	48.0	34.1	54.0-67.0	100	120	0.005	2	10

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# SPECIFICATIONS

## SDV0603S TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts						
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV0603S5R5C030YPTF	5.5	4.0	31.0-38.0	58	70	0.003	1	3
SDV0603S5R5C050YPTF	5.5	4.0	31.0-38.0	58	70	0.003	1	5
SDV0603S5R5C100□PTF	5.5	4.0	22.0-28.0	40	48	0.005	1	10
SDV0603S090C030YPTF	9.0	6.4	31.0-38.0	58	70	0.003	1	3
SDV0603S090C050YPTF	9.0	6.4	31.0-38.0	58	70	0.003	1	5
SDV0603S090C100□PTF	9.0	6.4	22.0-28.0	40	48	0.005	1	10

## SDV1005S TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts						
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1005S5R5C030YPTF	5.5	4.0	31.0-38.0	58	70	0.003	1	3
SDV1005S5R5C050YPTF	5.5	4.0	22.0-28.0	40	48	0.003	1	5
SDV1005S5R5C100□PTF	5.5	4.0	22.0-28.0	40	48	0.005	2	10
SDV1005S5R5C120□PTF	5.5	4.0	22.0-28.0	40	48	0.005	2	12
SDV1005S090C030YPTF	9.0	6.4	31.0-38.0	58	70	0.003	1	3
SDV1005S090C050YPTF	9.0	6.4	22.0-28.0	40	48	0.003	1	5
SDV1005S090C100□PTF	9.0	6.4	22.0-28.0	40	48	0.005	2	10
SDV1005S090C120□PTF	9.0	6.4	22.0-28.0	40	48	0.005	2	12
SDV1005S140C030YPTF	14.0	10.0	31.0-38.0	58	70	0.003	1	3
SDV1005S140C050YPTF	14.0	10.0	22.0-28.0	40	48	0.003	1	5
SDV1005S180C030YPTF	18.0	12.7	31.0-38.0	58	70	0.003	1	3
SDV1005S220C030YPTF	22.0	15.6	26.0-34.0	45	54	0.003	1	3

## SDV1608S TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
	DC	AC RMS		8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	
Test Condition	<20 $\mu$ A		@1mA DC	8/20 $\mu$ s	ESD	Energy 10/1000 $\mu$ s	Peak Current 8/20 $\mu$ s	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts						
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1608S5R5C030YPTF	5.5	4.0	31.0-38.0	58	70	0.003	1	3
SDV1608S5R5C050YPTF	5.5	4.0	22.0-28.0	40	48	0.003	1	5
SDV1608S5R5C100□PTF	5.5	4.0	22.0-28.0	40	48	0.005	2	10
SDV1608S5R5C120□PTF	5.5	4.0	22.0-28.0	40	48	0.005	2	12
SDV1608S090C030YPTF	9.0	6.4	31.0-38.0	58	70	0.003	1	3
SDV1608S090C050YPTF	9.0	6.4	22.0-28.0	40	48	0.003	1	5
SDV1608S090C100□PTF	9.0	6.4	22.0-28.0	40	48	0.005	2	10
SDV1608S090C120□PTF	9.0	6.4	22.0-28.0	40	48	0.005	2	12
SDV1608S140C030YPTF	14.0	10.0	31.0-38.0	58	70	0.003	1	3
SDV1608S140C050YPTF	14.0	10.0	22.0-28.0	40	48	0.003	1	5
SDV1608S180C030YPTF	18.0	12.7	31.0-38.0	58	70	0.003	1	3

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# SPECIFICATIONS

## SDV1608S TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance @0.5V <sub>rms</sub> , 1MHz
	DC	AC RMS		8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V <sub>rms</sub> , 1MHz
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	V <sub>C</sub> <sup>*1</sup>	V <sub>C</sub> <sup>*2</sup>	E <sub>T</sub>	I <sub>P</sub>	C
SDV1608S220C030YPTF	22.0	15.6	26.0-34.0	45	54	0.003	1	3

※\*1: V<sub>c</sub>, Maximum peak voltage across the varistor measured at a specified pulse current and waveform.

