

# Surface Mount PAR<sup>®</sup> Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



**DO-218AB**

## FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 175\text{ °C}$  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 ISO7637-2 surge specification (varied by test condition)
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- AEC-Q101 qualified
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



**RoHS**  
COMPLIANT

PRIMARY CHARACTERISTICS	
$V_{WM}$	10 V to 43 V
$P_{PPM}$ (10 x 1000 $\mu$ s)	6600 W
$P_{PPM}$ (10 x 10 000 $\mu$ s)	5200 W
$P_D$	8 W
$I_{FSM}$	700 A
$T_J$ max.	175 °C

## 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 94 V-0 flammability rating  
Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

HE3 suffix meets JESD 201 class 2 whisker test

**Polarity:** Heatsink is anode

MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation	$P_{PPM}$	with 10/1000 $\mu$ s waveform	6600
		with 10/10 000 $\mu$ s waveform	5200
Power dissipation on infinite heatsink at $T_C = 25\text{ °C}$ (fig. 1)	$P_D$	8.0	W
Peak pulse current with 10/1000 $\mu$ s waveform	$I_{PPM}^{(1)}$	See next table	A
Peak forward surge current 8.3 ms single half sine-wave	$I_{FSM}$	700	A
Operating junction and storage temperature range	$T_J, T_{STG}$	- 55 to + 175	°C

**Note**

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

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^\circ\text{C}$  unless otherwise noted)

Part Number	$V_R$	$I_T$	$I_R@V_R$		$V_{BR}@I_T$		$V_C@I_{PP}$	$I_{PP}$
			$\mu\text{A}@25^\circ\text{C}$	$\mu\text{A}@175^\circ\text{C}$	min(V)	max (V)		
SM8S10A	10.0	5	5	250	11.1	12.3	17.0	388
SM8S11A	11.0	5	5	150	12.2	13.5	18.2	363
SM8S12A	12.0	5	5	150	13.3	14.7	19.9	332
SM8S13A	13.0	5	5	150	14.4	15.9	21.5	307
SM8S14A	14.0	5	5	150	15.6	17.2	23.2	284
SM8S15A	15.0	5	5	150	16.7	18.5	24.4	270
SM8S16A	16.0	5	5	150	17.8	19.7	26.0	253
SM8S17A	17.0	5	5	150	18.9	20.9	27.6	239
SM8S18A	18.0	5	5	150	20.0	22.1	29.2	226
SM8S20A	20.0	5	5	150	22.2	24.5	32.4	204
SM8S22A	22.0	5	5	150	24.4	26.9	35.5	186
SM8S24A	24.0	5	5	150	26.7	29.5	38.9	170
SM8S26A	26.0	5	5	150	28.9	31.9	42.1	157
SM8S28A	28.0	5	5	150	31.1	34.4	45.4	145
SM8S30A	30.0	5	5	150	33.3	36.8	48.4	136
SM8S32A	32.0	5	5	150	35.5	39.4	51.4	128.5
SM8S33A	33.0	5	5	150	36.7	40.6	53.3	124
SM8S36A	36.0	5	5	150	40.0	44.2	58.1	114
SM8S40A	40.0	5	5	150	44.4	49.1	64.5	102
SM8S43A	43.0	5	5	150	47.8	52.8	69.4	95.1

**Note:**

①. For all types maximum  $V_F=1.8\text{V}$  at  $I_F=100\text{A}$  measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum.

②. Surge waveform: 10/1000 $\mu\text{s}$

$V_R$ : 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

THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance, junction to case	$R_{\theta JC}$	0.90	$^\circ\text{C/W}$

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SM8S10AHE3/2D <sup>(1)</sup>	2.605	2D	750	13" diameter plastic tape and reel, anode towards the sprocket hole

**Note**

<sup>(1)</sup> AEC-Q101 qualified

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

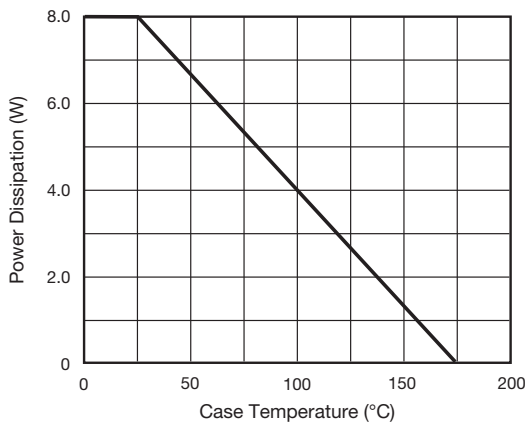


Fig. 1 - Power Derating Curve

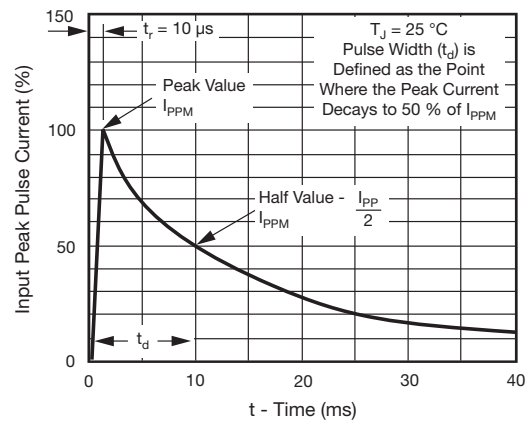


Fig. 3 - Pulse Waveform

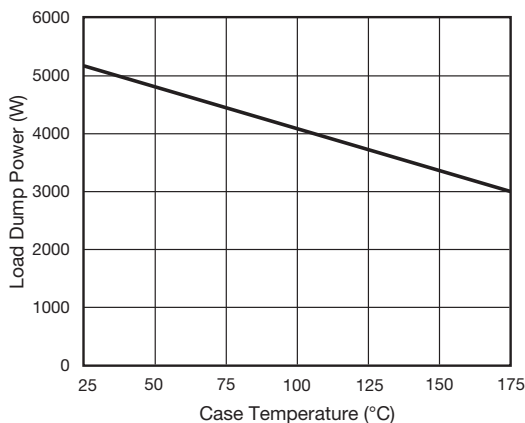


Fig. 2 - Load Dump Power Characteristics (10 ms Exponential Waveform)

