6600W Transient Voltage Suppressor (TVS)

SM8S Series 10 To 43 V 6600W

Description

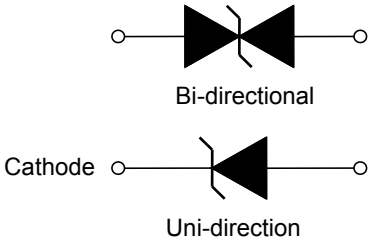
SM8S Series TVS diodes can be used in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

DO-218AB

Features

- Available in uni/bi-directional polarity.
- Low forward voltage drop & Low leakage current.
- High surge capability.
- Junction passivation optimized design passivated anisotropic rectifier technology.
- T_J = 175 ℃ capability suitable for high reliability and automotive requirement.
- Meets ISO7637-2 surge specification (varied by test condition).
- Meets MSL level 1, per J-STD-020,LF maximum peak of 245℃.
- AEC-Q101 qualified.
- 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, solder able per J-STD-002 and JESD 22-B102,
HE3 suffix meets JESD 201 class 2 whisker tests.

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	W
Operating junction and storage temperature range	T_J , T_{STG}	-55 to +150	℃
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.9	℃/W

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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
SM8S10A	SM8S10CA	10.0	5	250	11.1	12.3	5	17.0	388
SM8S11A	SM8S11CA	11.0	5	150	12.2	13.5	5	18.2	363
SM8S12A	SM8S12CA	12.0	5	150	13.3	14.7	5	19.9	332
SM8S13A	SM8S13CA	13.0	5	150	14.4	15.9	5	21.5	307
SM8S14A	SM8S14CA	14.0	5	150	15.6	17.2	5	23.2	284
SM8S15A	SM8S15CA	15.0	5	150	16.7	18.5	5	24.4	270
SM8S16A	SM8S16CA	16.0	5	150	17.8	19.7	5	26.0	253
SM8S17A	SM8S17CA	17.0	5	150	18.9	20.9	5	27.6	239
SM8S18A	SM8S18CA	18.0	5	150	20.0	22.1	5	29.2	226
SM8S20A	SM8S20CA	20.0	5	150	22.2	24.5	5	32.4	204
SM8S22A	SM8S22CA	22.0	5	150	24.4	26.9	5	35.5	186
SM8S24A	SM8S24CA	24.0	5	150	26.7	29.5	5	38.9	170
SM8S26A	SM8S26CA	26.0	5	150	28.9	31.9	5	42.1	157
SM8S28A	SM8S28CA	28.0	5	150	31.1	34.4	5	45.4	145
SM8S30A	SM8S30CA	30.0	5	150	33.3	36.8	5	48.4	136
SM8S32A	SM8S32CA	32.0	5	150	35.5	39.4	5	51.4	128.5
SM8S33A	SM8S33CA	33.0	5	150	36.7	40.6	5	53.3	124
SM8S36A	SM8S36CA	36.0	5	150	40.0	44.2	5	58.1	114
SM8S40A	SM8S40CA	40.0	5	150	44.4	49.1	5	64.5	102
SM8S43A	SM8S43CA	43.0	5	150	47.8	52.8	5	69.4	95.1

Note:

