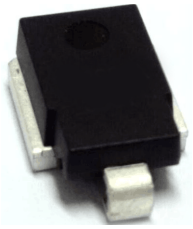
6600W Transient Voltage Suppressor (TVS)

SM8S Series | **10 To 43 V** | **6600W** | **DO-218AB**

Description

SM8S Series TVS diodes can be used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

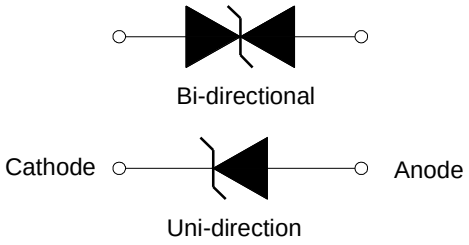
DO-218AB



Features

- **u** Available in uni/bi-directional polarity.
- **u** Low forward voltage drop & Low leakage current.
- **u** High surge capability.
- **u** Junction passivation optimized design passivated anisotropic rectifier technology.
- **u** T_J = 175 ℃ capability suitable for high reliability and automotive requirement.
- **u** Meets ISO7637-2 surge specification (varied by test condition).
- **u** Meets MSL level 1, per J-STD-020,LF maximum peak of 245℃.
- **u** AEC-Q101 qualified.
- **u** Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC.

Functional Diagram



Mechanical Data

Case: DO-218AB

Molding compound meets UL 94V-0 flammability rating. Base P/NHE3-ROHS-compliant, AEC-Q101 qualified.

Terminals: Matte tin plated leads, solderable per J-STD-002.

Absolute Maximum Ratings (T_C=25℃,RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	6600	W
Peak pulse power dissipation on 10/10000 μs waveform		5200	W
Peak pulse current with 10/1000 μs waveform	I_{PP}	See Next Table	A
Power dissipation on infinite heat Sink at T_C=25℃	P_D	8.0	W
Peak forward surge current, 8.3 ms single half sine-wave	I_{FSM}	700	A
Operating junction and storage temperature range	T_J , T_{STG}	-55 to +175	℃
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.9	℃/W

6600W Transient Voltage Suppressor (TVS)

SM8S Series | **10 To 43 V** | **6600W** | **DO-218AB**

Electrical Characteristics

Part Number		V_R	I_R@V_R		V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}
Uni	Bi	(V)	μA@25℃	μA@175℃	min(V)	max(V)	mA	(V)	A
SM8S10AE	SM8S10CAE	10.0	5	250	11.1	12.3	5	17.0	388
SM8S11AE	SM8S11CAE	11.0	5	150	12.2	13.5	5	18.2	363
SM8S12AE	SM8S12CAE	12.0	5	150	13.3	14.7	5	19.9	332
SM8S13AE	SM8S13CAE	13.0	5	150	14.4	15.9	5	21.5	307
SM8S14AE	SM8S14CAE	14.0	5	150	15.6	17.2	5	23.2	284
SM8S15AE	SM8S15CAE	15.0	5	150	16.7	18.5	5	24.4	270
SM8S16AE	SM8S16CAE	16.0	5	150	17.8	19.7	5	26.0	253
SM8S17AE	SM8S17CAE	17.0	5	150	18.9	20.9	5	27.6	239
SM8S18AE	SM8S18CAE	18.0	5	150	20.0	22.1	5	29.2	226
SM8S20AE	SM8S20CAE	20.0	5	150	22.2	24.5	5	32.4	204
SM8S22AE	SM8S22CAE	22.0	5	150	24.4	26.9	5	35.5	186
SM8S24AE	SM8S24CAE	24.0	5	150	26.7	29.5	5	38.9	170
SM8S26AE	SM8S26CAE	26.0	5	150	28.9	31.9	5	42.1	157
SM8S28AE	SM8S28CAE	28.0	5	150	31.1	34.4	5	45.4	145
SM8S30AE	SM8S30CAE	30.0	5	150	33.3	36.8	5	48.4	136
SM8S32AE	SM8S32CAE	32.0	5	150	35.5	39.4	5	51.4	128.5
SM8S33AE	SM8S33CAE	33.0	5	150	36.7	40.6	5	53.3	124
SM8S36AE	SM8S36CAE	36.0	5	150	40.0	44.2	5	58.1	114
SM8S40AE	SM8S40CAE	40.0	5	150	44.4	49.1	5	64.5	102
SM8S43AE	SM8S43CAE	43.0	5	150	47.8	52.8	5	69.4	95.1

Notes:

①. For all types maximum V_F = 1.8 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.

