

Surface Mount Trench MOS Barrier Schottky Rectifier



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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
 COMPLIANT
 HALOGEN
FREE

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3.0 A
V_{RRM}	50 V
I_{FSM}	80 A
V_F at $I_F = 3.0$ A	0.40 V
T_J max.	150 °C
Package	DO-221AC (SlimSMA)
Diode variation	Single die

MECHANICAL DATA

Case: DO-221AC (SlimSMA)

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

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

M3 suffix meets JESD 201 class 2 whisker test

Polarity: Color band denotes cathode end

TYPICAL APPLICATIONS

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

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)			
PARAMETER	SYMBOL	VSSAF3N50	UNIT
Device marking code		3N5	
Maximum repetitive peak reverse voltage	V_{RRM}	50	V
Maximum DC forward current (fig. 1)	$I_F^{(1)}$	3.0	A
	$I_F^{(2)}$	2.7	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	80	A
Maximum DC reserve voltage	V_{DC}	35	V
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150	°C

Note

- (1) Mounted on 5 mm x 5 mm copper pad areas, 2 oz. FR4 PCB
 (2) Free air, mounted on recommended copper pad area

ELECTRICAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_F = 1.5\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F^{(1)}$	0.40	-	V
	$I_F = 3.0\text{ A}$			0.47	0.54	
	$I_F = 1.5\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.30	-	
	$I_F = 3.0\text{ A}$			0.40	0.48	
Reverse current	$V_R = 35\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$	$I_R^{(2)}$	0.01	-	mA
		$T_A = 125\text{ }^\circ\text{C}$		8	-	
	$V_R = 50\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$		-	1	
		$T_A = 125\text{ }^\circ\text{C}$		12.5	35	
Typical junction capacitance	4.0 V, 1 MHz		C_J	570	-	pF

Notes

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
 (2) Pulse test: Pulse width $\leq 5\text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise specified)			
PARAMETER	SYMBOL	VSSAF3N50	UNIT
Typical thermal resistance	$R_{\theta JA}^{(1)}$	115	$^\circ\text{C/W}$
	$R_{\theta JM}^{(1)}$	12	

Note

- (1) Free air, mounted on recommended PCB, 2 oz. pad area; thermal resistance $R_{\theta JA}$ - junction to ambient, $R_{\theta JM}$ - junction to mount

ORDERING INFORMATION (Example)				
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
VSSAF3N50-M3/6A	0.032	6A	3500	7" diameter plastic tape and reel
VSSAF3N50-M3/6B	0.032	6B	14 000	13" diameter plastic tape and reel

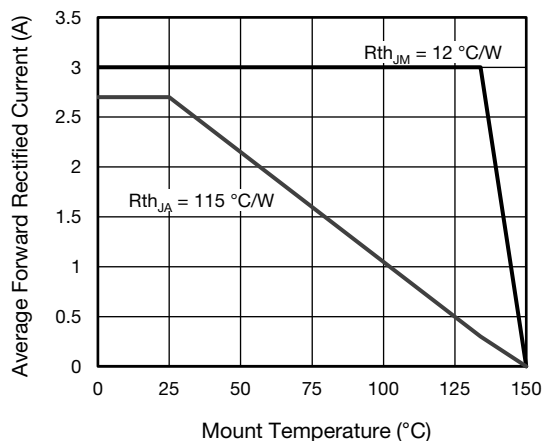
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

