

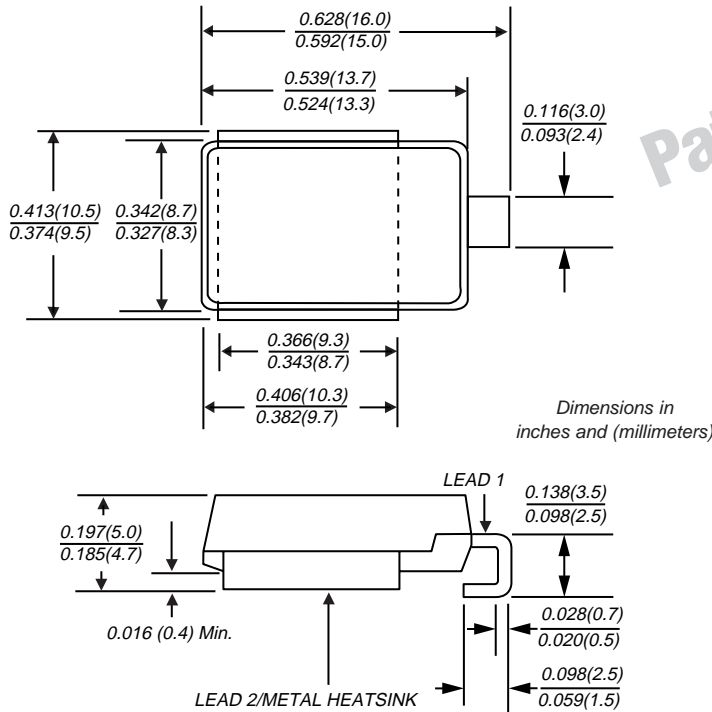


Surface Mount Automotive Transient Voltage Suppressors

DO-218AB

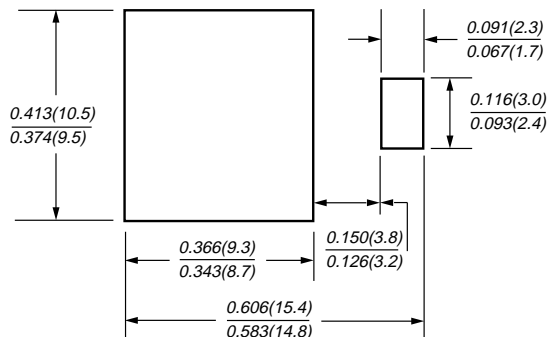
Stand-off Voltage 10 to 36V

Peak Pulse Power 3600W (10/1000μs)
2800W (10/10,000μs)



Patented*

Mounting Pad Layout



*Patent #s:
4,980,315
5,166,769
5,278,095

Mechanical Data

- Case:** Molded plastic body, surface mount with heatsink integrally mounted in the encapsulation
- Terminals:** Plated, solderable per MIL-STD-750, Method 2026
- Polarity:** Heatsink is anode
- Mounting Position:** Any
- Weight:** 0.091 oz., 2.58 g
- Packaging codes/options:**
 - 2D/750 per 13" Reel (16mm Tape), anode towards sprocket hole, 4.5K/box
 - 2E/750 per 13" Reel (16mm Tape), cathode towards sprocket hole, 4.5K/box

Features

- Ideally suited for load dump protection
- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- High temperature stability due to unique oxide passivation and patented PAR[®] construction
- Integrally molded heatsink provides a very low thermal resistance for maximum heat dissipation
- Low leakage current at T_J = 175°C
- High temperature soldering guaranteed: 260°C for 10 seconds at terminals
- Meets ISO7637-2 surge spec.
- Low forward voltage drop

Maximum Ratings and Thermal Characteristics (T_C = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------------------------------|--------------|------|
| Peak pulse power dissipation with 10/1000μs waveform 10/10,000μs waveform | PPPM | 3600 2800 | W |
| Steady state power dissipation | P _D | 5.0 | W |
| Peak pulse current with a 10/1000μs waveform ⁽¹⁾ | I _{PPM} | See Table 1 | A |
| Peak forward surge current, 8.3ms single half sine-wave | I _{FSM} | 500 | A |
| Typical thermal resistance junction to case | R _{θJC} | 1.0 | °C/W |
| Operating junction and storage temperature range | T _J , T _{STG} | -55 to +175 | °C |

Notes: (1) Non-repetitive current pulse derated above T_A = 25°C

Electrical Characteristics (T_C = 25°C unless otherwise noted)

