



## 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
- $T_J = 175\text{ }^\circ\text{C}$  capability suitable for high reliability and automotive requirement
- uni-directional and Bi-directional polarity
- Low leakage current
- Low forward voltage drop for uni-directional production
- 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 73.7 V
$V_{WM}$	10 V to 60 V
$P_{PPM}$ (10/1000 $\mu\text{s}$ )	6600 W
$P_{PPM}$ (10/10 000 $\mu\text{s}$ )	5200 W
$P_D$	8 W
$I_{FSM}$ (Only for uni-direction)	700 A
$T_J$ max.	$175\text{ }^\circ\text{C}$
Polarity	Uni/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:** For uni-directional production 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 $\mu\text{s}$ waveform	6600
		with 10/10 000 $\mu\text{s}$ waveform	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
Peak forward surge current 8.3 ms single half sine-wave	$I_{FSM}^{(2)}$	700	A
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	$^\circ\text{C}$

#### Note

<sup>(1)</sup> Non-repetitive current pulse derated above  $T_A = 25\text{ }^\circ\text{C}$

<sup>(2)</sup>  $I_{FSM}$  only for uni-directional production



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ 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 $V_{WM}$ $I_D$ ( $\mu\text{A}$ )	MAXIMUM REVERSE LEAKAGE AT $V_{WM}$ $T_J = 175\text{ }^\circ\text{C}$ $I_D$ ( $\mu\text{A}$ )	MAX. PEAK PULSE CURRENT AT 10/1000 $\mu\text{s}$ WAVEFORM (A)	MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)	TYPICAL TEMP. COEFFICIENT OF $V_{BR}$ $\alpha_T$ ( $\%/^\circ\text{C}$ )
	MIN.	NOM.	MAX.							
SM8S10A/CA	11.1	11.7	12.3	5.0	10.0	10	150	388	17.0	0.069
SM8S11A/CA	12.2	12.9	13.5	5.0	11.0	10	150	363	18.2	0.072
SM8S12A/CA	13.3	14.0	14.7	5.0	12.0	10	150	332	19.9	0.074
SM8S13A/CA	14.4	15.2	15.9	5.0	13.0	10	150	307	21.5	0.076
SM8S14A/CA	15.6	16.4	17.2	5.0	14.0	10	150	284	23.2	0.078
SM8S15A/CA	16.7	17.6	18.5	5.0	15.0	10	150	270	24.4	0.080
SM8S16A/CA	17.8	18.8	19.7	5.0	16.0	10	150	254	26.0	0.081
SM8S17A/CA	18.9	19.9	20.9	5.0	17.0	10	150	239	27.6	0.082
SM8S18A/CA	20.0	21.1	22.1	5.0	18.0	10	150	226	29.2	0.083
SM8S20A/CA	22.2	23.4	24.5	5.0	20.0	10	150	204	32.4	0.085
SM8S22A/CA	24.4	25.7	26.9	5.0	22.0	10	150	186	35.5	0.086
SM8S24A/CA	26.7	28.1	29.5	5.0	24.0	10	150	170	38.9	0.087
SM8S26A/CA	28.9	30.4	31.9	5.0	26.0	10	150	157	42.1	0.088
SM8S28A/CA	31.1	32.8	34.4	5.0	28.0	10	150	145	45.4	0.089
SM8S30A/CA	33.3	35.1	36.8	5.0	30.0	10	150	136	48.4	0.090
SM8S33A/CA	36.7	38.7	40.6	5.0	33.0	10	150	124	53.3	0.091
SM8S36A/CA	40.0	42.1	44.2	5.0	36.0	10	150	114	58.1	0.091
SM8S40A/CA	44.4	46.8	49.1	5.0	40.0	10	150	102	64.5	0.092
SM8S43A/CA	47.8	50.3	52.8	5.0	43.0	10	150	95.1	69.4	0.093
SM8S45A/CA	50.0	52.7	55.3	5.0	45.0	10	150	90.8	72.7	0.094
SM8S48A/CA	53.3	56.1	58.9	5.0	48.0	10	150	85.3	77.4	0.095
SM8S51A/CA	56.7	59.7	62.7	5.0	51.0	10	150	80.1	82.4	0.096
SM8S54A/CA	60.0	63.1	66.3	5.0	54.0	10	150	75.8	87.1	0.097
SM8S58A/CA	64.4	67.8	71.2	5.0	58.0	10	150	70.5	93.6	0.098
SM8S60A/CA	66.7	70.2	73.7	5.0	60.0	10	150	68.2	96.8	0.099

