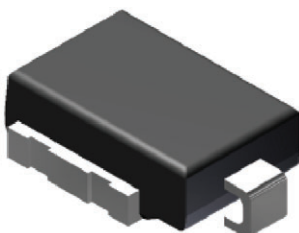


Surface Mount PAR[®] Transient Voltage Suppressors

High Temperature Stability and High Reliability Conditions



DO-218 Compatible

Anode  Cathode

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS	
V_{BR}	27 V
P_{PPM} (10 x 1000 μ s)	6600 W
P_{PPM} (10 x 10 000 μ s)	5200 W
P_D	8 W
V_{WM}	22 V
I_{PPM}	130 A
I_{FSM}	700 A
T_J max.	175 °C
Polarity	Unidirectional
Package	DO-218AC

FEATURES

- Junction passivation optimized design passivated anisotropic rectifier technology
- $T_J = 175$ °C capability suitable for high reliability and automotive requirement
- Low leakage current
- Low forward voltage drop
- High surge capability
- Meets ISO 7637-2 surge specification
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- AEC-Q101 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lightning, especially for automotive load dump protection application.

MECHANICAL DATA

Case: DO-218AC

Molding compound meets UL 94 V-0 flammability rating
Base P/NHM3 - RoHS-compliant, AEC-Q101 qualified

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

HM3 suffix meets JESD 201 class 2 whisker test

Polarity: heatsink is anode

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation	P_{PPM}	6600	W
		5200	
Power dissipation on infinite heatsink at $T_A = 25$ °C (fig. 1)	P_D	8.0	W
Non-repetitive peak reverse surge current for 10 μ s/10 ms exponentially decaying waveform	I_{PPM}	130	A
Maximum working stand-off voltage	V_{WM}	22.0	V
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

ELECTRICAL CHARACTERISTICS ($T_A = 25$ °C unless otherwise noted)			
DEVICE TYPE	BREAKDOWN VOLTAGE V_{BR} AT I_T (V)		STAND-OFF VOLTAGE V_{WM} (V)
	MIN.	MAX.	
SM8A27HM3	24	30	22

ADDITIONAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	MIN.	TYP.	MAX.	UNIT
Temperature coefficient of V _{BR}	I _T = 10 mA		αT	-	-	36	mV/°C
Clamping voltage for 10 μs/10 ms exponentially decaying waveform	I _{PP} = 75 A		V _C	-	-	40.0	V
Instantaneous forward voltage	I _F = 6.0 A		V _F ⁽¹⁾	-	-	0.98	V
	I _F = 100 A			-	0.93	-	
Reverse leakage current	Rated V _{WM}	T _J = 25 °C	I _R	-	-	1.0	μA
		T _J = 175 °C		-	-	50.0	

Note

(1) Measured on a 300 μ s square pulse width

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Typical thermal resistance	R _{θJA} (1)	55	°C/W
	R _{θJM} (2)	0.35	°C/W

Notes

(1) Thermal resistance junction-to-ambient to follow JEDEC®51-2A, device mounted on FR4 PCB, 2 oz. standard footprint

(2) Thermal resistance junction-to-mount to follow JEDEC®51-14 using Transient Dual Interface Test Method (TDIM)

ORDERING INFORMATION TABLE

Device code

SM	x	A	27	H	M3
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1 2 3 4 5 6

- 1** - Surface mount
- 2** - Power dissipation P_D (5 = 5 W, 6 = 6 W, 8 = 8 W)
- 3** - Automotive TVS designator (low V_F type)
- 4** - 27 V breakdown voltage
- 5** - Quality grade (H = AEC-Q101 qualified, otherwise = industry grade)
- 6** - Material / Environment category (M3 = halogen-free, RoHS-compliant, and termination lead (Pb)-free)

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
SM8A27HM3/I (1)	2.605	I	750	13" diameter plastic tape and reel, anode towards the sprocket hole

