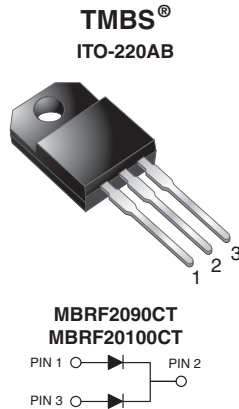


## Dual High-Voltage Trench MOS Barrier Schottky Rectifier



### 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 [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:** 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

| PRIMARY CHARACTERISTICS |                |
|-------------------------|----------------|
| $I_{F(AV)}$             | 2 x 10 A       |
| $V_{RRM}$               | 90 V, 100 V    |
| $I_{FSM}$               | 150 A          |
| $V_F$ at $I_F = 10$ A   | 0.65 V         |
| $T_J$ max.              | 150 °C         |
| Package                 | ITO-220AB      |
| Circuit configuration   | Common cathode |

| MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)                            |                |              |             |      |
|--|----------------|--------------|-------------|------|
| PARAMETER  | SYMBOL         | MBRF2090CT   | MBRF20100CT | UNIT |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$      | 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 $T_C = 133$ °C                        | $I_{F(AV)}$    | total device | 20          | A    |
|  |                | per diode    | 10          |      |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$      | 150          |             | A    |
| Voltage rating of change (rated $V_F$ )  | dV/dt          | 10 000       |             | V/μs |
| Operating junction and storage temperature range                                   | $T_J, T_{STG}$ | -65 to +150  |             | °C   |
| Isolation voltage from terminal to heatsink t = 1 min                              | $V_{AC}$       | 1500         |             | V    |



| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                     |                                   |             |       |               |
|--|---------------------|-----------------------------------|-------------|-------|---------------|
| PARAMETER  | TEST CONDITIONS     |                                   | SYMBOL      | VALUE | UNIT          |
| Maximum 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  |               |
|  | $I_F = 20\text{ A}$ |                                   |             | 0.75  |               |
| Maximum reverse current per diode at working peak reverse voltage                            |                     | $T_J = 25\text{ }^\circ\text{C}$  | $I_R^{(2)}$ | 100   | $\mu\text{A}$ |
|  |                     | $T_J = 100\text{ }^\circ\text{C}$ |             | 6.0   | mA            |

**Notes**

- (1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width  $\leq 40\text{ ms}$

| <b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |      |                    |
|---|-----------------|------|--------------------|
| PARAMETER   | SYMBOL          | MBRF | UNIT               |
| Typical thermal resistance per diode  | $R_{\theta JC}$ | 3.5  | $^\circ\text{C/W}$ |

| <b>ORDERING INFORMATION</b> (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** ( $T_C = 25\text{ }^\circ\text{C}$  unless otherwise noted)

