Surface Mount Automotive Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions

Patented*

*Patent #'s:
4,980,315
5,166,769
5,278,095

DO-218AB

FEATURES

- Patented PAR® construction
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO7637-2 surge spec
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C
- Component in accordance to RoHS 2002/95/EC and 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.

PRIMARY CHARACTERISTICS	
V_{BR}	27 V
P_{PPM} (10 x 1000 µs)	3600 W
P_D	5.0 W
I_{RSM}	70 A
I_{FSM}	500 A
T_J max.	175 °C

MECHANICAL DATA

Case: DO-218AB

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: Heatsink is anode

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with 10/1000 µs waveform	P_{PPM}	3600	W
Power dissipation on infinite heatsink at T_C = 25 °C (Fig. 1)	P_D	5.0	
Non-repetitive peak reverse surge current for 10 µs/10 ms exponentially decaying waveform	I_{RSM}	70	A
Maximum working stand-off voltage	V_{WM}	22.0	V
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	500	A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175	°C

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ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**UNIT**
Reverse zener voltage	at 10 mA	V_Z	24.0		30.0	V
Zener voltage temperature coefficient	at I_Z = 10 mA	V_{ZTC}			36	mV/°C
Clamping voltage for 10 µs/10 ms exponentially decaying waveform	at I_{PP} = 55 A	V_C			40.0	V
Instantaneous forward voltage (1)	at 6.0 A at 100 A	V_F		0.95	1.0	V
Reverse leakage current	at rated V_{WM} T_J = 25 °C T_J = 175 °C	I_R			0.2 10.0	µA

Note:

(1) Measured on a 300 µs square pulse width

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Typical thermal resistance, junction to case	$R_{\theta JC}$	1.0	°C/W

ORDERING INFORMATION (Example)				
PREFERRED P/N	**UNIT WEIGHT (g)**	**PREFERRED PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
SM5A27HE3/2D	2.505	2D	750	13" diameter paper tape and reel, anode towards the sprocket hole

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

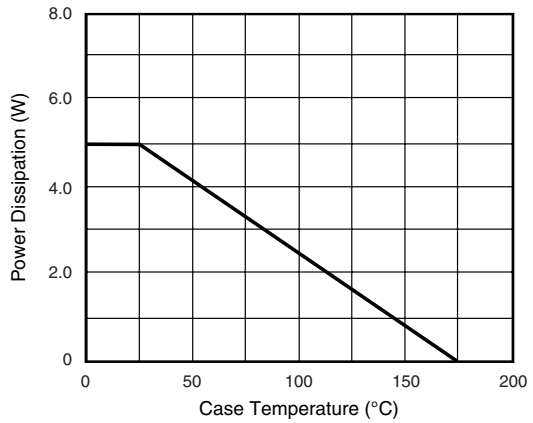

Figure 1. Power Derating Curve

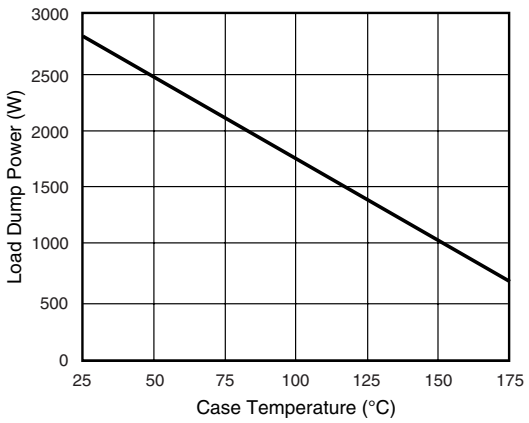

Figure 2. Load Dump Power Characteristics
(10 ms Exponential Waveform)

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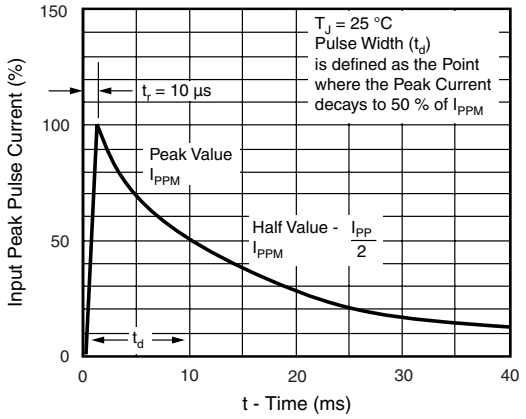

