

SM8T20A THRU SM8T43A TRANSIENT VOLTAGE SUPPRESSOR



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
- Base plate is cathode
- Low leakage current
- Low forward voltage drop
- High surge capability
- AEC-Q101 qualified.

Circuit Diagram



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 and JESD22-B102

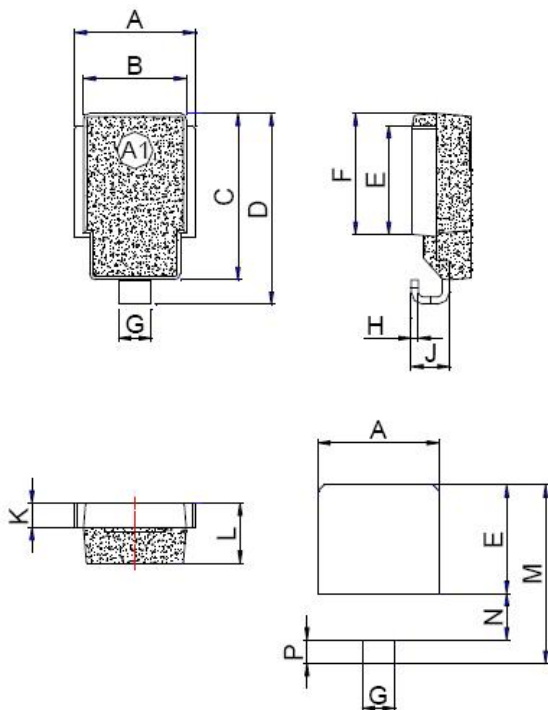
Maximum Ratings and Thermal Characteristics@ $T_A=25^\circ\text{C}$ unless otherwise specified

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|--------------------|
| Peak pulse power dissipation on 10/1000 μs waveform | P_{PPM} | 8000 | W |
| Peak pulse power dissipation on 10/10000 μs waveform | | 6000 | W |
| Power dissipation on infinite heat sink at $T_C = 25^\circ\text{C}$ | P_D | 8.5 | W |
| Peak forward surge current 8.3 ms single half sine-wave | I_{FSM} | 750 | A |
| Typical thermal resistance, junction to case | $R_{\theta JC}$ | 0.9 | $^\circ\text{C/W}$ |
| Operating Junction and Storage Temperature Range | T_J, T_{STG} | -55 to 175 | $^\circ\text{C}$ |

Electrical Characteristics@T_A=25° C unless otherwise specified

| DEVICE TYPE | REVERSE STAND-OFF VOLTAGE V _{RWM} (V) | BREAKDOWN VOLTAGE V _{BR} (V) @I _T | | TEST CURRENT I _T | CLAMPING VOLTAGE V _C @I _{PP} | PEAK PULSE CURRENT AT 10/1000μs WAVEFORM I _{PP} | REVERSE LEAKAGE CURRENT I _R | |
|-------------|--|---|------|-----------------------------|--|--|--|----------|
| | | MIN. | MAX. | MA | V | A | μA@25°C | μA@175°C |
| SM8T20A | 20 | 22.2 | 24.5 | 5 | 32.4 | 247 | 5 | 150 |
| SM8T22A | 22 | 24.4 | 26.9 | 5 | 35.5 | 225 | 5 | 150 |
| SM8T24A | 24 | 26.7 | 29.5 | 5 | 38.9 | 205 | 5 | 150 |
| SM8T26A | 26 | 28.9 | 31.9 | 5 | 42.1 | 190 | 5 | 150 |
| SM8T28A | 28 | 31.1 | 34.4 | 5 | 45.4 | 176 | 5 | 150 |
| SM8T30A | 30 | 33.3 | 36.8 | 5 | 48.4 | 165 | 5 | 150 |
| SM8T32A | 32 | 35.5 | 39.4 | 5 | 51.4 | 156 | 5 | 150 |
| SM8T33A | 33 | 36.7 | 40.6 | 5 | 53.3 | 150 | 5 | 150 |
| SM8T36A | 36 | 40.0 | 44.2 | 5 | 58.1 | 138 | 5 | 150 |
| SM8T40A | 40 | 44.4 | 49.1 | 5 | 64.5 | 124 | 5 | 150 |
| SM8T43A | 43 | 47.8 | 52.8 | 5 | 69.4 | 115 | 5 | 150 |

Mechanical Dimensions DO-218AB(Inches/Millimeters)