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

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

Fig.1 : Power Derating Curve

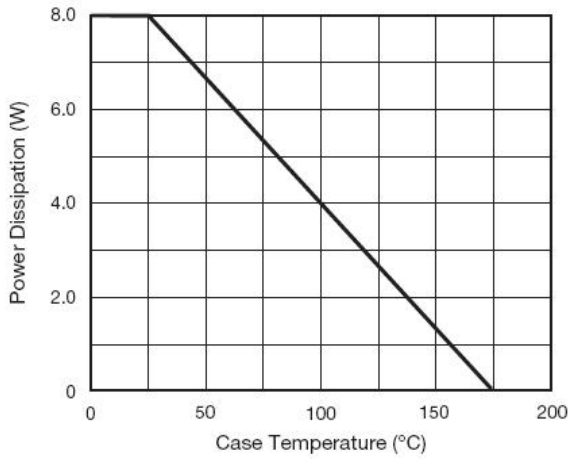


Fig.2 : Pulse Waveform

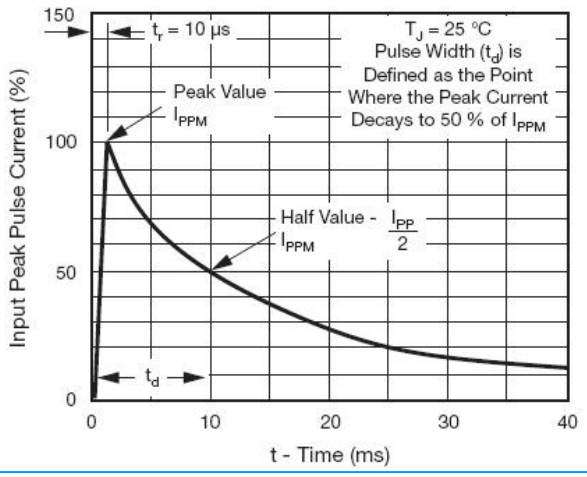


Fig.3 : Load Dump Power Characteristics (10 ms Exponential Waveform)

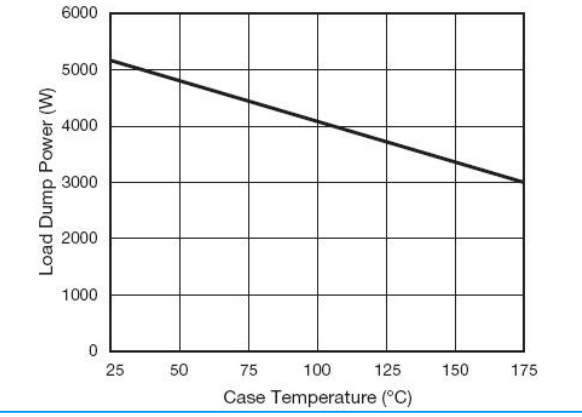


Fig.4 : Reverse Power Capability

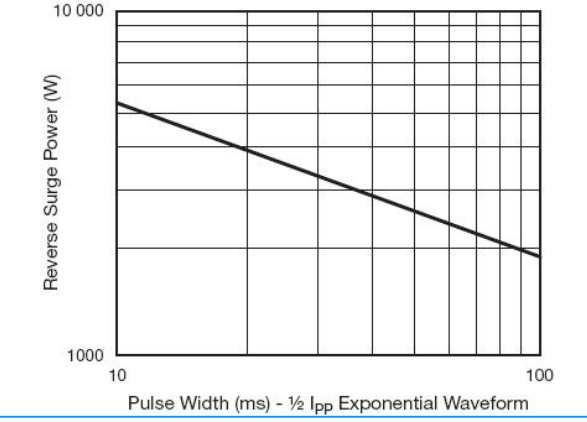


Fig.5 : Typical Transient Thermal Impedance

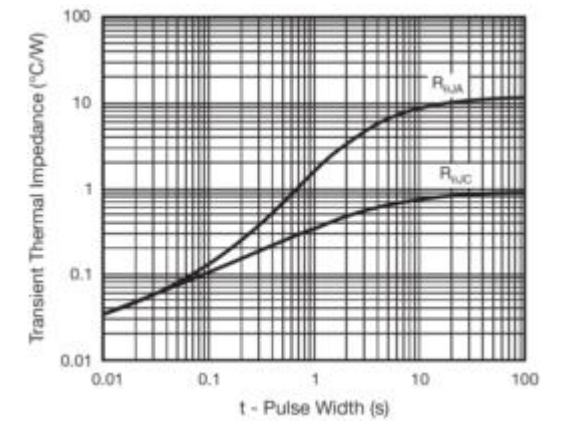
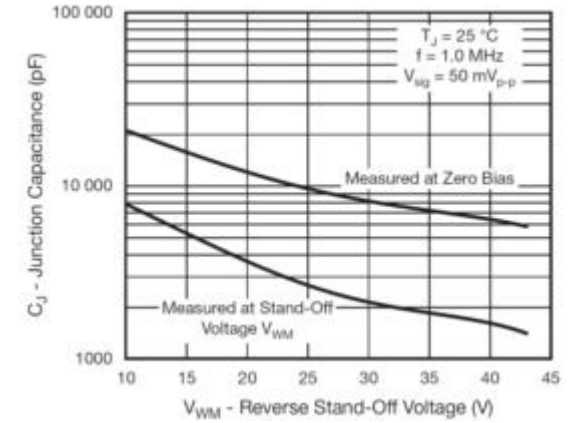


