AUTOMOTIVE

RoHS

COMPLIANT

HALOGEN

FREE



# Vishay General Semiconductor

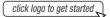
# **Surface Mount Schottky Barrier Rectifiers**



### MicroSMP (DO-219AD)



### **DESIGN SUPPORT TOOLS**





PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	1.0 A			
V <sub>RRM</sub>	30 V, 40 V			
I <sub>FSM</sub>	25 A			
V <sub>F</sub> at I <sub>F</sub> = 1.0 A	0.41 V			
T <sub>J</sub> max.	150 °C			
Package MicroSMP				
Circuit configuration	Single			

#### **FEATURES**

- Very low profile typical height of 0.65 mm
- · Ideal for automated placement
- · Low forward voltage drop, low power losses
- · 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.

### **MECHANICAL DATA**

Case: MicroSMP

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

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

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 JESD 22-B102

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

Polarity: color band denotes the cathode end

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	MSS1P3	MSS1P4	UNIT	
Device marking code		13	14		
Maximum repetitive peak reverse voltage	$V_{RRM}$	30	40	V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	1.0		А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	25		А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150		°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Maximum instantaneous forward voltage	I <sub>F</sub> = 0.5 A	T 05 00	V <sub>F</sub> <sup>(1)</sup>	0.41	-	V
	I <sub>F</sub> = 1.0 A	$T_J = 25 ^{\circ}\text{C}$		0.48	0.55	
	$I_F = 0.5 A$	T <sub>J</sub> = 125 °C		0.32	-	
	I <sub>F</sub> = 1.0 A			0.41	0.46	
Maximum reverse current	Detect \/	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	8.5	200	μΑ
	Rated V <sub>R</sub>	T <sub>J</sub> = 125 °C		4.5	15	mA
Typical junction capacitance	4.0 V, 1 MF	4.0 V, 1 MHz		50	-	pF

#### **Notes**

 $^{(1)}$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	MSS1P3	MSS1P4	UNIT	
	R <sub>0JA</sub> (1)	125		°C/W	
Typical thermal resistance	R <sub>0JL</sub> (1)	30			
	R <sub>0</sub> JC (1)	40			

### Note

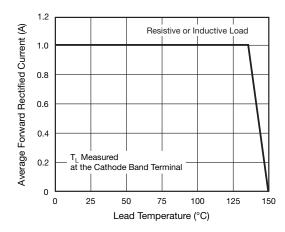
<sup>(1)</sup> Thermal resistance from junction to ambient and junction to lead mounted on PCB with 6.0 mm x 6.0 mm copper pad areas  $R_{\theta JL}$  is measured at the terminal of cathode band.  $R_{\theta JC}$  is measured at the top center of the body

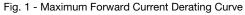
ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
MSS1P4-M3/89A	0.006	89A	4500	7" diameter plastic tape and reel		
MSS1P4HM3/89A (1)	0.006	89A	4500	7" diameter plastic tape and reel		
MSS1P4HM3_A/H (1)	0.006	Н	4500	7" diameter plastic tape and reel		

### Note

(1) AEC-Q101 qualified

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





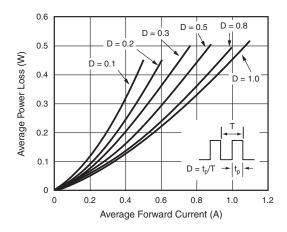


Fig. 2 - Forward Power Loss Characteristics



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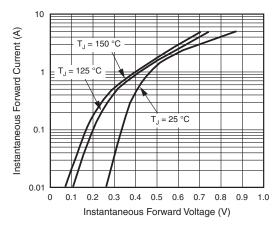


Fig. 3 - Typical Instantaneous Forward Characteristics

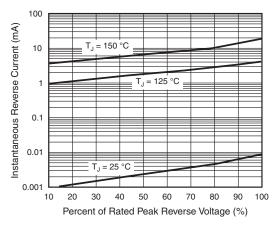


Fig. 4 - Typical Reverse Characteristics

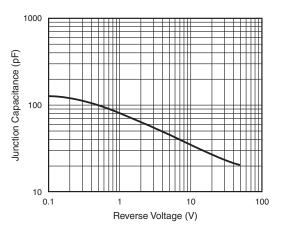


Fig. 5 - Typical Junction Capacitance

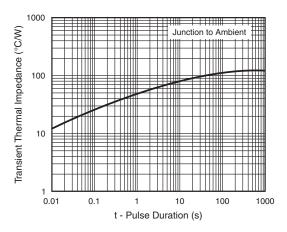
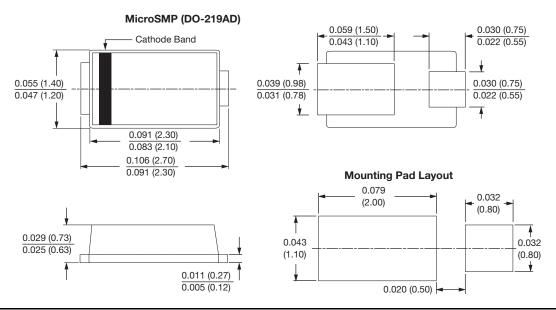


Fig. 6 - Typical Transient Thermal Impedance

### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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