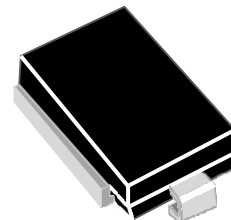


Transient Voltage Suppression Diodes Surface Mount – 8000W

Descriptions

Transient Voltage Suppressors (TVS) are semiconductor devices designed to provide protection against over voltage transients. When over voltage events occur, the silicon TVS activates from an very high impedance status to a very low impedance status by operating in the avalanche mode and uses a large junction area to absorb large transient currents in a fast response time, protecting voltage sensitive electronics equipment from damaging.

Boarden supplies unipolar and bipolar TVS devices with axial and SMD packages.



DO-218AB

Features

- Glass passivated chip junction in DO-218AB Package
- 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 ISO7637-2 surge specification (varied by test condition)
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245°C
- AEC-Q101 qualified
- RoHS compliant

Applications

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

Maximum Ratings and Thermal Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with 10/1000 μs waveform	P_{PP}	8000	W
Power dissipation on infinite heatsink at $T_C = 25^{\circ}\text{C}$	P_D	8.0	W
Peak pulse current with 10/1000 μs waveform	$I_{PPM}^{(1)}$	See next table	A
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave	I_{FSM}	700	A
Operating junction and Storage Temperature Range	T_J, T_{STG}	-55~175	$^{\circ}\text{C}$
Typical Thermal Resistance Junction to Lead	$R_{\theta JC}$	0.9	$^{\circ}\text{C/W}$

Notes:

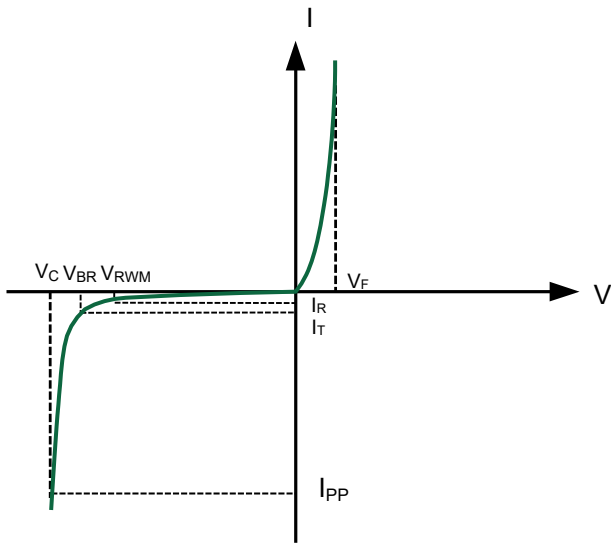
1) Non-repetitive current pulse derated above $T_A = 25^{\circ}\text{C}$

Electrical Characteristics (TA=25°C unless otherwise noted)

