

SM8S Series

Surface Mount — 6600W

HF **RoHS**



Description

The SM8S series is designed specifically to be used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump pulse protection.

Features

- Ideally suited for load dump protection
- Flammability Classification 94V-0
- 6600W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Integrally molded heatsink provides a very low thermal
- Resistance for maximum heat dissipation
- Low leakage current at $T_J = 150^{\circ}\text{C}$
- High temperature soldering guaranteed 260°C for 10 seconds at terminals
- Meets ISO7637-2 surge spec.
- Low forward voltage drop
- Meets RoHS2.0 (2011/65/EU) but Halogen
- Meets MSL level 1, per J-STD-020
- Meets AEC-Q101 requirement
- Unit Weight: 2.59g

Additional Information



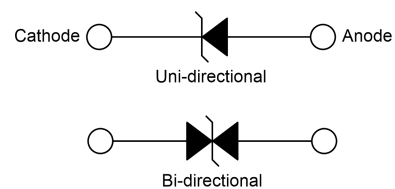
Maximum Ratings and Characteristics ($T_A=25^{\circ}\text{C}$)

| Rating | Symbol | Value |
|--|-----------------|---|
| Peak pulse power dissipation at 10/1000μs waveform (Note1, Fig.1) | P_{PPM} | 6600W |
| Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3) | I_{PPM} | See Table(A) |
| Steady state power dissipation at $T_L=25^{\circ}\text{C}$ (Fig.4) | $P_{M(AV)}$ | 8.0W |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load | I_{FSM} | 700A |
| Operating junction and Storage Temperature Ranges | T_J, T_{STG} | -55°C to $+150^{\circ}\text{C}$ |
| Typical thermal resistance junction to lead | $R_{\theta JC}$ | 0.9°C/W |

Notes:

1. Non-repetitive current pulse, per Fig.3 and derating above $T_A=25^{\circ}\text{C}$ per Fig.2.

Functional Diagram



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Electrical Characteristics (T_A=25°C)

| Part Number | | Reverse Stand-Off Voltage | Breakdown Voltage @I _T | | Test Current | Maximum Clamping Voltage @I _{PP} | Peak Pulse Current | Reverse Leakage @V _R |
|-------------|----------|---------------------------|-----------------------------------|-------------------------|---------------------|---|---------------------|---------------------------------|
| Uni. | Bi. | V _R (V) | V _{B Min.} (V) | V _{B Max.} (V) | I _T (mA) | V _C (V) | I _{PP} (A) | I _R (μA) |
| SM8S10A | SM8S10CA | 10.0 | 11.10 | 12.30 | 5 | 17.0 | 388.0 | 10 |
| SM8S11A | SM8S11CA | 11.0 | 12.20 | 13.50 | 5 | 18.2 | 363.0 | 10 |
| SM8S12A | SM8S12CA | 12.0 | 13.30 | 14.70 | 5 | 19.9 | 332.0 | 10 |
| SM8S13A | SM8S13CA | 13.0 | 14.40 | 15.90 | 5 | 21.5 | 307.0 | 10 |
| SM8S14A | SM8S14CA | 14.0 | 15.60 | 17.20 | 5 | 23.2 | 284.0 | 10 |
| SM8S15A | SM8S15CA | 15.0 | 16.70 | 18.50 | 5 | 24.4 | 270.0 | 10 |
| SM8S16A | SM8S16CA | 16.0 | 17.80 | 19.70 | 5 | 26.0 | 254.0 | 2 |
| SM8S17A | SM8S17CA | 17.0 | 18.90 | 20.90 | 5 | 27.6 | 239.0 | 2 |
| SM8S18A | SM8S18CA | 18.0 | 20.00 | 22.10 | 5 | 29.2 | 226.0 | 2 |
| SM8S20A | SM8S20CA | 20.0 | 22.20 | 24.50 | 5 | 32.4 | 204.0 | 2 |
| SM8S22A | SM8S22CA | 22.0 | 24.40 | 26.90 | 5 | 35.5 | 186.0 | 2 |
| SM8S24A | SM8S24CA | 24.0 | 26.70 | 29.50 | 5 | 38.9 | 170.0 | 2 |
| SM8S26A | SM8S26CA | 26.0 | 28.90 | 31.90 | 5 | 42.1 | 157.0 | 2 |
| SM8S28A | SM8S28CA | 28.0 | 31.10 | 34.40 | 5 | 45.4 | 145.0 | 2 |
| SM8S30A | SM8S30CA | 30.0 | 33.30 | 36.80 | 5 | 48.4 | 136.0 | 2 |
| SM8S33A | SM8S33CA | 33.0 | 36.70 | 40.60 | 5 | 53.3 | 124.0 | 2 |
| SM8S36A | SM8S36CA | 36.0 | 40.00 | 44.20 | 5 | 58.1 | 114.0 | 2 |
| SM8S40A | SM8S40CA | 40.0 | 44.40 | 49.10 | 5 | 64.5 | 102.0 | 2 |
| SM8S43A | SM8S43CA | 43.0 | 47.80 | 52.80 | 5 | 69.4 | 95.1 | 2 |

