

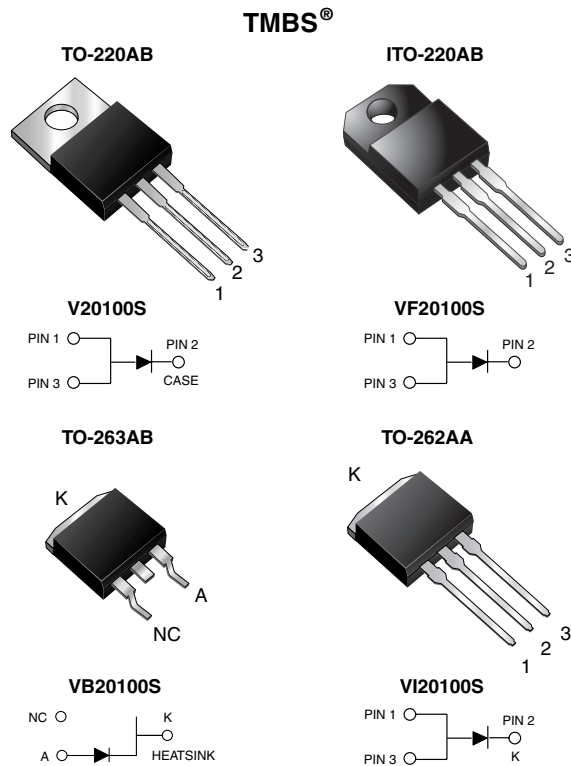


**New Product**  
**V20100S, VF20100S, VB20100S & VI20100S**

Vishay General Semiconductor

## High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low  $V_F = 0.446\text{ V}$  at  $I_F = 5\text{ A}$



### FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AB, ITO-220AB and TO-262AA package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



**RoHS**  
COMPLIANT

### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, TO-263AB and TO-262AA

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	20 A
$V_{RRM}$	100 V
$I_{FSM}$	250 A
$V_F$ at $I_F = 20\text{ A}$	0.69 V
$T_J$ max.	150 °C

### MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)

PARAMETER	SYMBOL	V20100S	VF20100S	VB20100S	VI20100S	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	100				V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$	20				A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	250				A
Isolation voltage (ITO-220AB only) From terminal to heatsink $t = 1\text{ min}$	$V_{AC}$	1500				V
Operating junction and storage temperature range	$T_J, T_{STG}$	- 40 to + 150				°C



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	$I_R = 10\text{ mA}$	$T_A = 25\text{ }^\circ\text{C}$	$V_{BR}$	105 (minimum)	-	V
Instantaneous forward voltage <sup>(1)</sup>	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 20\text{ A}$	$T_A = 25\text{ }^\circ\text{C}$	$V_F$	0.51 0.60 0.79	- - 0.90	V
	$I_F = 5\text{ A}$ $I_F = 10\text{ A}$ $I_F = 20\text{ A}$	$T_A = 125\text{ }^\circ\text{C}$		0.45 0.53 0.69	- - 0.76	
Reverse current <sup>(2)</sup>	$V_R = 70\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$	$I_R$	17 7	- -	$\mu\text{A}$ mA
	$V_R = 100\text{ V}$	$T_A = 25\text{ }^\circ\text{C}$ $T_A = 125\text{ }^\circ\text{C}$		70 14	500 30	$\mu\text{A}$ mA

**Notes:**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)						
PARAMETER	SYMBOL	V20100S	VF20100S	VB20100S	VI20100S	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.0	4.0	2.0	2.0	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20100S-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF20100S-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB20100S-E3/4W	1.37	4W	50/tube	Tube
TO-263AB	VB20100S-E3/8W	1.37	8W	800/reel	Tape and reel
TO-262AA	VI20100S-E3/4W	1.45	4W	50/tube	Tube

**RATINGS AND CHARACTERISTICS CURVES**

( $T_A = 25\text{ }^\circ\text{C}$  unless otherwise noted)

