



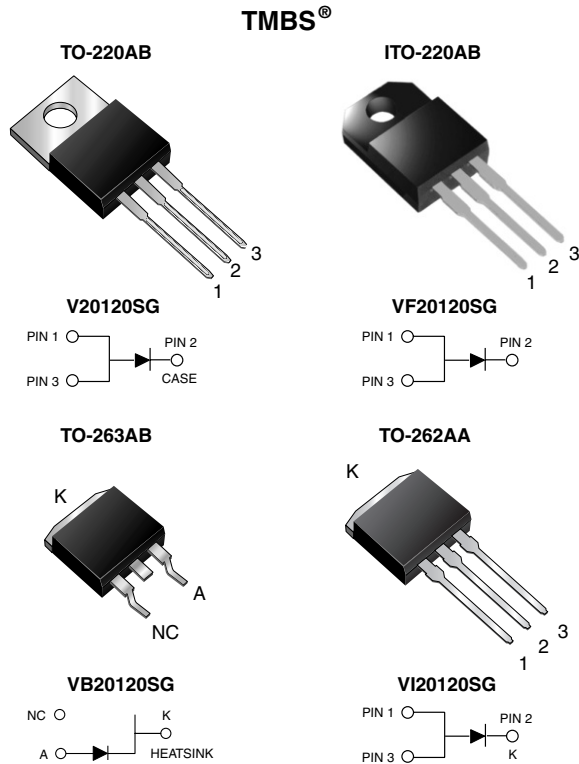
New Product

V20120SG, VF20120SG, VB20120SG & VI20120SG

Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.54 \text{ V}$ at $I_F = 5 \text{ A}$



PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
V_{RRM}	120 V
I_{FSM}	150 A
V_F at $I_F = 20 \text{ A}$	0.78 V
T_J max.	150 °C

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

MAXIMUM RATINGS ($T_A = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	SYMBOL	V20120SG	VF20120SG	VB20120SG	VI20120SG	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}			150		A
Isolation voltage (ITO-220AB only) From terminal to heatsink $t = 1$ minute	V_{AC}			1500		V
Operating junction and 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	0.62 0.81 1.20	- - 1.33	
	at I _F = 5 A I _F = 10 A I _F = 20 A	T _A = 125 °C		0.54 0.65 0.78	- - 0.88	
Reverse current ⁽²⁾	at V _R = 90 V	T _A = 25 °C T _A = 125 °C	I _R	10 7	- -	
	at V _R = 120 V	T _A = 25 °C T _A = 125 °C		- 12	250 25	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	V20120SG	VF20120SG	VB20120SG	VI20120SG	UNIT
Typical thermal resistance	R _{θJC}	2.2	4.2	2.2	2.2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	V20120SG-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	VF20120SG-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	VB20120SG-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	VB20120SG-E3/8W	1.38	8W	800/reel	Tape and reel
TO-262AA	VI20120SG-E3/4W	1.45	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