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

Figure 1: Peak Pulse Power Rating Curve

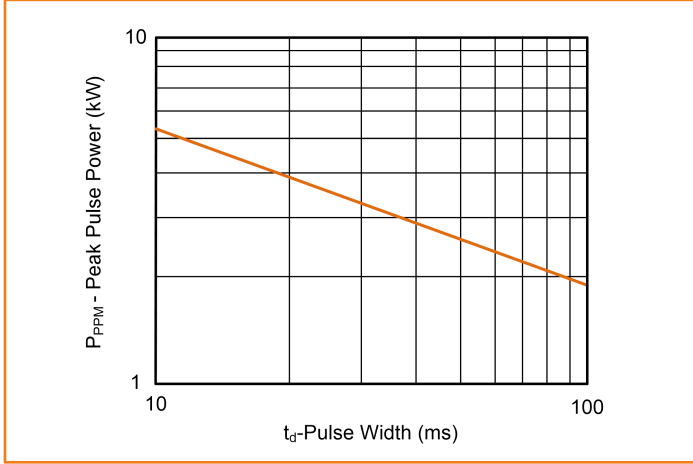


Figure 1: Pulse Derating Curve

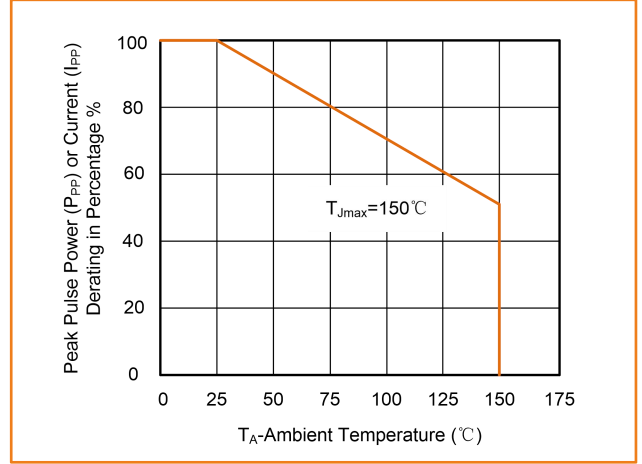


Figure 3: Pulse Waveform

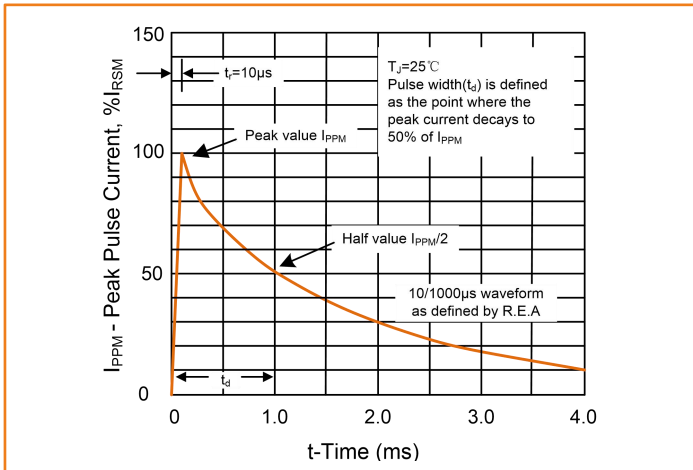
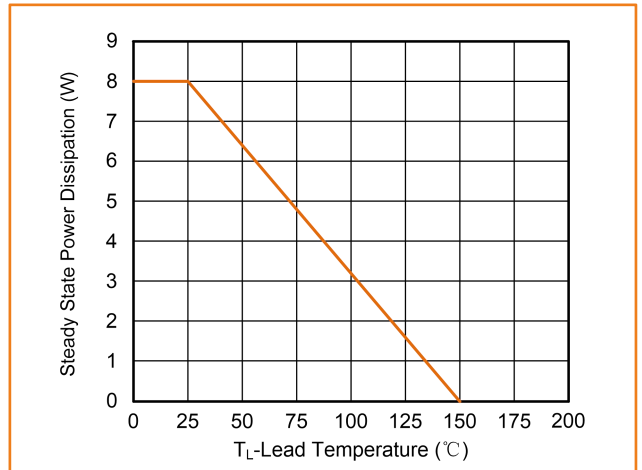
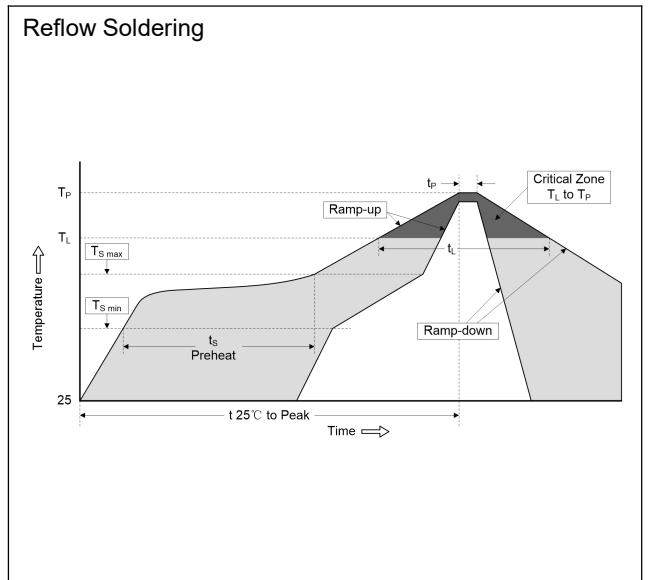


Figure 4: Steady State Power Dissipation Derating Curve



Soldering Parameters

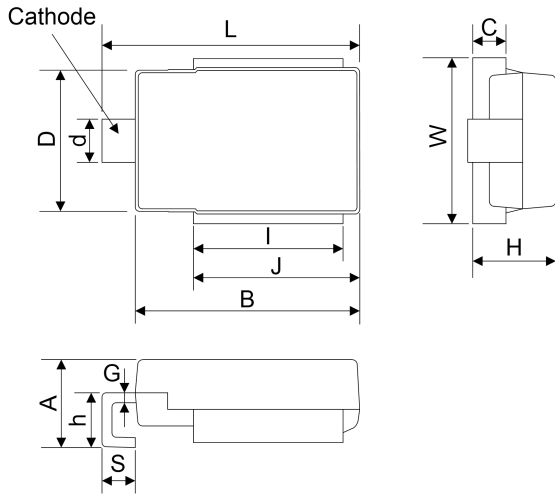
| Reflow Condition | | Lead-free |
|---|---------------------------------|---------------------------------|
| Pre Heat | -Temperature Min (T_{Smin}) | 150 $^\circ\text{C}$ |
| | -Temperature Max (T_{Smax}) | 200 $^\circ\text{C}$ |
| | -Time (min to max) (t_s) | 60 — 180 secs |
| Average ramp-up rate (T_L to T_p) | | 3 $^\circ\text{C}$ /second max. |
| T_{Smax} to T_L -Ramp-up Rate | | 3 $^\circ\text{C}$ /second max. |
| Time maintained above: | -Temperature (T_L) | 217 $^\circ\text{C}$ |
| | -Time (t_l) | 60-150 seconds |
| Peak Temperature (T_p) | | 260 $^\circ\text{C}$ |
| Time within 5 $^\circ\text{C}$ of actual Peak Temperature (t_p) | | 20-40 seconds |
| Ramp-down Rate | | 6 $^\circ\text{C}$ /second max. |
| Time 25 $^\circ\text{C}$ to Peak Temperature | | 8 minutes max. |