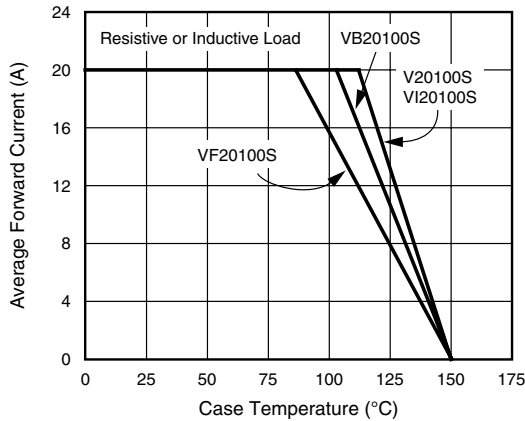


Figure 1. Maximum Forward Current Derating Curve

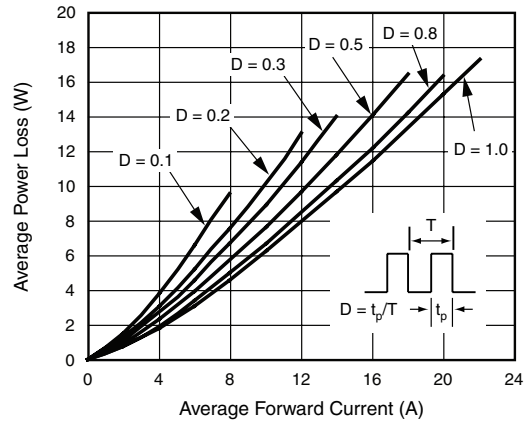


Figure 2. Forward Power Loss Characteristics



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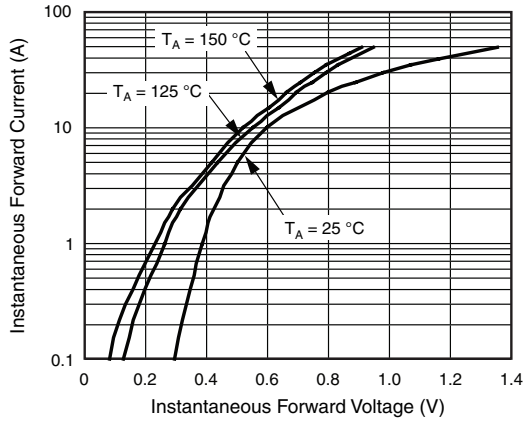


