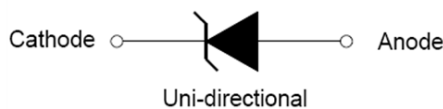


Surface Mount Transient Voltage Suppressors

High temperature stability and high reliability conditions



DO-218AB



FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology.
- $T_J = 175^\circ\text{C}$ capability suitable for high reliability and automotive requirement.
- Available in uni-directional polarity only.
- 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 245°C .
- AEC-Q101 qualified.
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC.

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

PRIMARY CHARACTERISTICS	
V_R	10V to 36V
P_{PP} (10/1000 μs)	3600W
P_{PP} (10/10000 μs)	2800W
P_D	5W
I_{FSM}	500A
T_{Jmax}	175°C
Package	DO-218AB

MAXIMUM RATINGS($T_C=25^\circ\text{C}$, RH=45%-75%, unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	3600	Watts
Peak pulse power dissipation on 10/10000 μs waveform		2800	Watts
Power dissipation on infinite heat sink at $T_C=25^\circ\text{C}$	P_D	5.0	Watts
Peak pulse current with 10/1000 μs waveform	$I_{PPM}^{(1)}$	See next table	Amps
Peak forward surge current, 8.3ms single half sine-wave	I_{FSM}	500	Amps
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$
Typical thermal resistance, junction to case	$R_{\theta JC}$	1.0	$^\circ\text{C/W}$

Note

(1) Non-repetitive current pulse derated above $T_A=25^\circ\text{C}$

ELECTRICAL CHARACTERISTICS								
Part Number	V _R	I _T	I _R @V _R		V _{BR} @I _T		V _C @I _{PP}	I _{PP}
Uni-polar	V	mA	µA@25°C	µA@175°C	min(V)	max (V)	V	A
SM5S10A	10.0	5	5	250	11.1	12.3	17.0	212.0
SM5S11A	11.0	5	5	150	12.2	13.5	18.2	198.0
SM5S12A	12.0	5	5	150	13.3	14.7	19.9	181.0
SM5S13A	13.0	5	5	150	14.4	15.9	21.5	167.0
SM5S14A	14.0	5	5	150	15.6	17.2	23.2	155.0
SM5S15A	15.0	5	5	150	16.7	18.5	24.4	148.0
SM5S16A	16.0	5	5	150	17.8	19.7	26.0	138.0
SM5S17A	17.0	5	5	150	18.9	20.9	27.6	130.0
SM5S18A	18.0	5	5	150	20.0	22.1	29.2	123.0
SM5S20A	20.0	5	5	150	22.2	24.5	32.4	111.0
SM5S22A	22.0	5	5	150	24.4	26.9	35.5	101.0
SM5S24A	24.0	5	5	150	26.7	29.5	38.9	93.0
SM5S26A	26.0	5	5	150	28.9	31.9	42.1	86.0
SM5S28A	28.0	5	5	150	31.1	34.4	45.4	79.0
SM5S30A	30.0	5	5	150	33.3	36.8	48.4	74.0
SM5S33A	33.0	5	5	150	36.7	40.6	53.3	68.0
SM5S36A	36.0	5	5	150	40.0	44.2	58.1	62.0

Note:

①. For all types maximum V_F=2.0V at I_F=100A measured on 8.3ms 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

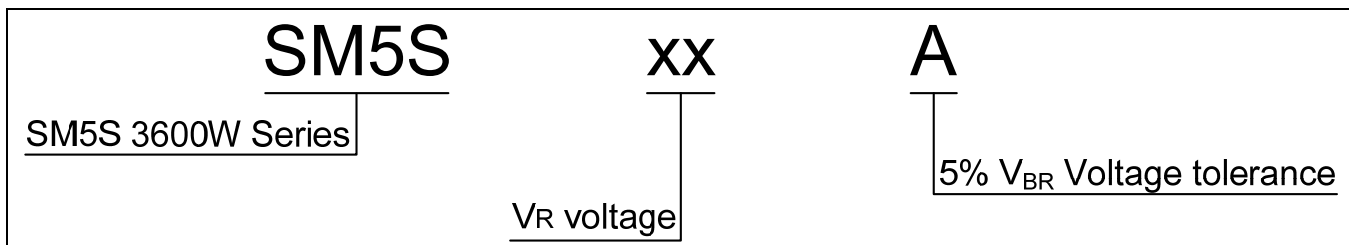
V_{BR}: Breakdown voltage

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

I_R: Reverse leakage current

I_T: Test current

ORDERING INFORMATION



RATINGS AND CHARACTERISTICS CURVES ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

