

### 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  $245\text{ }^\circ\text{C}$
- AEC-Q101 qualified

#### PRIMARY CHARACTERISTICS

$V_{BR}$	11.1 V to 52.8 V
$V_{WM}$	10 V to 43 V
$P_{PPM}$ (10 x 1000 $\mu\text{s}$ )	6600 W
$P_{PPM}$ (10 x 10 000 $\mu\text{s}$ )	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 $\mu\text{s}$ 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 <sub>C</sub> = 25 °C unless otherwise noted)										
DEVICE TYPE	BREAKDOWN VOLTAGE V <sub>BR</sub> (V)			TEST CURRENT I <sub>T</sub> (mA)	STAND-OFF VOLTAGE V <sub>WM</sub> (V)	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> I <sub>D</sub> (μA)	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> T <sub>J</sub> = 175 °C I <sub>D</sub> (μA)	MAX. PEAK PULSE CURRENT AT 10/1000 μs WAVEFORM (A)	MAXIMUM CLAMPING VOLTAGE AT I <sub>PPM</sub> V <sub>C</sub> (V)	TYPICAL TEMP. COEFFICIENT OF V <sub>BR</sub> <sup>(1)</sup> αT (%/°C)
	MIN.	NOM.	MAX.							
SM8S10(C)A-Q1	11.1	11.7	12.3	5.0	10.0	10	150	388	17.0	0.069
SM8S11(C)A-Q1	12.2	12.9	13.5	5.0	11.0	10	150	363	18.2	0.072
SM8S12(C)A-Q1	13.3	14.0	14.7	5.0	12.0	10	150	332	19.9	0.074
SM8S13(C)A-Q1	14.4	15.2	15.9	5.0	13.0	10	150	307	21.5	0.076
SM8S14(C)A-Q1	15.6	16.4	17.2	5.0	14.0	10	150	284	23.2	0.078
SM8S15(C)A-Q1	16.7	17.6	18.5	5.0	15.0	10	150	270	24.4	0.080
SM8S16(C)A-Q1	17.8	18.8	19.7	5.0	16.0	10	150	254	26.0	0.081
SM8S17(C)A-Q1	18.9	19.9	20.9	5.0	17.0	10	150	239	27.6	0.082
SM8S18(C)A-Q1	20.0	21.1	22.1	5.0	18.0	10	150	226	29.2	0.083
SM8S20(C)A-Q1	22.2	23.4	24.5	5.0	20.0	10	150	204	32.4	0.085
SM8S22(C)A-Q1	24.4	25.7	26.9	5.0	22.0	10	150	186	35.5	0.086
SM8S24(C)A-Q1	26.7	28.1	29.5	5.0	24.0	10	150	170	38.9	0.087
SM8S26(C)A-Q1	28.9	30.4	31.9	5.0	26.0	10	150	157	42.1	0.088
SM8S28(C)A-Q1	31.1	32.8	34.4	5.0	28.0	10	150	145	45.4	0.089
SM8S30(C)A-Q1	33.3	35.1	36.8	5.0	30.0	10	150	136	48.4	0.090
SM8S33(C)A-Q1	36.7	38.7	40.6	5.0	33.0	10	150	124	53.3	0.091
SM8S36(C)A-Q1	40.0	42.1	44.2	5.0	36.0	10	150	114	58.1	0.091
SM8S40(C)A-Q1	44.4	46.8	49.1	5.0	40.0	10	150	102	64.5	0.092
SM8S43(C)A-Q1	47.8	50.3	52.8	5.0	43.0	10	150	95.1	69.4	0.093

### Notes

(1) To calculate V<sub>BR</sub> vs. junction temperature, use the following formula: V<sub>BR</sub> at T<sub>J</sub> = V<sub>BR</sub> at 25 °C x (1 + αT x (T<sub>J</sub> - 25))

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE	BASE QUANTITY	DELIVERY MODE
SM8SXX(C)A-Q1	2.85	DO-218AB	NA	According to customer's requirement

