

## Transient Voltage Suppressors

TVS Diodes - 500W > SA Series

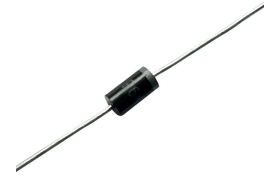


### Description

The SA series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

### Features

- For surface mounted applications in order to optimize board space
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL flammability classification 94V-0
- Typical IR less than 1uA above 12V
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min
- Glass passivated junction
- Low inductance
- High Temperature soldering: 260°C/10 seconds at terminals



Package: DO-204AC / DO-15

### Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

### Electrical Characteristics

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10x1000µs waveform (Fig.1)(Note 1), (Note 2)	PPPM	500	W
Power Dissipation on infinite heat sink at TA=50°C	PM(AV)	3.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	IFSM	70	A
Maximum Instantaneous Forward Voltage at 25A for Unidirectional only (Note 4)	V <sub>F</sub>	3.5/5	V
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to 150	°C
Typical Thermal Resistance Junction to Lead	R <sub>θJL</sub>	20	°C/W
Typical Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	75	°C/W

#### Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.

Electrical Characteristics (TA=25°C)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V <sub>BR</sub> (Volts)@I <sub>T</sub>		Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
Unidirectional	Bidirectional	V <sub>RWM</sub> (V)	Min	Max	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
SA5.0A	SA5.0CA	5.0	6.40	7.00	10	9.2	55.4	600
SA6.0A	SA6.0CA	6.0	6.67	7.37	10	10.3	48.5	600
SA6.5A	SA6.5CA	6.5	7.22	7.98	10	11.2	44.7	400
SA7.0A	SA7.0CA	7.0	7.78	8.60	10	12.0	41.7	150
SA7.5A	SA7.5CA	7.5	8.33	9.21	1	12.9	38.8	50
SA8.0A	SA8.0CA	8.0	8.89	9.83	1	13.6	36.7	25
SA8.5A	SA8.5CA	8.5	9.44	10.40	1	14.4	34.7	10
SA9.0A	SA9.0CA	9.0	10.00	11.10	1	15.4	32.5	5
SA10A	SA10CA	10.0	11.10	12.30	1	17.0	29.4	3
SA11A	SA11CA	11.0	12.20	13.50	1	18.2	27.4	1
SA12A	SA12CA	12.0	13.30	14.70	1	19.9	25.1	1
SA13A	SA13CA	13.0	14.40	15.90	1	21.5	23.2	1
SA14A	SA14CA	14.0	15.60	17.20	1	23.2	21.5	1
SA15A	SA15CA	15.0	16.70	18.50	1	24.4	20.6	1
SA16A	SA16CA	16.0	17.80	19.70	1	26.0	19.2	1
SA17A	SA17CA	17.0	18.90	20.90	1	27.6	16.1	1
SA18A	SA18CA	18.0	20.00	22.10	1	29.2	17.2	1
SA20A	SA20CA	20.0	22.20	24.50	1	32.4	15.4	1
SA22A	SA22CA	22.0	24.40	26.90	1	35.5	14.1	1
SA24A	SA24CA	24.0	26.70	29.50	1	38.9	12.8	1
SA26A	SA26CA	26.0	28.90	31.90	1	42.1	11.9	1
SA28A	SA28CA	28.0	31.10	34.40	1	45.4	11.0	1
SA30A	SA30CA	30.0	33.30	36.80	1	48.4	10.3	1
SA33A	SA33CA	33.0	36.70	40.60	1	53.3	9.4	1
SA36A	SA36CA	36.0	40.00	44.20	1	58.1	8.6	1
SA40A	SA40CA	40.0	44.40	49.10	1	64.5	7.8	1
SA43A	SA43CA	43.0	47.80	52.80	1	69.4	7.2	1
SA45A	SA45CA	45.0	50.00	55.30	1	72.7	6.9	1
SA48A	SA48CA	48.0	53.30	58.90	1	77.4	6.5	1
SA51A	SA51CA	51.0	56.70	62.70	1	82.4	6.1	1
SA54A	SA54CA	54.0	60.00	66.30	1	87.1	5.7	1