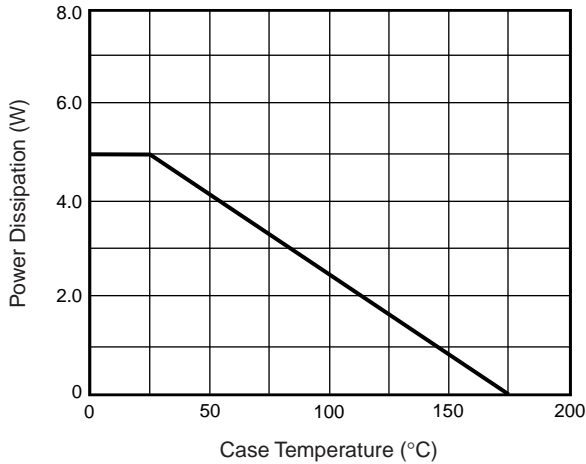
| Device Type | Breakdown Voltage V _(BR) (V) | | Test Current I _T (mA) | Stand-off Voltage V _{WM} (V) | Maximum Reverse Leakage at V _{WM} I _D (μA) | Maximum Reverse Leakage at V _{WM} T _C = 175°C I _D (μA) | Max. Peak Pulse Current at 10/1000μs Waveform (A) | Maximum Clamping Voltage at I _{PPM} V _C (V) |
|-------------|---|------|--|--|---|--|--|--|
| | Min. | Max. | | | | | | |
| SM5S10 | 11.1 | 13.6 | 5.0 | 10.0 | 15 | 250 | 191 | 18.8 |
| SM5S10A | 11.1 | 12.3 | 5.0 | 10.0 | 15 | 250 | 212 | 17.0 |
| SM5S11 | 12.2 | 14.9 | 5.0 | 11.0 | 10 | 150 | 179 | 20.1 |
| SM5S11A | 12.2 | 13.5 | 5.0 | 11.0 | 10 | 150 | 198 | 18.2 |
| SM5S12 | 13.3 | 16.3 | 5.0 | 12.0 | 10 | 150 | 164 | 22.0 |
| SM5S12A | 13.3 | 14.7 | 5.0 | 12.0 | 10 | 150 | 181 | 19.9 |
| SM5S13 | 14.4 | 17.6 | 5.0 | 13.0 | 10 | 150 | 151 | 23.8 |
| SM5S13A | 14.4 | 15.9 | 5.0 | 13.0 | 10 | 150 | 167 | 21.5 |
| SM5S14 | 15.6 | 19.1 | 5.0 | 14.0 | 10 | 150 | 140 | 25.8 |
| SM5S14A | 15.6 | 17.2 | 5.0 | 14.0 | 10 | 150 | 155 | 23.2 |
| SM5S15 | 16.7 | 20.4 | 5.0 | 15.0 | 10 | 150 | 134 | 26.9 |
| SM5S15A | 16.7 | 18.5 | 5.0 | 15.0 | 10 | 150 | 148 | 24.4 |
| SM5S16 | 17.8 | 21.8 | 5.0 | 16.0 | 10 | 150 | 125 | 28.8 |
| SM5S16A | 17.8 | 19.7 | 5.0 | 16.0 | 10 | 150 | 138 | 26.0 |
| SM5S17 | 18.9 | 23.1 | 5.0 | 17.0 | 10 | 150 | 118 | 30.5 |
| SM5S17A | 18.9 | 20.9 | 5.0 | 17.0 | 10 | 150 | 130 | 27.6 |
| SM5S18 | 20.0 | 24.4 | 5.0 | 18.0 | 10 | 150 | 112 | 32.2 |
| SM5S18A | 20.0 | 22.1 | 5.0 | 18.0 | 10 | 150 | 123 | 29.2 |
| SM5S20 | 22.2 | 27.1 | 5.0 | 20.0 | 10 | 150 | 101 | 35.8 |
| SM5S20A | 22.2 | 24.5 | 5.0 | 20.0 | 10 | 150 | 111 | 32.4 |
| SM5S22 | 24.4 | 29.8 | 5.0 | 22.0 | 10 | 150 | 91 | 39.4 |
| SM5S22A | 24.4 | 26.9 | 5.0 | 22.0 | 10 | 150 | 101 | 35.5 |
| SM5S24 | 26.7 | 32.6 | 5.0 | 24.0 | 10 | 150 | 84 | 43.0 |
| SM5S24A | 26.7 | 29.5 | 5.0 | 24.0 | 10 | 150 | 93 | 38.9 |
| SM5S26 | 28.9 | 35.3 | 5.0 | 26.0 | 10 | 150 | 77 | 46.6 |
| SM5S26A | 28.9 | 31.9 | 5.0 | 26.0 | 10 | 150 | 86 | 42.1 |
| SM5S28 | 31.1 | 38.0 | 5.0 | 28.0 | 10 | 150 | 72 | 50.1 |
| SM5S28A | 31.1 | 34.4 | 5.0 | 28.0 | 10 | 150 | 79 | 45.4 |
| SM5S30 | 33.3 | 40.7 | 5.0 | 30.0 | 10 | 150 | 67 | 53.5 |
| SM5S30A | 33.3 | 36.8 | 5.0 | 30.0 | 10 | 150 | 74 | 48.4 |
| SM5S33 | 36.7 | 44.9 | 5.0 | 33.0 | 10 | 150 | 61 | 59.0 |
| SM5S33A | 36.7 | 40.6 | 5.0 | 33.0 | 10 | 150 | 68 | 53.3 |
| SM5S36 | 40.0 | 48.9 | 5.0 | 36.0 | 10 | 150 | 56 | 64.3 |
| SM5S36A | 40.0 | 44.2 | 5.0 | 36.0 | 10 | 150 | 62 | 58.1 |

