

Vishay General Semiconductor

# Surface-Mount TMBS<sup>®</sup> (Trench MOS Barrier Schottky) Rectifier



Cathode O Anode

### LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	2.0 A		
V <sub>RRM</sub>	200 V		
I <sub>FSM</sub>	50 A		
V <sub>F</sub> at I <sub>F</sub> = 2.0 A	0.68 V		
T <sub>J</sub> 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 gualified available - Automotive ordering code; base P/NHM3
- · Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

### **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

<b>MAXIMUM RATINGS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)			
PARAMETER	SYMBOL	V2P22L	UNIT
Device marking code		V2D	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	200	V
Maximum DC forward current	I <sub>F(AV)</sub> <sup>(1)</sup>	2	A
	I <sub>F(AV)</sub> <sup>(2)</sup>	1.6	А
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	50	А
Operating junction and storage temperature range	T <sub>J</sub> <sup>(3)</sup>	-40 to +175	°C
Operating junction and storage temperature range	T <sub>STG</sub>	-55 to +175	°C

Notes

<sup>(1)</sup> Mounted on 10 mm x 10 mm PCB pad area

<sup>(2)</sup> Free air, mounted on recommended copper pad area

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



RoHS COMPLIANT HALOGEN FREE





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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 1.0 A	- T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.76	-	V
	I <sub>F</sub> = 2.0 A			0.83	0.91	
	I <sub>F</sub> = 1.0 A	- T <sub>A</sub> = 125 °C		0.60	-	
	I <sub>F</sub> = 2.0 A			0.68	0.76	
Reverse current	V - 160 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> (2)	0.001	-	mA mA
	v <sub>R</sub> = 100 v	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C		0.2	-	
	V - 200 V	T <sub>A</sub> = 25 °C T <sub>A</sub> = 125 °C		-	0.04	
	v <sub>R</sub> = 200 v	T <sub>A</sub> = 125 °C		0.4	2.0	
Typical junction capacitance	4.0 V, 1 M⊦	4.0 V, 1 MHz		90.0	-	pF

Notes

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: pulse width  $\leq$  5 ms

<b>THERMAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise specified)				
PARAMETER	SYMBOL	V2P22L	UNIT	
Typical thermal resistance	R <sub>0JA</sub> (1)(2)	125	°C/W	
	R <sub>0JM</sub> <sup>(3)</sup>	15		

#### 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<sub>0JA</sub> - 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		
V2P22L-M3/H	0.024	Н	3000	7" diameter plastic tape and reel		
V2P22L-M3/I	0.024	I	10 000	13" diameter plastic tape and reel		
V2P22LHM3_A/H <sup>(1)</sup>	0.024	Н	3000	7" diameter plastic tape and reel		
V2P22LHM3_A/I <sup>(1)</sup>	0.024	I	10 000	13" diameter plastic tape and reel		

Note

(1) AEC-Q101 gualified



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### **RATINGS AND CHARACTERISTICS CURVES** (T<sub>A</sub> = 25 °C unless otherwise noted)

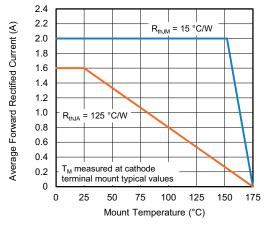


Fig. 1 - Maximum Forward Current Derating Curve

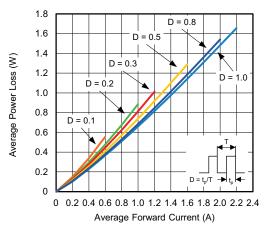


Fig. 2 - Forward Power Loss Characteristics

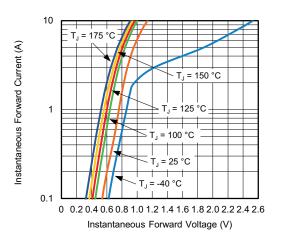


Fig. 3 - Typical Instantaneous Forward Characteristics

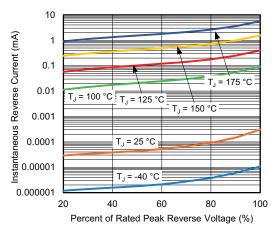


Fig. 4 - Typical Reverse Characteristics

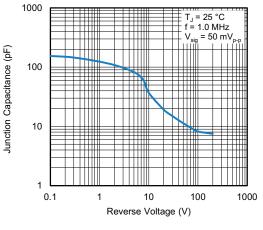


Fig. 5 - Typical Junction Capacitance

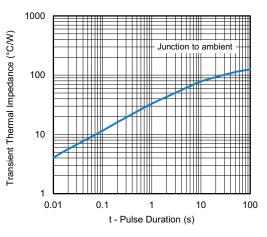


Fig. 6 - Typical Transient Thermal Impedance

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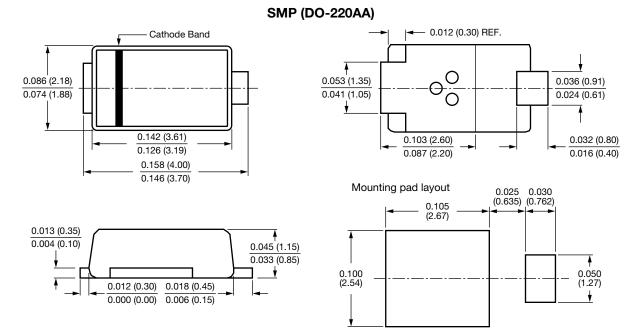
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### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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