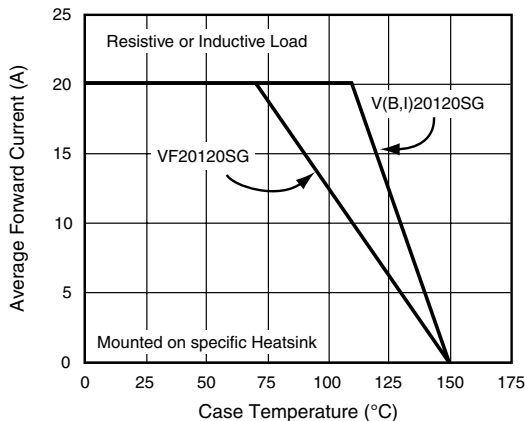


Figure 1. Forward Current Derating Curve

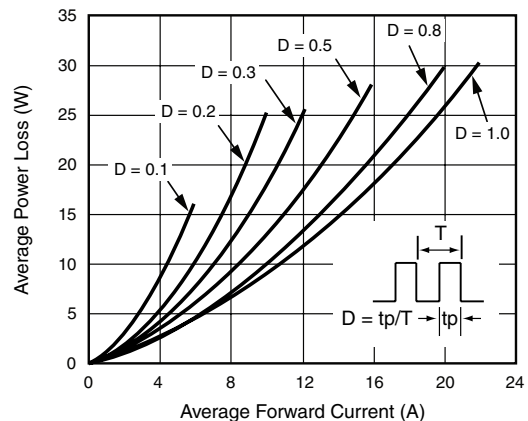


Figure 2. Forward Power Loss Characteristics



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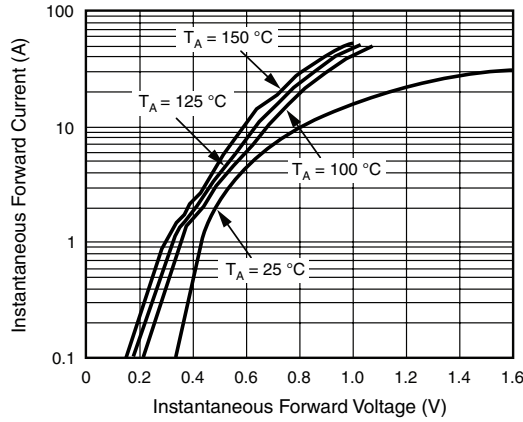


