RoHS COMPLIANT

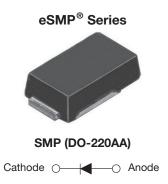
HALOGEN

FREE



Vishay General Semiconductor

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



DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS			
I _{F(AV)}	3.0 A		
V _{RRM}	100 V		
I _{FSM}	80 A		
V _F at I _F = 2.0 A	0.58 V		
T _J max.	175 °C		
Package	SMP (DO-220AA)		
Circuit configuration	Single		

FEATURES

- Low profile package
- 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; base P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

TYPICAL APPLICATIONS

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

MECHANICAL DATA

Case: SMP (DO-220AA)

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

M3 suffix meets JESD 201 class 2 whisker test, HM3 suffix meets JESD 201 class 2 whisker test

Polarity: color band denotes the cathode end

PARAMETER	SYMBOL	V3PM10	UNIT
Device marking code		3MB	
Maximum repetitive peak reverse voltage	V _{RRM}	100	V
Manifesture DO forward surrent	I _{F(AV)} (1)	3	А
Maximum DC forward current	I _{F(AV)} (2)	2.1	А
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	80	А
Operating junction and storage temperature range	T _J ⁽³⁾	-40 to +175	°C
Operating junction and storage temperature range	T _{STG}	-55 to +175	°C

Notes

- (1) Mounted on 10 mm x 10 mm copper pad area PCB
- (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 CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 1.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.56	-	V
	I _F = 3.0 A			0.67	0.75	
	I _F = 1.5 A	T _A = 125 °C		0.49	-	
	I _F = 3.0 A			0.58	0.66	
Reverse current	V _R = 70 V	T _A = 25 °C	I _R ⁽²⁾	0.001	-	mA mA
	v _R = 70 v	T _A = 125 °C		0.8	-	
	V _R = 100 V	$T_A = 25 ^{\circ}\text{C}$ $T_A = 125 ^{\circ}\text{C}$		-	0.2	
	V _R = 100 V	T _A = 125 °C		1.5	4.0	
Typical junction capacitance	4.0 V, 1 MH	4.0 V, 1 MHz		300	-	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 V3PM10				
Typical thermal resistance	R _{0JA} (1)	125	°C/W	
Typical thermal resistance	R _{0JM} (2)	15	C/VV	

Notes

 $^{(1)}$ Free air, mounted on recommended PCB, 1 oz. pad area; thermal resistance $R_{\theta JA}$ - junction-to-ambient

 $^{(2)}$ Units mounted on PCB with specific copper pad areas; $R_{\theta JM}$ - junction-to-mount

ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
V3PM10-M3/H	0.024	Н	3000	7" diameter plastic tape and reel	
V3PM10-M3/I	0.024	I	10 000	13" diameter plastic tape and reel	
V3PM10HM3/H (1)	0.024	Н	3000	7" diameter plastic tape and reel	
V3PM10HM3/I (1)	0.024	I	10 000	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)

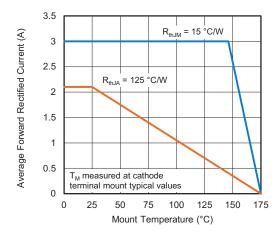


Fig. 1 - Maximum Forward Current Derating Curve

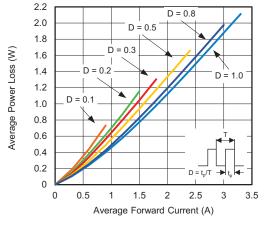


Fig. 2 - Forward Power Loss Characteristics

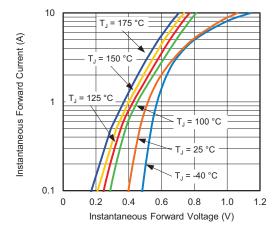


Fig. 3 - Typical Instantaneous Forward Characteristics

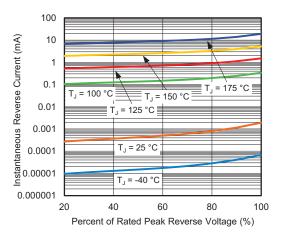


Fig. 4 - Typical Reverse Characteristics

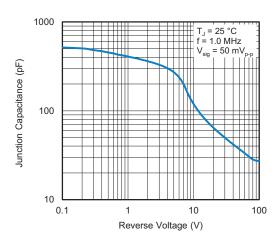


Fig. 5 - Typical Junction Capacitance

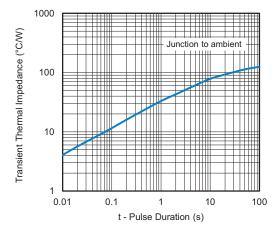


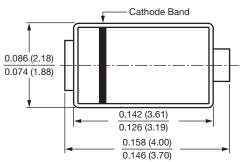
Fig. 6 - Typical Transient Thermal Impedance

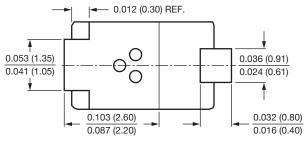


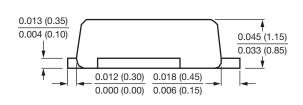
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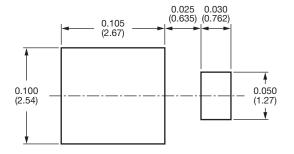
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)











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