

FEATURE

- ✧ Junction passivation optimized design passivated anisotropic rectifier technology.
- ✧ $T_J = 175\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement.
- ✧ Available in uni-directional polarity only.
- ✧ Low leakage current.
- ✧ Low forward voltage drop.
- ✧ High surge capability.
- ✧ Meets ISO7637-2 surge specification (varied by test condition).
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of $245\text{ }^\circ\text{C}$.



MECHANICAL DATE

- ✧ Case: DO-218AB, Molding compound meets UL 94 V-0 flammability rating Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified.
- ✧ Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102, HE3 suffix meets JESD 201 class 2 whisker test.
- ✧ Polarity: Heatsink is anode.
- ✧ Mounting Position: Any.

MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at $25\text{ }^\circ\text{C}$ ambient temperature unless otherwise specified.

| PARAMETER | | SYMBOL | VALUE | UNITS |
|---|---------------------------------------|-----------------|----------------|------------------|
| Peak pulse power dissipation | with 10/1000 μs waveform | P_{PPM} | 6600 | W |
| | with 10/10 000 μs waveform | | 5200 | |
| Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1) | | P_D | 8.0 | W |
| Peak pulse current with 10/1000 μs waveform | | $I_{PPM}^{(1)}$ | See next table | A |
| Peak forward surge current 8.3 ms single half sine-wave | | I_{FSM} | 700 | A |
| Operating junction and storage temperature range | | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ |

Notes:

(1) Non-repetitive current pulse derated above $T_A = 25\text{ }^\circ\text{C}$

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ELECTRICAL CHARACTERISTICS

| Part Number | BREAKDOWN VOLTAGE V_{BR} (V) | | TEST CURRENT | STAND-OFF VOLTAGE | MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (μA) | MAXIMUM REVERSE LEAKAGE AT V_{WM} $T_J = 175^\circ C$ I_D (μA) | MAX PEAK PULSE CURRENT AT 10/1000 μs WAVEFORM | MAXIMUM CLAMPING VOLTAGE AT I_{PPM} |
|-------------|--------------------------------|------|--------------|-------------------|---|---|--|---------------------------------------|
| | MIN. | MAX. | I_T (mA) | V_{WM} (V) | | | $I_{PPM}(A)$ | V_C (V) |
| SM8S10 | 11.1 | 13.6 | 5.0 | 10.0 | 15 | 250 | 351 | 18.8 |
| SM8S10A | 11.1 | 12.3 | 5.0 | 10.0 | 15 | 250 | 388 | 17.0 |
| SM8S11 | 12.2 | 14.9 | 5.0 | 11.0 | 10 | 150 | 328 | 20.1 |
| SM8S11A | 12.2 | 13.5 | 5.0 | 11.0 | 10 | 150 | 363 | 18.2 |
| SM8S12 | 13.3 | 16.3 | 5.0 | 12.0 | 10 | 150 | 300 | 22.0 |
| SM8S12A | 13.3 | 14.7 | 5.0 | 12.0 | 10 | 150 | 332 | 19.9 |
| SM8S13 | 14.4 | 17.6 | 5.0 | 13.0 | 10 | 150 | 277 | 23.8 |
| SM8S13A | 14.4 | 15.9 | 5.0 | 13.0 | 10 | 150 | 307 | 21.5 |
| SM8S14 | 15.6 | 19.1 | 5.0 | 14.0 | 10 | 150 | 256 | 25.8 |
| SM8S14A | 15.6 | 17.2 | 5.0 | 14.0 | 10 | 150 | 284 | 23.2 |
| SM8S15 | 16.7 | 20.4 | 5.0 | 15.0 | 10 | 150 | 245 | 26.9 |
| SM8S15A | 16.7 | 18.5 | 5.0 | 15.0 | 10 | 150 | 270 | 24.4 |
| SM8S16 | 17.8 | 21.8 | 5.0 | 16.0 | 10 | 150 | 229 | 28.8 |
| SM8S16A | 17.8 | 19.7 | 5.0 | 16.0 | 10 | 150 | 254 | 26.0 |
| SM8S17 | 18.9 | 23.1 | 5.0 | 17.0 | 10 | 150 | 216 | 30.5 |
| SM8S17A | 18.9 | 20.9 | 5.0 | 17.0 | 10 | 150 | 239 | 27.6 |
| SM8S18 | 20.0 | 24.4 | 5.0 | 18.0 | 10 | 150 | 205 | 32.2 |
| SM8S18A | 20.0 | 22.1 | 5.0 | 18.0 | 10 | 150 | 226 | 29.2 |
| SM8S20 | 22.2 | 27.1 | 5.0 | 20.0 | 10 | 150 | 184 | 35.8 |
| SM8S20A | 22.2 | 24.5 | 5.0 | 20.0 | 10 | 150 | 204 | 32.4 |
| SM8S22 | 24.4 | 29.8 | 5.0 | 22.0 | 10 | 150 | 168 | 39.4 |
| SM8S22A | 24.4 | 26.9 | 5.0 | 22.0 | 10 | 150 | 186 | 35.5 |
| SM8S24 | 26.7 | 32.6 | 5.0 | 24.0 | 10 | 150 | 153 | 43.0 |
| SM8S24A | 26.7 | 29.5 | 5.0 | 24.0 | 10 | 150 | 170 | 38.9 |
| SM8S26 | 28.9 | 35.3 | 5.0 | 26.0 | 10 | 150 | 142 | 46.6 |
| SM8S26A | 28.9 | 31.9 | 5.0 | 26.0 | 10 | 150 | 157 | 42.1 |
| SM8S28 | 31.1 | 38.0 | 5.0 | 28.0 | 10 | 150 | 132 | 50.1 |
| SM8S28A | 31.1 | 34.4 | 5.0 | 28.0 | 10 | 150 | 145 | 45.4 |
| SM8S30 | 33.3 | 40.7 | 5.0 | 30.0 | 10 | 150 | 123 | 53.5 |
| SM8S30A | 33.3 | 36.8 | 5.0 | 30.0 | 10 | 150 | 136 | 48.4 |
| SM8S33 | 36.7 | 44.9 | 5.0 | 33.0 | 10 | 150 | 112 | 59.0 |
| SM8S33A | 36.7 | 40.6 | 5.0 | 33.0 | 10 | 150 | 124 | 53.3 |
| SM8S36 | 40.0 | 48.9 | 5.0 | 36.0 | 10 | 150 | 103 | 64.3 |
| SM8S36A | 40.0 | 44.2 | 5.0 | 36.0 | 10 | 150 | 114 | 58.1 |
| SM8S40 | 44.4 | 54.3 | 5.0 | 40.0 | 10 | 150 | 92.4 | 71.4 |
| SM8S40A | 44.4 | 49.1 | 5.0 | 40.0 | 10 | 150 | 102 | 64.5 |
| SM8S43 | 47.8 | 58.4 | 5.0 | 43.0 | 10 | 150 | 86 | 76.7 |
| SM8S43A | 47.8 | 52.8 | 5.0 | 43.0 | 10 | 150 | 95.1 | 69.4 |