Energy Rating	Pulse & Waveform
0.00-0.05 Joule	1A, 8/20μs
0.10 Joule	2A, 8/20μs
0.20-0.50 Joule	5A, 8/20μs

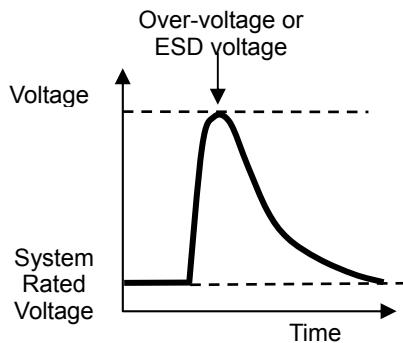
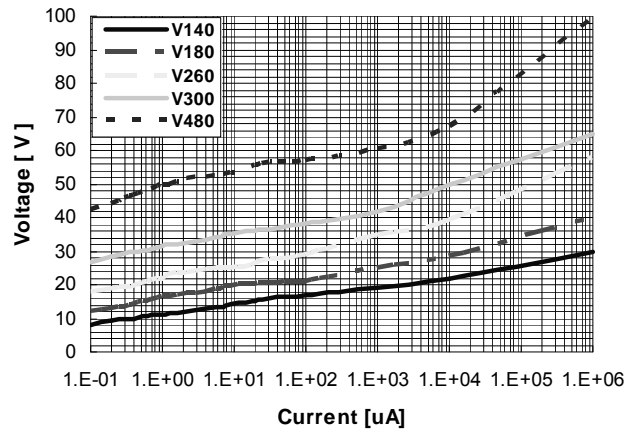
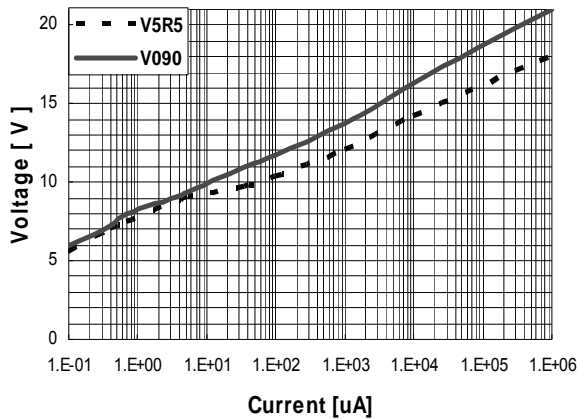
※\*2: V<sub>c</sub>, Maximum peak voltage across the varistor measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8kV.

※□: Please specify the capacitance tolerance code (N=±30%, Y=+100%~-50%, G=Maximum).

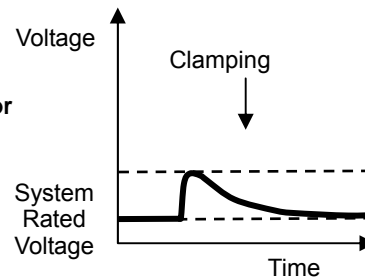
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## SPECIFICATIONS

Ultra low capacitance type (C=0.5pF, 1pF or 2pF)

