SM6S10(C)A-Q1 THRU SM6S43(C)A-Q1

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
- 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 °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 µs)	4600 W
P_{PPM} (10 x 10 000 µs)	3600 W
P_D	6 W
T_J max.	175 °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 °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 °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	°C

Note

(1) Non-repetitive current pulse derated above T_A = 25 °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.**							
SM6S10(C)A-Q1	11.1	11.7	12.3	5.0	10.0	10	150	271	17.0	0.069
SM6S11(C)A-Q1	12.2	12.9	13.5	5.0	11.0	10	150	253	18.2	0.072
SM6S12(C)A-Q1	13.3	14.0	14.7	5.0	12.0	10	150	231	19.9	0.074
SM6S13(C)A-Q1	14.4	15.2	15.9	5.0	13.0	10	150	214	21.5	0.076
SM6S14(C)A-Q1	15.6	16.4	17.2	5.0	14.0	10	150	198	23.2	0.078
SM6S15(C)A-Q1	16.7	17.6	18.5	5.0	15.0	10	150	189	24.4	0.080
SM6S16(C)A-Q1	17.8	18.8	19.7	5.0	16.0	10	150	177	26.0	0.081
SM6S17(C)A-Q1	18.9	19.9	20.9	5.0	17.0	10	150	167	27.6	0.082
SM6S18(C)A-Q1	20.0	21.1	22.1	5.0	18.0	10	150	158	29.2	0.083
SM6S20(C)A-Q1	22.2	23.4	24.5	5.0	20.0	10	150	142	32.4	0.085
SM6S22(C)A-Q1	24.4	25.7	26.9	5.0	22.0	10	150	130	35.5	0.086
SM6S24(C)A-Q1	26.7	28.1	29.5	5.0	24.0	10	150	118	38.9	0.087
SM6S26(C)A-Q1	28.9	30.4	31.9	5.0	26.0	10	150	109	42.1	0.088
SM6S28(C)A-Q1	31.1	32.8	34.4	5.0	28.0	10	150	101	45.4	0.089
SM6S30(C)A-Q1	33.3	35.1	36.8	5.0	30.0	10	150	95	48.4	0.090
SM6S33(C)A-Q1	36.7	38.7	40.6	5.0	33.0	10	150	86	53.3	0.091
SM6S36(C)A-Q1	40.0	42.1	44.2	5.0	36.0	10	150	79	58.1	0.091
SM6S40(C)A-Q1	44.4	46.8	49.1	5.0	40.0	10	150	71	64.5	0.092
SM6S43(C)A-Q1	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 °C x (1 + αT x (T_J - 25))

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PACKAGE**	**BASE QUANTITY**	**DELIVERY MODE**
SM6SXX(C)A-Q1	2.85	DO-218AB	NA	According to customer's requirement

