




**SPECIFICATION SHEET**

|                                |  |
|--------------------------------|--|
| <b>SPECIFICATION SHEET NO.</b> | N1115 - DO218ABSM8S10A   |
| <b>DATE</b>                    | Nov. 15, 2021  |
| <b>REVISION</b>                | A0   |
| <b>DESCRIPTION</b>             | SMD Transient Voltage Suppressor (TVS) Diodes, DO-218AB series,<br>SM8S10A Type, 2 Pads, Uni-directional<br>Stand-off Voltage 10V. Reverse Surge Current. 388A Max.<br>Operating Temp. Range -55°C ~+175°C<br>Package in Tape/Reel, 750pcs/13" Reel<br>RoHS/RoHS III compliant |
| <b>CUSTOMER</b>                |  |
| <b>CUSTOMER PART NUMBER</b>    |  |
| <b>CROSS REF. PART NUMBER</b>  |  |
| <b>ORIGINAL PART NUMBER</b>    | MDD SM8S10A  |
| <b>PART CODE</b>               | DO218ABSM8S10A   |

|                         |   |  |   |
|-------------------------|---|--|---|
| <b>VENDOR APPROVE</b>   |   |  |   |
| Issued/Checked/Approved |  |  |  |
| DATE: Nov. 15, 2021     |   |  |   |

|                         |  |
|-------------------------|--|
| <b>CUSTOMER APPROVE</b> |  |
|                         |  |
| DATE:                   |  |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**



**MAIN FEATURE**

- Round Chip Produced By Chemical Method
- Junction Passivated By Polyimide
- T J – 175 °C Capability Suitable For High Reliability And Automotive Requirement
- Available In both Uni-directional and Bi-directional Polarity
- Low Leakage Current
- Low Forward Voltage Drop
- High Surge Capability
- Meet ISO7637-2 Surge Specification (Varied By Test Condition)
- Meet MSL Level 1, Per J-STD\_020, LF Max. Peak Of 245 °C
- AEC – Q101 Quality

**APPLICATION**

- Use In Sensitive Electronics Protection Against Voltage Transients Included By Inductive Load Switching And Lighting, Especially For Automotive Load Dump Protection Application

**RFQ**

[Request For Quotation](#)

**PART CODE GUIDE**

| DO218AB | SM8S10A |
|---------|---------|
| 1       | 2       |

1) **DO218AB**: SMD Transient Voltage Suppressor (TVs) Diodes, DO218AB series

2) **SM8S10A**: Type code for original part number SM8S10A

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**

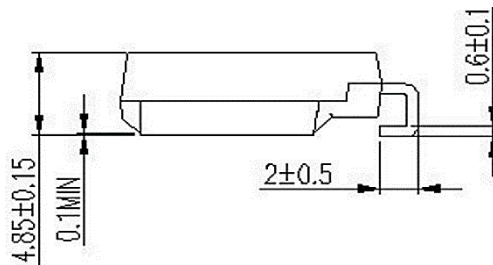
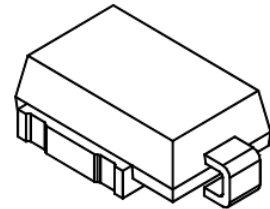
**DIMENSION (Unit: mm)**

Image for reference

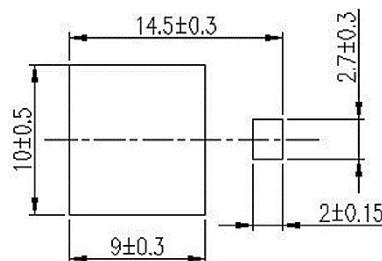


Marking: SM8S10A

DO-218AB



Recommend Pad Layout



## SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES

**MECHANICAL DATA**

| Case                          | Terminals  | Polarity          | Mounting Position   | Unit Weight |
|-------------------------------|--|-------------------|---|-------------|
| JEDEC DO-218AB molded plastic | Matte tin plated leads, solderable per J-STD-002 & JESD22-B102 | Heatsink is Anode | Meets UL 94 V-0 flammability rating base P/NHE3_X – RoHS Compliant & AEC – Q101 qualified (X: denotes revision code e. g A, B...) | 2.60 g/pc   |