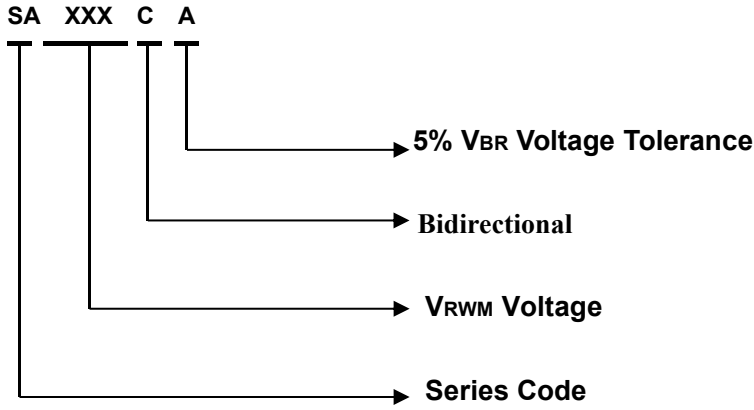
Electrical Characteristics (TA=25°C)

continued


Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V <sub>BR</sub> (Volts)@I <sub>T</sub>		Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
Unidirectional	Bidirectional	V <sub>RWM</sub> (V)	Min	Max	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (μA)
SA58A	SA58CA	58.0	64.40	71.20	1	93.6	5.3	1
SA60A	SA60CA	60.0	66.70	73.70	1	96.8	5.2	1
SA64A	SA64CA	64.0	71.10	78.60	1	103.0	4.9	1
SA70A	SA70CA	70.0	77.80	86.00	1	113.0	4.4	1
SA75A	SA75CA	75.0	83.30	92.10	1	121.0	4.1	1
SA78A	SA78CA	78.0	86.70	95.80	1	126.0	4.0	1
SA85A	SA85CA	85.0	94.40	104.0	1	137.0	3.6	1
SA90A	SA90CA	90.0	100.0	111.0	1	146.0	3.4	1
SA100A	SA100CA	100.0	111.0	123.0	1	162.0	3.1	1
SA110A	SA110CA	110.0	122.0	135.0	1	177.0	2.8	1
SA120A	SA120CA	120.0	133.0	147.0	1	193.0	2.0	1
SA130A	SA130CA	130.0	144.0	159.0	1	209.0	2.4	1
SA150A	SA150CA	150.0	167.0	185.0	1	243.0	2.1	1
SA160A	SA160CA	160.0	178.0	197.0	1	259.0	1.9	1
SA170A	SA170CA	170.0	189.0	209.0	1	275.0	1.8	1
SA180A	SA180CA	180.0	198.0	230.4	1	292.0	1.7	1
SA190A	SA190CA	190.0	209.0	243.2	1	308.0	1.6	1

Notes: For bidirectional type having V<sub>RWM</sub> of 10 volts and less, the I<sub>R</sub> limit is double.

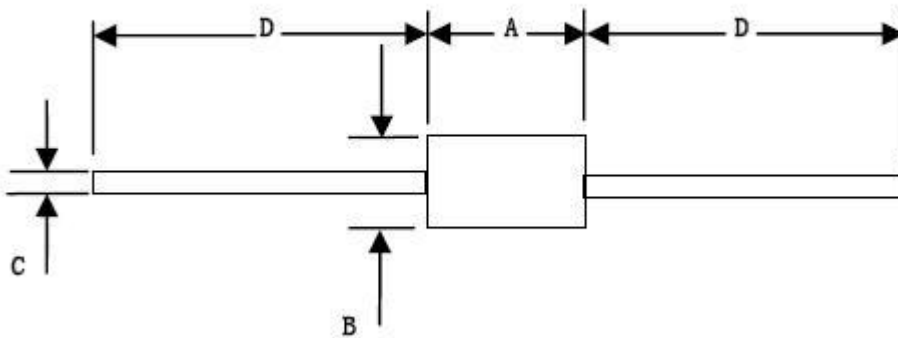
## Description of Part Number



## Packing Options

Package Type	Description	Packing Quantity	Industry Standard
DO-15 	Tape and Reel Pack	2000 PCS	EIA STD RS-296E

## Dimensions - DO-204AC / DO-15



Dimension	Inches		Millimeters		Note
	Min	Max	Min	Max	
A	0.230	0.300	5.80	7.60	
B	0.104	0.140	2.60	3.60	Φ
C	0.026	0.034	0.70	0.90	Φ
D	1.000		25.4		

