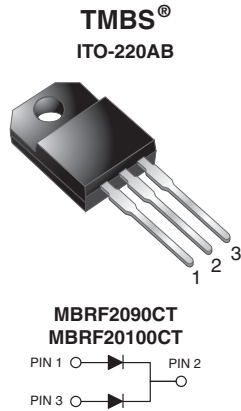


Dual High-Voltage Trench MOS Barrier Schottky Rectifier



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



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 | | A |
| | | per diode | | |
| 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 |



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^\circ\text{C}$ 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 | | | $I_R^{(2)}$ | 100 | μA |
| | | | | 6.0 | mA |

Notes

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

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

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

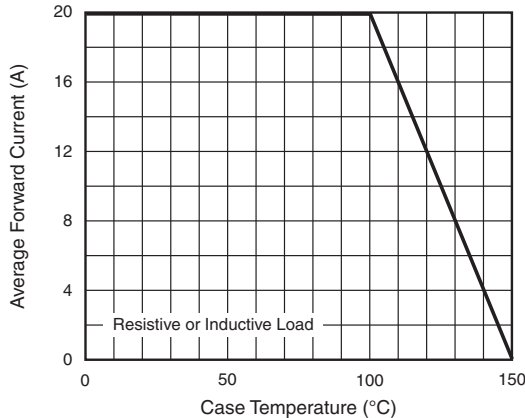


Fig. 1 - Forward Current Derating Curve

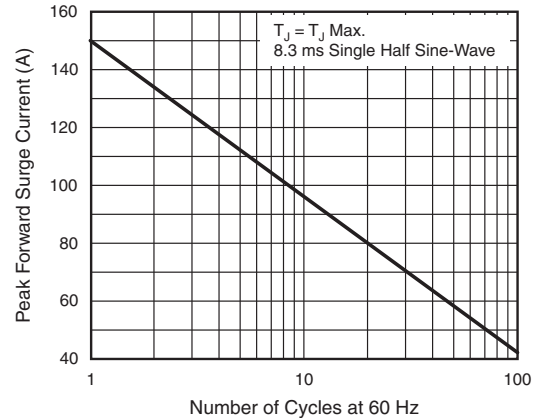


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode

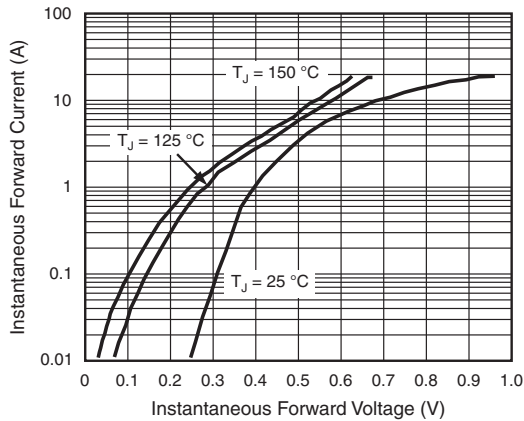


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

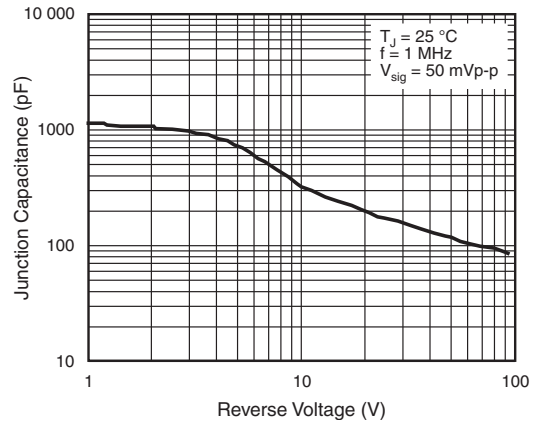


Fig. 5 - Typical Junction Capacitance Per Diode

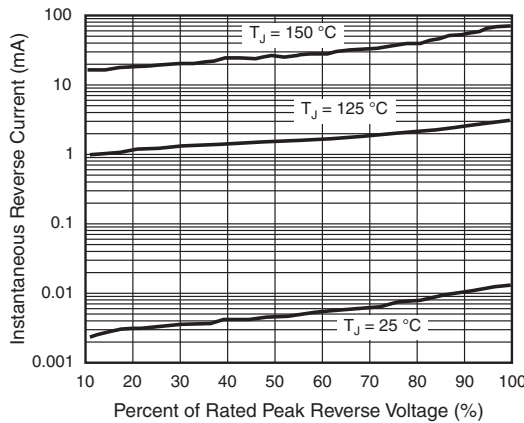


Fig. 4 - Typical Reverse Characteristics Per Diode

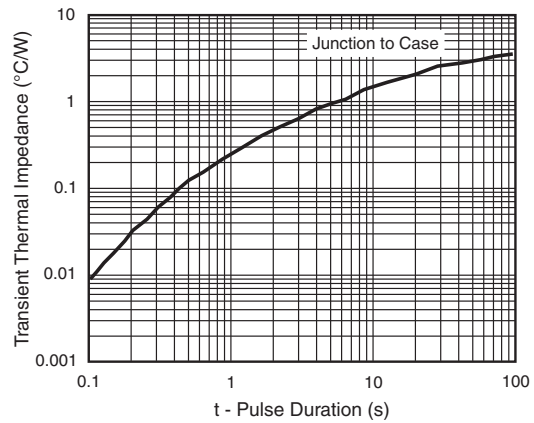
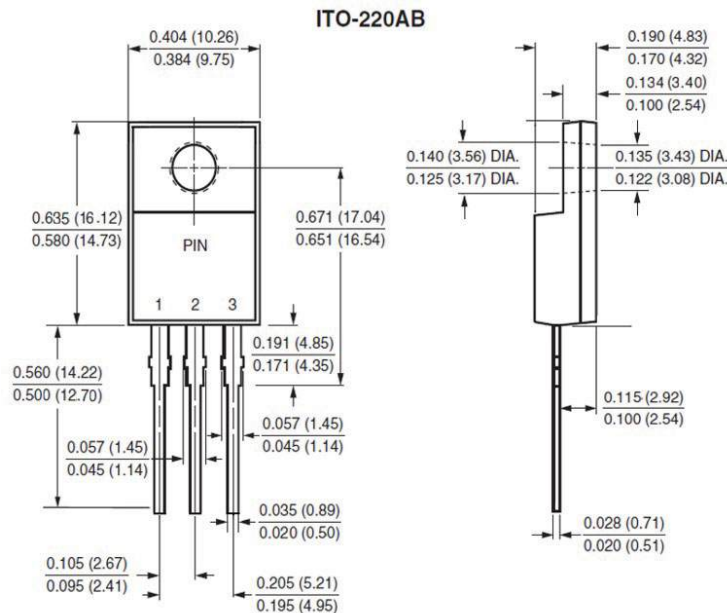


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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