

## Axial Lead Transient Voltage Suppressors (TVS)

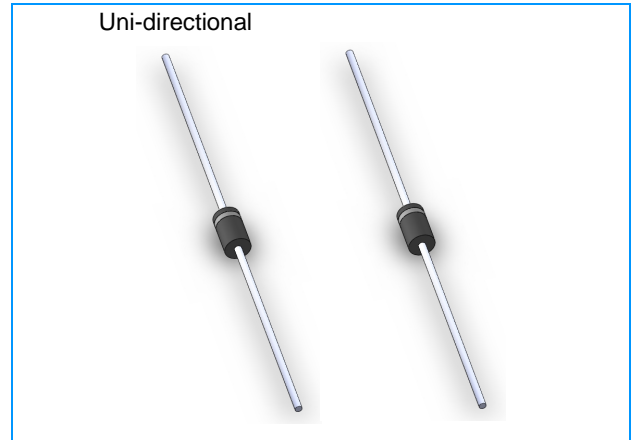
**SAC Series    5.0 To 50 V    500W    Low Capacitance**

### Description

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

### Features

- u Glass passivated chip
- u 500W peak pulse power capability with a 10/1000µs waveform, repetitive rate (duty cycle): 0.01%
- u Low leakage
- u Excellent clamping capability
- u Very fast response time
- u RoHS compliant



### Applications

TVS devices are ideal for the protection of I/O interfaces, V<sub>CC</sub> bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

### Maximum Ratings (T<sub>A</sub>=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000µs waveform <sup>(1)</sup>	P <sub>PPM</sub>	500	Watts
Peak Pulse Current with a 10/1000µs waveform.(Fig.2) <sup>(1)</sup>	I <sub>PP</sub>	See Next Table	Amps
Power Dissipation on Infinite Heat Sink at T <sub>L</sub> =75°C (Fig.2)	P <sub>M(AV)</sub>	3.0	Watt
Operating junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

#### Notes:

1. Non-repetitive current pulse , per Fig. 3 and derated above TA= 25°C per Fig. 2

### Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Part Number	Reverse Stand-Off Voltage V <sub>RWM</sub> (V)	Breakdown Voltage V <sub>BR</sub> @I <sub>T</sub> =1.0mA (V)	Maximum Reverse Leakage I <sub>R</sub> @V <sub>RWM</sub> (µA)	Maximum Clamping Voltage V <sub>C</sub> @I <sub>PP</sub> (V)	Maximum Peak Pulse Current I <sub>PP</sub> (A)	Maximum Junction Capacitance @0V (pF)	Working Inverse Blocking Voltage V <sub>WIB</sub> (V)	Inverse Blocking Leakage Current I <sub>B</sub> @V <sub>WIB</sub> (mA)	Peak Inverse Voltage V <sub>PIB</sub> (V)
		MIN							
SAC5.0	5.0	7.60	300	10.0	44.0	50	75	1	100
SAC6.0	6.0	7.90	300	11.2	41.0	50	75	1	100
SAC7.0	7.0	8.33	300	12.6	38.0	50	75	1	100
SAC8.0	8.0	8.89	100	13.4	36.0	50	75	1	100
SAC8.5	8.5	9.44	50	14.0	34.0	50	75	1	100
SAC10	10.0	11.10	5	16.3	29.0	50	75	1	100
SAC12	12.0	13.30	5	19.0	25.0	50	75	1	100
SAC15	15.0	16.67	5	23.6	20.0	50	75	1	100
SAC18	18.0	20.00	5	28.8	15.0	50	75	1	100
SAC22	22.0	24.40	5	35.4	14.0	50	75	1	100
SAC26	26.0	28.90	5	42.3	11.1	50	75	1	100
SAC30	30.0	33.30	5	48.6	10.0	50	75	1	100
SAC36	36.0	40.00	5	60.0	8.6	50	75	1	100
SAC45	45.0	50.00	5	77.0	6.8	50	150	1	200
SAC50	50.0	55.50	5	88.0	5.8	50	150	1	200

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Ratings and Characteristic Curves ( $T_A=25^\circ\text{C}$  unless otherwise noted)