Note

For all types maximum $V_F = 1.8 V$ at $I_F = 100 A$ measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

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RATINGS AND CHARACTERISTIC CURVES (TA=25°C unless otherwise noted)

Figure 1 - Power Derating Curve

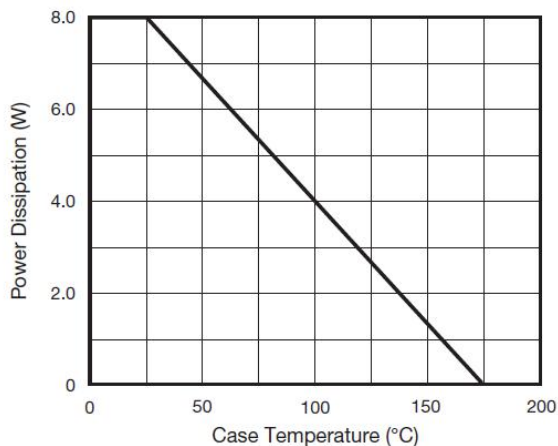


Figure 2 - Pulse Waveform

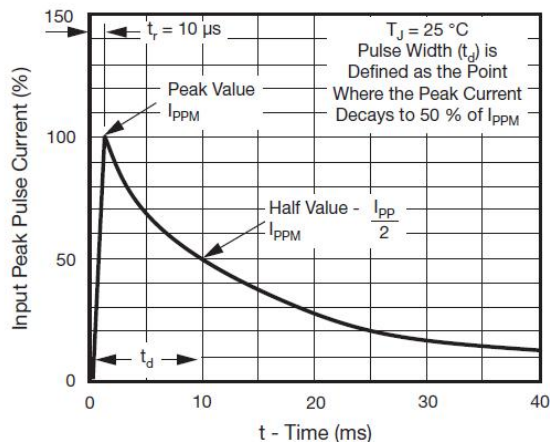


Figure 3 - Load Dump Power Characteristics (10 ms Exponential Waveform)

