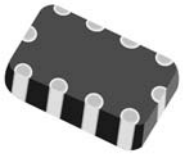
Multilayer Chip Varistor Array – SDVA-R Series

Operating Temp. : -55℃~+125℃



FEATURES

- R-C composite circuit structure, availing transient voltage protection and EMI suppression in 4 lines by one chip
- Excellent clamping ratio and quick response time (<0.5ns)

APPLICATIONS

- LCD module and I/O line transient voltage protection or ESD protection, such as mobile phone, PDA, LCD TV, etc.

PRODUCT IDENTIFICATION

SDVA	2082	RA	140	C100	N	P	T	F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①

Type	
SDVA	Chip Varistor Arrays

②

External Dimensions and Structure (L×W) (mm)	
2082	2.0×1.2, 8+2 Terminals

③

Feature Code	
RA	R-C EMI/ESD Array, R=30Ω
RB	R-C EMI/ESD Array, R=50Ω
RC	R-C EMI/ESD Array, R=100Ω
RD	R-C EMI/ESD Array, R=10Ω

④

Max. Continuous Working Voltage	
Example	Nominal Value
5R5	5.5V
140	14V

⑤

Capacitance @1MHz	
Example	Nominal Value
C100	10pF
C151	150pF

⑥

Tolerance of Capacitance	
N	±30%
Y	+100%~-50%
G	Maximum

⑦

Terminal Code	
P	Ni, Sn Plating

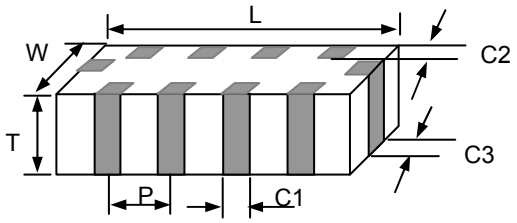
⑧

Packing	
T	Tape & Reel

⑨

Hazardous Substance Free Products
F

SHAPE AND DIMENSIONS



Unit: mm

Type	L	W	T	C1	C2	C3	P
SDVA2082R	2.05±0.10	1.25±0.10	0.85±0.10	0.25±0.10	0.20±0.10	0.30±0.10	0.50±0.10

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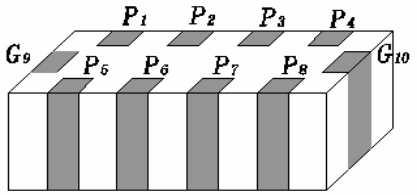
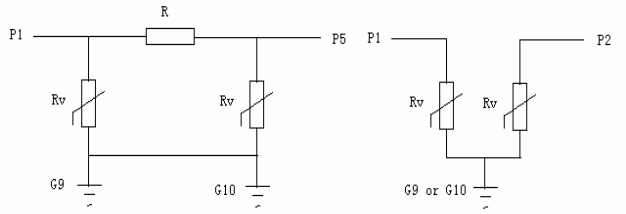
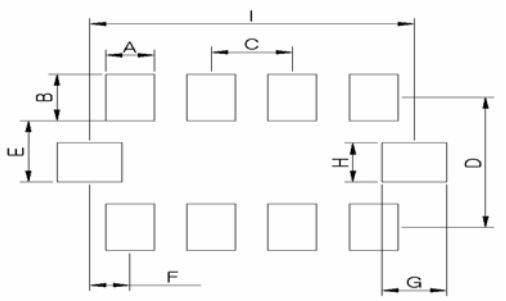
EQUIVALENT CIRCUIT

Type: SDVA2082R Series	Equivalent Circuit
	 P1, P2, P3, P4: IN (OUT) P5, P6, P7, P8: OUT (IN) G9, G10: GROUND

LAND PATTERN



Unit: mm

Size	A	B	C	D	E	F	G	H	I
2082	0.28	0.625	0.5	1.37	0.575	0.20	0.50	0.40	1.90

SPECIFICATIONS

SDVA2082R TYPE

Part Number	Max. Working Voltage		DC Resistance	Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient	Cut-off Frequency	Typical Capacitance
Test Condition	<20μA		/	@1mA DC	8/20μs	ESD	Peak Current 8/20μs	/	@0.5V_{rms} 1MHz
	DC	AC RMS							
Units	Volts	Volts	Ω	Volts	Volts	Volts	Amps	MHz	pF
Symbol	V_{WDC}	V_{WAC}	DCR	V_B	V_C *1	V_C *2	I_P *3	f_0	C
SDVA2082RC5R5C500□PTF	5.5	4.0	100±30%	10~14	18	23	10	50	50
SDVA2082RA140C100□PTF	14	10.0	30±30%	16~22	30	39	2	100	10
SDVA2082RB140C100□PTF	14	10.0	50±30%	16~22	30	39	2	100	10
SDVA2082RC140C100□PTF	14	10.0	100±30%	16~22	30	39	2	100	10
SDVA2082RD140C100□PTF	14	10.0	10±30%	16~22	30	39	2	100	10
SDVA2082RA180C150□PTF	18	12.7	30±30%	22~28	40	48	2	100	15
SDVA2082RB180C150□PTF	18	12.7	50±30%	22~28	40	48	2	100	15
SDVA2082RC180C150□PTF	18	12.7	100±30%	22~28	40	48	2	100	15
SDVA2082RD180C150□PTF	18	12.7	10±30%	22~28	40	48	2	100	15

※*1: Vc, Maximum peak voltage across the varistor measured at 1A, 8/20μs impulse current.
※*2: Vc, Maximum peak voltage across the varistor measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8kV.
※*3: Ip, Maximum peak current applied at 8/20μs surge impulse current without varistor failure.
※□: Please specify the capacitance tolerance code (N=±30%, Y=+100%~-50%, G=Maximum).
And products with other electrical characteristics can be provided upon customer's request. Please contact your local sales.

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Multilayer Chip Varistor – SDV Series

Operating Temp. : -55℃~+125℃

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

SDV	1608	A	180	C121	N	P	T	F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①

Type	
SDV	Chip Varistor

②

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

③

Feature Code	
A	For General Use
E	For ESD
H	For High Speed
S	For Special Request

④

Maximum Continuous Working Voltage	
Example	Nominal Value
5R5	5.5V
180	18V

⑤

Capacitance @1MHz	
Example	Nominal Value
C121	120pF
C152	1500pF

⑥

Tolerance of Capacitance	
N	±30%
Y	+100%~-50%
G	Maximum

⑦

Terminal Code	
P	Ni, Sn Plating

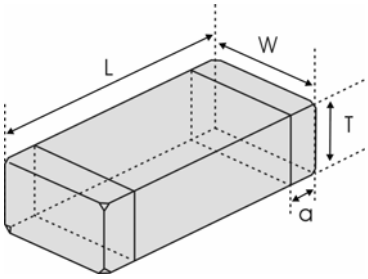
⑧

Packing	
T	Tape & Reel

⑨

Hazardous Substance Free Products
F

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
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Peak Current 8/20μs	@0.5V_{rms}, 1MHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Joules	Amps	pF
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	E_T	I_P	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
SDV1005A140C161□PTF	14.0	10.0	16.0-22.0	30	39	0.05	20	160

SDV1608A 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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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
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
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Test Condition DC
	DC	AC RMS					
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}
SDV2012A5R5C901□PTF	5.5	4.0	10.0-14.0	18	0.2	60	900
SDV2012A5R5C122□PTF	5.5	4.0	10.0-14.0	18	0.3	120	1200
SDV2012A5R5C202□PTF	5.5	4.0	10.0-14.0	18	0.4	150	2000
SDV2012A090C701□PTF	9.0	6.4	11.0-16.0	20	0.2	60	700
SDV2012A090C102□PTF	9.0	6.4	11.0-16.0	20	0.3	120	1000
SDV2012A090C162□PTF	9.0	6.4	11.0-16.0	20	0.4	150	1600
SDV2012A140C401□PTF	14.0	10.0	16.0-22.0	30	0.2	60	400
SDV2012A140C701□PTF	14.0	10.0	16.0-22.0	30	0.3	120	700
SDV2012A140C901□PTF	14.0	10.0	16.0-22.0	30	0.4	150	900
SDV2012A180C301□PTF	18.0	12.7	22.0-28.0	40	0.2	60	300
SDV2012A180C501□PTF	18.0	12.7	22.0-28.0	40	0.3	120	500
SDV2012A180C701□PTF	18.0	12.7	22.0-28.0	40	0.4	150	700
SDV2012A220C251□PTF	22.0	15.6	26.0-34.0	45	0.2	60	250
SDV2012A220C401□PTF	22.0	15.6	26.0-34.0	45	0.3	120	400
SDV2012A220C501□PTF	22.0	15.6	26.0-34.0	45	0.3	120	500
SDV2012A260C251□PTF	26.0	18.4	31.0-38.0	58	0.2	60	250
SDV2012A260C401□PTF	26.0	18.4	31.0-38.0	58	0.3	120	400
SDV2012A300C181□PTF	30.0	21.3	37.0-46.0	65	0.2	60	180
SDV2012A300C301□PTF	30.0	21.3	37.0-46.0	65	0.3	120	300

SDV0603E 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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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
SDV1005E5R5C500□PTF	5.5	4.0	10.0-14.0	18	23	0.01	10	50
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
SDV1005E180C101□PTF	18.0	12.7	22.0-28.0	40	48	0.05	20	100
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

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SPECIFICATIONS

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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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
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
SDV1608E220C600□PTF	22.0	15.6	26.0-34.0	45	54	0.02	10	60
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
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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

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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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
SDV0603H180C050YPTF	18.0	12.7	22.0-28.0	40	48	0.003	1	5
SDV0603H180C100□PTF	18.0	12.7	22.0-28.0	40	48	0.005	1	10
SDV0603H220C050YPTF	22.0	15.6	26.0-34.0	40	48	0.003	1	5
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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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

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SPECIFICATIONS

SDV0603S 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	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
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
Test Condition	<20μA		@1mA DC	8/20μs	ESD	Energy 10/1000μs	Test Condition DC	<20μA AC RMS
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}	V_{WAC}
SDV1608S220C030YPTF	22.0	15.6	26.0-34.0	45	54	0.003	1	3

※*1: Vc, 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

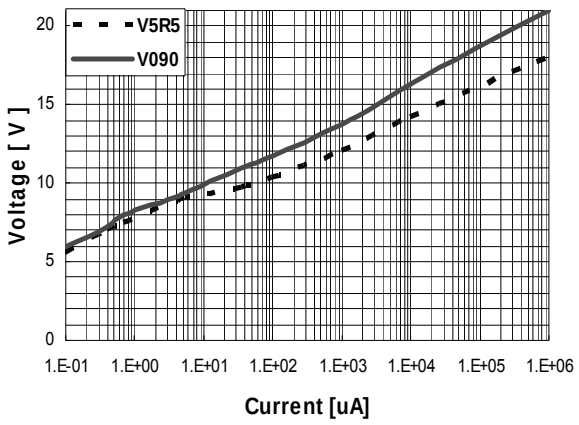
※*2: Vc, Maximum peak voltage across the varistor measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8kV.

