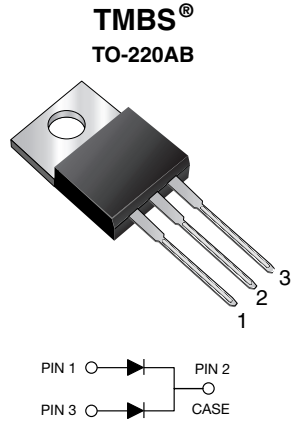


Dual High Voltage Trench MOS Barrier Schottky Rectifier



RoHS
COMPLIANT
HALOGEN
FREE

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

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 ($T_C = 25\text{ °C}$ unless otherwise noted) | | | | |
|--|---------------------------|-------------|------------|------------|
| PARAMETER | SYMBOL | MBR2090CT | MBR20100CT | UNIT |
| Max. repetitive peak reverse voltage | V_{RRM} | 90 | 100 | V |
| Working peak reverse voltage | V_{RWM} | 90 | 100 | V |
| Max. DC blocking voltage | V_{DC} | 90 | 100 | V |
| Max. average forward rectified current at $T_C = 133\text{ °C}$ | total device per diode | $I_{F(AV)}$ | | A |
| | | 20 | | |
| | | 10 | | |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 150 | | A |
| Voltage rate of change (rated V_F) | dV/dt | 10 000 | | V/ μ s |
| Operating junction and storage temperature range | T_J, T_{STG} | -65 to +150 | | °C |



| ELECTRICAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted) | | | | | |
|--|-----------------------|-------------------------|-------------------------------|-------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | VALUE | UNIT |
| Max. instantaneous forward voltage per diode | I _F = 10 A | T _C = 25 °C | V _F ⁽¹⁾ | 0.80 | V |
| | | T _C = 125 °C | | 0.65 | |
| | I _F = 20 A | | | 0.75 | |
| Max. 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 ≤ 40 ms

| THERMAL CHARACTERISTICS | | | |
|--------------------------------------|------------------|-----------------------|------|
| PARAMETER | SYMBOL | MBR2090CT, MBR20100CT | UNIT |
| Typical thermal resistance per diode | R _{θJA} | 60 | °C/W |
| | R _{θJC} | 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 °C unless otherwise noted)

