AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN FREE



# Vishay General Semiconductor

# Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier



#### MicroSMP (DO-219AD)



### **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 A			
V <sub>RRM</sub>	100 V			
I <sub>FSM</sub>	30 A			
V <sub>F</sub> at I <sub>F</sub> = 2 A (125 °C)	0.62 V			
T <sub>J</sub> max.	175 °C			
Package	MicroSMP (DO-219AD)			
Circuit configuration	Single			

#### **FEATURES**





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 <a href="https://www.vishay.com/doc?99912"><u>www.vishay.com/doc?99912</u></a>

## 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 per 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

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V2PM10	UNIT	
Device marking code		2MB		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	100	V	
Market in BO for and a most	I <sub>F(AV)</sub> (1)	1.5	А	
Maximum DC forward current	I <sub>F(AV)</sub> (2)	2	Α	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load		30	А	
Operating junction and storage temperature range	T <sub>J</sub> <sup>(3)</sup> , T <sub>STG</sub>	-55 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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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST C	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 1.0 A	T <sub>A</sub> = 25 °C		0.61	-	V
	$I_F = 2.0 A$	T <sub>A</sub> = 25 °C	V <sub>F</sub> (1)	0.75	0.83	
	$I_F = 1.0 A$	T <sub>A</sub> = 125 °C	VF (''	0.53	-	
	$I_F = 2.0 A$	T <sub>A</sub> = 125 °C		0.62	0.7	
Reverse current	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	0.001	-	- mA
	V <sub>R</sub> = 70 V	T <sub>A</sub> = 125 °C		0.25	-	
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		-	0.05	
	v <sub>R</sub> = 100 v	T <sub>A</sub> = 125 °C		0.5	2	
Typical junction capacitance	4.0 V, 1 MHz	7	CJ	150	-	pF

#### Notes

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

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL V2PM10			
Typical thermal resistance	R <sub>0JA</sub> (1)(2)	130	°C/W	
	R <sub>0JM</sub> (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,  $R_{\theta JA}$  junction to ambient
- 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	BASE QUANTITY	DELIVERY MODE	
V2PM10-M3/H	0.006	Н	4500	7" diameter plastic tape and reel	
V2PM10HM3/H (1)	0.006	Н	4500	7" diameter plastic tape and reel	

## Note

(1) AEC-Q101 qualified

# RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

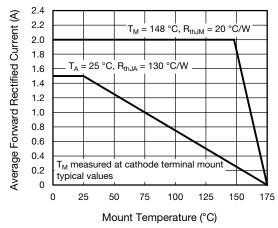


Fig. 1 - Maximum Forward Current Derating Curve

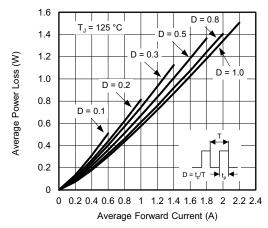


Fig. 2 - Average Power Loss Characteristics



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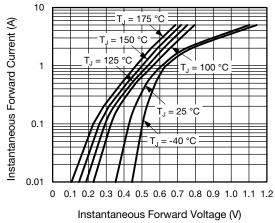


Fig. 3 - Typical Instantaneous Forward Characteristics

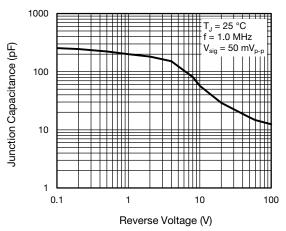


Fig. 5 - Typical Junction Capacitance

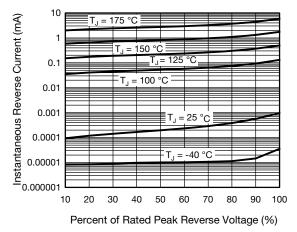


Fig. 4 - Typical Reverse Leakage Characteristics

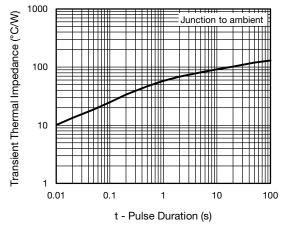
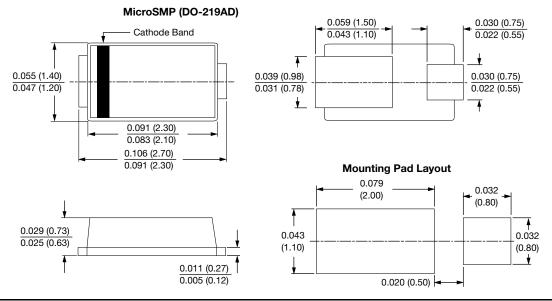


Fig. 6 - Typical Transient Thermal Impedance

# **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)



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