Rev.1.0

Surface Mount Transient Voltage Suppressors

High temperature stability and high reliability conditions

DO-218AB

Bi-directional

Symbol

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.

PRIMARY CHARACTERISTICS	
V_R	24V
P_{PP} (10/1000μs)	7700W
P_{PP} (10/10000μs)	4600W
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

AEC-Q101 qualified

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

MAXIMUM RATINGS(T_A=25℃, unless otherwise noted)			
Parameter	**Symbol**	**Value**	**Unit**
Peak pulse power dissipation at 10/1000μs waveform	P_{PP}	7700	W
Peak pulse power dissipation at 10/10000μs waveform		4600	W
Power dissipation on infinite heat sink at T_C=25℃	P_D	8.0	W
Peak pulse current with 10/1000μs waveform	I_{PP}(1)	200	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
Typical thermal resistance, junction to ambient	$R_{\theta JA}$	12	℃/W

Note

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

ELECTRICAL CHARACTERISTICS (T_A=25℃, unless otherwise noted)								
Part Number	V_R	I_R @ V_R	V_{BR} @ I_T		I_T	V_C @ I_{PP}		I_{PP}
Bi-polar	V	Max (μA)	Min (V)	Max (V)	mA	Typ (V)	Max (V)	A
☆SM8S24CAP-AL	24.0	1	26.7	29.5	5	28.0	38.5	200

Note:

①.Surge waveform: 10/1000μs

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

V_{BR}: Breakdown voltage

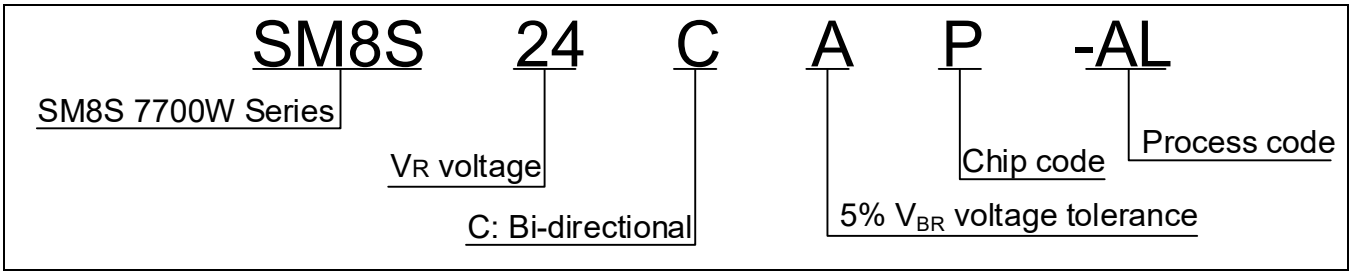
V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

