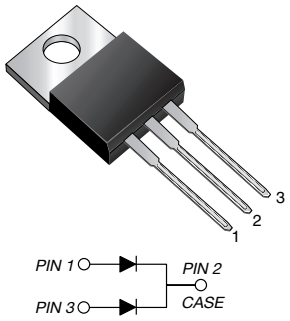
# Dual High-Voltage Trench MOS Barrier Schottky Rectifier

**TMBS®**

**TO-220AB**




| PRIMARY CHARACTERISTICS | |
|---|---|
| $I_{F(AV)}$ | 2 x 5.0 A |
| $V_{RRM}$ | 90 V, 100 V |
| $I_{FSM}$ | 120 A |
| $V_F$ | 0.75 V |
| $T_J$ max. | 150 °C |
| Package | TO-220AB |
| Diode variation | Dual common cathode |

## FEATURES

- Trench MOS Schottky technology
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see 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 maximum

**MAXIMUM RATINGS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | | SYMBOL | MBR1090CT | MBR10100CT | UNIT |
|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | | $V_{RRM}$ | 90 | 100 | V |
| Maximum peak reverse voltage | | $V_{RWM}$ | 90 | 100 | V |
| Maximum DC blocking voltage | | $V_{DC}$ | 90 | 100 | V |
| Maximum average forward rectified current at $T_C$ = 105 °C | total device | $I_{F(AV)}$ | 10 | | A |
| | per diode | | 5.0 | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | | $I_{FSM}$ | 120 | | A |
| Voltage rate of change | | dV/dt | 10 000 | | V/µs |
| Operating junction and storage temperature range | | $T_J$, $T_{STG}$ | -65 to +150 | | °C |

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25 °C unless otherwise noted)

| PARAMETER | TEST CONDITIONS | | SYMBOL | MBR1090CT | MBR10100CT | UNIT |
|---|---|---|---|---|---|---|
| Maximum instantaneous forward voltage | $I_F$ = 5.0 A | $T_A$ = 125 °C | $V_F$ (1) | 0.75 | | V |
| | | $T_A$ = 25 °C | | 0.85 | | |
| Maximum reverse current per diode at working peak reverse voltage | | $T_A$ = 25 °C | $I_R$ (2) | 100 | | µA |
| | | $T_A$ = 100 °C | | 6.0 | | mA |

**Notes**

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

| THERMAL CHARACTERISTICS ($T_A$ = 25 °C unless otherwise noted) | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MBR1090CT** | **MBR10100CT** | **UNIT** |
| Typical thermal resistance per diode | $R_{\theta JC}$ | 4.4 | | °C/W |

| ORDERING INFORMATION (Example) | | | | | |
|---|---|---|---|---|---|
| **PACKAGE** | **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| TO-220AB | MBR10100CT-M3/4W | 1.87 | 4W | 50/tube | Tube |