**MAX. RATING & CHARACTERISTICS - Ratings at 25°C ambient temperature unless otherwise specified.**

| Parameter   | SYMBOLS          | VALUE |         |            | UNITS |
|---|------------------|-------|---------|------------|-------|
|   |                  | Min.  | Typical | Max.       |       |
| Peak Pulse Power Dissipation @10/1000µs Waveform                          | P <sub>ppm</sub> |       | 6600    |            | W     |
| Peak Pulse Power Dissipation @10/1000µs Waveform                          | P <sub>ppm</sub> |       | 5200    |            | W     |
| Power Dissipation On Infinite Heatsink @ T <sub>c</sub> = 25 °C ( Fig. 1) | P <sub>D</sub>   |       | 8.0     |            | W     |
| Peak Pulse Current On 10/1000µs Waveform (Note 1)                         | I <sub>ppm</sub> |       |         | <b>388</b> | A     |
| Peak Forward Surge Current 8.3 Ms Single Half Sine- Wave                  | I <sub>FSM</sub> |       | 700     |            | A     |
| Thermal Resistance Junction To Case                                       | R <sub>θJA</sub> |       | 0.90    |            | °C/W  |
| Operating Junction Temperature Range                                      | T <sub>J</sub>   | -55   |         | +175       | °C    |
| Storage Temperature Range   | T <sub>STG</sub> | -55   |         | +175       | °C    |

Note

1. Non-repetitive current pulse derated above TA=25 °C

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**

**ELECTRICAL CHARACTERISTICS - Ratings at 25°C**

| Parameter   | SYMBOLS          | VALUE |         |      | UNITS |
|---|------------------|-------|---------|------|-------|
|   |                  | Min.  | Typical | Max. |       |
| Breakdown Voltage   | V <sub>BR</sub>  | 11.1  | 11.7    | 12.3 | V     |
| Test Current  | I <sub>T</sub>   |       | 5.0     |      | mA    |
| Reverse Stand-Off   | V <sub>WM</sub>  |       | 10.0    |      | V     |
| Reverse Leakage @V <sub>WM</sub>                            | I <sub>D</sub>   |       |         | 15.0 | µA    |
| Reverse Leakage @ V <sub>WM</sub> , T <sub>J</sub> = 175 °C | I <sub>D</sub>   |       |         | 250  | µA    |
| Peak Pulse Current @ 10/1000 µs Wave-form                   | I <sub>PPM</sub> |       |         | 388  | A     |
| Clamping Voltage @ I <sub>PPM</sub>                         | V <sub>C</sub>   |       |         | 17.0 | V     |
| Temp. Coefficient of V <sub>BR</sub> (Note 1)               | α <sub>T</sub>   |       | 0.069   |      | %/ °C |

Note

1. To calculate V<sub>BR</sub> vs Junction temperature, use the following formula: V<sub>BR</sub> at T<sub>J</sub> = V<sub>BR</sub> at 25 °C x 1+ α<sub>T</sub> x (T<sub>J</sub> -25)
2. For all type Max. V<sub>F</sub> = 1.8V at I<sub>F</sub> = 100 A measured on 8.3ms single half Sine-wave or equivalent square wave, duty cycle = 4 pulses per minute Max.

