

Vishay General Semiconductor

High-Voltage Trench MOS Barrier Schottky Rectifier

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



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		
Package	ITO-220AB		
Diode variation	Single		

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 <u>www.vishav.com/doc?99912</u>

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: 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	VF20120S	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	А	
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}	-55 to +150	°C	



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 5 A	T _A = 25 °C	- V _F ⁽¹⁾	0.57	-	V
	I _F = 10 A			0.71	-	
	I _F = 20 A			0.99	1.12	
	I _F = 5 A	T _A = 125 °C		0.50	-	
	I _F = 10 A			0.61	-	
	I _F = 20 A			0.73	0.81	
Reverse current	V _B = 90 V	T _A = 25 °C	I _R ⁽²⁾	10	1	μΑ
	V _R = 90 V	T _A = 125 °C		6	-	mA
	V _R = 120 V	T _A = 25 °C		-	300	μΑ
	v _R = 120 v	T _A = 125 °C		14	30	mA

Notes

⁽²⁾ Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL VF20120S			
Typical thermal resistance	$R_{ heta JC}$	4.0	°C/W	

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
ITO-220AB	VF20120S-M3/4W	1.75	4W	50/tube	Tube		

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

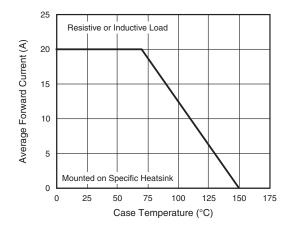


Fig. 1 - Maximum Forward Current Derating Curve

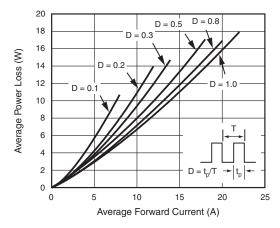


Fig. 2 - Forward Power Dissipation Characteristics

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



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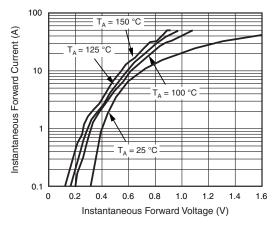


Fig. 3 - Typical Instantaneous Forward Characteristics

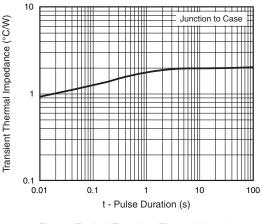


Fig. 5 - Typical Transient Thermal Impedance

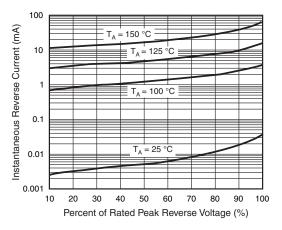


Fig. 4 - Typical Reverse Characteristics

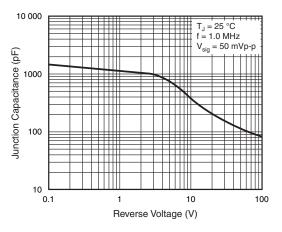
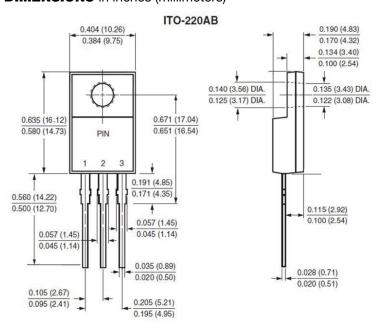


Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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