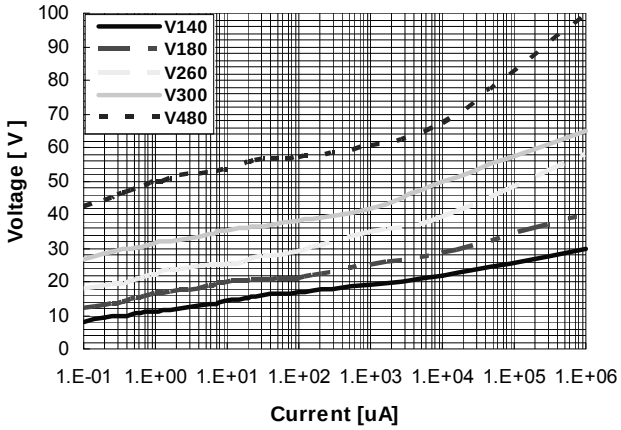
※□: Please specify the capacitance tolerance code (N=±30%, Y=+100%~-50%, G=Maximum).

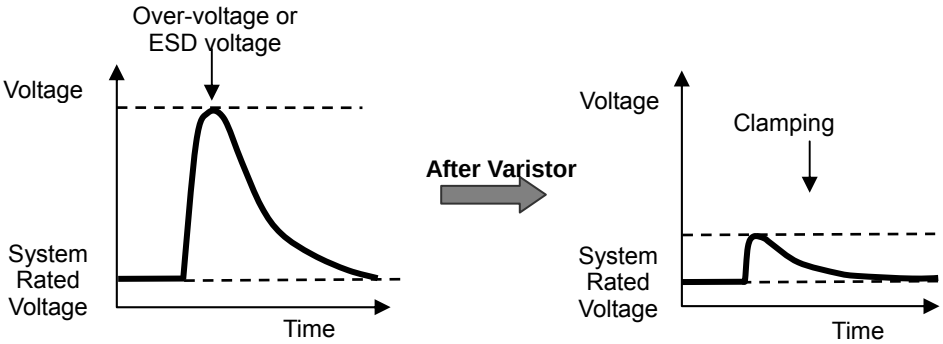
And products with other electrical characteristics can be provided upon customer's request. Please contact your local sales.

TYPICAL ELECTRICAL CHARACTERISTICS

SDV-A/E/H series







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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
Test Condition	<20μA		@1mA DC	@0.5V_{rms}, 1MHz	@-3dB
	DC	AC RMS			
Units	Volts	Volts	Volts	pF	MHz
Symbol	V_{WDC}	V_{WAC}	V_B	C	f_0
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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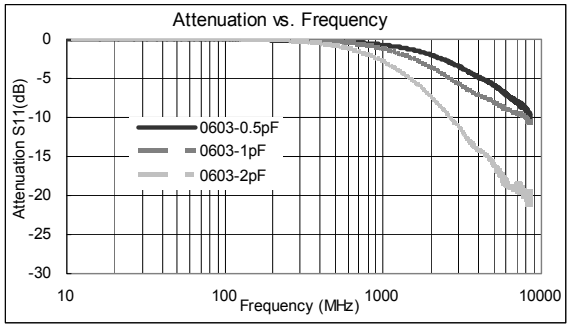
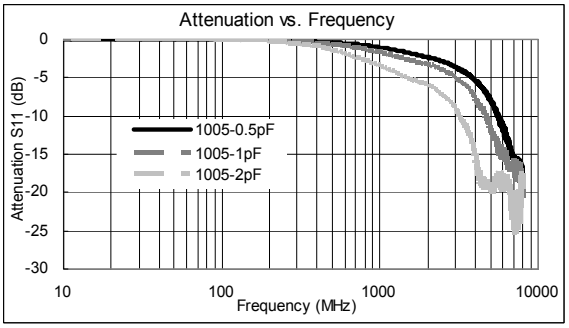
TYPICAL ELECTRICAL CHARACTERISTICS

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

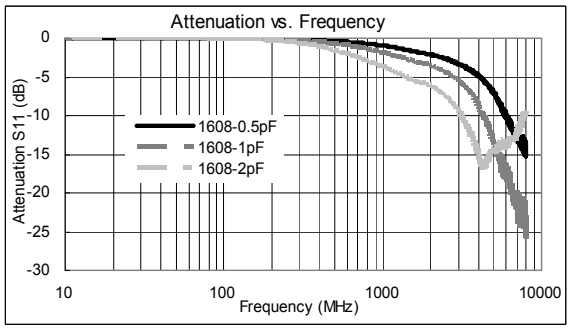
SDV0603 series



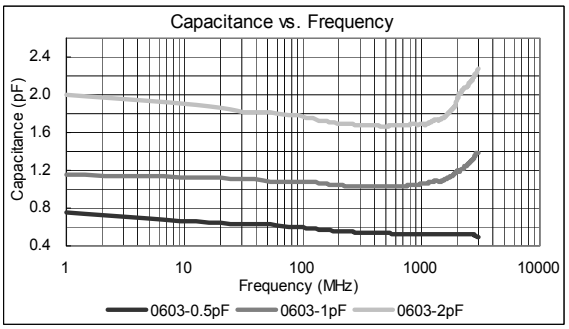
SDV1005 series



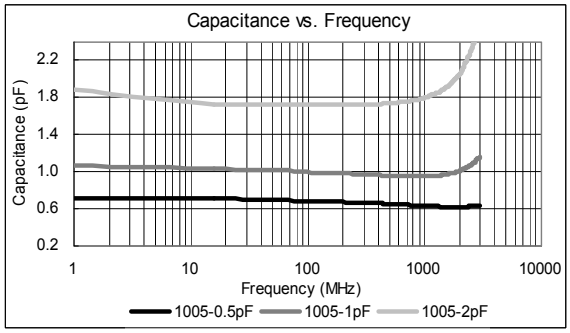
SDV1608 series



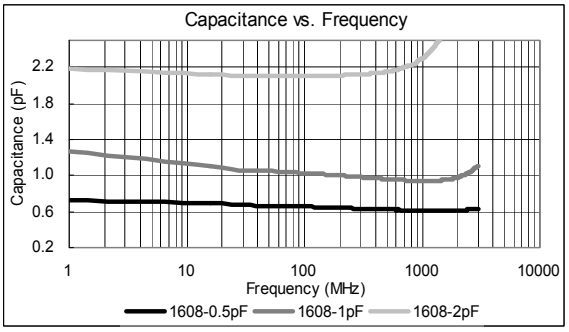
SDV0603 series



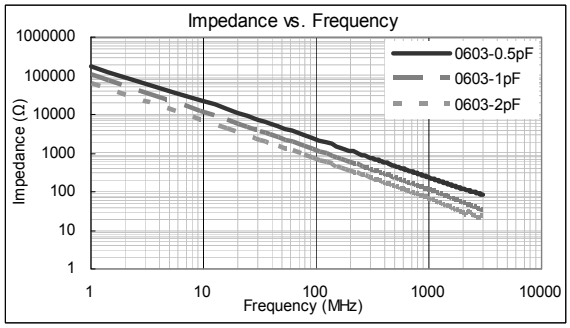
SDV1005 series



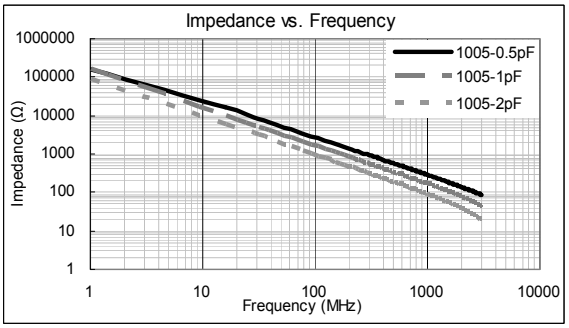
SDV1608 series



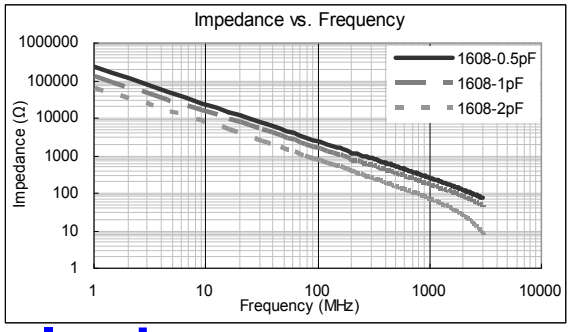
SDV0603 series



SDV1005 series



SDV1608 series



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Multilayer Chip Varistor Array – SDVA-VA Series

Operating Temp. : -55℃~+125℃

FEATURES

- Availing transient voltage protection in 4 or 8 lines by one chip
- Excellent clamping ratio and quick response time (<0.5ns)
- Highly effective in designing a higher density circuit

APPLICATIONS

- LCD module and I/O line transient voltage protection or ESD protection, such as mobile phone, PDA, LCD TV, etc.

PRODUCT IDENTIFICATION

SDVA	2082	VA	5R5	C200	N	P	T	F
①	②	③	④	⑤	⑥	⑦	⑧	⑨

①

Type	
SDVA	Chip Varistor Arrays

②

External Dimensions and Structure (L×W) (mm)	
2080	2.0×1.2, 8 Terminals
2082	2.0×1.2, 8+2 Terminals

③

Feature Code	
VA	ESD Array

④

Max. Continuous Working Voltage	
Example	Nominal Value
5R5	5.5V
180	18V

⑤

Capacitance @1MHz	
Example	Nominal Value
C200	20pF
C151	150pF

⑥

Tolerance of Capacitance	
N	±30%
Y	+100%~-50%
G	Maximum

⑦

Terminal Code	
P	Ni, Sn Plating

⑧

Packing	
T	Tape & Reel

⑨

Hazardous Substance Free Products
F

SHAPE AND DIMENSIONS

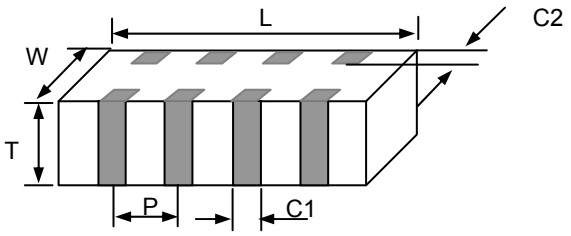

Fig.1

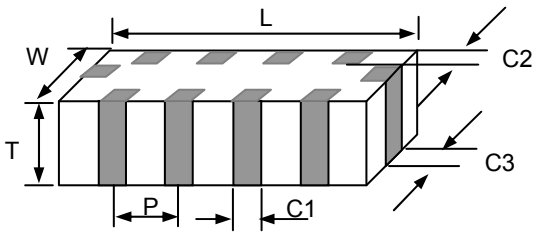

Fig.2

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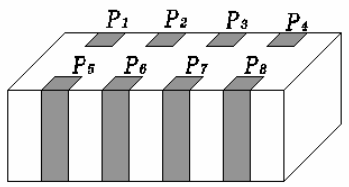
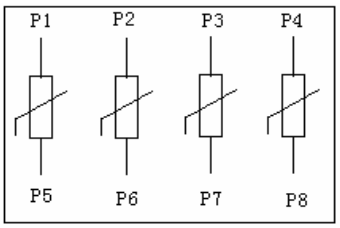
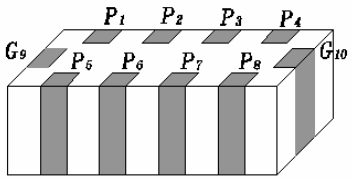
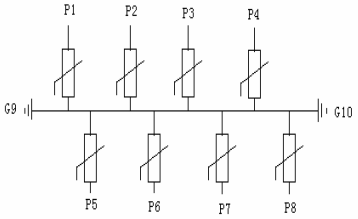
SHAPE AND DIMENSIONS