②. Surge waveform: 10/1000μs

V_R ： Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}： Breakdown Voltage

V_C： Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

I_R： Reverse Leakage Current

I_T: Test current

6600W Transient Voltage Suppressor (TVS)

SM8S Series | **10 To 43 V** | **6600W** | **DO-218AB**

Ratings and Characteristic Curves (T_A=25℃ unless otherwise noted)

Fig.1 : Power Derating Curve

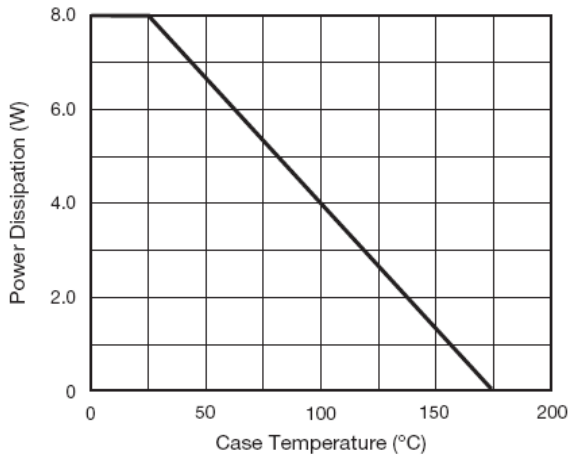


Fig.2 : Pulse Waveform

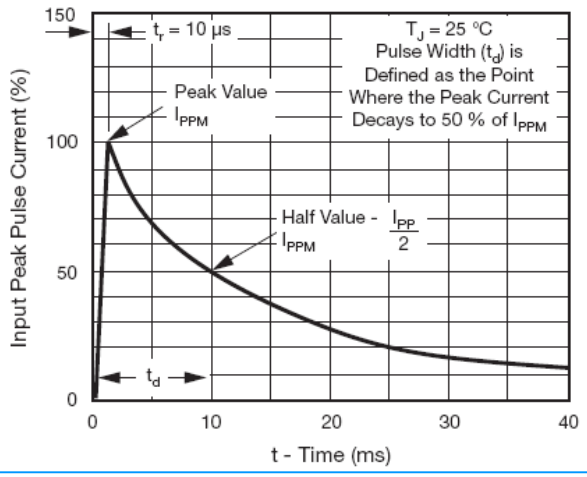


Fig.3 : Load Dump Power Characteristics (10 ms Exponential Waveform)

