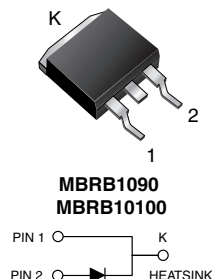


High-Voltage TMBS® (Trench MOS Barrier Schottky) Rectifier

D²PAK (TO-263AB)

MBRB1090
MBRB10100

PIN 1 K
PIN 2 HEATSINK

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
- 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

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: D²PAK (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

Polarity: As marked

M3 suffix meets JESD 201 class 1A whisker test

LINKS TO ADDITIONAL RESOURCES



3D Models

PRIMARY CHARACTERISTICS

| | |
|-----------------------|-------------------------------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 90 V, 100 V |
| I_{FSM} | 150 A |
| V_F | 0.65 V |
| T_J max. | 150 °C |
| Package | D ² PAK (TO-263AB) |
| Circuit configuration | Single |

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⁾ | T _J = 25 °C | | I _R | 100 | μA |
| | T _J = 125 °C | | | 6.0 | mA |

Notes

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

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



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

| PARAMETER | SYMBOL | MBRB | UNIT |
|----------------------------|-----------------|------|---------------------------|
| Typical thermal resistance | $R_{\theta JA}$ | 60 | $^\circ\text{C}/\text{W}$ |
| | $R_{\theta JC}$ | 2.0 | |

ORDERING INFORMATION (Example)

| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-------------------------------|-----------------|-----------------|--------------|---------------|---------------|
| D ² PAK (TO-263AB) | MBRB10100-M3/4W | 1.384 | 4W | 50/tube | Tube |
| D ² PAK (TO-263AB) | MBRB10100-M3/8W | 1.384 | 8W | 800/reel | Tape and reel |

