VF10150S

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Vishay General Semiconductor

# **High-Voltage Trench MOS Barrier Schottky Rectifier**

Ultra Low  $V_F = 0.59$  V at  $I_F = 5$  A



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	10 A		
V <sub>RRM</sub>	150 V		
I <sub>FSM</sub>	120 A		
$V_F$ at $I_F$ = 10 A	0.69 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 <u>www.vishay.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

<b>MAXIMUM RATINGS</b> ( $T_A = 25$ °C unless otherwise noted)				
PARAMETER	SYMBOL	VF10150S	UNIT	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	150	V	
Maximum average forward rectified current (fig. 1)	I <sub>F(AV)</sub>	10	А	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	120	А	
Voltage rate of change (rated V <sub>R</sub> )	dV/dt	10 000	V/µs	
Isolation voltage from thermal 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>	-55 to +150	°C	



ROHS COMPLIANT

HALOGEN

FREE

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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)							
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT	
Instantaneous forward voltage	I <sub>F</sub> = 5 A	T <sub>A</sub> = 25 °C		0.79	-	V	
	I <sub>F</sub> = 10 A	$I_A = 25 C$	V <sub>F</sub> <sup>(1)</sup>	1.05	1.20		
	I <sub>F</sub> = 5 A	T <sub>A</sub> = 125 °C		0.59	-		
	I <sub>F</sub> = 10 A			0.69	0.75		
Reverse current	V <sub>B</sub> = 100 V	T <sub>A</sub> = 25 °C	I <sub>R</sub> (2)	1.3	-	μA	
	V <sub>R</sub> = 100 V	T <sub>A</sub> = 125 °C		1.2	-	mA	
	V <sub>B</sub> = 150 V	T <sub>A</sub> = 25 °C		-	150	μA	
	v <sub>R</sub> = 150 v	T <sub>A</sub> = 125 °C		3	15	mA	

Notes

 $^{(1)}\,$  Pulse test: 300  $\mu s$  pulse width, 1 % duty cycle

<sup>(2)</sup> Pulse test: Pulse width  $\leq$  40 ms

<b>THERMAL CHARACTERISTICS</b> ( $T_A = 25 \text{ °C}$ unless otherwise noted)				
PARAMETER	ER SYMBOL VF10150S			
Typical thermal resistance	$R_{ ext{ heta}JC}$	4.0	°C/W	

ORDERING INFORMATION (Example)						
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE	
ITO-220AB	VF10150S-M3/4W	1.75	4W	50/tube	Tube	

## RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)

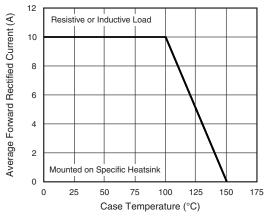


Fig. 1 - Maximum Forward Current Derating Curve

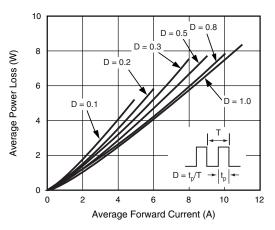
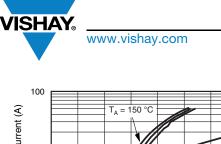


Fig. 2 - Forward Power Dissipation Characteristics

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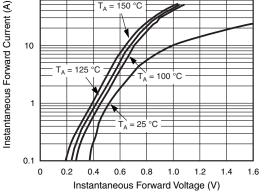
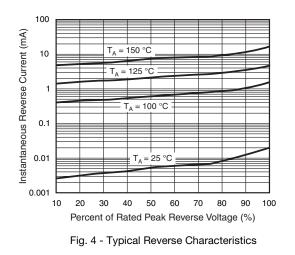
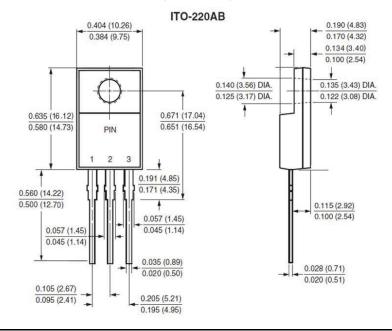


Fig. 3 - Typical Instantaneous Forward Characteristics



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



Tarsient Junction to Case Junction to Ca

Fig. 5 - Typical Transient Thermal Impedance

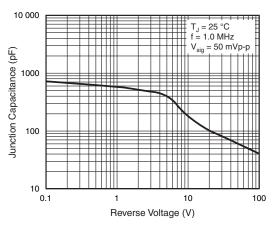


Fig. 6 - Typical Junction Capacitance

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