

## Vishay General Semiconductor

# **Dual High Voltage Trench MOS Barrier Schottky Rectifier**

Ultra Low  $V_F = 0.57 \text{ V}$  at  $I_F = 5 \text{ A}$ 





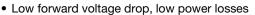
### V20M100M



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 10 A			
V <sub>RRM</sub>	100 V			
I <sub>FSM</sub>	110 A			
$V_F$ at $I_F = 10 A (T_A = 125 °C)$	0.67 V			
T <sub>J</sub> max.	175 °C			
Package	TO-220AB			
Diode variations	Common cathode			

#### **FEATURES**

• Trench MOS Schottky technology



• High efficiency operation

• Solder dip 275 °C max. 10 s, per JESD 22-B106

 Material categorization: for definitions of compliance please see www.vishay.com/doc?99912





# TYPICAL APPLICATIONS

For use in high frequency DC/DC converters, switching power supplies, freewheeling diodes, OR-ing diode, and reverse battery protection.

#### **MECHANICAL DATA**

Case: TO-220AB

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Terminals: Matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test

Polarity: As markedp

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	V20M100M	UNIT	
Maximum repetitive peak reverse voltage		V <sub>RRM</sub>	100	V	
Maximum average forward rectified current (fig. 1)	per device		20	^	
	per diode	I <sub>F(AV)</sub>	10	A	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	110	А	
Voltage rate of change (rated V <sub>R</sub> )		dV/dt	10 000	V/µs	
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-55 to +175	°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.65	=	V	
	I <sub>F</sub> = 10 A			0.83	1.02		
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.57	-		
	I <sub>F</sub> = 10 A			0.67	0.75		
Reverse current per diode	V <sub>R</sub> = 70 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> (2)	1.5	-	μA	
		T <sub>A</sub> = 125 °C		0.8	-	mA	
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 25 °C		-	500	μA	
	v <sub>R</sub> = 100 v	T <sub>A</sub> = 125 °C		1.5	10	mA	

#### Notes

 $^{(1)}$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

(2) Pulse test: Pulse width  $\leq 5 \text{ ms}$ 

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER		SYMBOL	V20M100M	UNIT
Typical thermal resistance	per diode	- R <sub>θJC</sub>	2.8	°C/W
	per device		1.4	
	per device	R <sub>0</sub> JA (1)(2)	40	

#### 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, without heatsink

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
TO-220AB	V20M100M-E3/4W	1.88	4W	50/tube	Tube		

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

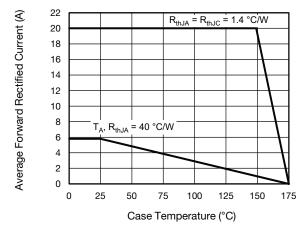


Fig. 1 - Maximum Forward Current Derating Curve

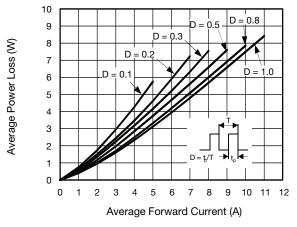


Fig. 2 - Forward Power Loss Characteristics Per Diode

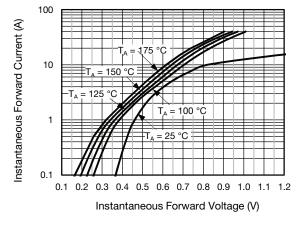


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

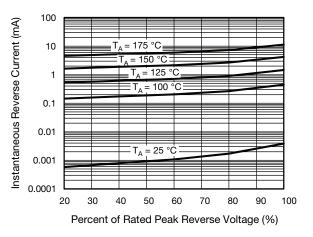


Fig. 4 - Typical Reverse Characteristics Per Diode

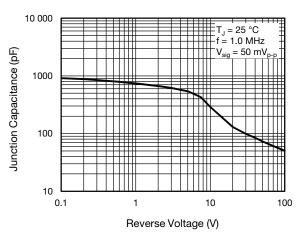


Fig. 5 - Typical Junction Capacitance Per Diode

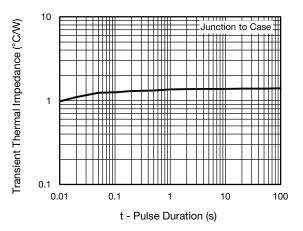


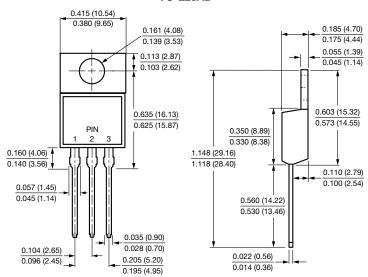
Fig. 6 - Typical Transient Thermal Impedance Per Device



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

#### TO-220AB





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