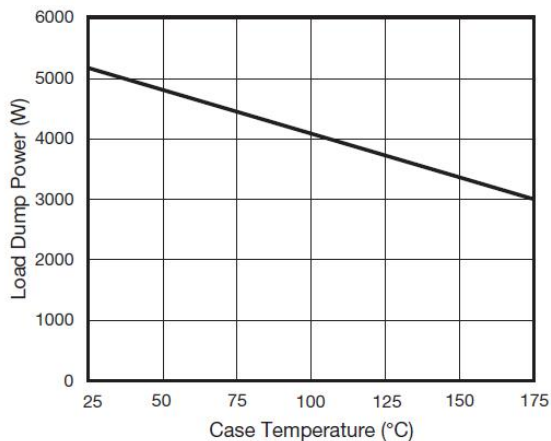


Figure 4 - Reverse Power Capability

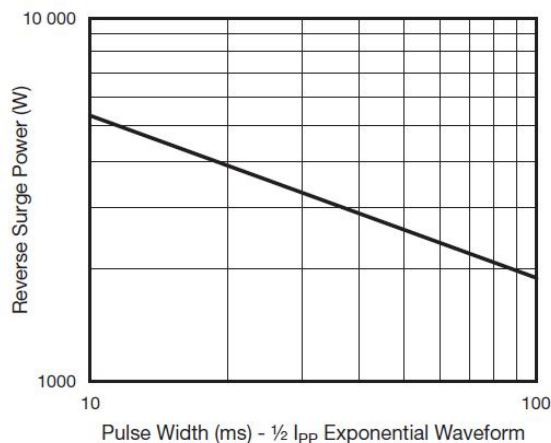


Figure 5 - Typical Transient Thermal Impedance

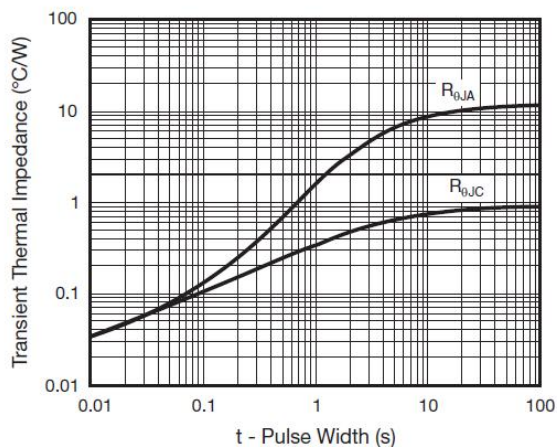
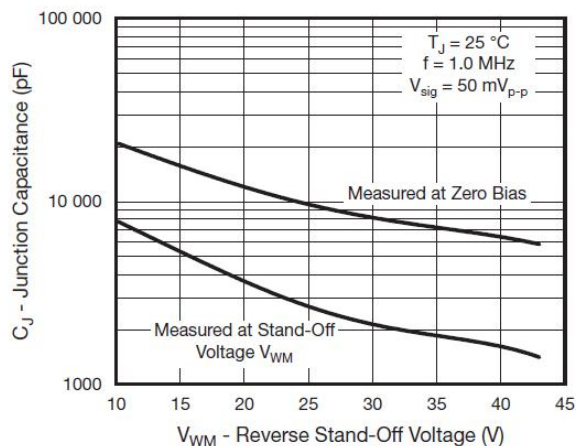
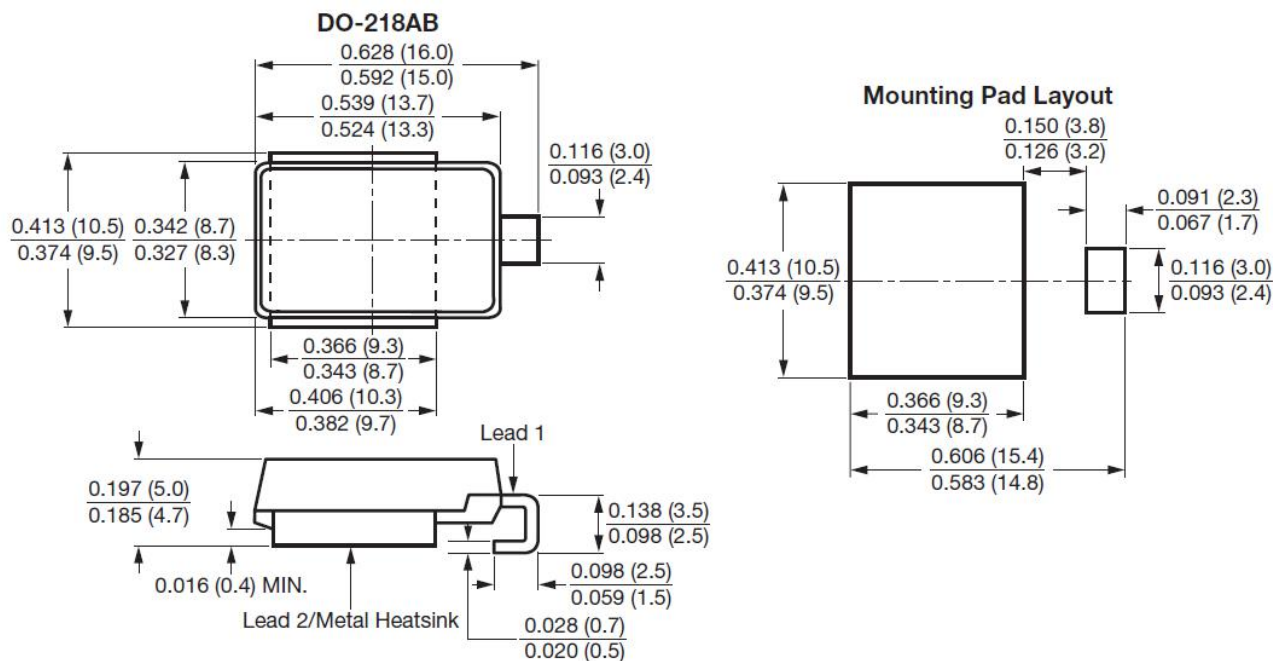


