

Surface Mount Transient Voltage Suppressors

High temperature stability and high reliability conditions



DO-218AB



FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology.
- $T_J = 175^\circ\text{C}$ 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 ISO16750-2 surge specification (varied by test condition).
- Meets MSL-1, per J-STD-020, LF maximum peak of 245°C .
- AEC-Q101 qualified.
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC.

PRIMARY CHARACTERISTICS

| | |
|------------------------------------|---------------------|
| V_R | 20V to 43V |
| P_{PP} (10/1000 μs) | 8000W |
| P_{PP} (10/10000 μs) | 6000W |
| P_D | 8.5W |
| I_{FSM} | 750A |
| T_{Jmax} | 175°C |
| Polarity | Uni-directional |
| Package | DO-218AB |

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-218AB

Molding compound meets UL 94V-0 flammability rating
Base P/NHE3-RoHS-compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002

MAXIMUM RATINGS ($T_C=25^\circ\text{C}$, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------------|----------------|---------------------------|
| Peak pulse power dissipation on 10/1000 μs waveform | P_{PP} | 8000 | Watts |
| Peak pulse power dissipation on 10/10000 μs waveform | | 6000 | Watts |
| Power dissipation on infinite heat sink at $T_C=25^\circ\text{C}$ | P_D | 8.5 | Watts |
| Peak pulse current with 10/1000 μs waveform | $I_{PPM}^{(1)}$ | See next table | Amps |
| Peak forward surge current, 8.3ms single half sine-wave | I_{FSM} | 750 | Amps |
| Operating junction and storage temperature range | T_J, T_{STG} | -55 to +175 | $^\circ\text{C}$ |
| Typical thermal resistance, junction to case | $R_{\theta JC}$ | 0.9 | $^\circ\text{C}/\text{W}$ |

Note

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

| ELECTRICAL CHARACTERISTICS | | | | | | | | |
|----------------------------|----------------|----------------|--------------------------------|----------|---------------------------------|---------|---------------------------------|-----------------|
| Part Number | V _R | I _T | I _R @V _R | | V _{BR} @I _T | | V _C @I _{PP} | I _{PP} |
| Uni-polar | V | mA | μA@25°C | μA@175°C | min(V) | max (V) | V | A |
| SM8T20A | 20.0 | 5 | 5 | 150 | 22.2 | 24.5 | 32.4 | 247 |
| SM8T22A | 22.0 | 5 | 5 | 150 | 24.4 | 26.9 | 35.5 | 225 |
| SM8T24A | 24.0 | 5 | 5 | 150 | 26.7 | 29.5 | 38.9 | 205 |
| SM8T26A | 26.0 | 5 | 5 | 150 | 28.9 | 31.9 | 42.1 | 190 |
| SM8T28A | 28.0 | 5 | 5 | 150 | 31.1 | 34.4 | 45.4 | 176 |
| SM8T30A | 30.0 | 5 | 5 | 150 | 33.3 | 36.8 | 48.4 | 165 |
| SM8T32A | 32.0 | 5 | 5 | 150 | 35.5 | 39.4 | 51.4 | 156 |
| SM8T33A | 33.0 | 5 | 5 | 150 | 36.7 | 40.6 | 53.3 | 150 |
| SM8T36A | 36.0 | 5 | 5 | 150 | 40.0 | 44.2 | 58.1 | 138 |
| SM8T40A | 40.0 | 5 | 5 | 150 | 44.4 | 49.1 | 64.5 | 124 |
| SM8T43A | 43.0 | 5 | 5 | 150 | 47.8 | 52.8 | 69.4 | 115 |

Note:

①. For all types maximum V_F=1.8V at I_F=100A measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.

