Microsemi
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SA5.0 thru SA170A

5.0 thru 170 volts 500 Watts Transient Voltage Suppressors

FEATURES:

- ECONOMICAL SERIES
- AVAILABLE IN BOTH UNIDIRECTIONAL AND BI-DIRECTIONAL CONSTRUCTION
- 5.0 TO 170 STAND-OFF VOLTAGE AVAILABLE
- 500 WATTS PEAK PULSE POWER DISSIPATION
- QUICK RESPONSE

DESCRIPTION:

This Transient Voltage Suppressor is an economical, molded, commercial product used to protect voltage sensitive components from destruction or partial degradation. The response time of their clamping action is virtually instantaneous (1 x 10^{-12} seconds) and they have a peak pulse power rating of 500 watts for 1 ms as depicted in Figure 1 and 2. Microsemi also offers a great variety of other Transient Voltage Suppressor's to meet higher and lower power demands and special applications.

MAXIMUM RATINGS:

Peak Pulse Power Dissipation at 25°C: 500 Watts

Steady State Power Dissipation: 2.5 Watts at T_L = +75°C
3/8" Lead Length

$t_{clamping}$ (0 volts to BV Min.):
Unidirectional <1x10^{-12} Seconds: Bi-directional <5x10^{-9} Seconds.

Operating and Storage Temperature: -55° to +175°C

TYPICAL CHARACTERISTIC CURVES

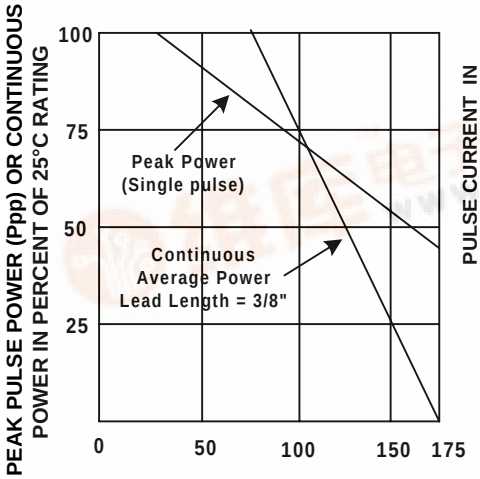


FIGURE 1

DERATING CURVE

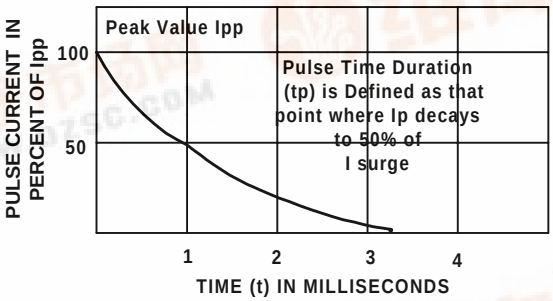
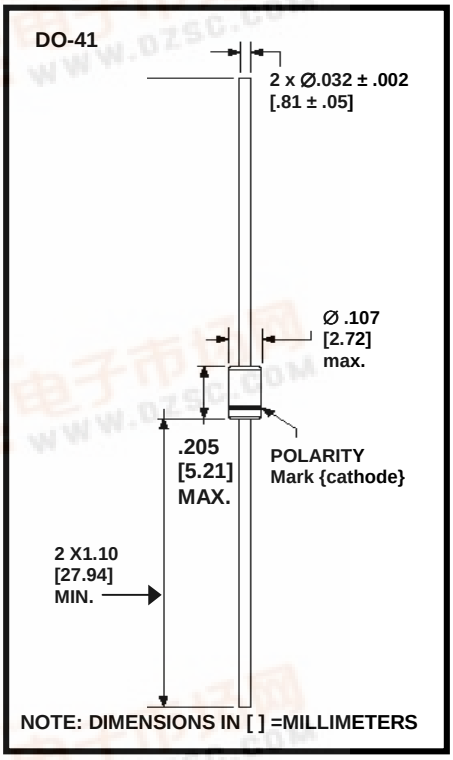


FIGURE 2

PULSE WAVEFORM FOR EXPONENTIAL SURGE



MECHANICAL CHARACTERISTICS

CASE: Void free transfer molded thermosetting plastic.

FINISH: Readily solderable.

POLARITY: Band denotes cathode. Bi-directional not marked.

WEIGHT: 0.7 gram (Appx.).

