

Surface Mount Trench MOS Barrier Schottky Rectifier

TMBS® eSMP® Series


Top View

Bottom View

SlimSMA (DO-221AC)

Cathode Anode

FEATURES

- Very low profile - typical height of 0.95 mm
- Ideal for automated placement
- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code; base P/NHM3
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
 COMPLIANT
 HALOGEN
FREE
DESIGN SUPPORT TOOLS
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3D
 Models
 Available

TYPICAL APPLICATIONS

For use in low voltage, high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	5.0 A
V_{RRM}	60 V
I_{FSM}	100 A
V_F at $I_F = 5.0$ A	0.48 V
T_J max.	150 °C
Package	SlimSMA (DO-221AC)
Circuit configuration	Single

MECHANICAL DATA
Case: SlimSMA (DO-221AC)

 Molding compound meets UL 94 V-0 flammability rating
 Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

 Base P/NHM3_X - halogen-free, RoHS-compliant, and AEC-Q101 qualified
 (“_X” denotes revision code e.g. A, B,.....)

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD22-B102

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VSSAF56	UNIT
Device marking code		V56	
Maximum repetitive peak reverse voltage	V_{RRM}	60	V
Maximum DC forward current	I_F ⁽¹⁾	5.0	A
	I_F ⁽²⁾	2.6	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	100	A
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

Notes

- (1) Mounted on 30 mm x 30 mm pad areas, 2 oz. FR4 PCB
- (2) Free air, mounted on recommended copper pad area



ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I _F = 2.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.47	-	V
	I _F = 5.0 A			0.54	0.62	
	I _F = 2.5 A	T _A = 125 °C		0.38	-	
	I _F = 5.0 A			0.48	0.56	
Reverse current	V _R = 60 V	T _A = 25 °C	I _R ⁽²⁾	-	0.4	mA
		T _A = 125 °C		4.5	15	
Typical junction capacitance	4.0 V, 1 MHz	C _J	540	-	pF	

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)			
PARAMETER	SYMBOL	VSSAF56	UNIT
Typical thermal resistance	R _{thJA} ⁽¹⁾	115	°C/W
	R _{thJM} ⁽²⁾	12	

Notes

- (1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance R_{thJA} - junction to ambient
- (2) Mounted on 30 mm x 30 mm pad areas, 2 oz. FR4 PCB; R_{thJM} - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
VSSAF56-M3/6A	0.032	6A	3500	7" diameter plastic tape and reel
VSSAF56-M3/6B	0.032	6B	14 000	13" diameter plastic tape and reel
VSSAF56HM3_A/H ⁽¹⁾	0.032	H	3500	7" diameter plastic tape and reel
VSSAF56HM3_A/I ⁽¹⁾	0.032	I	14 000	13" diameter plastic tape and reel

Note

- (1) AEC-Q101 qualified

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise specified)