Part Number	Max. Working Voltage		Varistor Voltage	Typical Capacitance	Min. Cut-off Frequency
	<20 $\mu$ A				
Test Condition	DC	AC RMS	@1mA DC	@0.5V <sub>rms</sub> , 1MHz	@-3dB
Units	Volts	Volts	Volts	pF	MHz
Symbol	V <sub>WDC</sub>	V <sub>WAC</sub>	V <sub>B</sub>	C	f <sub>0</sub>
SDV0603S5R5C0R5YPTF	5.5	4.0	100-160	0.5	2000
SDV0603S5R5C010YPTF	5.5	4.0	100-160	1	1250
SDV0603S5R5C020YPTF	5.5	4.0	60-80	2	600
SDV0603S090C0R5YPTF	9.0	6.4	100-160	0.5	2000
SDV0603S090C010YPTF	9.0	6.4	100-160	1	1250
SDV0603S090C020YPTF	9.0	6.4	60-80	2	600
SDV1005H260C0R5YPTF	26.0	18.4	100-160	0.5	2000
SDV1005H260C010YPTF	26.0	18.4	100-160	1	1250
SDV1005H260C020YPTF	26.0	18.4	60-80	2	600
SDV1005S5R5C0R5YPTF	5.5	4.0	100-160	0.5	2000
SDV1005S5R5C010YPTF	5.5	4.0	100-160	1	1250
SDV1005S5R5C020YPTF	5.5	4.0	60-80	2	600
SDV1005S090C0R5YPTF	9.0	6.4	100-160	0.5	2000
SDV1005S090C010YPTF	9.0	6.4	100-160	1	1250
SDV1005S090C020YPTF	9.0	6.4	60-80	2	600
SDV1005S140C0R5YPTF	14.0	10.0	100-160	0.5	2000
SDV1005S140C010YPTF	14.0	10.0	100-160	1	1250
SDV1005S140C020YPTF	14.0	10.0	60-80	2	600
SDV1005S180C0R5YPTF	18.0	12.7	100-160	0.5	2000
SDV1005S180C010YPTF	18.0	12.7	100-160	1	1250
SDV1005S180C020YPTF	18.0	12.7	60-80	2	600
SDV1608H260C0R5YPTF	26.0	18.4	100-160	0.5	2000
SDV1608H260C010YPTF	26.0	18.4	100-160	1	1250
SDV1608H260C020YPTF	26.0	18.4	60-80	2	600
SDV1608S5R5C0R5YPTF	5.5	4.0	100-160	0.5	2000
SDV1608S5R5C010YPTF	5.5	4.0	100-160	1	1250
SDV1608S5R5C020YPTF	5.5	4.0	60-80	2	600
SDV1608S090C0R5YPTF	9.0	6.4	100-160	0.5	2000
SDV1608S090C010YPTF	9.0	6.4	100-160	1	1250
SDV1608S090C020YPTF	9.0	6.4	60-80	2	600
SDV1608S140C0R5YPTF	14.0	10.0	100-160	0.5	2000
SDV1608S140C010YPTF	14.0	10.0	100-160	1	1250
SDV1608S140C020YPTF	14.0	10.0	60-80	2	600
SDV1608S180C0R5YPTF	18.0	12.7	100-160	0.5	2000
SDV1608S180C010YPTF	18.0	12.7	100-160	1	1250
SDV1608S180C020YPTF	18.0	12.7	60-80	2	600
SDV1608S180C020YPTF	18.0	12.7	60-80	2	600

※: Products with other electrical characteristics can be provided upon customer's request. Please contact your local sales.

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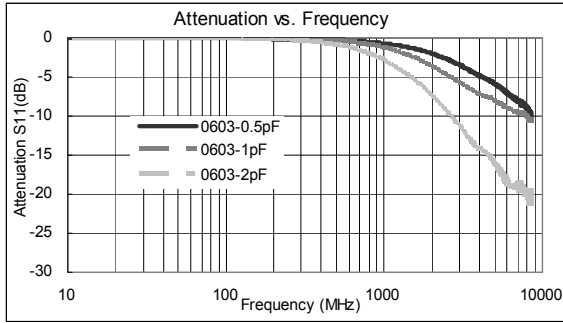
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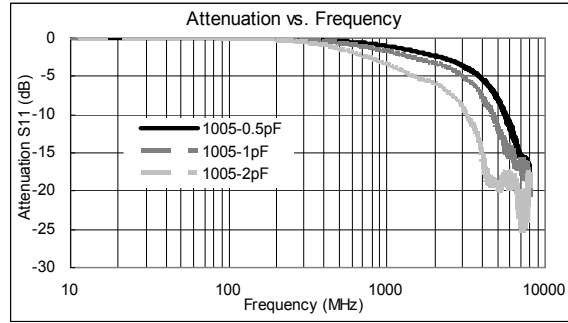
# TYPICAL ELECTRICAL CHARACTERISTICS

