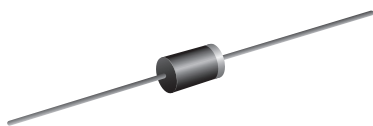


# Low Capacitance TRANSZORB® Transient Voltage Suppressors



DO-15 (DO-204AC)

## FEATURES

- Glass passivated chip junction
- 500 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT

## TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, and telecommunication.

## MECHANICAL DATA

**Case:** DO-15 (DO-204AC)

Molded epoxy over passivated body

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant and commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** color band denotes cathode end

| PRIMARY CHARACTERISTICS |                  |
|-------------------------|------------------|
| $V_{WM}$                | 5.0 V to 50 V    |
| $V_{BR}$                | 7.6 V to 55.5 V  |
| $P_{PPM}$               | 500 W            |
| $P_D$                   | 3.0 W            |
| $T_J$ max.              | 175 °C           |
| Polarity                | Unidirectional   |
| Package                 | DO-15 (DO-204AC) |

| MAXIMUM RATINGS ( $T_A = 25$ °C unless otherwise noted)                     |                |                |      |
|-----------------------------------------------------------------------------|----------------|----------------|------|
| PARAMETER                                                                   | SYMBOL         | VALUE          | UNIT |
| Peak pulse power dissipation with a 10/1000 $\mu$ s waveform <sup>(1)</sup> | $P_{PPM}$      | 500            | W    |
| Peak pulse current with a 10/1000 $\mu$ s waveform (fig. 3) <sup>(1)</sup>  | $I_{PPM}$      | See next table | A    |
| Power dissipation on infinite heatsink at $T_L = 75$ °C (fig. 2)            | $P_D$          | 3.0            | W    |
| Operating junction and storage temperature range                            | $T_J, T_{STG}$ | -55 to +175    | °C   |

### Note

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25$  °C per fig. 2

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

| PART NUMBER | BREAKDOWN VOLTAGE AT $I_T = 1.0\text{ mA}$<br>$V_{BR}\text{ (V)}$ | STAND-OFF VOLTAGE <sup>(1)</sup><br>$V_{WM}\text{ (V)}$ | MAXIMUM REVERSE LEAKAGE AT $V_{WM}$<br>$I_D\text{ (}\mu\text{A)}$ | MAXIMUM CLAMPING VOLTAGE AT $I_{PP} = 5.0\text{ A}$<br>$V_C\text{ (V)}$ | MAXIMUM PEAK PULSE CURRENT PER FIG. 3<br>$I_{PP}\text{ (A)}$ | MAXIMUM JUNCTION CAPACITANCE AT 0 V<br>$C_J\text{ (pF)}$ | WORKING INVERSE BLOCKING VOLTAGE<br>$V_{WIB}\text{ (V)}$ | INVERSE BLOCKING LEAKAGE CURRENT<br>$V_{WIB}\text{ } I_{IB}\text{ (mA)}$ | PEAK INVERSE BLOCKING VOLTAGE<br>$V_{PIB}\text{ (V)}$ |
|-------------|-------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------|
|             | MIN.                                                              |                                                         |                                                                   |                                                                         |                                                              |                                                          |                                                          |                                                                          |                                                       |
| SAC5.0      | 7.60                                                              | 5                                                       | 300                                                               | 10.0                                                                    | 44                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC6.0      | 7.90                                                              | 6                                                       | 300                                                               | 11.2                                                                    | 41                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC7.0      | 8.33                                                              | 7                                                       | 300                                                               | 12.6                                                                    | 38                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC8.0      | 8.89                                                              | 8                                                       | 100                                                               | 13.4                                                                    | 36                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC8.5      | 9.44                                                              | 8.5                                                     | 50                                                                | 14.0                                                                    | 34                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC10       | 11.10                                                             | 10                                                      | 5.0                                                               | 16.3                                                                    | 29                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC12       | 13.30                                                             | 12                                                      | 5.0                                                               | 19.0                                                                    | 25                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC15       | 16.70                                                             | 15                                                      | 5.0                                                               | 23.6                                                                    | 20                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC18       | 20.00                                                             | 18                                                      | 5.0                                                               | 28.8                                                                    | 15                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC22       | 24.40                                                             | 22                                                      | 5.0                                                               | 35.4                                                                    | 14                                                           | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC26       | 28.90                                                             | 26                                                      | 5.0                                                               | 42.3                                                                    | 11.1                                                         | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC30       | 33.30                                                             | 30                                                      | 5.0                                                               | 48.6                                                                    | 10.0                                                         | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC36       | 40.00                                                             | 36                                                      | 5.0                                                               | 60.0                                                                    | 8.6                                                          | 50                                                       | 75                                                       | 1.0                                                                      | 100                                                   |
| SAC45       | 50.00                                                             | 45                                                      | 5.0                                                               | 77.0                                                                    | 6.8                                                          | 50                                                       | 150                                                      | 1.0                                                                      | 200                                                   |
| SAC50       | 55.50                                                             | 50                                                      | 5.0                                                               | 88.0                                                                    | 5.8                                                          | 50                                                       | 150                                                      | 1.0                                                                      | 200                                                   |

