

High Temperature Stability and High Reliability Conditions



DO-218AB

FEATURES

- Chip produced by chemical method
- Junction passivated by high temperature resistant insulating adhesive
- $T_J = 175\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement
- Available in Bi-directional polarity only
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO16750-2 surge specification (varied by test condition)
LF maximum peak of $245\text{ }^\circ\text{C}$

PRIMARY CHARACTERISTICS

V_{BR}	11.1 V to 52.8 V
V_{WM}	10 V to 43 V
P_{PPM} (10 x 1000 μs)	6600 W
P_{PPM} (10 x 10 000 μs)	5200 W
P_D	8 W
T_J max.	$175\text{ }^\circ\text{C}$
Polarity	Unfi-dfirectfional/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: heatsink is anode

MAXIMUM RATINGS ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation	P_{PPM}	6600	W
		5200	
Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1)	P_D	8.0	W
Peak pulse current with 10/1000 μs waveform	$I_{PPM}^{(1)}$	See next table	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$

Note

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

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.							
SM8S10(C)A	11.1	11.7	12.3	5.0	10.0	10	150	388	17.0	0.069
SM8S11(C)A	12.2	12.9	13.5	5.0	11.0	10	150	363	18.2	0.072
SM8S12(C)A	13.3	14.0	14.7	5.0	12.0	10	150	332	19.9	0.074
SM8S13(C)A	14.4	15.2	15.9	5.0	13.0	10	150	307	21.5	0.076
SM8S14(C)A	15.6	16.4	17.2	5.0	14.0	10	150	284	23.2	0.078
SM8S15(C)A	16.7	17.6	18.5	5.0	15.0	10	150	270	24.4	0.080
SM8S16(C)A	17.8	18.8	19.7	5.0	16.0	10	150	254	26.0	0.081
SM8S17(C)A	18.9	19.9	20.9	5.0	17.0	10	150	239	27.6	0.082
SM8S18(C)A	20.0	21.1	22.1	5.0	18.0	10	150	226	29.2	0.083
SM8S20(C)A	22.2	23.4	24.5	5.0	20.0	10	150	204	32.4	0.085
SM8S22(C)A	24.4	25.7	26.9	5.0	22.0	10	150	186	35.5	0.086
SM8S24(C)A	26.7	28.1	29.5	5.0	24.0	10	150	170	38.9	0.087
SM8S26(C)A	28.9	30.4	31.9	5.0	26.0	10	150	157	42.1	0.088
SM8S28(C)A	31.1	32.8	34.4	5.0	28.0	10	150	145	45.4	0.089
SM8S30(C)A	33.3	35.1	36.8	5.0	30.0	10	150	136	48.4	0.090
SM8S33(C)A	36.7	38.7	40.6	5.0	33.0	10	150	124	53.3	0.091
SM8S36(C)A	40.0	42.1	44.2	5.0	36.0	10	150	114	58.1	0.091
SM8S40(C)A	44.4	46.8	49.1	5.0	40.0	10	150	102	64.5	0.092
SM8S43(C)A	47.8	50.3	52.8	5.0	43.0	10	150	95.1	69.4	0.093

Notes

(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))

ORDERING INFORMATION (Example)

PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE	BASE QUANTITY	DELIVERY MODE
SM8SXX(C)A	2.85	DO-218AB	NA	According to customer's requirement

RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)

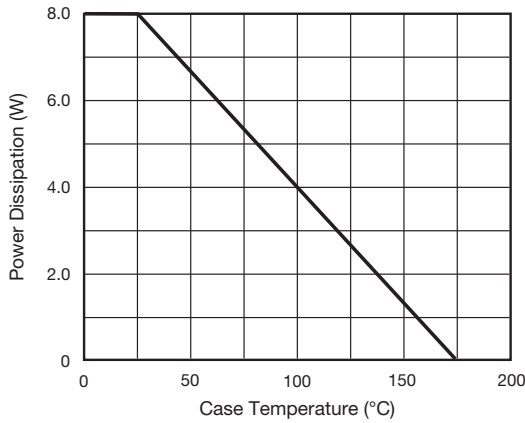


Fig. 1 - Power Derating Curve

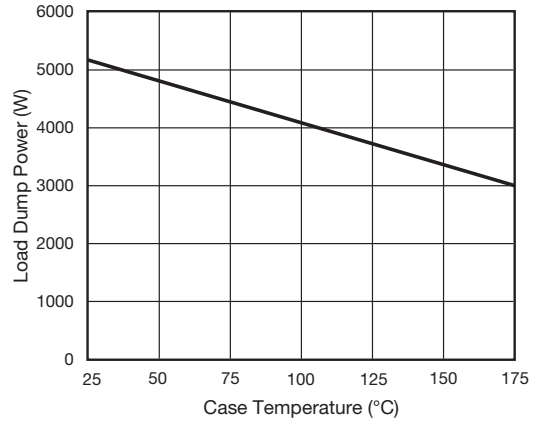


Fig. 2 - Load Dump Power Characteristics
(10 ms Exponential Waveform)

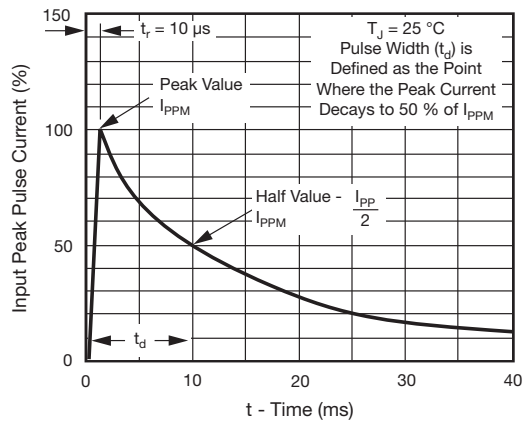


Fig. 3 - Pulse Waveform

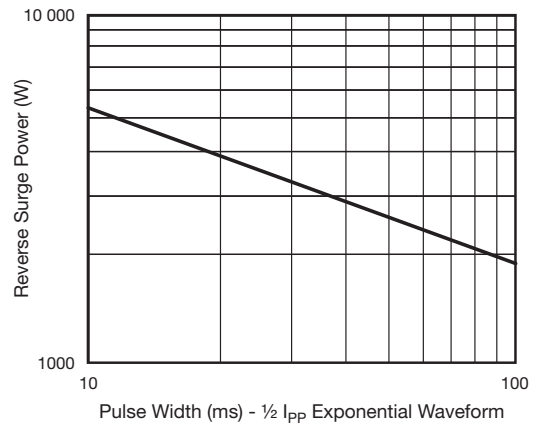


Fig. 4 - Reverse Power Capability

PACKAGE OUTLINE DIMENSIONS (millimeters)