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

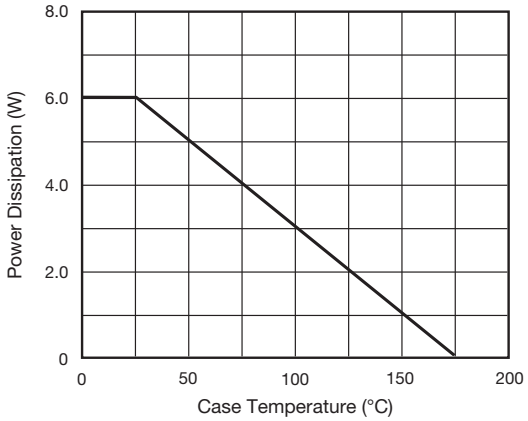


Fig. 1 - Power Derating Curve

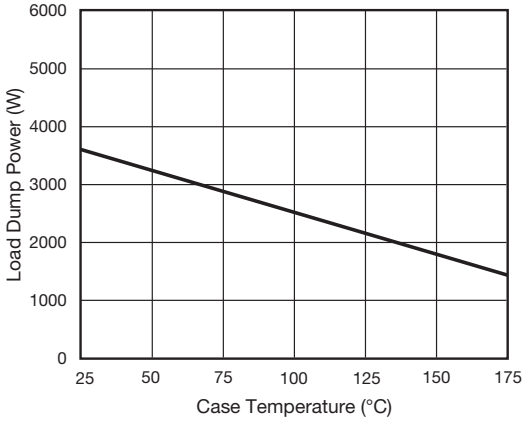


Fig. 2 - Load Dump Power Characteristics
(10 ms Exponential Waveform)

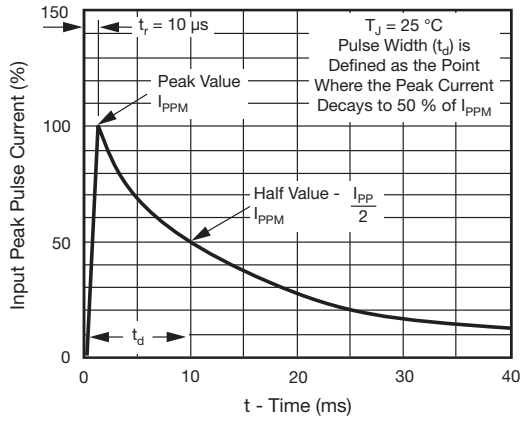


Fig. 3 - Pulse Waveform

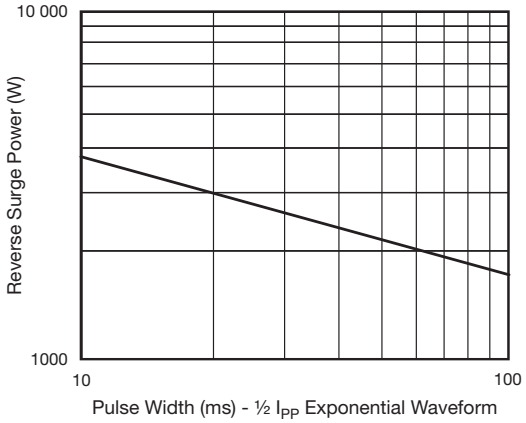
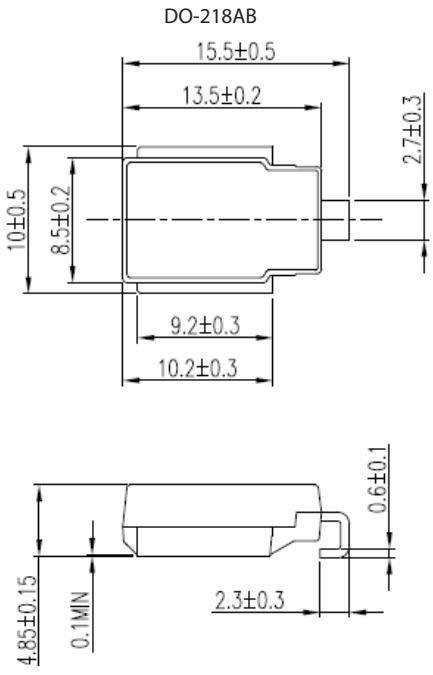
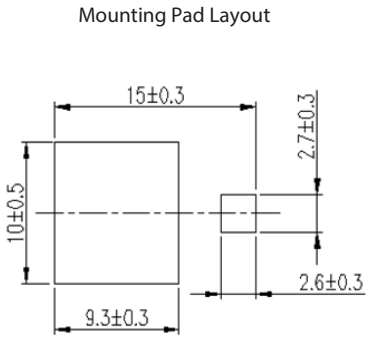


Fig. 4 - Reverse Power Capability

PACKAGE OUTLINE DIMENSIONS (millimeters)





Document ID	Issued Date	Revised Date	Revision	Page.
AS-1080017	2018/03/08	2023/05/12	C	3