



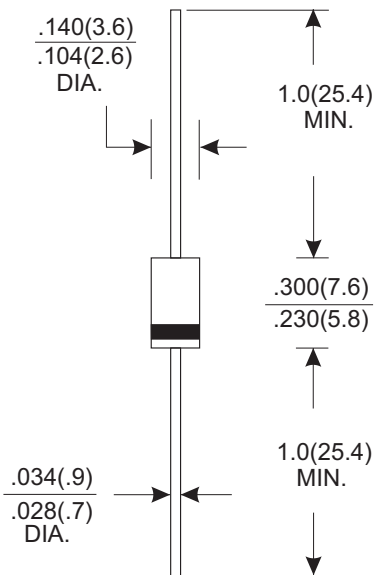
# SA SERIES

## TRANSIENT VOLTAGE SUPPRESSORS

VOLTAGE RANGE 5.0 to 190 Volts

500 Watts Peak Power

### DO-15



Dimensions in inches and (millimeters)

## FEATURES

- \* 600 Watts Surge Capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- \* Typical  $I_R$  less than  $1\mu A$  above 10V
- \* High temperature soldering guaranteed:  $260^\circ C$  / 10 seconds / .375"(9.5mm) lead length, 5lbs.(2.3kg) tension

## MECHANICAL DATA

- \* Case: Molded plastic
- \* Epoxy: UL 94V-0 rate flame retardant
- \* Lead: Solderable per MIL-STD-202, method 208 guaranteed
- \* Polarity: Color band denotes cathode end except Bidirectional
- \* Mounting position: Any

Rating  $25^\circ C$  ambient temperature unless otherwise specified.  
Single phase half wave, 60Hz, resistive or inductive load.  
For capacitive load, derate current by 20%.

RATINGS	SYMBOL	VALUE	UNITS
Peak Power Dissipation at $T_A=25^\circ C$ , $T_P=1ms$ (NOTE 1)	$P_{PK}$	Minimum 500	Watts
Peak Dissipation on infinite heatsink at $T_L=75^\circ C$ ,	$P_D$	1.0	Watt
Peak Forward Surge Current at 8.3ms Single Half Sine-Wave superimposed on rated load (JEDEC method) (NOTE 3)	$I_{FSM}$	40	Amps
Maximum Instantaneous Forward Voltage at 25.0A for Unidirectional only	$V_F$	3.5/5.0	Volts
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

### NOTES:

1. Non-repetitive current pulse per Fig. 3 and derated above  $T_A=25^\circ C$  per Fig. 2.
2. Mounted on Copper Pad area of  $5.0mm^2$ (.013mm Thick) to each terminal.
3. 8.3ms single half sine-wave, duty cycle = 4 pulses per minute maximum.

## DEVICES FOR BIPOLAR APPLICATIONS

1. For Bidirectional use C or CA Suffix for types SA5.0 thru SA190.
2. Electrical characteristics apply in both directions.

