

Surface Mount Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

Patented*

* Patent #'s:
4,980,315
5,166,769
5,278,095


DO-218AB
FEATURES

- Patented PAR[®] construction
- Available in uni-directional polarity only
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO7637-2 surge spec (varied by test condition)
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC


TYPICAL APPLICATIONS

Used 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

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Heatsink is anode

PRIMARY CHARACTERISTICS	
V_{WM}	10 V to 36 V
P_{PPM} (10 x 1000 μ s)	4600 W
P_{PPM} (10 x 10000 μ s)	3600 W
P_D	6 W
I_{FSM}	600 A
T_J max.	175 °C

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	VALUE	UNIT	
Peak pulse power dissipation with 10/1000 μ s waveform with 10/10000 μ s waveform	P_{PPM}	4600 3600	W	
Power dissipation on infinite heatsink at $T_C = 25$ °C (Fig. 1)	P_D	6.0	W	
Peak pulse current with 10/1000 μ s waveform ⁽¹⁾	I_{PPM}	See next table	A	
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	600	A	
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175	°C	

Note:

(1) Non-repetitive current pulse at $T_A = 25$ °C

SM6S10 thru SM6S36A

Vishay General Semiconductor



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)
	MIN	MAX						
SM6S10	11.1	13.6	5.0	10.0	15	250	245	18.8
SM6S10A	11.1	12.3	5.0	10.0	15	250	271	17.0
SM6S11	12.2	14.9	5.0	11.0	10	150	229	20.1
SM6S11A	12.2	13.5	5.0	11.0	10	150	253	18.2
SM6S12	13.3	16.3	5.0	12.0	10	150	209	22.0
SM6S12A	13.3	14.7	5.0	12.0	10	150	231	19.9
SM6S13	14.4	17.6	5.0	13.0	10	150	193	23.8
SM6S13A	14.4	15.9	5.0	13.0	10	150	214	21.5
SM6S14	15.6	19.1	5.0	14.0	10	150	178	25.8
SM6S14A	15.6	17.2	5.0	14.0	10	150	198	23.2
SM6S15	16.7	20.4	5.0	15.0	10	150	171	26.9
SM6S15A	16.7	18.5	5.0	15.0	10	150	189	24.4
SM6S16	17.8	21.8	5.0	16.0	10	150	160	28.8
SM6S16A	17.8	19.7	5.0	16.0	10	150	177	26.0
SM6S17	18.9	23.1	5.0	17.0	10	150	151	30.5
SM6S17A	18.9	20.9	5.0	17.0	10	150	167	27.6
SM6S18	20.0	24.4	5.0	18.0	10	150	143	32.2
SM6S18A	20.0	22.1	5.0	18.0	10	150	158	29.2
SM6S20	22.2	27.1	5.0	20.0	10	150	128	35.8
SM6S20A	22.2	24.5	5.0	20.0	10	150	142	32.4
SM6S22	24.4	29.8	5.0	22.0	10	150	117	39.4
SM6S22A	24.4	26.9	5.0	22.0	10	150	130	35.5
SM6S24	26.7	32.6	5.0	24.0	10	150	107	43.0
SM6S24A	26.7	29.5	5.0	24.0	10	150	118	38.9
SM6S26	28.9	35.3	5.0	26.0	10	150	99	46.6
SM6S26A	28.9	31.9	5.0	26.0	10	150	109	42.1
SM6S28	31.1	38.0	5.0	28.0	10	150	92	50.1
SM6S28A	31.1	34.4	5.0	28.0	10	150	101	45.4
SM6S30	33.3	40.7	5.0	30.0	10	150	86	53.5
SM6S30A	33.3	36.8	5.0	30.0	10	150	95	48.4
SM6S33	36.7	44.9	5.0	33.0	10	150	78	59.0
SM6S33A	36.7	40.6	5.0	33.0	10	150	86	53.3
SM6S36	40.0	48.9	5.0	36.0	10	150	72	64.3
SM6S36A	40.0	44.2	5.0	36.0	10	150	79	58.1

Note:

For all types maximum V_F = 1.9 V at I_F = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

THERMAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	R _{θJC}	0.95	°C/W



ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SM6S10AHE3/2D ⁽¹⁾	2.550	2D	750	13" diameter paper tape and reel, anode towards the sprocket hole

