SM8S Series

Automotive Protection

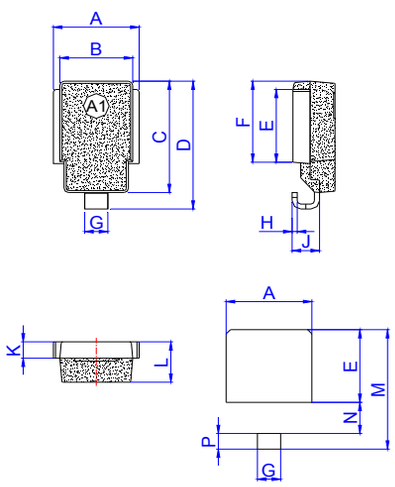
Surface Mount Transient Voltage Suppressors

Working Voltage: 10 to 43 V
Peak Pulse Power: 6600 W

Features

- Optimized glass passivated chip
- T_J = 175 °C capability suitable for high reliability and automotive requirement
- 6600 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle):0.01 %
- Meet ISO 7637-2 5a/5b and ISO 16750 load dump test (varied by test condition)
- AEC-Q101 qualified
- Low leakage current
- Low forward voltage drop
- Uni-directional polarity
- Excellent clamping capability
- Very fast response time
- RoHS compliant

DO-218AB



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	2.4	3.0	0.094	0.118
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

Mechanical Data

- Case: DO-218AB
- Molding compound: UL94V-0 flammability
- Polarity: Heatsink is anode

Maximum Ratings(T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	UNIT
Peak power dissipation with a 10/1000µs waveform(1)	P_{PP}	6600	W
Peak power dissipation with a 10/10,000µs waveform	P_{PP}	5200	W
Peak pulse current wih a 10/1000µs waveform(1)	I_{PP}	See Next Table	A
Power dissipation on infinite heatsink at T_L = 25 °C	P_D	8.0	W
Peak forward surge current 8.3 ms single half sine-	I_{FSM}	700	A
Operating junction and storage temperature range	T_J, T_{STG}	–55 to +175	°C

Note:

(1)Non-repetitive current pulse per Fig.2 and derated above T_A= 25 °C per Fig.1

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Electrical Characteristics(T_A=25℃ unless otherwise noted)

Part Number		Breakdown Voltage(V_{BR})@I_T		Test Current	Stand Off Voltage	Max.Reverse Leakage@ V_{WM}	Max.Recerse Leakage@V_{WM} T_J=175°C	Max Clamping Voltage@ I_{PPM}	Max. Peak Pulse Current @10/1000μs Wave Form
Unidirectional	Bidirectional	Min	Max	I_T	V_{WM}	I_R	I_R	V_C	I_{PPM}
		V	V	(mA)	V	(μA)	(μA)	V	A
SM8S10	SM8S10C	11.1	13.6	5	10	15	250	18.8	351
SM8S10A	SM8S10CA	11.1	12.3	5	10	15	250	17	388
SM8S11	SM8S11C	12.2	14.9	5	11	10	150	20.1	328
SM8S11A	SM8S11CA	12.2	13.5	5	11	10	150	18.2	363
SM8S12	SM8S12C	13.3	16.3	5	12	10	150	22	300
SM8S12A	SM8S12CA	13.3	14.7	5	12	10	150	19.9	332
SM8S13	SM8S13C	14.4	17.6	5	13	10	150	23.8	277
SM8S13A	SM8S13CA	14.4	15.9	5	13	10	150	21.5	307
SM8S14	SM8S14C	15.6	19.1	5	14	10	150	25.8	256
SM8S14A	SM8S14CA	15.6	17.2	5	14	10	150	23.2	284
SM8S15	SM8S15C	16.7	20.4	5	15	10	150	26.9	245
SM8S15A	SM8S15CA	16.7	18.5	5	15	10	150	24.4	270
SM8S16	SM8S16C	17.8	21.8	5	16	10	150	28.8	229
SM8S16A	SM8S16CA	17.8	19.7	5	16	10	150	26	254
SM8S17	SM8S17C	18.9	23.1	5	17	10	150	30.5	216
SM8S17A	SM8S17CA	18.9	20.9	5	17	10	150	27.6	239
SM8S18	SM8S18C	20	24.4	5	18	10	150	32.2	205
SM8S18A	SM8S18CA	20	22.1	5	18	10	150	29.2	226
SM8S20	SM8S20C	22.2	27.1	5	20	10	150	35.8	184
SM8S20A	SM8S20CA	22.2	24.5	5	20	10	150	32.4	204
SM8S22	SM8S22C	24.4	29.8	5	22	10	150	39.4	168
SM8S22A	SM8S22CA	24.4	26.9	5	22	10	150	35.5	186
SM8S24	SM8S24C	26.7	32.6	5	24	10	150	43	153
SM8S24A	SM8S24CA	26.7	29.5	5	24	10	150	38.9	170
SM8S26	SM8S26C	28.9	35.3	5	26	10	150	46.6	142
SM8S26A	SM8S26CA	28.9	31.9	5	26	10	150	42.1	157
SM8S28	SM8S28C	31.1	38	5	28	10	150	50.1	132
SM8S28A	SM8S28CA	31.1	34.4	5	28	10	150	45.4	145
SM8S30	SM8S30C	33.3	40.7	5	30	10	150	53.5	123
SM8S30A	SM8S30CA	33.3	36.8	5	30	10	150	48.4	136
SM8S33	SM8S33C	36.7	44.9	5	33	10	150	59	112
SM8S33A	SM8S33CA	36.7	40.6	5	33	10	150	53.3	124
SM8S36	SM8S36C	40	48.9	5	36	10	150	64.3	103
SM8S36A	SM8S36CA	40	44.2	5	36	10	150	58.1	114
SM8S40	SM8S40C	44.4	54.3	5	40	10	150	71.4	92.4
SM8S40A	SM8S40CA	44.4	49.1	5	40	10	150	64.5	102
SM8S43	SM8S43C	47.8	58.4	5	43	10	150	76.7	86
SM8S43A	SM8S43CA	47.8	52.8	5	43	10	150	69.4	95.1