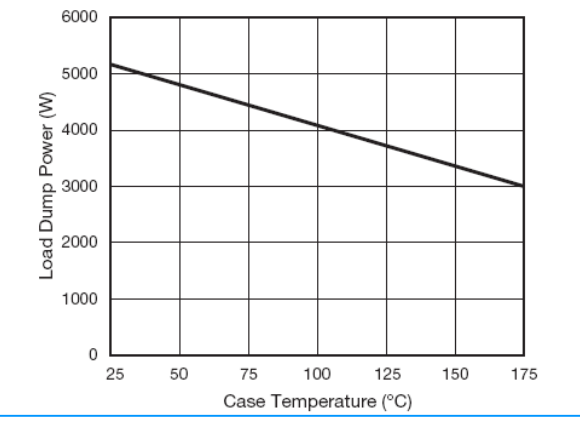


Fig.4 : Reverse Power Capability

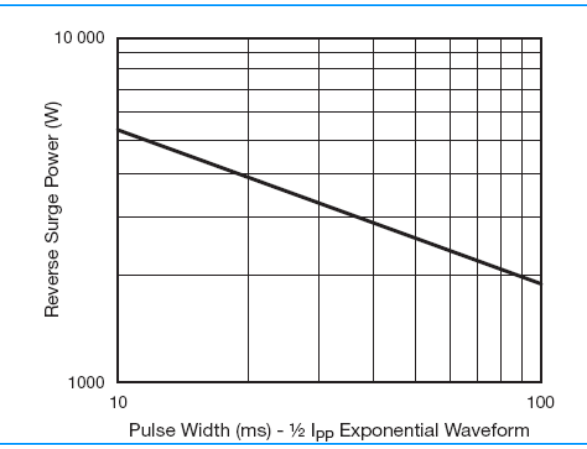


Fig.5 : Typical Transient Thermal Impedance

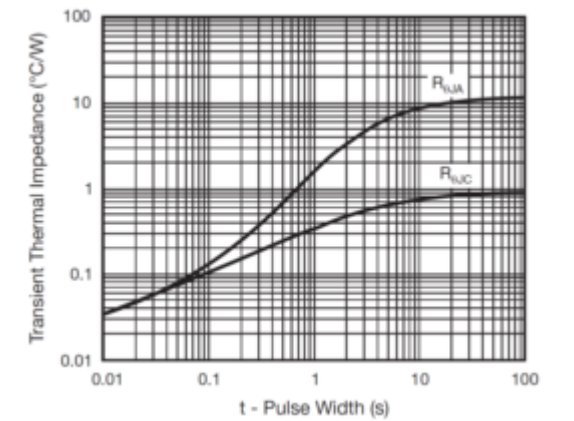
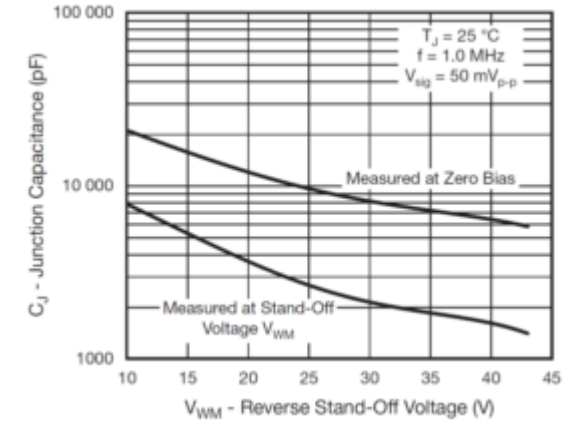


Fig.6 : Typical Junction Capacitance

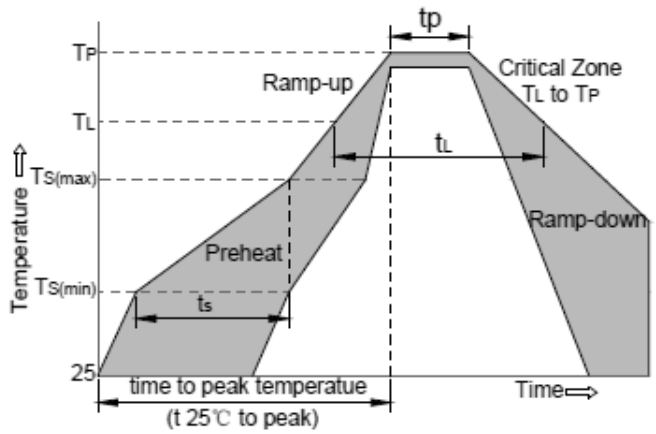


6600W Transient Voltage Suppressor (TVS)

SM8S Series | **10 To 43 V** | **6600W** | **DO-218AB**

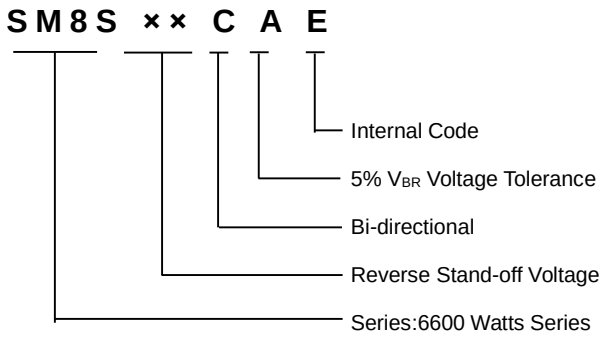
Soldering Parameters

Fig.5 : Reflow Condition



Reflow Condition		Pb–Free assembly (see Fig.5)
Pre Heat	**-Temperature Min ($T_{s(min)}$)**	+150℃
	-Temperature Max ($T_{s(max)}$)	+200℃
	- Time (Min to Max) (T_s)	60 -180 secs.
Average ramp up rate (Liquid μs Temp (T_L) to peak)		3℃/sec. Max
$T_{S(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	**- Temperature (T_L) (Liquid μs)**	+217℃
	- Time (t_L)	60 -150 secs.
Peak Temperature (T_P)		+260(+0/-5)℃
Time within 5℃ of actual peak Temperature (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temperature (T_P)		8 min. Max
Do not exceed		+260℃