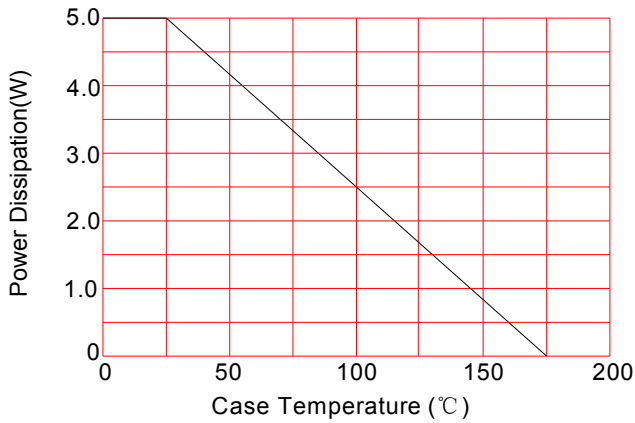


FIG.1: Power Derating Curve

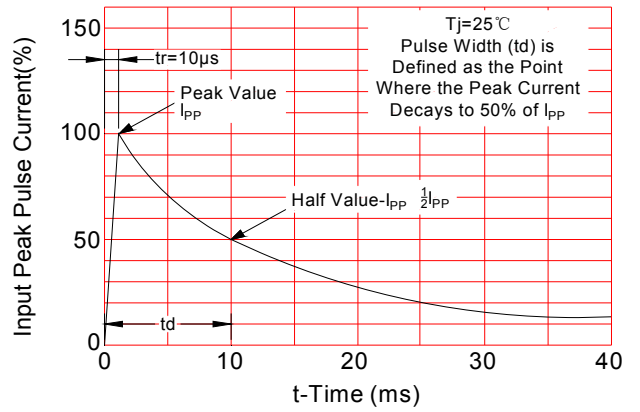


FIG.2: Pulse Waveform

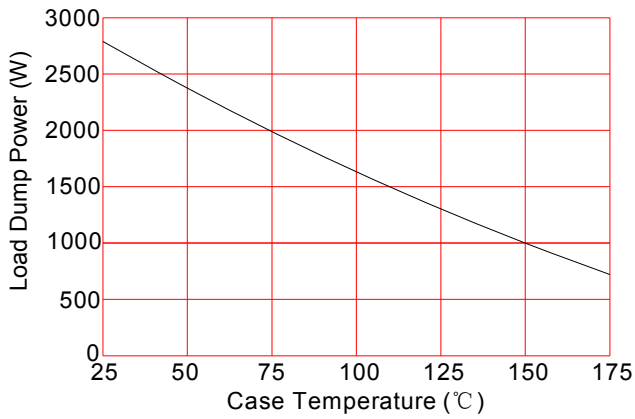


FIG.3: Load Dump Power Characteristics (10ms Exponential Waveform)

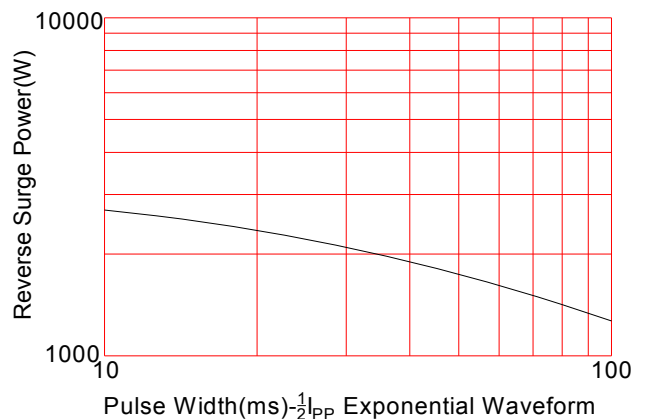


FIG.4: Reverse Power Capability

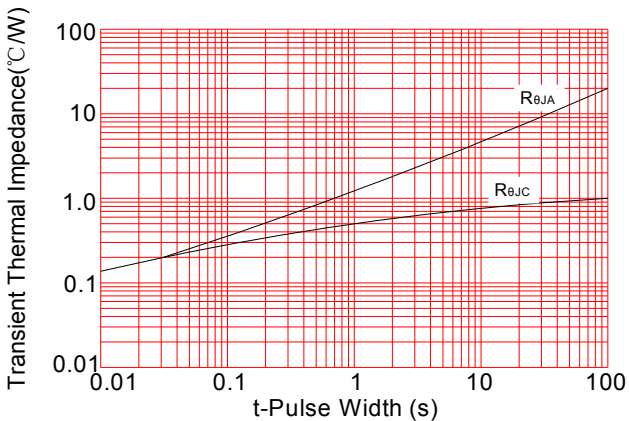
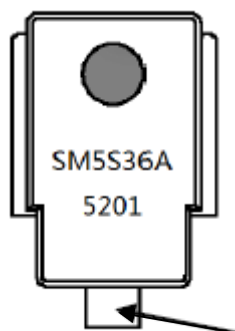


