

## SM8T20A THRU SM8T43A TRANSIENT VOLTAGE SUPPRESSOR

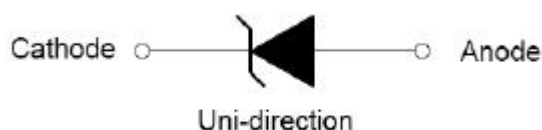


**DO-218AB**

### 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
- AEC-Q101 qualified.

### Circuit Diagram



### Mechanical Data

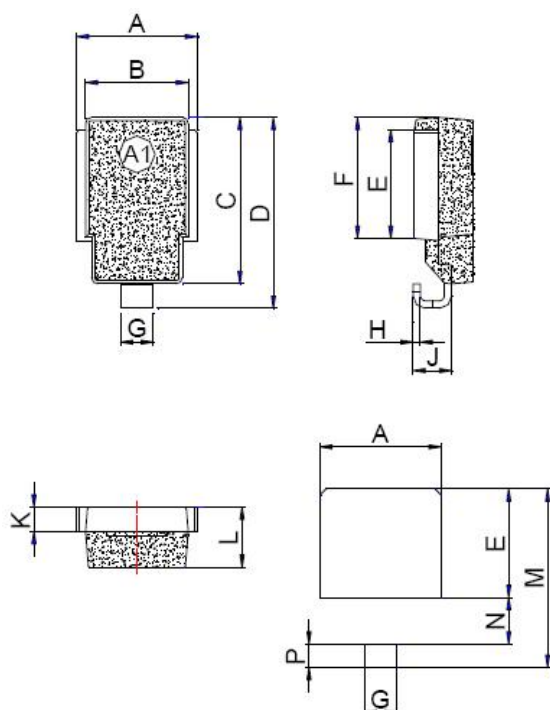
- Case: DO-218AB
- Molding compound meets UL 94V-0 flammability rating
- Base P/NHE3-RoHS-compliant, AEC-Q101 qualified
- Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

### 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 $\mu\text{s}$ waveform        | $P_{PPM}$       | 8000       | W                    |
| Peak pulse power dissipation on 10/10000 $\mu\text{s}$ 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<sub>A</sub>=25° C unless otherwise specified**

| DEVICE TYPE | REVERSE STAND-OFF VOLTAGE V <sub>RWM</sub> (V) | BREAKDOWN VOLTAGE V <sub>BR</sub> (V) @I <sub>T</sub> |      | TEST CURRENT I <sub>T</sub> | CLAMPING VOLTAGE V <sub>C</sub> @I <sub>PP</sub> | PEAK PULSE CURRENT AT 10/1000μs WAVEFORM I <sub>PP</sub> | REVERSE LEAKAGE CURRENT I <sub>R</sub> |          |
|-------------|------------------------------------------------|-------------------------------------------------------|------|-----------------------------|--------------------------------------------------|----------------------------------------------------------|----------------------------------------|----------|
|             |                                                | MIN.                                                  | MAX. |                             |                                                  |                                                          | 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)**


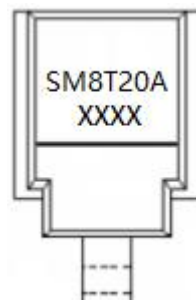
| SYMBOL | Millimeters |      | Inches |       |
|--------|-------------|------|--------|-------|
|        | Min.        | Max. | Min.   | Max.  |
| A      | 9.5         | 10.5 | 0.374  | 0.413 |
| B      | 8.3         | 8.7  | 0.327  | 0.342 |
| C      | 13.3        | 13.7 | 0.524  | 0.539 |
| D      | 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<br>THRU<br>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.