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

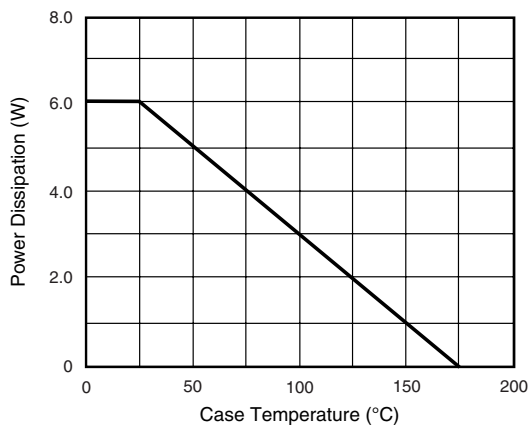


Figure 1. Power Derating Curve

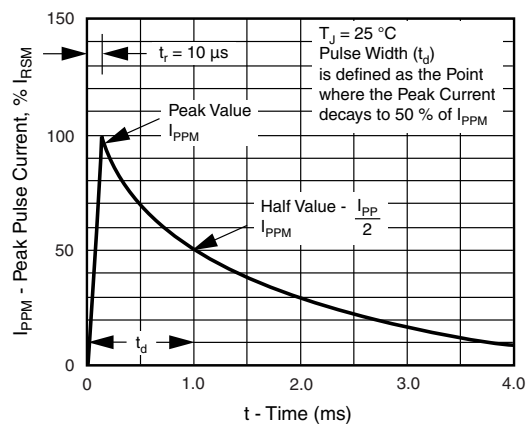


Figure 3. Pulse Waveform

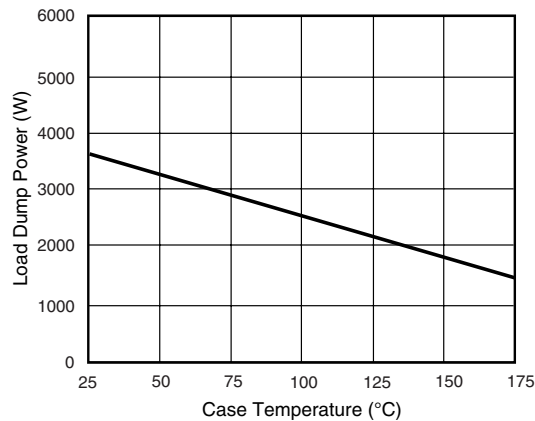


Figure 2. Load Dump Power Characteristics (10 ms Exponential Waveform)

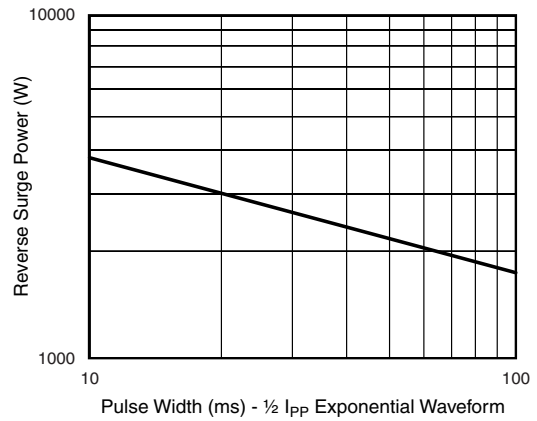


Figure 4. Reverse Power Capability

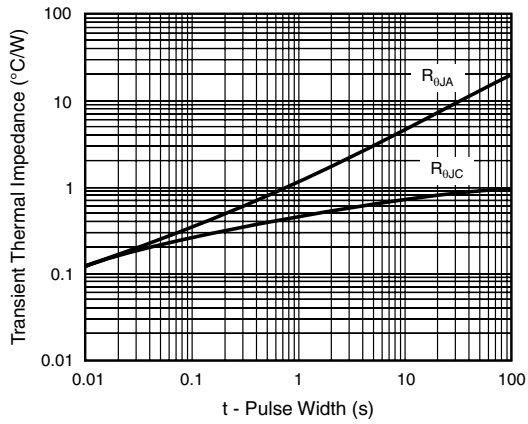
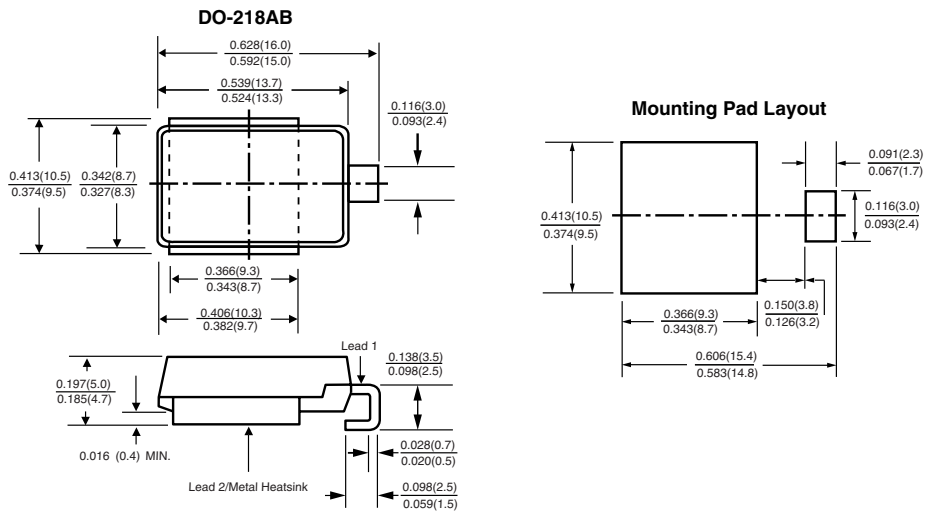


Figure 5. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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