Figure 1 - Peak Pulse Power Rating Curve

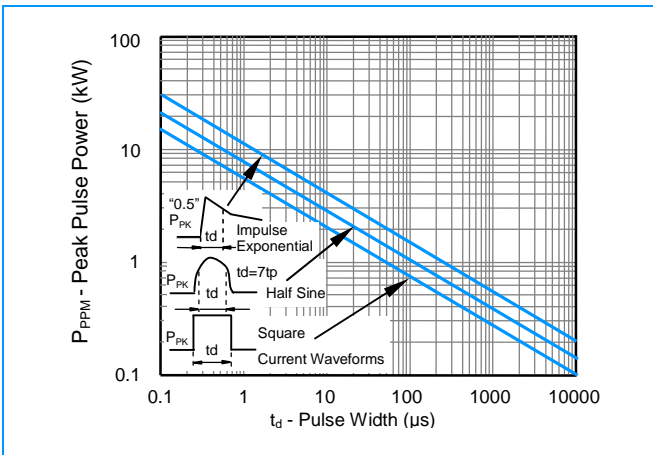


Figure 2 - Pulse Derating Curve

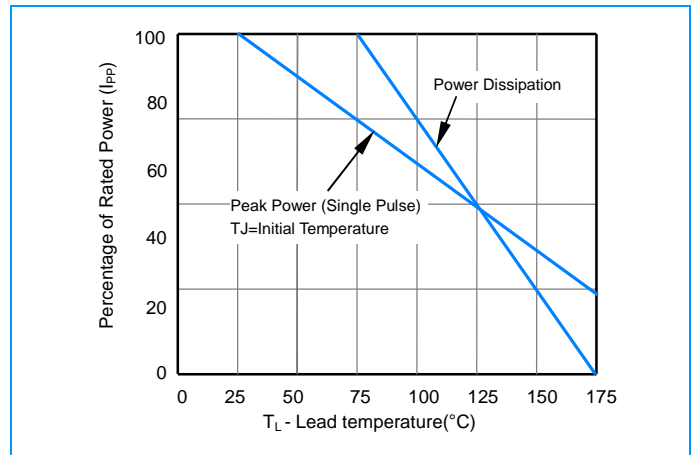


Figure 3 - Pulse Waveform

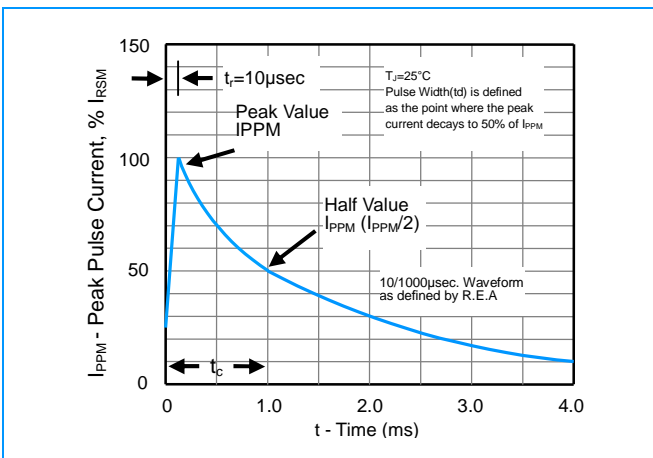
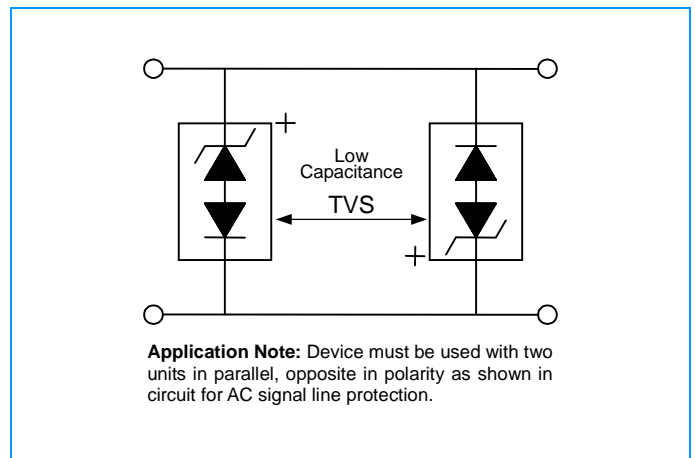