MOUNTING POSITION: Any

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ELECTRICAL CHARACTERISTICS AT 25°C

PART NUMBER	BREAKDOWN VOLTAGE V(BR) MIN.	BREAKDOWN VOLTAGE V(BR) MAX	TEST CURRENT I_T	RATED STAND OFF VOLTAGE V_{WM}	MAX. REVERSE STANDBY CURRENT I_D @ V_{WM}	MAX. PEAK REVERSE VOLTAGE V_C MAX. @ I_{PP}	MAX. PEAK PULSE CURRENT I_{PP} (Figure 2)	MAX. TEMP. COEFFICIENT OF V(BR) -55°C TO 175°C $\alpha_{V(BR)}$
	VOLTS	VOLTS	mA	VOLTS	μ ADC	VOLTS	AMP	% / °C
SA5.0	6.40	7.30	10	5.0	600	9.6	52	.057
SA5.0A	6.40	7.00	10	5.0	600	9.2	54.3	.057
SA6.0	6.67	8.15	10	6.0	600	11.4	43.9	.059
SA6.0A	6.67	7.37	10	6.0	600	10.3	48.5	.059
SA6.5	7.22	8.82	10	6.5	400	12.3	40.7	.061
SA6.5A	7.22	7.98	10	6.5	400	11.2	44.7	.061
SA7.0	7.78	9.51	10	7.0	150	13.3	37.8	.065
SA7.0A	7.78	8.60	10	7.0	150	12.0	41.7	.065
SA7.5	8.33	10.2	1	7.5	50	14.3	35.0	.067
SA7.5A	8.33	9.21	1	7.5	50	12.9	38.8	.067
SA8.0	8.89	10.9	1	8.0	25	15.0	33.3	.070
SA8.0A	8.89	9.83	1	8.0	25	13.6	36.7	.070
SA8.5	9.44	11.5	1	8.5	5	15.9	31.4	.073
SA8.5A	9.44	10.4	1	8.5	5	14.4	34.7	.073
SA9.0	10.0	12.2	1	9.0	1	16.9	29.5	.076
SA9.0A	10.0	11.1	1	9.0	1	15.4	32.5	.076
SA10	11.1	13.6	1	10	1	18.8	26.6	.078
SA10A	11.1	12.3	1	10	1	17.0	29.4	.078
SA11	12.2	14.9	1	11	1	20.1	24.9	.081
SA11A	12.2	13.5	1	11	1	18.2	27.4	.081
SA12	13.3	16.3	1	12	1	22.0	22.7	.082
SA12A	13.3	14.7	1	12	1	19.9	25.1	.082
SA13	14.4	17.6	1	13	1	23.8	21.0	.084
SA13A	14.4	15.9	1	13	1	21.5	23.2	.084
SA14	15.6	19.1	1	14	1	25.8	19.4	.086
SA14A	15.6	17.2	1	14	1	23.2	21.5	.086
SA15	16.7	20.4	1	15	1	26.9	18.8	.087
SA15A	16.7	18.5	1	15	1	24.4	20.6	.087
SA16	17.8	21.8	1	16	1	28.8	17.6	.088
SA6A	17.8	19.7	1	16	1	26.0	19.2	.088
SA17	18.9	23.1	1	17	1	30.5	16.4	.090
SA17A	18.9	20.9	1	17	1	27.6	18.1	.090
SA18	20.0	24.4	1	18	1	32.2	15.5	.092
SA18A	20.0	22.1	1	18	1	29.2	17.2	.092
SA20	22.2	27.1	1	20	1	35.8	13.9	.093
SA20A	22.2	24.5	1	20	1	32.4	15.4	.093

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ELECTRICAL CHARACTERISTICS AT 25°C