# RATING AND CHARACTERISTIC CURVES (SA SERIES)

FIG.1-PEAK PULSE POWER DERATING CURVE

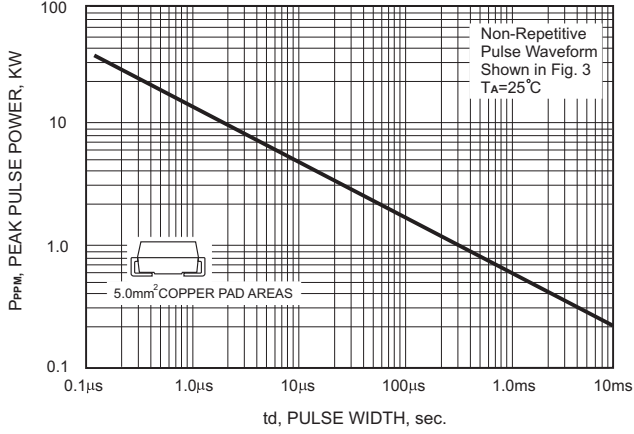


FIG.2-PULSE DERATING CURVE

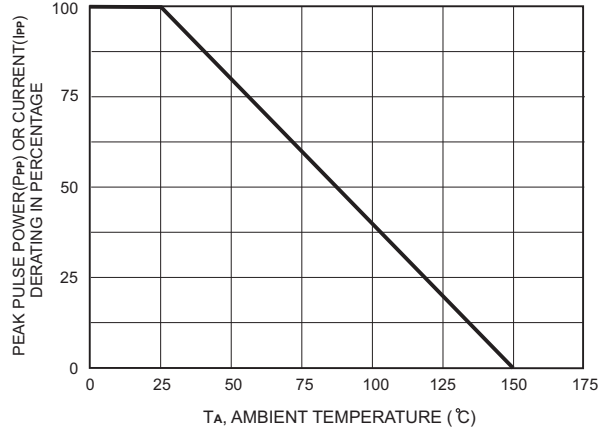


FIG.3-PULSE WAVE FORM

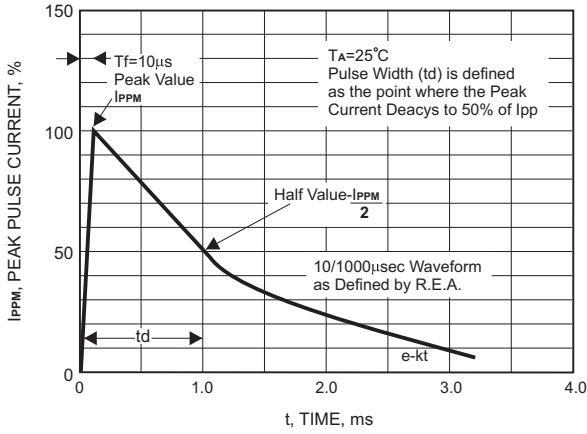


FIG.4-TYPICAL JUNCTION CAPACITANCE

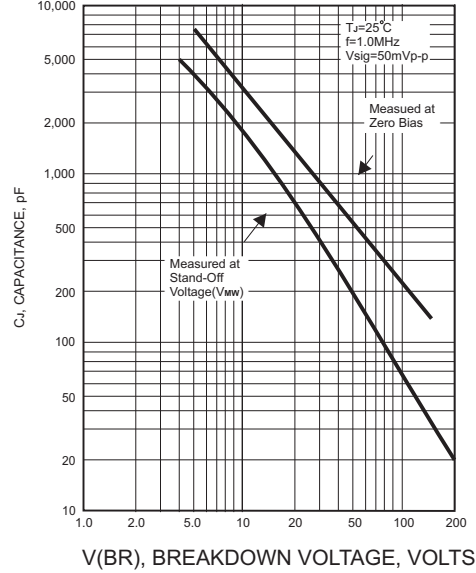


FIG.5-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

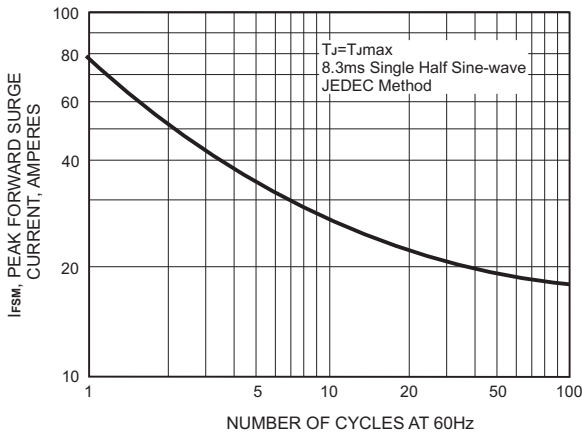
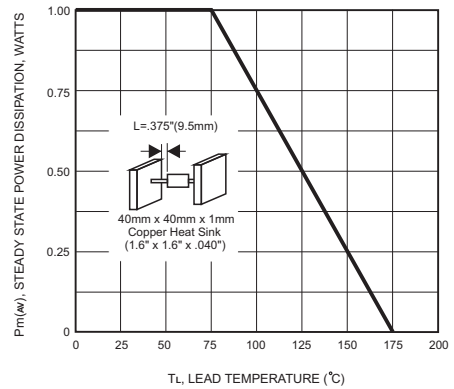