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

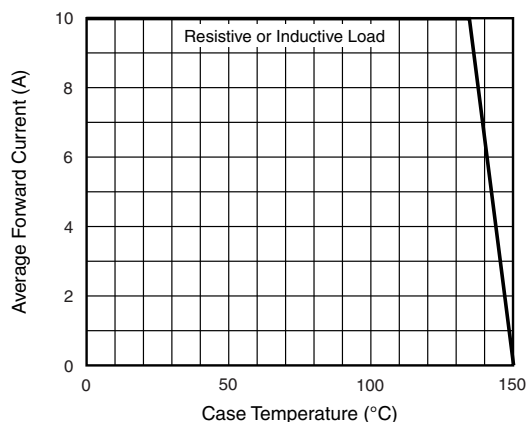


Fig. 1 - Forward Current Derating Curve

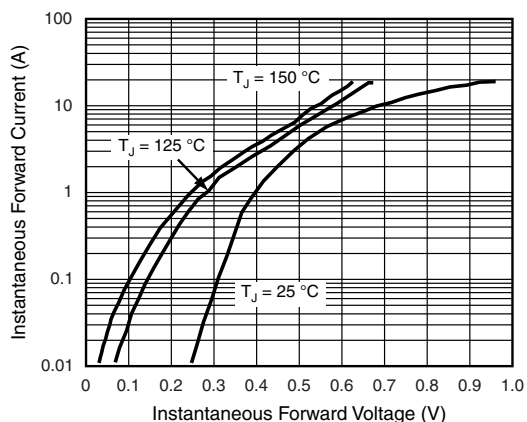


Fig. 3 - Typical Instantaneous Forward Characteristics

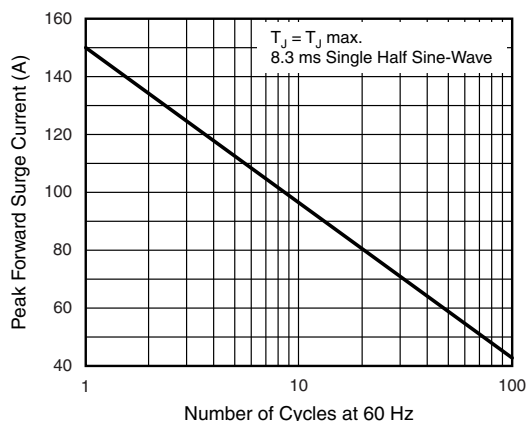


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

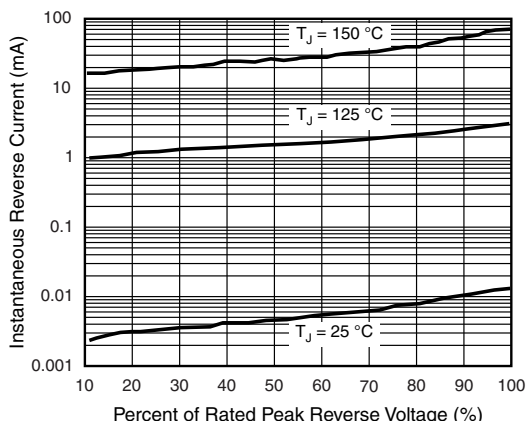


Fig. 4 - Typical Reverse Characteristics

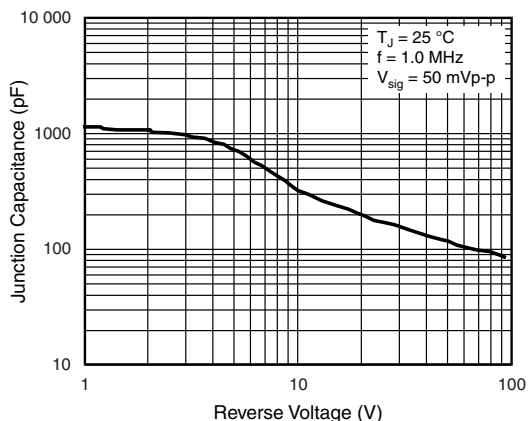


Fig. 5 - Typical Junction Capacitance

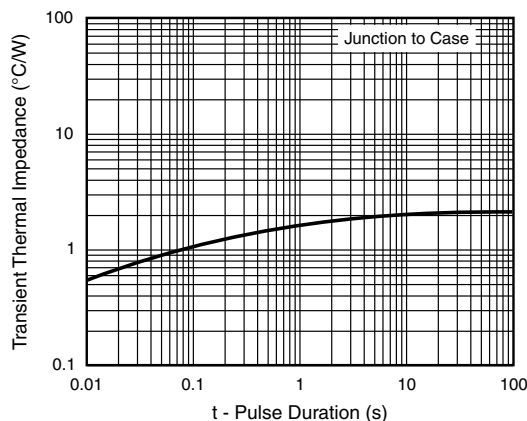
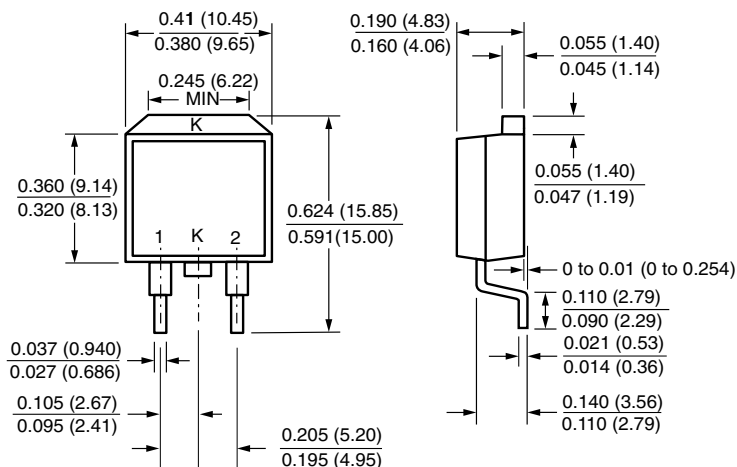
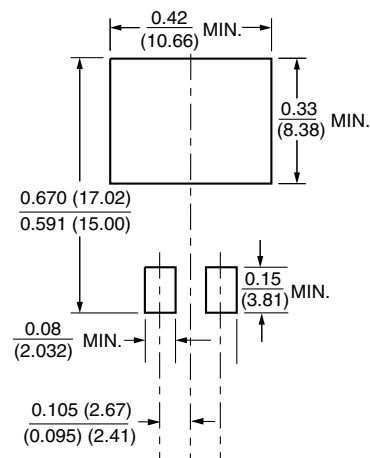


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D²PAK (TO-263AB)

Mounting Pad Layout




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