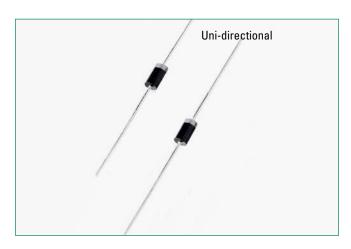
# **SAC Series**Axial Leaded – 500W





## **Additional Information**







**Samples** 

Resources

Accessories

Agency Approvals

Agency	Agency File Number
71	E230531

## **Maximum Ratings and Thermal Characteristics**

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

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10/1000µs Test Waveform (Fig.1) (Note 1)	P <sub>PPM</sub>	500	W
Steady State Power Dissipation on Infinite Heat Sink at $T_L$ =75°C )	P <sub>D</sub>	3.0	W
Operating Junction and Storage Temperature Range	$T_{J},\;T_{STG}$	-65 to 175	°C
Typical Thermal Resistance Junction to Lead	$R_{\theta JL}$	20	°C/W
Typical Thermal Resistance Junction to Ambient	$R_{\theta JA}$	75	°C/W

#### Note:

1. Non-repetitive current pulse , per Fig. 3 and derated above  $T_{_{\rm J}}$  (initial) = 25 $^{\circ}$ C per Fig. 2.

## **Description**

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

#### **Features & Benefits**

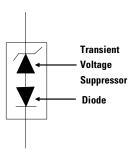
- 500W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%
- Glass passivated chip junction in DO-15 Package
- Fast response time: typically less than 1.0ps from 0 Volts to BV min
- Typical failure mode is short from over-specified voltage or current
- Whisker test is conducted based on JEDECJESD201A per its table 4a and 4c
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- ESD protection of data lines in accordance with IEC 61000-4-2
- Low incremental surge resistance

- EFT protection of data lines in accordance with IEC 61000-4-4
- High temperature to reflow soldering guaranteed: 260°C/30sec / 0.375"(9.5mm) lead length, 5 lbs., (2.3kg) tension
- Plastic package is flammability rated V-0 per Underwriters Laboratories
- Matte tin lead-free plated
- Ideal for data line applications
- Halogen free and RoHS compliant
- Pb-free E3 means 2nd level interconnect is Pb-free and the terminal finish material is tin(Sn) (IPC/JEDEC J-STD-609A.01)

# **Applications**

TVS devices are ideal for the protection of I/O interfaces, VCC bus and other vulnerable circuits used in telecom, computer, industrial and consumer electronic applications.

## Schematic





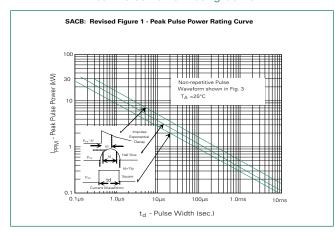
# **Electrical Characteristics** ( $T_A$ =25°C unless otherwise noted)

Part Number	Reverse Stand off Voltage V <sub>R</sub>	Break Volta	geV <sub>BR</sub> /)	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub>	Maximum Clamping Voltage V <sub>c</sub> @I <sub>pp</sub> (V)	Maximum Peak Pulse Current (Fig.3)	Maximum Junction Capacitance @ 0 Volts (pF)	Working Inverse Blocking Voltage V <sub>WIB</sub>	Inverse Blocking Leakage Current at I <sub>IB</sub> @ V <sub>WIB</sub> (mA)	Peak Inverse Blocking Voltage V <sub>PIB</sub>	Agency Approval
	(V)	MIN	MAX	(μΑ)	C O pp (C)	I <sub>PP</sub> (A)	o crono (p. )	(V)	(IIIA)	(V)	
SAC5.0	5.0	7.6	8.3	300	13.2	46.2	50	700	1	800	Χ
SAC6.0	6.0	7.9	9.3	300	12.2	43.1	50	700	1	800	Χ
SAC7.0	7.0	8.3	10.5	300	13.7	39.9	50	700	1	800	Χ
SAC8.0	8.0	8.9	10.9	100	13.9	37.8	50	700	1	800	Χ
SAC8.5	8.5	9.4	11.5	50	14.7	35.7	50	700	1	800	Χ
SAC10	10	11.1	13.6	5	17.2	30.5	50	700	1	800	Χ
SAC12	12	13.3	16.3	1	20.0	26.3	50	700	1	800	Χ
SAC15	15	16.7	20.4	1	25.0	21.0	50	700	1	800	Χ
SAC18	18	20.0	24.4	1	33.3	15.8	50	700	1	800	Χ
SAC22	22	24.4	29.8	1	35.7	14.7	50	700	1	800	Χ
SAC26	26	28.9	35.3	1	45.0	11.7	50	700	1	800	Χ
SAC30	30	33.3	41.1	1	50.0	10.5	50	700	1	800	Χ
SAC36	36	40.0	48.9	1	58.1	9.0	50	700	1	800	Χ
SAC45	45	50.0	61.1	1	73.5	7.1	50	700	1	800	Χ
SAC50	50	55.5	66.6	1	86.2	6.1	50	700	1	800	Χ
SAC55	55	60.5	66.9	1	87.0	5.7	50	700	1	800	Χ
SAC60	60	66.0	72.9	1	95.0	5.3	50	700	1	800	Χ
SAC65	65	71.5	79.0	1	103.0	4.9	50	700	1	800	Χ
SAC70	70	77.0	85.1	1	111.0	4.5	50	700	1	800	Χ
SAC75	75	82.5	91.2	1	119.0	4.2	50	700	1	800	Χ
SAC80	80	88.0	97.2	1	127.0	3.9	50	700	1	800	
SAC85	85	93.5	103.3	1	135.0	3.7	45	700	1	800	Χ
SAC90	90	99.0	109.4	1	143.0	3.5	45	700	1	800	Χ
SAC95	95	104.5	115.5	1	151.0	3.3	45	700	1	800	Χ
SAC100	100	110.0	121.0	1	158.0	3.2	40	700	1	800	Χ
SAC110	110	120.0	133.0	1	173.0	2.9	40	700	1	800	Χ
SAC120	120	131.0	145.0	1	189.0	2.6	40	700	1	800	Χ
SAC130	130	142.0	160.0	1	209.0	2.4	35	700	1	800	Χ
SAC140	140	153.0	170.0	1	219.0	2.3	35	700	1	800	Χ
SAC150	150	164.0	182.0	1	237.0	2.1	35	700	1	800	Χ