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**
**RELIABILITY**

| Number | Experiment Items                   | Experiment Method And Conditions   | Reference Documents             |
|--------|------------------------------------|--|---------------------------------|
| 1      | Solder Resistance Test             | Test 260°C± 5°C for 10 ± 2 sec.<br>Immerse body into solder 1/16" ± 1/32"                                      | MIL-STD-750D<br>METHOD-2031.2   |
| 2      | Solderability Test                 | 230°C ±5°C for 5 sec.  | MIL-STD-750D<br>METHOD-2026.1 0 |
| 3      | Pull Test                          | 1 kg in axial lead direction for 10 sec.   | MIL-STD-750D<br>METHOD-2036.4   |
| 4      | Bend Test                          | 0.5Kg Weight Applied To Each Lead,<br>Bending Arcs 90 °C ± 5 °C For 3 Times                                    | MIL-STD-750D<br>METHOD-2036.4   |
| 5      | High Temperature Reverse Bias Test | TA=100°C for 1000 Hours at VR=80%<br>Rated VR  | MIL-STD-750D<br>METHOD-1038.4   |
| 6      | Forward Operation Life Test        | TA=25°C Rated Average Rectified<br>Current   | MIL-STD-750D<br>METHOD-1027.3   |
| 7      | Intermittent Operation Life Test   | On state: 5 min with rated IRMS Power<br>Off state: 5 min with Cool Forced Air.<br>On and off for 1000 cycles. | MIL-STD-750D<br>METHOD-1036.3   |
| 8      | Pressure Cooker Test               | 15 PSIG, TA=121°C, 4 hours   | MIL-S-19500<br>APPENOIXC        |
| 9      | Temperature Cycling Test           | -55°C~+125°C; 30 Minutes For Dwelled<br>Time 5 minutes for transferred time.<br>Total: 10 cycles.              | MIL-STD-750D<br>METHOD-1051.7   |
| 10     | Thermal Shock Test                 | 0°C for 5 minutes., 100°C for 5minutes,<br>Total: 10 cycles  | MIL-STD-750D<br>METHOD-1056.7   |
| 11     | Forward Surge Test                 | 8.3ms Single Sale Sine-wave One Surge.   | MIL-STD-750D<br>METHOD-4066.4   |
| 12     | Humidity Test                      | TA=65°C, RH=98% for 1000 hours.  | MIL-STD-750D<br>METHOD-1021.3   |
| 13     | High Temperature Storage life Test | 150°C for 1000 Hours   | MIL-STD-750D<br>METHOD-1031.5   |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**

**SUGGESTED REFLOW PROFILE (For Reference Only)**



|  |                                  |                   |
|--|----------------------------------|-------------------|
| <b>Profile Feature</b>                                 |                                  | Pb-Free Assembly  |
| <b>Average Ramp-up Rate (Ts Max to Tp)</b>             |                                  | 3°C/second Max    |
| <b>Preheat</b>   | <b>Temperature Min (Ts Min.)</b> | 150°C             |
|  | <b>Temperature Max (Ts Max.)</b> | 200°C             |
|  | <b>Time (ts Min. to ts Max.)</b> | 60 ~ 180 seconds  |
| <b>Time maintained above</b>                           | <b>Temperature (Tl)</b>          | 217°C             |
|  | <b>Time (tL)</b>                 | 60 ~ 150 seconds  |
| <b>Peak/Classification Temperature (Tp)</b>            |                                  | 260 °C            |
| <b>Time within 5°C of actual Peak Temperature (tp)</b> |                                  | 20 ~ 40 seconds   |
| <b>Ramp-down rate</b>                                  |                                  | 6 °C /Second Max. |
| <b>Time 25 °C to Peak Temperature</b>                  |                                  | 6 minutes Max.    |
| <b>Suggest reflow times</b>                            |                                  | 3 Times Max.      |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**

