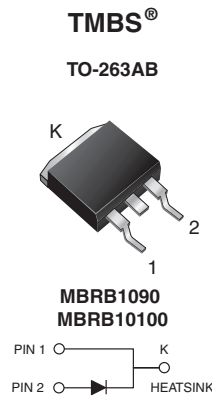


High-Voltage Trench MOS Barrier Schottky Rectifier



FEATURES

- Trench MOS Schottky technology
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- 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-263AB

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 | |
|-------------------------|-------------|
| Package | TO-263AB |
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 90 V, 100 V |
| I_{FSM} | 150 A |
| V_F | 0.65 V |
| T_J max. | 150 °C |
| Diode variation | Single die |

| MAXIMUM RATINGS ($T_A = 25$ °C unless otherwise noted) | | | | |
|--|----------------|---------------|-----------|------------|
| PARAMETER | SYMBOL | MBRB1090 | MBRB10100 | 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 | $I_{F(AV)}$ | 10 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I_{FSM} | 150 | | A |
| Voltage rate of change (rated V_R) | dV/dt | 10 000 | | V/ μ s |
| 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 | MAX. | UNIT |
| Maximum instantaneous forward voltage ⁽¹⁾ | $I_F = 10$ A | $T_C = 25$ °C | V_F | 0.80 | V |
| | $I_F = 10$ A | $T_C = 125$ °C | | 0.65 | |
| | $I_F = 20$ A | $T_C = 125$ °C | | 0.75 | |
| Maximum reverse current per at working peak reverse voltage ⁽²⁾ | | | I_R | 100 | μ A |
| | | | | $T_J = 125$ °C | 6.0 |

Notes

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

⁽²⁾ Pulse test: Pulse width \leq 40 ms



| THERMAL CHARACTERISTICS ($T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted) | | | |
|--|-----------------|------|--------------------|
| PARAMETER | SYMBOL | MBRB | UNIT |
| Typical thermal resistance | $R_{\theta JA}$ | 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-263AB | MBRB10100CT-M3/4W | 1.384 | 4W | 50/tube | Tube |
| TO-263AB | MBRB10100CT-M3/8W | 1.384 | 8W | 800/reel | Tape and reel |

