

SM8S Series

Automotive Protection

Working Voltage: 14 to 43 V

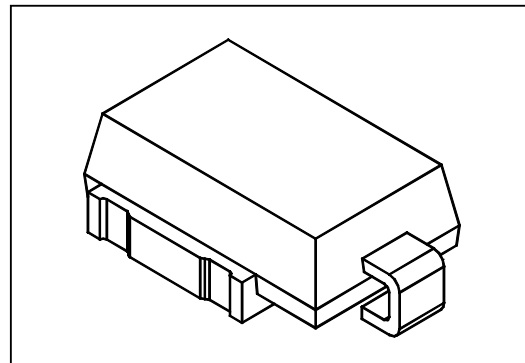
Peak Pulse Power: 6600 W

Surface Mount

Transient Voltage Suppressors

Features

- Glass passivated chip
- 6600 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %
- Meets ISO7637-2 5a surge specification
- Meet AEC-Q101 requirement
- Low leakage
- Uni-directional polarity
- Excellent clamping capability
- Very fast response time
- RoHS compliant



DO-218AB

Mechanical Data

- Case: DO-218AB
- Epoxy: UL 94V-0 rate flame retardant
- Polarity: Heatsink is anode

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

| Parameter | Symbol | Value | UNIT |
|---|----------------|----------------|------------------|
| Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾ | P_{PP} | 6600 | W |
| Peak power dissipation with a 10/10,000 μ s waveform | P_{PP} | 5200 | W |
| Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾ | I_{PP} | See Next Table | A |
| Power dissipation on infinite heatsink at $T_L = 25^\circ\text{C}$ | P_D | 8.0 | W |
| Peak forward surge current 8.3 ms single half sine- | I_{FSM} | 700 | A |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ |

Note:

(1)Non-repetitive current pulse per Fig.2 and derated above $T_A=25^\circ\text{C}$ per Fig.1

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

| Part Number (Uni) | Breakdown Voltage V_{BR} @ I_T | | | Maximum Reverse Leakage I_R @ V_{RWM} (uA) | Maximum I_R @ V_{RWM} $T_J=175$ (uA) | Working Peak Reverse Voltage V_{RWM} (V) | Maximum Reverse Surge Current I_{PP} (A) ⁽¹⁾ | Maximum Clamping Voltage V_C @ I_{PP} (V) |
|----------------------|------------------------------------|---------|------------|---|---|---|---|--|
| | Min (V) | Max (V) | I_T (mA) | | | | | |
| SM8Z14A | 15.60 | 17.20 | 5 | 10 | 150 | 14 | 284.0 | 23.2 |
| SM8Z15A | 16.70 | 18.50 | 5 | 10 | 150 | 15 | 270.0 | 24.4 |
| SM8Z16A | 17.80 | 19.70 | 5 | 10 | 150 | 16 | 254.0 | 26.0 |
| SM8Z17A | 18.90 | 20.90 | 5 | 10 | 150 | 17 | 239.0 | 27.6 |
| SM8Z18A | 20.00 | 22.10 | 5 | 10 | 150 | 18 | 226.0 | 29.2 |
| SM8Z20A | 22.20 | 24.50 | 5 | 10 | 150 | 20 | 204.0 | 32.4 |
| SM8Z22A | 24.40 | 26.90 | 5 | 10 | 150 | 22 | 186.0 | 35.5 |
| SM8Z24A | 26.70 | 29.50 | 5 | 10 | 150 | 24 | 170.0 | 38.9 |
| SM8Z26A | 28.90 | 31.90 | 5 | 10 | 150 | 26 | 157.0 | 42.1 |
| SM8Z28A | 31.10 | 34.40 | 5 | 10 | 150 | 28 | 145.0 | 45.4 |
| SM8Z30A | 33.30 | 36.80 | 5 | 10 | 150 | 30 | 136.0 | 48.4 |
| SM8Z33A | 36.70 | 40.60 | 5 | 10 | 150 | 33 | 124.0 | 53.3 |
| SM8Z36A | 40.00 | 44.20 | 5 | 10 | 150 | 36 | 114.0 | 58.1 |
| SM8Z40A | 44.40 | 49.10 | 5 | 10 | 150 | 40 | 102.0 | 64.5 |
| SM8Z43A | 47.80 | 52.80 | 5 | 10 | 150 | 43 | 95.1 | 69.4 |