**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**

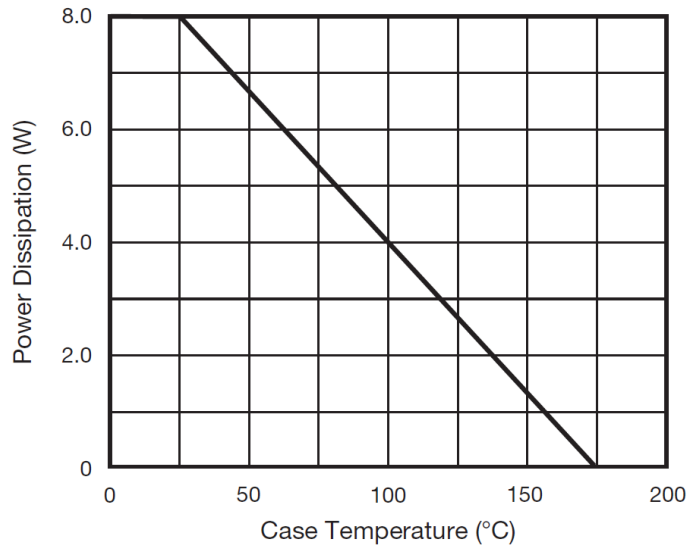


Fig. 1 - Power Derating Curve

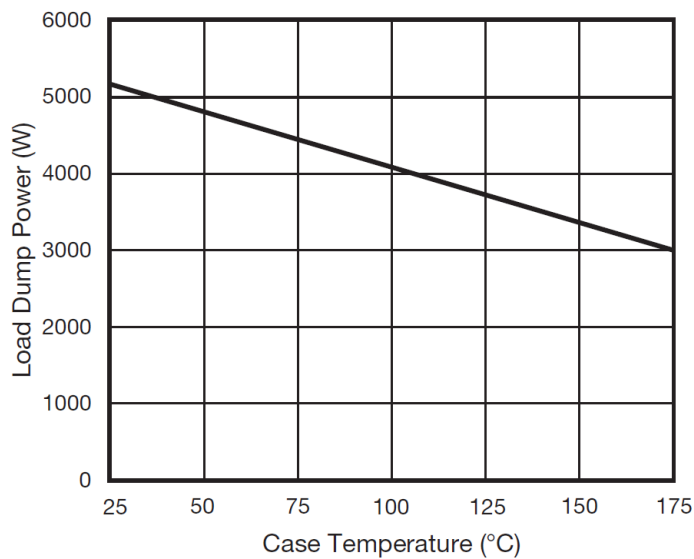


Fig. 2 - Load Dump Power Characteristics  
(10 ms Exponential Waveform)



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**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**

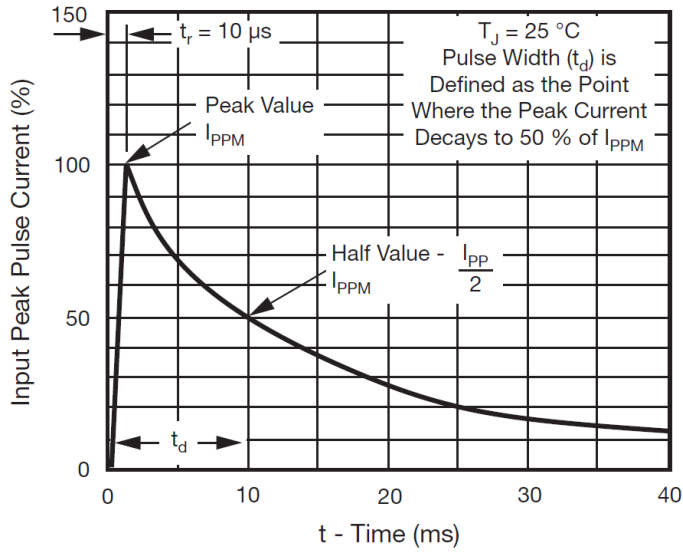


Fig. 3 - Pulse Waveform

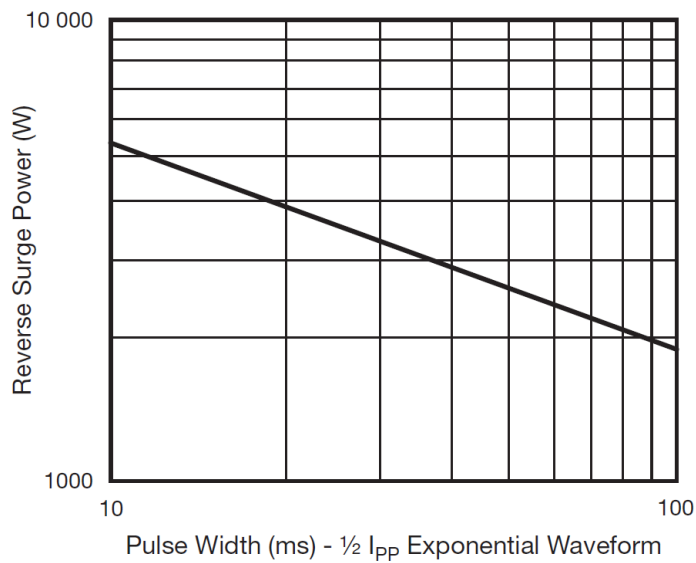


Fig. 4 - Reverse Power Capability

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**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**