Note

(1) AEC-Q101 qualified

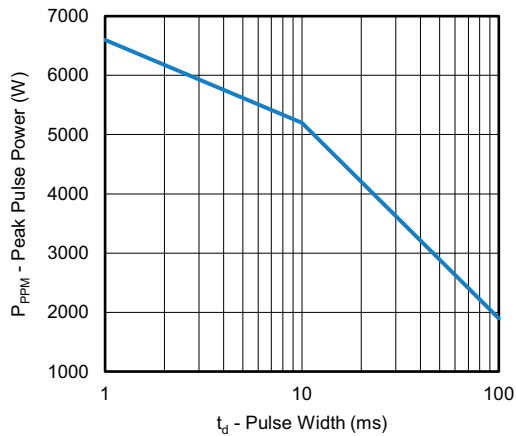
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)


Fig. 1 - Peak Pulse Power Derating Curve

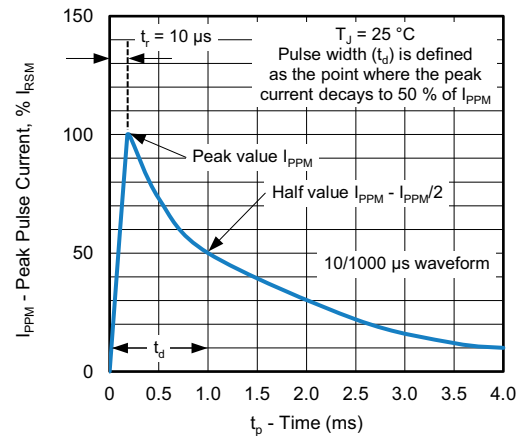


Fig. 4 - Pulse Waveform

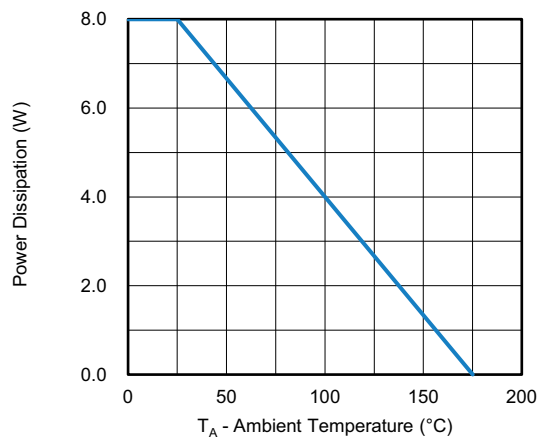


Fig. 2 - Power Derating Curve

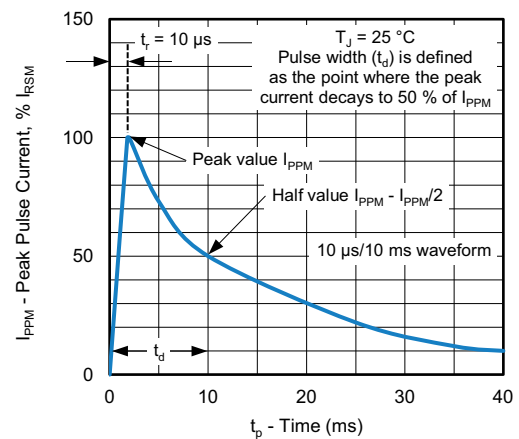


Fig. 5 - Pulse Waveform

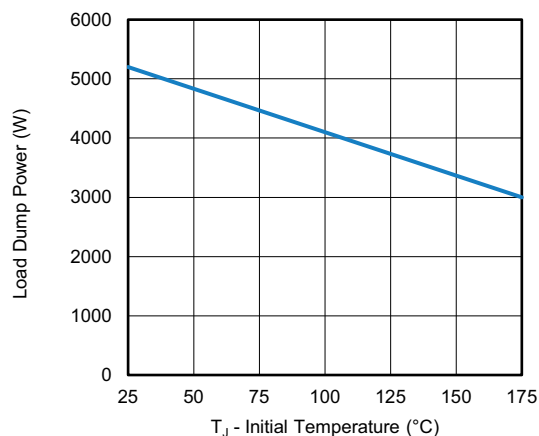


Fig. 3 - Load dump Power Characteristics (10 ms Exponential Waveform)

