

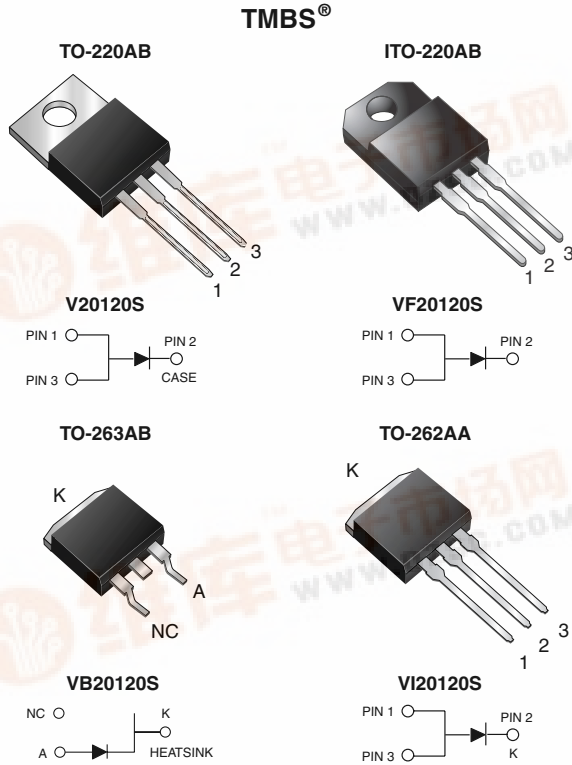


New Product V20120S, VF20120S, VB20120S & VI20120S

Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.50\text{ V}$ at $I_F = 5\text{ A}$



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- 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}	120 V
I_{FSM}	200 A
V_F at $I_F = 20\text{ A}$	0.73 V
T_J max.	150 °C

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

PARAMETER	SYMBOL	V20120S	VF20120S	VB20120S	VI20120S	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	120				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}	200				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



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Breakdown voltage	I _R = 1.0 mA	T _A = 25 °C	V _{BR}	120 (minimum)	-	V
Instantaneous forward voltage ⁽¹⁾	I _F = 5 A	T _A = 25 °C	V _F	0.57	-	
	I _F = 10 A			0.71	-	
	I _F = 20 A			0.99	1.12	
Reverse current ⁽²⁾	V _R = 90 V	T _A = 25 °C	I _R	10	-	μA
		T _A = 125 °C		6	-	mA
	V _R = 120 V	T _A = 25 °C	-	300	μA	
		T _A = 125 °C		14	30	mA

Notes:

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V20120S	VF20120S	VB20120S	VI20120S	UNIT
Typical thermal resistance	R _{θJC}	2	4	2	2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20120S-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF20120S-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB20120S-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB20120S-E3/8W	1.38	8W	800/reel	Tape and reel
TO-262AA	VI20120S-E3/4W	1.45	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

