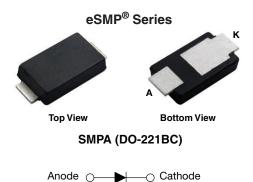
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Vishay General Semiconductor

# Surface-Mount TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier



## LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	8.0 A		
V <sub>RRM</sub>	100 V		
I <sub>FSM</sub>	90 A		
$V_F$ at I_F = 8.0 A (T_J = 125 °C)	0.63 V		
T <sub>J</sub> max.	175 °C		
Package	SMPA (DO-221BC)		
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: P/NHM3
- · Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

### **TYPICAL APPLICATIONS**

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

### **MECHANICAL DATA**

Case: SMPA (DO-221BC) 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 JESD22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes cathode end

<b>MAXIMUM RATINGS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V8PAM103S	UNIT	
Device marking code		8MGS		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	100	V	
Maximum DC forward current	I <sub>F(AV)</sub> <sup>(1)</sup>	8.0	Α	
	I <sub>F(AV)</sub> <sup>(2)</sup>	2.8		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	90	А	
Operating junction temperature range	T <sub>J</sub> <sup>(3)</sup>	-40 to +175	°C	
Storage temperature range	T <sub>STG</sub>	-55 to +175	°C	

#### Notes

<sup>(1)</sup> Units mounted on 3 cm x 3 cm aluminum PCB

<sup>(2)</sup> Free air, mounted on recommended copper pad area, 2 oz., FR4 PCB

 $^{(3)}$  The heat generated must be less than the thermal conductivity from junction-to-ambient:  $dP_D/dT_1 < 1/R_{0.1A}$ 



# V8PAM103S



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>J</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	$I_{F} = 4.0 \text{ A}$	- T <sub>J</sub> = 25 °C	V <sub>E</sub> <sup>(1)</sup>	0.6	-	V
	$I_{F} = 8.0 \text{ A}$			0.73	0.8	
	$I_{F} = 4.0 \text{ A}$	- T <sub>J</sub> = 125 °C		0.53	-	
	I <sub>F</sub> = 8.0 A			0.63	0.7	
Reverse current	V <sub>R</sub> = 70 V	T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C	I <sub>R</sub> <sup>(2)</sup>	0.002	-	- mA
	v <sub>R</sub> = 70 v	T <sub>J</sub> = 125 °C		1	-	
	V <sub>B</sub> = 100 V	T <sub>J</sub> = 25 °C T <sub>J</sub> = 125 °C		-	0.14	
	v <sub>R</sub> = 100 v	T <sub>J</sub> = 125 °C		2	8	
Typical junction capacitance	4.0 V, 1 MH	4.0 V, 1 MHz		770	-	pF

#### Notes

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

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  5 ms

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25$ °C unless otherwise specified)				
PARAMETER SYMBOL V8PAM103S				
Typical thermal resistance	R <sub>0JA</sub> (1)(2)	100	°C/W	
	R <sub>0JM</sub> <sup>(3)</sup>	5	0/11	

#### 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 recommended PCB, 2 oz. pad area; thermal resistance  $R_{\theta JA}$  - junction to ambient

 $^{(3)}$  Units mounted on 3 cm x 3 cm aluminum PCB; thermal resistance  $R_{\theta JM}$  - junction to mount

ORDERING INFORMATION (Example)						
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
V8PAM103S-M3/H	0.032	Н	3500	7" diameter plastic tape and reel		
V8PAM103S-M3/I	0.032	I	14 000	13" diameter plastic tape and reel		
V8PAM103SHM3/H (1)	0.032	Н	3500	7" diameter plastic tape and reel		
V8PAM103SHM3/I (1)	0.032	l	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 specified)

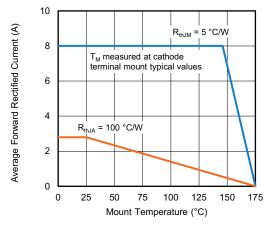


Fig. 1 - Maximum Forward Current Derating Curve

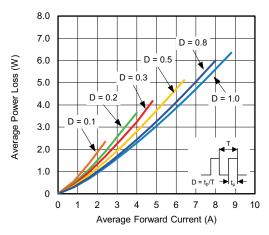


Fig. 2 - Forward Power Loss Characteristics

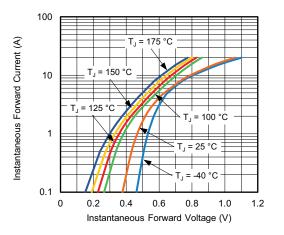


Fig. 3 - Typical Instantaneous Forward Characteristics

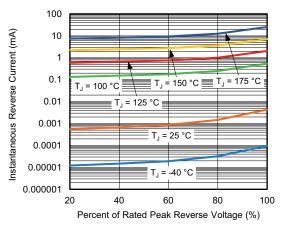


Fig. 4 - Typical Reverse Leakage Characteristics

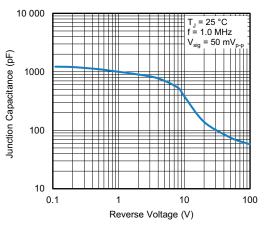


Fig. 5 - Typical Junction Capacitance

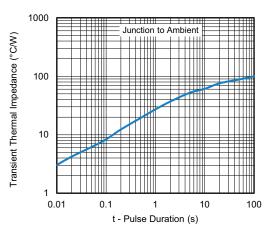


Fig. 6 - Typical Transient Thermal Impedance

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# **V8PAM103S**



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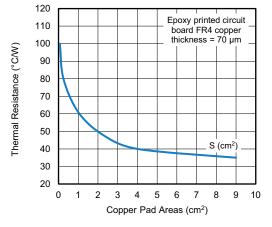
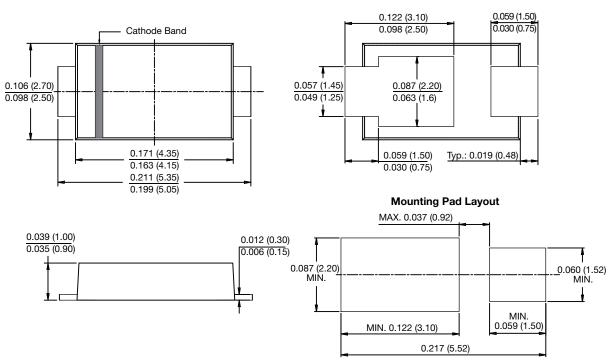


Fig. 7 - Thermal Resistance Junction to Ambient vs. **Copper Pad Areas** 

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



#### SMPA (DO-221BC)



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