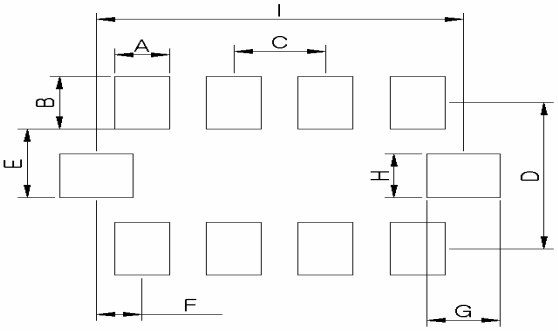
Unit: mm

Type	Reference Fig	L	W	T	C1	C2	C3	P
SDVA2080VA	Fig.1	2.05±0.10	1.25±0.10	0.85±0.10	0.25±0.10	0.20±0.10	/	0.50±0.10
SDVA2082VA	Fig.2	2.05±0.10	1.25±0.10	0.85±0.10	0.25±0.10	0.20±0.10	0.30±0.10	0.50±0.10

EQUIVALENT CIRCUIT

Type: SDVA2080VA Series	Equivalent Circuit
	 P1, P2, P3, P4: IN (OUT) P5, P6, P7, P8: OUT (IN)
Type: SDVA2082VA Series	**Equivalent Circuit**
	 P1, P2, P3, P4, P5, P6, P7, P8: IN G9, G10: GROUND

LAND PATTERN



Unit: mm

Size	A	B	C	D	E	F	G	H	I
2080	0.28	0.625	0.5	1.37	/	0.20	/	/	1.90
2082	0.28	0.625	0.5	1.37	0.575	0.20	0.50	0.40	1.90

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SPECIFICATIONS

SDVA2080VA 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	Peak Current 8/20μs	@0.5V_{rms}, 1MHz
	DC	AC RMS					
Units	Volts	Volts	Volts	Volts	Volts	Amps	pF
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	I_P *3	C
SDVA2080VA5R5C400□PTF	5.5	4.0	10~18	20	26	5	40
SDVA2080VA5R5C500□PTF	5.5	4.0	10~18	20	26	5	50
SDVA2080VA140C100□PTF	14	10.0	18~28	40	48	2	10
SDVA2080VA140C400□PTF	14	10.0	18~28	40	48	5	40
SDVA2080VA140C700□PTF	14	10.0	18~28	40	48	10	70
SDVA2080VA180C050YPTF	18	12.7	24~36	58	70	1	5
SDVA2080VA180C100□PTF	18	12.7	24~36	58	70	2	10
SDVA2080VA180C150□PTF	18	12.7	24~36	58	70	2	15
SDVA2080VA180C200□PTF	18	12.7	24~36	58	70	2	20
SDVA2080VA260C030YPTF	26	18.4	36~46	65	78	1	3
SDVA2080VA260C010YPTF	26	18.4	100~160	200	300	1	1

SDVA2082VA 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	Peak Current 8/20μs	Test Condition DC
	DC	AC RMS					
Units	Volts	Volts	Volts	Volts	Volts	Units	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C *1	V_C *2	Symbol	V_{WDC}
SDVA2082VA5R5C200□PTF	5.5	4.0	10~18	20	26	3	20
SDVA2082VA5R5C400□PTF	5.5	4.0	10~18	20	26	5	40
SDVA2082VA5R5C500□PTF	5.5	4.0	10~18	20	26	5	50
SDVA2082VA140C100□PTF	14	10.0	18~28	40	48	2	10
SDVA2082VA140C200□PTF	14	10.0	18~28	40	48	2	20
SDVA2082VA180C050YPTF	18	12.7	24~36	58	70	1	5
SDVA2082VA180C100□PTF	18	12.7	24~36	58	70	2	10
SDVA2082VA180C150□PTF	18	12.7	24~36	58	70	2	15
SDVA2082VA260C030YPTF	26	18.4	36~46	65	78	1	3
SDVA2082VA260C010YPTF	26	18.4	100~160	200	300	1	1

※*1: Vc, Maximum peak voltage across the varistor measured at 1A, 8/20μs impulse current.
※*2: Vc, Maximum peak voltage across the varistor measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8kV.
※*3: Ip, Maximum peak current applied at 8/20μs surge impulse current without varistor failure.
※□: Please specify the capacitance tolerance code (N=±30%, Y=+100%~-50%, G=Maximum).
And products with other electrical characteristics can be provided upon customer's request. Please contact your local sales.

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Multilayer Chip Varistor for Voltage Surge Suppression – SDVL Series

Operating Temp. : -55℃~+85℃

FEATURES

- SMD type, small size suitable for high density mounting
- Excellent clamping ratio and strong capability of voltage surge suppression
- Excellent solderability (Ni, Sn plating)

APPLICATIONS

- Transient voltage protection and voltage surge suppression for LED lighting
- Transient voltage protection for security system, PLC, Automotive electronics etc.
- Industrial instrument, smart meters, etc.
- Portable equipment protection, such as mobile phone, PDA, etc

PRODUCT IDENTIFICATION

SDVL	4532	S	D	140	P	T
①	②	③	④	⑤	⑥	⑦

①

Type	
SDVL	Chip Varistor for Voltage Surge Suppression

②

External Dimensions (L×W) (mm)	
3216 [1206]	3.2×1.6
3225 [1210]	3.2×2.5
4532 [1812]	4.5×3.2
5650 [2220]	5.7×5.0

③

Tolerance of Varistor Voltage	
S	Special

④

Type of Working Voltage	
D	DC Working Voltage

⑤

Max. Continuous Working Voltage	
Example	Nominal Value
140	14V
480	48V

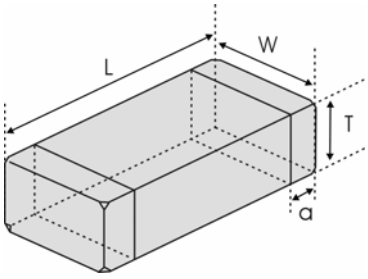
⑥

Terminal Code	
P	Ni, Sn Plating

⑦

Packing	
T	Tape & Reel

SHAPE AND DIMENSIONS



Unit: mm [inch]

Type	L	W	T	a
SDVL3216 [1206]	3.2±0.2 [0.126±0.008]	1.6±0.2 [0.063±0.008]	1.05 Max. [0.041]	0.2~0.8 [0.008~0.031]
SDVL3225 [1210]	3.2±0.3 [0.126±0.012]	2.5±0.25 [0.098±0.010]	1.7 Max. [0.067]	0.25~0.75 [0.010~0.029]
SDVL4532 [1812]	4.5±0.4 [0.177±0.016]	3.2±0.3 [0.126±0.012]	2.5 Max. [0.098]	0.25~1.0 [0.010±0.039]
SDVL5650 [2220]	5.7±0.4 [0.224±0.016]	5.0±0.4 [0.197±0.016]	2.5 Max. [0.098]	0.25~1.0 [0.010±0.039]

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SPECIFICATIONS

SDVL3216 TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs		Energy 10/1000μs	Peak Current 8/20μs	@1V_{rms}, 1kHz
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Amps	Joules	Amps	pF
Symbol	V_{WDC}	V_{WAC}	V_B	V_C	I_C	E_T	I_P	C
SDVL3216SD5R5PT	5.5	4.0	10.0-14.0	18	5.0	0.5	250	1700
SDVL3216SD090PT	9	6.4	12.0-16.0	20	5.0	0.5	250	1400
SDVL3216SD120PT	12	8.5	13.0-19.0	25	5.0	0.5	250	1100
SDVL3216SD140PT	14	10.0	16.0-22.0	30	5.0	0.5	250	1050
SDVL3216SD180PT	18	12.7	22.0-28.0	40	5.0	0.5	250	900
SDVL3216SD220PT	22	15.6	26.0-34.0	45	5.0	0.6	250	750
SDVL3216SD260PT	26	18.4	31.0-38.0	58	5.0	0.7	200	620
SDVL3216SD300PT	30	21.3	37.0-46.0	65	5.0	0.7	200	550
SDVL3216SD380PT	38	30.0	46.0-54.0	75	5.0	0.7	200	330
SDVL3216SD480PT	48	34.1	54.0-67.0	100	5.0	0.5	150	200
SDVL3216SD560PT	56	40.0	61.0-75.0	120	5.0	0.5	150	170
SDVL3216SD600PT	60	46.0	69.0-83.0	130	5.0	0.5	150	140
SDVL3216SD650PT	65	50.0	73.0-91.0	140	5.0	0.6	150	110
SDVL3216SD750PT	75	55.0	85.0-103.0	160	5.0	0.6	150	95
SDVL3216SD850PT	85	60.0	90.0-110.0	170	5.0	0.7	150	80
SDVL3216SD101PT	100	75.0	108.0-132.0	200	5.0	0.7	150	60

SDVL3225 TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs		Energy 10/1000μs	Peak Current 8/20μs	Test Condition DC
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Amps	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C	I_C	Symbol	V_{WDC}	V_{WAC}
SDVL3225SD5R5PT	5.5	4.0	10.0-14.0	18	5.0	0.7	400	3500
SDVL3225SD090PT	9	6.4	12.0-16.0	20	5.0	0.9	400	2800
SDVL3225SD120PT	12	8.5	13.0-19.0	25	5.0	1.0	400	2000
SDVL3225SD140PT	14	10.0	16.0-22.0	30	5.0	1.2	400	1800
SDVL3225SD180PT	18	12.7	22.0-28.0	40	5.0	1.5	400	1400
SDVL3225SD220PT	22	15.6	26.0-34.0	45	5.0	1.7	400	1100
SDVL3225SD260PT	26	18.4	31.0-38.0	58	5.0	1.9	400	900
SDVL3225SD300PT	30	21.3	37.0-46.0	65	5.0	1.7	300	800
SDVL3225SD380PT	38	30.0	46.0-54.0	75	5.0	2.0	300	700
SDVL3225SD480PT	48	34.1	54.0-67.0	100	5.0	2.0	300	600
SDVL3225SD560PT	56	40.0	61.0-75.0	120	5.0	2.3	300	500
SDVL3225SD600PT	60	46.0	69.0-83.0	130	5.0	2.0	300	450
SDVL3225SD650PT	65	50.0	73.0-91.0	140	5.0	1.6	300	350
SDVL3225SD750PT	75	55.0	85.0-103.0	160	5.0	1.6	200	300
SDVL3225SD850PT	85	60.0	90.0-110.0	170	5.0	2.0	200	250
SDVL3225SD101PT	100	75.0	108.0-132.0	200	5.0	1.6	200	150