②. Surge waveform: 10/1000μs

V_R: Stand-off voltage -- Maximum voltage that can be applied

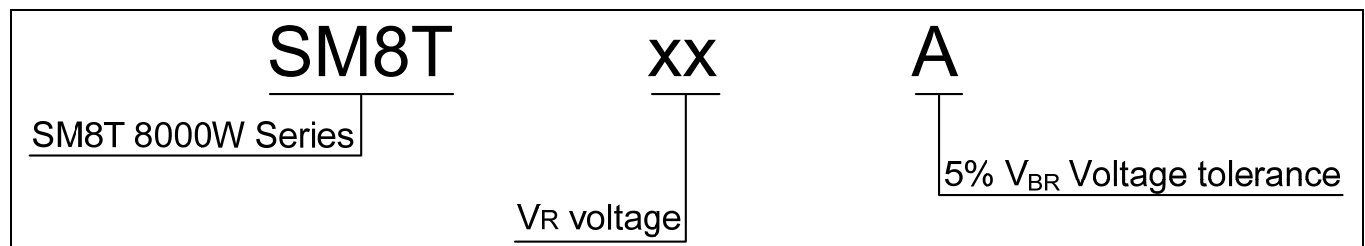
V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

I_T: Test current

ORDERING INFORMATION



RATINGS AND CHARACTERISTICS CURVES ($T_A=25^\circ\text{C}$, unless otherwise noted)

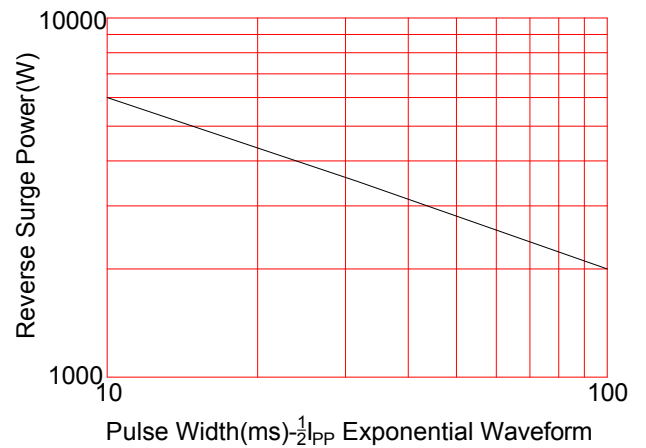
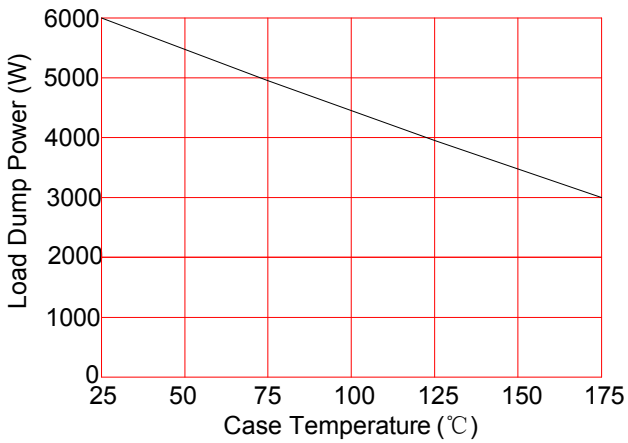
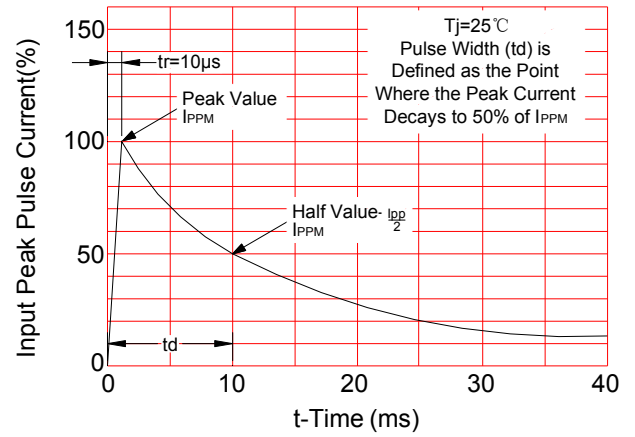
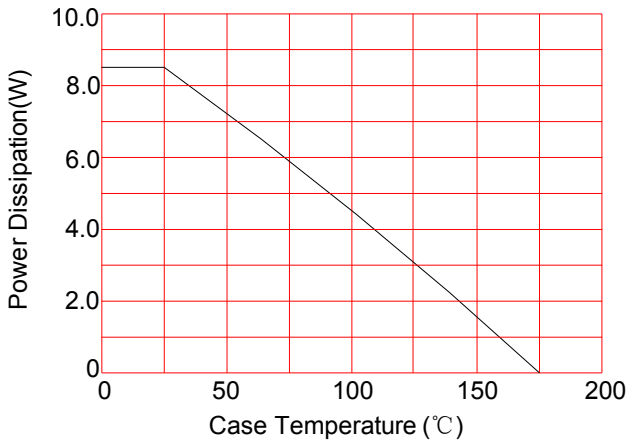