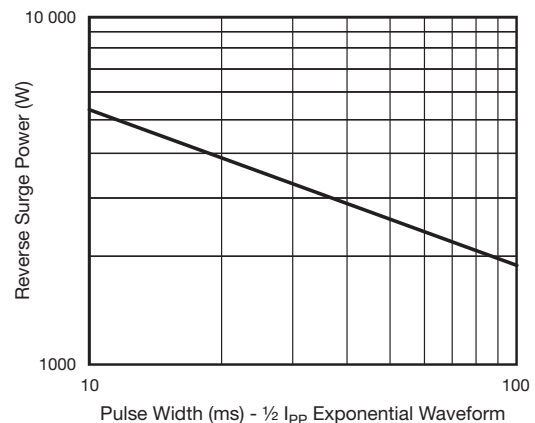


Fig. 4 - Reverse Power Capability

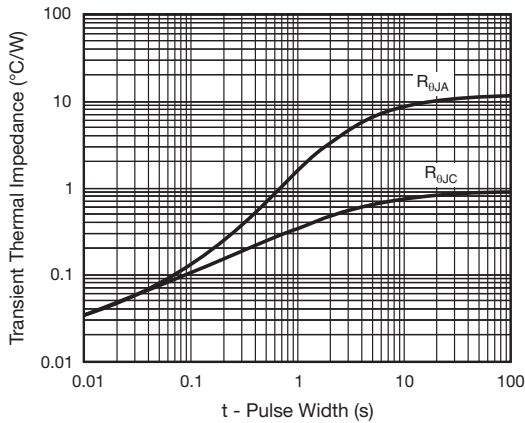


Fig. 5 - Typical Transient Thermal Impedance

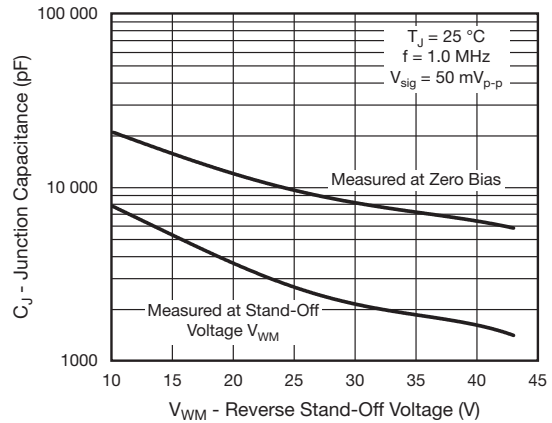
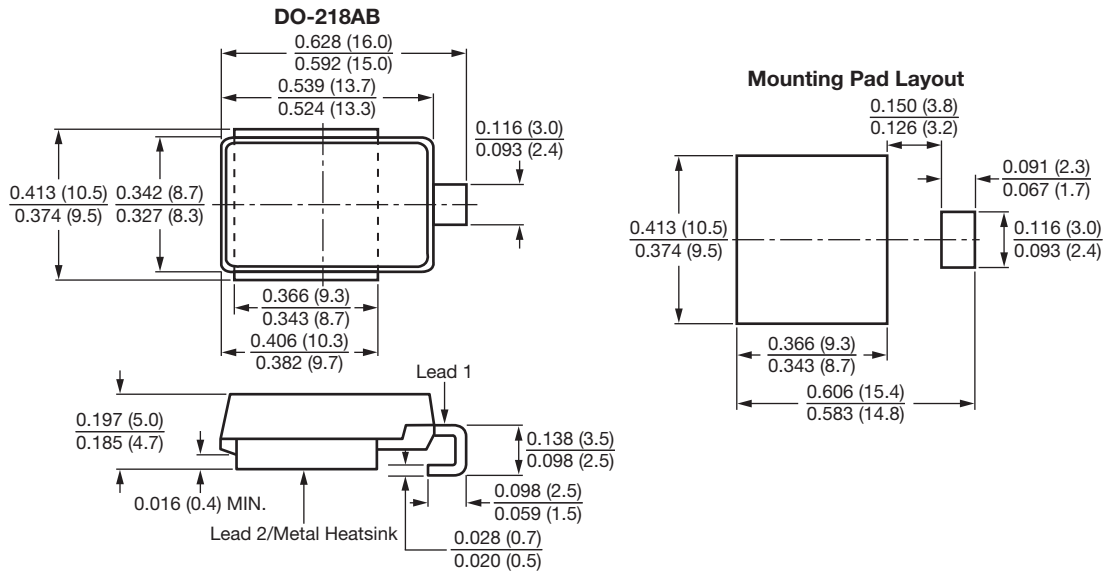
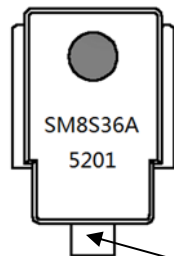


Fig. 6 - Typical Junction Capacitance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



### MARKING



**SM8S36A:** Device marking code

**5201:** "5" --2015 (year)

"2" --2 (month)

"01" -- (lot)

Cathode

ORDERING INFORMATION				
PART No.	UNIT WEIGHT (g) typ	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SM8SxxA	2.985	750	3000	13 inch reel pack

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