Rev.A-4

Surface Mount Transient Voltage Suppressors

High temperature stability and high reliability conditions

DO-218AB

Bi-directional

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology.
- T_J = 175℃ capability suitable for high reliability and automotive requirement.
- Available in bi-directional polarity.
- Low leakage current.
- Low forward voltage drop.
- High surge capability.
- Meets ISO16750-2 surge specification(varied by test condition).
- Meets MSL-1, per J-STD-020, LF maximum peak of 260℃.
- AEC-Q101 qualified.
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC.

PRIMARY CHARACTERISTICS	
V_R	12V to 43V
P_{PP} (10/1000μs)	6600W
P_{PP} (10/10000μs)	5200W
P_D	8W
T_{Jmax}	175℃
Polarity	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 94V-0 flammability rating

Base P/NHE3-RoHS-compliant, AEC-Q101 qualified

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

MAXIMUM RATINGS(T_C=25℃, RH=45%-75%, unless otherwise noted)			
Parameter	**Symbol**	**Value**	**Unit**
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	6600	Watts
Peak pulse power dissipation on 10/10000μs waveform		5200	Watts
Power dissipation on infinite heat sink at T_C=25℃	P_D	8.0	Watts
Peak pulse current with 10/1000μs waveform	I_{PPM}(1)	See next table	Amps
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
Typical thermal resistance, junction to ambient	$R_{\theta JA}$	12	℃/W

Note

(1) Non-repetitive current pulse derated above T_A=25℃

ELECTRICAL CHARACTERISTICS								
Part Number	**V_R**	**I_T**	**I_R@V_R**		**V_{BR}@I_T**		**V_C@I_{PP}**	**I_{PP}**
Bi-polar	**V**	**mA**	**μA@25°C**	**μA@175°C**	**min(V)**	**max (V)**	**V**	**A**
SM8S12CA-AL	12.0	5	5	150	13.3	14.7	19.9	332
SM8S13CA-AL	13.0	5	5	150	14.4	15.9	21.5	307
SM8S14CA-AL	14.0	5	5	150	15.6	17.2	23.2	284
SM8S15CA-AL	15.0	5	5	150	16.7	18.5	24.4	270
SM8S16CA-AL	16.0	5	5	150	17.8	19.7	26.0	253
SM8S17CA-AL	17.0	5	5	150	18.9	20.9	27.6	239
SM8S18CA-AL	18.0	5	5	150	20.0	22.1	29.2	226
SM8S20CA-AL	20.0	5	5	150	22.2	24.5	32.4	204
SM8S22CA-AL	22.0	5	5	150	24.4	26.9	35.5	186
SM8S24CA-AL	24.0	5	5	150	26.7	29.5	38.9	170
SM8S26CA-AL	26.0	5	5	150	28.9	31.9	42.1	157
SM8S28CA-AL	28.0	5	5	150	31.1	34.4	45.4	145
SM8S30CA-AL	30.0	5	5	150	33.3	36.8	48.4	136
SM8S33CA-AL	33.0	5	5	150	36.7	40.6	53.3	124
SM8S36CA-AL	36.0	5	5	150	40.0	44.2	58.1	114
SM8S40CA-AL	40.0	5	5	150	44.4	49.1	64.5	102
SM8S43CA-AL	43.0	5	5	150	47.8	52.8	69.4	95.1

Note:

①.Surge waveform:10/1000μs

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

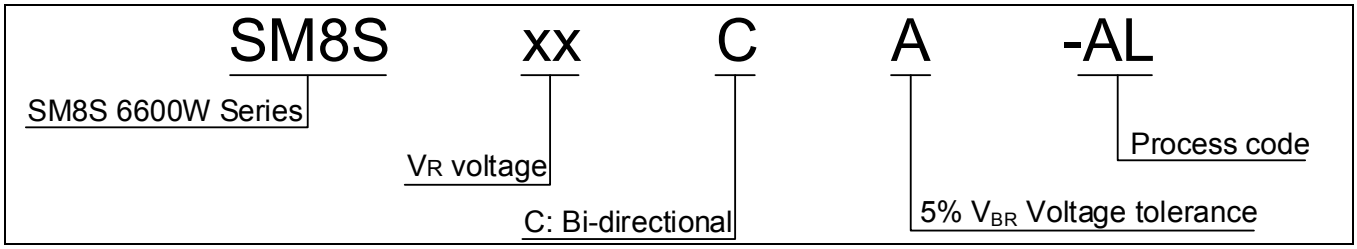
V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

I_T: Test current

ORDERING INFORMATION



RATINGS AND CHARACTERISTICS CURVES (T_A=25℃, unless otherwise noted)

