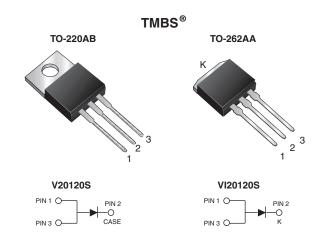
Vishay General Semiconductor

# High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.50$  V at  $I_F = 5$  A



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PRIMARY CHARACTERISTICS					
I <sub>F(AV)</sub>	20 A				
V <sub>RRM</sub>	120 V				
I <sub>FSM</sub>	200 A				
V <sub>F</sub> at I <sub>F</sub> = 20 A	0.73 V				
T <sub>J</sub> max.	150 °C				
Package	TO-220AB, TO-262AA				
Diode variation	Single				

### **FEATURES**

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- · High efficiency operation
- Solder bath temperature 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 and TO-262AA

Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

M3 suffix meets JESD 201 class 1A whisker test

#### Polarity: as marked

Mounting Torque: 10 in-lbs maximum

<b>MAXIMUM RATINGS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	V20120S	VI20120S	UNIT	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	120		V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	20		А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	200		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>	-40 to +150		°C	



RoHS COMPLIANT

HALOGEN

FREE

Document Number: 89243



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ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 5 A		V <sub>F</sub> <sup>(1)</sup>	0.57	-	V
	I <sub>F</sub> = 10 A	T <sub>A</sub> = 25 °C		0.71	-	
	I <sub>F</sub> = 20 A			0.99	1.12	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.50	-	
	I <sub>F</sub> = 10 A			0.61	-	
	I <sub>F</sub> = 20 A			0.73	0.81	
Reverse current	V <sub>B</sub> = 90 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	10	-	μA
	v <sub>R</sub> = 90 v	T <sub>A</sub> = 125 °C		6	-	mA
	$V_{1} = 120 V_{1}$	T <sub>A</sub> = 25 °C		-	300	μA
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 125 °C		14	30	mA

Notes

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

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	V20120S	VI20120S	UNIT	
Typical thermal resistance	$R_{ ext{ heta}JC}$	2.0		°C/W	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
TO-220AB	V20120S-M3/4W	1.88	4W	50/tube	Tube	
TO-262AA	VI20120S-M3/4W	1.45	4W	50/tube	Tube	



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### **RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25$ °C unless otherwise noted)

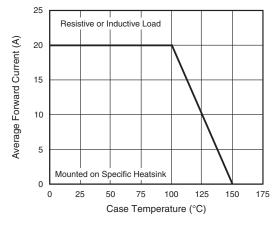


Fig. 1 - Maximum Forward Current Derating Curve

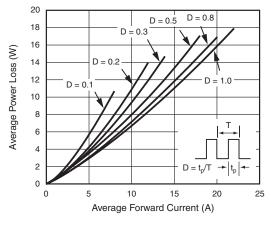


Fig. 2 - Forward Power Dissipation Characteristics

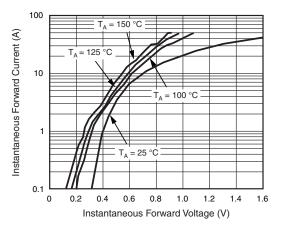


Fig. 3 - Typical Instantaneous Forward Characteristics

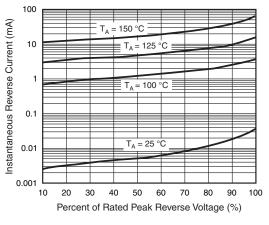


Fig. 4 - Typical Reverse Characteristics

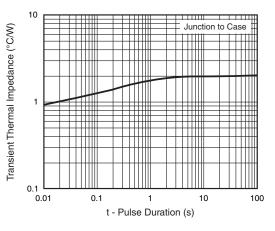


Fig. 5 - Typical Transient Thermal Impedance

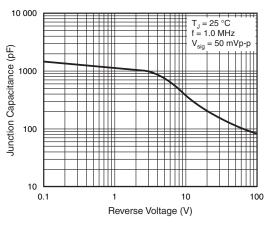


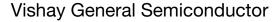
Fig. 6 - Typical Junction Capacitance

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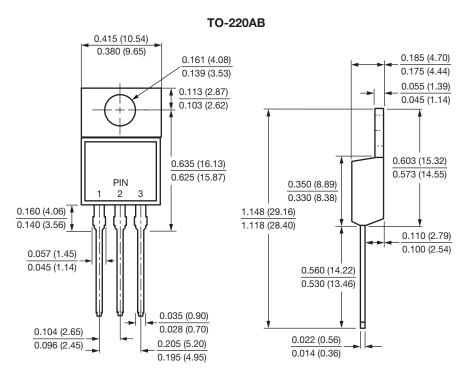
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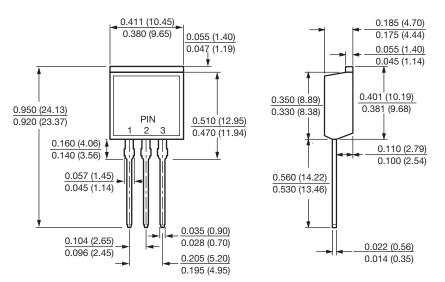




### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



**TO-262AA** 





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