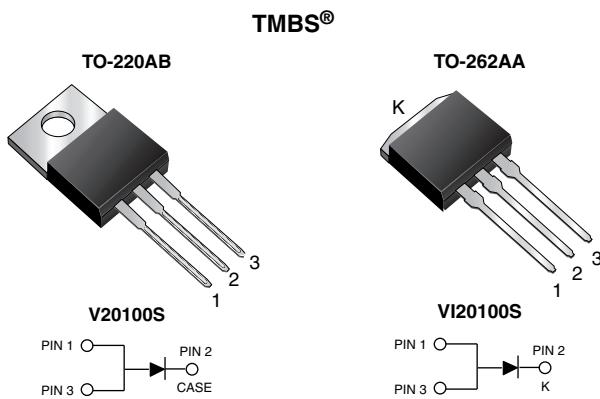


High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.446$ V at $I_F = 5$ A



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Low thermal resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified
- 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
Base P/NHM3 - halogen-free, RoHS-compliant, and AEC-Q101 qualified

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

M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 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 $I_F = 20$ A	0.69 V
T_J max.	150 °C
Package	TO-220AC, TO-262AA
Diode variation	Single die

MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	V20100S	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
Voltage rate of change (rated V_R)	dV/dt	10 000		V/μs
Operating junction and storage temperature range	T_J, T_{STG}	-40 to +150		°C

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Maximum instantaneous forward voltage	$I_F = 5 \text{ A}$ $I_F = 10 \text{ A}$ $I_F = 20 \text{ A}$	$T_A = 25^\circ\text{C}$	V_F ⁽¹⁾	0.51	-	V	
				0.60	-		
				0.79	0.90		
	$I_F = 5 \text{ A}$ $I_F = 10 \text{ A}$ $I_F = 20 \text{ A}$	$T_A = 125^\circ\text{C}$		0.45	-		
				0.53	-		
				0.69	0.76		
Reverse current	$V_R = 70 \text{ V}$	$T_A = 25^\circ\text{C}$	I_R ⁽²⁾	17	-	μA	
		$T_A = 125^\circ\text{C}$		7	-	mA	
	$V_R = 100 \text{ V}$	$T_A = 25^\circ\text{C}$		70	500	μA	
		$T_A = 125^\circ\text{C}$		14	30	mA	

Notes

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width $\leq 40 \text{ ms}$

THERMAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)					
PARAMETER	SYMBOL	V20100S	VI20100S	UNIT	
Typical thermal resistance	$R_{\theta\text{JC}}$	2.0		$^\circ\text{C/W}$	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20100S-M3/4W	1.88	4W	50/tube	Tube
TO-262AA	V20100S-M3/4W	1.45	4W	50/tube	Tube
TO-220AB	V20100SHM3/4W ⁽¹⁾	1.88	4W	50/tube	Tube
TO-262AA	V20100SHM3/4W ⁽¹⁾	1.45	4W	50/tube	Tube

Note

(1) AEC-Q101 qualified

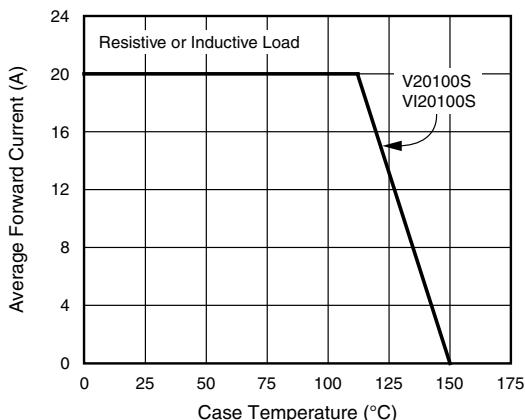
RATINGS AND CHARACTERISTICS CURVES ($T_A = 25^\circ\text{C}$ unless otherwise noted)