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SPECIFICATIONS

SDVL4532 TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs		Energy 10/1000μs	Peak Current 8/20μs	Test Condition DC
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Amps	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C	I_C	Symbol	V_{WDC}	V_{WAC}
SDVL4532SD5R5PT	5.5	4.0	10.0-14.0	18	5.0	1.0	800	5500
SDVL4532SD090PT	9	6.4	12.0-16.0	20	5.0	1.2	800	4800
SDVL4532SD120PT	12	8.5	13.0-19.0	25	5.0	1.5	800	4200
SDVL4532SD140PT	14	10.0	16.0-22.0	30	5.0	1.9	800	3800
SDVL4532SD180PT	18	12.7	22.0-28.0	40	5.0	2.3	800	3200
SDVL4532SD220PT	22	15.6	26.0-34.0	45	5.0	2.5	800	2400
SDVL4532SD260PT	26	18.4	31.0-38.0	58	5.0	3.0	800	2000
SDVL4532SD300PT	30	21.3	37.0-46.0	65	5.0	3.7	800	1500
SDVL4532SD380PT	38	30.0	46.0-54.0	75	5.0	4.2	800	1100
SDVL4532SD480PT	48	34.1	54.0-67.0	100	5.0	4.0	600	900
SDVL4532SD560PT	56	40.0	61.0-75.0	120	5.0	4.3	600	800
SDVL4532SD600PT	60	46.0	69.0-83.0	130	5.0	4.3	600	600
SDVL4532SD650PT	65	50.0	73.0-91.0	140	5.0	4.0	600	500
SDVL4532SD750PT	75	55.0	85.0-103.0	160	5.0	4.0	500	400
SDVL4532SD850PT	85	60.0	90.0-110.0	170	5.0	4.0	500	300
SDVL4532SD101PT	100	75.0	108.0-132.0	200	5.0	4.0	500	200

SDVL5650 TYPE

Part Number	Max. Working Voltage		Varistor Voltage	Max. Clamping Voltage		Rated Single Pulse Transient		Typical Capacitance
Test Condition	<20μA		@1mA DC	8/20μs		Energy 10/1000μs	Peak Current 8/20μs	Test Condition DC
	DC	AC RMS						
Units	Volts	Volts	Volts	Volts	Amps	Units	Volts	Volts
Symbol	V_{WDC}	V_{WAC}	V_B	V_C	I_C	Symbol	V_{WDC}	V_{WAC}
SDVL5650SD5R5PT	5.5	4	10.0-14.0	18	10.0	1.4	1200	8000
SDVL5650SD090PT	9	6.4	12.0-16.0	20	10.0	2.7	1200	7000
SDVL5650SD120PT	12	8.5	13.0-19.0	25	10.0	3.2	1200	6400
SDVL5650SD140PT	14	10.0	16.0-22.0	30	10.0	5.4	1200	6000
SDVL5650SD180PT	18	12.7	22.0-28.0	40	10.0	5.8	1200	5000
SDVL5650SD220PT	22	15.6	26.0-34.0	45	10.0	6.5	1200	4500
SDVL5650SD260PT	26	18.4	31.0-38.0	58	10.0	7.8	1200	4000
SDVL5650SD300PT	30	21.3	37.0-46.0	65	10.0	9.6	1200	3000
SDVL5650SD380PT	38	30.0	46.0-54.0	75	10.0	12.0	1200	2200
SDVL5650SD480PT	48	34.1	54.0-67.0	100	10.0	7.7	900	1500
SDVL5650SD560PT	56	40.0	61.0-75.0	120	10.0	9.0	900	1300
SDVL5650SD600PT	60	46.0	69.0-83.0	130	10.0	6.5	900	1100
SDVL5650SD650PT	65	50.0	73.0-91.0	140	10.0	5.6	900	900
SDVL5650SD750PT	75	55.0	85.0-103.0	160	10.0	6.0	800	800
SDVL5650SD850PT	85	60.0	90.0-110.0	170	10.0	6.8	800	700
SDVL5650SD101PT	100	75.0	108.0-132.0	200	10.0	6.0	800	400

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

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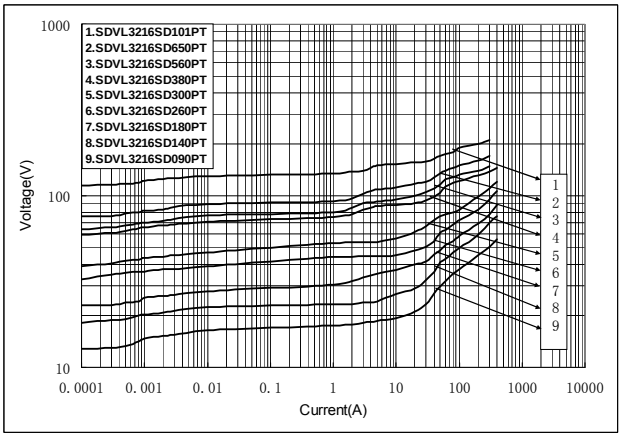
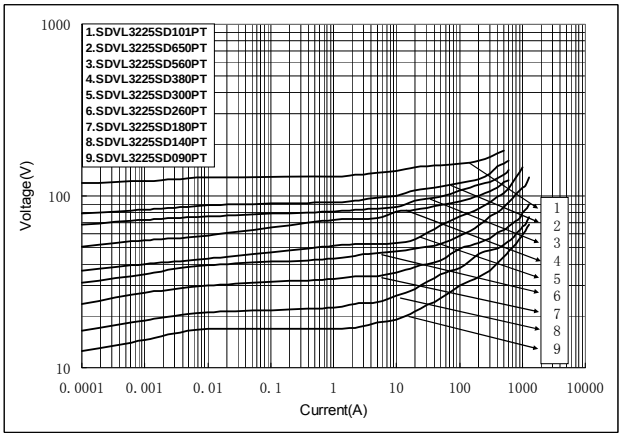
TYPICAL ELECTRICAL CHARACTERISTICS

V/I characteristic curves of chip varistor for voltage surge

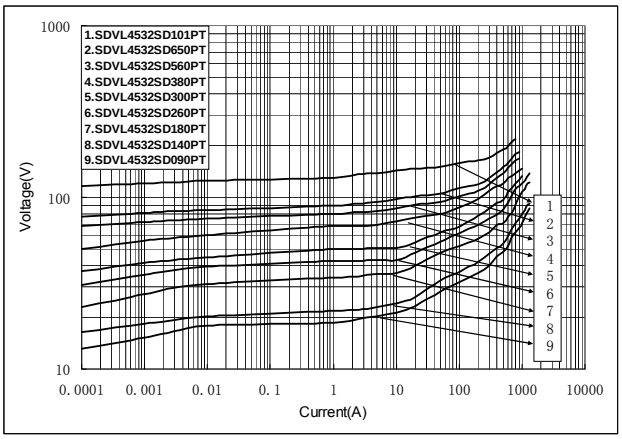
SDVL3216 series



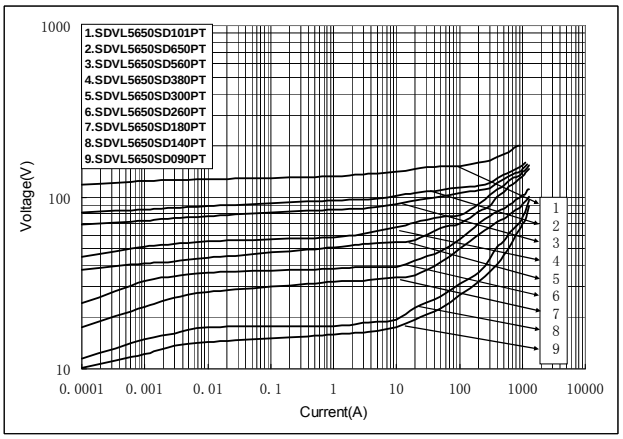
SDVL3225 series



SDVL4532 series



SDVL5650 series



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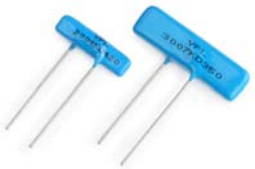
Low Profile Leaded Varistor – VPL Series

Operating Temp.: -40℃~+85℃



FEATURES

- Ultra low height components, ideal for the thin and slim products
- Fast response
- Excellent clamping ratio, high peak current and pulse energy withstanding characteristics, providing strong capability of voltage surge suppression
- Wide working voltage range, suitable for different levels circuit

APPLICATIONS

- Ultra-thin LCD-TV, Ultra-thin charger
- Transient voltage protection and voltage surge suppression for LED lighting
- Transient voltage protection for security system, PLC, Automotive electronics, etc.
- Industrial instrument, smart meters, etc.

PRODUCT IDENTIFICATION

VP	L	2004	K	D	300	B	S
①	②	③	④	⑤	⑥	⑦	⑧

①

Type	
VP	Leaded Varistor for Voltage Surge Suppression

②

Shape	
L	Low profile rectangle

③

Size of Ceramic Body (mm)	
2004	20(Length)*4(Width)
3007	30(Length)*7(Width)
4505	45(Length)*5(Width)

④

Tolerance of Varistor Voltage	
K	10%

⑤

Feature Code	
D	Standard

⑥

Max. Allowable AC Working Voltage	
Example	Nominal Value
095	95
115	115

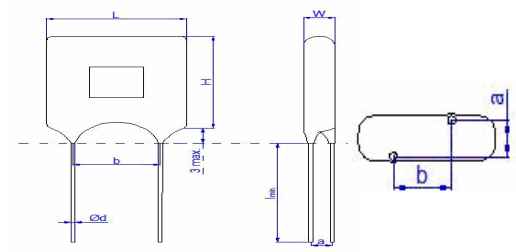
⑦

Package	
B	Bulk Package

⑧

Lead Wire Type	
S	Straight Cut Lead
Y	Straight Cut Y Kink Lead
C	Straight Cut Crimped Lead
I	Straight Cut Inner Lead

SHAPE AND DIMENSIONS



Unit: mm

Type	L max	H max	W max	a	b	d	l min
VPL2004KD	23.5	5.5	3.8	2.9±1	7.5±1	0.8±0.1	25
VPL3007KD	33.5	9.5	5.8	2.9±1	7.5±1	0.8±0.1	25
VPL4505KD	48.5	7.5	5.8	2.9±1	15.0±1	0.8±0.1	25

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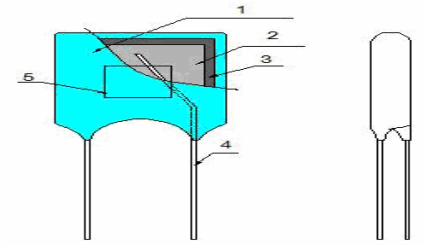
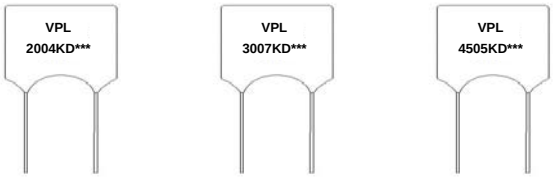
SHAPE AND DIMENSIONS

Structure and Dimensions



No.	Name	Type
1	Epoxy resin	Flame-retardant UL94V-0 blue
2	Silver layer	100%Ag, 500℃~850℃
3	Ceramic body	Zinc oxide ceramic
4	Tinned wire	Φ0.8(mm)
5	Marking	VPL****KD***