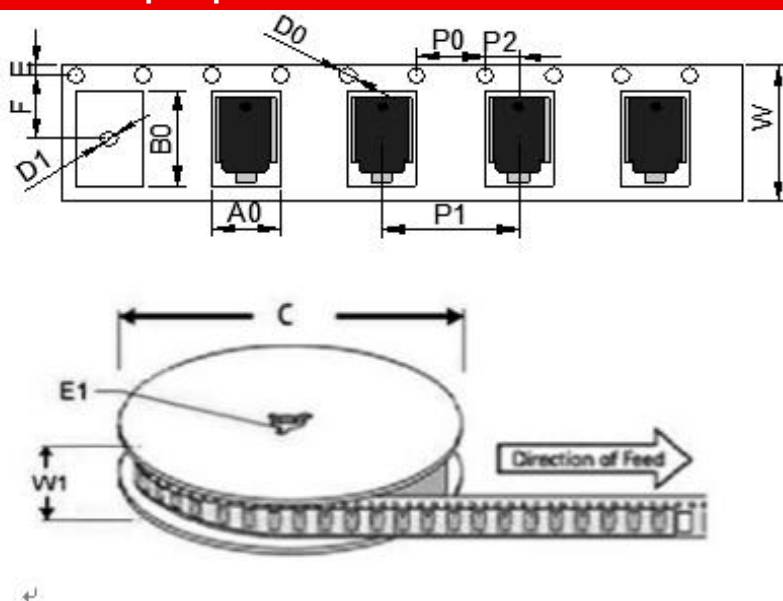
## Marking Diagram



SM8T20A  
XXXX

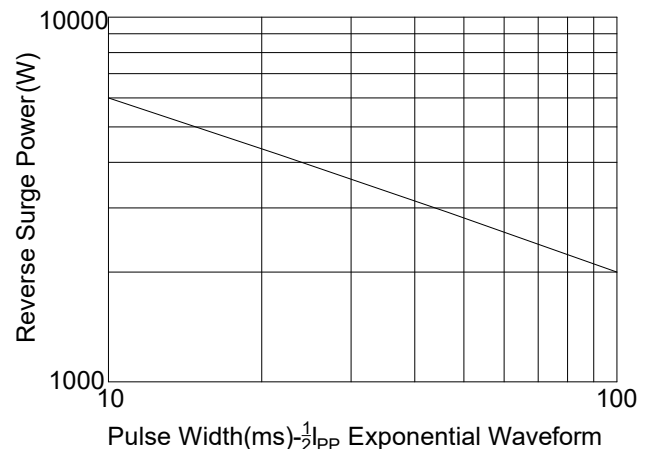
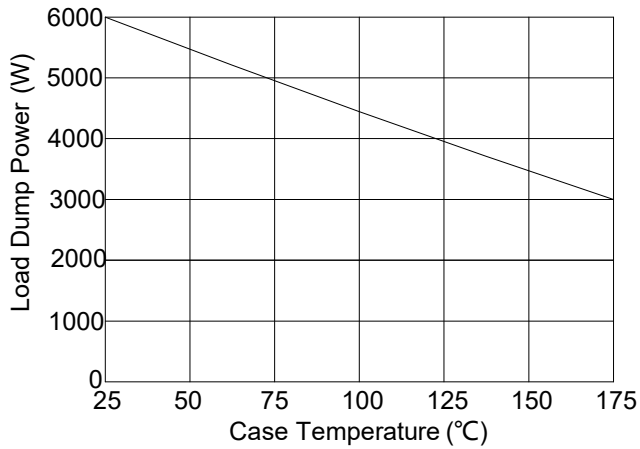
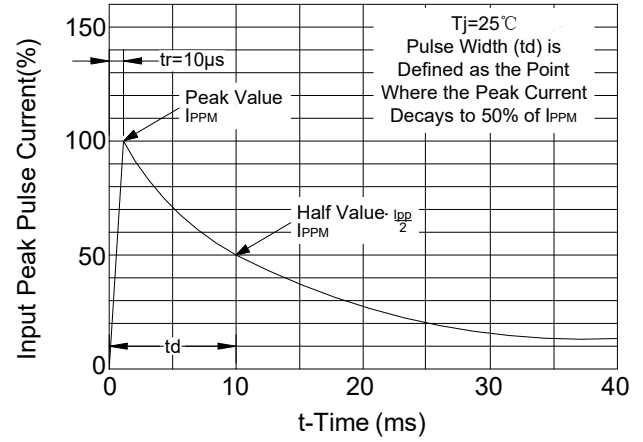
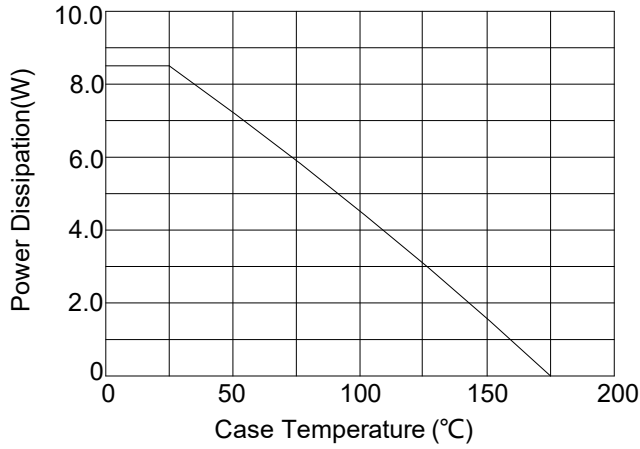
= Part Name  
= Date Code

## Carrier Tape Specification DO-218AB



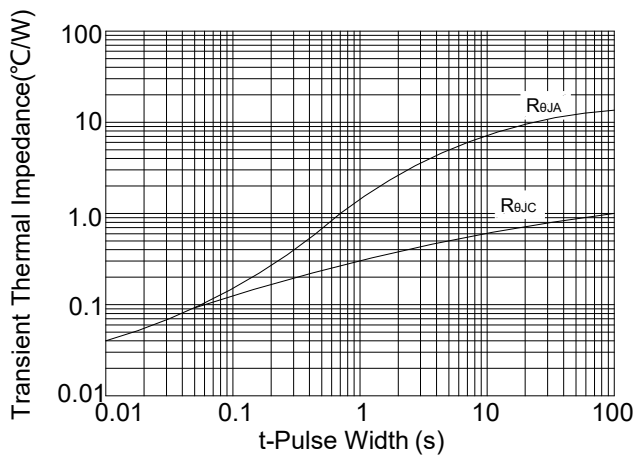
| Ref. | Dimensions  |               |
|------|-------------|---------------|
|      | Millimeters | Inches        |
| A0   | 10.80 ± 0.3 | 0.425 ± 0.012 |
| B0   | 16.13 ± 0.3 | 0.635 ± 0.012 |
| C    | 330.0 ± 0.3 | 13.0 ± 0.012  |
| D0   | 1.55 ± 0.2  | 0.061 ± 0.008 |
| D1   | 1.55 ± 0.2  | 0.061 ± 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

**Technical Data  
Data Sheet N2146, Rev. -**



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