V20120S, VF20120S, VB20120S & VI20120S

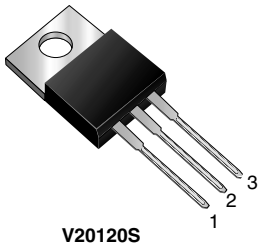
Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

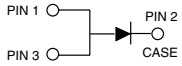
Ultra Low V_F = 0.50 V at I_F = 5 A

TMBS®

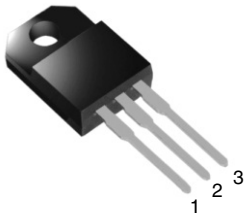
TO-220AB



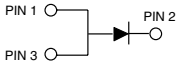
V20120S



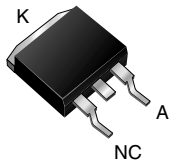
ITO-220AB



VF20120S



TO-263AB



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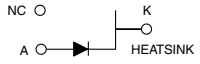
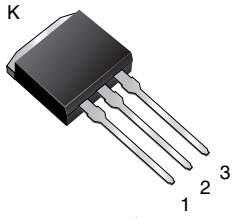
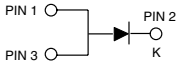


TO-262AA



VI20120S



FEATURES

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

TYPICAL APPLICATIONS

For use in high frequency inverters, switching power supplies, free-wheeling diodes, oring diode, dc-to-dc converters and reverse battery protection.

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB & TO-262AA

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade

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 A	0.73 V
T_J max.	150 °C

MAXIMUM RATINGS (T_A = 25 °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 (see 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 minute	V_{AC}	1500				V
Operating junction ans storage temperature range	T_J, T_{STG}	- 40 to + 150				°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Breakdown voltage	at I_R = 1.0 mA	T_A = 25 °C	$V_{(BR)}$	120 (minimum)	-	V
Instantaneous forward voltage (1)	at I_F = 5 A I_F = 10 A I_F = 20 A	T_A = 25 °C	V_F	0.57 0.71 0.99	- - 1.12	
	at I_F = 5 A I_F = 10 A I_F = 20 A	T_A = 125 °C		0.50 0.61 0.73	- - 0.81	
Reverse current (2)	at V_R = 90 V	T_A = 25 °C T_A = 125 °C	I_R	10 6	- -	µA mA
	at V_R = 120 V	T_A = 25 °C T_A = 125 °C		- 14	300 30	µA mA

Notes:

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

(2) Pulse test: 10 ms pulse width

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**V20120S**	**VF20120S**	**VB20120S**	**VI20120S**	**UNIT**
Typical thermal resistance	$R_{\theta JC}$	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)