Figure 3. Typical Instantaneous Forward Characteristics

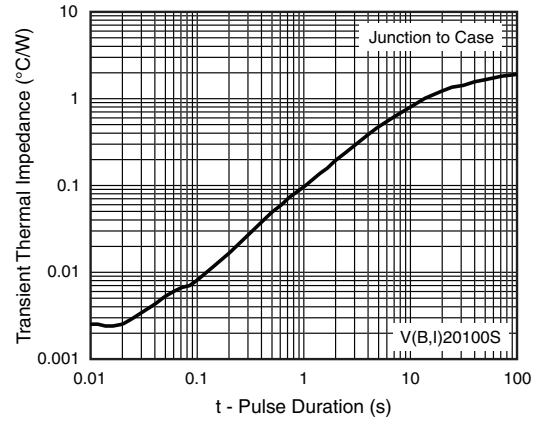


Figure 6. Typical Transient Thermal Impedance

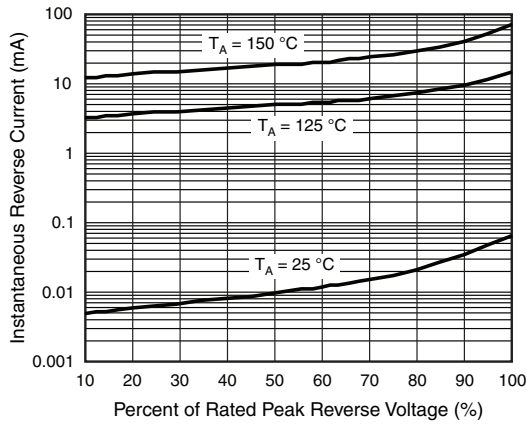


Figure 4. Typical Reverse Characteristics

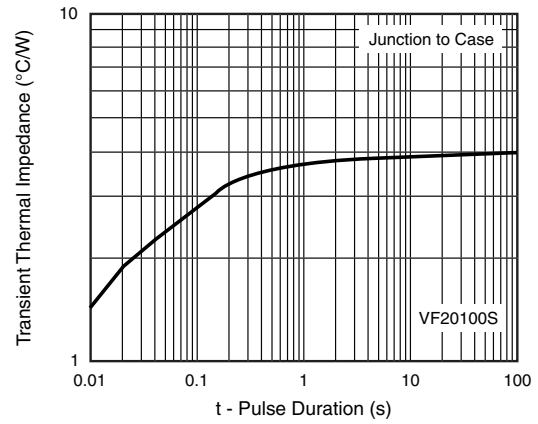


Figure 7. Typical Transient Thermal Impedance

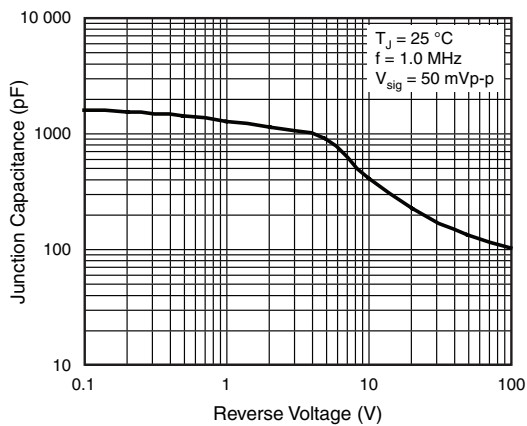


Figure 5. Typical Junction Capacitance

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

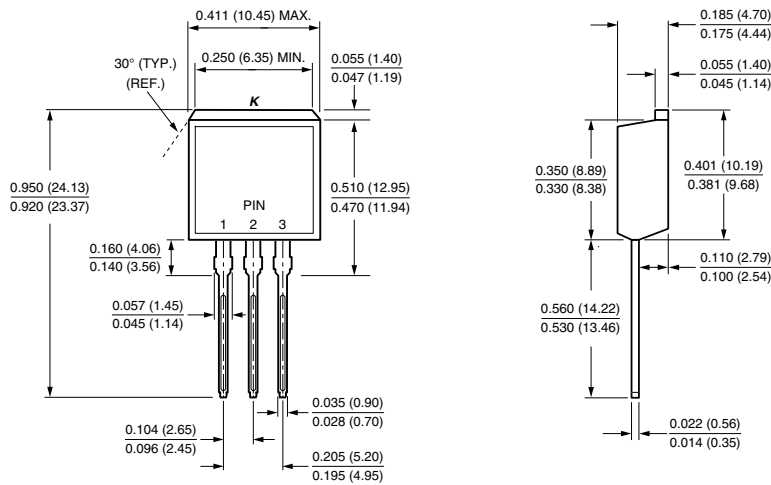
**TO-220AB**



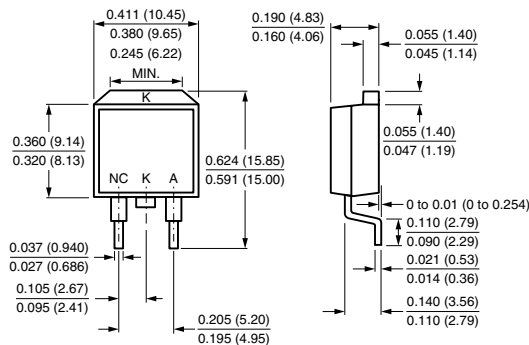
**ITO-220AB**



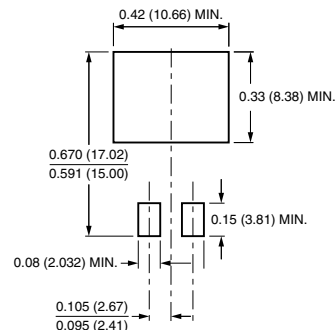
**TO-262AA**



**TO-263AB**



**Mounting Pad Layout**





## Disclaimer

All product specifications and data are subject to change without notice.

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