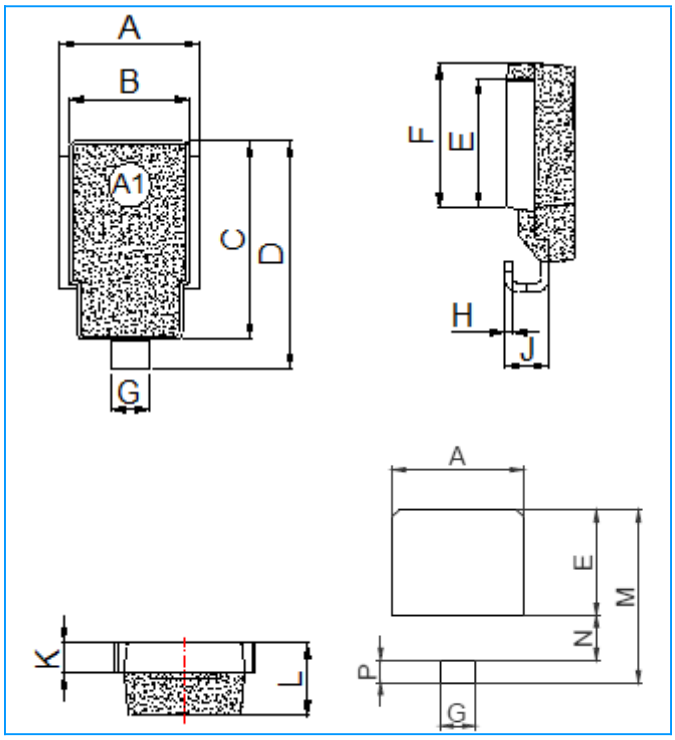
Part Numbering



6600W Transient Voltage Suppressor (TVS)

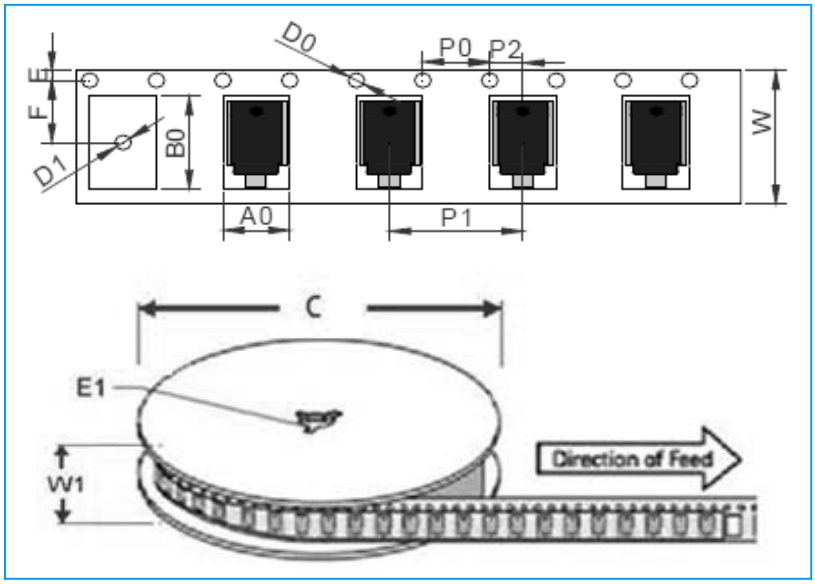
SM8S Series | **10 To 43 V** | **6600W** | **DO-218AB**

DO-218AB Package Mechanical Data



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	9.5	10.5	0.374	0.413
B	8.3	8.7	0.327	0.342
C	13.3	13.7	0.524	0.539
D	15.0	16.0	0.592	0.628
E	8.5	9.1	0.335	0.358
F	9.5	10.1	0.374	0.398
G	2.5	3.6	0.098	0.141
H	0.5	0.7	0.020	0.028
J	2.7	3.7	0.106	0.146
K	1.9	2.1	0.075	0.083
L	4.7	5.1	0.185	0.201
M	14.2	14.8	0.559	0.583
N	3.5	4.1	0.138	0.161
P	1.6	2.2	0.063	0.087

DO-218AB Tape and Reel Specification



Ref.	Dimensions	
	Millimeters	Inches
A0	10.80 ± 0.3	0.425± 0.012
B0	16.13 ± 0.3	0.635 ± 0.012
C	330.0 ± 0.3	13.0 ± 0.012
D0	1.55 ± 0.2	0.061 ± 0.008
D1	1.55 ± 0.2	0.061 ± 0.008
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.30 ± 0.2	0.524 ± 0.008
F	11.50 ± 0.2	0.453 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	16.00 ± 0.2	0.630 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	24.00 ± 0.2	0.945 ± 0.008
W1	25.85 ± 0.2	1.018 ± 0.008

Ordering Information

Part Number	Component Package	Quantity	Packaging Option
SM8S Series	DO-218AB	500 PCS	13" diameter plastic tape and reel, anode towards the sprocket hole