

SD6S SERIES

GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR STAND-OFF VOLTAGE - 16 TO 43 Volts



FEATURES

- ⊙ Halogen-Free
- ⊙ RoHS compliant
- ⊙ Glass Passivated Junction technology
- ⊙ $T_J = 175\text{ }^\circ\text{C}$ capability suitable for high reliability
- ⊙ Both available in uni and bi-polar directional polarity
- ⊙ Low leakage current
- ⊙ Low forward voltage drop for uni-directional polarity
- ⊙ High surge capability
- ⊙ Meets ISO7637-2 & ISO16750-2 surge specification (varied by test condition)
- ⊙ AEC-Q101 qualified

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

MECHANICAL DATA

Case: DO-218. Molded plastic over glass passivated junction
Molding compound meets UL 94 V-0 flammability rating

Polarity: Heatsink is anode

Terminal: Solderable per MIL-STD-750, Method 2026

Mounting Position: Any

MAXIMUM RATINGS AND CHARACTERISTICS

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

| RATING | SYMBOL | VALUE | UNITS |
|--|----------------|-----------------|------------------|
| Peak Pulse Power Dissipation on 10/1000 μs waveform (Note 1) | P_{PPM} | 4600 | Watts |
| Peak Pulse Power Dissipation on 10/10000 μs waveform (Note 1) | P_{PPM} | 3600 | Watts |
| Peak Pulse Current of on 10/1000 μs waveform | I_{PPM} | SEE TABLE 1 | Amps |
| Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1) | $P_M (AV)$ | 6 | Watts |
| Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) | I_{FSM} | 600 | Amps |
| Operating junction and Storage Temperature Range | T_J, T_{STG} | -55 to + 175 | $^\circ\text{C}$ |

Note

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

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| 4.6KW PART NUMBER | | REVERSE STAND- OFF VOLTAGE $V_{RWM}(V)$ | BREAKDOWN VOLTAGE $V_{BR}(V) @ I_T$ | | TEST CURRENT $I_T (mA)$ | MAXIMUM CLAMPING VOLTAGE @ $I_{PP} V_C (V)$ | PEAK PULSE CURRENT AT 10/1000 $\mu s I_{pp} (A)$ | REVERSE LEAKAGE @ $V_{RWM} I_R (\mu A)$ |
|-------------------|----------|---|-------------------------------------|-------|-------------------------|---|--|---|
| UNI-POLAR | BI-POLAR | | MIN | MAX | | | | |
| SD6S16A | SD6S16CA | 16.0 | 17.80 | 19.70 | 5 | 26.0 | 177.0 | 10 |
| SD6S17A | SD6S17CA | 17.0 | 18.90 | 20.90 | 5 | 27.6 | 166.7 | 10 |
| SD6S18A | SD6S18CA | 18.0 | 20.00 | 22.10 | 5 | 29.2 | 157.5 | 10 |
| SD6S20A | SD6S20CA | 20.0 | 22.20 | 24.50 | 5 | 32.4 | 142.0 | 10 |
| SD6S22A | SD6S22CA | 22.0 | 24.40 | 26.90 | 5 | 35.5 | 129.6 | 10 |
| SD6S24A | SD6S24CA | 24.0 | 26.70 | 29.50 | 5 | 38.9 | 118.3 | 10 |
| SD6S26A | SD6S26CA | 26.0 | 28.90 | 31.90 | 5 | 42.1 | 109.3 | 10 |
| SD6S28A | SD6S28CA | 28.0 | 31.10 | 34.40 | 5 | 45.4 | 101.3 | 10 |
| SD6S30A | SD6S30CA | 30.0 | 33.30 | 36.80 | 5 | 48.4 | 95.0 | 10 |
| SD6S33A | SD6S33CA | 33.0 | 36.70 | 40.6 | 5 | 53.3 | 86.3 | 10 |
| SD6S36A | SD6S36CA | 36.0 | 40.00 | 44.2 | 5 | 58.1 | 79.2 | 10 |
| SD6S40A | SD6S40CA | 40.0 | 44.40 | 49.1 | 5 | 64.5 | 71.3 | 10 |
| SD6S43A | SD6S43CA | 43.0 | 47.80 | 52.8 | 5 | 69.4 | 66.3 | 10 |