Fig.6 : Typical Junction Capacitance



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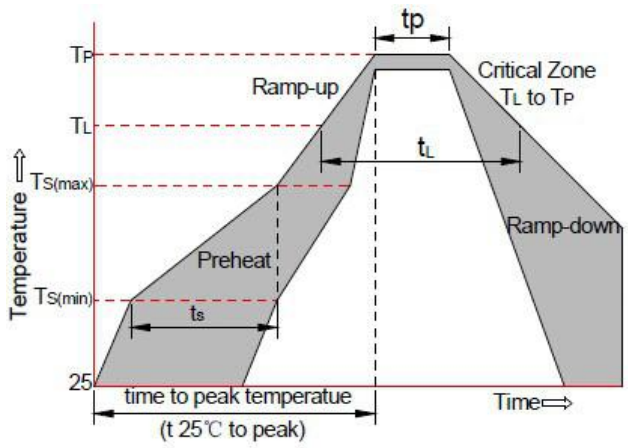
Soldering Parameters

Fig.5 : Reflow Condition



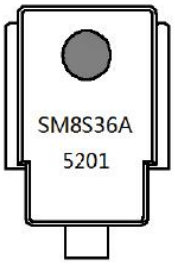
Reflow Condition		Pb–Free assembly (see Fig.5)
Pre Heat	**-Temperature Min ($T_{s(min)}$)**	+150℃
	-Temperature Max ($T_{s(max)}$)	+200℃
	- Time (Min to Max) (T_s)	60 -180 secs.
Average ramp up rate (Liquid μs Temp (T_L) to peak)		3℃/sec. Max
$T_{S(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	**- 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

SM8S ×× C A

- A — 5% V_{BR} Voltage Tolerance
- C — Bi-directional
- ×× — Reverse Stand-off Voltage
- SM8S — Series:6600 Watts Series

Part Marking



SM8S36A: Part Number

5201: "5" --2015 (year)

"2" --2 (month)

"01" -- (lot)

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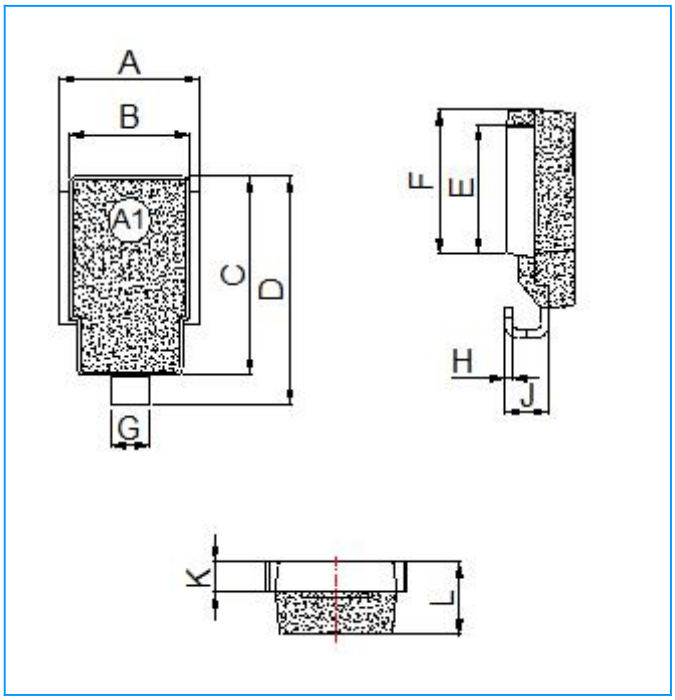
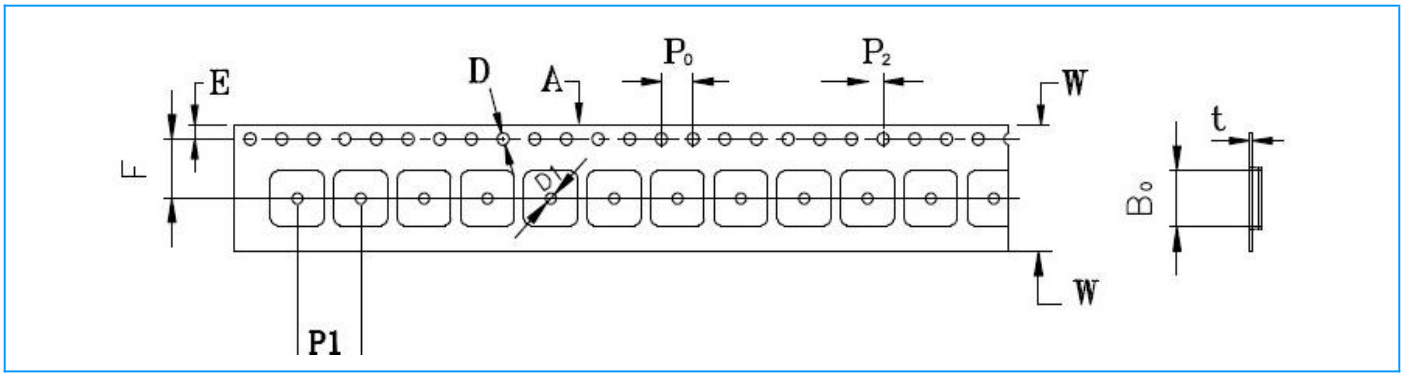
DO-218AB Package Mechanical Data