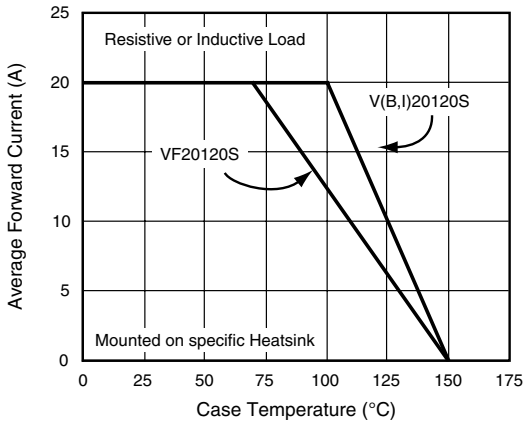


Figure 1. Maximum Forward Current Derating Curve

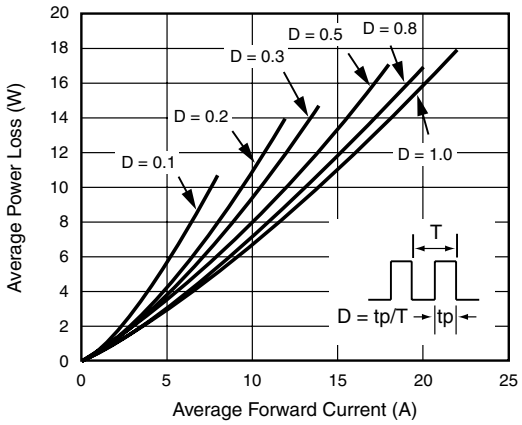


Figure 2. Forward Power Loss Characteristics

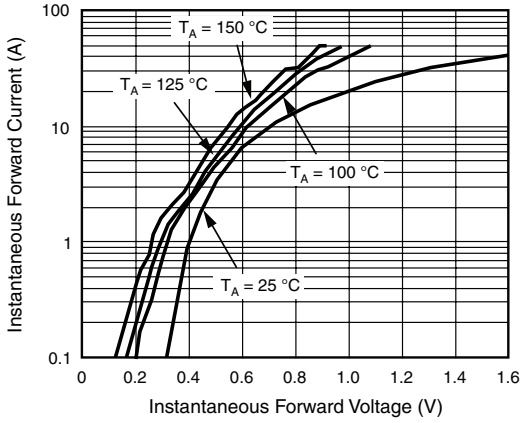


Figure 3. Typical Instantaneous Forward Characteristics

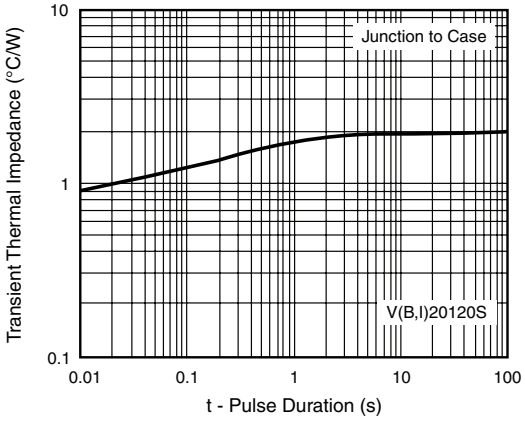


Figure 6. Typical Transient Thermal Impedance

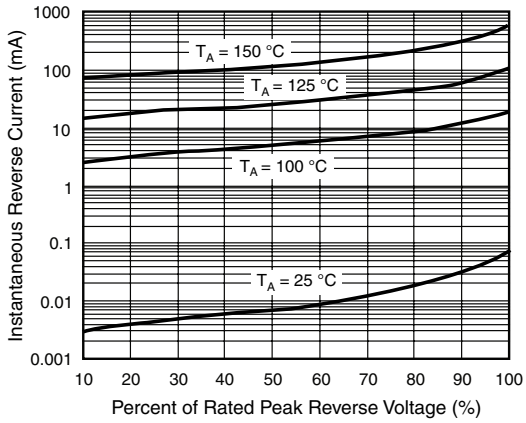


Figure 4. Typical Reverse Characteristics

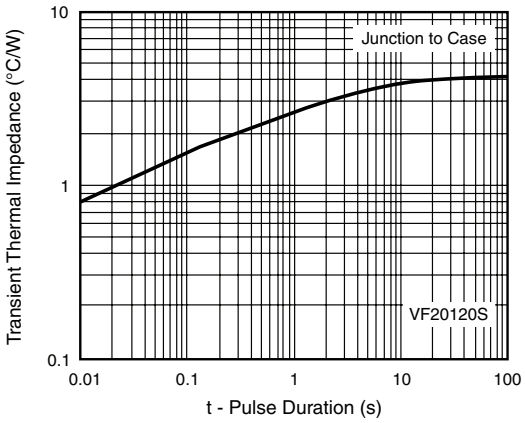