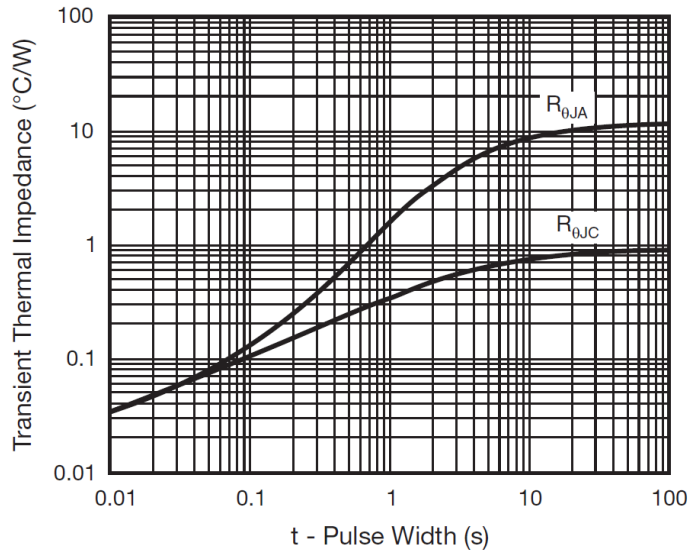


Fig. 5 - Typical Transient Thermal Impedance

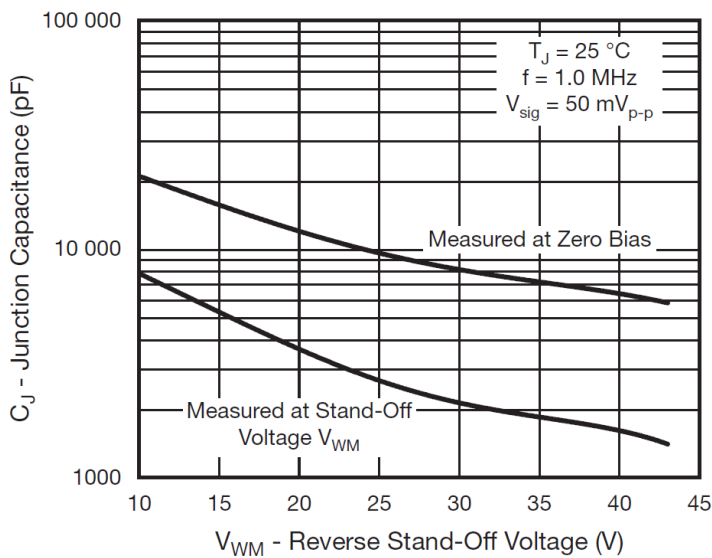


Fig. 6 - Typical Junction Capacitance

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**

**TAPE/REEL (Unit: mm)**

All Devices are packed in accordance with EIA standard RS-481-A and specifications. 750pcs/Reel



| Item                     | Symbol | Tolerance | DO-218AB   |
|--------------------------|--------|-----------|------------|
| Carrier width            | A      | +/-0.30   | 10.80      |
| Carrier Length           | B      | +/-0.30   | 16.13      |
| Carrier Depth            | C      | +/-0.20   | 6.00       |
| Sprocket hole            | d      | +/-0.20   | 1.55       |
| 13"Reel outside diameter | D      | +/-0.30   | 330.00     |
| 13"Reel inner diameter   | D1     | -         | 50.0 Min.  |
| Feed hole diameter       | D2     | -         | 20.2 Min.  |
| Sprocket hole position   | E      | +/-0.2    | 1.75       |
| Punch hole position      | F      | +/-0.20   | 11.50      |
| Punch hole pitch         | P      | +/-0.20   | 16.0       |
| Sprocket hole pitch      | P0     | +/-0.20   | 4.00       |
| Embossment center        | P1     | +/-0.20   | 2.00       |
| Overall tape thickness   | T      | -         | -          |
| Tape width               | W      | +/-0.20   | 24.00      |
| Reel width               | W1     | -         | 30.40 Max. |

**SMD TRANSIENT VOLTAGE SUPPRESSORS DO-218AB SERIES**

**PACKAGE for reference**

| Case Code | DO- 218AB |
|-----------|-----------|
| Reel Size | 13"       |
| Reel Size | 330 mm    |
| MPQ/Reel  | 750 pcs   |
| Qty. /Box | 1500 pcs  |
| G.W/Box   | 5.5 kgs   |

**DISCLAIMER**

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