Ultra low capacitance type: SDV0603/SDV1005/SDV1608 series, C=0.5pF, 1pF, 2pF

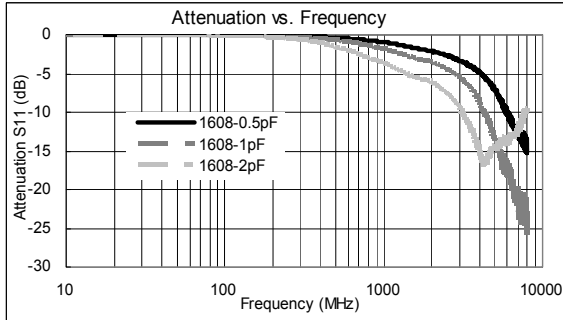
SDV0603 series



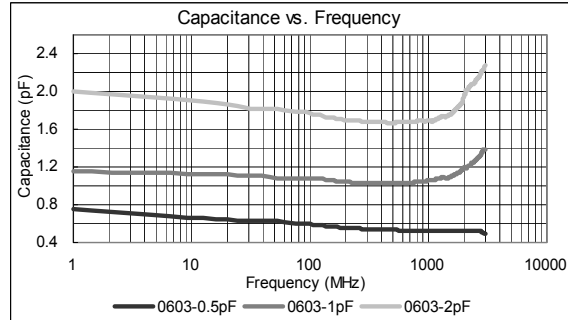
SDV1005 series



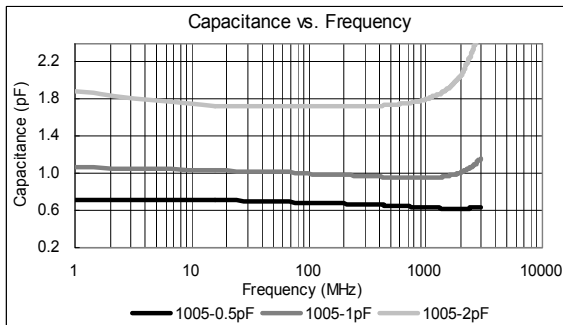
SDV1608 series



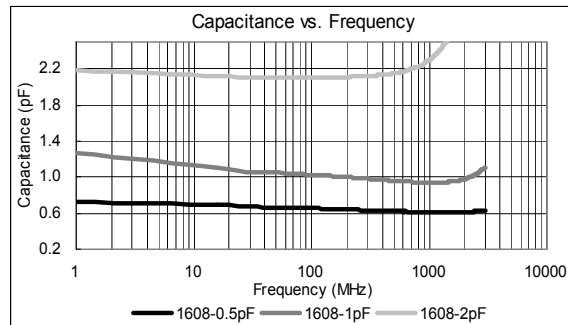
SDV0603 series



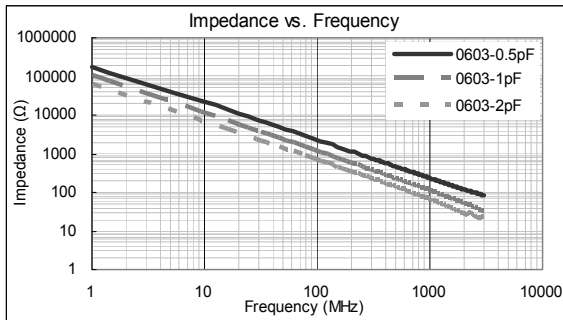
SDV1005 series



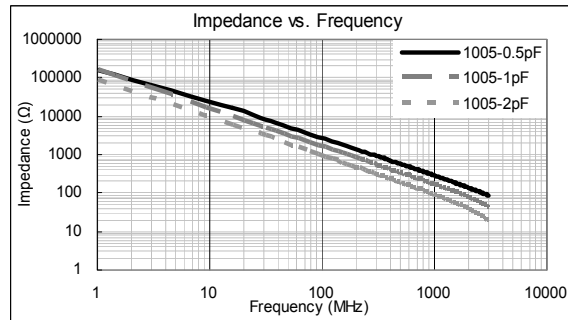
SDV1608 series



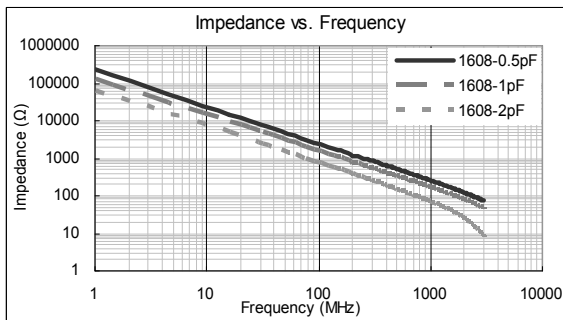
SDV0603 series



SDV1005 series



SDV1608 series



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