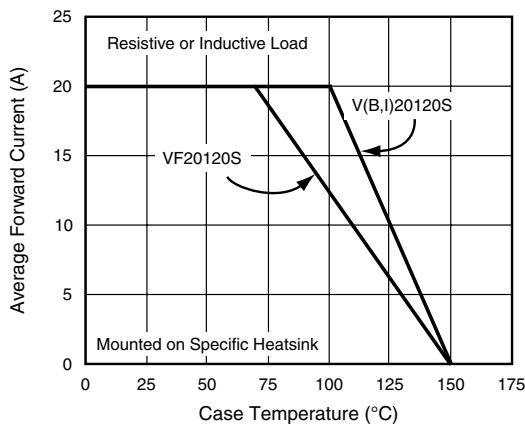


Figure 1. Maximum Forward Current Derating Curve

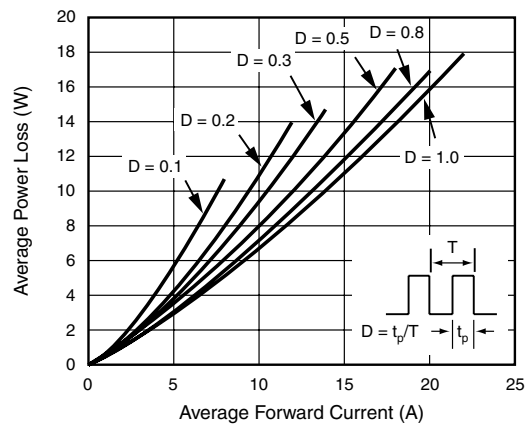


Figure 2. Forward Power Loss Characteristics



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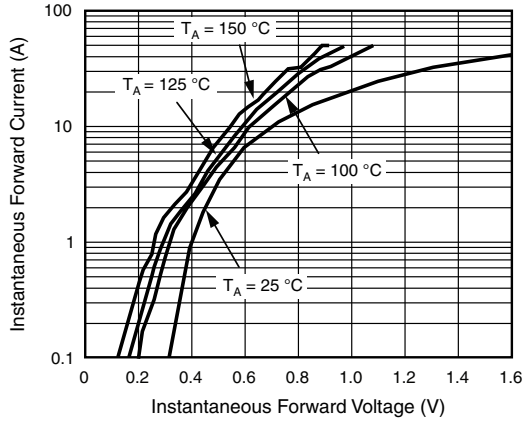