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

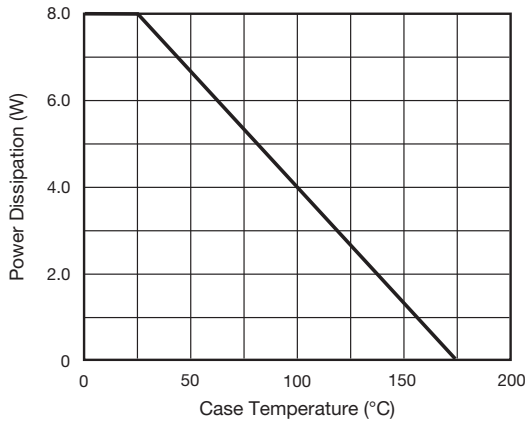


Fig. 1 - Power Derating Curve

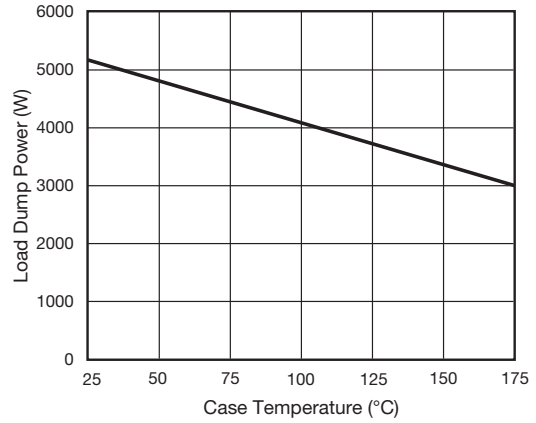


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

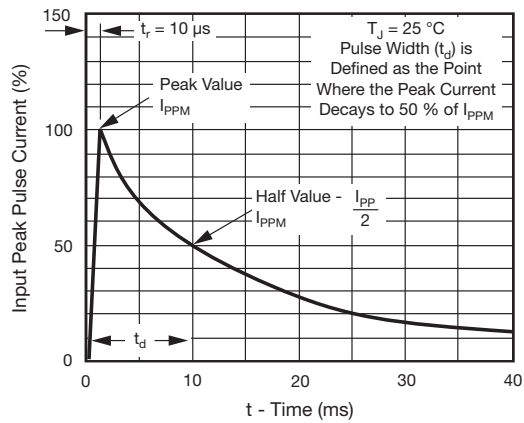


Fig. 3 - Pulse Waveform

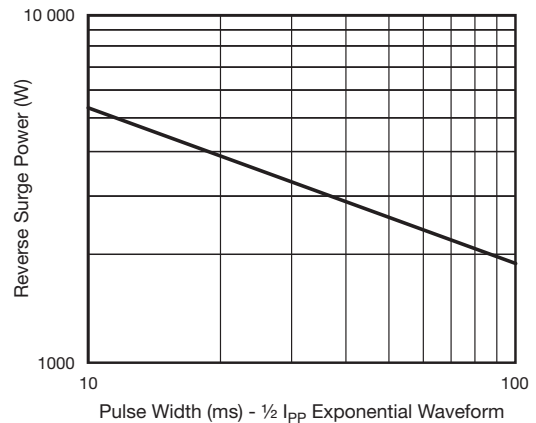
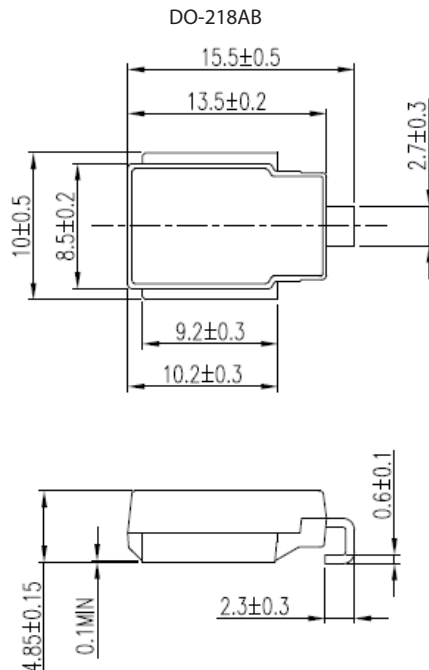
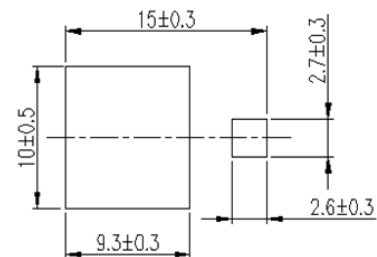


Fig. 4 - Reverse Power Capability

**PACKAGE OUTLINE DIMENSIONS** (millimeters)



Mounting Pad Layout



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