Fig. 1 - Maximum Forward Current Derating Curve

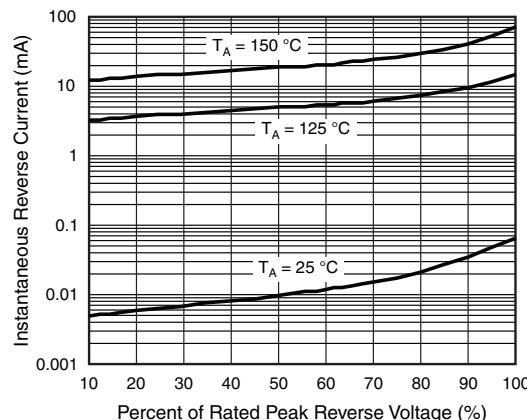


Fig. 4 - Typical Reverse Leakage Characteristics

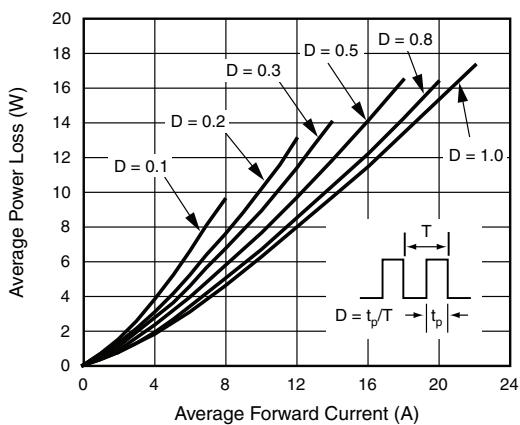


Fig. 2 - Forward Power Loss Characteristics

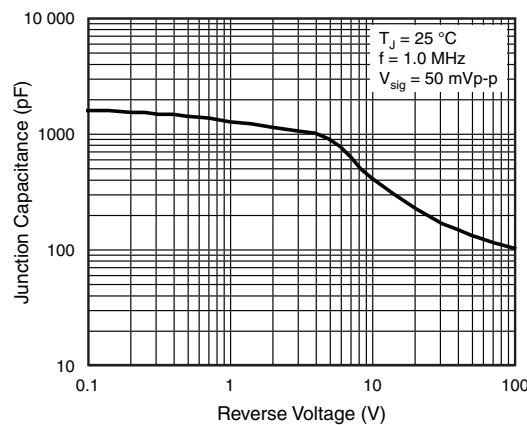


Fig. 5 - Typical Junction Capacitance

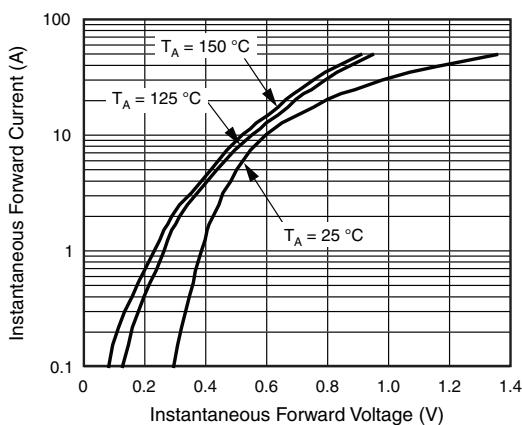


Fig. 3 - Typical Instantaneous Forward Characteristics

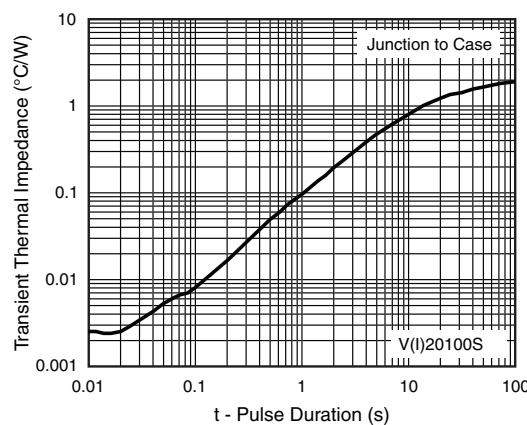
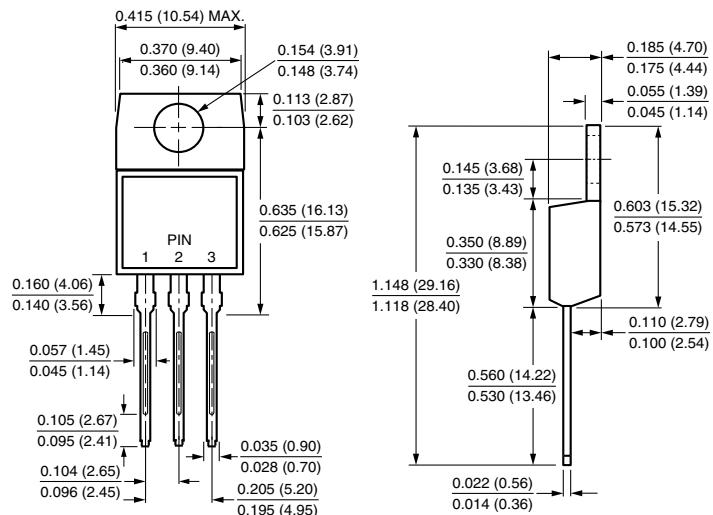
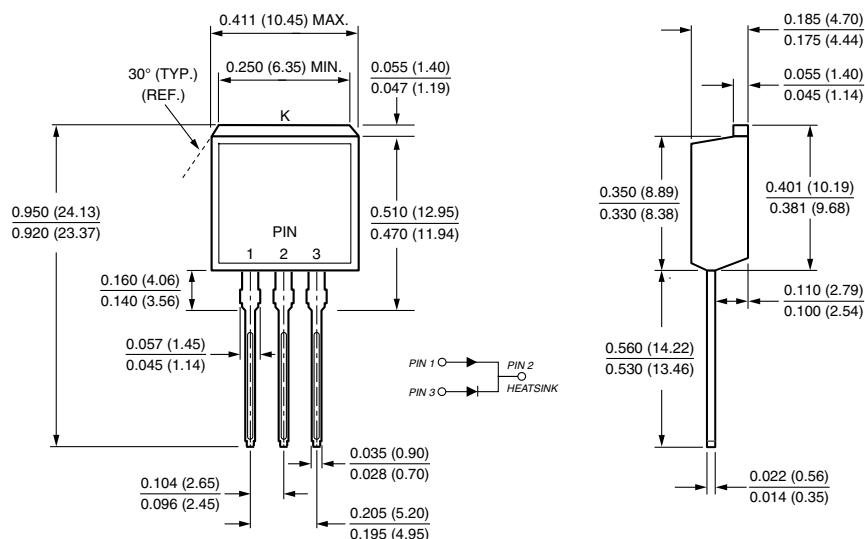


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB

TO-262AA


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