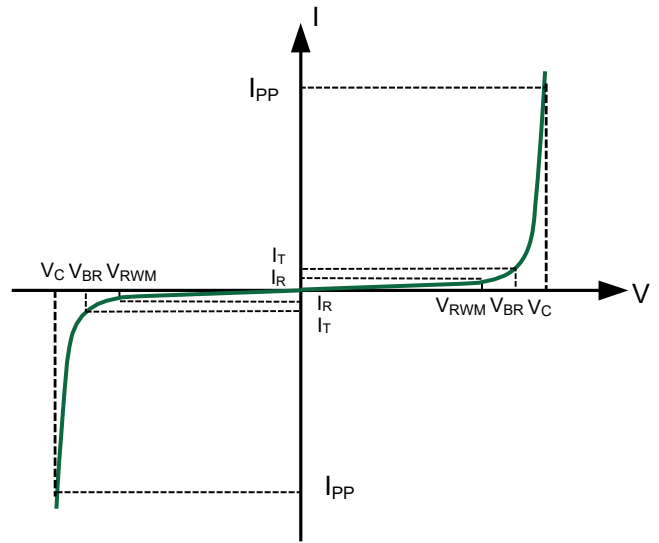
Part Number		V _{RWM}	V _{BR@I_T} V		I _T	I _{PP}	V _{C@I_{PP}Max.}	I _{R@V_{RWM}}	Package
UNT	BI	V	min.	max.	mA	A	V	uA	Package
SM8T10A	SM8T10A	10.0	11.10	12.30	5	470.6	17.0	15	DO-218AB
SM8T11A	SM8T11A	11.0	12.20	13.50	5	439.6	18.2	10	DO-218AB
SM8T12A	SM8T12A	12.0	13.30	14.70	5	402.0	19.9	10	DO-218AB
SM8T13A	SM8T13A	13.0	14.40	15.90	5	372.1	21.5	10	DO-218AB
SM8T14A	SM8T14CA	14.0	15.60	17.20	5	344.8	23.2	10	DO-218AB
SM8T15A	SM8T15CA	15.0	16.70	18.50	5	327.9	24.4	10	DO-218AB
SM8T16A	SM8T16CA	16.0	17.80	19.70	5	307.7	26.0	10	DO-218AB
SM8T17A	SM8T17CA	17.0	18.90	20.90	5	289.9	27.6	10	DO-218AB
SM8T18A	SM8T18CA	18.0	20.00	22.10	5	274.0	29.2	10	DO-218AB
SM8T20A	SM8T20CA	20.0	22.20	24.50	5	246.9	32.4	10	DO-218AB
SM8T22A	SM8T22CA	22.0	24.40	26.90	5	225.4	35.5	10	DO-218AB
SM8T24A	SM8T24CA	24.0	26.70	29.50	5	205.7	38.9	10	DO-218AB
SM8T26A	SM8T26CA	26.0	28.90	31.90	5	190.0	42.1	10	DO-218AB
SM8T28A	SM8T28CA	28.0	31.10	34.40	5	176.2	45.4	10	DO-218AB
SM8T30A	SM8T30CA	30.0	33.30	36.80	5	165.3	48.4	10	DO-218AB
SM8T33A	SM8T33CA	33.0	36.70	40.60	5	150.1	53.3	10	DO-218AB
SM8T36A	SM8T36CA	36.0	40.00	44.20	5	137.7	58.1	10	DO-218AB
SM8T40A	SM8T40CA	40.0	44.40	49.10	5	124.0	64.5	10	DO-218AB
SM8T43A	SM8T43CA	43.0	47.80	52.80	5	115.3	69.4	10	DO-218AB

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

I-V Curve Characteristics



Uni-Directional TVS



Bi-Directional TVS

VRWM - Reverse Stand-Off Voltage - Working Peak Reverse Voltage

VBR - Breakdown Voltage - Maximum current that flows through the TVS at a specified test current (I_T)

IT - Test Current - Test Current

Vc - Clamping Voltage - Peak voltage measured across the suppressor at a specified I_{ppm} (peak impulse current)

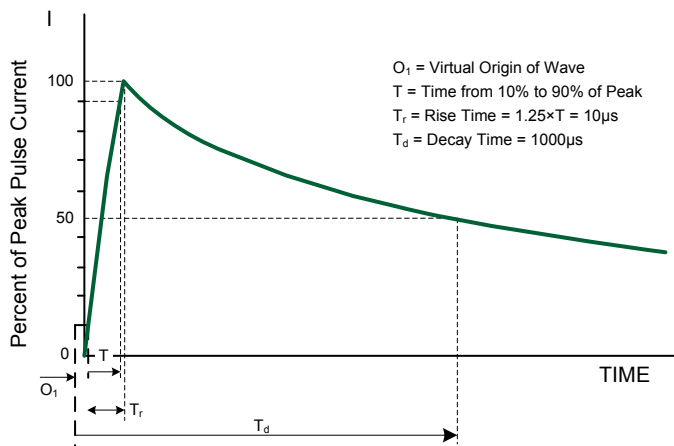
IPP - Peak Pulse Current - Maximum Reverse Peak Pulse Current

PPP - Peak Pulse Power Dissipation - Max power dissipation

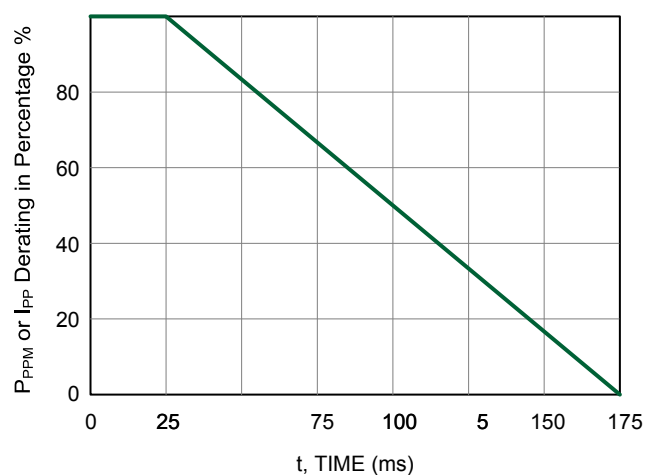
IR - Reverse Leakage Current - Current measured at V_{RWM}