FIG.5: Typical Transient Thermal Impedance

MARKING



SM5S36A: Device marking code

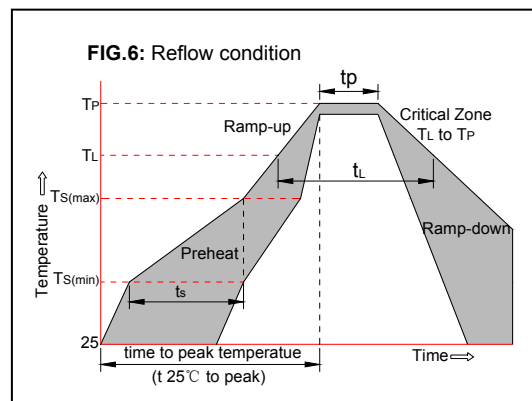
5201: “5” --2015 (year)

“2” --2 (month)

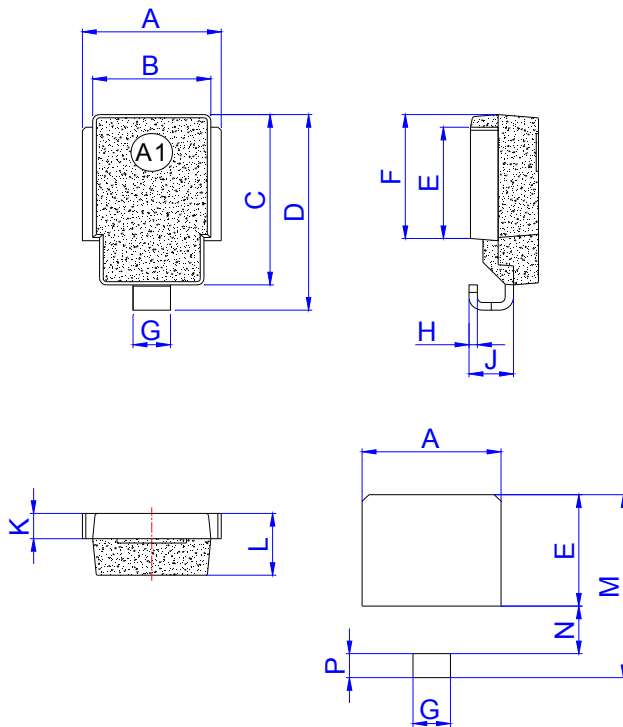
“01” -- (lot)

SOLDERING PARAMETERS

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



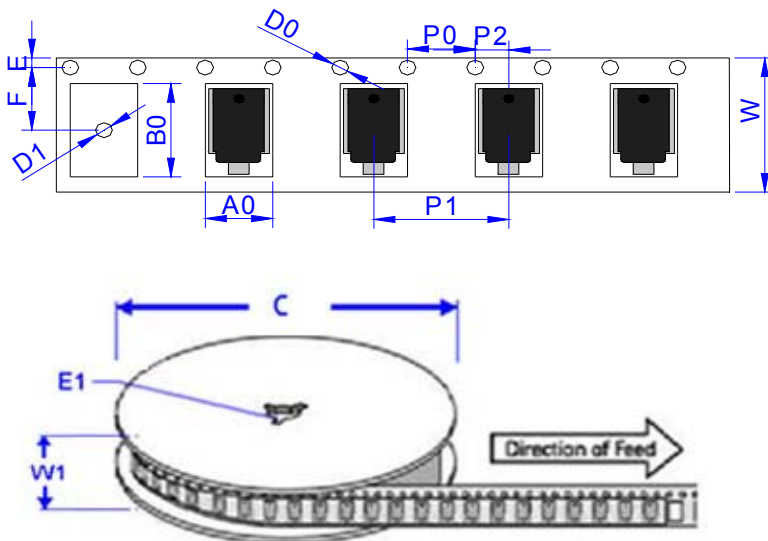
PACKAGE MECHANICAL DATA



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
SM5SxxA	2.985	750	3000	13 inch reel pack

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