Note: For all types maximum V_F = 2.0V at I_F = 100A measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

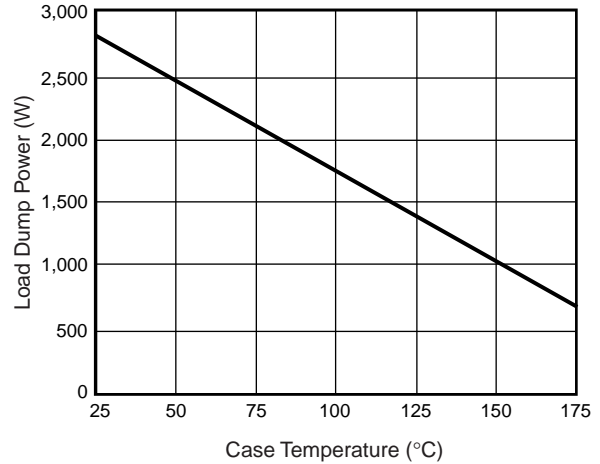


Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

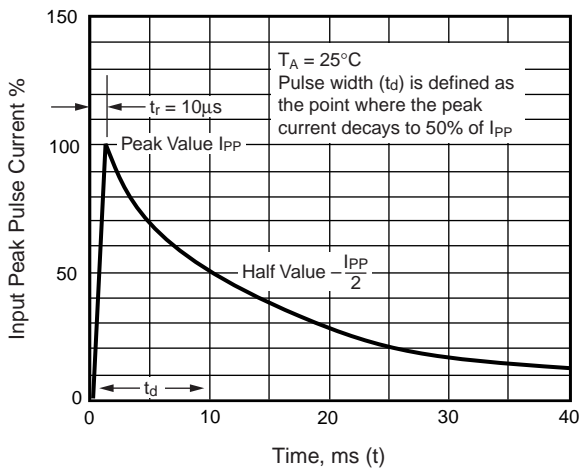
Power Derating Curve



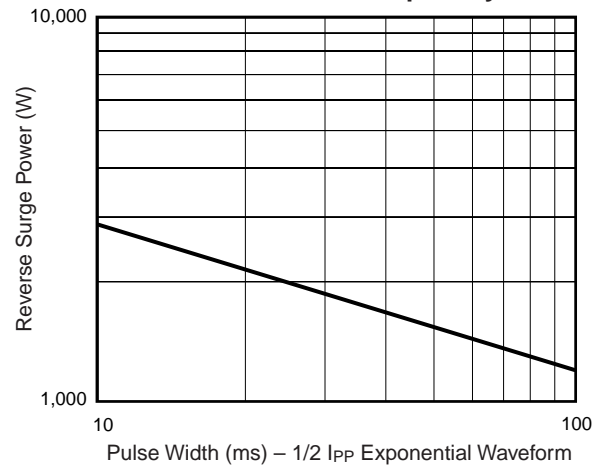
Load Dump Power Characteristics (10ms Exponential Waveform)



Pulse Waveform



Reverse Power Capability



Typical Transient Thermal Impedance

