RoHS COMPLIANT

Surface Mount Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

DO-218AB

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
- uni-directional and Bi-directional polarity
- Low leakage current
- Low forward voltage drop for uni-directional production
- High surge capability
- Meets ISO16750-2 surge specification (varied by test condition)
- LF maximum peak of 245 °C
- AEC-Q101 qualified

PRIMARY CHARACTERISTICS	
V_{BR}	11.1 V to 73.7 V
V_{WM}	10 V to 60 V
P_{PPM} (10/1000 µs)	6600 W
P_{PPM} (10/10 000 µs)	5200 W
P_D	8 W
I_{FSM} (Only for uni-direction)	700 A
T_J max.	175 °C
Polarity	Uni/Bi-directional
Package	DO-218AB

TYPICAL APPLICATIONS

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

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: For uni-directional production heatsink is anode

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)				
PARAMETER		**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation	with 10/1000 µs waveform	P_{PPM}	6600	W
	with 10/10 000 µs waveform		5200	
Power dissipation on infinite heatsink at T_C = 25 °C (fig. 1)		P_D	8.0	W
Peak pulse current with 10/1000 µs waveform		I_{PPM} (1)	See next table	A
Peak forward surge current 8.3 ms single half sine-wave		I_{FSM} (2)	700	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
(2) I_{FSM} only for uni-directional production

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)										
DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} (V)			TEST CURRENT I_T (mA)	STAND-OFF VOLTAGE V_{WM} (V)	MAXIMUM REVERSE LEAKAGE AT V_{WM} I_D (µA)	MAXIMUM REVERSE LEAKAGE AT V_{WM} T_J = 175 °C I_D (µA)	MAX. PEAK PULSE CURRENT AT 10/1000 µs WAVEFORM (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	TYPICAL TEMP. COEFFICIENT OF V_{BR} (1) αT (%/°C)
	MIN.	NOM.	MAX.							
SM8S10A	11.1	11.7	12.3	5.0	10.0	10	150	388	17.0	0.069
SM8S11A	12.2	12.9	13.5	5.0	11.0	10	150	363	18.2	0.072
SM8S12A	13.3	14.0	14.7	5.0	12.0	10	150	332	19.9	0.074
SM8S13A	14.4	15.2	15.9	5.0	13.0	10	150	307	21.5	0.076
SM8S14A	15.6	16.4	17.2	5.0	14.0	10	150	284	23.2	0.078
SM8S15A	16.7	17.6	18.5	5.0	15.0	10	150	270	24.4	0.080
SM8S16A	17.8	18.8	19.7	5.0	16.0	10	150	254	26.0	0.081
SM8S17A	18.9	19.9	20.9	5.0	17.0	10	150	239	27.6	0.082
SM8S18A	20.0	21.1	22.1	5.0	18.0	10	150	226	29.2	0.083
SM8S20A	22.2	23.4	24.5	5.0	20.0	10	150	204	32.4	0.085
SM8S22A	24.4	25.7	26.9	5.0	22.0	10	150	186	35.5	0.086
SM8S24A	26.7	28.1	29.5	5.0	24.0	10	150	170	38.9	0.087
SM8S26A	28.9	30.4	31.9	5.0	26.0	10	150	157	42.1	0.088
SM8S28A	31.1	32.8	34.4	5.0	28.0	10	150	145	45.4	0.089
SM8S30A	33.3	35.1	36.8	5.0	30.0	10	150	136	48.4	0.090
SM8S33A	36.7	38.7	40.6	5.0	33.0	10	150	124	53.3	0.091
SM8S36A	40.0	42.1	44.2	5.0	36.0	10	150	114	58.1	0.091
SM8S40A	44.4	46.8	49.1	5.0	40.0	10	150	102	64.5	0.092
SM8S43A	47.8	50.3	52.8	5.0	43.0	10	150	95.1	69.4	0.093
SM8S45A	50.0	52.7	55.3	5.0	45.0	10	150	90.8	72.7	0.094
SM8S48A	53.3	56.1	58.9	5.0	48.0	10	150	85.3	77.4	0.095
SM8S51A	56.7	59.7	62.7	5.0	51.0	10	150	80.1	82.4	0.096
SM8S54A	60.0	63.1	66.3	5.0	54.0	10	150	75.8	87.1	0.097
SM8S58A	64.4	67.8	71.2	5.0	58.0	10	150	70.5	93.6	0.098
SM8S60A	66.7	70.2	73.7	5.0	60.0	10	150	68.2	96.8	0.099

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SM8S43CA	47.8	50.3	52.8	5.0	43.0	10	150	95.1	69.4	0.093
SM8S45CA	50.0	52.7	55.3	5.0	45.0	10	150	90.8	72.7	0.094
SM8S48CA	53.3	56.1	58.9	5.0	48.0	10	150	85.3	77.4	0.095
SM8S51CA	56.7	59.7	62.7	5.0	51.0	10	150	80.1	82.4	0.096
SM8S54CA	60.0	63.1	66.3	5.0	54.0	10	150	75.8	87.1	0.097
SM8S58CA	64.4	67.8	71.2	5.0	58.0	10	150	70.5	93.6	0.098
SM8S60CA	66.7	70.2	73.7	5.0	60.0	10	150	68.2	96.8	0.099

Notes

- For all uni-directional 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

(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))

THERMAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.90	°C/W

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE	BASE QUANTITY	DELIVERY MODE
SM8SXXA	2.85	DO-218AB	NA	According to customer's requirement

