AUTOMOTIVI GRADE

COMPLIANT

HALOGEN FREE



# Vishay General Semiconductor

# High Current Density Surface-Mount Schottky Barrier Rectifiers



## **LINKS TO ADDITIONAL RESOURCES**



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	3.0 A			
V <sub>RRM</sub>	30 V			
I <sub>FSM</sub>	50 A			
E <sub>AS</sub>	11.25 mJ			
V <sub>F</sub>	0.43 V			
T <sub>J</sub> max.	150 °C			
Package	SMP (DO-220AA)			
Circuit configuration	Single			

#### **FEATURES**

- Very low profile typical height of 1.0 mm
- Ideal for automated placement
- Low forward voltage drop, low power losses
- High efficiency
- · Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>

#### **TYPICAL APPLICATIONS**

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

#### **MECHANICAL DATA**

Case: SMP (DO-220AA)

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

automotive grade

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

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	SS3P3	UNIT	
Device marking code		33		
Maximum repetitive peak reverse voltage	$V_{RRM}$	30	V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	3.0	А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	50	А	
Non-repetitive avalanche energy at T <sub>J</sub> = 25 °C, I <sub>AS</sub> = 1.5 A, L = 10 mH	E <sub>AS</sub>	11.25	mJ	
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000	V/µs	
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 CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
	V (1)	0.52	0.58	V		
	I <sub>F</sub> = 3 A	T <sub>J</sub> = 125 °C	V <sub>F</sub> ···	0.43	0.48	]
Maximum reverse current at rated V <sub>R</sub>		T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	-	200	μΑ
Maximum reverse current at rated v <sub>R</sub>		T <sub>J</sub> = 125 °C		9.0	20	mA
Typical junction capacitance	4.0 V, 1 MHz		CJ	130		pF

#### Notes

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	SS3P3	UNIT	
	R <sub>θJA</sub> <sup>(1)</sup>	95		
Typical thermal resistance (1)	R <sub>0JL</sub> (1)	15	°C/W	
	R <sub>0</sub> JC (1)	20		

#### Note

(1) Thermal resistance from junction to ambient and junction to lead mounted on PCB with 5.0 mm x 5.0 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	
SS3P3-M3/84A	0.024	84A	3000	7" diameter plastic tape and reel	
SS3P3-M3/85A	0.024	85A	10 000	13" diameter plastic tape and reel	
SS3P3HM3/84A (1)	0.024	84A	3000	7" diameter plastic tape and reel	
SS3P3HM3/85A (1)	0.024	85A	10 000	13" diameter plastic tape and reel	

#### Note

(1) Automotive grade

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

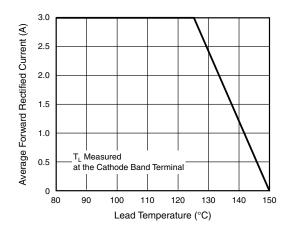


Fig. 1 - Forward Current Derating Curve

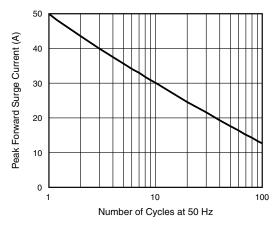


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

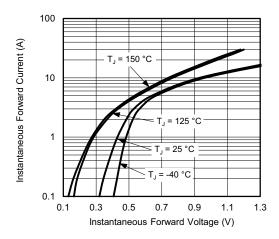


Fig. 3 - Typical Instantaneous Forward Characteristics

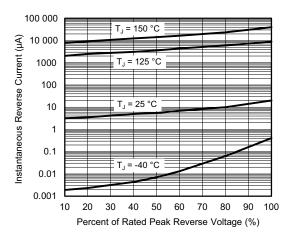


Fig. 4 - Typical Reverse Leakage Characteristics

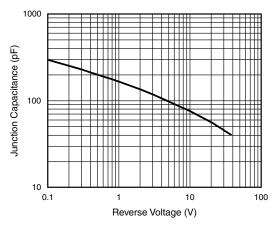


Fig. 5 - Typical Junction Capacitance

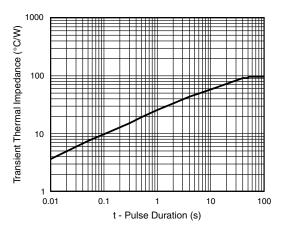


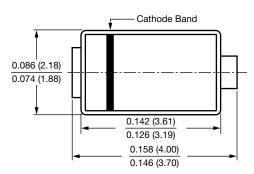
Fig. 6 - Typical Transient Thermal Impedance

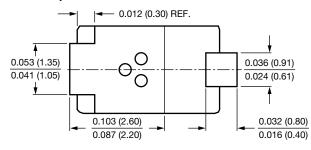


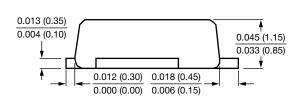
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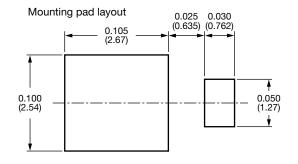
### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

## **SMP (DO-220AA)**











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