VF - Forward Voltage - Drop for Uni-directional

Ratings and Characteristic Curves (TA=25°C unless otherwise noted)

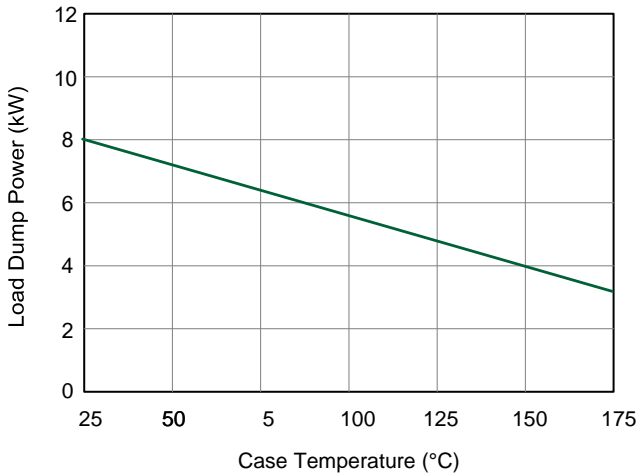


Pulse Waveform- 10/1000µs

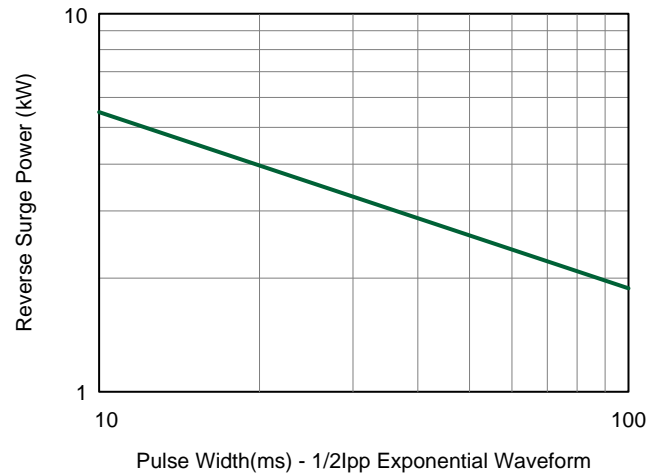


Pulse Derating Curve

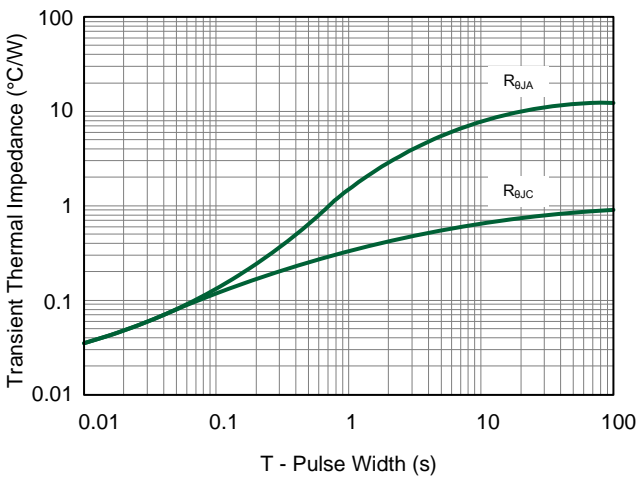
Ratings and Characteristic Curves (TA=25°C unless otherwise noted)



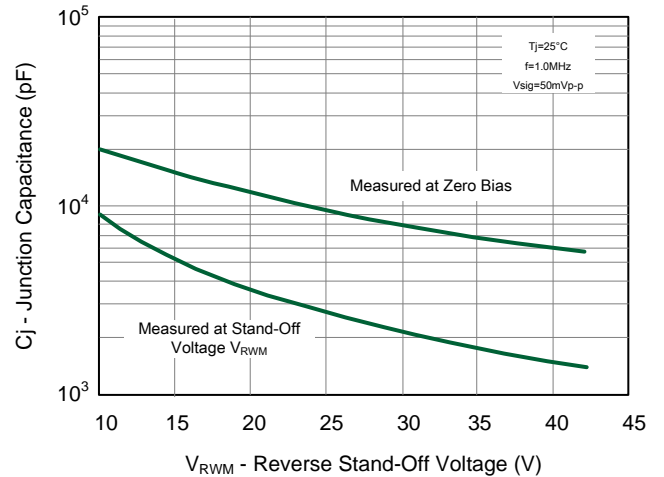
Load Dump Power Characteristics (10ms Exponential Waveform)