FIG.3: Load Dump Power Characteristics (10ms Exponential Waveform)

FIG.4: Reverse Power Capability

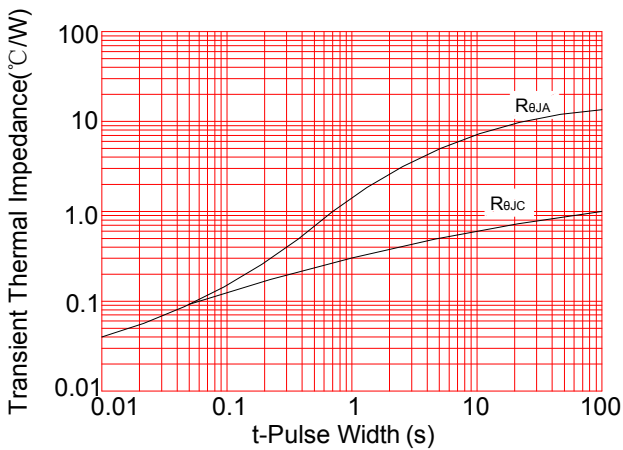
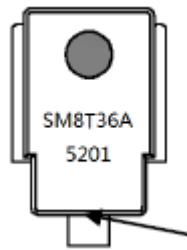


FIG.5: Typical Transient Thermal Impedance

MARKING



SM8T36A: Device marking code

5201: “5” --2015 (year)

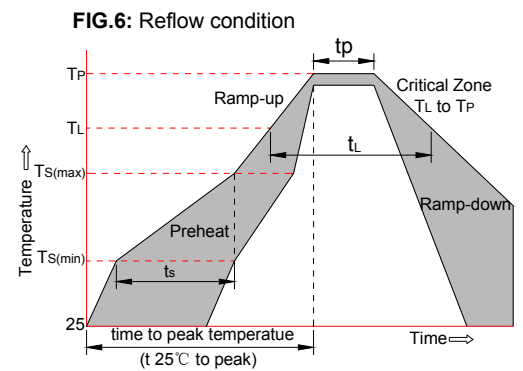
“2” --2 (month)

“01” -- (lot)

