

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)	4600 W
P_{PPM} (10 x 10 000 μs)	3600 W
P_D	6 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	with 10/1000 μs waveform	P_{PPM}	4600	W
	with 10/10 000 μs waveform		3600	
Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1)		P_D	6.0	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 ($T_C = 25\text{ }^\circ\text{C}$ 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} $T_J = 175\text{ }^\circ\text{C}$ 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} α_T ($\%/^\circ\text{C}$)
	MIN.	NOM.	MAX.							
SM6S10(C)A	11.1	11.7	12.3	5.0	10.0	10	150	271	17.0	0.069
SM6S11(C)A	12.2	12.9	13.5	5.0	11.0	10	150	253	18.2	0.072
SM6S12(C)A	13.3	14.0	14.7	5.0	12.0	10	150	231	19.9	0.074
SM6S13(C)A	14.4	15.2	15.9	5.0	13.0	10	150	214	21.5	0.076
SM6S14(C)A	15.6	16.4	17.2	5.0	14.0	10	150	198	23.2	0.078
SM6S15(C)A	16.7	17.6	18.5	5.0	15.0	10	150	189	24.4	0.080
SM6S16(C)A	17.8	18.8	19.7	5.0	16.0	10	150	177	26.0	0.081
SM6S17(C)A	18.9	19.9	20.9	5.0	17.0	10	150	167	27.6	0.082
SM6S18(C)A	20.0	21.1	22.1	5.0	18.0	10	150	158	29.2	0.083
SM6S20(C)A	22.2	23.4	24.5	5.0	20.0	10	150	142	32.4	0.085
SM6S22(C)A	24.4	25.7	26.9	5.0	22.0	10	150	130	35.5	0.086
SM6S24(C)A	26.7	28.1	29.5	5.0	24.0	10	150	118	38.9	0.087
SM6S26(C)A	28.9	30.4	31.9	5.0	26.0	10	150	109	42.1	0.088
SM6S28(C)A	31.1	32.8	34.4	5.0	28.0	10	150	101	45.4	0.089
SM6S30(C)A	33.3	35.1	36.8	5.0	30.0	10	150	95	48.4	0.090
SM6S33(C)A	36.7	38.7	40.6	5.0	33.0	10	150	86	53.3	0.091
SM6S36(C)A	40.0	42.1	44.2	5.0	36.0	10	150	79	58.1	0.091
SM6S40(C)A	44.4	46.8	49.1	5.0	40.0	10	150	71	64.5	0.092
SM6S43(C)A	47.8	50.3	52.8	5.0	43.0	10	150	66	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 $25\text{ }^\circ\text{C} \times (1 + \alpha_T \times (T_J - 25))$

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE	BASE QUANTITY	DELIVERY MODE
SM6SXX(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)

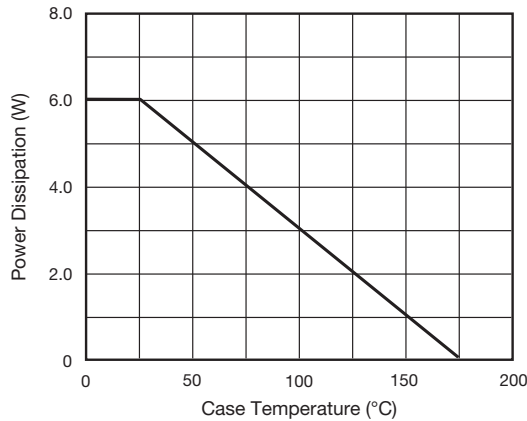


Fig. 1 - Power Derating Curve

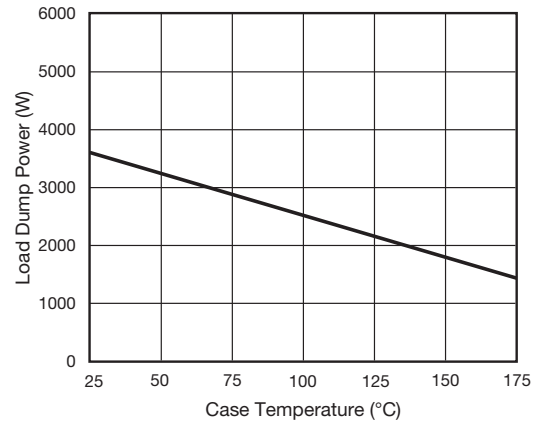


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

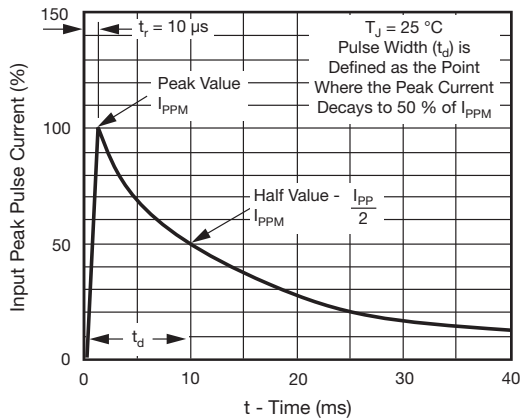


Fig. 3 - Pulse Waveform

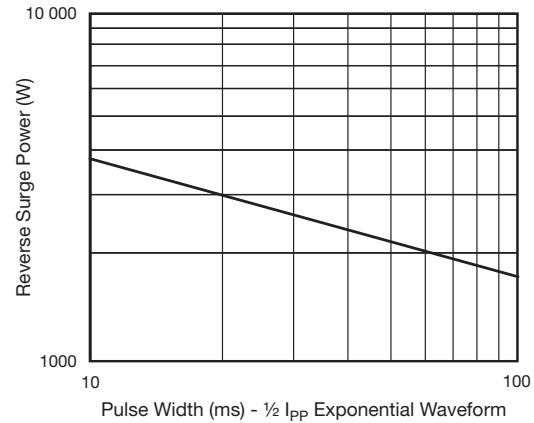


Fig. 4 - Reverse Power Capability

PACKAGE OUTLINE DIMENSIONS (millimeters)