Figure 3. Pulse Waveform

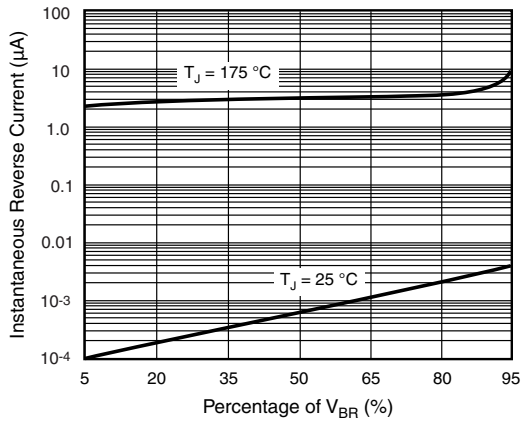

Figure 6. Typical Reverse Characteristics

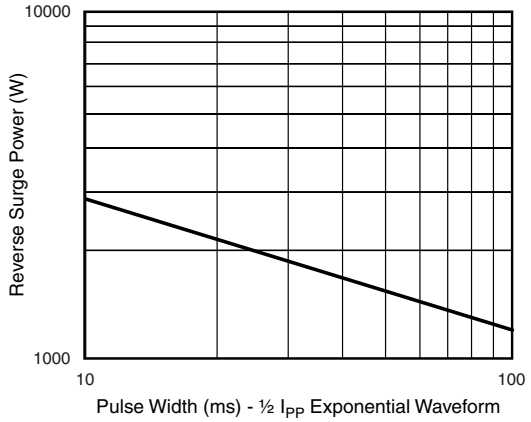

Figure 4. Reverse Power Capability

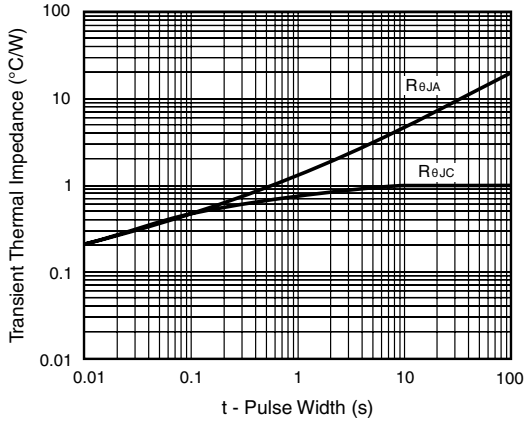

Figure 7. Typical Transient Thermal Impedance

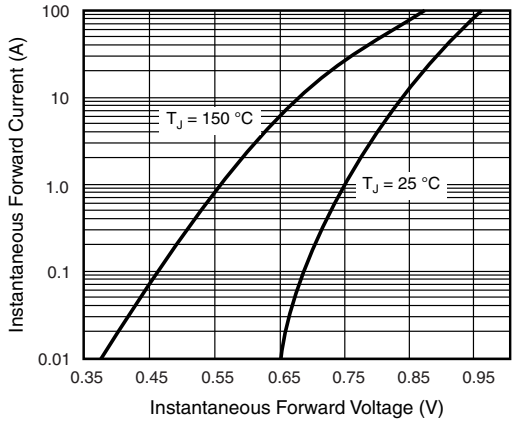

Figure 5. Typical Instantaneous Forward Characteristics

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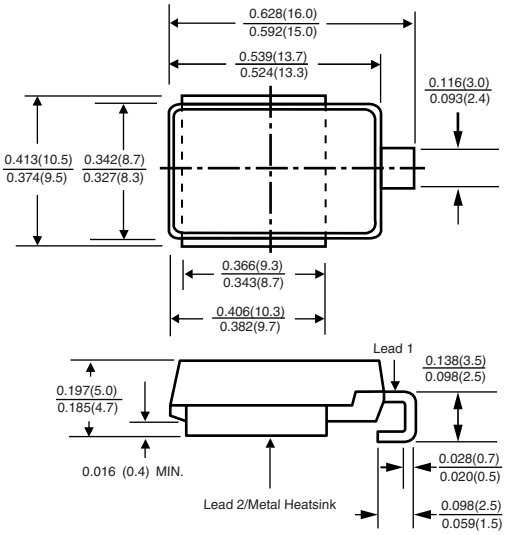
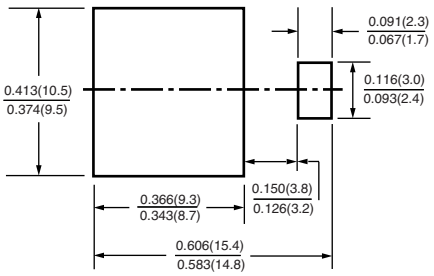
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-218AB



Mounting Pad Layout



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