RATINGS AND CHARACTERISTICS CURVES

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

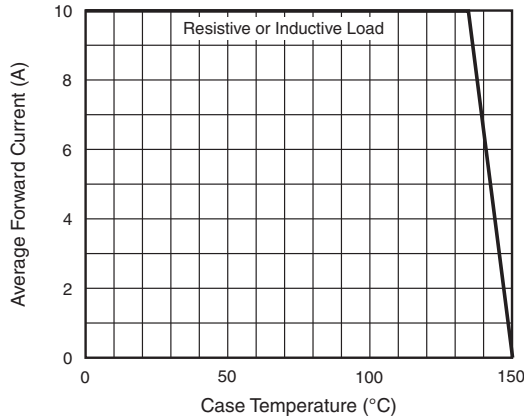


Fig. 1 - Forward Current Derating Curve

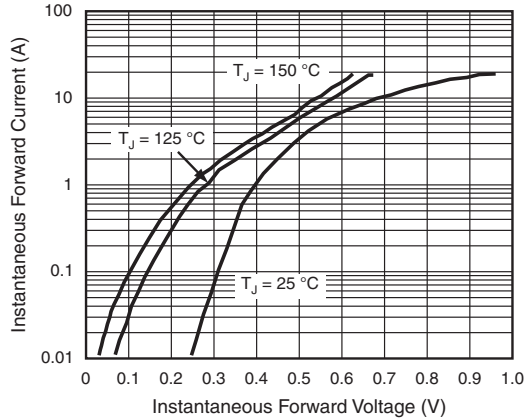


Fig. 3 - Typical Instantaneous Forward Characteristics

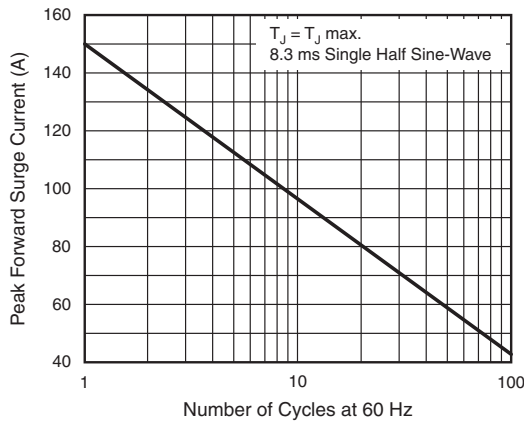


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

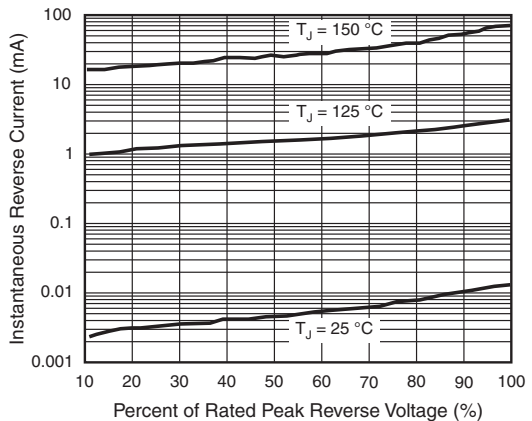


Fig. 4 - Typical Reverse Characteristics

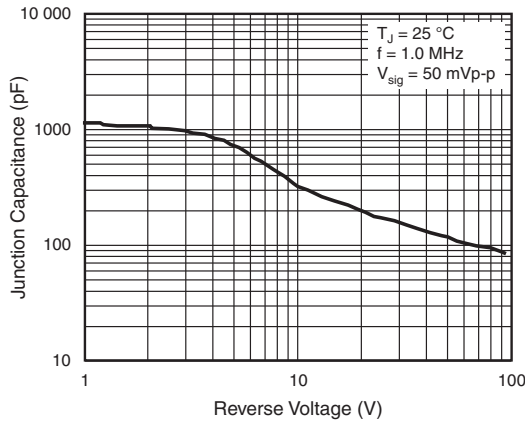


Fig. 5 - Typical Junction Capacitance

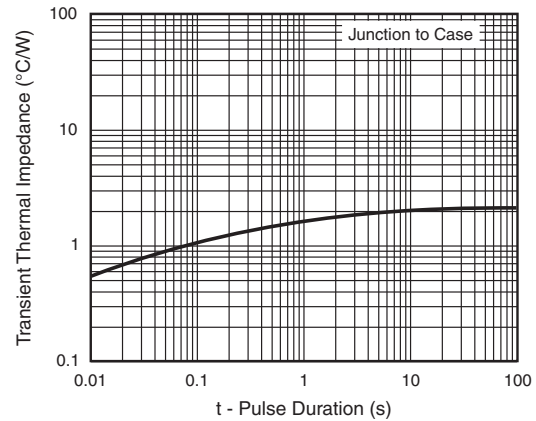
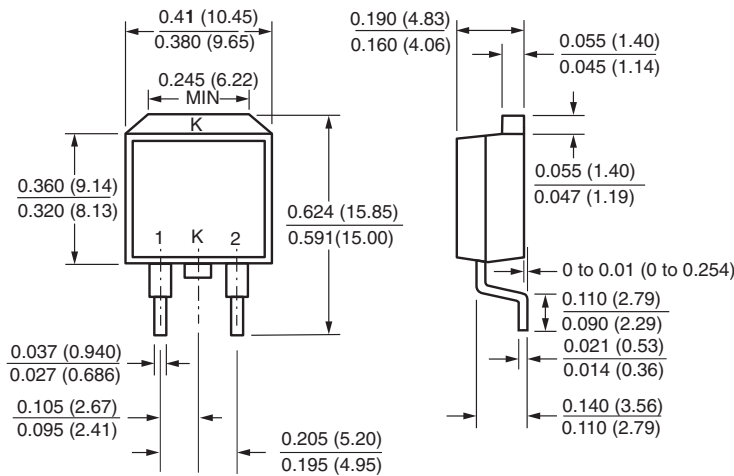


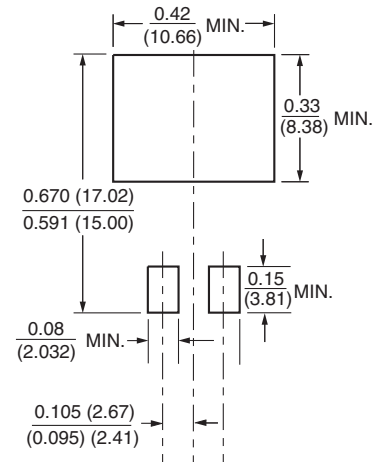
Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-263AB



Mounting Pad Layout





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