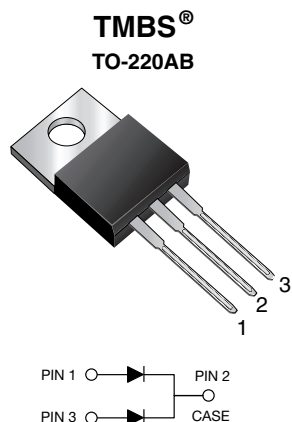


# Dual High Voltage Trench MOS Barrier Schottky Rectifier



## 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](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

## 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:** TO-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.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 10 A
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	150 A
$V_F$	0.65 V
$T_J$ max.	150 °C
Package	TO-220AB
Diode variation	Common cathode

MAXIMUM RATINGS (T <sub>C</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MBR2090CT	MBR20100CT	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 <sub>C</sub> = 133 °C	total device	20		A
	per diode	10		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I <sub>FSM</sub>	150		A
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

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Max. instantaneous forward voltage per diode	$I_F = 10\text{ A}$	$T_C = 25\text{ }^{\circ}\text{C}$	$V_F^{(1)}$	0.80	V
		$T_C = 125\text{ }^{\circ}\text{C}$		0.65	
	$I_F = 20\text{ A}$	$T_C = 125\text{ }^{\circ}\text{C}$		0.75	
Max. reverse current per diode at working peak reverse voltage			$I_R^{(2)}$	100	$\mu\text{A}$
				6.0	mA

**Notes**

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

(2) Pulse test: Pulse width  $\leq 40\text{ ms}$

**THERMAL CHARACTERISTICS**

PARAMETER	SYMBOL	MBR2090CT, MBR20100CT	UNIT
Typical thermal resistance per diode	$R_{\theta JA}$	60	$^{\circ}\text{C/W}$
	$R_{\theta JC}$	2.0	

**ORDERING INFORMATION** (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR20100CT-M3/4W	1.88	4W	50/tube	Tube

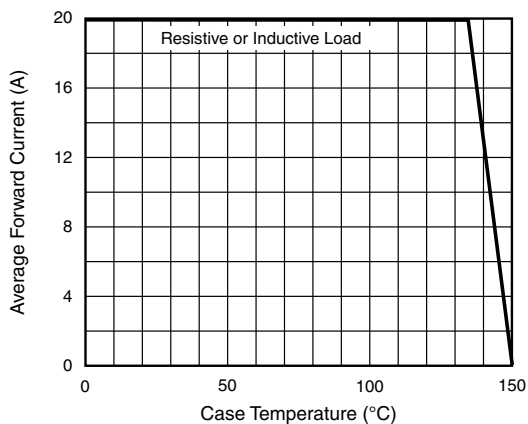
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