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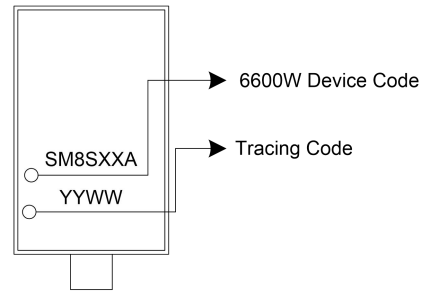
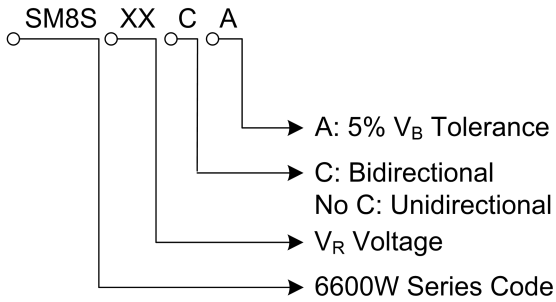
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Dimensions (DO-218AB)



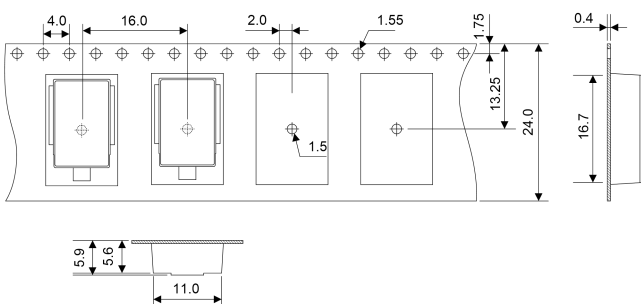
| Symbol | Millimeters | | Inches | |
|--------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 4.8 | 5.8 | 0.189 | 0.228 |
| B | 13.3 | 13.7 | 0.524 | 0.539 |
| C | 1.7 | 2.3 | 0.067 | 0.091 |
| D | 8.3 | 8.7 | 0.327 | 0.343 |
| d | 2.3 | 3.1 | 0.091 | 0.122 |
| G | 0.5 | 0.7 | 0.020 | 0.028 |
| H | 4.7 | 5.2 | 0.185 | 0.205 |
| h | 2.5 | 3.9 | 0.098 | 0.154 |
| I | 8.7 | 9.5 | 0.343 | 0.374 |
| J | 9.7 | 10.5 | 0.382 | 0.413 |
| W | 9.5 | 10.5 | 0.374 | 0.414 |
| S | 1.5 | 2.5 | 0.059 | 0.099 |
| L | 15.0 | 16.0 | 0.591 | 0.630 |

Part Number Code and Marking Code

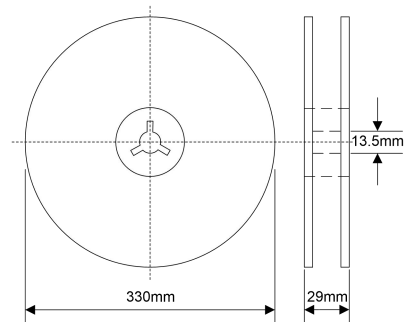


Packaging Specification

Tape



13 Inches Reel



Quantity: 5000pcs/reel

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[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)