Figure 4 - AC Line Protection Application



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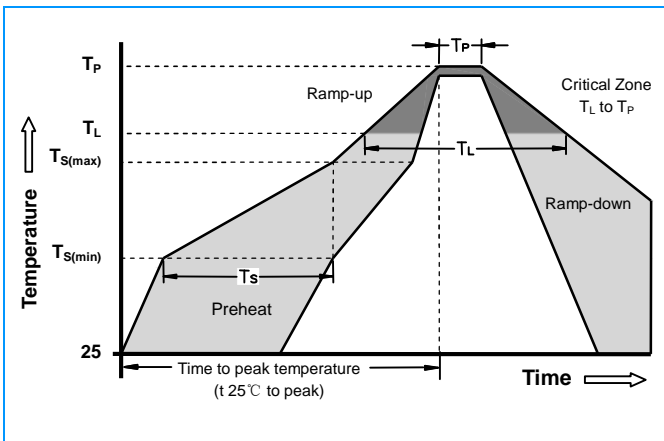
### Physical Specifications

<b>Weight</b>	0.015 ounce, 0.4 gram
<b>Case</b>	JEDEC DO-204AC (DO-15) Molded Plastic over glass passivated junction
<b>Polarity</b>	Color band denotes cathode except Bipolar
<b>Terminal</b>	Matte Tin-plated leads, Solderable per JESD22-B102D

### Environmental Specifications

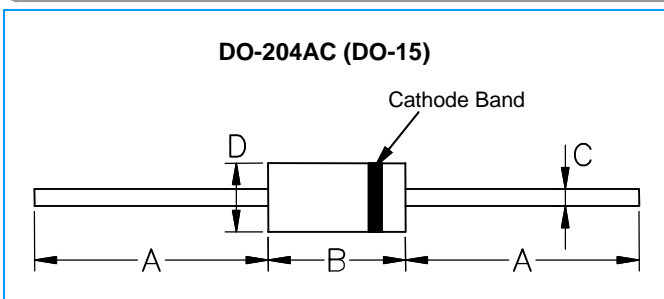
<b>Temperature Cycle</b>	JESD22-A104
<b>Pressure Cooker</b>	JESD22-A102
<b>High Temp. Storage</b>	JESD22-A103
<b>HTRB</b>	JESD22-A108
<b>Thermal Shock</b>	JESD22-A106

### Soldering Parameters



<b>Reflow Condition</b>		Lead-free assembly
<b>Pre Heat</b>	- Temperature Min ( $T_{s(min)}$ )	150°C
	- Temperature Max ( $T_{s(max)}$ )	200°C
	- Time (min to max) ( $t_s$ )	60 - 180 Seconds
<b>Average ramp up rate ( Liquidus Temp <math>T_L</math> ) to peak</b>		3°C/second max
<b><math>T_{s(max)}</math> to <math>T_L</math> - Ramp-up Rate</b>		3°C/second max
<b>Reflow</b>	- Temperature ( $T_L$ ) (Liquidus)	217°C
	- Time (min to max) ( $t_s$ )	60 - 150 Seconds
<b>Peak Temperature (<math>T_P</math>)</b>		260 $\pm$ 0/-5°C
<b>Time within 5°C of actual peak Temperature (<math>t_p</math>)</b>		20 - 40 Seconds
<b>Ramp-down Rate</b>		6°C/second max
<b>Time 25°C to peak Temperature (<math>T_P</math>)</b>		8 minutes Max
<b>Do not exceed</b>		280°C

### Dimensions

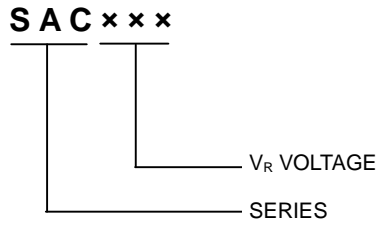


Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
<b>A</b>	1.000	-	25.40	-
<b>B</b>	0.230	0.300	5.85	7.63
<b>C</b>	0.028	0.033	0.71	0.84
<b>D</b>	0.102	0.142	2.60	3.61

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### Part Numbering



### Packaging

Part Number	Component Package	Quantity	Packaging Option
SACXXXXX	DO-204AC (DO-15)	2000	Box

### Packaging Dimensions Unit: Inches (Millimeters)