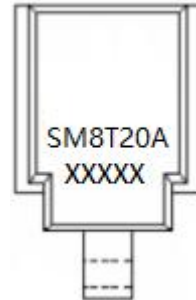
| SYMBOL | Millimeters | | Inches | |
|--------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 9.5 | 10.5 | 0.374 | 0.413 |
| B | 8.3 | 8.7 | 0.327 | 0.342 |
| C | 13.3 | 13.7 | 0.524 | 0.539 |
| D | 15.0 | 16.0 | 0.592 | 0.628 |
| E | 8.5 | 9.1 | 0.335 | 0.358 |
| F | 9.5 | 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 |

Ordering Information

| Device | Package | Shipping |
|----------------------------|----------|---------------|
| SM8T20A THRU SM8T43A | DO-218AB | 750pcs / reel |

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

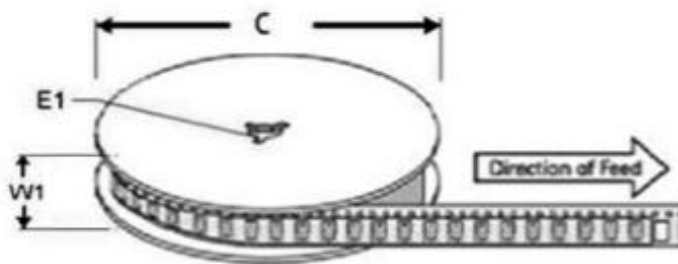
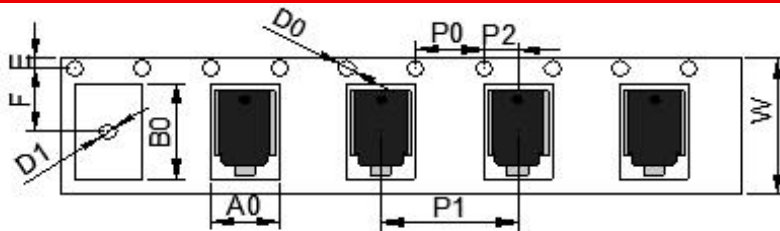
Marking Diagram



SM8T20A
XXXXX

= Part Name
= Date Code

Carrier Tape 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 |

Ratings and Characteristics Curves

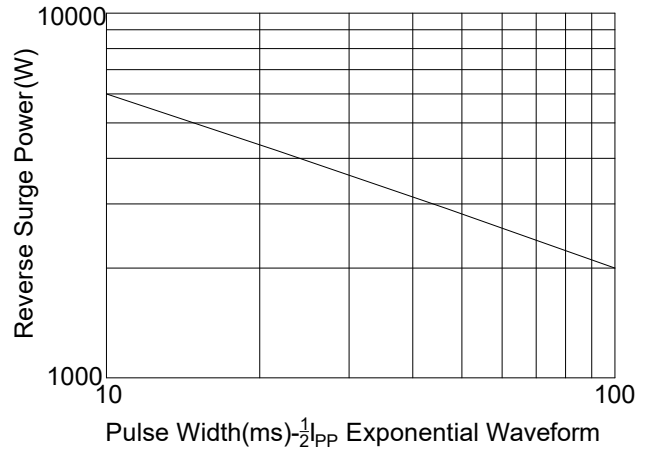
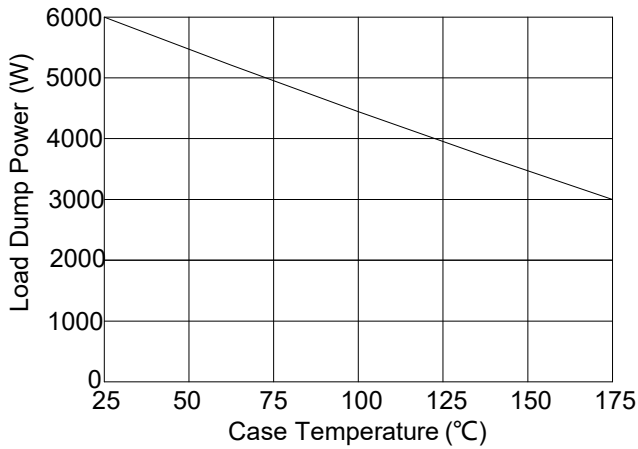
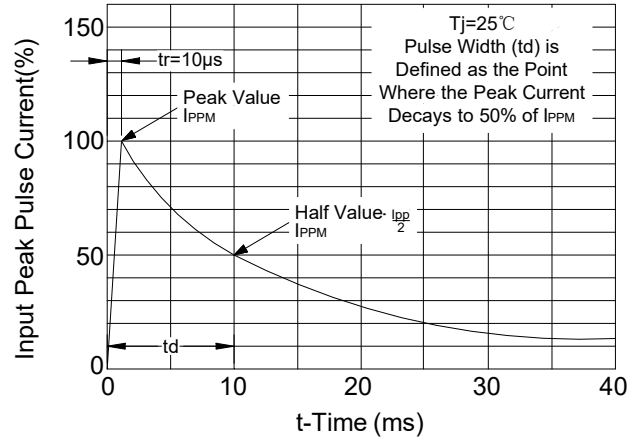
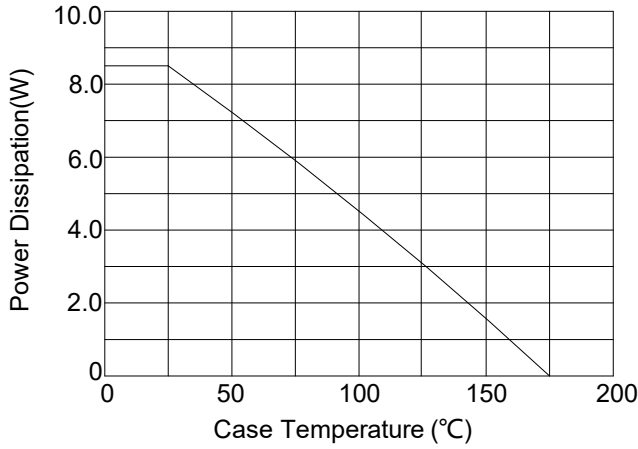


