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





	PRIMARY CHARACTERISTICS						
	I _{F(AV)}	5 A					
V _{RRM} I _{FSM}		100 V					
		100 A					
	V_F at I_F = 5 A (T_A = 125 °C)	0.62 V					
	T _J max.	175 °C					
	Package	SlimSMAW (DO-221AD)					
	Circuit configuration	Single					

FEATURES

- Low-profile package
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C



COMPLIANT

AUTOMOTIVE

Available

- AEC-Q101 qualified available
 Automotive ordering code: base P/NHM3
- Compatible to SOD-128 package case outline
 FREE
- 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, industrial, and automotive applications.

MECHANICAL DATA

Case: SlimSMAW (DO-221AD) 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 JESD 22-B102

M3 and HM3 suffix meet JESD 201 class 2 whisker test **Polarity:** color band denotes cathode end

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise note	ed)
DADAMETED	SAMBOI

PARAMETER	SYMBOL	VSS8D5M10	UNIT	
Device marking code		5M10		
Maximum repetitive peak reverse voltage	V _{RRM}	100	V	
Maximum average forward rectified current (fig.1)	I _{F(AV)} ⁽¹⁾	5	^	
Maximum average forward rectilied current (lig.1)	I _{F(AV)} ⁽²⁾	2.3	- A	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	100	А	
Operating junction temperature range	T _J ⁽³⁾	-40 to +175		
Storage temperature range	T _{STG}	-55 to +175		

Notes

(1) Mounted on 30 mm x 30 mm aluminum PCB pad areas

⁽²⁾ Free air, mounted on recommended copper pad area

⁽³⁾ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{0JA}$

VSS8D5M10



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 2.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.58	-	V
	$I_F = 5 A$			0.71	0.79	
	I _F = 2.5 A	- T _A = 125 °C		0.50	-	
	I _F = 5 A			0.62	0.70	
Reverse current	V _R = 70 V	T _A = 25 °C	I _R (2)	0.01	-	- mA
	$v_{\rm R} = 70$ v	T _A = 25 °C T _A = 125 °C		0.9	-	
nevelse current	$V_{-100}V_{-100}$	T _A = 25 °C T _A = 125 °C		-	0.4	
	v _R = 100 v	T _A = 125 °C		1.5	4	
Typical junction capacitance	4.0 V, 1 MH	4.0 V, 1 MHz		480	-	pF

Notes

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

⁽²⁾ Pulse test: pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise specified)				
PARAMETER	SYMBOL	TYP.	MAX.	UNIT
Typical thermal resistance	R _{0JA} ⁽¹⁾⁽²⁾	120	150	°C/W
	R _{0JM} ⁽³⁾	10	12	C/W

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) Thermal resistance junction-to-ambient to follow JEDEC® 51-2A, device mounted on FR4 PCB, 2 oz., standard footprint

⁽³⁾ Thermal resistance junction-to-mount to follow JEDEC 51-14 transient dual interface test method (TDIM)

ORDERING INFORMATION (Example)							
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
VSS8D5M10-M3/H	0.033	Н	3500	7" diameter plastic tape and reel			
VSS8D5M10-M3/I	0.033	I	14 000	13" diameter plastic tape and reel			
VSS8D5M10HM3/H (1)	0.033	Н	3500	7" diameter plastic tape and reel			
VSS8D5M10HM3/I (1)	0.033	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 noted)

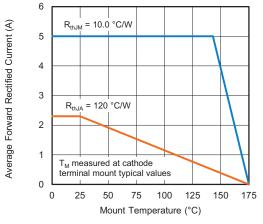


Fig. 1 - Maximum Forward Current Derating Curve

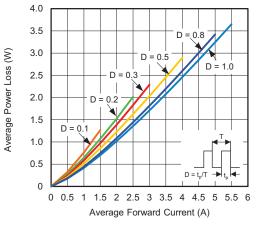


Fig. 2 - Forward Power Loss Characteristics

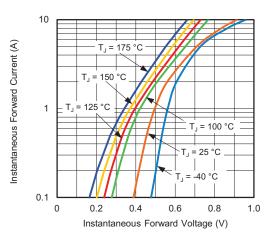


Fig. 3 - Typical Instantaneous Forward Characteristics

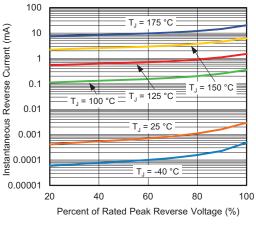


Fig. 4 - Typical Reverse Leakage Characteristics

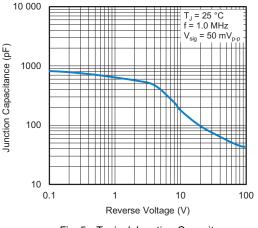


Fig. 5 - Typical Junction Capacitance

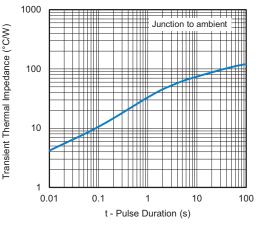


Fig. 6 - Typical Transient Thermal Impedance

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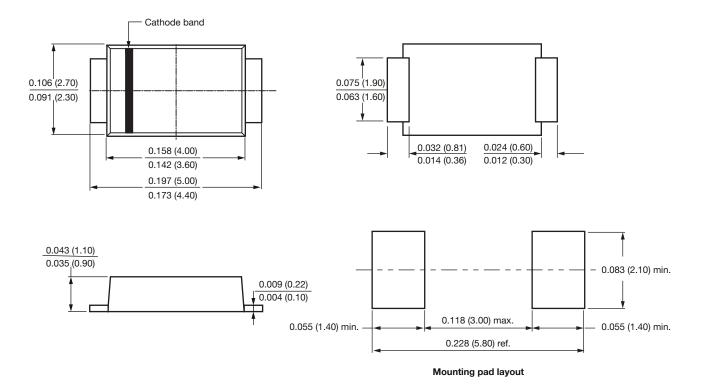


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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMAW (DO-221AD)





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