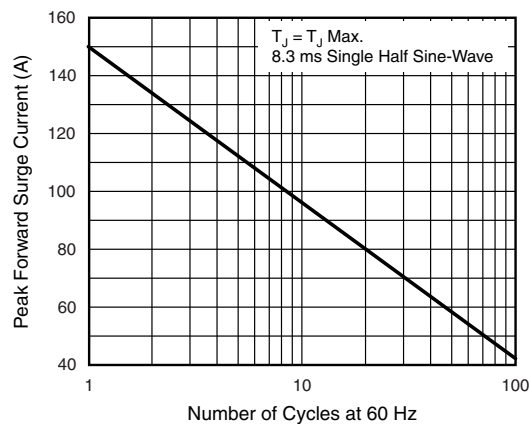


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

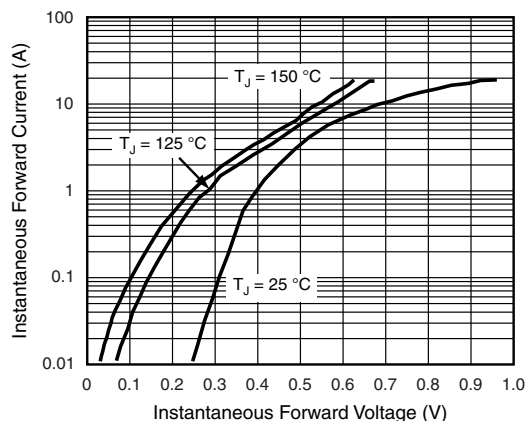


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

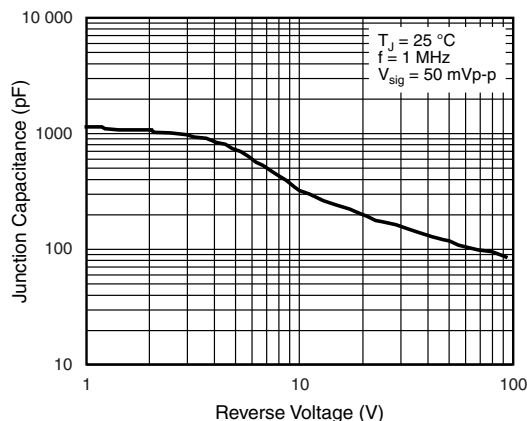


Fig. 5 - Typical Junction Capacitance Per Diode

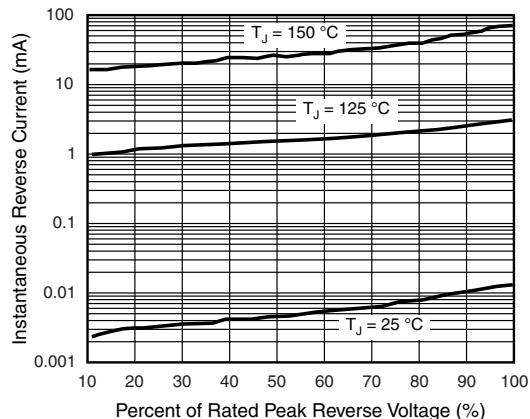


Fig. 4 - Typical Reverse Characteristics Per Diode

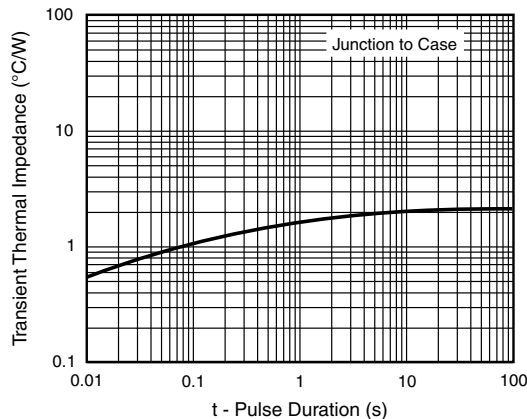
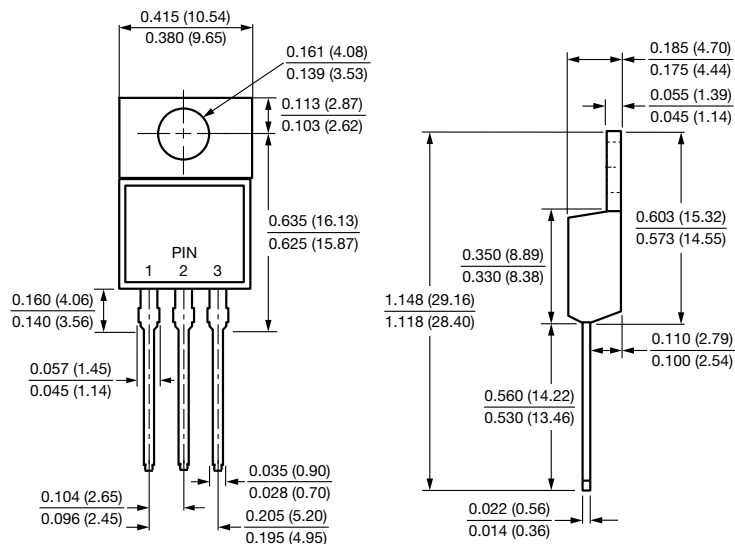


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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

**TO-220AB**




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