Figure 3. Typical Instantaneous Forward Characteristics

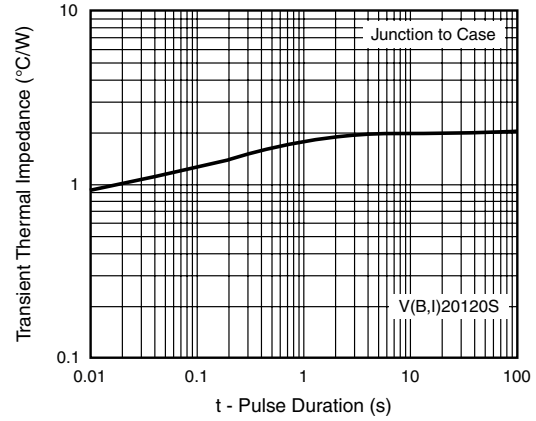


Figure 6. Typical Transient Thermal Impedance

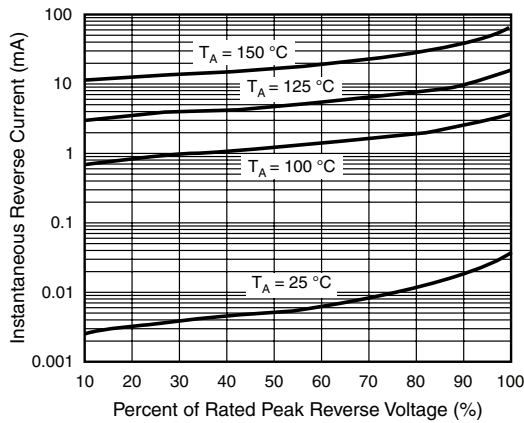


Figure 4. Typical Reverse Characteristics

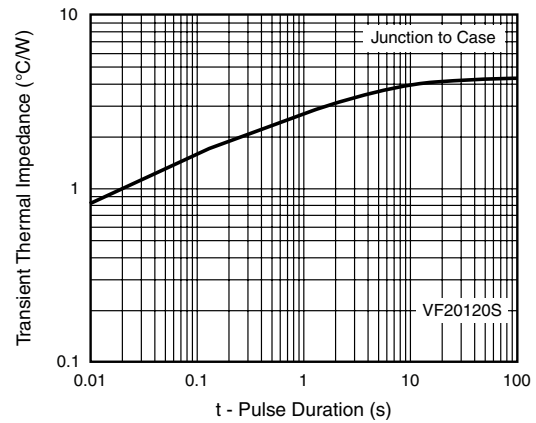


Figure 7. Typical Transient Thermal Impedance

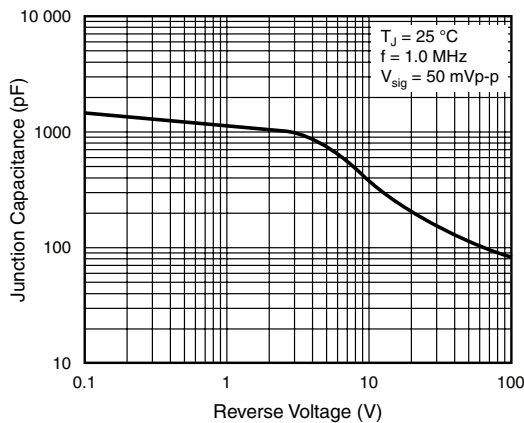


Figure 5. Typical Junction Capacitance

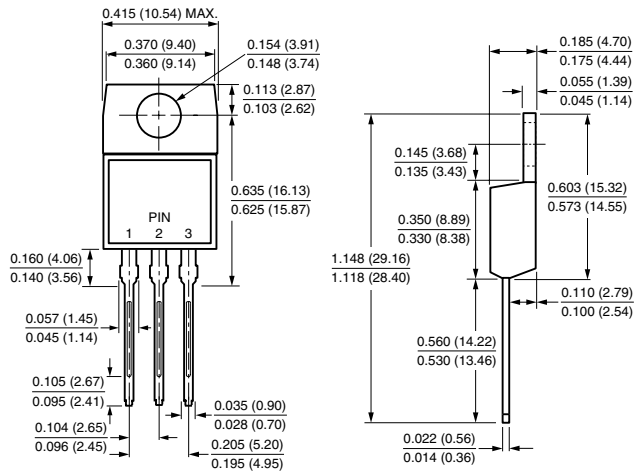
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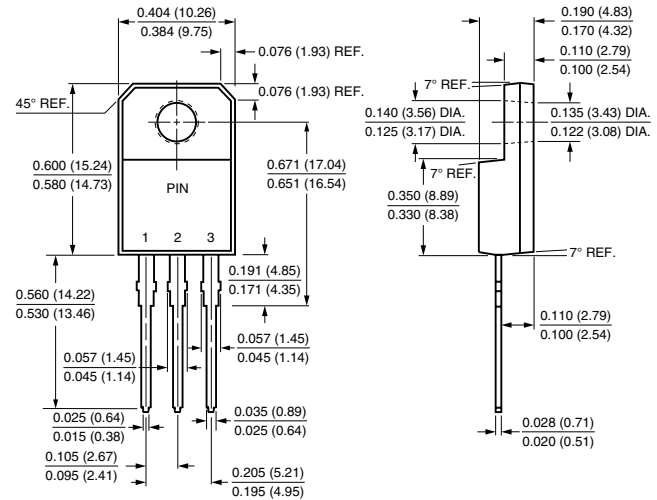
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

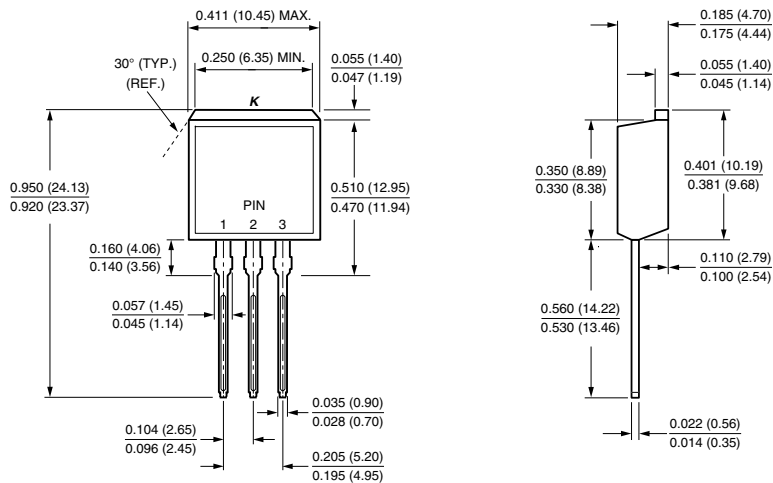
TO-220AB



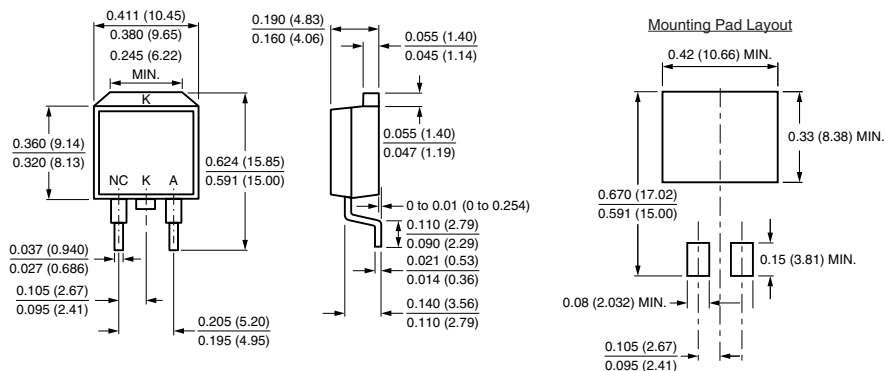
ITO-220AB



TO-262AA



TO-263AB





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