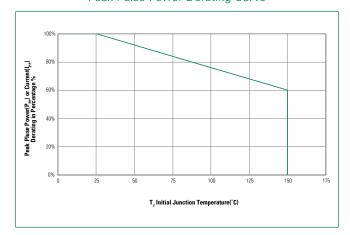


# **Ratings and Characteristic Curves** ( $T_A = 25$ °C unless otherwise noted)

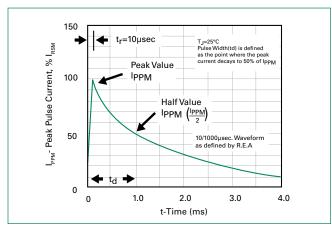
Figure 1: Peak Pulse Power Rating Curve



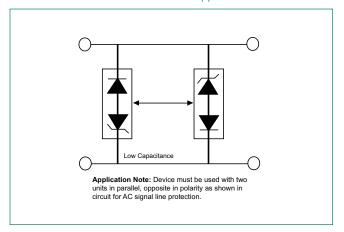
**Figure 2:** Peak Pulse Power Derating Curve



**Figure 3:** Pulse Waveform

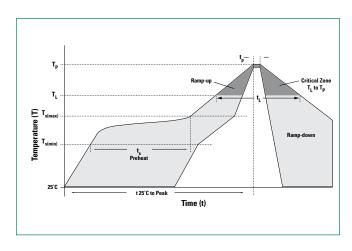


**Figure 4:** AC Line Protection Application



# **Soldering Parameters**

Reflow Con	dition	Lead-free assembly	
	-Temperature Min (T <sub>s(min)</sub> )	150°C	
Pre Heat	- Temperature Max (T <sub>s(max)</sub> )	200°C	
	-Time (min to max) (t <sub>s</sub> )	60 – 120 secs	
Average rar peak	mp up rate (Liquidus Temp (T <sub>A</sub> ) to	3°C/second max	
T <sub>S(max)</sub> to T <sub>A</sub>	- Ramp-up Rate	3°C/second max	
Reflow	-Temperature (T <sub>A</sub> ) (Liquidus)	217°C	
Retiow	-Time (min to max) (t <sub>s</sub> )	60 – 150 seconds	
Peak Tempe	rature (T <sub>p</sub> )	260 <sup>+0/-5</sup> °C	
Time withir	1 5°C of actual peak Temperature	30 seconds max	
Ramp-dow	n Rate	6°C/second max	
Time 25°C t	to peak Temperature (T <sub>P</sub> )	8 minutes Max.	
Do not exce	eed	260°C	



## Flow/Wave Soldering (Solder Dipping)

Peak Temperature :	265°C
Dipping Time :	10 seconds
Soldering :	1 time

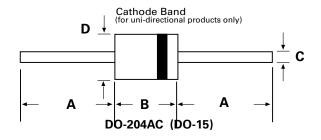
## **Physical Specifications**

Weight	0.015oz., 0.4g
Case	JEDEC DO-204AC (DO-15) molded plastic body over passivated junction.
Polarity	Color band denotes the cathode except Bipolar.
Terminal	Matte Tin axial leads, solderable per JESD22-B102.

## **Environmental Specifications**

High Temp. Storage	JESD22-A103		
HTRB	JESD22-A108		
Temperature Cycling	JESD22-A104		
H3TRB	JESD22-A101		
RSH	JESD22-B106		

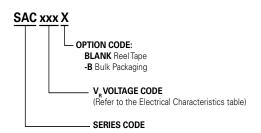
## **Dimensions**



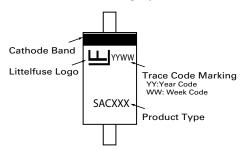
Dimensions	Incl	hes	Millimeters	
	Min	Max	Min	Max
А	1.000	-	25.40	-
В	0.230	0.300	5.80	7.60
С	0.028	0.034	0.71	0.86
D	0.104	0.140	2.60	3.60



## **Part Numbering System**



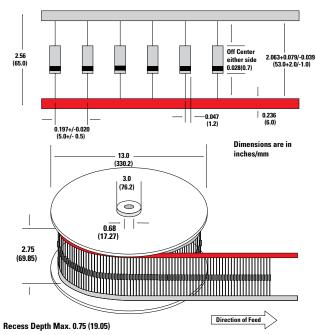
## Part Marking System



#### **Packaging**

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
SACxxxXX	DO-204AC	4000	Tape & Reel	EIA STD RS-296
SACxxxXX-B	DO-204AC	1000	BULK	Littelfuse Spec.

## **Tape and Reel Specification**



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