Ref.	Dimensions			
	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	0.374	0.413	9.5	10.5
B	0.327	0.342	8.3	8.7
C	0.524	0.539	13.3	13.7
D	0.592	0.628	15.0	16.0
E	0.335	0.358	8.5	9.1
F	0.374	0.398	9.5	10.1
G	0.094	0.118	2.4	3.0
H	0.020	0.028	0.5	0.7
J	0.106	0.146	2.7	3.7
K	0.075	0.083	1.9	2.1
L	0.185	0.201	4.7	5.1

DO-218AB Tape and Reel Specification



Item	W	A0	B0	K0	K1	P1	E	F	D	D1	P0	P2	T
Dim	24	10.8	16.13	5.21	3.9	16	1.75	11.5	1.55	1.55	4.0	2.0	0.4
Tol	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1	±0.1

Note:

1. Dimension is in mm.
2. 10 pocket holes pitch cumulative tolerance ±0.20mm.
3. Carrier camber is 1mm in 100mm.
4. A0 and B0 are measured on a plane 0.30mm above the bottom of the pocket.
5. K0 is measured from a plane on the inside bottom of the pocket to the top surface of the pocket.
6. All dimensions meet EIA-481-2-A requirements.
7. Packing length per 22" Reel: 205Meters.

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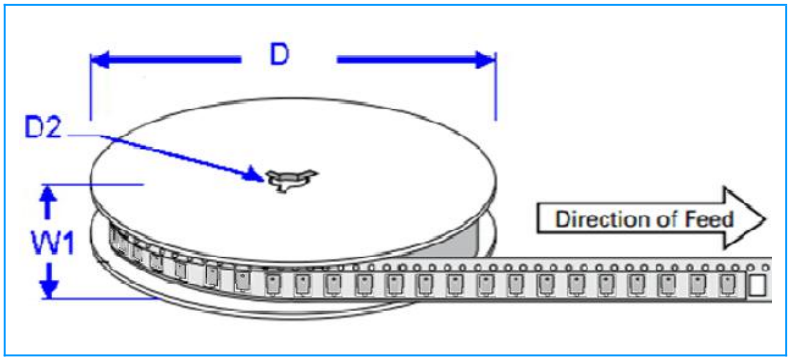
DO-218AB Tape and Reel Specification (continue)



Dimensions	Millimeters	Inches
D	330±0.2	13.0±0.008
D2	13.2±0.2	0.52±0.008
W1	24±0.2	0.94±0.008

Outline	Reel (pcs)	Reel Diameters (mm)
Taping	500/750	330

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