## RATINGS AND CHARACTERISTICS CURVES ($T_A$ = 25 °C unless otherwise noted)

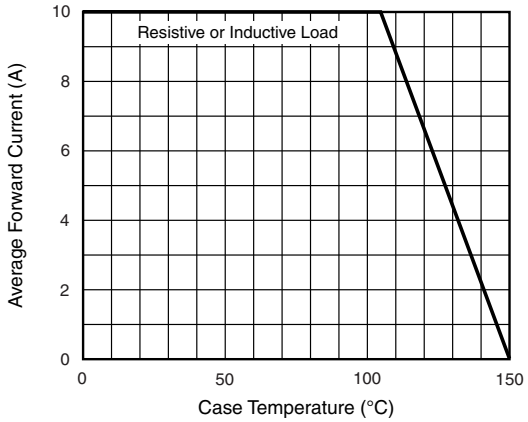



Fig. 1 - Forward Current Derating Curve

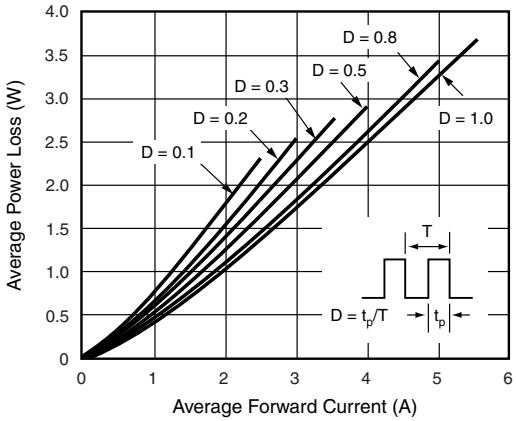



Fig. 3 - Forward Power Loss Characteristics Per Diode

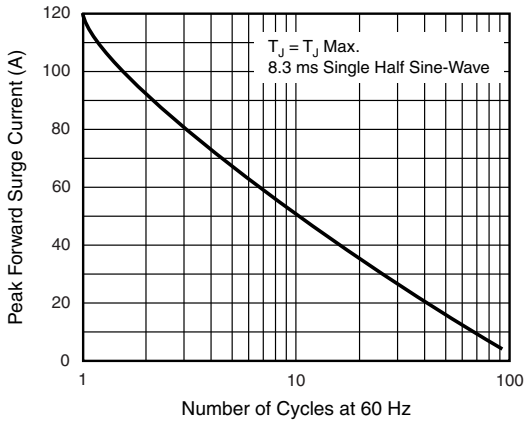



Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

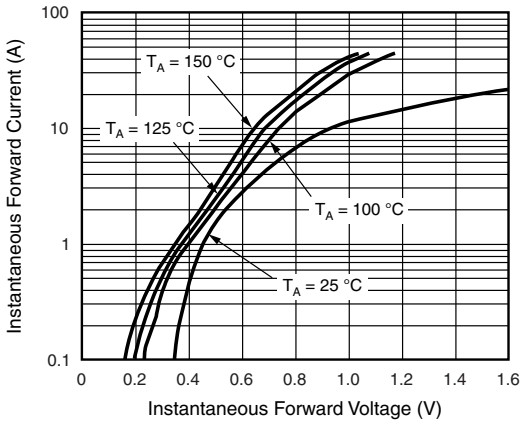



Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

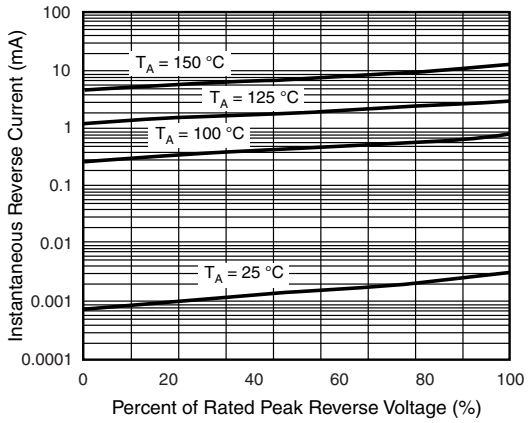



Fig. 5 - Typical Reverse Characteristics Per Diode

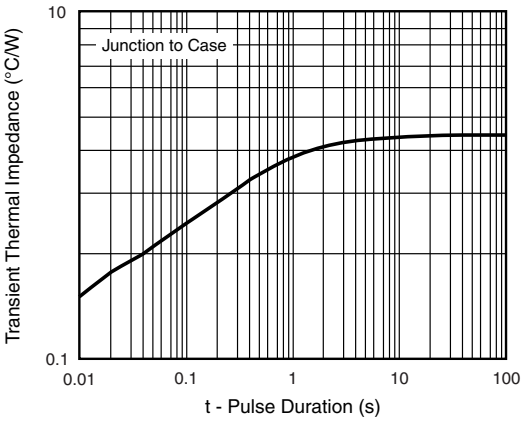



Fig. 7 - Typical Transient Thermal Impedance Per Diode

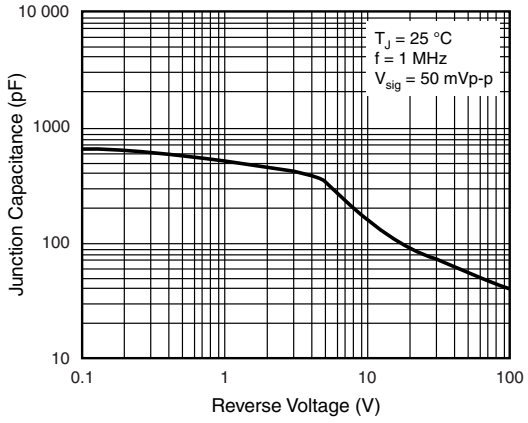
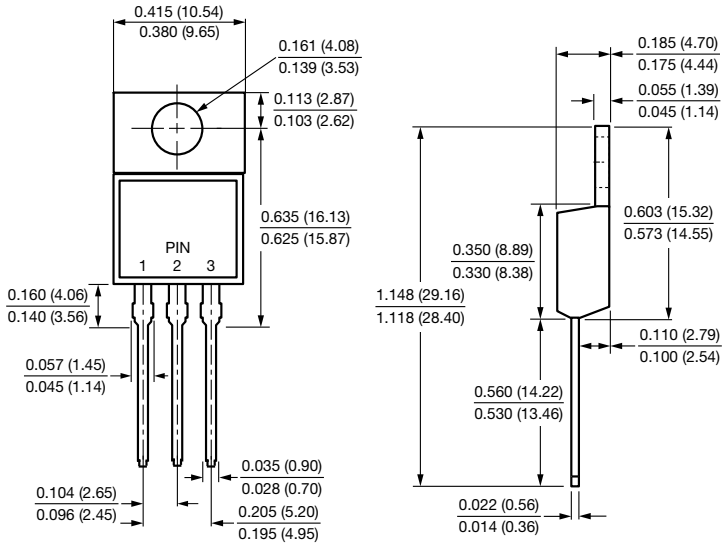



Fig. 6 - Typical Junction Capacitance Per Diode

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

**TO-220AB**



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