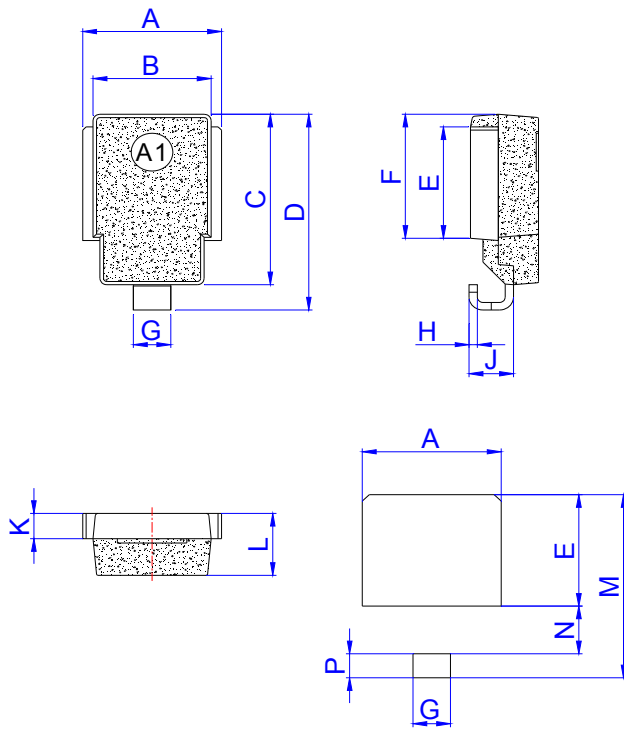
Cathode

SOLDERING PARAMETERS

| Reflow Condition | | Pb-Free assembly (see FIG.6) |
|---|-----------------------------------|---------------------------------|
| Pre Heat | -Temperature Min ($T_{s(min)}$) | +150°C |
| | -Temperature Max($T_{s(max)}$) | +200°C |
| | -Time (Min to Max) (t_s) | 60-180 secs. |
| Average ramp up rate (Liquidus Temp (T_L)to peak) | | 3°C/sec. Max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/sec. Max |
| Reflow | -Temperature(T_L)(Liquidus) | +217°C |
| | -Temperature(t_L) | 60-150 secs. |
| Peak Temp (T_p) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (t_p) | | 20-40secs. |
| Ramp-down Rate | | 6°C/sec. Max |
| Time 25°C to Peak Temp (T_p) | | 8 min. Max |
| Do not exceed | | +260°C |



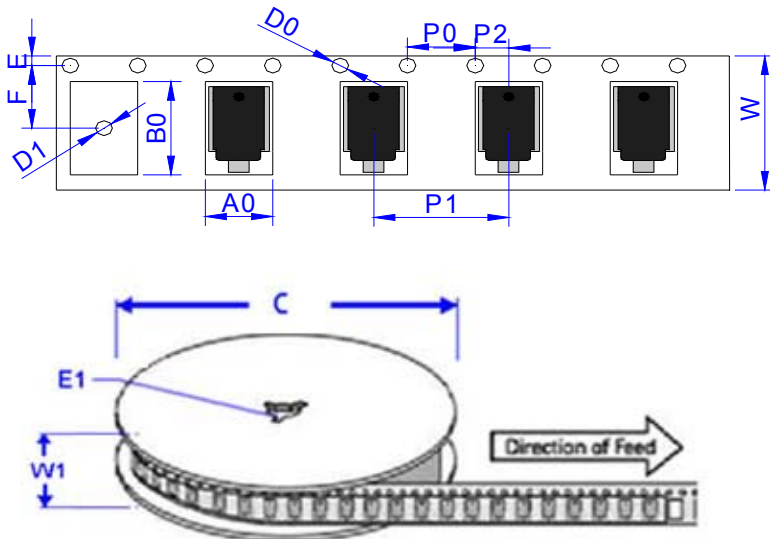
PACKAGE MECHANICAL DATA



DO-218AB

| Ref. | Dimensions | | | |
|------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 9.5 | 10.5 | 0.374 | 0.413 |
| B | 8.3 | 8.7 | 0.327 | 0.342 |
| C | 13.3 | 13.7 | 0.524 | 0.539 |
| D | 15.0 | 16.0 | 0.592 | 0.628 |
| E | 8.5 | 9.1 | 0.335 | 0.358 |
| F | 9.5 | 10.1 | 0.374 | 0.398 |
| G | 2.4 | 3.0 | 0.094 | 0.118 |
| H | 0.5 | 0.7 | 0.020 | 0.028 |
| J | 2.7 | 3.7 | 0.106 | 0.146 |
| K | 1.9 | 2.1 | 0.075 | 0.083 |
| L | 4.7 | 5.1 | 0.185 | 0.201 |
| M | 14.2 | 14.8 | 0.559 | 0.583 |
| N | 3.5 | 4.1 | 0.138 | 0.161 |
| P | 1.6 | 2.2 | 0.063 | 0.087 |

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 |

| ORDERING INFORMATION | | | | |
|----------------------|------------------------|---------------|---------------------|-------------------|
| PART No. | UNIT WEIGHT (g) typ | REEL (PCS) | PER CARTON (PCS) | DESCRIPTION |
| SM8TxxA | 3.040 | 750 | 3000 | 13 inch reel pack |

Information furnished in this document is believed to be accurate and reliable. However, Jiangsu JieJie Microelectronics Co.,Ltd assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.

Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Jiangsu JieJie complies with the agreement.

Products and information provided in this document have no infringement of patents. Jiangsu JieJie assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information.

This document is the 3.2nd version which is made in 27-Apr.-2019. This document supersedes and replaces all information previously supplied.