PART NUMBER	BREAKDOWN VOLTAGE V(BR) MIN.	BREAKDOWN VOLTAGE V(BR) MAX	TEST CURRENT I_T	RATED STAND OFF VOLTAGE V_{WM}	MAX. REVERSE STANDBY CURRENT I_D @ V_{WM}	MAX. PEAK REVERSE VOLTAGE V_C MAX. @ I_{PP}	MAX. PEAK PULSE CURRENT I_{PP} (Figure 2)	MAX. TEMP. COEFFICIENT OF $V_{(BR)}$ -55°C TO 175°C $\alpha_{V(BR)}$
	VOLTS	VOLTS	mA	VOLTS	μ ADC	VOLTS	AMP	% / °C
SA22	24.4	29.8	1	22	1	39.4	12.7	.094
SA22A	24.4	26.9	1	22	1	35.5	14.1	.094
SA24	26.7	32.6	1	24	1	43.0	11.6	.096
SA24A	26.7	29.5	1	24	1	38.9	12.8	.096
SA26	28.9	35.3	1	26	1	46.6	10.7	.097
SA26A	28.9	31.9	1	26	1	42.1	11.9	.097
SA28	31.1	38.0	1	28	1	50.0	9.9	.098
SA28A	31.1	34.4	1	28	1	45.4	11.0	.098
SA30	33.3	40.7	1	30	1	53.5	9.3	.099
SA30A	33.3	36.8	1	30	1	48.4	10.3	.099
SA33	36.7	44.9	1	33	1	59.0	8.5	.100
SA33A	36.7	40.6	1	33	1	53.3	9.4	.100
SA36	40.0	48.9	1	36	1	64.3	7.8	.101
SA36A	40.0	44.2	1	36	1	58.1	8.6	.101
SA40	44.4	54.3	1	40	1	71.4	7.0	.101
SA40A	44.4	49.1	1	40	1	64.5	7.8	.101
SA43	47.8	58.4	1	43	1	76.7	6.5	.102
SA43A	47.8	52.8	1	43	1	69.4	7.2	.102
SA45	50.0	61.1	1	45	1	80.3	6.2	.102
SA45A	50.0	55.3	1	45	1	72.7	6.9	.102
SA48	53.3	65.1	1	48	1	85.5	5.8	.103
SA48A	53.3	58.9	1	48	1	77.4	6.5	.103
SA51	56.7	69.3	1	51	1	91.1	5.5	.103
SA51A	56.7	62.7	1	51	1	82.4	6.1	.103
SA54	60.0	73.3	1	54	1	96.3	5.2	.104
SA54A	60.0	66.3	1	54	1	87.1	5.7	.104
SA58	64.4	78.7	1	58	1	103.0	4.9	.104
SA58A	64.4	71.2	1	58	1	93.6	5.3	.104
SA60	66.7	81.5	1	60	1	107.0	4.7	.104
SA60A	66.7	73.7	1	60	1	96.8	5.2	.104
SA64	71.1	86.9	1	64	1	114.0	4.4	.105
SA64A	71.1	78.6	1	64	1	103.0	4.9	.105
SA70	77.8	95.1	1	70	1	125.0	4.0	.105
SA70A	77.8	86.0	1	70	1	113.0	4.4	.105
SA75	83.3	102.0	1	75	1	134.0	3.7	.105
SA75A	83.3	92.1	1	75	1	121.0	4.1	.105

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ELECTRICAL CHARACTERISTICS AT 25°C

PART NUMBER	BREAKDOWN VOLTAGE V(BR) MIN.	BREAKDOWN VOLTAGE V(BR) MAX	TEST CURRENT I_T	RATED STAND OFF VOLTAGE V_{WM}	MAX. REVERSE STANDBY CURRENT I_D @ V_{WM}	MAX. PEAK REVERSE VOLTAGE V_C MAX. @ I_{PP}	MAX. PEAK PULSE CURRENT I_{PP} (Figure 2)	MAX. TEMP. COEFFICIENT OF $V_{(BR)}$ -55°C TO 175°C $\alpha_{V(BR)}$
	VOLTS	VOLTS	mA	VOLTS	μ ADC	VOLTS	AMP	% / °C
SA78	86.7	106.0	1	78	1	139.0	3.6	.106
SA78A	86.7	95.8	1	78	1	126.0	4.0	.106
SA85	94.4	115.0	1	85	1	151.0	3.3	.106
SA85A	94.4	104.0	1	85	1	137.0	3.6	.106
SA90	100.0	122.0	1	90	1	160.0	3.1	.107
SA90A	100.0	111.0	1	90	1	146.0	3.4	.107
SA100	111.0	136.0	1	100	1	179.0	2.8	.107
SA100A	111.0	123.0	1	100	1	162.0	3.1	.107
SA110	122.0	149.0	1	110	1	196.0	2.6	.107
SA110A	122.0	135.0	1	110	1	177.0	2.8	.107
SA120	133.0	163.0	1	120	1	214.0	2.3	.107
SA120A	133.0	147.0	1	120	1	193.0	2.0	.107
SA130	144.0	176.0	1	130	1	231.0	2.2	.108
SA130A	144.0	159.0	1	130	1	209.0	2.4	.108
SA150	167.0	204.0	1	150	1	268.0	1.9	.108
SA150A	167.0	185.0	1	150	1	243.0	2.1	.108
SA160	178.0	218.0	1	160	1	287.0	1.7	.108
SA160A	178.0	197.0	1	160	1	259.0	1.9	.108
SA170	189.0	231.0	1	170	1	304.0	1.6	.108
SA170A	189.0	209.0	1	170	1	275.0	1.8	.108