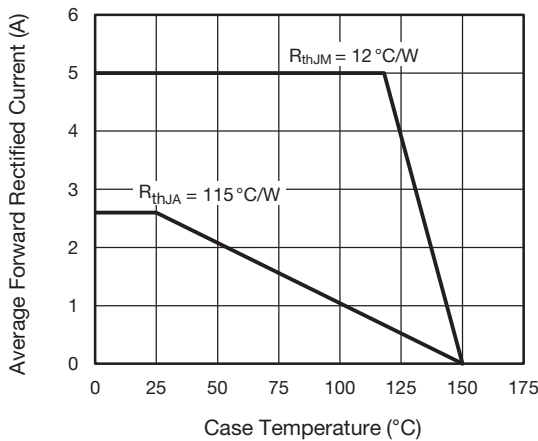


Fig. 1 - Maximum Forward Current Derating Curve

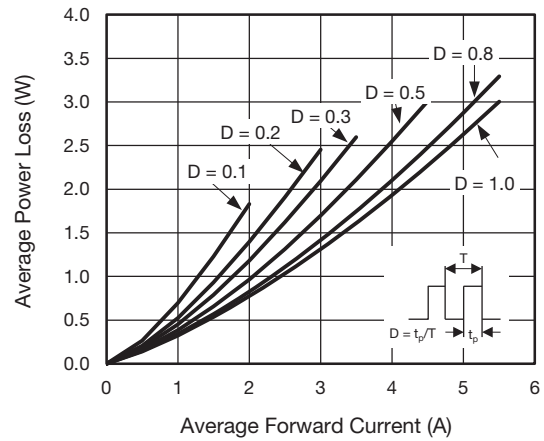


Fig. 2 - Average Power Loss Characteristics

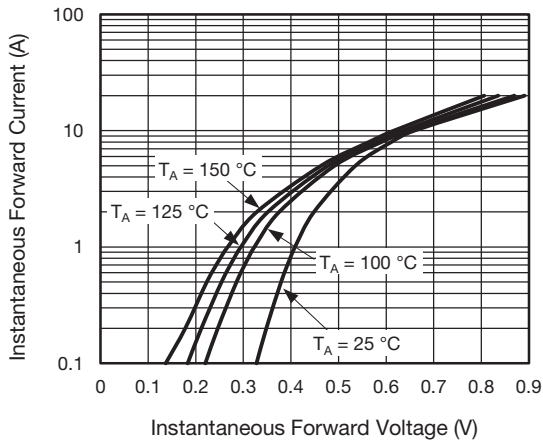


Fig. 3 - Typical Instantaneous Forward Characteristics

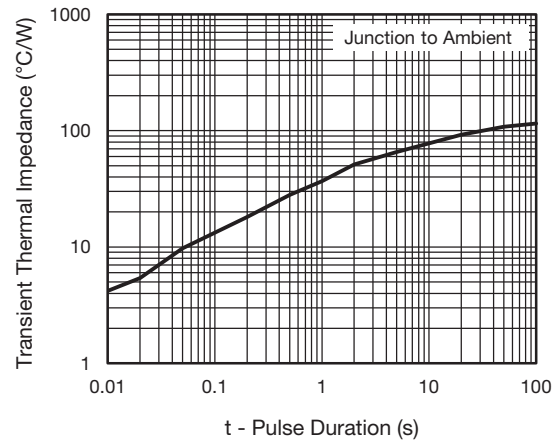


Fig. 6 - Typical Transient Thermal Impedance

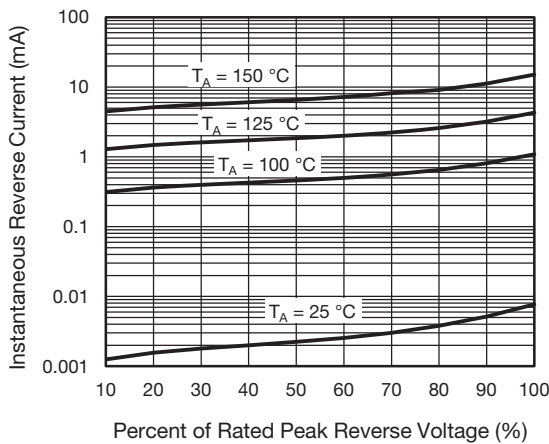


Fig. 4 - Typical Reverse Leakage Characteristics

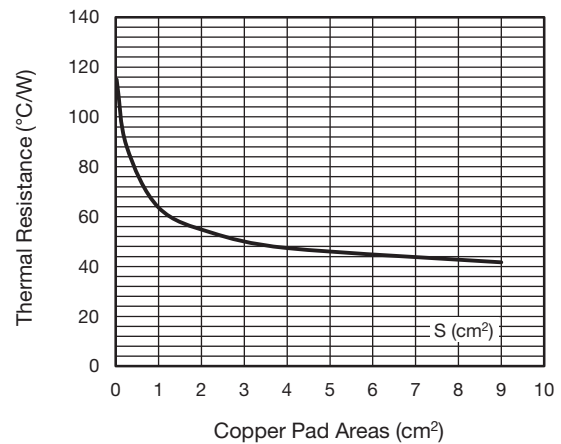


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

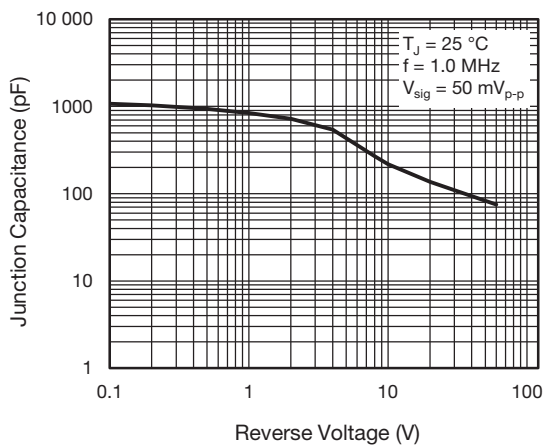
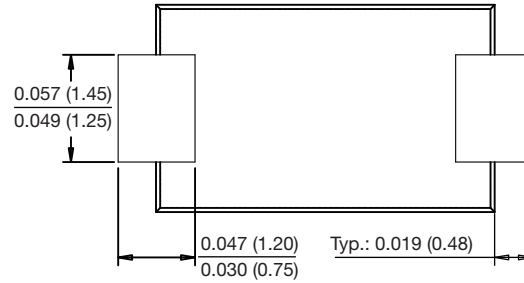
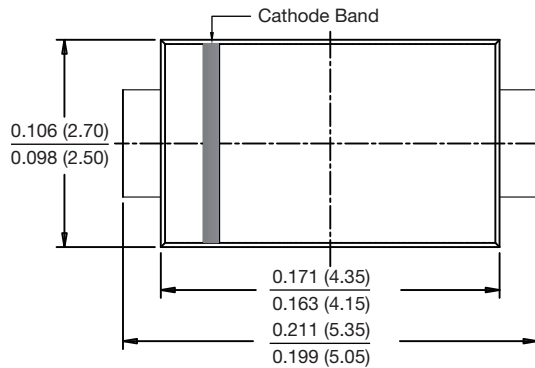


Fig. 5 - Typical Junction Capacitance

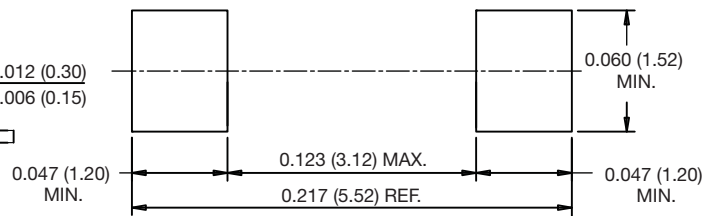
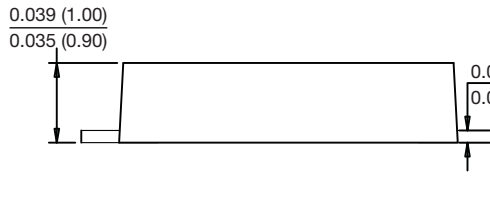


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMA (DO-221AC)



Mounting Pad Layout





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