

## MBRF2090CT, MBRF20100CT

Vishay General Semiconductor

COMPLIANT

HALOGEN

**FREE** 

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

TMBS<sup>®</sup> ITO-220AB



PRIMARY CHARACTERISTICS				
I <sub>F(AV)</sub> 2 x 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-220AB			
Circuit configuration	Common cathode			

#### **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-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>C</sub> = 25 °C unless otherwise noted)					
PARAMETER		SYMBOL	MBRF2090CT	MBRF20100CT	UNIT
Maximum repetitive peak reverse voltage	ium repetitive peak reverse voltage		90	100	V
Working peak reverse voltage		$V_{RWM}$	90	100	V
Maximum DC blocking voltage		$V_{DC}$	90	100	V
Maximum average forward rectified current at T <sub>C</sub> = 133 °C	total device	I	20		А
	per diode	I <sub>F(AV)</sub>	10		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load		I <sub>FSM</sub>	150		Α
Voltage rating 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 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	VALUE	UNIT	
Maximum instantaneous forward voltage per diode	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		
Maximum reverse current per diode at working peak reverse voltage		T <sub>J</sub> = 25 °C	I <sub>R</sub> <sup>(2)</sup>	100	μΑ	
		T <sub>J</sub> = 100 °C		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				
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-220AB	MBRF20100CT-M3/4W	1.75	4W	50/tube	Tube	

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

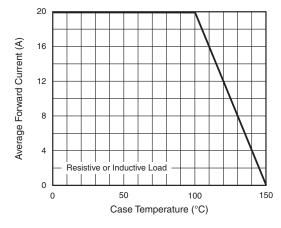


Fig. 1 - Forward Current Derating Curve

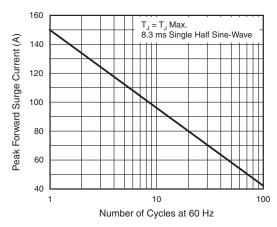


Fig. 2 - Maximum Non-Repetititve Peak Forward Surge Current Per Diode





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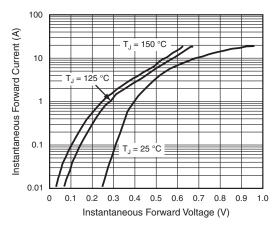


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

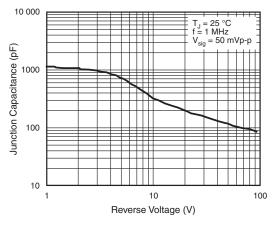


Fig. 5 - Typical Junction Capacitance Per Diode

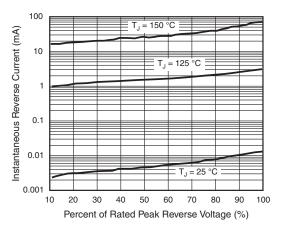


Fig. 4 - Typical Reverse Characteristics Per Diode

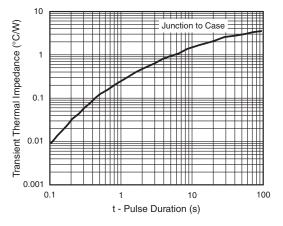
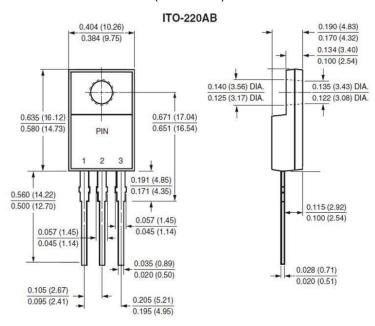


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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





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