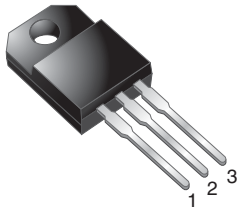
High-Voltage Trench MOS Barrier Schottky Rectifier

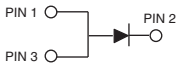
Ultra Low V_F = 0.54 V at I_F = 5 A

TMBS®

ITO-220AB



VF20120SG



FEATURES

- Trench MOS Schottky technology
- Low forward voltage drop, low power losses
- High efficiency operation
- Solder bath temperature 275 °C max. 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

HALOGEN FREE

TYPICAL APPLICATIONS

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	20 A
V_{RRM}	120 V
I_{FSM}	150 A
V_F at I_F = 20 A	0.78 V
T_J max.	150 °C
Package	ITO-220AB
Diode variation	Single

MECHANICAL DATA

Case: ITO-220AB
Molding compound meets UL 94 V-0 flammability rating Base P/N-M3 - halogen-free, RoHS-compliant, and commercial grade

Terminals: matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
M3 suffix meets JESD 201 class 1A whisker test

Polarity: as marked

Mounting Torque: 10 in-lbs maximum

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VF20120SG	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}	150	A
Voltage rate of change (rated V_R)	dV/dt	10 000	V/µs
Isolation voltage from termal to heatsink t = 1 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
Instantaneous forward voltage	I_F = 5 A	T_A = 25 °C	V_F (1)	0.62	-	V
	I_F = 10 A			0.81	-	
	I_F = 20 A			1.20	1.33	
	I_F = 5 A	T_A = 125 °C		0.54	-	
	I_F = 10 A			0.65	-	
	I_F = 20 A			0.78	0.88	
Reverse current	V_R = 90 V	T_A = 25 °C	I_R (2)	10	-	µA
		T_A = 125 °C		7	-	mA
	V_R = 120 V	T_A = 25 °C		-	250	µA
		T_A = 125 °C		12	25	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	VF20120SG	UNIT
Typical thermal resistance	$R_{\theta JC}$	4.2	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
ITO-220AB	VF20120SG-M3/4W	1.75	4W	50/tube	Tube

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

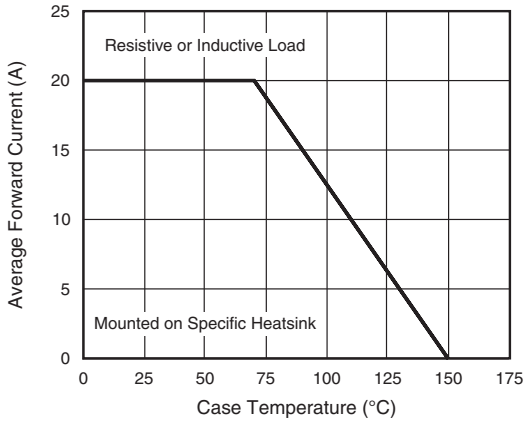

Fig. 1 - Maximum Forward Current Derating Curve

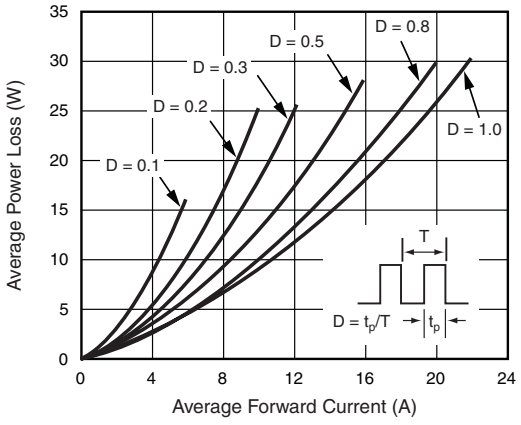

Fig. 2 - Forward Power Dissipation Characteristics

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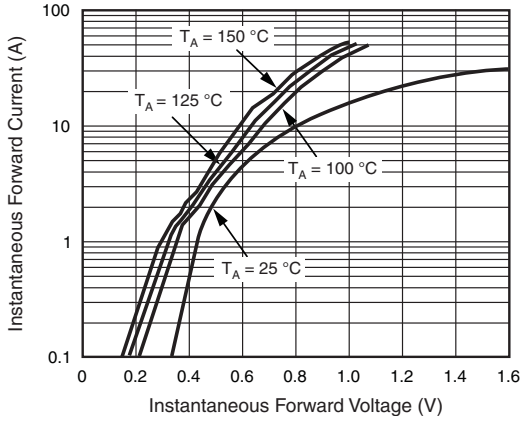