FIG.6-STEADY STATE POWER DERATING CURVE



## 500 Watt Axial Lead TVS

Part Number (Uni)	Part Number (Bi)	Reverse Standoff Voltage	Breakdown Voltage $V_{BR}$ @ $I_T$			Maximum Reverse Leakage @ $V_R$	Maximum Peak Pulse Current $I_{pp}$ (A)	Maximum Clamping Voltage @ $I_{pp}$
			$V_R$ (V)	Min (V)	Max (V)			
SA5.0	SA5.0C	5.0	6.40	7.30	10	600	52.08	9.6
SA5.0A	SA5.0CA	5.0	6.40	7.00	10	600	54.35	9.2
SA6.0	SA6.0C	6.0	6.67	8.15	10	600	43.86	11.4
SA6.0A	SA6.0CA	6.0	6.67	7.37	10	600	48.54	10.3
SA6.5	SA6.5C	6.5	7.22	8.82	10	400	40.65	12.3
SA6.5A	SA6.5CA	6.5	7.22	7.98	10	400	44.64	11.2
SA7.0	SA7.0C	7.0	7.78	9.51	10	150	37.59	13.3
SA7.0A	SA7.0CA	7.0	7.78	8.60	10	150	41.67	12.0
SA7.5	SA7.5C	7.5	8.33	10.20	1	50	34.97	14.3
SA7.5A	SA7.5CA	7.5	8.33	9.21	1	50	38.76	12.9
SA8.0	SA8.0C	8.0	8.89	10.90	1	25	33.33	15.0
SA8.0A	SA8.0CA	8.0	8.89	9.83	1	25	36.76	13.6
SA8.5	SA8.5C	8.5	9.44	11.50	1	5	31.45	15.9
SA8.5A	SA8.5CA	8.5	9.44	10.40	1	5	34.72	14.4
SA9.0	SA9.0C	9.0	10.00	12.20	1	5	29.59	16.9
SA9.0A	SA9.0CA	9.0	10.00	11.10	1	5	32.47	15.4
SA10	SA10C	10.0	11.10	13.60	1	5	26.60	18.8
SA10A	SA10CA	10.0	11.10	12.30	1	5	29.41	17.0
SA11	SA11C	11.0	12.20	14.90	1	5	24.88	20.1
SA11A	SA11CA	11.0	12.20	13.50	1	5	27.47	18.2
SA12	SA12C	12.0	13.30	16.30	1	5	22.73	22.0
SA12A	SA12CA	12.0	13.30	14.70	1	5	25.13	19.9
SA13	SA13C	13.0	14.40	17.60	1	5	21.01	23.8
SA13A	SA13CA	13.0	14.40	15.90	1	5	23.26	21.5
SA14	SA14C	14.0	15.60	19.10	1	5	19.38	25.8
SA14A	SA14CA	14.0	15.60	17.20	1	5	21.55	23.2
SA15	SA15C	15.0	16.70	20.40	1	5	18.59	26.9
SA15A	SA15CA	15.0	16.70	18.50	1	5	20.49	24.4
SA16	SA16C	16.0	17.80	21.80	1	5	17.36	28.8
SA16A	SA16CA	16.0	17.80	19.70	1	5	19.23	26.0
SA17	SA17C	17.0	18.90	23.10	1	5	16.39	30.5
SA17A	SA17CA	17.0	18.90	20.90	1	5	18.12	27.6
SA18	SA18C	18.0	20.00	24.40	1	5	15.53	32.2
SA18A	SA18CA	18.0	20.00	22.10	1	5	17.12	29.2
SA20	SA20C	20.0	22.20	27.10	1	5	13.97	35.8
SA20A	SA20CA	20.0	22.20	24.50	1	5	15.43	32.4
SA22	SA22C	22.0	24.40	29.80	1	5	12.69	39.4
SA22A	SA22CA	22.0	24.40	26.90	1	5	14.08	35.5
SA24	SA24C	24.0	26.70	32.60	1	5	11.63	43.0
SA24A	SA24CA	24.0	26.70	29.50	1	5	12.85	38.9
SA26	SA26C	26.0	28.90	35.30	1	5	10.73	46.6
SA26A	SA26CA	26.0	28.90	31.90	1	5	11.88	42.1
SA28	SA28C	28.0	31.10	38.00	1	5	10.00	50.1
SA28A	SA28CA	28.0	31.10	34.40	1	5	11.01	45.4
SA30	SA30C	30.0	33.30	40.70	1	5	9.35	53.5
SA30A	SA30CA	30.0	33.30	36.80	1	5	10.33	48.4
SA33	SA33C	33.0	36.70	44.90	1	5	8.47	59.0
SA33A	SA33CA	33.0	36.70	40.60	1	5	9.38	53.3