Reverse Power Capability



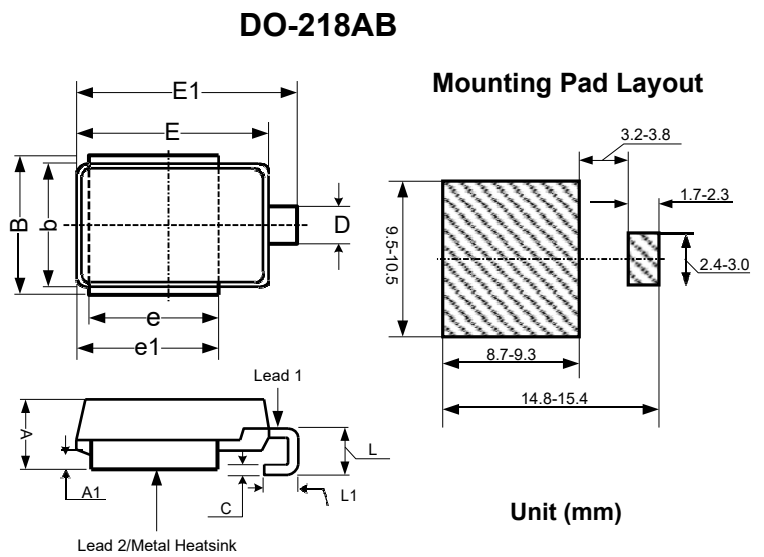
Typical Transient Thermal Impedance



Typical Junction Capacitance

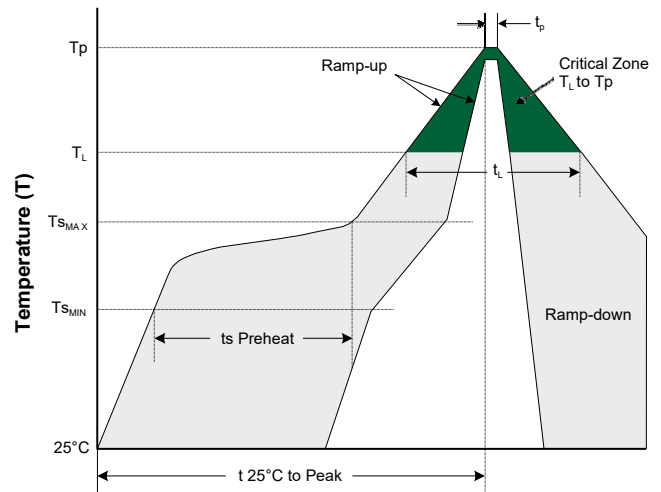
Product Dimensions

Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.185	0.204	4.70	5.20
A1	0.016	-	0.40	-
B	0.374	0.413	9.50	10.50
b	0.327	0.342	8.30	8.70
C	0.020	0.028	0.50	0.70
D	0.094	0.137	2.40	3.50
E	0.524	0.539	13.30	13.70
E1	0.592	0.628	15.00	16.00
e	0.335	0.358	8.50	9.10
e1	0.374	0.398	9.50	10.10
L	0.098	0.146	2.50	3.70
L1	0.059	0.098	1.50	2.50

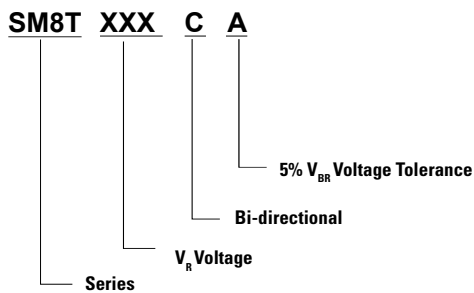


Soldering Parameters

Profile Feature	Lead-Free Assembly
Average Ramp-up Rate ($T_{S_{MAX}}$ to T_p) Average Ramp-down Rate (T_p to T_L)	3°C/second max. 6°C/second max.
Preheat • Temperature Min ($T_{S_{MIN}}$) • Temperature Max ($T_{S_{MAX}}$) • Time (t_s Preheat)	150°C 200°C 60-180 seconds
Time maintained above: • Temperature (T_L) • Time (t_L)	217°C 60-150 seconds
Peak/Classification Temperature • Temperature (T_p)	260 ^{+0/-5} °C
Time within 5°C of actual Peak Time (t_p)	20-40 seconds
Time 25°C to peak Temperature	8 minutes max
Do not exceed	260 °C



Part Numbering System



Order Information

Device	Package	Quantity	Tape
SM8T series	DO-218AB	750	13" Reel