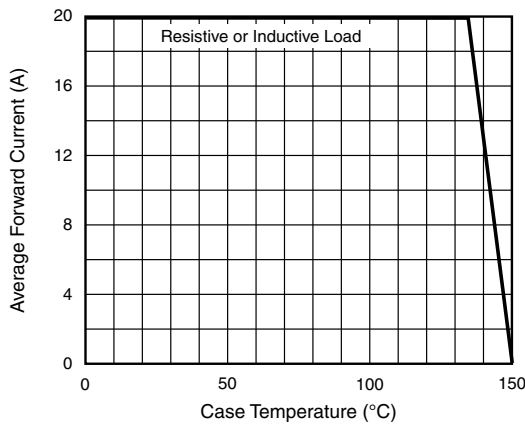


Fig. 1 - Forward Current Derating Curve

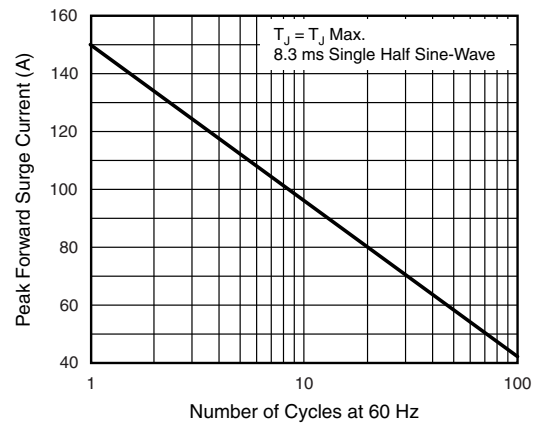


Fig. 2 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

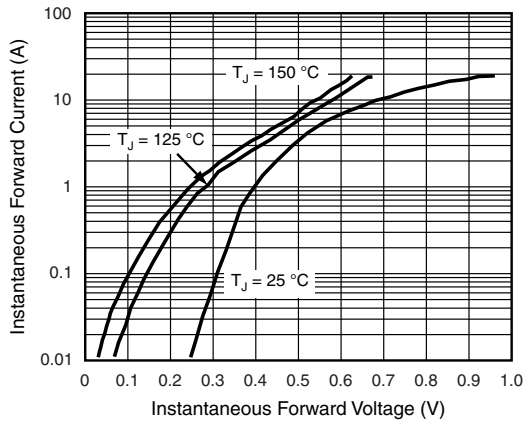


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

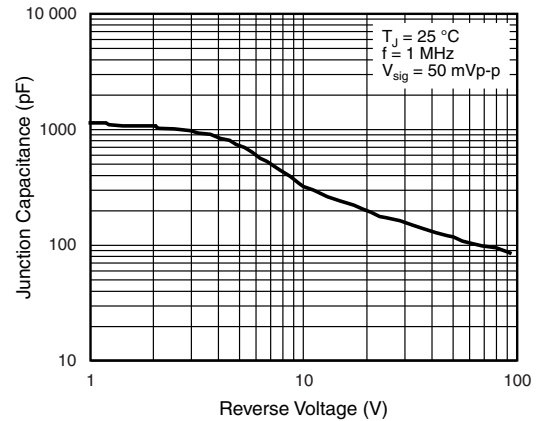


Fig. 5 - Typical Junction Capacitance Per Diode

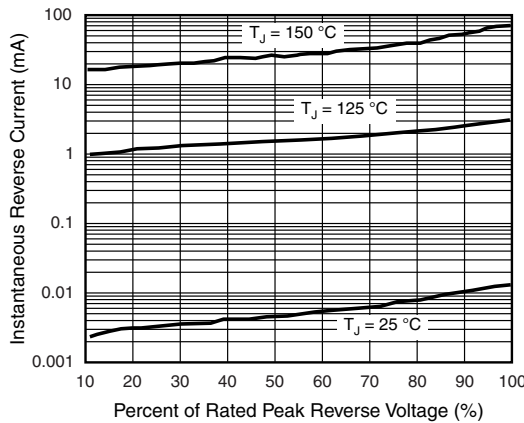


Fig. 4 - Typical Reverse Characteristics Per Diode

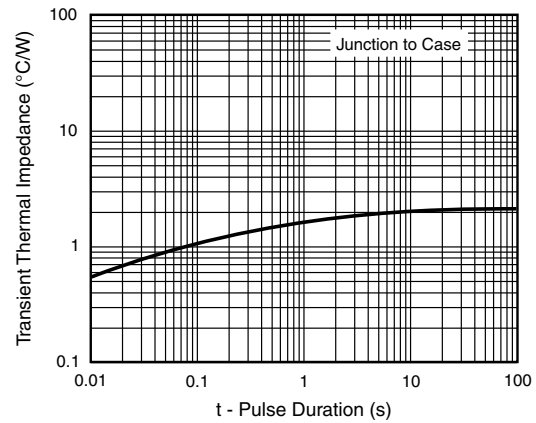
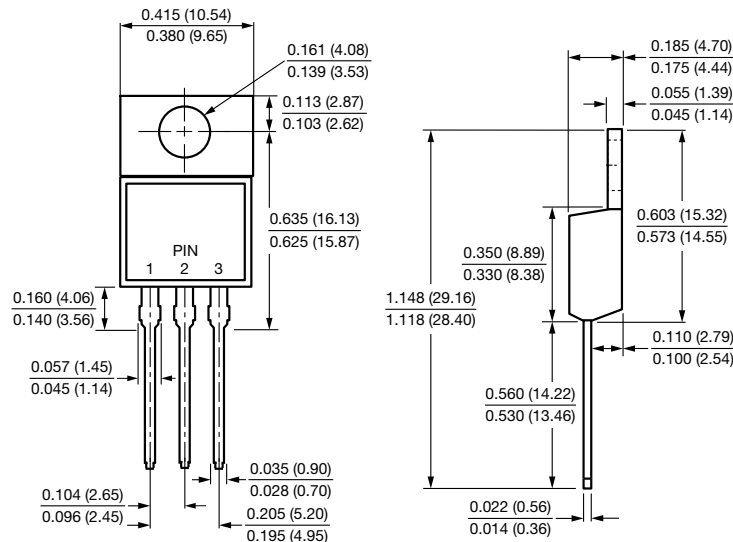


Fig. 6 - Typical Transient Thermal Impedance Per Diode

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AB





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