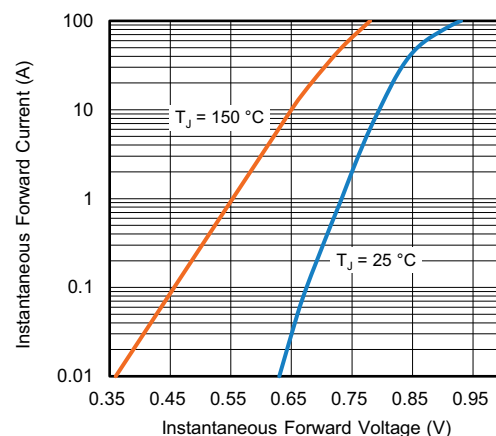


Fig. 6 - Typical Instantaneous Forward Characteristics

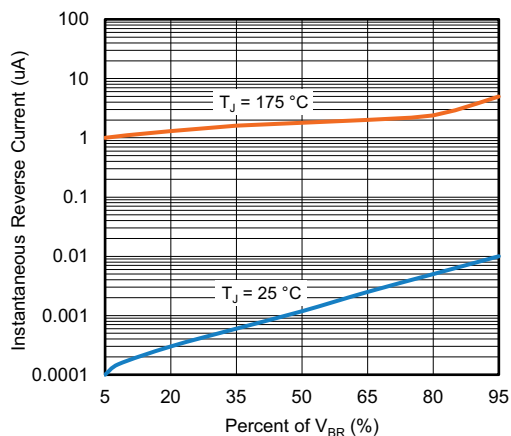


Fig. 7 - Typical Reverse Characteristics

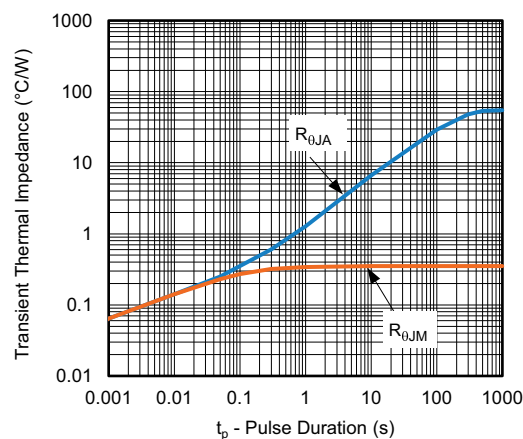
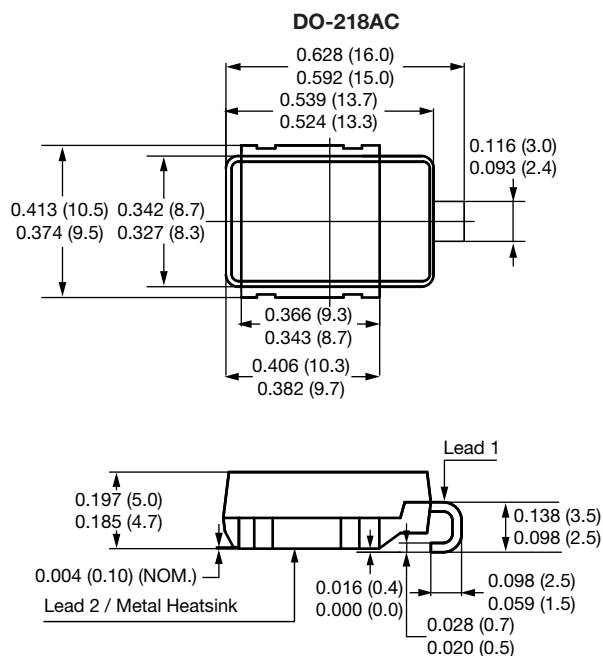
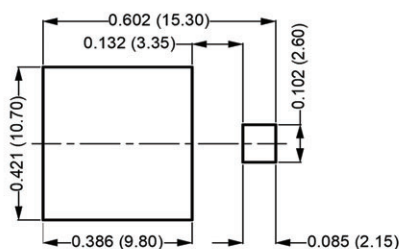


Fig. 8 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

Mounting Pad Layout

Note

- Footprint in accordance with IPC 7351 standard



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