RoHS

HALOGEN FREE



Vishay General Semiconductor

Surface Mount Trench MOS Barrier Schottky Rectifier



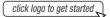


SlimSMA (DO-221AC)

Cathode O Anode

DESIGN SUPPORT TOOLS

Top View



Bottom View



PRIMARY CHARACTERISTICS			
I _{F(AV)}	5.0 A		
V _{RRM}	100 V		
I _{FSM}	100 A		
V _F at I _F = 5.0 A (125 °C)	0.59 V		
T _J max.	150 °C		
Package	SlimSMA (DO-221AC)		
Circuit configuration	Single		

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 <u>www.vishav.com/doc?99912</u>

TYPICAL APPLICATIONS

For use in high frequency inverters, freewheeling, DC/DC converters, and polarity protection in commercial, industrial, and automotive applications.

MECHANICAL DATA

Case: SlimSMA (DO-221AC)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 and 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	VSSAF510	UNIT		
Device marking code		V510			
Maximum repetitive peak reverse voltage	V _{RRM}	100	V		
Maximum average femiliard westified a surrent	I _{F(AV)} (1)	2.2			
Maximum average forward rectified current	I _{F(AV)} (2)	5.0	A		
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM} 100		А		
Operating junction and storage temperature range	T _J , T _{STG}	-40 to +150	°C		

Notes

(1) Free air, mounted on recommended copper pad area

(2) Mounted on 30 mm x 30 mm pad area



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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 _E (1)	0.54	1	- V	
	I _F = 5.0 A			0.66	0.75		
	I _F = 2.5 A	- T _A = 125 °C	- '	VF (*)	0.48	-] v
	I _F = 5.0 A			0.59	0.68		
Reverse current	V _R = 70 V	$T_A = 25 ^{\circ}\text{C}$ $T_A = 125 ^{\circ}\text{C}$	I _R ⁽²⁾	0.01	-	mA	
		T _A = 125 °C		2	-		
	V _R = 100 V	T _A = 25 °C		-	0.5		
		T _A = 125 °C		5	20		
Typical junction capacitance	4.0 V, 1 MHz		C_{J}	440	-	pF	

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	VSSAF510	UNIT	
Typical thormal registance	R _{θJA} (1)(2)	115	°C/W	
Typical thermal resistance	R _{0JM} (3)	12	C/VV	

Notes

⁽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

 $^{(2)}$ The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/DT_J < 1/R_{\theta JA}$

(3) Mounted on 30 mm x 30 mm pad area

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
VSSAF510-M3/H	0.032	Н	3500	7" diameter plastic tape and reel	
VSSAF510-M3/I	0.032	1	14 000	13" diameter plastic tape and reel	
VSSAF510HM3/H (1)	0.032	Н	3500	7" diameter plastic tape and reel	
VSSAF510HM3/I (1)	0.032	I	14 000	13" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified

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

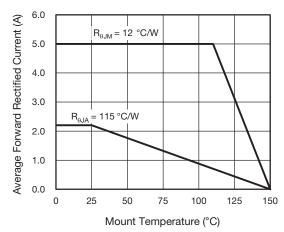


Fig. 1 - Maximum Forward Current Derating Curve

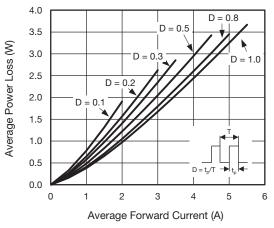


Fig. 2 - Forward Power Loss Characteristics

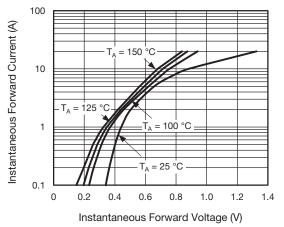


Fig. 3 - Typical Instantaneous Forward Characteristics

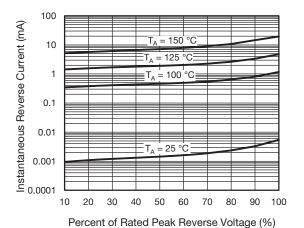


Fig. 4 - Typical Reverse Leakage Characteristics

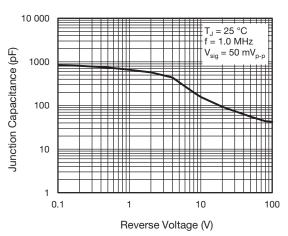


Fig. 5 - Typical Junction Capacitance

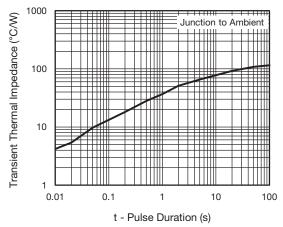


Fig. 6 - Typical Transient Thermal Impedance

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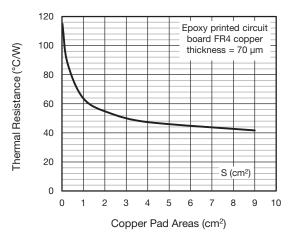
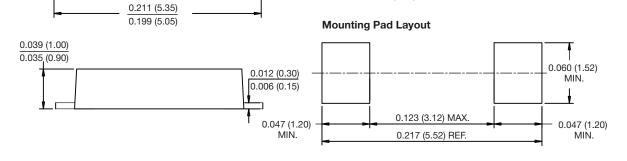


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Area

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

0.106 (2.70) 0.098 (2.50) 0.098 (2.50) 0.047 (1.20) 0.047 (1.20) 0.047 (1.20) 0.030 (0.75) Typ.: 0.019 (0.48)

SlimSMA (DO-221AC)



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