

## Surface Mount Transient Voltage Suppressors (TVS)

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

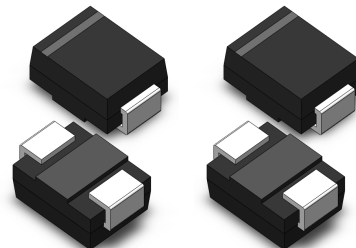
### Description

The SACB 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

Uni-directional



### 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 | Device Marking Code | 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>IB</sub> @V <sub>WIB</sub> (mA) | Peak Inverse Voltage V <sub>PIB</sub> (V) |
|-------------|---------------------|------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------|---------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------|
|             |                     |                                                | MIN                                                          |                                                               |                                                              |                                                |                                       |                                                       |                                                                         |                                           |
| SACB5.0     | SAD                 | 5.0                                            | 7.60                                                         | 300                                                           | 10.0                                                         | 44.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB6.0     | SAE                 | 6.0                                            | 7.90                                                         | 300                                                           | 11.2                                                         | 41.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB7.0     | SAF                 | 7.0                                            | 8.33                                                         | 300                                                           | 12.6                                                         | 38.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB8.0     | SAG                 | 8.0                                            | 8.89                                                         | 100                                                           | 13.4                                                         | 36.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB8.5     | SAH                 | 8.5                                            | 9.44                                                         | 50                                                            | 14.0                                                         | 34.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB10      | SAK                 | 10.0                                           | 11.10                                                        | 5                                                             | 16.3                                                         | 29.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB12      | SAL                 | 12.0                                           | 13.30                                                        | 5                                                             | 19.0                                                         | 25.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB15      | SAM                 | 15.0                                           | 16.67                                                        | 5                                                             | 23.6                                                         | 20.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB18      | SAN                 | 18.0                                           | 20.00                                                        | 5                                                             | 28.8                                                         | 15.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB22      | SAP                 | 22.0                                           | 24.40                                                        | 5                                                             | 35.4                                                         | 14.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB26      | SAQ                 | 26.0                                           | 28.90                                                        | 5                                                             | 42.3                                                         | 11.1                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB30      | SAR                 | 30.0                                           | 33.30                                                        | 5                                                             | 48.6                                                         | 10.0                                           | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB36      | SAS                 | 36.0                                           | 40.00                                                        | 5                                                             | 60.0                                                         | 8.6                                            | 45                                    | 75                                                    | 1                                                                       | 100                                       |
| SACB45      | SAT                 | 45.0                                           | 50.00                                                        | 5                                                             | 77.0                                                         | 6.8                                            | 45                                    | 150                                                   | 1                                                                       | 200                                       |
| SACB50      | SAU                 | 50.0                                           | 55.50                                                        | 5                                                             | 88.0                                                         | 5.8                                            | 45                                    | 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

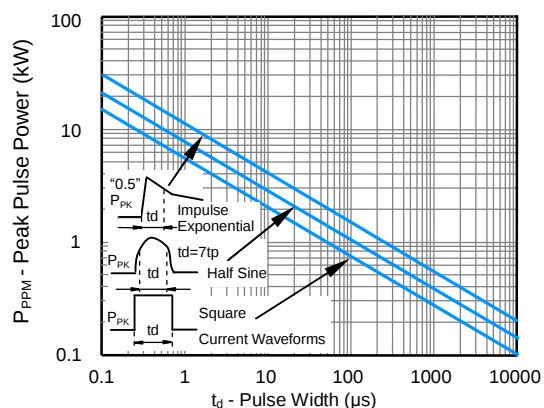


Figure 2 - Pulse Derating Curve

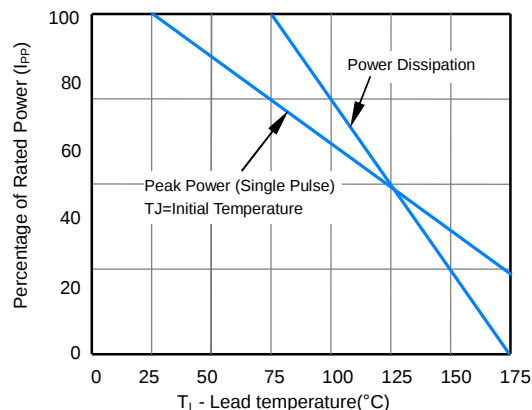


Figure 3 - Pulse Waveform

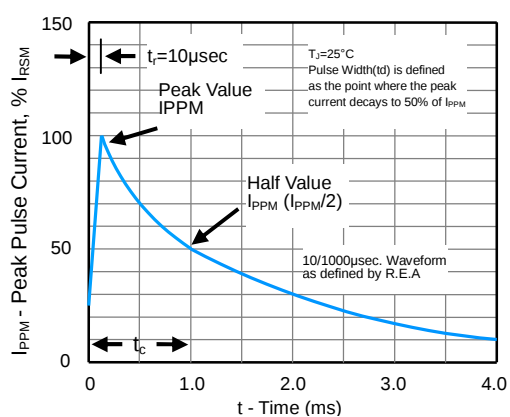
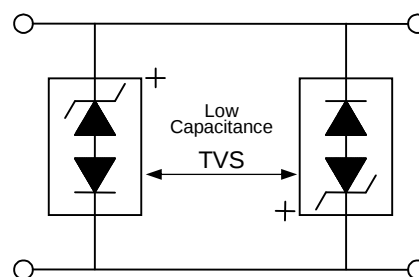


Figure 4 - AC Line Protection Application



**Application Note:** Device must be used with two units in parallel, opposite in polarity as shown in circuit for AC signal line protection.