Figure 6 - Typical Junction Capacitance



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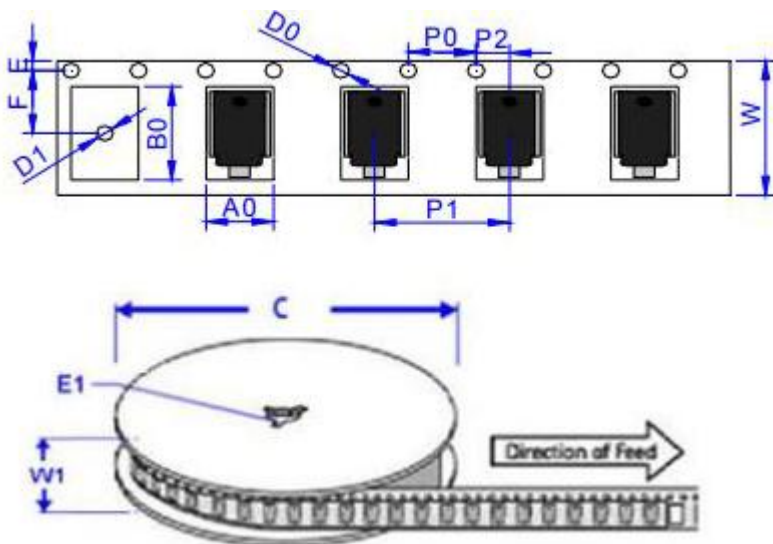
DIMENSIONS in inches (millimeters)



ORDERING INFORMATION

| PART No. | UNIT WEIGHT(g) (PCS) | REEL (PCS) | PER CARTON (PCS) | DESCRIPTION |
|----------|-------------------------|---------------|---------------------|-------------------|
| SM8SxxA | 2.985 | 750 | 3000 | 13 inch reel pack |
| SM8SxxA | 2.985 | 750 | 6000 | 13 inch reel pack |

TAPE AND REEL SPECIFICATION-DO-218AB



| Ref. | Dimensions | |
|------|-------------|---------------|
| | Millimeters | Inches |
| A0 | 10.80 ± 0.3 | 0.425 ± 0.012 |
| B0 | 16.13 ± 0.3 | 0.635 ± 0.012 |
| C | 330.0 ± 0.3 | 13.0 ± 0.012 |
| D0 | 1.55 ± 0.2 | 0.061 ± 0.008 |
| D1 | 1.55 ± 0.2 | 0.061 ± 0.008 |
| E | 1.75 ± 0.2 | 0.069 ± 0.008 |
| E1 | 13.30 ± 0.2 | 0.524 ± 0.008 |
| F | 11.50 ± 0.2 | 0.453 ± 0.008 |
| P0 | 4.00 ± 0.2 | 0.157 ± 0.008 |
| P1 | 16.00 ± 0.2 | 0.630 ± 0.008 |
| P2 | 2.00 ± 0.2 | 0.079 ± 0.008 |
| W | 24.00 ± 0.2 | 0.945 ± 0.008 |
| W1 | 25.85 ± 0.2 | 1.018 ± 0.008 |

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