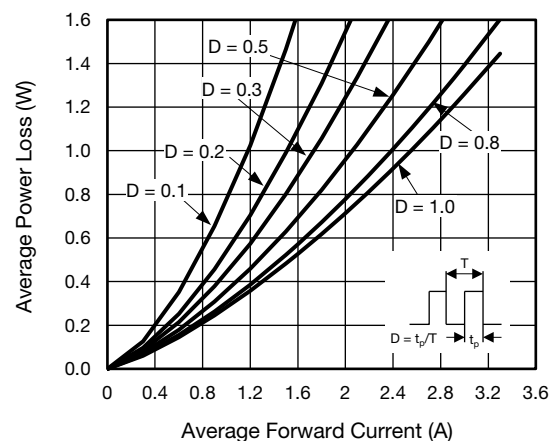


Fig. 2 - Forward Power Loss Characteristics

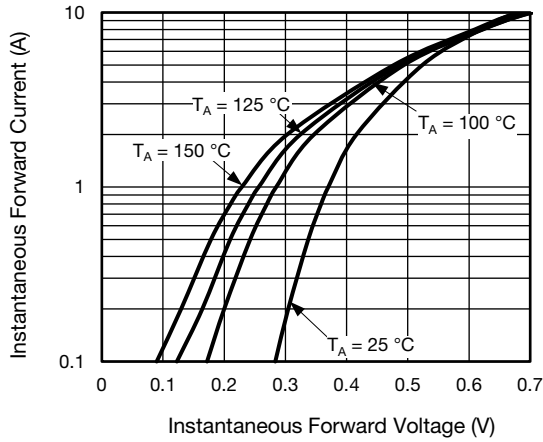


Fig. 3 - Typical Instantaneous Forward Characteristics

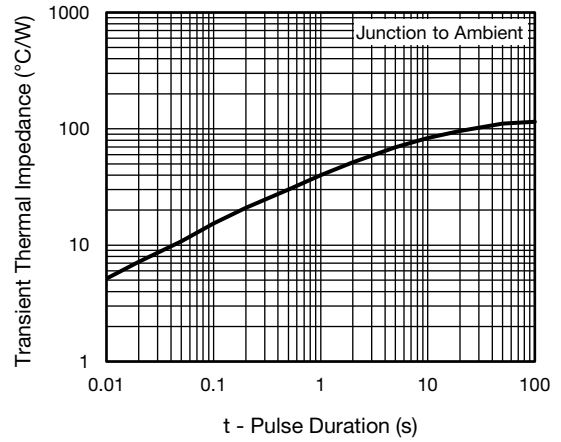


Fig. 6 - Typical Transient Thermal Impedance

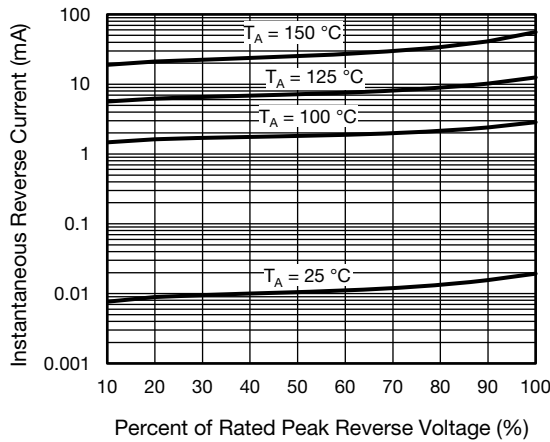


Fig. 4 - Typical Reverse Leakage Characteristics

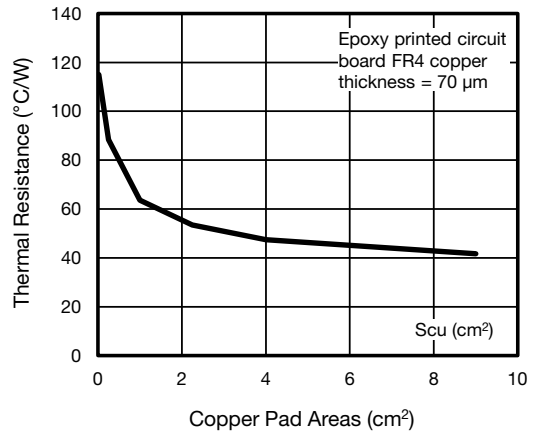


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Area

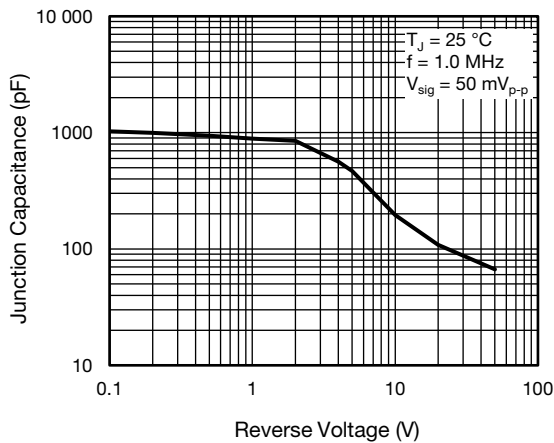
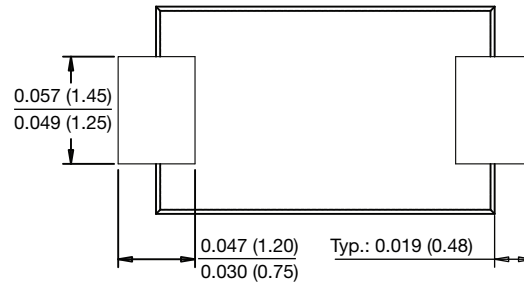
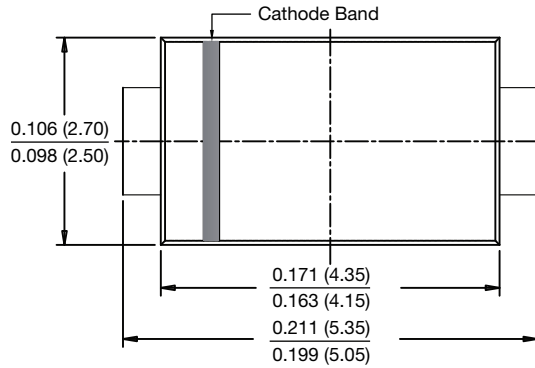


Fig. 5 - Typical Junction Capacitance

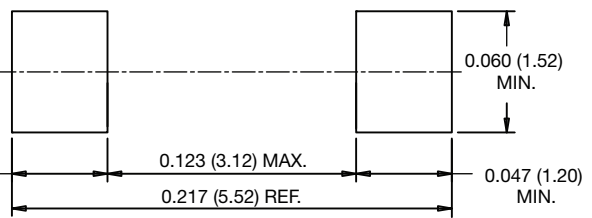
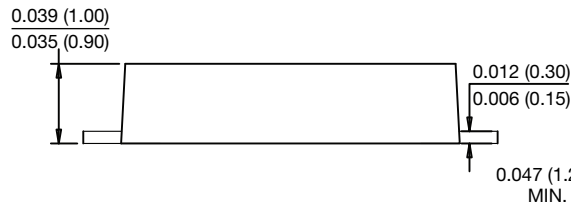


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-221AC (SlimSMA)



Mounting Pad Layout





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