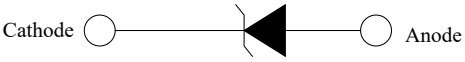
Automotive Protection Surface Mount Transient Voltage Suppressors

Features

- Chip produced by chemical method
- Junction passivated by high temperature resistant insulating adhesive
- T_J = 175 °C capability suitable for high reliability and automotive requirement
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO16750-2 surge specification (varied by test condition)
- LF maximum peak of 245 °C
- AEC-Q101 qualified

DO-218AB

Bi-directional



Uni-directional

Mechanical Data

Case: DO-218AB

Molding compound meets UL 94 V-0 flammability rating Base P/NHE3_X - RoHS-compliant and AEC-Q101 qualified ("X" denotes revision code e.g. A, B, ...)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

Polarity: heatsink is anode

Maximum Ratings (T_A=25°C unless otherwise noted)

Parameter		Symbol	Value	Unit
Peak pulse power dissipation	with 10/1000 µs waveform	P_{PPM}	3600	W
	with 10/10 000 µs waveform		2800	
Power dissipation on infinite heatsink at T_C = 25 °C (fig. 1)		P_D	5.0	W
Peak pulse current with 10/1000 µs waveform		I_{PPM} (1)	See next table	A
Peak forward surge current 8.3 ms single half sine-wave		I_{FSM}	500	A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +175	°C

Note

(1) Non-repetitive current pulse derated above T_A = 25 °C

Thermal Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Typical thermal resistance, junction to case	$R_{\theta JC}$	1.0	°C/W

Ordering Information (Example)

Part Number	Unit Weight (g)	Package	Quantity	Delivery Mode
SM5S Series	2.80	DO-218AB	750 pcs	According to customer's requirement

Ratings and Characteristics Curves (T_A=25°C unless otherwise noted)

