HALOGEN

FREE



Vishay General Semiconductor

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



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS			
I _{F(AV)}	3.0 A		
V _{RRM}	200 V		
I _{FSM}	60 A		
V_F at $I_F = 3.0$ A	0.70 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_X - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,....)

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

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	V3P22	UNIT	
Device marking code		V3D		
Maximum repetitive peak reverse voltage	V_{RRM}	200	V	
Maximum DC forward current	I _{F(AV)} (1)	3	А	
Maximum DC forward current	I _{F(AV)} (2)	1.7	А	
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I _{FSM}	60	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 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: $dP_D/dT_J < 1/R_{hJA}$



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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 _E (1)	0.78	-	V	
	I _F = 3 A			0.85	0.94		
	I _F = 1.5 A	T _A = 125 °C	· '	VF (·/	0.62	-	V
	I _F = 3 A			0.70	0.78		
Reverse current	V 160 V	T _A = 25 °C T _A = 125 °C	I _R ⁽²⁾	0.001	ı	mA	
	V _R = 100 V	T _A = 125 °C		0.3	-		
	$V_R = 200 \text{ V} \frac{T}{T}$	T _A = 25 °C		-	0.05	mA	
		T _A = 125 °C		0.7	3.0	IIIA	
Typical junction capacitance	4.0 V, 1 MHz		CJ	120	-	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 V3P22 UNIT			
Typical thermal resistance	R ₀ JA (1)(2)	125	°C/W
	R _{0JM} (3)	15	C/VV

Notes

- (1) The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$
- $^{(2)}$ Free air, mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ junction-to-ambient
- $^{(3)}$ Mounted on 10 mm x 10 mm 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	
V3P22-M3/H	0.024	Н	3000	7" diameter plastic tape and reel	
V3P22-M3/I	0.024	I	10 000	13" diameter plastic tape and reel	
V3P22HM3_A/H (1)	0.024	Н	3000	7" diameter plastic tape and reel	
V3P22HM3_A/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)

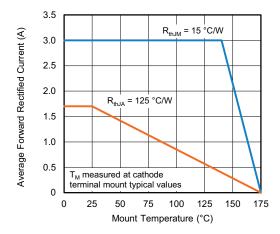


Fig. 1 - Maximum Forward Current Derating Curve

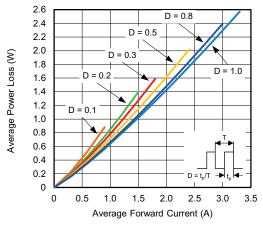


Fig. 2 - Forward Power Loss Characteristics

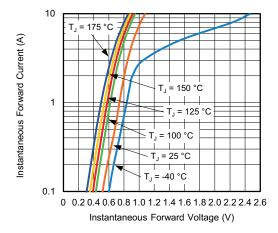


Fig. 3 - Typical Instantaneous Forward Characteristics

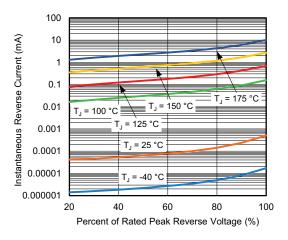


Fig. 4 - Typical Reverse Characteristics

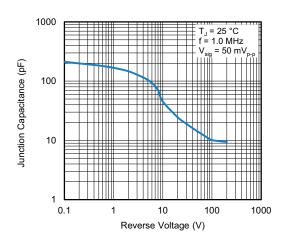


Fig. 5 - Typical Junction Capacitance

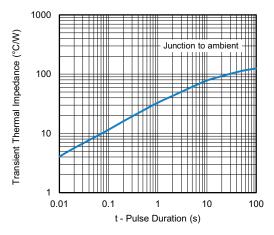


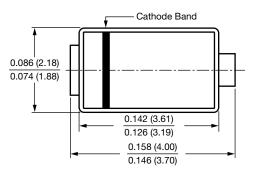
Fig. 6 - Typical Transient Thermal Impedance

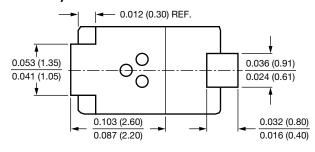


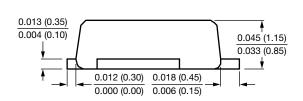
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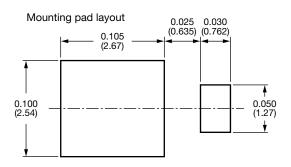
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

SMP (DO-220AA)











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