**Notes**

- For all uni-directional types maximum  $V_F = 1.8\text{ V}$  at  $I_F = 100\text{ A}$  measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum
- (1) To calculate  $V_{BR}$  vs. junction temperature, use the following formula:  $V_{BR}$  at  $T_J = V_{BR}$  at  $25\text{ }^\circ\text{C} \times (1 + \alpha_T \times (T_J - 25))$

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.90	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE	BASE QUANTITY	DELIVERY MODE
SM8SXXA	2.85	DO-218AB	NA	According to customer's requirement



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

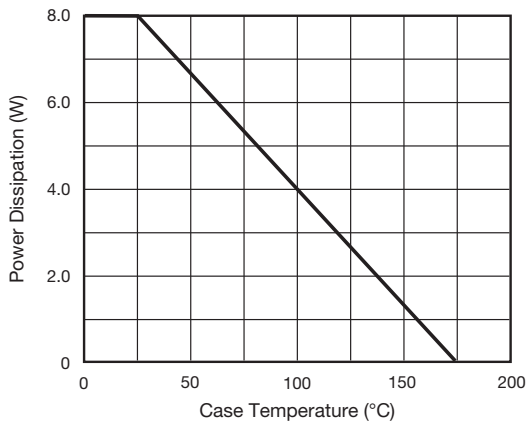


Fig. 1 - Power Derating Curve

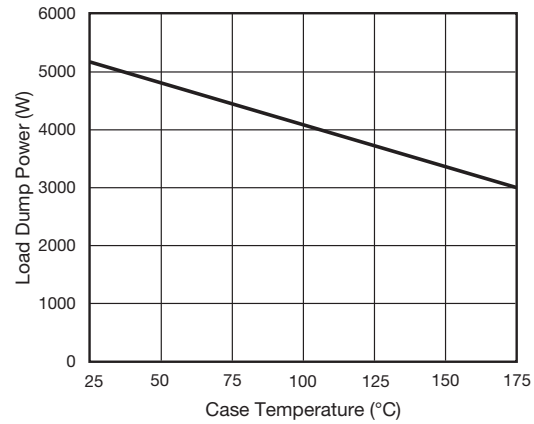


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

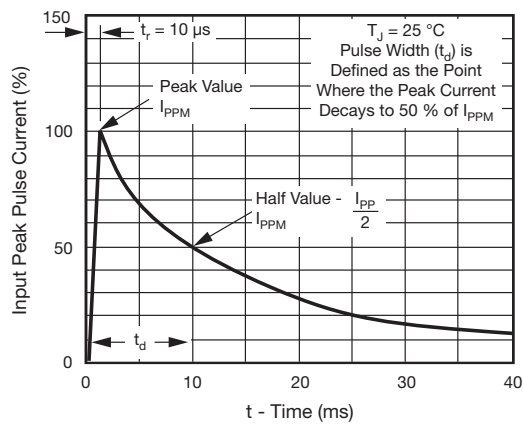


Fig. 3 - Pulse Waveform

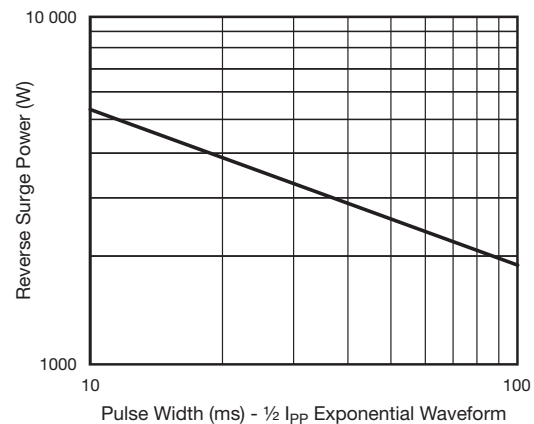


Fig. 4 - Reverse Power Capability

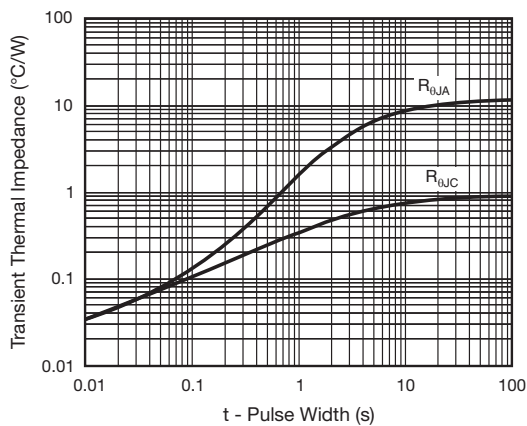


Fig. 5 - Typical Transient Thermal Impedance

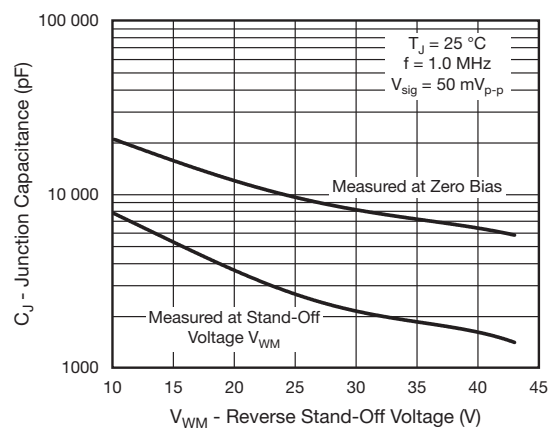
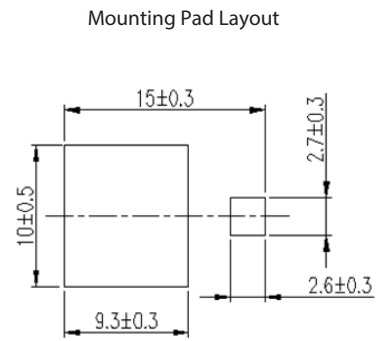
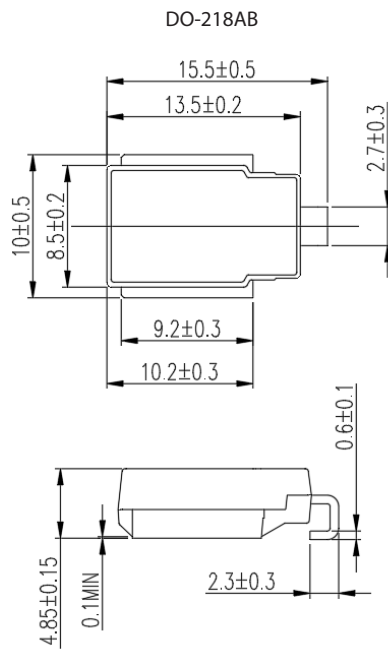


Fig. 6 - Typical Junction Capacitance