Figure 7. Typical Transient Thermal Impedance

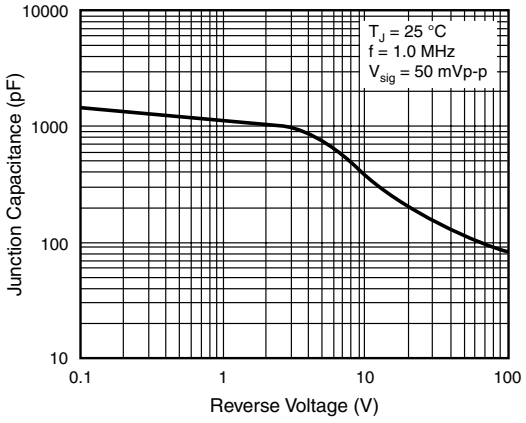
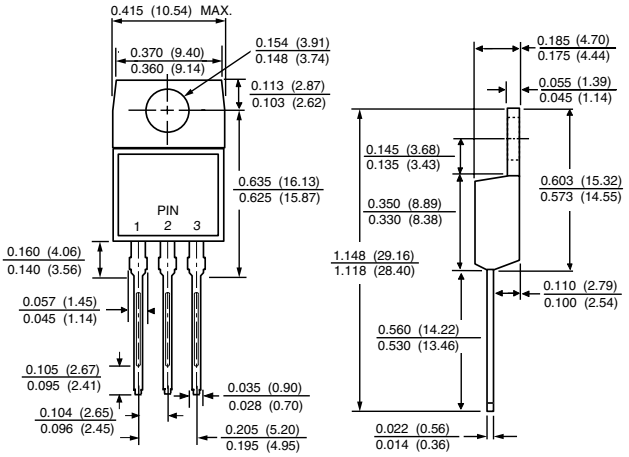


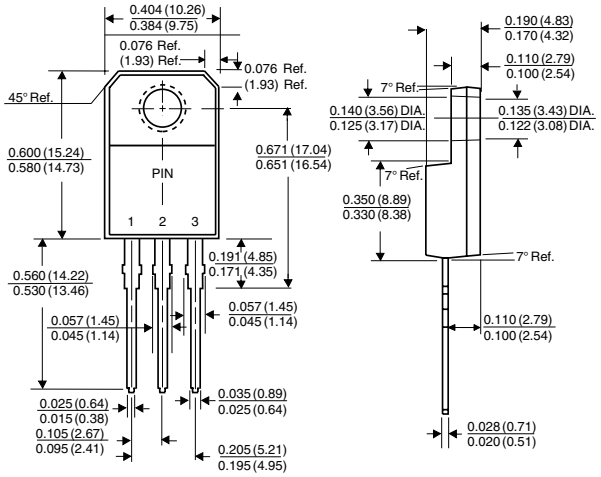
Figure 5. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

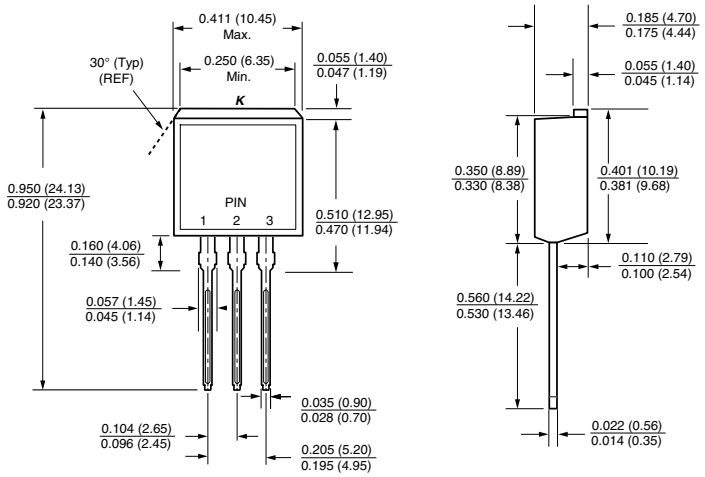
TO-220AB



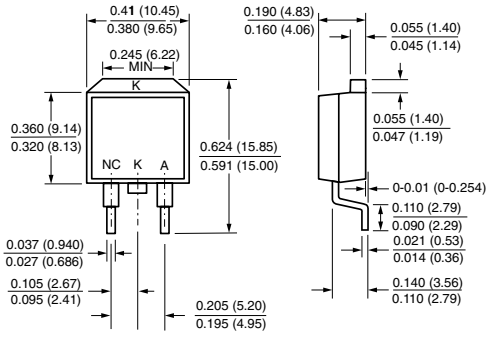
ITO-220AB



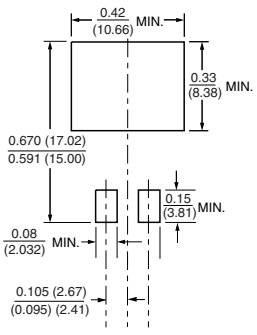
TO-262AA



TO-263AB



Mounting Pad Layout



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