Note: For Bi-directional construction, indicate a C or CA suffix after the part number, i.e. SA5.0CA

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SA5.0
thru
SA170A

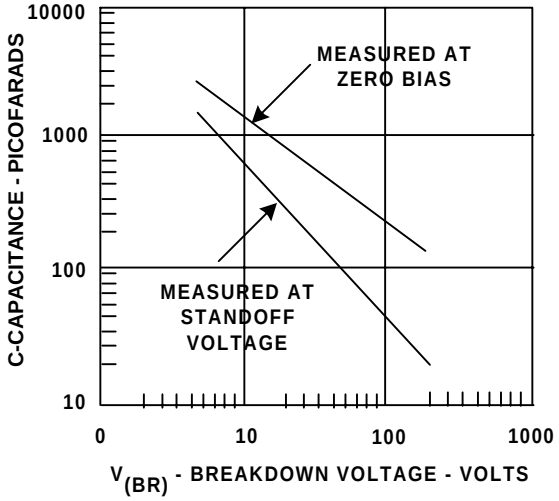
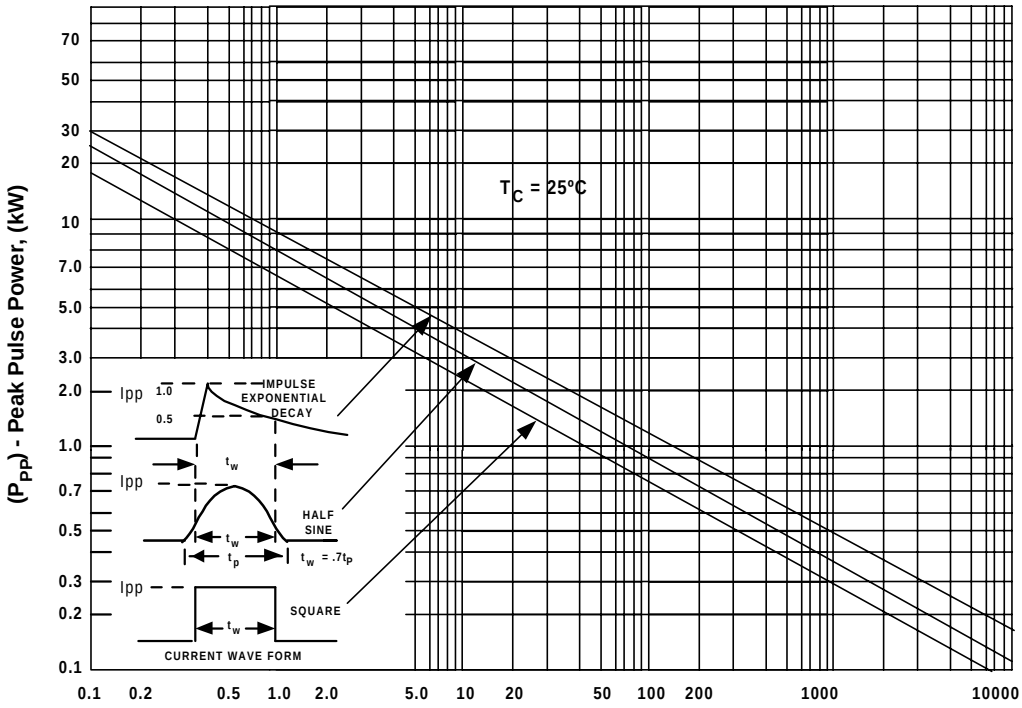


FIGURE 3
TYPICAL CAPACITANCE VS BREAKDOWN VOLTAGE



tw - Pulse Width μs
FIGURE 4
PEAK PULSE POWER VS. PULSE TIME