**PACKAGE OUTLINE DIMENSIONS** (millimeters)



## X-ON Electronics

Largest Supplier of Electrical and Electronic Components

*Click to view similar products for [ESD Suppressors / TVS Diodes](#) category:*

*Click to view products by [DOWO](#) manufacturer:*

Other Similar products are found below :

[60KS200C](#) [D18V0L1B2LP-7B](#) [D5V0F4U5P5-7](#) [NTE4902](#) [P4KE27CA](#) [P6KE11CA](#) [P6KE8.2A](#) [SA60CA](#) [SA64CA](#) [SMBJ12CATR](#)  
[SMBJ33CATR](#) [SMBJ6.5A](#) [SMBJ8.0A](#) [ESD101-B1-02ELS E6327](#) [ESD112-B1-02EL E6327](#) [ESD7451N2T5G](#) [19180-510](#) [CPDT-5V0USP-](#)  
[HF](#) [3.0SMCJ33CA-F](#) [3.0SMCJ36A-F](#) [HSPC16701B02TP](#) [JANTX1N6126A](#) [D3V3Q1B2DLP3-7](#) [D55V0M1B2WS-7](#) [SCM1293A-04SO](#)  
[ESD200-B1-CSP0201 E6327](#) [SM12-7](#) [CEN955 W/DATA](#) [VESD12A1A-HD1-GS08](#) [CPDQC5V0-HF](#) [D1213A-01LP4-7B](#) [ESD101-B1-02EL](#)  
[E6327](#) [AOZ8808DI-03](#) [5KP15A](#) [5KP48A](#) [5KP90A](#) [ESD3V3D7-TP](#) [15KPA36A-LF](#) [P4KE56CA](#) [P4KE68A](#) [P4KE91CATR](#) [P6KE120A](#)  
[P6KE13CA](#) [P6KE43CA](#) [P6KE6.8CA](#) [P6KE8.2](#) [P6SMBJ20CA](#) [JANTX1N6072A](#) [SR2835ESKG](#) [SA90CA](#)