SPECIFICATIONS

VPL2004 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPL2004KD130BS	130	170	180	200	220	340	25	30.0	2500	0.40	570
VPL2004KD140BS	140	180	198	220	242	360	25	32.0	2500	0.40	560
VPL2004KD150BS	150	200	216	240	264	395	25	35.0	2500	0.40	550
VPL2004KD175BS	175	225	247	270	303	455	25	40.0	2500	0.40	530
VPL2004KD195BS	195	250	270	300	330	500	25	42.0	2500	0.40	500
VPL2004KD210BS	210	275	297	330	363	550	25	47.0	2500	0.40	450
VPL2004KD230BS	230	300	324	360	396	595	25	47.0	2500	0.40	450
VPL2004KD250BS	250	320	351	390	429	650	25	60.0	2500	0.40	430
VPL2004KD275BS	275	350	387	430	473	710	25	65.0	2500	0.40	400
VPL2004KD300BS	300	385	423	470	517	775	25	70.0	2500	0.40	300
VPL2004KD320BS	320	410	459	510	561	845	25	70.0	2500	0.40	260
VPL2004KD350BS	350	460	504	560	616	915	25	70.0	2500	0.40	200
VPL2004KD385BS	385	505	558	620	682	1025	25	70.0	2500	0.40	170
VPL2004KD420BS	420	560	612	680	748	1120	25	70.0	2500	0.40	160
VPL2004KD460BS	460	615	675	750	825	1240	25	75.0	2500	0.40	150
VPL2004KD485BS	485	640	702	780	858	1290	25	80.0	2500	0.40	150
VPL2004KD510BS	510	670	738	820	902	1355	25	85.0	2500	0.40	150
VPL2004KD550BS	550	745	819	910	1001	1500	25	93.0	2500	0.40	140
VPL2004KD625BS	625	825	900	1000	1100	1650	25	102.0	2500	0.40	140
VPL2004KD680BS	680	895	990	1100	1210	1815	25	115.0	2500	0.40	130

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SPECIFICATIONS

VPL3007 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPL3007KD130BS	130	170	180	200	220	340	50	57.0	4500	0.60	1150
VPL3007KD140BS	140	180	198	220	242	360	50	60.0	4500	0.60	1100
VPL3007KD150BS	150	200	216	240	264	395	50	63.0	4500	0.60	1050
VPL3007KD175BS	175	225	247	270	303	455	50	70.0	4500	0.60	1000
VPL3007KD195BS	195	250	270	300	330	500	50	73.0	4500	0.60	900
VPL3007KD210BS	210	275	297	330	363	550	50	93.0	4500	0.60	850
VPL3007KD230BS	230	300	324	360	396	595	50	93.0	4500	0.60	800
VPL3007KD250BS	250	320	351	390	429	650	50	100.0	4500	0.60	800
VPL3007KD275BS	275	350	387	430	473	710	50	115.0	4500	0.60	650
VPL3007KD300BS	300	385	423	470	517	775	50	125.0	4500	0.60	550
VPL3007KD320BS	320	410	459	510	561	845	50	125.0	4500	0.60	450
VPL3007KD350BS	350	460	504	560	616	915	50	125.0	4500	0.60	400
VPL3007KD385BS	385	505	558	620	682	1025	50	125.0	4500	0.60	350
VPL3007KD420BS	420	560	612	680	748	1120	50	130.0	4500	0.60	350
VPL3007KD460BS	460	615	675	750	825	1240	50	143.0	4500	0.60	330
VPL3007KD485BS	485	640	702	780	858	1290	50	148.0	4500	0.60	330
VPL3007KD510BS	510	670	738	820	902	1355	50	157.0	4500	0.60	330
VPL3007KD550BS	550	745	819	910	1001	1500	50	175.0	4500	0.60	300
VPL3007KD625BS	625	825	900	1000	1100	1650	50	190.0	4500	0.60	300
VPL3007KD680BS	680	895	990	1100	1210	1815	50	213.0	4500	0.60	200

VPL4505 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPL4505KD130BS	130	170	180	200	220	340	50	57.0	4500	0.60	1150
VPL4505KD140BS	140	180	198	220	242	360	50	60.0	4500	0.60	1100
VPL4505KD150BS	150	200	216	240	264	395	50	63.0	4500	0.60	1050
VPL4505KD175BS	175	225	247	270	303	455	50	70.0	4500	0.60	1000
VPL4505KD195BS	195	250	270	300	330	500	50	73.0	4500	0.60	900
VPL4505KD210BS	210	275	297	330	363	550	50	93.0	4500	0.60	850
VPL4505KD230BS	230	300	324	360	396	595	50	93.0	4500	0.60	800
VPL4505KD250BS	250	320	351	390	429	650	50	100.0	4500	0.60	800
VPL4505KD275BS	275	350	387	430	473	710	50	115.0	4500	0.60	650
VPL4505KD300BS	300	385	423	470	517	775	50	125.0	4500	0.60	550
VPL4505KD320BS	320	410	459	510	561	845	50	125.0	4500	0.60	450
VPL4505KD350BS	350	460	504	560	616	915	50	125.0	4500	0.60	400
VPL4505KD385BS	385	505	558	620	682	1025	50	125.0	4500	0.60	350
VPL4505KD420BS	420	560	612	680	748	1120	50	130.0	4500	0.60	350
VPL4505KD460BS	460	615	675	750	825	1240	50	143.0	4500	0.60	330

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SPECIFICATIONS

VPL4505TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPL4505KD485BS	485	640	702	780	858	1290	50	148.0	4500	0.60	330
VPL4505KD510BS	510	670	738	820	902	1355	50	157.0	4500	0.60	330
VPL4505KD550BS	550	745	819	910	1001	1500	50	175.0	4500	0.60	300
VPL4505KD625BS	625	825	900	1000	1100	1650	50	190.0	4500	0.60	300
VPL4505KD680BS	680	895	990	1100	1210	1815	50	213.0	4500	0.60	200

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Leaded Varistor for Voltage Surge Suppression – VPR Series

Operating Temp. : -40℃~ +85℃

FEATURES

- Fast response
- Excellent clamping ratio, high peak current and pulse energy withstanding characteristics, providing strong capability of voltage surge suppression
- Wide working voltage range, suitable for AC circuit or DC circuit

APPLICATIONS

- Transient voltage protection and voltage surge suppression for LED lighting
- Transient voltage protection for security system, PLC, Automotive electronics, etc.
- Industrial instrument, smart meters, etc.
- Portable equipment protection, such as mobile phone, PDA, etc

PRODUCT IDENTIFICATION

VP	R	05	K	D	300	B	S
①	②	③	④	⑤	⑥	⑦	⑧

①

Type	
VP	Leaded Varistor for Voltage Surge Suppression

②

Shape	
R	Round

③

Diameter of Ceramic Body (mm)	
05	5
07	7
10	10
14	14
20	20

⑤

Feature Code	
D	Standard

④

Tolerance of Varistor Voltage	
K	for Varistor voltage≤68, Special
	for Varistor voltage>68, 10%

⑥

Max. Allowable AC Working Voltage	
Example	Nominal Value
095	95
115	115

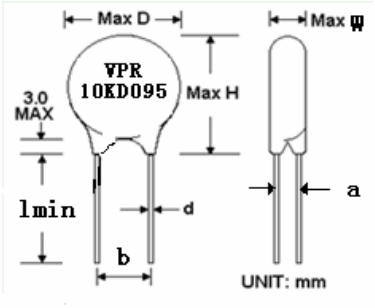
⑦

Package	
B	Bulk Package

⑧

Lead Wire Type	
S	Straight Cut Lead
Y	Straight Cut Y Kink Lead
C	Straight Cut Crimped Lead
I	Straight Cut Inner Lead

SHAPE AND DIMENSIONS



Unit: mm

Type	D max	H max	W max	a	b	d	lmin
VPR05KD	7.5	10.0	5.8	2.8±1	5.0±1	0.6±0.1	25
VPR07KD	9.0	12.0	6.3	2.8±1	5.0±1	0.6±0.1	25
VPR10KD	14.0	17.0	7.4	2.9±1	7.5±1	0.8±0.1	25
VPR14KD	17.5	20.0	11.5	2.9±1	7.5±1	0.8±0.1	25
VPR20KD	25.0	28.0	11.9	3.1±1	10.0±1	1.0±0.1	25

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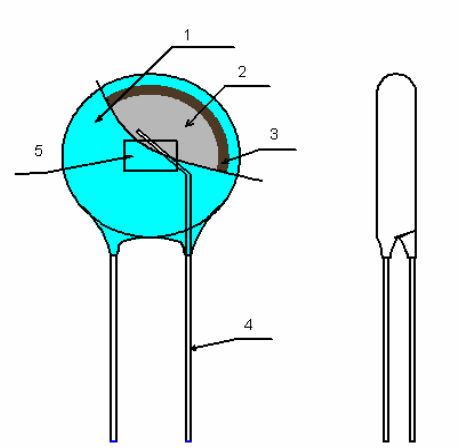
SHAPE AND DIMENSIONS

Structure and Dimensions



No.	Name	Type
1	Epoxy resin	Flame-retardant UL94V-0 blue
2	Silver layer	100% Ag
3	Ceramic body	Zinc oxide ceramic
4	Tinned wire	Φ0.6/Φ0.8/Φ1.0 (mm)
5	Marking*[1]	VPR*D*** /VPR**KD***

Fig.1

Fig.2

※*1: Marking: Diameter or side of ceramic body is 5 or 7mm, sample shown in Fig.1; Diameter or side of ceramic body is 10, 14 or 20mm, sample shown in Fig.2.

SPECIFICATIONS

VPR05 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR05KD011BS	11	14	14.4	18	21.6	44	1	0.4	100	0.01	1600
VPR05KD014BS	14	18	18.7	22	26.0	51	1	0.5	100	0.01	1500
VPR05KD017BS	17	22	23.0	27	31.1	60	1	0.6	100	0.01	1450
VPR05KD020BS	20	26	29.5	33	36.5	73	1	0.8	100	0.01	1400
VPR05KD025BS	25	31	35	39	46	86	1	0.9	100	0.01	700
VPR05KD030BS	30	38	42	47	55	104	1	1.1	100	0.01	650
VPR05KD035BS	35	45	50	56	66	123	1	1.3	100	0.01	600
VPR05KD040BS	40	56	61	68	80	150	1	1.6	100	0.01	580
VPR05KD050BS	50	65	74	82	90	145	5	2.5	400	0.10	310
VPR05KD060BS	60	85	90	100	110	175	5	3.0	400	0.10	290
VPR05KD075BS	75	100	108	120	132	210	5	4.0	400	0.10	270
VPR05KD095BS	95	125	135	150	165	260	5	4.8	400	0.10	240
VPR05KD115BS	115	150	162	180	198	325	5	5.9	400	0.10	140
VPR05KD130BS	130	170	180	200	220	355	5	6.5	400	0.10	120
VPR05KD140BS	140	180	198	220	242	380	5	7.0	400	0.10	110
VPR05KD150BS	150	200	216	240	264	415	5	8.0	400	0.10	110
VPR05KD175BS	175	225	247	270	303	475	5	8.5	400	0.10	100
VPR05KD195BS	195	250	270	300	330	505	5	9.0	400	0.10	100
VPR05KD210BS	210	275	297	330	363	600	5	10.0	400	0.10	90
VPR05KD230BS	230	300	324	360	396	620	5	10.0	400	0.10	80
VPR05KD250BS	250	320	351	390	429	675	5	12.0	400	0.10	80
VPR05KD275BS	275	350	387	430	473	745	5	13.0	400	0.10	70
VPR05KD300BS	300	385	423	470	517	810	5	15.0	400	0.10	70
VPR05KD320BS	320	410	459	510	561	880	5	15.0	400	0.10	65
VPR05KD350BS	350	460	504	560	616	940	5	15.0	400	0.10	65
VPR05KD385BS	385	505	558	620	682	1050	5	15.0	400	0.10	65
VPR05KD420BS	420	560	612	680	748	1150	5	15.0	400	0.10	60
VPR05KD460BS	460	615	675	750	825	1290	5	15.0	400	0.10	60