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

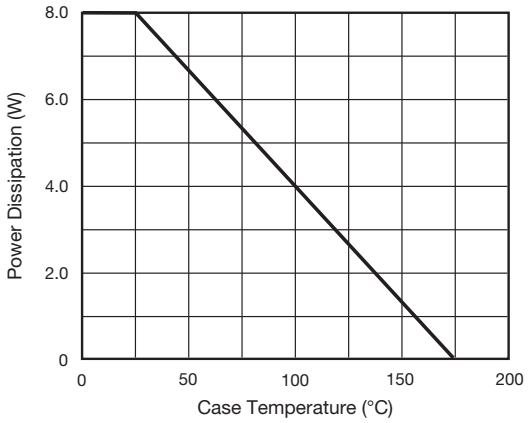


Fig. 1 - Power Derating Curve

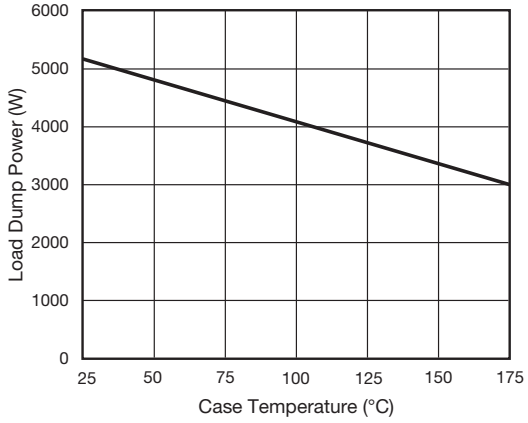


Fig. 2 - Load Dump Power Characteristics
(10 ms Exponential Waveform)

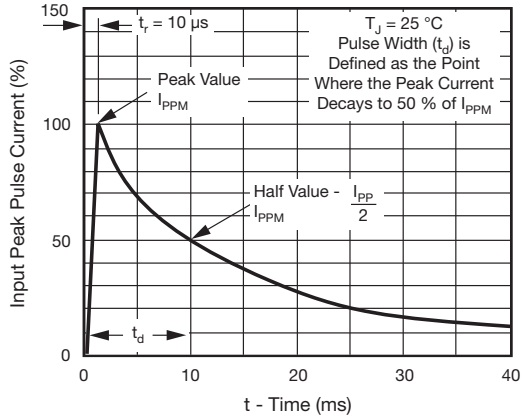


Fig. 3 - Pulse Waveform

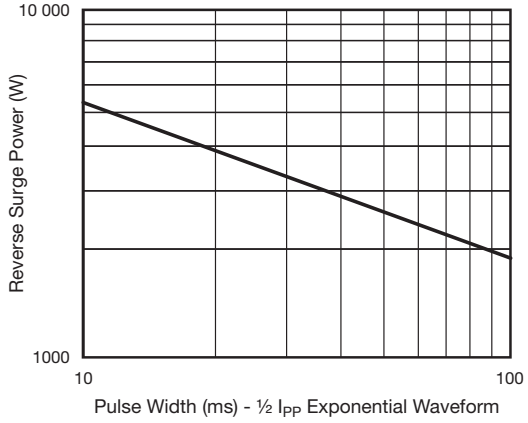


Fig. 4 - Reverse Power Capability

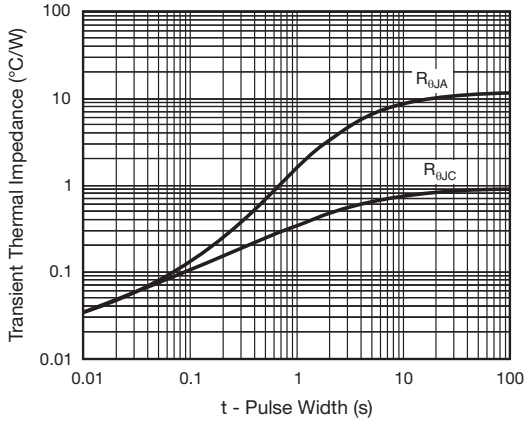


Fig. 5 - Typical Transient Thermal Impedance

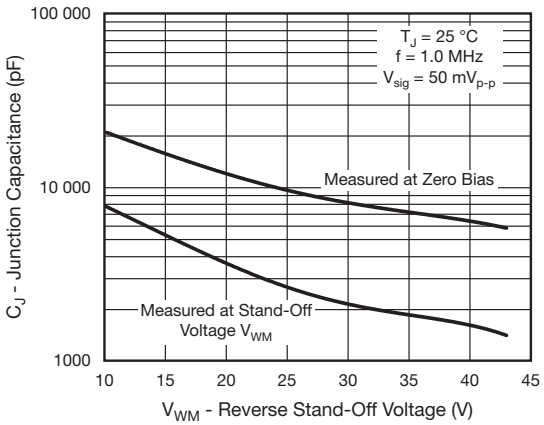


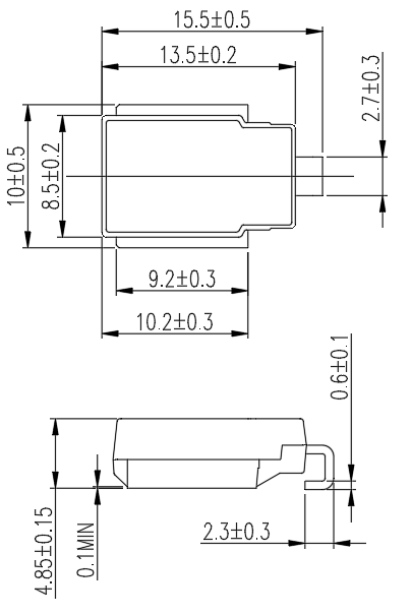
Fig. 6 - Typical Junction Capacitance

■Ordering Information (Example)

P/N	PKG	QTY
SM8SXXA(CA)	DO-218AB	750

PACKAGE OUTLINE DIMENSIONS (millimeters)

DO-218AB



Mounting Pad Layout