Figure 3. Typical Instantaneous Forward Characteristics

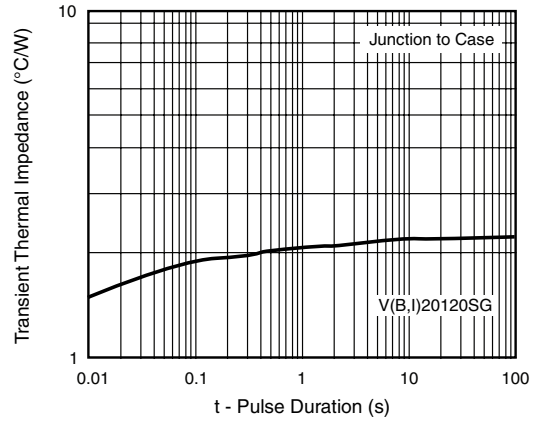


Figure 6. Typical Transient Thermal Impedance

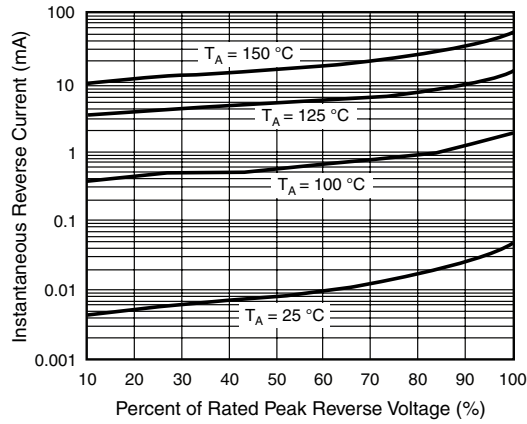


Figure 4. Typical Reverse Characteristics

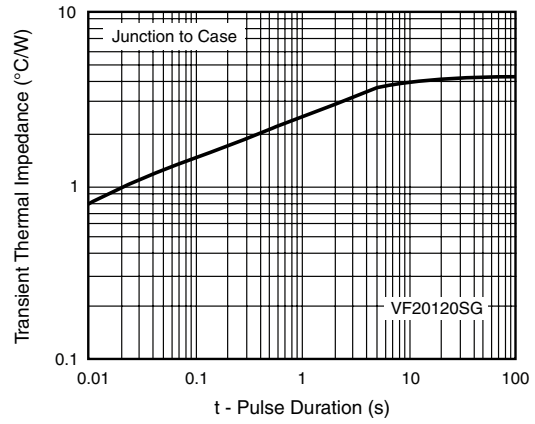


Figure 7. Typical Transient Thermal Impedance

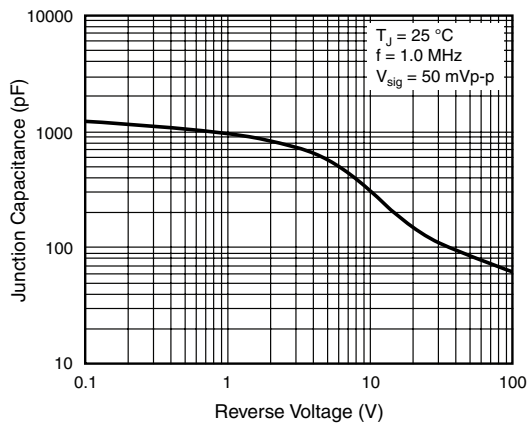
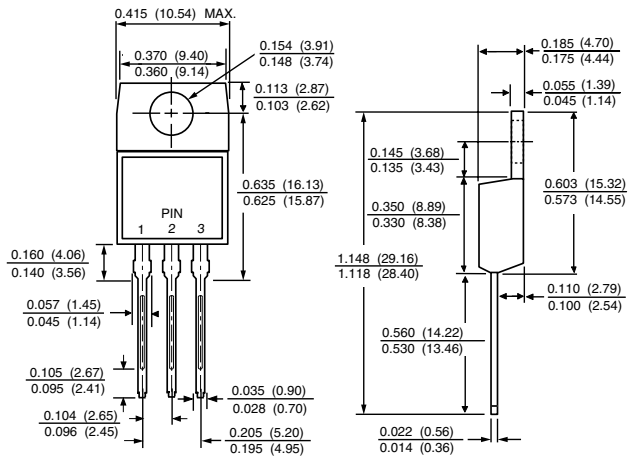


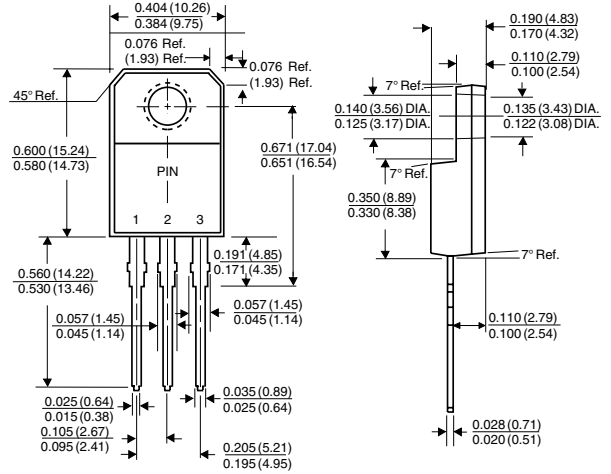
Figure 5. Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

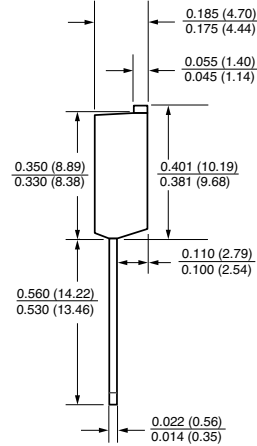
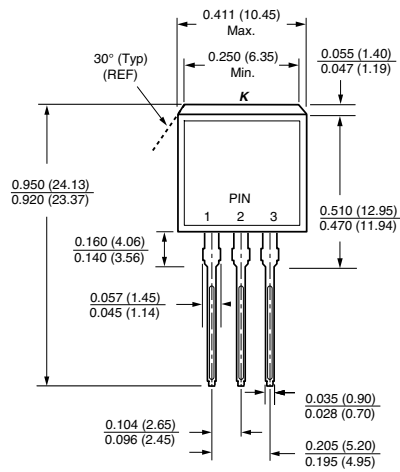
TO-220AB



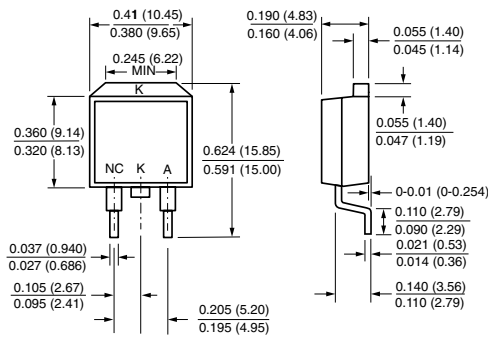
ITO-220AB



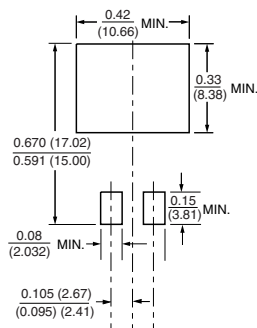
TO-262AA



TO-263AB



Mounting Pad Layout





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