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SPECIFICATIONS

VPR07 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR07KD011BS	11	14	14.4	18	21.6	42	2.5	0.9	250	0.02	3800
VPR07KD014BS	14	18	18.7	22	26	47	2.5	1.1	250	0.02	3600
VPR07KD017BS	17	22	23.0	27	31.1	53	2.5	1.4	250	0.02	3400
VPR07KD020BS	20	26	29.5	33	36.5	65	2.5	1.7	250	0.02	2900
VPR07KD025BS	25	31	35	39	46	77	2.5	2.1	250	0.02	1600
VPR07KD030BS	30	38	42	47	55	93	2.5	2.5	250	0.02	1550
VPR07KD035BS	35	45	50	56	66	110	2.5	3.1	250	0.02	1500
VPR07KD040BS	40	56	61	68	80	135	2.5	3.6	250	0.02	1200
VPR07KD050BS	50	65	74	82	90	135	10	5.5	1200	0.25	860
VPR07KD060BS	60	85	90	100	110	165	10	6.5	1200	0.25	750
VPR07KD075BS	75	100	108	120	132	200	10	7.8	1200	0.25	530
VPR07KD095BS	95	125	135	150	165	250	10	9.7	1200	0.25	410
VPR07KD115BS	115	150	162	180	198	300	10	11.7	1200	0.25	300
VPR07KD130BS	130	170	180	200	220	340	10	13.0	1200	0.25	250
VPR07KD140BS	140	180	198	220	242	360	10	14.0	1200	0.25	250
VPR07KD150BS	150	200	216	240	264	395	10	15.0	1200	0.25	240
VPR07KD175BS	175	225	247	270	303	455	10	18.0	1200	0.25	220
VPR07KD195BS	195	250	270	300	330	500	10	20.0	1200	0.25	190
VPR07KD210BS	210	275	297	330	363	550	10	25.0	1200	0.25	180
VPR07KD230BS	230	300	324	360	396	595	10	25.0	1200	0.25	170
VPR07KD250BS	250	320	351	390	429	650	10	25.0	1200	0.25	160
VPR07KD275BS	275	350	387	430	473	710	10	28.0	1200	0.25	150
VPR07KD300BS	300	385	423	470	517	775	10	30.0	1200	0.25	130
VPR07KD320BS	320	410	459	510	561	845	10	30.0	1200	0.25	120
VPR07KD350BS	350	460	504	560	616	915	10	30.0	1200	0.25	120
VPR07KD385BS	385	505	558	620	682	1025	10	30.0	1200	0.25	120
VPR07KD420BS	420	560	612	680	748	1120	10	30.0	1200	0.25	110
VPR07KD460BS	460	615	675	750	825	1240	10	33.0	1200	0.25	100
VPR07KD485BS	485	640	702	780	858	1290	10	37.0	1200	0.25	90
VPR07KD510BS	510	670	738	820	902	1355	10	40.0	1200	0.25	90

VPR10 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR10KD011BS	11	14	14.4	18	21.6	39	5	2.1	500	0.05	16000
VPR10KD014BS	14	18	18.7	22	26.0	43	5	2.5	500	0.05	11000
VPR10KD017BS	17	22	23.0	27	31.1	53	5	3.0	500	0.05	8000
VPR10KD020BS	20	26	29.5	33	36.5	65	5	4.0	500	0.05	6300
VPR10KD025BS	25	31	35	39	46	77	5	4.6	500	0.05	5200
VPR10KD030BS	30	38	42	47	55	93	5	5.5	500	0.05	4600

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SPECIFICATIONS

VPR10 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR10KD035BS	35	45	50	56	66	110	5	7.0	500	0.05	3750
VPR10KD040BS	40	56	61	68	80	135	5	8.2	500	0.05	2800
VPR10KD050BS	50	65	74	82	90	135	25	12.0	2500	0.40	1920
VPR10KD060BS	60	85	90	100	110	165	25	15.0	2500	0.40	1800
VPR10KD075BS	75	100	108	120	132	200	25	18.0	2500	0.40	1500
VPR10KD095BS	95	125	135	150	165	250	25	22.0	2500	0.40	1200
VPR10KD115BS	115	150	162	180	198	300	25	27.0	2500	0.40	620
VPR10KD130BS	130	170	180	200	220	340	25	30.0	2500	0.40	570
VPR10KD140BS	140	180	198	220	242	360	25	32.0	2500	0.40	560
VPR10KD150BS	150	200	216	240	264	395	25	35.0	2500	0.40	550
VPR10KD175BS	175	225	247	270	303	455	25	40.0	2500	0.40	530
VPR10KD195BS	195	250	270	300	330	500	25	42.0	2500	0.40	500
VPR10KD210BS	210	275	297	330	363	550	25	47.0	2500	0.40	450
VPR10KD230BS	230	300	324	360	396	595	25	47.0	2500	0.40	450
VPR10KD250BS	250	320	351	390	429	650	25	60.0	2500	0.40	430
VPR10KD275BS	275	350	387	430	473	710	25	65.0	2500	0.40	400
VPR10KD300BS	300	385	423	470	517	775	25	70.0	2500	0.40	300
VPR10KD320BS	320	410	459	510	561	845	25	70.0	2500	0.40	260
VPR10KD350BS	350	460	504	560	616	915	25	70.0	2500	0.40	200
VPR10KD385BS	385	505	558	620	682	1025	25	70.0	2500	0.40	170
VPR10KD420BS	420	560	612	680	748	1120	25	70.0	2500	0.40	160
VPR10KD460BS	460	615	675	750	825	1240	25	75.0	2500	0.40	150
VPR10KD485BS	485	640	702	780	858	1290	25	80.0	2500	0.40	150
VPR10KD510BS	510	670	738	820	902	1355	25	85.0	2500	0.40	150
VPR10KD550BS	550	745	819	910	1001	1500	25	93.0	2500	0.40	140
VPR10KD625BS	625	825	900	1000	1100	1650	25	102.0	2500	0.40	140
VPR10KD680BS	680	895	990	1100	1210	1815	25	115.0	2500	0.40	130

VPR14 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR14KD130BS	130	170	180	200	220	340	50	57.0	4500	0.60	1150
VPR14KD140BS	140	180	198	220	242	360	50	60.0	4500	0.60	1100
VPR14KD150BS	150	200	216	240	264	395	50	63.0	4500	0.60	1050
VPR14KD175BS	175	225	247	270	303	455	50	70.0	4500	0.60	1000
VPR14KD195BS	195	250	270	300	330	500	50	73.0	4500	0.60	900
VPR14KD210BS	210	275	297	330	363	550	50	93.0	4500	0.60	850
VPR14KD230BS	230	300	324	360	396	595	50	93.0	4500	0.60	800
VPR14KD250BS	250	320	351	390	429	650	50	100.0	4500	0.60	800
VPR14KD275BS	275	350	387	430	473	710	50	115.0	4500	0.60	650

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SPECIFICATIONS

VPR14 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR14KD300BS	300	385	423	470	517	775	50	125.0	4500	0.60	550
VPR14KD320BS	320	410	459	510	561	845	50	125.0	4500	0.60	450
VPR14KD350BS	350	460	504	560	616	915	50	125.0	4500	0.60	400
VPR14KD385BS	385	505	558	620	682	1025	50	125.0	4500	0.60	350
VPR14KD420BS	420	560	612	680	748	1120	50	130.0	4500	0.60	350
VPR14KD460BS	460	615	675	750	825	1240	50	143.0	4500	0.60	330
VPR14KD485BS	485	640	702	780	858	1290	50	148.0	4500	0.60	330
VPR14KD510BS	510	670	738	820	902	1355	50	157.0	4500	0.60	330
VPR14KD550BS	550	745	819	910	1001	1500	50	175.0	4500	0.60	300
VPR10KD625BS	625	825	900	1000	1100	1650	50	190.0	4500	0.60	300
VPR14KD680BS	680	895	990	1100	1210	1815	50	213.0	4500	0.60	200

VPR20 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max. Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPR20KD130BS	130	170	180	200	220	340	100	95.0	6500	1.00	2300
VPR20KD140BS	140	180	198	220	242	360	100	100.0	6500	1.00	2200
VPR20KD150BS	150	200	216	240	264	395	100	108.0	6500	1.00	2200
VPR20KD175BS	175	225	247	270	303	455	100	127.0	6500	1.00	2100
VPR20KD195BS	195	250	270	300	330	500	100	150.0	6500	1.00	1800
VPR20KD210BS	210	275	297	330	363	550	100	163.0	6500	1.00	1750
VPR20KD230BS	230	300	324	360	396	595	100	163.0	6500	1.00	1700
VPR20KD250BS	250	320	351	390	429	650	100	180.0	6500	1.00	1400
VPR20KD275BS	275	350	387	430	473	710	100	190.0	6500	1.00	1350
VPR20KD300BS	300	385	423	470	517	775	100	220.0	6500	1.00	1200
VPR20KD320BS	320	410	459	510	561	845	100	220.0	6500	1.00	1050
VPR20KD350BS	350	460	504	560	616	915	100	220.0	6500	1.00	850
VPR20KD385BS	385	505	558	620	682	1025	100	220.0	6500	1.00	570
VPR20KD420BS	420	560	612	680	748	1120	100	230.0	6500	1.00	550
VPR20KD460BS	460	615	675	750	825	1240	100	255.0	6500	1.00	530
VPR20KD485BS	485	640	702	780	858	1290	100	265.0	6500	1.00	500
VPR20KD510BS	510	670	738	820	902	1355	100	282.0	6500	1.00	500
VPR20KD550BS	550	745	819	910	1001	1500	100	310.0	6500	1.00	480
VPR20KD625BS	625	825	900	1000	1100	1650	100	342.0	6500	1.00	460
VPR20KD680BS	680	895	990	1100	1210	1815	100	383.0	6500	1.00	400

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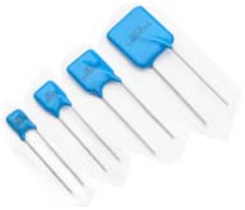
Leaded Varistor for Voltage Surge Suppression – VPS Series

Operating Temp. : -40℃~ +85℃



FEATURES

- Fast response
- Excellent clamping ratio, high peak current and pulse energy withstanding characteristics, providing strong capability of voltage surge suppression
- Wide working voltage range, suitable for AC circuit or DC circuit

APPLICATIONS

- Transient voltage protection and voltage surge suppression for LED lighting
- Transient voltage protection for security system, PLC, Automotive electronics, etc.
- Industrial instrument, smart meters, etc.
- Portable equipment protection, such as mobile phone, PDA, etc

PRODUCT IDENTIFICATION

VP	S	05	K	D	300	B	S
①	②	③	④	⑤	⑥	⑦	⑧

①

Type	
VP	Leaded Varistor for Voltage Surge Suppression

②

Shape	
S	Square

③

Side of Ceramic Body (mm)	
05	5
07	7
10	10
14	14
20	20

④

Tolerance of Varistor Voltage	
K	For Varistor voltage<68, Special
	For Varistor voltage≥68, 10%