NOTE:

1.Surge current waveform is defined at 10/1000uS waveform

2.For all types maximum VF = 1.8 V at IF = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

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

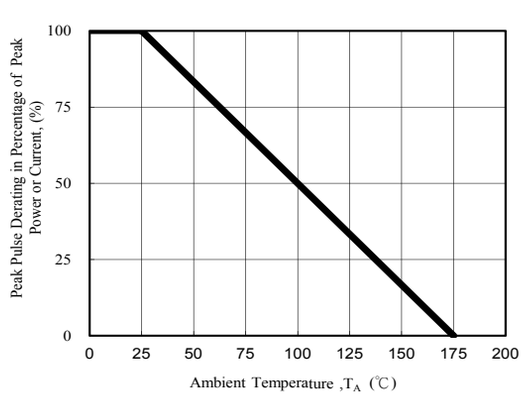


Fig. 1 - Pulse Derating Curve

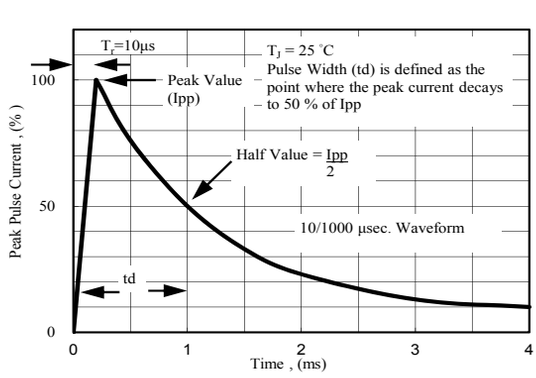


Fig. 2 - Pulse Waveform

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

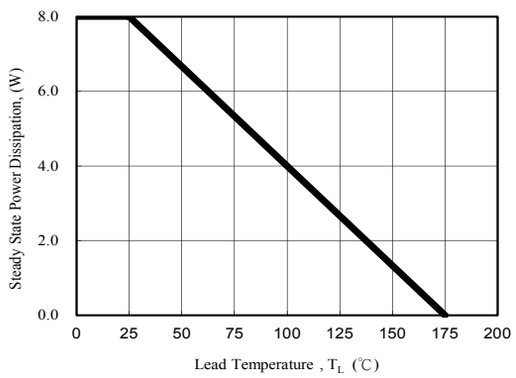


Fig. 3 - Steady State Power Derating Curve

Fig. 4 - Peak Pulse Power Rating Curve

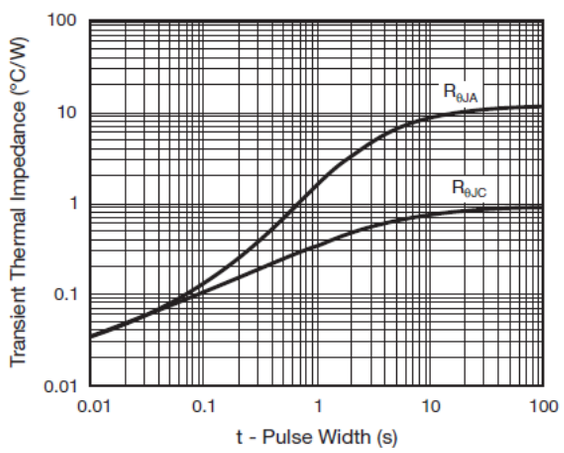


Fig. 5 - Typical Thermal Impedance

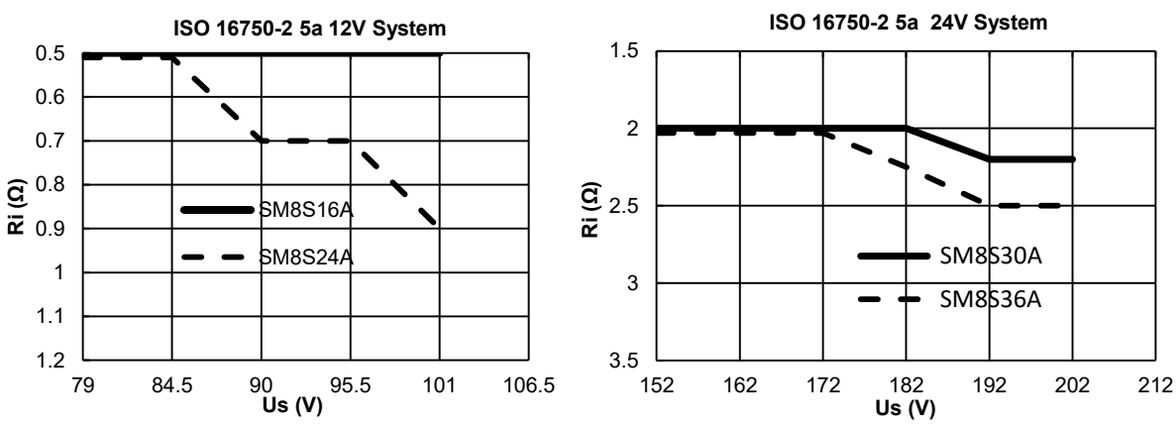
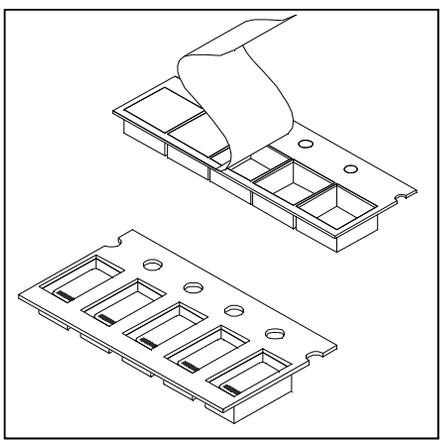
