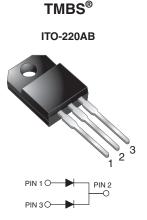
# MBRF1090CT-M3, MBRF10100CT-M3

Vishay General Semiconductor

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



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub>	2 x 5.0 A			
V <sub>RRM</sub>	90 V, 100 V			
I <sub>FSM</sub>	120 A			
V <sub>F</sub>	0.75 V			
T <sub>J</sub> max.	150 °C			
Package	ITO-220AB			
Circuit configuration	Common cathode			

## **FEATURES**

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

## **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-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 max.

<b>MAXIMUM RATINGS</b> ( $T_c = 25$ °C unless otherwise noted)						
PARAMETER		SYMBOL	MBRF1090CT	MBRF10100CT	UNIT	
Max. repetitive peak reverse voltage		V <sub>RRM</sub>	90	100	V	
Working peak reverse voltage		V <sub>RWM</sub>	90	100	V	
Max. DC blocking voltage		V <sub>DC</sub>	90	100	V	
Max. average forward rectified current at $T_C$ = 105 °C	total device	1	10		А	
	per diode	I <sub>F(AV)</sub>	5.0			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode		I <sub>FSM</sub>	120		А	
Non-repetitive avalanche energy at $T_J = 25 \text{ °C}$ , L = 60 mH per diode		E <sub>AS</sub>	60		mJ	
Peak repetitive reverse current at $t_p$ = 2 µs, 1 kHz, T <sub>J</sub> = 38 °C ± 2 °C per diode		I <sub>RRM</sub>	0.5		А	
Voltage rate of change (rated V <sub>R</sub> )		dV/dt	10 000		V/µs	
Operating junction and storage temperature range		T <sub>J</sub> , T <sub>STG</sub>	-65 to +150		°C	
Isolation voltage from terminal to heatsink with t = 1 min		V <sub>AC</sub>	1500		V	

RoHS

COMPLIANT HALOGEN FREE

Document Number: 89126

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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25 \text{ °C}$ unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	MBRF1090CT	MBRF10100CT	UNIT
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	I <sub>F</sub> = 5.0 A	T <sub>C</sub> = 125 °C	0.75		V	
	$I_{F} = 5.0 \text{ A}$	T <sub>C</sub> = 25 °C	۷F	0.85		v
Maximum reverse current per diode at working peak reverse voltage <sup>(2)</sup>		T <sub>J</sub> = 25 °C	100		00	μA
		T <sub>J</sub> = 100 °C	IR	6	.0	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> ( $T_c = 25$ °C unless otherwise noted)						
PARAMETER	ER SYMBOL MBRF1090CT MBRF10100CT		MBRF10100CT	UNIT		
Typical thermal resistance per diode	$R_{ ext{ heta}JC}$	6.8		°C/W		

ORDERING INFORMATION (EXAMPLE)							
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
ITO-220AB	MBRF10100CT-M3/4W	1.75	4W	50/tube	Tube		

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

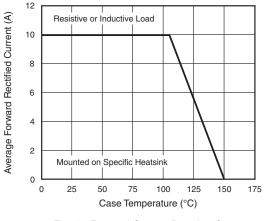


Fig. 1 - Forward Current Derating Curve

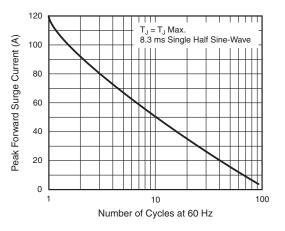


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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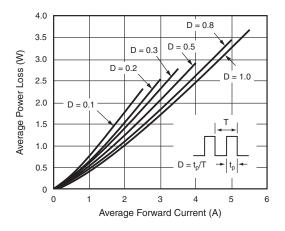


Fig. 3 - Forward Power Loss Characteristics Per Diode

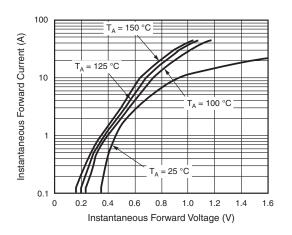


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

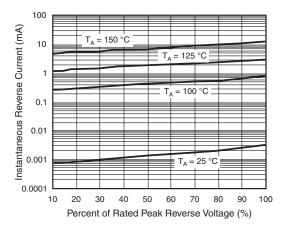


Fig. 5 - Typical Reverse Characteristics Per Diode

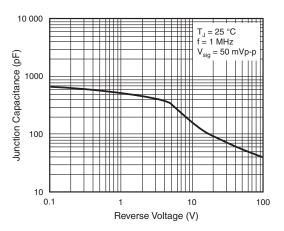


Fig. 6 - Typical Junction Capacitance Per Diode

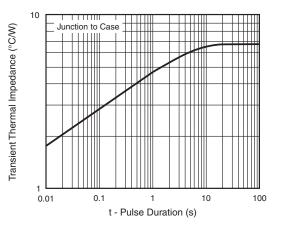


Fig. 7 - Typical Transient Thermal Impedance Per Diode

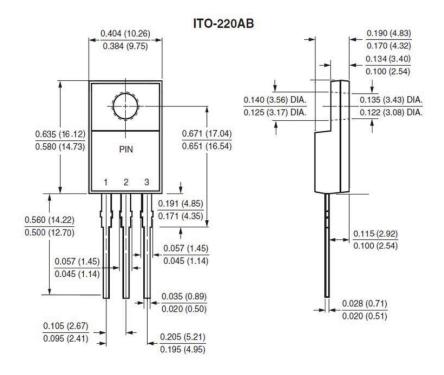
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## **PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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