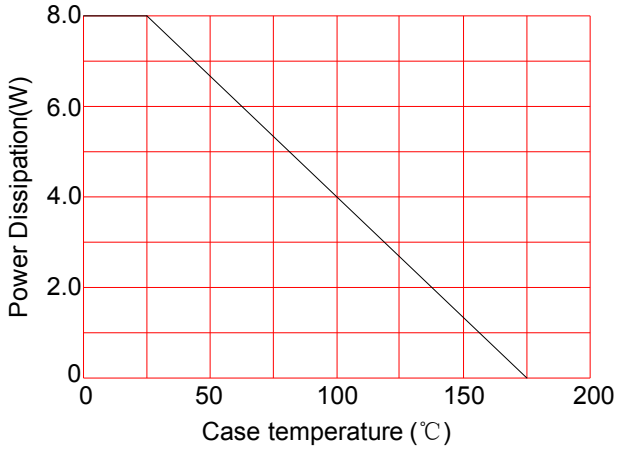


FIG.1: Power derating curve

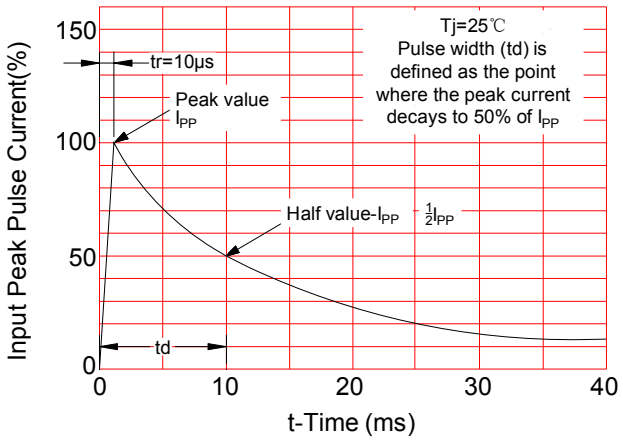


FIG.2: Pulse waveform

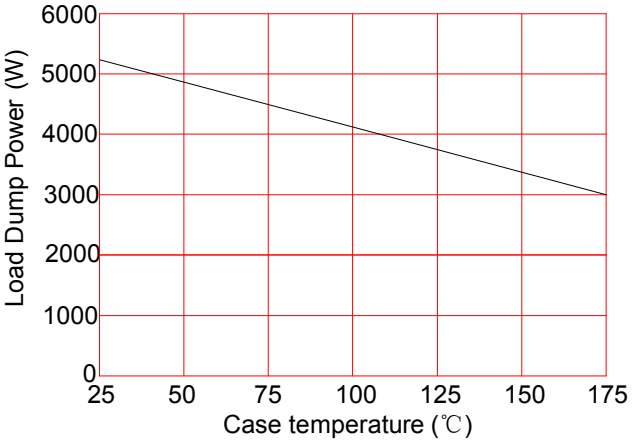


FIG.3: Load dump power characteristics (10ms exponential waveform)

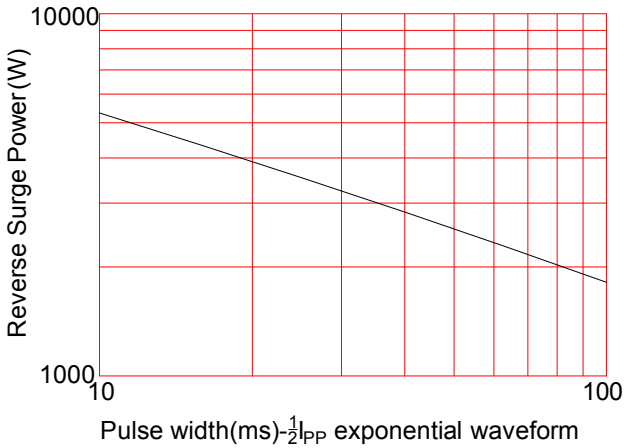


FIG.4: Reverse power capability

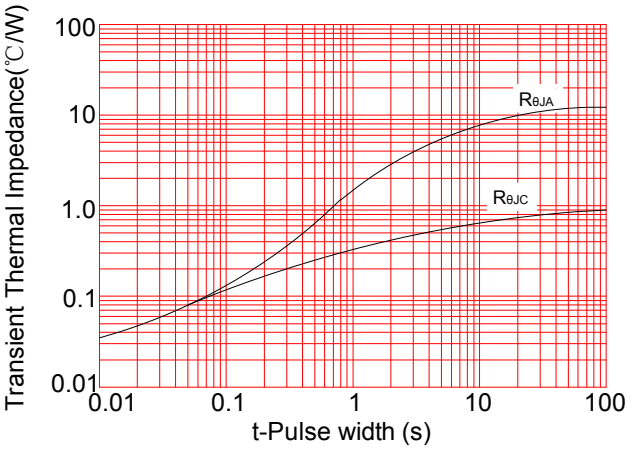


FIG.5: Typical transient thermal impedance

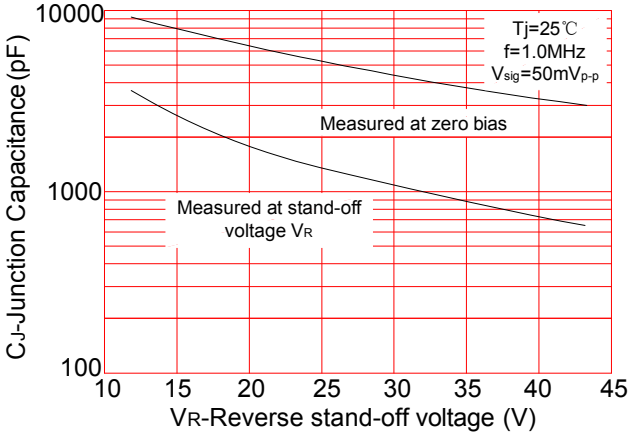
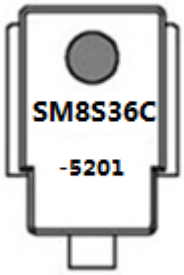