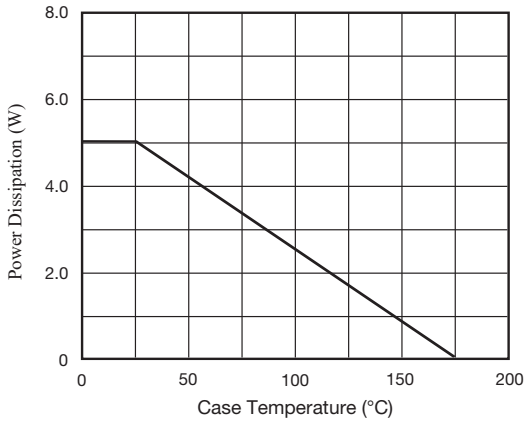


Fig. 1 - Power Derating Curve

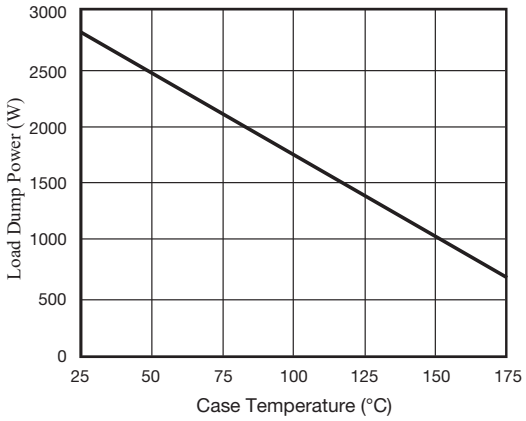


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

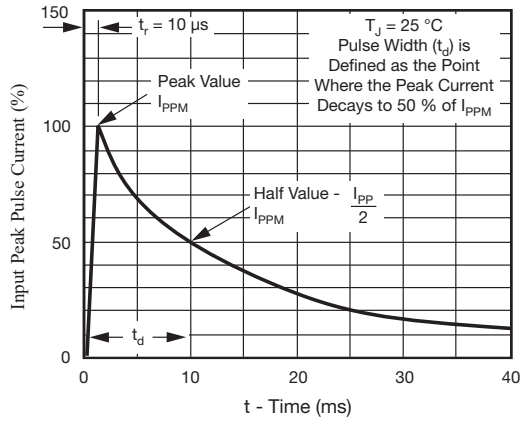


Fig. 3 - Pulse Waveform

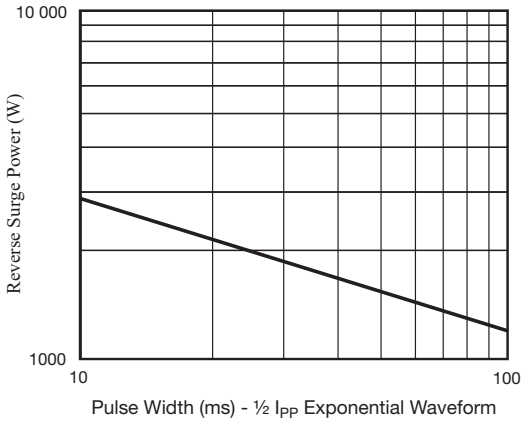


Fig. 4 - Reverse Power Capability

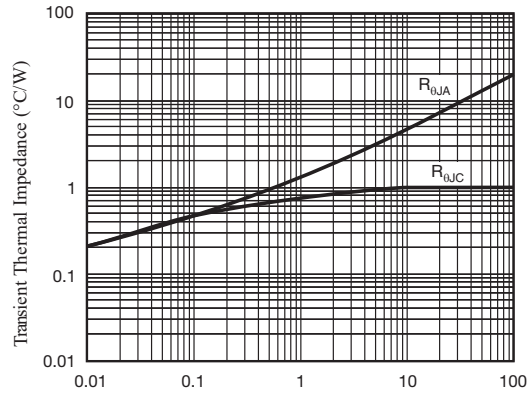


Fig. 5 - Typical Transient Thermal Impedance

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

Part Number		Breakdown Voltage V_{BR} (V)			Test Current I_T (mA)	Stand-off Voltage V_{RWM} (V)	Maximum Reverse Leakage I_R @V_{RWM} (μA)	Maximum Reverse Leakage I_R @V_{RWM} T_J=175°C (μA)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C @I_{PP} (V)	Typical Temp. Coefficient OF V_{BR} (1) αT (%/°C)
Uni	Bi	Min.	Nom.	Max.							
SM5S10A	SM5S10CA	11.1	11.7	12.3	5.0	10.0	10	150	212	17.0	0.069
SM5S11A	SM5S11CA	12.2	12.9	13.5	5.0	11.0	10	150	198	18.2	0.072
SM5S12A	SM5S12CA	13.3	14.0	14.7	5.0	12.0	10	150	181	19.9	0.074
SM5S13A	SM5S13CA	14.4	15.2	15.9	5.0	13.0	10	150	167	21.5	0.076
SM5S14A	SM5S14CA	15.6	16.4	17.2	5.0	14.0	10	150	155	23.2	0.078
SM5S15A	SM5S15CA	16.7	17.6	18.5	5.0	15.0	10	150	148	24.4	0.080
SM5S16A	SM5S16CA	17.8	18.8	19.7	5.0	16.0	10	150	138	26.0	0.081
SM5S17A	SM5S17CA	18.9	19.9	20.9	5.0	17.0	10	150	130	27.6	0.082
SM5S18A	SM5S18CA	20.0	21.1	22.1	5.0	18.0	10	150	123	29.2	0.083
SM5S20A	SM5S20CA	22.2	23.4	24.5	5.0	20.0	10	150	111	32.4	0.085
SM5S22A	SM5S22CA	24.4	25.7	26.9	5.0	22.0	10	150	101	35.5	0.086
SM5S24A	SM5S24CA	26.7	28.1	29.5	5.0	24.0	10	150	93	38.9	0.087
SM5S26A	SM5S26CA	28.9	30.4	31.9	5.0	26.0	10	150	86	42.1	0.088
SM5S28A	SM5S28CA	31.1	32.8	34.4	5.0	28.0	10	150	79	45.4	0.089
SM5S30A	SM5S30CA	33.3	35.1	36.8	5.0	30.0	10	150	74	48.4	0.090
SM5S33A	SM5S33CA	36.7	38.7	40.6	5.0	33.0	10	150	68	53.3	0.091
SM5S36A	SM5S36CA	40.0	42.1	44.2	5.0	36.0	10	150	62	58.1	0.091
SM5S40A	SM5S40CA	44.4	46.8	49.1	5.0	40.0	10	150	56	64.5	0.092
SM5S43A	SM5S43CA	47.8	50.3	52.8	5.0	43.0	10	150	52	69.4	0.093

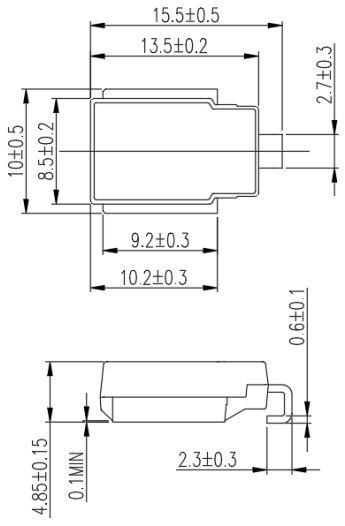
Notes

- For all types maximum V_F = 2.0 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

(1) To calculate V_{BR} vs. junction temperature, use the following formula: V_{BR} at T_J = V_{BR} at 25 °C x (1 + αT x (T_J - 25))

Package Outline Dimensions (millimeters)

DO-218AB



Mounting Pad Layout