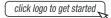


Vishay General Semiconductor

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

Top View Bottom View SlimSMAW (DO-221AD) Cathode Anode

DESIGN SUPPORT TOOLS

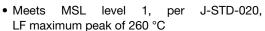




PRIMARY CHARACTERISTICS				
I _{F(AV)}	3 A			
V_{RRM}	120 V			
I _{FSM}	60 A			
V _F at I _F = 3 A (125 °C)	0.61 V			
T _J max.	175 °C			
Package	SlimSMAW (DO-221AD)			
Circuit configuration	Single			

FEATURES

Low-profile package



Ph

AUTOMOTIVE GRADE

• AEC-Q101 qualified available

Automotive ordering code: base P/NHM3

ROHS COMPLIANT HALOGEN

• Compatible to SOD-128 package case outline

 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, and

commercial grade

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

H3 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	VSS8D3M12	UNIT		
Device marking code		3M12			
Maximum repetitive peak reverse voltage	V _{RRM}	120	V		
Maximum average forward rectified current (fig.1)	I _{F(AV)} (1)	3	A		
	I _{F(AV)} (2)	2			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	60	Α		
Operating junction temperature range		-40 to +175	°C		
Storage temperature range	T _{STG}	-55 to +175			

Notes

- (1) Mounted on 30 mm x 30 mm AL PCB pad area
- (2) Free air, mounted on recommended copper pad area
- $^{(3)}$ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage	I _F = 1.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.61	-	V	
	I _F = 3 A			0.75	0.83		
	I _F = 1.5 A	T _A = 125 °C		0.52	-		
	I _F = 3 A			0.61	0.69		
Reverse current	V _R = 90 V	T _A = 25 °C	I _R ⁽²⁾	0.01	-	mA	
		T _A = 125 °C		0.5	-		
	V _R = 120 V	T _A = 25 °C		-	0.3	IIIA	
		T _A = 125 °C		1	4		
Typical junction capacitance	4.0 V, 1 MHz		CJ	310	-	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 TYP. MAX. UN				UNIT
Typical thermal resistance	R ₀ JA (1)(2)	120	150	°C/W
	R _{0JM} (3)	12	15	C/VV

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		
VSS8D3M12-M3/H	0.033	Н	3500	7" diameter plastic tape and reel		
VSS8D3M12-M3/I	0.033	I	14 000	13" diameter plastic tape and reel		
VSS8D3M12HM3/H (1)	0.033	Н	3500	7" diameter plastic tape and reel		
VSS8D3M12HM3/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)

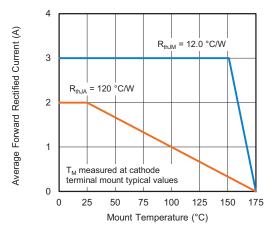


Fig. 1 - Maximum Forward Current Derating Curve

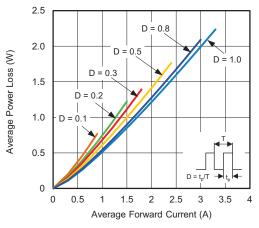


Fig. 2 - Forward Power Loss Characteristics

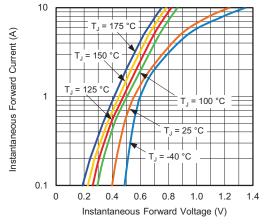


Fig. 3 - Typical Instantaneous Forward Characteristics

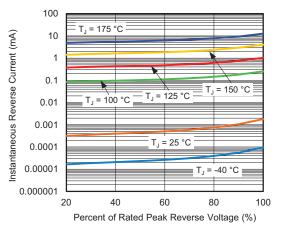


Fig. 4 - Typical Reverse Leakage Characteristics

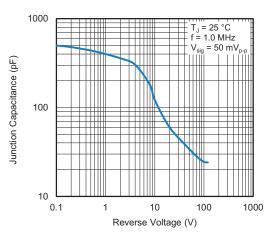


Fig. 5 - Typical Junction Capacitance

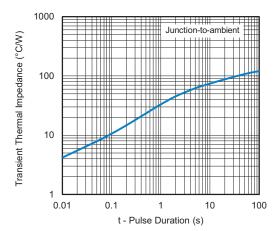


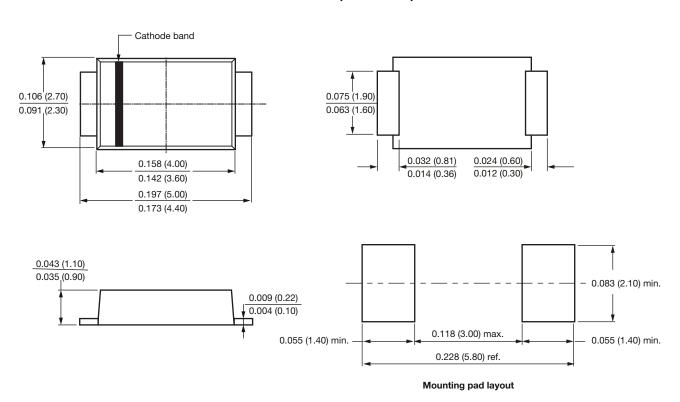
Fig. 6 - Typical Transient Thermal Impedance



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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SlimSMAW (DO-221AD)





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