



Vishay General Semiconductor

COMPLIANT

HALOGEN

**FREE** 

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



PRIMARY CHARACTERISTICS			
I <sub>F(AV)</sub>	10 A		
$V_{RRM}$	90 V, 100 V		
I <sub>FSM</sub>	150 A		
V <sub>F</sub> at I <sub>F</sub> = 10 A	0.65 V		
T <sub>J</sub> max.	150 °C		
Package	ITO-220AC		
Circuit configuration	Single		

### **FEATURES**

- Trench MOS Schottky technology
- Low power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency 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"><u>www.vishav.com/doc?99912</u></a>

### **TYPICAL APPLICATIONS**

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

### **MECHANICAL DATA**

Case: ITO-220AC

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>C</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	MBRF1090	MBRF10100	UNIT	
Maximum repetitive peak reverse voltage	V <sub>RRM</sub>	90	100	V	
Working peak reverse voltage	$V_{RWM}$	90	100	V	
Maximum DC blocking voltage	V <sub>DC</sub>	90	100	V	
Maximum average forward rectified current at T <sub>C</sub> = 133 °C	I <sub>F(AV)</sub>	10		Α	
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I <sub>FSM</sub>	150		А	
Voltage rating 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>	-65 to +150		°C	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CO	NDITIONS	SYMBOL	VALUE	UNIT	
Maximum instantaneous forward voltage	I <sub>F</sub> = 10 A	T <sub>C</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.80	V	
		T <sub>C</sub> = 125 °C		0.65		
	I <sub>F</sub> = 20 A			0.75		
With All To Volco Galloni	T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	100	μΑ		
		T <sub>J</sub> = 100 °C	'R (=/	6.0	mA	

### **Notes**

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

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MBRF	UNIT	
Typical thermal resistance per diode	$R_{ heta JC}$	3.5	°C/W	

ORDERING INFORMATION (Example)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
ITO-220AC	MBRF10100-M3/4W	1.384	4W	50/tube	Tube		

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

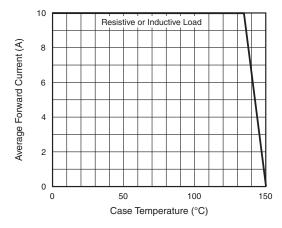


Fig. 1 - Forward Current Derating Curve

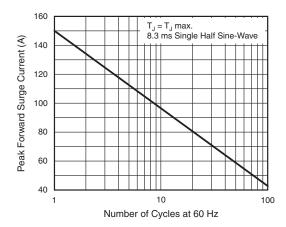


Fig. 2 - Maximum Non-Repetititve Peak Forward Surge Current

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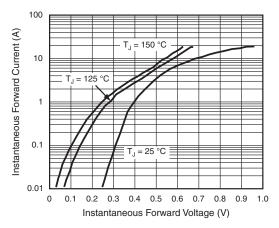


Fig. 3 - Typical Instantaneous Forward Characteristics

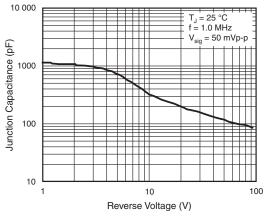


Fig. 5 - Typical Junction Capacitance

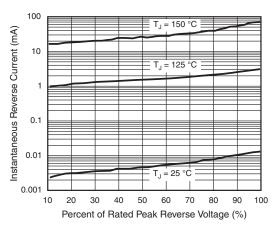


Fig. 4 - Typical Reverse Characteristics

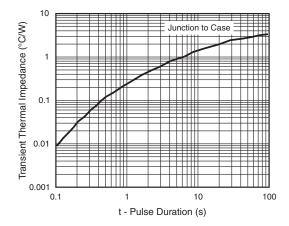
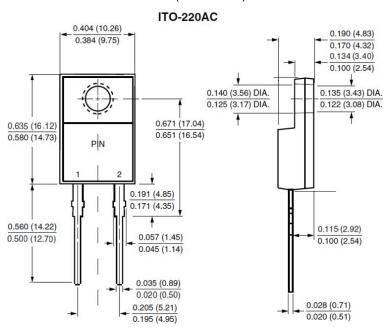


Fig. 6 - Typical Transient Thermal Impedance

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





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