

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)	3600 W
P_{PPM} (10 x 10 000 μs)	2800 W
P_D	5 W
T_J max.	$175\text{ }^\circ\text{C}$
Polarity	Unfi-directfional/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}	with 10/1000 μs waveform	3600
		with 10/10 000 μs waveform	2800
Power dissipation on infinite heatsink at $T_C = 25\text{ }^\circ\text{C}$ (fig. 1)	P_D	5.0	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.							
SM5S10(C)A	11.1	11.7	12.3	5.0	10.0	10	150	212	17.0	0.069
SM5S11(C)A	12.2	12.9	13.5	5.0	11.0	10	150	198	18.2	0.072
SM5S12(C)A	13.3	14.0	14.7	5.0	12.0	10	150	181	19.9	0.074
SM5S13(C)A	14.4	15.2	15.9	5.0	13.0	10	150	167	21.5	0.076
SM5S14(C)A	15.6	16.4	17.2	5.0	14.0	10	150	155	23.2	0.078
SM5S15(C)A	16.7	17.6	18.5	5.0	15.0	10	150	148	24.4	0.080
SM5S16(C)A	17.8	18.8	19.7	5.0	16.0	10	150	138	26.0	0.081
SM5S17(C)A	18.9	19.9	20.9	5.0	17.0	10	150	130	27.6	0.082
SM5S18(C)A	20.0	21.1	22.1	5.0	18.0	10	150	123	29.2	0.083
SM5S20(C)A	22.2	23.4	24.5	5.0	20.0	10	150	111	32.4	0.085
SM5S22(C)A	24.4	25.7	26.9	5.0	22.0	10	150	101	35.5	0.086
SM5S24(C)A	26.7	28.1	29.5	5.0	24.0	10	150	93	38.9	0.087
SM5S26(C)A	28.9	30.4	31.9	5.0	26.0	10	150	86	42.1	0.088
SM5S28(C)A	31.1	32.8	34.4	5.0	28.0	10	150	79	45.4	0.089
SM5S30(C)A	33.3	35.1	36.8	5.0	30.0	10	150	74	48.4	0.090
SM5S33(C)A	36.7	38.7	40.6	5.0	33.0	10	150	68	53.3	0.091
SM5S36(C)A	40.0	42.1	44.2	5.0	36.0	10	150	62	58.1	0.091
SM5S40(C)A	44.4	46.8	49.1	5.0	40.0	10	150	56	64.5	0.092
SM5S43(C)A	47.8	50.3	52.8	5.0	43.0	10	150	52	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
SM5SXX(C)A	2.80	DO-218AB	NA	According to customer's requirement

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

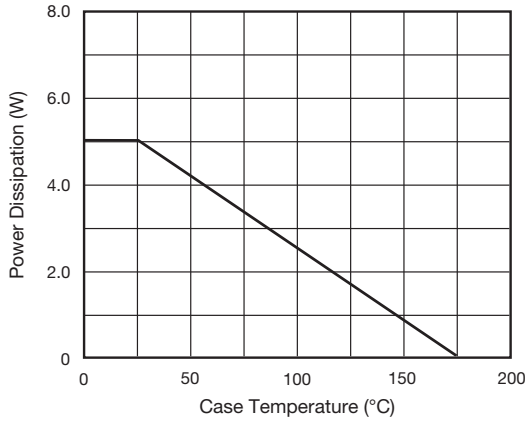


Fig. 1 - Power Derating Curve

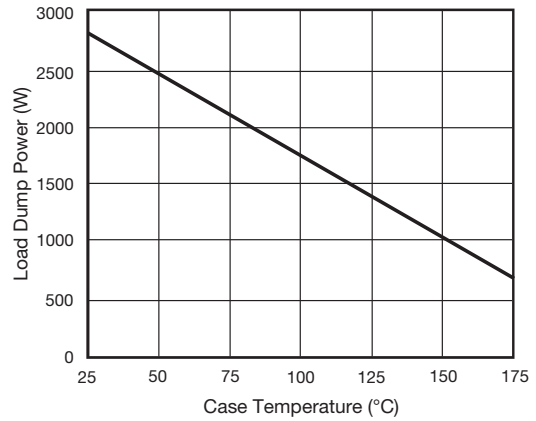


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

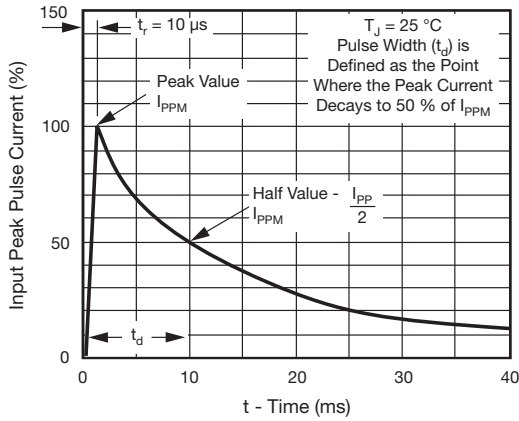


Fig. 3 - Pulse Waveform

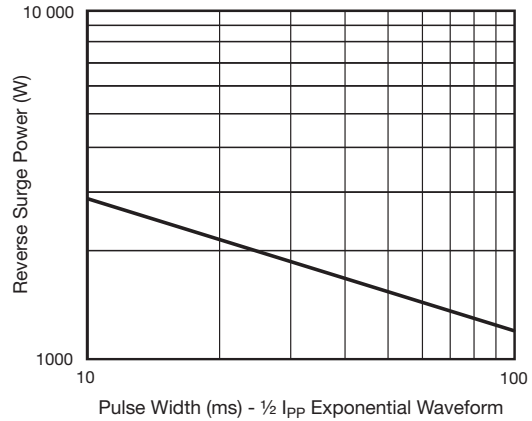


Fig. 4 - Reverse Power Capability

PACKAGE OUTLINE DIMENSIONS (millimeters)

