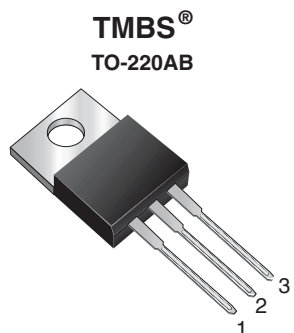


# Dual High Voltage Trench MOS Barrier Schottky Rectifier



## 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 ( $T_C = 25$ °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 <sub>C</sub> = 25 °C unless otherwise noted) |                       |                         |                               |       |      |
|----------------------------------------------------------------------------|-----------------------|-------------------------|-------------------------------|-------|------|
| PARAMETER                                                                  | TEST CONDITIONS       |                         | SYMBOL                        | VALUE | UNIT |
| Max. 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  |      |
| Max. reverse current per diode<br>at working peak reverse voltage          |                       |                         | I <sub>R</sub> <sup>(2)</sup> | 100   | μA   |
|                                                                            |                       |                         |                               | 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          |

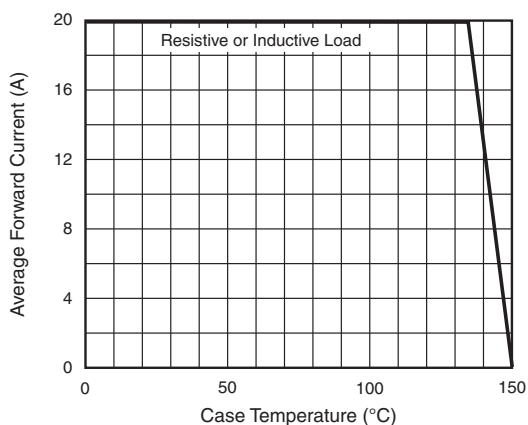
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

Fig. 1 - Forward Current Derating Curve

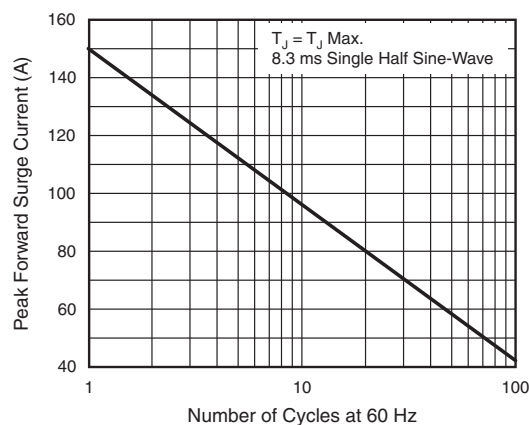


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

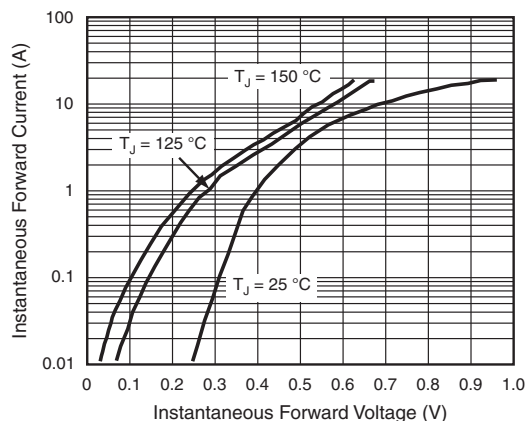


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

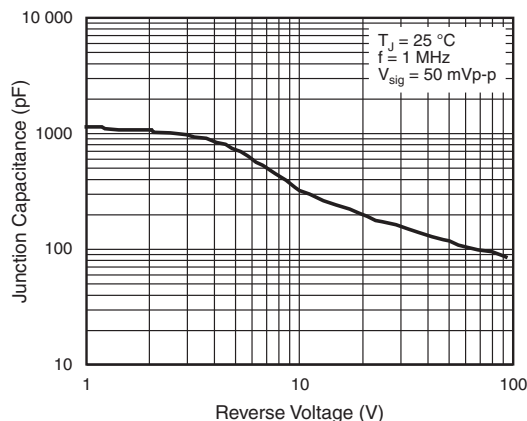


Fig. 5 - Typical Junction Capacitance Per Diode

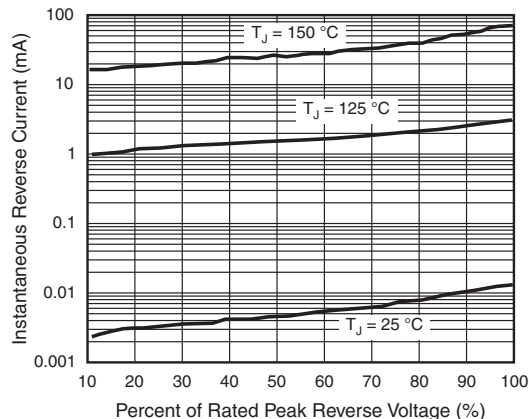


Fig. 4 - Typical Reverse Characteristics Per Diode

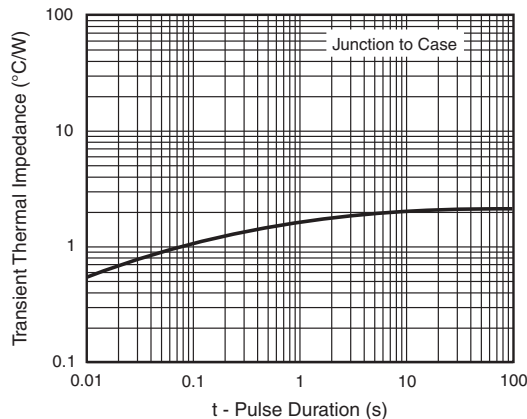
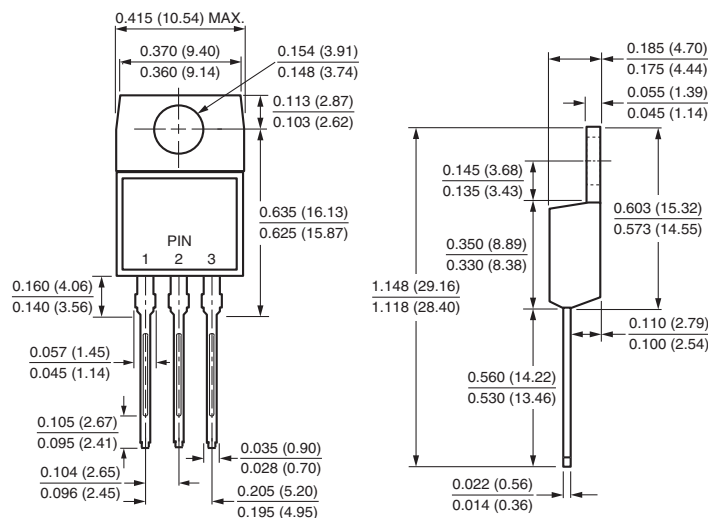


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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

**TO-220AB**




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