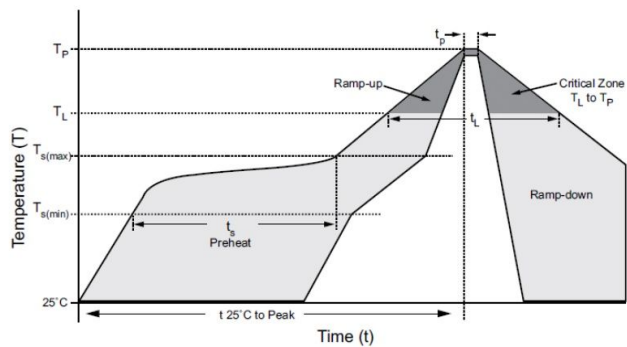
Note

- For uni-directional part, the maximum VF = 1.8 V at IF = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

Soldering Parameters

| Reflow Condition | | Lead-free assembly |
|--|---------------------------------------|-----------------------|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | 150°C |
| | -Temperature Max ($T_{s(max)}$) | 200°C |
| | -Time (min to max) (t_s) | 60 -120 secs |
| Average ramp up rate(Liquidus Temp(T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | -Temperature Min (T_L) | 217°C |
| | Time (t_L) maintained above T_L | 60 - 150 seconds |
| Peak temperature(T_p) | | 245 $\pm 0.5^\circ C$ |
| Time within 5°C of actual peak Temperature(t_p) | | 20 - 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 2 5°C to peak Temperature(T_p) | | 8 minutes Max. |

Soldering Profile



Note : Number of reflow cycles allowed 3 times

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RATINGS AND CHARACTERISTIC CURVES

