AUTOMOTIVE

RoHS

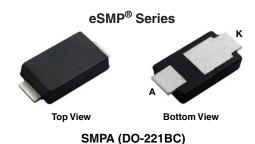
COMPLIANT

HALOGEN FREE



Vishay General Semiconductor

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





LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS				
I _{F(AV)}	8.0 A			
V _{RRM}	100 V			
I _{FSM}	90 A			
V _F at I _F = 8.0 A (T _J = 125 °C)	0.63 V			
T _J 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

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

Notes

- (1) Units mounted on 3 cm x 3 cm aluminum PCB
- (2) 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: $dP_D/dT_J < 1/R_{\theta JA}$



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ELECTRICAL CHARACTERISTICS (T _J = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	$I_F = 4.0 \text{ A}$	T _J = 25 °C	V _E (1)	0.6	-	V	
	I _F = 8.0 A			0.73	0.8		
	I _F = 4.0 A	T _J = 125 °C	T _ 105 °C	V F (1)	0.53	-	V
	I _F = 8.0 A			0.63	0.7		
Reverse current	$V_R = 70 \text{ V}$ $T_J = 25 \text{ °C}$ $T_J = 125 \text{ °C}$		0.002	-			
		T _J = 125 °C	I _R ⁽²⁾	1	-	mA	
	V _R = 100 V	T _J = 25 °C T _J = 125 °C		-	0.14	IIIA	
		T _J = 125 °C		2	8		
Typical junction capacitance	4.0 V, 1 MHz		CJ	770	-	pF	

Notes

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

(2) Pulse test: Pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	V8PAM103S	UNIT	
Typical thermal resistance	R ₀ JA (1)(2)	100	°C/W	
Typical thermal resistance	R _{0JM} (3)	5]	

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	I	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)

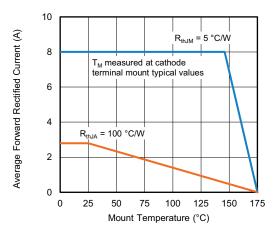


Fig. 1 - Maximum Forward Current Derating Curve

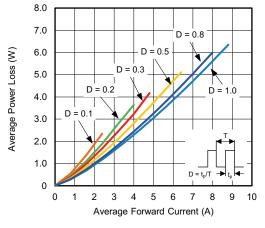


Fig. 2 - Forward Power Loss Characteristics

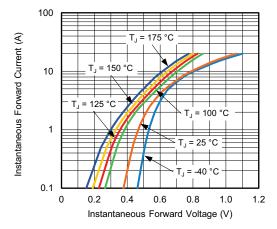


Fig. 3 - Typical Instantaneous Forward Characteristics

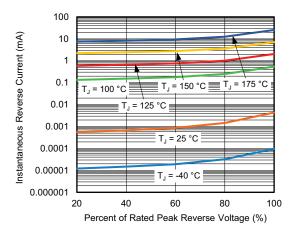


Fig. 4 - Typical Reverse Leakage Characteristics

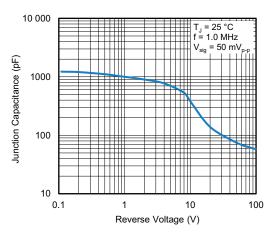


Fig. 5 - Typical Junction Capacitance

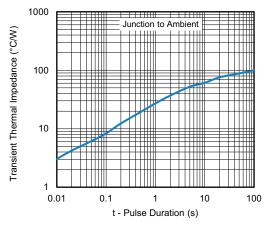


Fig. 6 - Typical Transient Thermal Impedance



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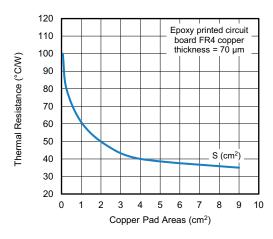
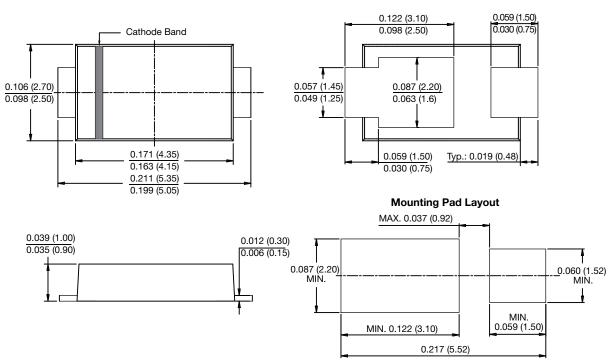


Fig. 7 - Thermal Resistance Junction to Ambient vs. Copper Pad Areas

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMPA (DO-221BC)





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