AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN

FREE



Vishay General Semiconductor

Surface Mount Trench MOS Barrier Schottky Rectifier

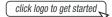
TMBS® eSMP® Series



MicroSMP (DO-219AD)



DESIGN SUPPORT TOOLS





PRIMARY CHARACTERISTICS				
I _{F(AV)}	2 A			
V _{RRM}	120 V			
I _{FSM}	30 A			
V _F at I _F = 2 A (125 °C)	0.65 V			
T _J max.	175 °C			
Package	MicroSMP (DO-219AD)			
Circuit configuration	Single			

FEATURES

- Very low profile typical height of 0.65 mm
- · Ideal for automated placement
- Trench MOS Schottky technology
- Low forward voltage drop
- Low power loss, high efficiency
- 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 low voltage high frequency inverters, freewheeling, DC/DC converters, and polarity protection applications, in commercial, industrial, and automotive applications.

MECHANICAL DATA

Case: MicroSMP (DO-219AD)

Molding compound meets UL 94 V-0 flammability rating

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

Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

Terminals: matte tin plated leads, solderable

J-STD-002 and JESD 22-B102 M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V2PM12	UNIT	
Device marking code		2MS		
Maximum repetitive peak reverse voltage	V _{RRM}	120	V	
Maximum DC forward current	I _{F(AV)} (1)	1.4	Α	
	I _{F(AV)} (2)	2	Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	30	А	
Operating junction and storage temperature range	T _J ⁽³⁾ , T _{STG}	-40 to +175	°C	

Notes

- (1) Free air, mounted on recommended copper pad area
- (2) Mounted on 8.0 mm x 8.0 mm pad area
- $^{(3)}$ The heat generated must be less than the thermal conductivity from junction to ambient: $dP_D/dT_J < 1/R_{\theta JA}$



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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 = 1.0 A	T _A = 25 °C	V _F (1)	0.70	-	V
	I _F = 2.0 A	T _A = 25 °C		0.90	0.98	
	I _F = 1.0 A	T _A = 125 °C		0.57	-	
	I _F = 2.0 A	T _A = 125 °C		0.65	0.73	
Reverse current	V _R = 90 V	T _A = 25 °C	- I _R ⁽²⁾	0.001	-	- mA
		T _A = 125 °C		0.25	-	
	V _R = 120 V	T _A = 25 °C		-	0.05	
		T _A = 125 °C		0.5	2	
Typical junction capacitance	4.0 V, 1 MHz		CJ	140	-	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 noted)			
PARAMETER	SYMBOL	V2PM12	UNIT
Typical thermal resistance	R _{0JA} ⁽¹⁾⁽²⁾ 130		°C/W
	R _{0JM} (3)	20	C/VV

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$
- (2) Free air, mounted on FR4 PCB, 2 oz. standard footprint, R_{0JA} junction to ambient
- $^{(3)}$ Mounted on PCB with 8.0 mm x 8.0 mm copper pad areas, $R_{\theta JM}$ junction to mount

ORDERING INFORMATION (Example)					
PREFERRED P/N UNIT WEIGHT (g) PREFERRED PACKAGE CODE BA		BASE QUANTITY	DELIVERY MODE		
V2PM12-M3/H	0.006	Н	4500	7" diameter plastic tape and reel	
V2PM12HM3/H (1)	0.006	Н	4500	7" diameter plastic tape and reel	

Note

(1) AEC-Q101 qualified

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

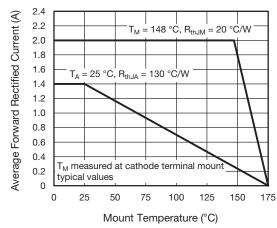


Fig. 1 - Maximum Forward Current Derating Curve

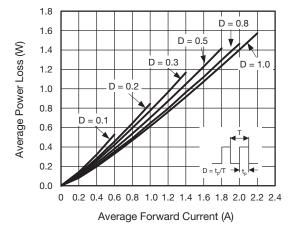


Fig. 2 - Average Power Loss Characteristics



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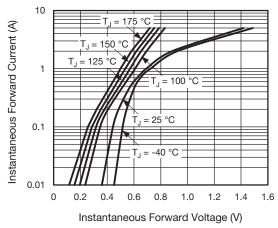


Fig. 3 - Typical Instantaneous Forward Characteristics

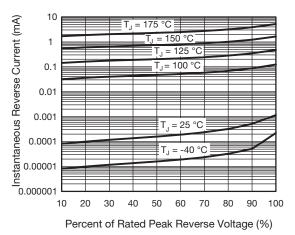


Fig. 4 - Typical Reverse Leakage Characteristics

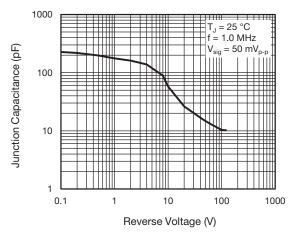


Fig. 5 - Typical Junction Capacitance

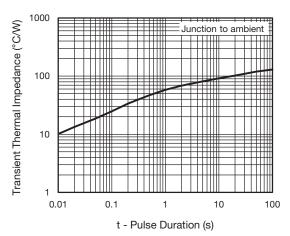
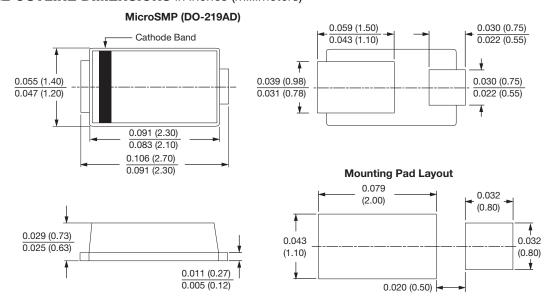


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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