

### 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 <sub>F(AV)</sub>	20 A		
$V_{RRM}$	120 V		
I <sub>FSM</sub>	150 A		
V <sub>F</sub> at I <sub>F</sub> = 20 A	0.78 V		
T <sub>J</sub> 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 <a href="https://www.vishav.com/doc?99912">www.vishav.com/doc?99912</a>

# 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.

### **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 <sub>A</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	VF20120SG	UNIT	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	120	V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	20	А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	150	А	
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000	V/µs	
Isolation voltage from termal to heatsink t = 1 min	V <sub>AC</sub>	1500	V	
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	-40 to +150	°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>A</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT
Instantaneous forward voltage	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C	- V <sub>F</sub> <sup>(1)</sup>	0.62	-	V
	I <sub>F</sub> = 10 A			0.81	-	
	I <sub>F</sub> = 20 A			1.20	1.33	
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.54	-	
	I <sub>F</sub> = 10 A			0.65	-	
	I <sub>F</sub> = 20 A			0.78	0.88	
Reverse current	V <sub>R</sub> = 90 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	10	-	μΑ
		T <sub>A</sub> = 125 °C		7	-	mA
	V <sub>R</sub> = 120 V	T <sub>A</sub> = 25 °C		-	250	μΑ
	v <sub>R</sub> = 120 v	T <sub>A</sub> = 125 °C		12	25	mA

#### **Notes**

<sup>(2)</sup> Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)			
PARAMETER	SYMBOL VF20120SG		UNIT
Typical thermal resistance	$R_{ heta JC}$	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<sub>A</sub> = 25 °C unless otherwise noted)

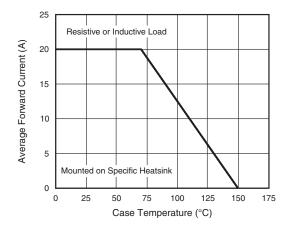


Fig. 1 - Maximum Forward Current Derating Curve

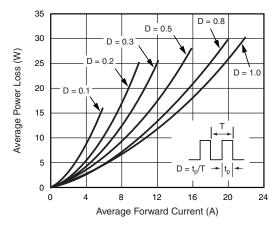


Fig. 2 - Forward Power Dissipation Characteristics

<sup>(1)</sup> Pulse test: 300 µs pulse width, 1 % duty cycle



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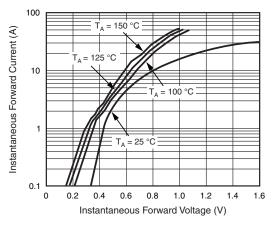
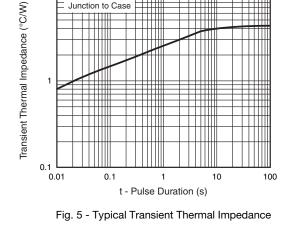


Fig. 3 - Typical Instantaneous Forward Characteristics



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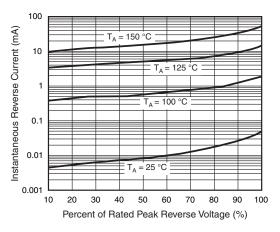


Fig. 4 - Typical Reverse Characteristics

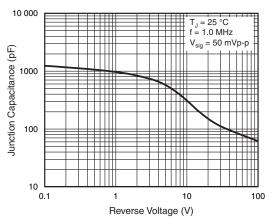
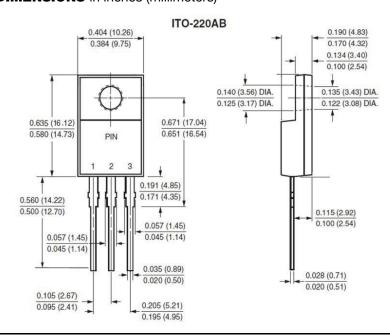


Fig. 6 - Typical Junction Capacitance

### **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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