

# Transient Voltage Suppressors

## SA5V0(C)A - SA170(C)A

### Features

- Glass passivated junction.
- 500W Peak Pulse Power capability on 10/1000  $\mu$ s waveform.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time; typically less than 1.0 ps from 0 volts to BV for unidirectional and 5.0 ns for bidirectional.
- Typical  $I_R$  less than 1.0  $\mu$ A above 10V.



**DO-15**  
COLOR BAND DENOTES CATHODE  
ON UNIDIRECTIONAL DEVICES ONLY. NO  
COLOR BAND ON BIDIRECTIONAL DEVICES.

### DEVICES FOR BIPOLAR APPLICATIONS

- Bidirectional types use CA suffix.
- Electrical Characteristics apply in both directions.

## 500 Watt Transient Voltage Suppressors

### Absolute Maximum Ratings\*

$T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Value	Units
$P_{PPM}$	Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform	500	W
$I_{PPM}$	Peak Pulse Current on 10/1000 $\mu$ s waveform	see table	A
$P_D$	Power Dissipation .375 " lead length @ $T_A = 75^\circ\text{C}$	1.0	W
$I_{FSM}$	Non-repetitive Peak Forward Surge Current superimposed on rated load (JEDEC method) (Note 1)	70	A
$T_{stg}$	Storage Temperature Range	-65 to +175	$^\circ\text{C}$
$T_J$	Operating Junction Temperature	+ 175	$^\circ\text{C}$

\*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Note 1: Measured on 8.3 ms single half-sine wave or equivalent square wave; Duty cycle = 4 pulses per minute maximum.

## Transient Voltage Suppressors

(continued)

## Electrical Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise noted

Uni-directional Bi-directional (C) Device	Reverse Stand-off Voltage $V_{RWM}$ (V)	Breakdown Voltage $V_{BR}$ (V)		Test Current $I_T$ (mA)	Clamping Voltage $\text{@} I_{PPM}$ $V_c$ (V)	Peak Pulse Current $I_{PPM}$ (A)	Reverse Leakage $V_{RWM}$ $I_R$ (uA)*
		min	max				
SA5V0(C)A	5.0	6.40	7.00	10	9.2	54.3	600
SA6V0(C)A	6.0	6.67	7.37	10	10.3	48.5	600
SA6V5(C)A	6.5	7.22	7.98	10	11.2	44.7	400
SA7V0(C)A	7.0	7.78	8.60	10	12.0	41.7	150
SA7V5(C)A	7.5	8.33	9.21	1.0	12.9	38.8	50
SA8V0(C)A	8.0	8.89	9.83	1.0	13.6	36.7	25
SA8V5(C)A	8.5	9.44	10.4	1.0	14.4	34.7	10
SA9V0(C)A	9.0	10.0	11.1	1.0	15.4	32.5	5
SA10(C)A	10	11.1	12.3	1.0	17.0	29.4	1
SA11(C)A	11	12.2	13.5	1.0	18.2	27.4	1
SA12(C)A	12	13.3	14.7	1.0	19.9	25.1	1
SA13(C)A	13	14.4	15.9	1.0	21.5	23.2	1
SA14(C)A	14	15.6	17.2	1.0	23.2	21.5	1
SA15(C)A	15	16.7	18.5	1.0	24.4	20.6	1
SA16(C)A	16	17.8	19.7	1.0	26.0	19.2	1
SA17(C)A	17	18.9	20.9	1.0	27.6	18.1	1
SA18(C)A	18	20.0	22.1	1.0	29.2	17.2	1
SA20(C)A	20	22.2	24.5	1.0	32.4	15.4	1
SA22(C)A	22	24.4	26.9	1.0	35.5	14.1	1
SA24(C)A	24	26.7	29.5	1.0	38.9	12.8	1
SA26(C)A	26	28.9	31.9	1.0	42.1	11.9	1
SA28(C)A	28	31.1	34.4	1.0	45.4	11.0	1
SA30(C)A	30	33.3	36.8	1.0	48.4	10.3	1
SA33(C)A	33	36.7	40.6	1.0	53.3	9.4	1
SA36(C)A	36	40.0	44.2	1.0	58.1	8.6	1
SA40(C)A	40	44.4	49.1	1.0	64.5	7.8	1
SA43(C)A	43	47.8	52.8	1.0	69.4	7.2	1
SA45(C)A	45	50.0	55.3	1.0	72.7	6.9	1
SA48(C)A	48	53.3	58.9	1.0	77.4	6.5	1
SA51(C)A	51	56.7	62.7	1.0	82.4	6.1	1
SA54(C)A	54	60.0	66.3	1.0	87.1	5.7	1
SA58(C)A	58	64.4	71.2	1.0	93.6	5.3	1
SA60(C)A	60	66.7	73.7	1.0	96.8	5.2	1
SA64(C)A	64	71.1	78.6	1.0	103.0	4.9	1
SA70(C)A	70	77.8	86.0	1.0	113.0	4.4	1
SA75(C)A	75	83.3	92.1	1.0	121.0	4.1	1
SA78(C)A	78	86.7	95.8	1.0	126.0	4.0	1
SA85(C)A	85	94.4	104.0	1.0	137.0	3.6	1
SA90(C)A	90	100.0	111.0	1.0	146.0	3.4	1
SA100(C)A	100	111.0	123.0	1.0	162.0	3.1	1
SA110(C)A	110	122.0	135.0	1.0	177.0	2.8	1
SA120(C)A	120	133.0	147.0	1.0	193.0	2.7	1
SA130(C)A	130	144.0	159.0	1.0	209.0	2.4	1
SA150(C)A	150	167.0	185.0	1.0	243.0	2.1	1
SA160(C)A	160	178.0	197.0	1.0	259.0	1.9	1
SA170(C)A	170	189.0	209.0	1.0	275.0	1.8	1