⑤

Feature Code	
D	Standard

⑥

allowable AC Working Voltage	
Example	Nominal Value
011	11
220	220
300	300

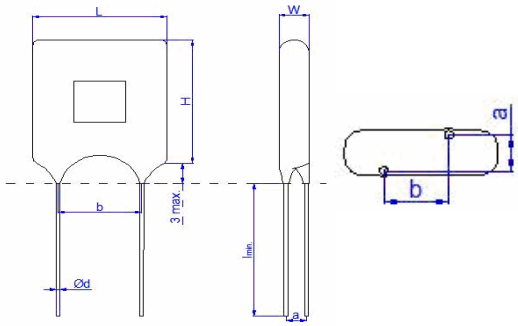
⑦

Package	
B	Bulk Package

⑧

Lead Wire Type	
S	Straight Cut Lead
Y	Straight Cut Y Kink Lead
C	Straight Cut Crimped Lead
I	Straight Cut Inner Lead

SHAPE AND DIMENSIONS



Unit: mm

Type	L max	H max	W max	a	b	d	l min
VPS05KD	7.5	7.5	5.8	2.8±1	5.0±1	0.6±0.1	25
VPS07KD	9.0	9.0	6.3	2.8±1	5.0±1	0.6±0.1	25
VPS10KD	14.0	14.0	7.4	2.9±1	7.5±1	0.8±0.1	25
VPS14KD	17.5	17.5	11.5	2.9±1	7.5±1	0.8±0.1	25
VPS20KD	25.0	25.0	11.9	3.1±1	10.0±1	1.0±0.1	25

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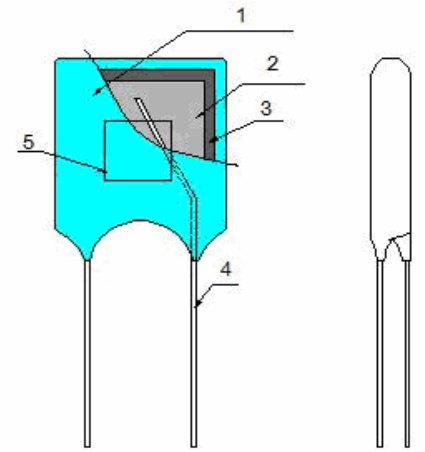
SHAPE AND DIMENSIONS

Structure and Dimensions



No.	Name	Type
1	Epoxy resin	Flame-retardant UL94V-0 blue
2	Silver layer	100% Ag
3	Ceramic body	Zinc oxide ceramic
4	Tinned wire	Φ0.6/Φ0.8/Φ1.0 (mm)
5	Marking*1	VPS*D*** /VPS**KD***

Fig.1

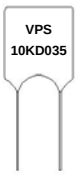


Fig.2

※*1: Marking: Diameter or side of ceramic body is 5 or 7mm, sample shown in Fig.1; Diameter or side of ceramic body is 10, 14 or 20mm, sample shown in Fig.2.

SPECIFICATIONS

VPS05 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	@1V_{rms}, 1kHz
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Amps	Watt	pF
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	I_C	E_T	I_P	P	C
VPS05KD011BS	11	14	14.4	18	21.6	44	1	0.4	100	0.01	1600
VPS05KD014BS	14	18	18.7	22	26.0	51	1	0.5	100	0.01	1500
VPS05KD017BS	17	22	23.0	27	31.1	60	1	0.6	100	0.01	1450
VPS05KD020BS	20	26	29.5	33	36.5	73	1	0.8	100	0.01	1400
VPS05KD025BS	25	31	35	39	46	86	1	0.9	100	0.01	700
VPS05KD030BS	30	38	42	47	55	104	1	1.1	100	0.01	650
VPS05KD035BS	35	45	50	56	66	123	1	1.3	100	0.01	600
VPS05KD040BS	40	56	61	68	80	150	1	1.6	100	0.01	580
VPS05KD050BS	50	65	74	82	90	145	5	2.5	400	0.10	310
VPS05KD060BS	60	85	90	100	110	175	5	3.0	400	0.10	290
VPS05KD075BS	75	100	108	120	132	210	5	4.0	400	0.10	270
VPS05KD095BS	95	125	135	150	165	260	5	4.8	400	0.10	240
VPS05KD115BS	115	150	162	180	198	325	5	5.9	400	0.10	140
VPS05KD130BS	130	170	185	200	225	355	5	6.5	400	0.10	120
VPS05KD140BS	140	180	198	220	242	380	5	7.0	400	0.10	110
VPS05KD150BS	150	200	216	240	264	415	5	8.0	400	0.10	110
VPS05KD175BS	175	225	247	270	303	475	5	8.5	400	0.10	100
VPS05KD195BS	195	250	270	300	330	505	5	9.0	400	0.10	100
VPS05KD210BS	210	275	297	330	363	600	5	10.0	400	0.10	90
VPS05KD230BS	230	300	324	360	396	620	5	10.0	400	0.10	80
VPS05KD250BS	250	320	351	390	429	675	5	12.0	400	0.10	80
VPS05KD275BS	275	350	387	430	473	745	5	13.0	400	0.10	70
VPS05KD300BS	300	385	423	470	517	810	5	15.0	400	0.10	70
VPS05KD320BS	320	410	459	510	561	880	5	15.0	400	0.10	65
VPS05KD350BS	350	460	504	560	616	940	5	15.0	400	0.10	65
VPS05KD385BS	385	505	558	620	682	1050	5	15.0	400	0.10	65
VPS05KD420BS	420	560	612	680	748	1150	5	15.0	400	0.10	60
VPS05KD460BS	460	615	675	750	825	1290	5	15.0	400	0.10	60

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SPECIFICATIONS

VPS07 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	Test Condition AC RMS
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Units	Volts	Volts
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	Symb	V_{WAC}	V_{WDC}	Min.	V_B
VPS07KD011BS	11	14	14.4	18	21.6	42	2.5	0.9	250	0.02	3800
VPS07KD014BS	14	18	18.7	22	26	47	2.5	1.1	250	0.02	3600
VPS07KD017BS	17	22	23.0	27	31.1	53	2.5	1.4	250	0.02	3400
VPS07KD020BS	20	26	29.5	33	36.5	65	2.5	1.7	250	0.02	2900
VPS07KD025BS	25	31	35	39	46	77	2.5	2.1	250	0.02	1600
VPS07KD030BS	30	38	42	47	55	93	2.5	2.5	250	0.02	1550
VPS07KD035BS	35	45	50	56	66	110	2.5	3.1	250	0.02	1500
VPS07KD040BS	40	56	61	68	80	135	2.5	3.6	250	0.02	1200
VPS07KD050BS	50	65	74	82	90	135	10	5.5	1200	0.25	860
VPS07KD060BS	60	85	90	100	110	165	10	6.5	1200	0.25	750
VPS07KD075BS	75	100	108	120	132	200	10	7.8	1200	0.25	530
VPS07KD095BS	95	125	135	150	165	250	10	9.7	1200	0.25	410
VPS07KD115BS	115	150	162	180	198	300	10	11.7	1200	0.25	300
VPS07KD130BS	130	170	185	200	225	340	10	13.0	1200	0.25	250
VPS07KD140BS	140	180	198	220	242	360	10	14.0	1200	0.25	250
VPS07KD150BS	150	200	216	240	264	395	10	15.0	1200	0.25	240
VPS07KD175BS	175	225	247	270	303	455	10	18.0	1200	0.25	220
VPS07KD195BS	195	250	270	300	330	500	10	20.0	1200	0.25	190
VPS07KD210BS	210	275	297	330	363	550	10	25.0	1200	0.25	180
VPS07KD230BS	230	300	324	360	396	595	10	25.0	1200	0.25	170
VPS07KD250BS	250	320	351	390	429	650	10	25.0	1200	0.25	160
VPS07KD275BS	275	350	387	430	473	710	10	28.0	1200	0.25	150
VPS07KD300BS	300	385	423	470	517	775	10	30.0	1200	0.25	130
VPS07KD320BS	320	410	459	510	561	845	10	30.0	1200	0.25	120
VPS07KD350BS	350	460	504	560	616	915	10	30.0	1200	0.25	120
VPS07KD385BS	385	505	558	620	682	1025	10	30.0	1200	0.25	120
VPS07KD420BS	420	560	612	680	748	1120	10	30.0	1200	0.25	110
VPS07KD460BS	460	615	675	750	825	1240	10	33.0	1200	0.25	100
VPS07KD485BS	485	640	702	780	858	1290	10	37.0	1200	0.25	90
VPS07KD510BS	510	670	738	820	902	1355	10	40.0	1200	0.25	90

VPS10 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	Test Condition AC RMS
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Units	Volts	Volts
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	Symb	V_{WAC}	V_{WDC}	Min.	V_B
VPS10KD011BS	11	14	14.4	18	21.6	39	5	2.1	500	0.05	16000
VPS10KD014BS	14	18	18.7	22	26.0	43	5	2.5	500	0.05	11000
VPS10KD017BS	17	22	23.0	27	31.1	53	5	3.0	500	0.05	8000
VPS10KD020BS	20	26	29.5	33	36.5	65	5	4.0	500	0.05	6300
VPS10KD025BS	25	31	35	39	46	77	5	4.6	500	0.05	5200
VPS10KD030BS	30	38	42	47	55	93	5	5.5	500	0.05	4600

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SPECIFICATIONS

VPS10 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	Test Condition AC RMS
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Units	Volts	Volts
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	Symb	V_{WAC}	V_{WDC}	Min.	V_B
VPS10KD035BS	35	45	50	56	66	110	5	7.0	500	0.05	3750
VPS10KD040BS	40	56	61	68	80	135	5	8.2	500	0.05	2800
VPS10KD050BS	50	65	74	82	90	135	25	12.0	2500	0.40	1920
VPS10KD060BS	60	85	90	100	110	165	25	15.0	2500	0.40	1800
VPS10KD075BS	75	100	108	120	132	200	25	18.0	2500	0.40	1500
VPS10KD095BS	95	125	135	150	165	250	25	22.0	2500	0.40	1200
VPS10KD115BS	115	150	162	180	198	300	25	27.0	2500	0.40	620
VPS10KD130BS	130	170	185	200	225	340	25	30.0	2500	0.40	570
VPS10KD140BS	140	180	198	220	242	360	25	32.0	2500	0.40	560
VPS10KD150BS	150	200	216	240	264	395	25	35.0	2500	0.40	550
VPS10KD175BS	175	225	247	270	303	455	25	40.0	2500	0.40	530
VPS10KD195BS	195	250	270	300	330	500	25	42.0	2500	0.40	500
VPS10KD210BS	210	275	297	330	363	550	25	47.0	2500	0.40	450
VPS10KD230BS	230	300	324	360	396	595	25	47.0	2500	0.40	450
VPS10KD250BS	250	320	351	390	429	650	25	60.0	2500	0.40	430
VPS10KD275BS	275	350	387	430	473	710	25	65.0	2500	0.40	400
VPS10KD300BS	300	385	423	470	517	775	25	70.0	2500	0.40	300
VPS10KD320BS	320	410	459	510	561	845	25	70.0	2500	0.40	260
VPS10KD350BS	350	460	504	560	616	915	25	70.0	2500	0.40	200
VPS10KD385BS	385	505	558	620	682	1025	25	70.0	2500	0.40	170
VPS10KD420BS	420	560	612	680	748	1120	25	70.0	2500	0.40	160
VPS10KD460BS	460	615	675	750	825	1240	25	75.0	2500	0.40	150
VPS10KD485BS	485	640	702	780	858	1290	25	80.0	2500	0.40	150
VPS10KD510BS	510	670	738	820	902	1355	25	85.0	2500	0.40	150
VPS10KD550BS	550	745	819	910	1001	1500	25	93.0	2500	0.40	140
VPS10KD625BS	625	825	900	1000	1100	1650	25	102.0	2500	0.40	140
VPS10KD680BS	680	895	990	1100	1210	1815	25	115.0	2500	0.40	130

