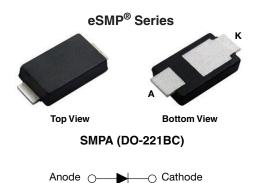
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Vishay General Semiconductor

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



## LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	8.0 A		
V <sub>RRM</sub>	120 V		
I <sub>FSM</sub>	100 A		
$V_F$ at $I_F$ = 8.0 A ( $T_A$ = 125 °C)	0.65 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 <u>www.vishay.com/doc?99912</u>

### **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	V8PAM12	UNIT	
Device marking code		8M12		
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	120	V	
Maximum DC forward current	I <sub>F(AV)</sub> <sup>(1)</sup>	8.0	Α	
	I <sub>F(AV)</sub> <sup>(2)</sup>	2.7		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	100	А	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-40 to +175	°C	

Notes

 $^{(1)}\,$  Units mounted on 3 cm x 3 cm aluminum PCB

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





FREE

**V8PAM12** 



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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 4.0 A	T <sub>A</sub> = 25 °C		0.63	-	V
	I <sub>F</sub> = 8.0 A			0.8	0.88	
	$I_{F} = 4.0 \text{ A}$	- T <sub>A</sub> = 125 °C		0.54	-	
	I <sub>F</sub> = 8.0 A			0.65	0.73	
Reverse current	V <sub>R</sub> = 90 V	$V_{R} = 90 V = \frac{T_{A} = 25 \degree C}{T_{A} = 125 \degree C}$	I <sub>R</sub> (2)	0.01	-	mA
	v <sub>R</sub> = 90 v	T <sub>A</sub> = 125 °C		1.5	-	
	V 100.V	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C		-	0.5	
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 125 °C		3	10	
Typical junction capacitance	4.0 V, 1 M⊦	4.0 V, 1 MHz		730	-	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 V8PAM12				
Typical thermal resistance	R <sub>0JA</sub> <sup>(1)(2)</sup>	100	°C/W	
	R <sub>0JM</sub> <sup>(3)</sup>	5	0/10	

#### Notes

<sup>(1)</sup> 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  $R_{0JA}$  - junction to ambient

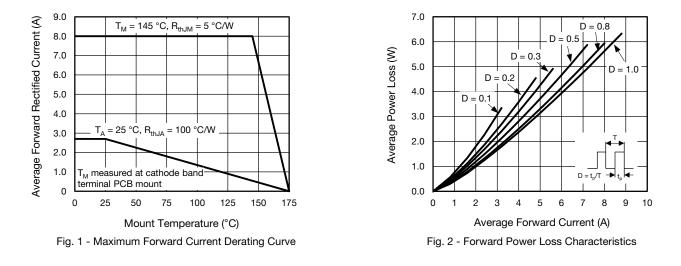
 $^{(3)}$  Units mounted on 3 cm x 3 cm aluminum PCB; thermal resistance  $R_{\theta JM}$  - junction to mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V8PAM12-M3/I	0.032	I	14 000	13" diameter plastic tape and reel	
V8PAM12HM3/I <sup>(1)</sup>	0.032	l	14 000	13" diameter plastic tape and reel	

#### Note

(1) AEC-Q101 qualified

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



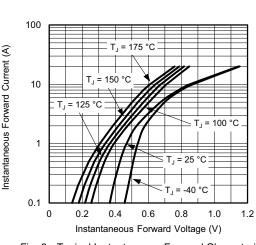
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Fig. 3 - Typical Instantaneous Forward Characteristics

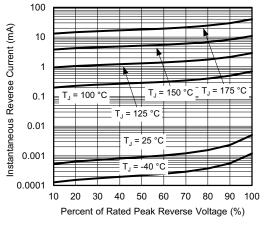
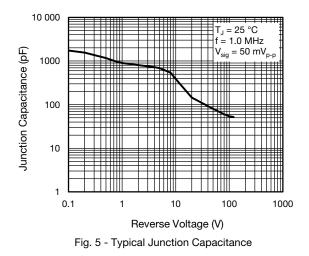


Fig. 4 - Typical Reverse Leakage Characteristics



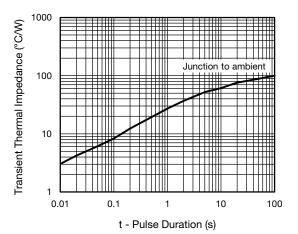


Fig. 6 - Typical Transient Thermal Impedance

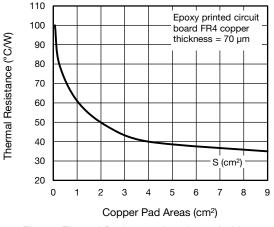


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

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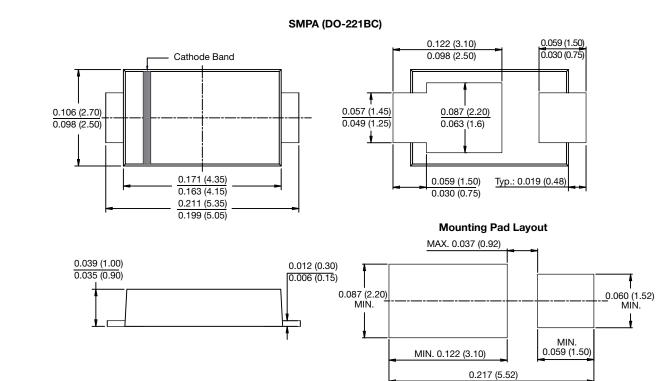
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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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