

## MBRF1090CT-M3, MBRF10100CT-M3

Vishay General Semiconductor

COMPLIANT

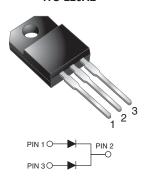
HALOGEN

**FREE** 

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

### TMBS®

#### ITO-220AB



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 <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-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 <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER		SYMBOL	MBRF1090CT	MBRF10100CT	UNIT	
Max. repetitive peak reverse voltage		$V_{RRM}$	90	100	V	
Working peak reverse voltage		V <sub>RWM</sub>	90	100	V	
Max. DC blocking voltage		$V_{DC}$	90	100	V	
Max. average forward rectified current at T <sub>C</sub> = 105 °C	total device	1	1	0		
	per diode	I <sub>F(AV)</sub>	5.0		Α	
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 $T_J = 25$ °C, L = 60 mH per diode		E <sub>AS</sub>	60		mJ	
ak repetitive reverse current at $t_p$ = 2 $\mu$ s, 1 kHz, = 38 °C $\pm$ 2 °C per diode		I <sub>RRM</sub>	0.5		Α	
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	



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<b>ELECTRICAL CHARACTERISTICS</b> (T <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	TEST CONDITIONS		SYMBOL	MBRF1090CT	MBRF10100CT	UNIT
Maximum instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 5.0 \text{ A}$	T <sub>C</sub> = 125 °C	V <sub>E</sub> 0.75		75	V
	$I_F = 5.0 \text{ A}$	T <sub>C</sub> = 25 °C	٧F	V <sub>F</sub> 0.85		
Maximum reverse current per diode at working peak reverse voltage (2)		T <sub>J</sub> = 25 °C			00	μΑ
		T <sub>J</sub> = 100 °C	IR	6	.0	mA

#### **Notes**

(1) Pulse test: 300 μs 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	MBRF1090CT MBRF10100CT		UNIT	
Typical thermal resistance per diode	$R_{ heta JC}$	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)

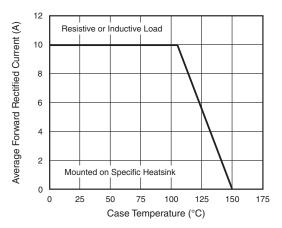


Fig. 1 - Forward Current Derating Curve

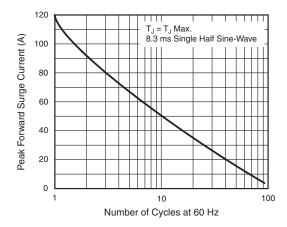
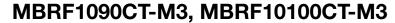


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode





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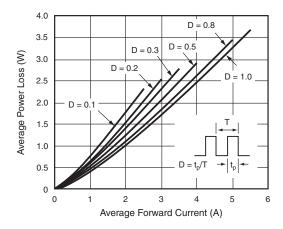


Fig. 3 - Forward Power Loss Characteristics Per Diode

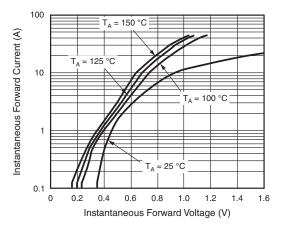


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

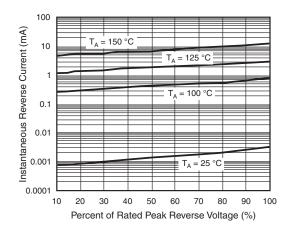


Fig. 5 - Typical Reverse Characteristics Per Diode

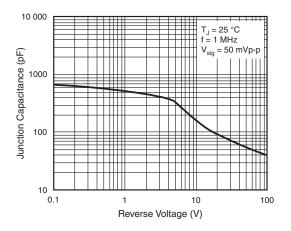


Fig. 6 - Typical Junction Capacitance Per Diode

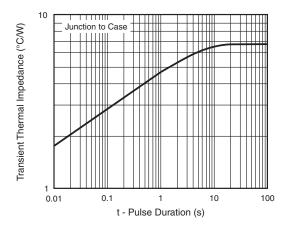


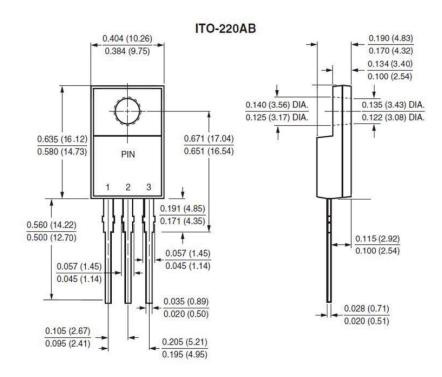
Fig. 7 - Typical Transient Thermal Impedance Per Diode



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### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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