VPS14 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	Test Condition AC RMS
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Units	Volts	Volts
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	Symb	V_{WAC}	V_{WDC}	Min.	V_B
VPS14KD130BS	130	170	185	200	225	340	50	57.0	4500	0.60	1150
VPS14KD140BS	140	180	198	220	242	360	50	60.0	4500	0.60	1100
VPS14KD150BS	150	200	216	240	264	395	50	63.0	4500	0.60	1050
VPS14KD175BS	175	225	247	270	303	455	50	70.0	4500	0.60	1000
VPS14KD195BS	195	250	270	300	330	500	50	73.0	4500	0.60	900
VPS14KD210BS	210	275	297	330	363	550	50	93.0	4500	0.60	850
VPS14KD230BS	230	300	324	360	396	595	50	93.0	4500	0.60	800
VPS14KD250BS	250	320	351	390	429	650	50	100.0	4500	0.60	800
VPS14KD275BS	275	350	387	430	473	710	50	115.0	4500	0.60	650

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SPECIFICATIONS

VPS14 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	Test Condition AC RMS
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Units	Volts	Volts
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	Symb	V_{WAC}	V_{WDC}	Min.	V_B
VPS14KD300BS	300	385	423	470	517	775	50	125.0	4500	0.60	550
VPS14KD320BS	320	410	459	510	561	845	50	125.0	4500	0.60	450
VPS14KD350BS	350	460	504	560	616	915	50	125.0	4500	0.60	400
VPS14KD385BS	385	505	558	620	682	1025	50	125.0	4500	0.60	350
VPS14KD420BS	420	560	612	680	748	1120	50	130.0	4500	0.60	350
VPS14KD460BS	460	615	675	750	825	1240	50	143.0	4500	0.60	330
VPS14KD485BS	485	640	702	780	858	1290	50	148.0	4500	0.60	330
VPS14KD510BS	510	670	738	820	902	1355	50	157.0	4500	0.60	330
VPS14KD550BS	550	745	819	910	1001	1500	50	175.0	4500	0.60	300
VPS10KD625BS	625	825	900	1000	1100	1650	50	190.0	4500	0.60	300
VPS14KD680BS	680	895	990	1100	1210	1815	50	213.0	4500	0.60	200

VPS20 TYPE

Part Number	Max. Working Voltage		Varistor Voltage			Max.Clamping Voltage		Rated Single Pulse Transient		Rated Power	Typical Capacitance
Test Condition	<20μA		@1mA DC			8/20μs		Energy 10/1000 μs	Peak Current 8/20μs	/	Test Condition AC RMS
	AC RMS	DC									
Units	Volts	Volts	Volts			Volts	Amps	Joules	Units	Volts	Volts
Symbol	V_{WAC}	V_{WDC}	Min.	V_B	Max.	V_C	Symb	V_{WAC}	V_{WDC}	Min.	V_B
VPS20KD130BS	130	170	185	200	225	340	100	95.0	6500	1.00	2300
VPS20KD140BS	140	180	198	220	242	360	100	100.0	6500	1.00	2200
VPS20KD150BS	150	200	216	240	264	395	100	108.0	6500	1.00	2200
VPS20KD175BS	175	225	247	270	303	455	100	127.0	6500	1.00	2100
VPS20KD195BS	195	250	270	300	330	500	100	150.0	6500	1.00	1800
VPS20KD210BS	210	275	297	330	363	550	100	163.0	6500	1.00	1750
VPS20KD230BS	230	300	324	360	396	595	100	163.0	6500	1.00	1700
VPS20KD250BS	250	320	351	390	429	650	100	180.0	6500	1.00	1400
VPS20KD275BS	275	350	387	430	473	710	100	190.0	6500	1.00	1350
VPS20KD300BS	300	385	423	470	517	775	100	220.0	6500	1.00	1200
VPS20KD320BS	320	410	459	510	561	845	100	220.0	6500	1.00	1050
VPS20KD350BS	350	460	504	560	616	915	100	220.0	6500	1.00	850
VPS20KD385BS	385	505	558	620	682	1025	100	220.0	6500	1.00	570
VPS20KD420BS	420	560	612	680	748	1120	100	230.0	6500	1.00	550
VPS20KD460BS	460	615	675	750	825	1240	100	255.0	6500	1.00	530
VPS20KD485BS	485	640	702	780	858	1290	100	265.0	6500	1.00	500
VPS20KD510BS	510	670	738	820	902	1355	100	282.0	6500	1.00	500
VPS20KD550BS	550	745	819	910	1001	1500	100	310.0	6500	1.00	480
VPS20KD625BS	625	825	900	1000	1100	1650	100	342.0	6500	1.00	460
VPS20KD680BS	680	895	990	1100	1210	1815	100	383.0	6500	1.00	400

※□: Please specify the package code (B: Bulk package, A: Ammo package, R: Reel package).
And products with other electrical characteristics can be provided upon customer's request. Please contact your local sales.

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Chip Polymer ESD Suppressor – PESD Series

Operating Temp. : -40℃~+85℃

FEATURES

- Ultra low capacitance, suitable for ultra high speed lines
- Extremely low leakage current (nA scale)
- Excellent solderability (Ni, Sn plating)

APPLICATIONS

- ESD protection for ultra high speed lines, such as USB3.0 I/F, HDMI I/F, etc.

PRODUCT IDENTIFICATION

PESD	1005	H	140	CR15	G	P	T
①	②	③	④	⑤	⑥	⑦	⑧

①

Type	
PESD	Chip Polymer ESD Suppressor

②

External Dimensions (L×W) (mm)	
1005 [0402]	1.0×0.5
1608 [0603]	1.6×0.8

③

Feature Code	
H	For High Speed

④

Max. Continuous Working Voltage	
Example	Nominal Value
140	14V

⑤

Capacitance @1MHz	
Example	Nominal Value
CR15	0.15pF

⑥

Tolerance of Capacitance	
G	Maximum

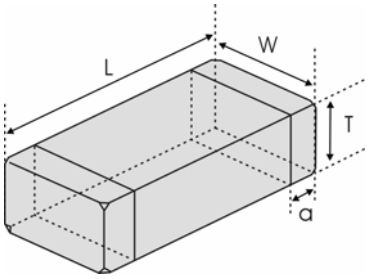
⑦

Terminal Code	
P	Ni, Sn Plating

⑧

Packing	
T	Tape & Reel

SHAPE AND DIMENSIONS



Unit: mm [inch]

Type	L	W	T	a
PESD1005 [0402]	1.0±0.10 [.040±.004]	0.5±0.10 [.020±.004]	0.4±0.10 [.016±.004]	0.25±0.10 [.010±.004]
PESD1608 [0603]	1.6±0.15 [.063±.006]	0.8±0.15 [.031±.006]	0.60±0.15 [.024±.006]	0.3±0.2 [.012±.008]

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SPECIFICATIONS

PESD1005H TYPE

Part Number	Max. DC Working Voltage	Trigger Voltage	Max. Clamping Voltage	Cut-off Frequency	Typical Capacitance
Test Condition	DC	ESD	ESD	@-0.3dB	@1V_{rms}, 1MHz
Units	Volts	Volts	Volts	GHz	pF
Symbol	Vw_{DC}	V_T *1	V_C *2	f_0	C
PESD1005H140CR15GPT	14	200~400	36	4.5	0.05~0.15

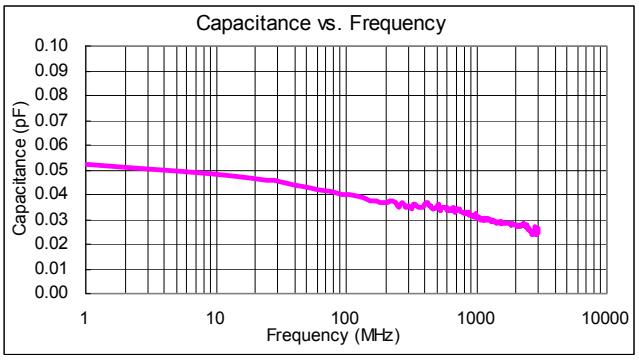
PESD1608H TYPE

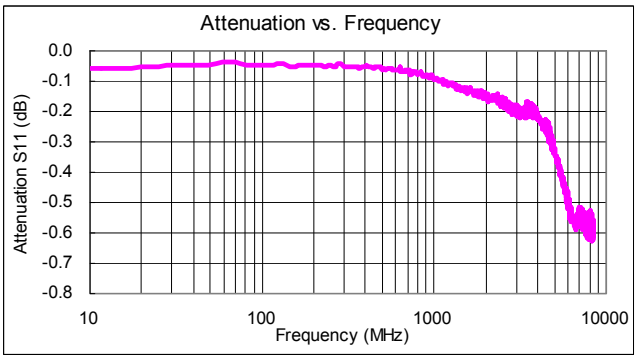
Part Number	Max. DC Working Voltage	Trigger Voltage	Max. Clamping Voltage	Cut-off Frequency	Typical Capacitance
Test Condition	DC	ESD	ESD	@-0.3dB	@1V_{rms}, 1MHz
Units	Volts	Volts	Volts	GHz	pF
Symbol	Vw_{DC}	V_T *1	V_C *2	f_0	C
PESD1608H140CR15GPT	14	200~400	36	4.5	0.05~0.15

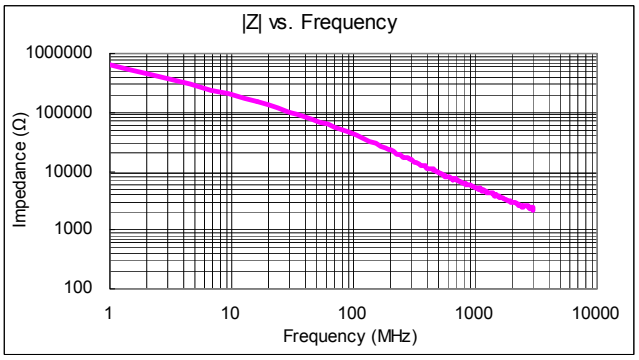
※*1: V_T, The breakdown voltage across the PESD according IEC61000-4-2 8kV contact discharge.
※*2: Vc, Maximum peak voltage across the PESD measured at 30ns after initiation of pulse on IEC61000-4-2 30A/8kV.
Products with other electrical characteristics can be provided upon customer's request. Please contact your local sales.

TYPICAL ELECTRICAL CHARACTERISTICS

Ultra low capacitance type: PESD1005H/PESD1608H series, C=0.15pF







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