**Note**

<sup>(1)</sup> Non-repetitive current pulse, per fig. 3 and derated above  $T_A = 25\text{ }^{\circ}\text{C}$  per fig. 2

**ORDERING INFORMATION** (Example)

| PREFERRED PIN | UNIT WEIGHT (g) | PREFERRED PACKAGE CODE | BASE QUANTITY | DELIVERY MODE                    |
|---------------|-----------------|------------------------|---------------|----------------------------------|
| SAC5.0-E3/54  | 0.432           | 54                     | 4000          | 13" diameter paper tape and reel |

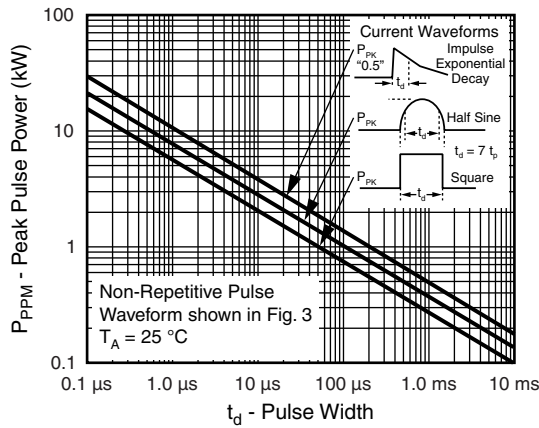
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Peak Pulse Power Rating Curve

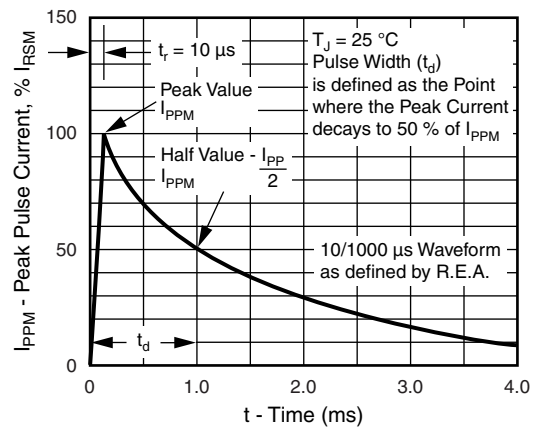


Fig. 3 - Pulse Waveform

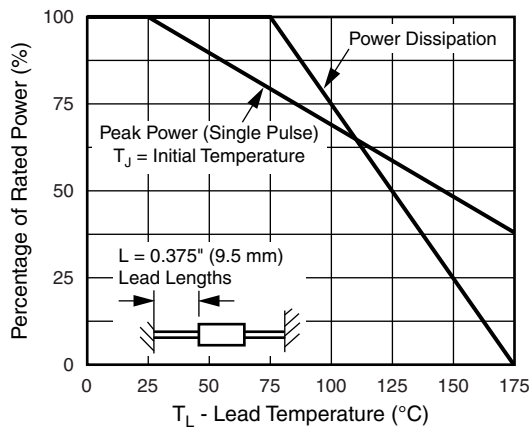
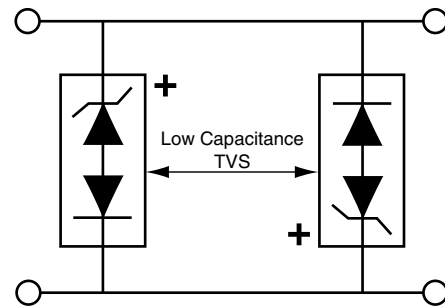
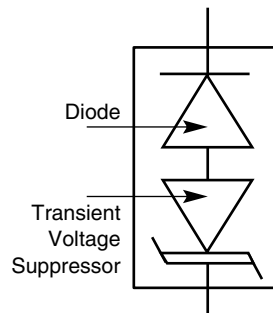


Fig. 2 - Power Derating Curve



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

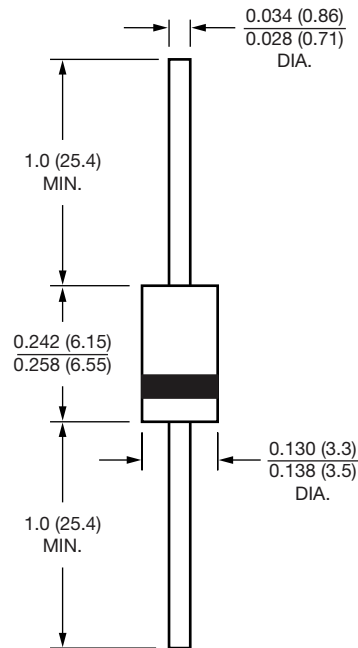
Fig. 4 - AC Line Protection Application

**SCHEMATIC**




**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**DO-15 (DO-204AC)**



**Note**

- Dimensions of mold length and diameter do not include mold flash and gate burr, mold flash shall not exceed 0.015 inch per side. These dimensions are measured at the outermost extreme of the plastic body



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