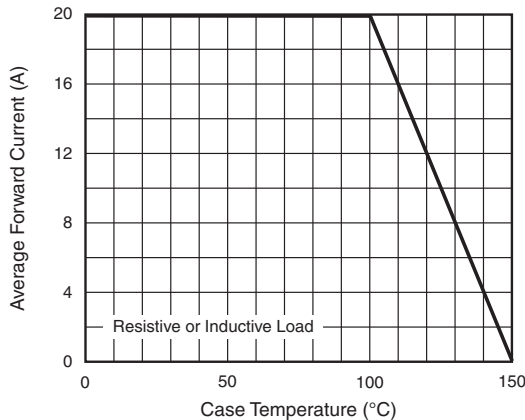


Fig. 1 - Forward Current Derating Curve

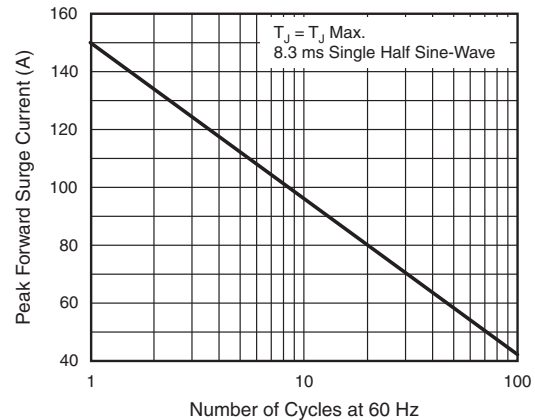


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

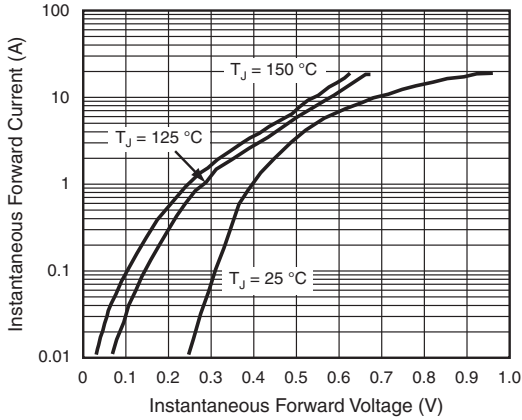


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

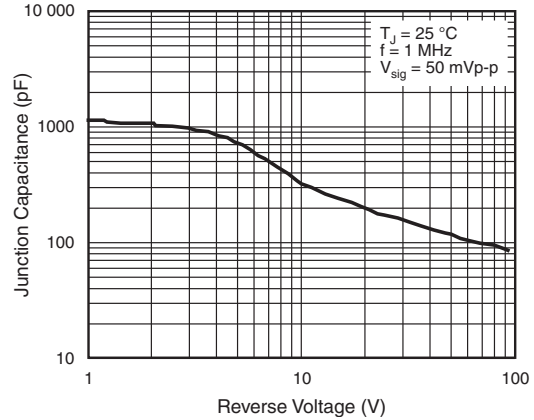


Fig. 5 - Typical Junction Capacitance Per Diode

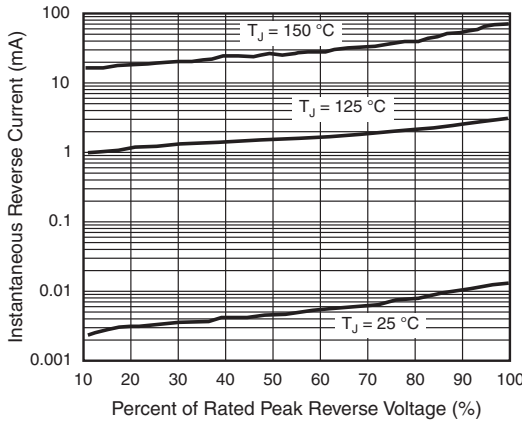


Fig. 4 - Typical Reverse Characteristics Per Diode

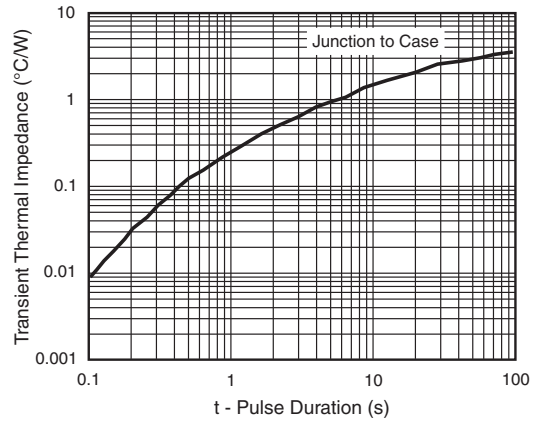
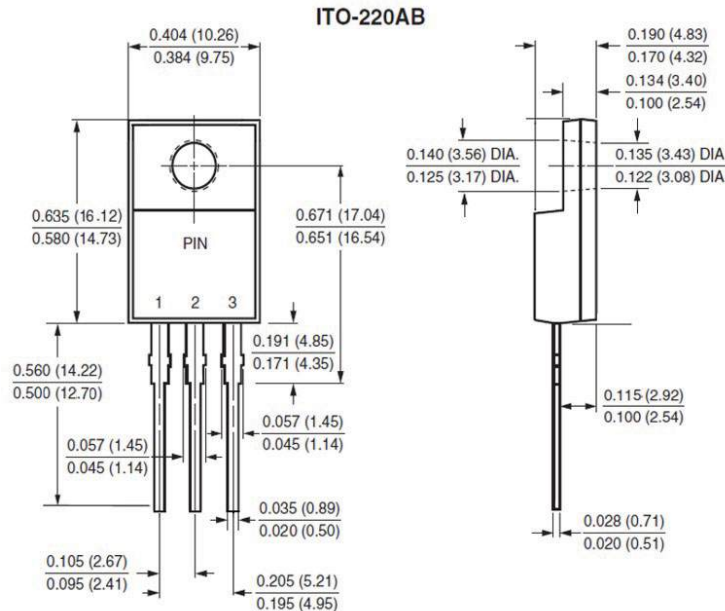


Fig. 6 - Typical Transient Thermal Impedance Per Diode

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





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