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			$V_R$ (V)	Min (V)	Max (V)			
SA36	SA36C	36.0	40.00	48.90	1	5	7.78	64.3
SA36A	SA36CA	36.0	40.00	44.20	1	5	8.61	58.1
SA40	SA40C	40.0	44.40	54.30	1	5	7.00	71.4
SA40A	SA40CA	40.0	44.40	49.10	1	5	7.75	64.5
SA43	SA43C	43.0	47.80	58.40	1	5	6.52	76.7
SA43A	SA43CA	43.0	47.80	52.80	1	5	7.20	69.4
SA45	SA45C	45.0	50.00	61.10	1	5	6.23	80.3
SA45A	SA45CA	45.0	50.00	55.30	1	5	6.88	72.7
SA48	SA48C	48.0	53.30	65.20	1	5	5.85	85.5
SA48A	SA48CA	48.0	53.30	58.90	1	5	6.46	77.4
SA51	SA51C	51.0	56.70	69.30	1	5	5.49	91.1
SA51A	SA51CA	51.0	56.70	62.70	1	5	6.07	82.4
SA54	SA54C	54.0	60.00	73.30	1	5	5.19	96.3
SA54A	SA54CA	54.0	60.00	66.30	1	5	5.74	87.1
SA58	SA58C	58.0	64.40	78.70	1	5	4.85	103.0
SA58A	SA58CA	58.0	64.40	71.20	1	5	5.34	93.6
SA60	SA60C	60.0	66.70	81.50	1	5	4.67	107.0
SA60A	SA60CA	60.0	66.70	73.70	1	5	5.17	96.8
SA64	SA64C	64.0	71.10	86.90	1	5	4.39	114.0
SA64A	SA64CA	64.0	71.10	78.60	1	5	4.85	103.0
SA70	SA70C	70.0	77.80	95.10	1	5	4.00	125.0
SA70A	SA70CA	70.0	77.80	86.00	1	5	4.42	113.0
SA75	SA75C	75.0	83.30	102.00	1	5	3.73	134.0
SA75A	SA75CA	75.0	83.30	92.10	1	5	4.13	121.0
SA78	SA78C	78.0	86.70	106.00	1	5	3.60	139.0
SA78A	SA78CA	78.0	86.70	95.80	1	5	3.97	126.0
SA85	SA85C	85.0	94.40	115.00	1	5	3.31	151.0
SA85A	SA85CA	85.0	94.40	104.00	1	5	3.65	137.0
SA90	SA90C	90.0	100.00	122.00	1	5	3.13	160.0
SA90A	SA90CA	90.0	100.00	111.00	1	5	3.42	146.0
SA100	SA100C	100.0	111.00	136.00	1	5	2.79	179.0
SA100A	SA100CA	100.0	111.00	123.00	1	5	3.09	162.0
SA110	SA110C	110.0	122.00	149.00	1	5	2.55	196.0
SA110A	SA110CA	110.0	122.00	135.00	1	5	2.82	177.0
SA120	SA120C	120.0	133.00	163.00	1	5	2.34	214.0
SA120A	SA120CA	120.0	133.00	147.00	1	5	2.59	193.0
SA130	SA130C	130.0	144.00	176.00	1	5	2.16	231.0
SA130A	SA130CA	130.0	144.00	159.00	1	5	2.39	209.0
SA150	SA150C	150.0	167.00	204.00	1	5	1.87	268.0
SA150A	SA150CA	150.0	167.00	185.00	1	5	2.06	243.0
SA160	SA160C	160.0	178.00	218.00	1	5	1.74	287.0
SA160A	SA160CA	160.0	178.00	197.00	1	5	1.93	259.0
SA170	SA170C	170.0	189.00	231.00	1	5	1.64	304.0
SA170A	SA170CA	170.0	189.00	209.00	1	5	1.82	275.0
SA180	SA180C	180.0	200.00	244.00	1	5	1.55	322.2
SA180A	SA180CA	180.0	200.00	233.00	1	5	1.71	291.6
SA190	SA190C	190.0	211.00	258.00	1	5	1.47	340.1
SA190A	SA190CA	190.0	211.00	232.00	1	5	1.62	307.8