FIG.3: Load Dump Power Characteristics (10ms Exponential Waveform)

FIG.4: Reverse Power Capability

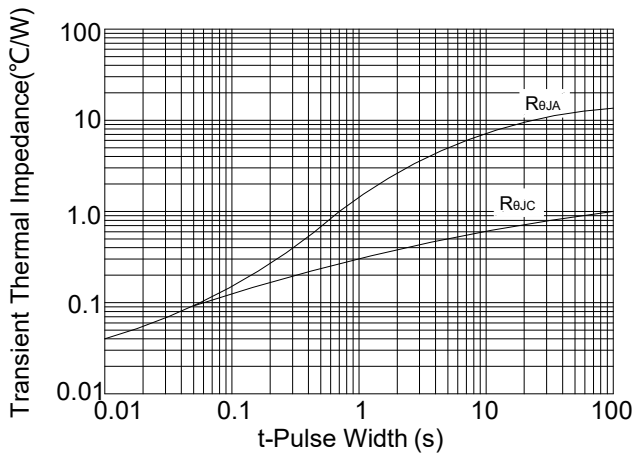


FIG.5: Typical Transient Thermal Impedance



DISCLAIMER:

- 1- The information given herein, including the specifications and dimensions, is subject to change without prior notice to improve product characteristics. Before ordering, purchasers are advised to contact the SMC Diode Solutions sales department for the latest version of the datasheet(s).
- 2- In cases where extremely high reliability is required (such as use in nuclear power control, aerospace and aviation, traffic equipment, medical equipment, and safety equipment), safety should be ensured by using semiconductor devices that feature assured safety or by means of users' fail-safe precautions or other arrangement.
- 3- In no event shall SMC Diode Solutions be liable for any damages that may result from an accident or any other cause during operation of the user's units according to the datasheet(s). SMC Diode Solution assumes no responsibility for any intellectual property claims or any other problems that may result from applications of information, products or circuits described in the datasheets.
- 4- In no event shall SMC Diode Solutions be liable for any failure in a semiconductor device or any secondary damage resulting from use at a value exceeding the absolute maximum rating.
- 5- No license is granted by the datasheet(s) under any patents or other rights of any third party or SMC Diode Solutions.
- 6- The datasheet(s) may not be reproduced or duplicated, in any form, in whole or part, without the expressed written permission of SMC Diode Solutions.
- 7- The products (technologies) described in the datasheet(s) are not to be provided to any party whose purpose in their application will hinder maintenance of international peace and safety nor are they to be applied to that purpose by their direct purchasers or any third party. When exporting these products (technologies), the necessary procedures are to be taken in accordance with related laws and regulations..