FIG.6: Typical junction capacitance

MARKING



SM8S36C：Device marking code

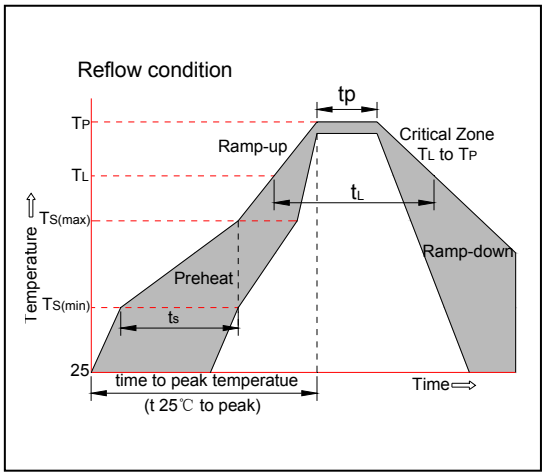
5201：“5”--2015 （year）

“2”--2 （month）

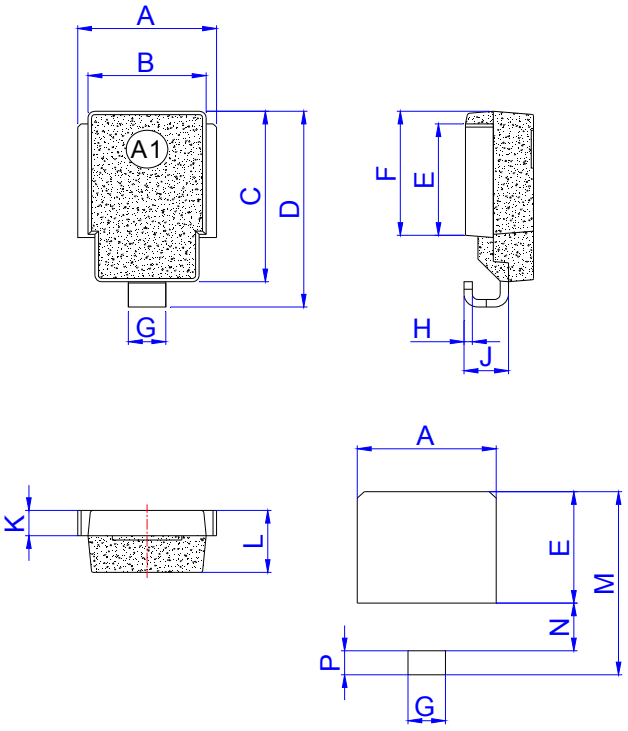
“01”-- （lot）

SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



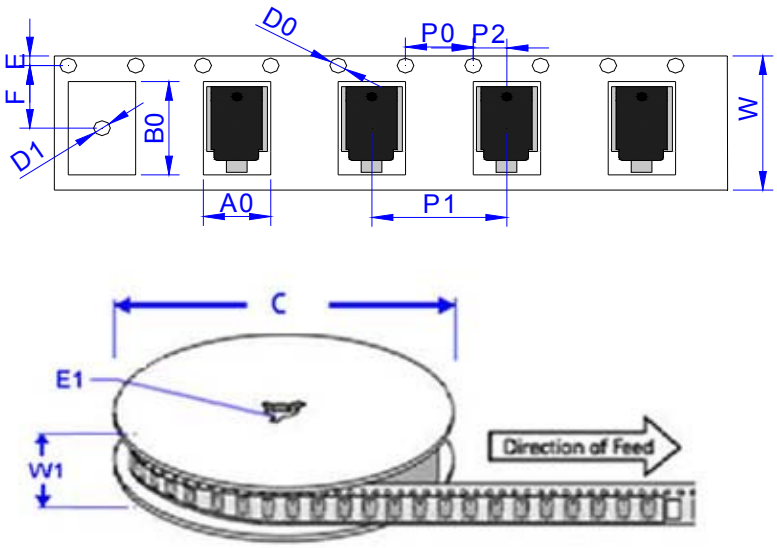
PACKAGE MECHANICAL DATA



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

TAPE AND REEL SPECIFICATION-DO-218AB



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 No.	UNIT WEIGHT (g) typ	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SM8SxxCA-AL	2.985	750	3000	13 inch reel pack

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