Fig. 3 - Typical Instantaneous Forward Characteristics

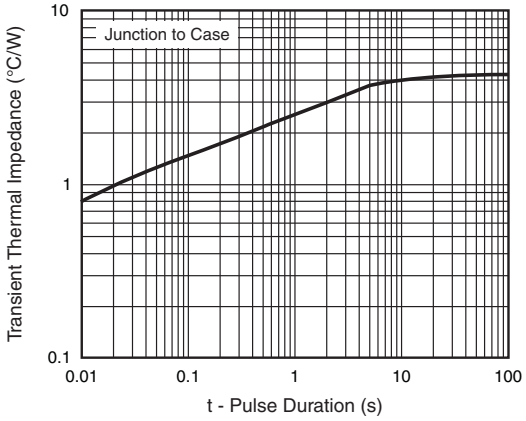


Fig. 5 - Typical Transient Thermal Impedance

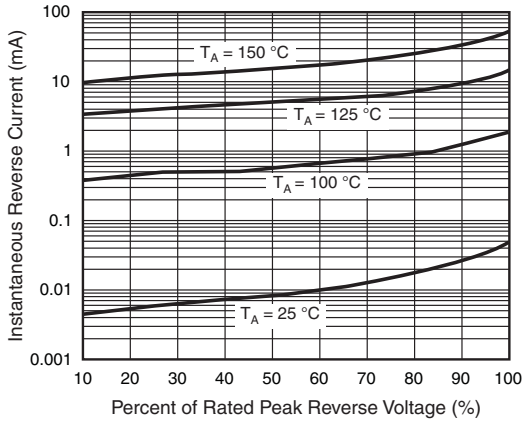


Fig. 4 - Typical Reverse Characteristics

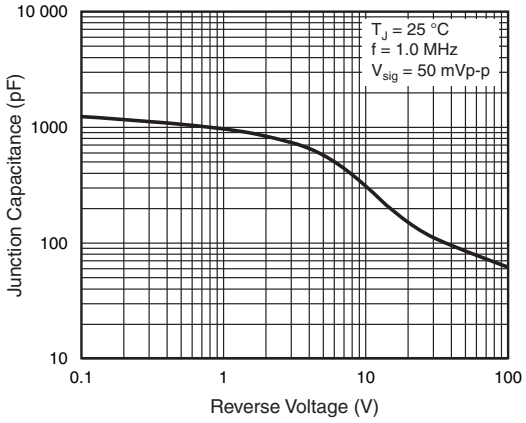
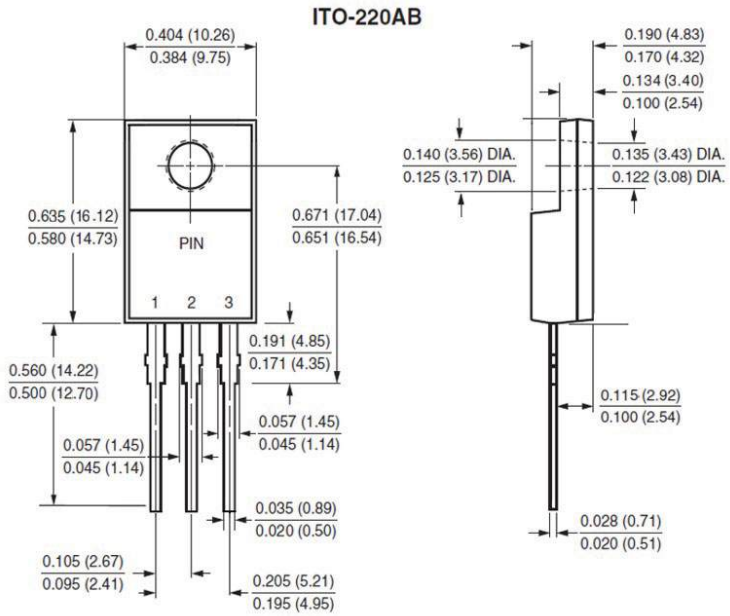


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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