\* For bidirectional parts with  $V_{RWM} < 10\text{V}$ , the  $I_R$  max limit is doubled.

## Typical Characteristics

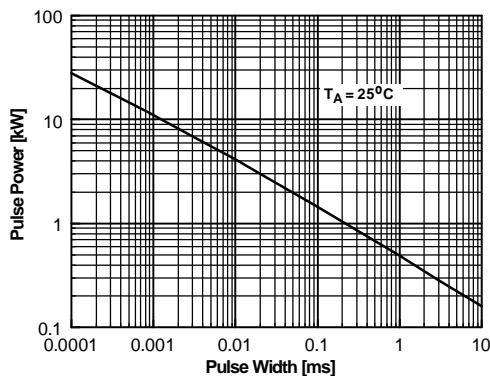


Figure 1. Peak Pulse Power Rating Curve

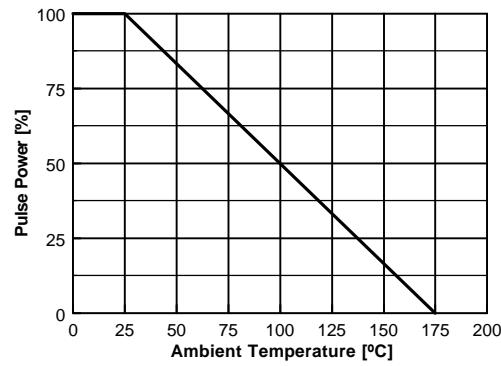


Figure 2. Pulse Derating Curve

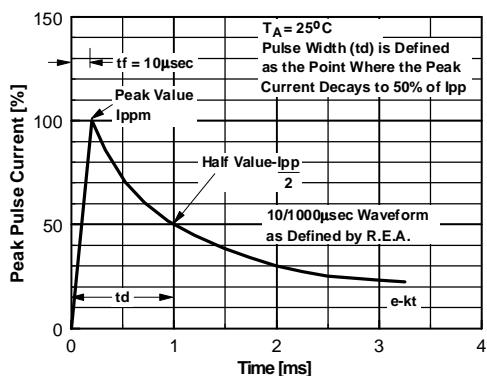


Figure 3. Pulse Waveform

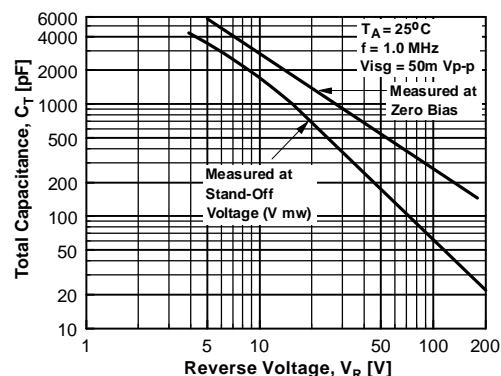


Figure 4. Total Capacitance - Unidirectional

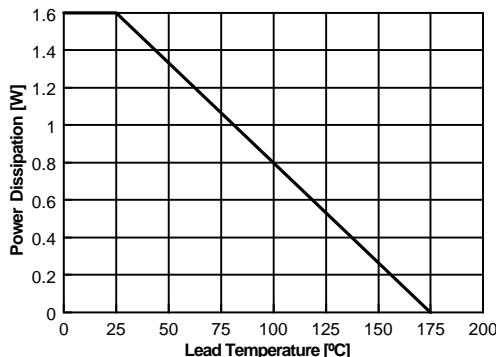


Figure 5. Steady State Power Derating Curve

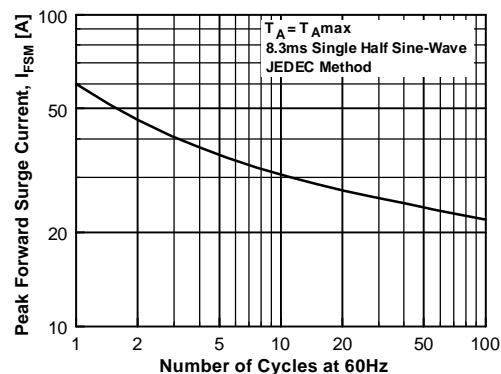


Figure 6. Non-Repetitive Surge Current



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