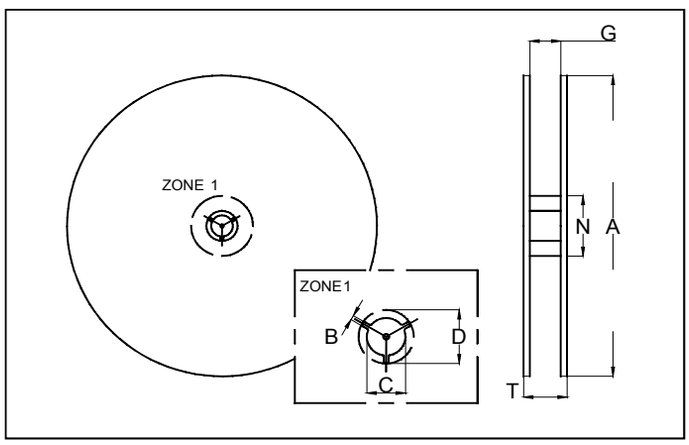


Fig. 6 - Typical SOA Chart

SURFACE MOUNT TAPE AND REEL PACKAGING





DIMENSIONS in millimeters (inches)

TAPE SIZE	A MAX.	B MIN.	C	D MIN.	N MIN.	G MAX.	T MAX.
24 mm (0.945)	330 ± 2.0 (13.0 ± 0.079) 178 ± 2.0 (7.0 ± 0.079)	1.5 (0.059)	13.5 ± 0.50 (0.53 ± 0.02)	20.2 (0.795)	50 (1.97)	26.4 (1.039)	30.4 (1.197)

Recommended Soldering Parameters

IR-Reflow Condition			
Pre Heat	Temp. min	150	℃
	Temp. max	200	℃
	Time(min to max)	60-180	sec
Ramp up rate (150-200℃)		<3	℃/sec

Reflow	Liquidus Temp.	>220	℃
	Peak Temp.	245	℃
	Time(Liq. to Peak)	60-150	sec
Ramp up rate (220-200℃)		<3	℃/sec
Time within actual peak temp.		10-30	sec

Ramp down Rate	<5	℃/sec
Time(25℃ to Peak temp.)	<6	min
Do not exceed	280	℃