I_T: Test current

☆: Products with negative resistance

ORDERING INFORMATION



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

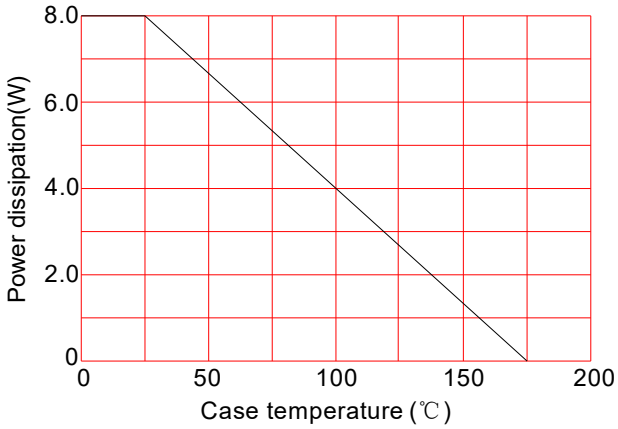


FIG.1: Power derating curve

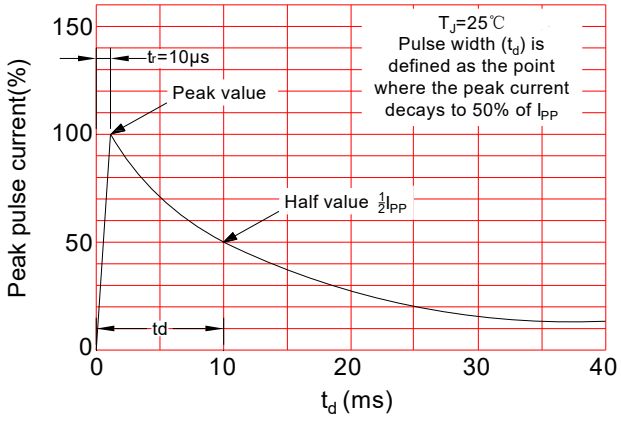


FIG.2: Pulse waveform

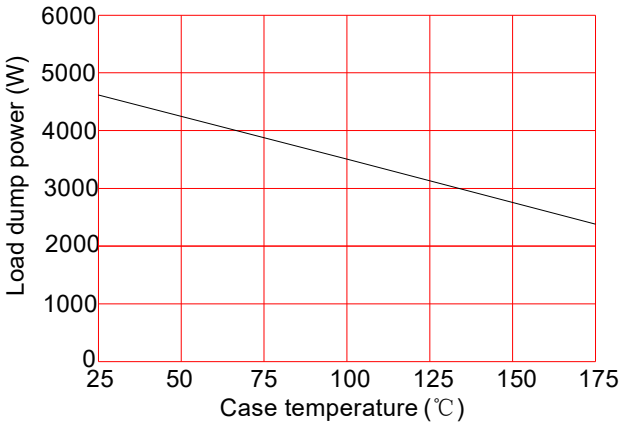


FIG.3: Load dump power characteristics (10ms exponential waveform)

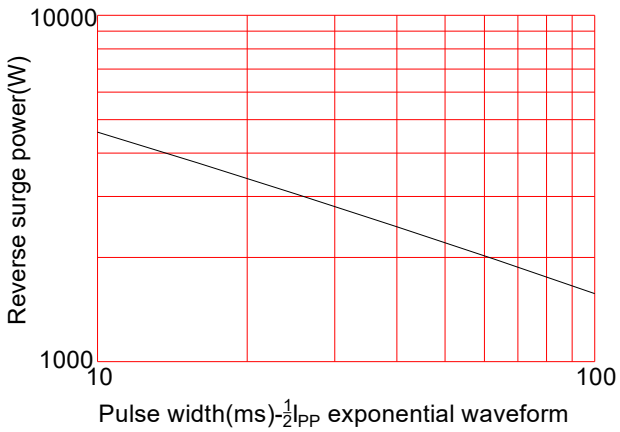


FIG.4: Reverse power capability

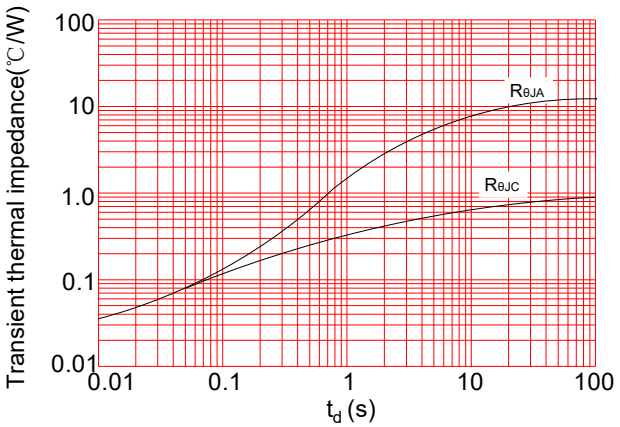
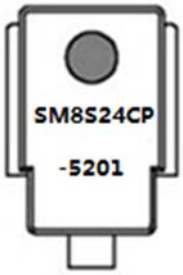


FIG.5: Typical transient thermal impedance

MARKING



SM	Surface Mount
8S	P_D=8W
24	V_R: 24V
C	Bi-directional
P	Chip code

x201:

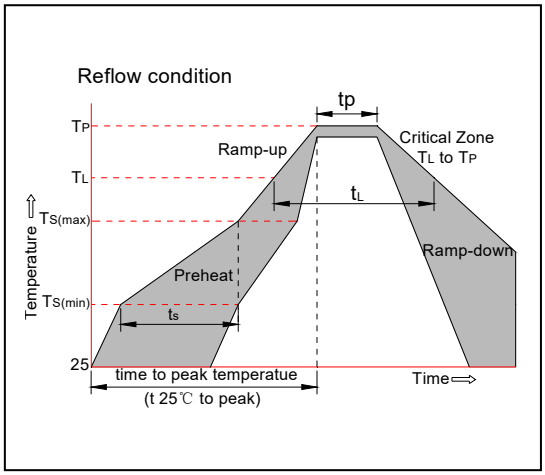
2015	2016	2017	2018	2019	2020
5	6	7	8	9	0
2021	2022	2023	2024	…	
1	2	3	4	…	

5**x**01: Month,1/2/3~9/O/N/D

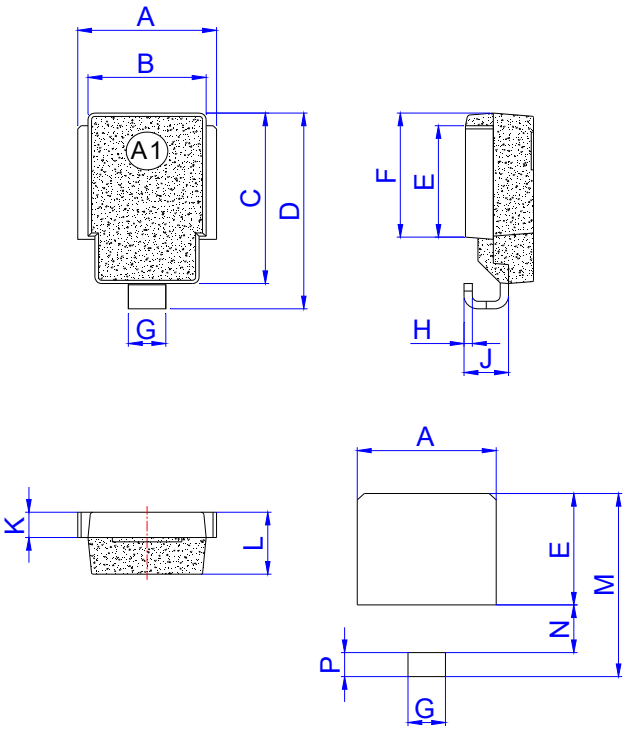
52**xx**: Lot number

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℃



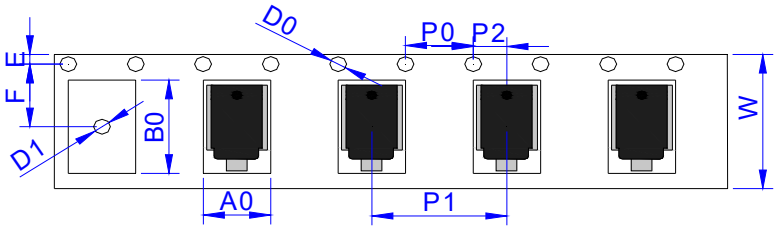
PACKAGE MECHANICAL DATA

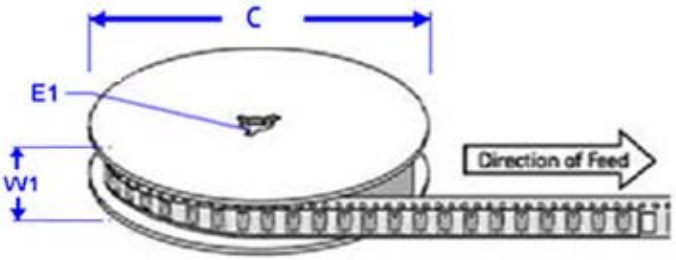


DO-218AB

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
SM8S24CAP-AL	2.985	750	3,000	13 inch reel pack