## Ratings and Characteristics Curve

Figure 1. Peak Pulse Power Rating Curve

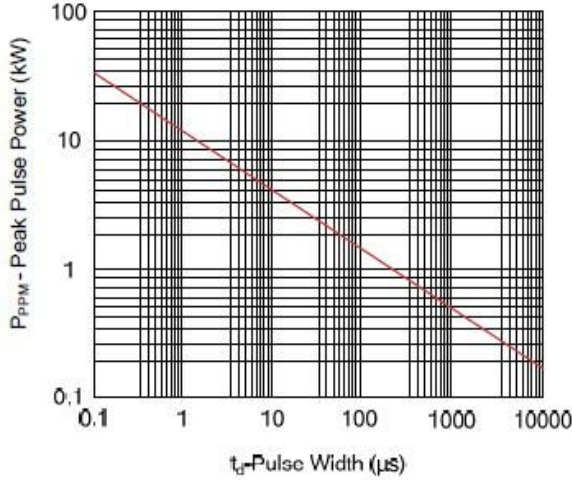


Figure 2. Pulse Derating Curve

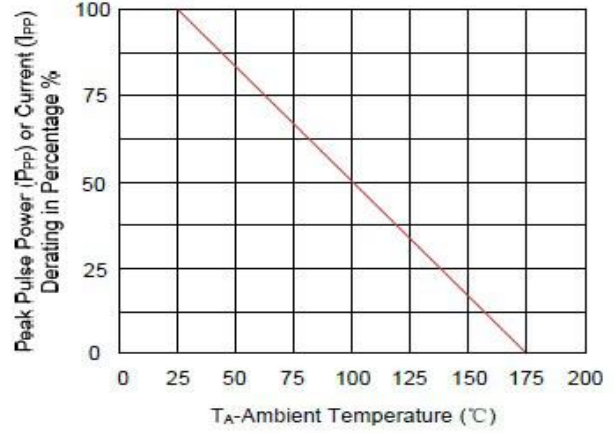


Figure 3. Pulse Waveform

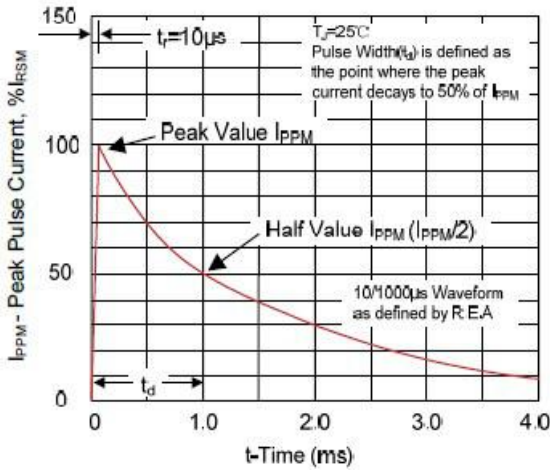


Figure 4. Typical Junction Capacitance

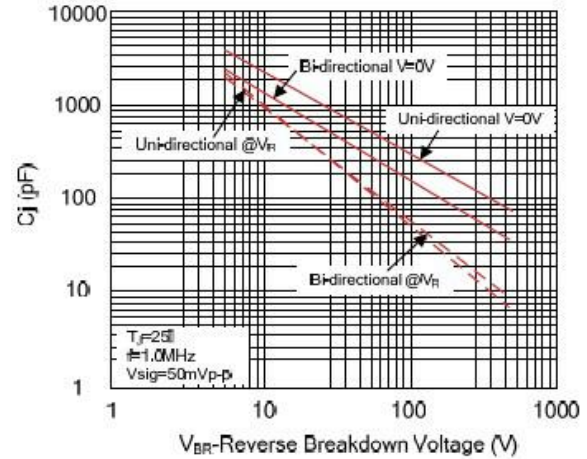


Figure 5. Steady State Power Dissipation Derating Curve

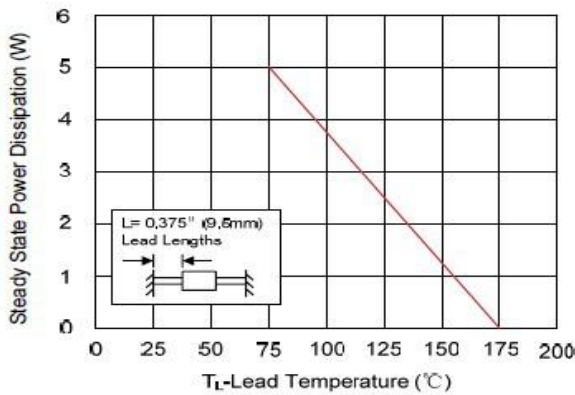
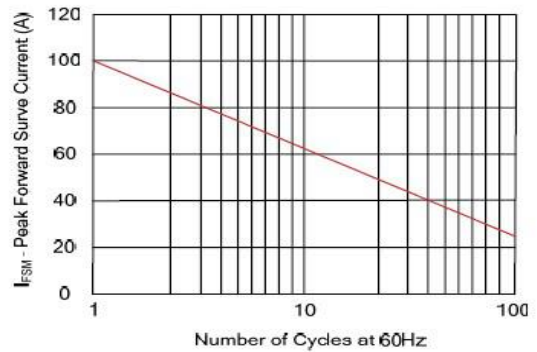


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



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