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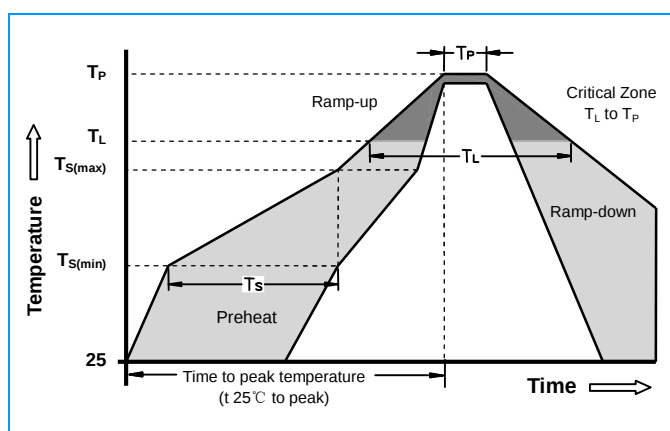
### Physical Specifications

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| <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

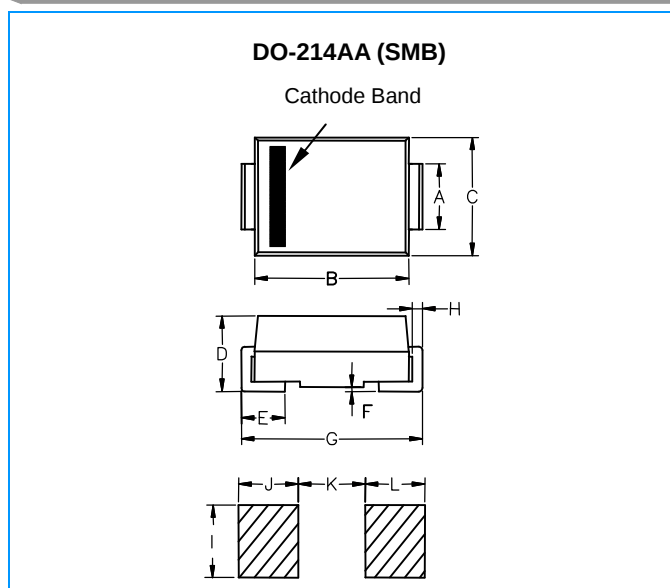
|                           |             |
|---------------------------|-------------|
| <b>Temperature Cycle</b>  | JESD22-A104 |
| <b>Pressure Cooker</b>    | JESD22-A102 |
| <b>High Temp. Storage</b> | JESD22-A103 |
| <b>HTRB</b>               | JESD22-A108 |
| <b>Thermal Shock</b>      | JESD22-A106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

### Soldering Parameters



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

### Dimensions

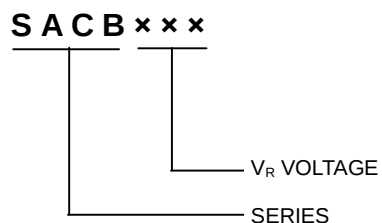


| Dimensions | Inches |       | Millimeters |       |
|------------|--------|-------|-------------|-------|
|            | Min    | Max   | Min         | Max   |
| A          | 0.077  | 0.087 | 1.960       | 2.200 |
| B          | 0.171  | 0.191 | 4.350       | 4.850 |
| C          | 0.130  | 0.155 | 3.300       | 3.940 |
| D          | 0.084  | 0.096 | 2.130       | 2.440 |
| E          | 0.030  | 0.060 | 0.750       | 1.520 |
| F          | -      | 0.008 | -           | 0.203 |
| G          | 0.201  | 0.216 | 5.100       | 5.500 |
| H          | 0.006  | 0.012 | 0.152       | 0.305 |
| I          | 0.089  | -     | 2.260       | -     |
| J          | 0.085  | -     | 2.160       | -     |
| K          | -      | 0.107 | -           | 2.740 |
| L          | 0.085  | -     | 2.160       | -     |

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### Part Numbering



### Packaging

| Part Number | Component Package | Quantity | Packaging                | Option | Packaging Specification |
|-------------|-------------------|----------|--------------------------|--------|-------------------------|
| SACBXXX     | DO-214AA(SMB)     | 500      | Tape & Reel -12mm/7"tape |        | EIA STD RS-481          |

### Tape and Reel Specifications