NOTE: Surge current waveform is defined at 10/1000uS waveform

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

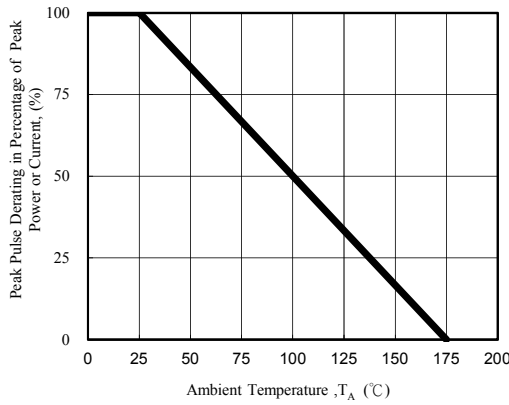


Fig. 1 - Pulse Derating Curve

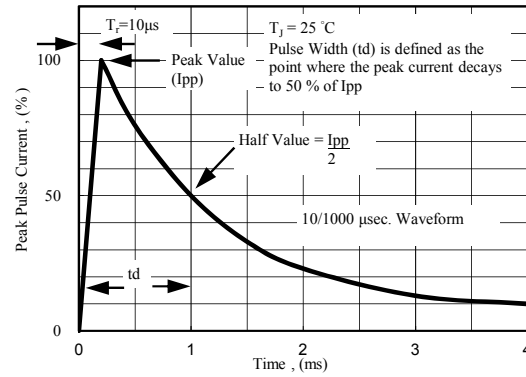


Fig. 2 - Pulse Waveform

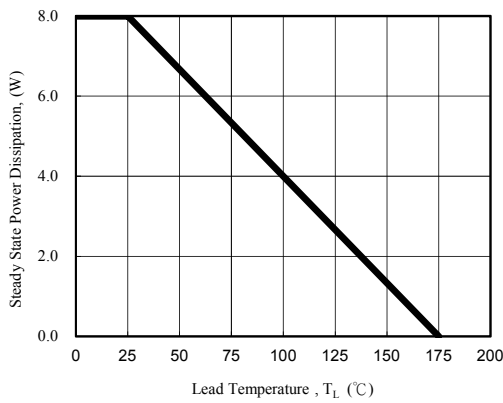


Fig. 3 - Steady State Power Derating Curve

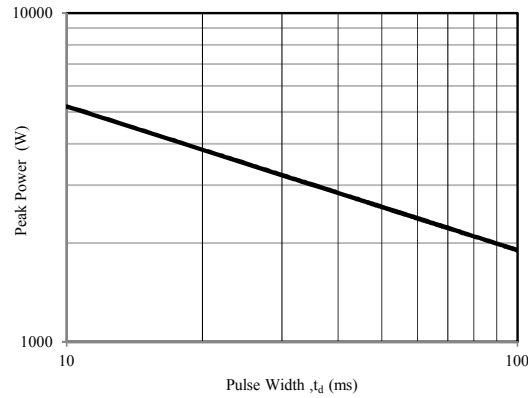
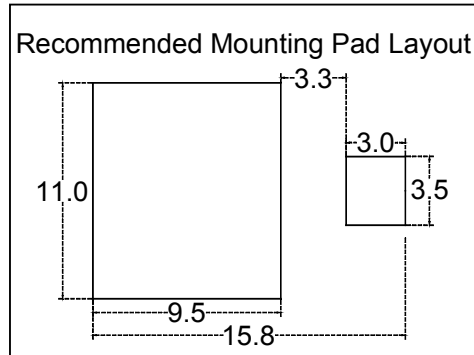
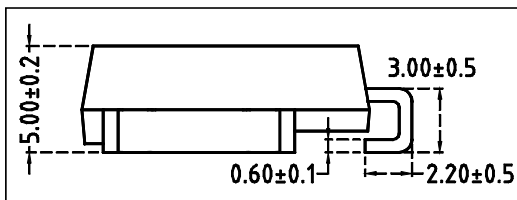
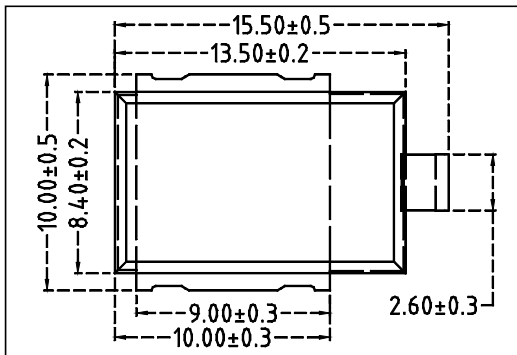
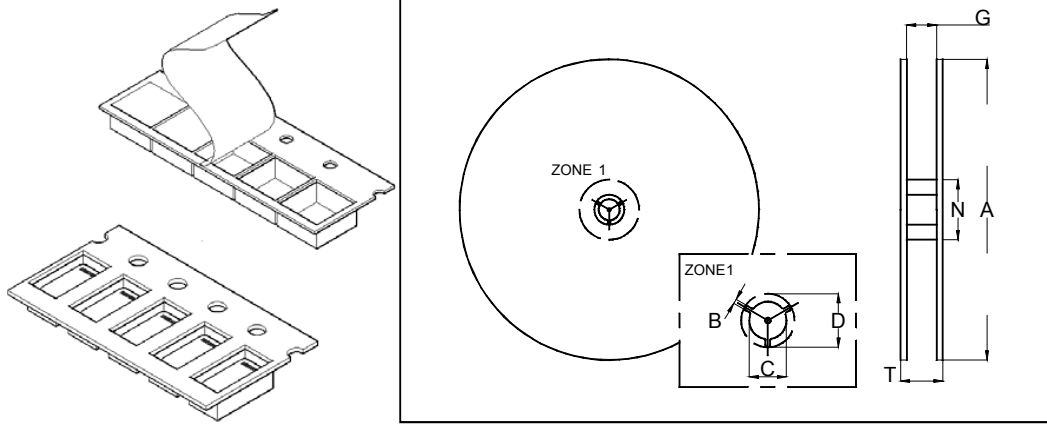


Fig. 4 - Peak Pulse Power Rating Curve

PACKAGE OUTLINE DIMENSIONS(millimeters)



SURFACE MOUNT TAPE AND REEL PACKAGING



DIMENSIONS in millimeters (inches)

| TAPE SIZE | A MAX. | B MIN. | C | D MIN. | N MIN. | G MAX. | T MAX. |
|---------------|---|-------------|--------------------------------|-----------------|-----------|--------------|-----------------|
| 24 mm (0.945) | 330 ± 2.0 (13.0 ± 0.079) 178 ± 2.0 (7.0 ± 0.079) | 1.5 (0.059) | 13.0 ± 0.20 (0.51 ± 0.0008) | 20.2 (0.795) | 50 (1.97) | 26.4 (1.039) | 30.4 (1.197) |

Recommended Soldering Parameters

| IR-Reflow Condition | | | |
|--------------------------|------------------|--------|--------|
| Pre Heat | Temp. min | 150 | °C |
| | Temp. max | 200 | °C |
| | Time(min to max) | 60-180 | sec |
| Ramp up rate (150-200°C) | | <3 | °C/sec |

| | | | |
|-------------------------------|--------------------|---------|--------|
| Reflow | Liquidus Temp. | >220 | °C |
| | Peak Temp. | 255-260 | sec |
| | Time(Liq. to Peak) | 60-150 | sec |
| Ramp up rate (220-200°C) | | <3 | °C/sec |
| Time within actual peak temp. | | 10-30 | sec |

| | | |
|--------------------------|-----|--------|
| Ramp down Rate | <5 | °C/sec |
| Time(25°C to Peak temp.) | <6 | min |
| Do not exceed | 280 | °C |