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

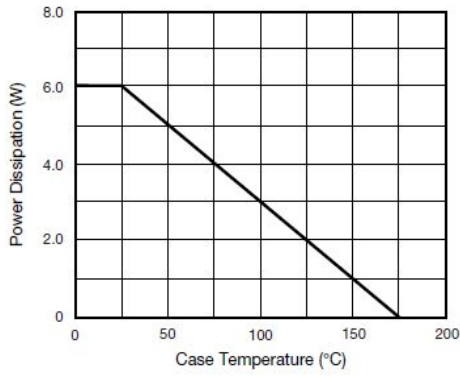


Fig. 1 - Power Derating Curve

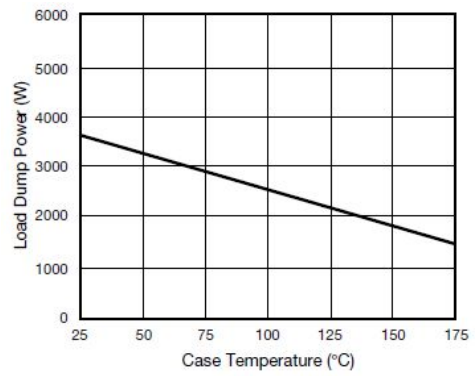


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

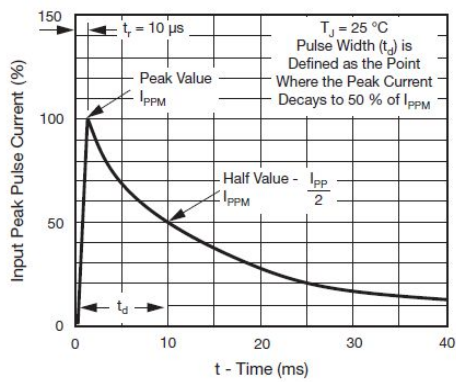


Fig. 3 - Pulse Waveform

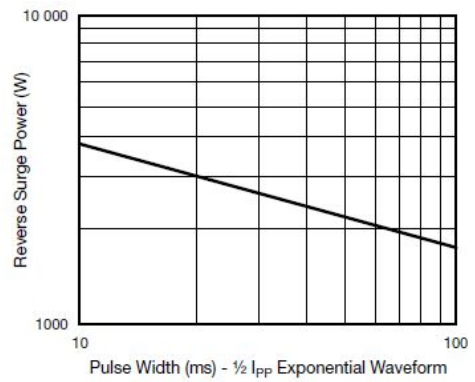


Fig. 4 - Reverse Power Capability

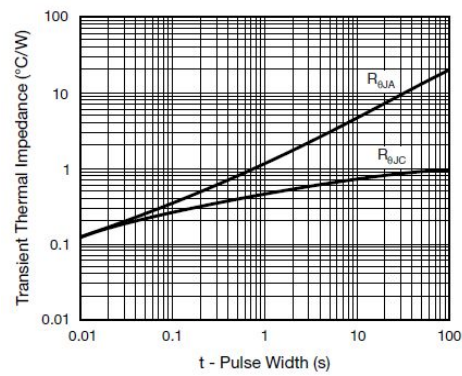
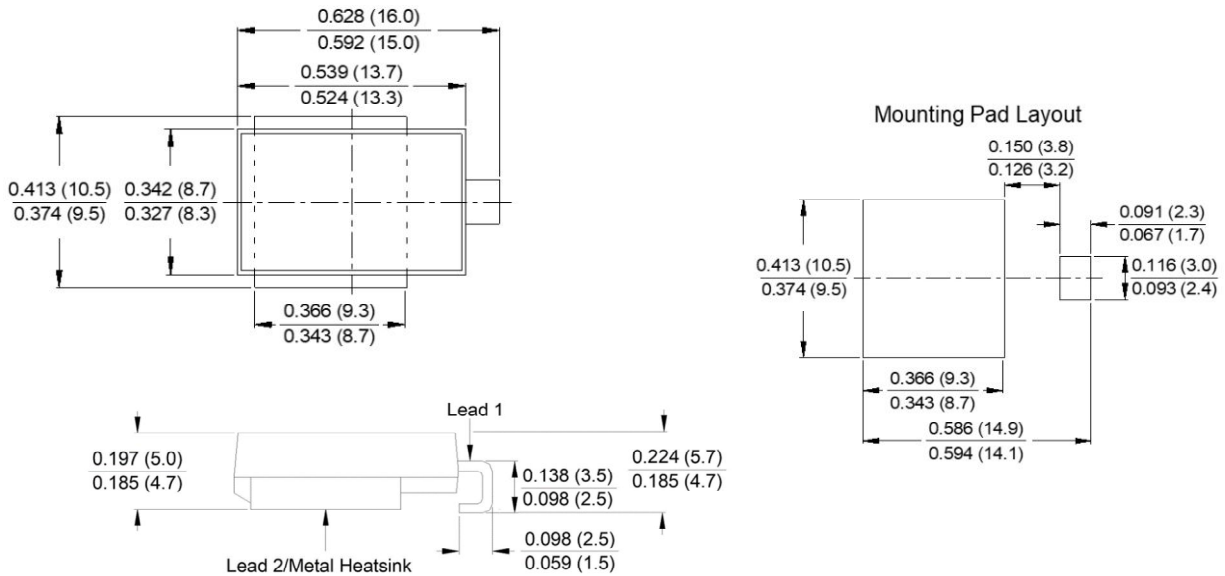


Fig. 5 - Typical Transient Thermal Impedance

SD6S SERIES PACKAGE OUTLINE DIMENSIONS

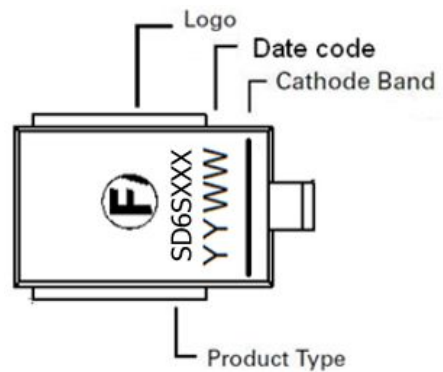
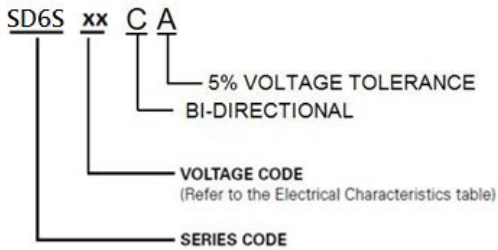
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



SD6S SERIES GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSOR

Part Numbering System

Part Marking System



Packaging

| Part number | Component Package | Quantity | Packaging Option | Packaging Specification |
|-------------|-------------------|----------|-----------------------------|-------------------------|
| SD6SXXX | DO-218 | 750 | Tape & Reel - 24mm/13" tape | EIA STD RS-481 |