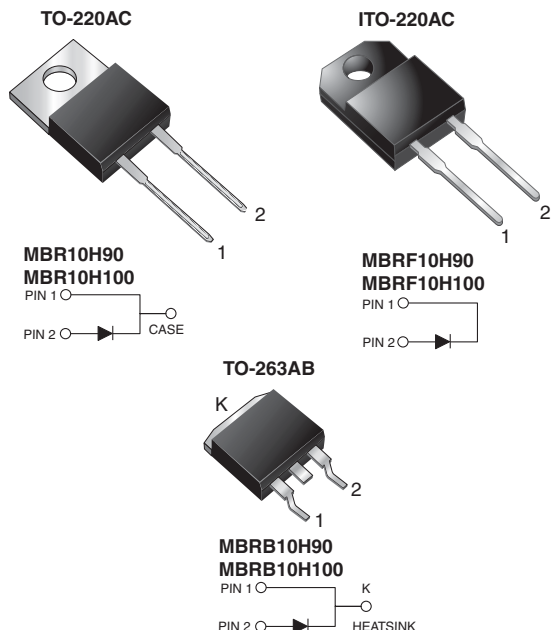


High Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- Low leakage current
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- AEC-Q101 qualified
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT

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-220AC, ITO-220AC, TO-263AB

Molding compound meets UL 94-V-0 flammability rating
Base P/N-E3 - RoHS-compliant, commercial grade
Base P/NHE3 - RoHS-compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102

E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

| PRIMARY CHARACTERISTICS | |
|-------------------------|-------------|
| $I_{F(AV)}$ | 10 A |
| V_{RRM} | 90 V, 100 V |
| I_{FSM} | 250 A |
| V_F | 0.64 V |
| I_R | 4.5 μ A |
| T_J max. | 175 °C |

| MAXIMUM RATINGS (T _C = 25 °C unless otherwise noted) | | | | |
|--|-----------------------------------|-------------|-----------|------|
| PARAMETER | SYMBOL | MBR10H90 | MBR10H100 | UNIT |
| Maximum repetitive peak reverse voltage | V _{RRM} | 90 | 100 | V |
| Working peak reverse voltage | V _{RWM} | 90 | 100 | |
| Maximum DC blocking voltage | V _{DC} | 90 | 100 | |
| Maximum average forward rectified current | I _{F(AV)} | 10 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I _{FSM} | 250 | | |
| Peak repetitive reverse current at t _p = 2.0 μs, 1 kHz | I _{RRM} | 0.5 | | |
| Voltage rate of change (rated V _R) | dV/dt | 10 000 | | V/μs |
| Operating junction and storage temperature range | T _J , T _{STG} | - 65 to 175 | | °C |
| Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min | V _{AC} | 1500 | | V |



| ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted) | | | | | |
|---|-------------|---------------------|-------------------------------------|-------|---------------|
| PARAMETER | SYMBOL | TEST CONDITIONS | | VALUE | UNIT |
| Maximum instantaneous forward voltage | $V_F^{(1)}$ | $I_F = 10\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$ | 0.77 | V |
| | | $I_F = 10\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.64 | |
| | | $I_F = 20\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$ | 0.88 | |
| | | $I_F = 20\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.73 | |
| Maximum reverse current | $I_R^{(2)}$ | Rated V_R | $T_J = 25\text{ }^{\circ}\text{C}$ | 4.5 | μA |
| | | | $T_J = 125\text{ }^{\circ}\text{C}$ | 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 | MBR | MBRF | MBRB | UNIT |
| Typical thermal resistance | $R_{\theta JC}$ | 2.7 | 5.8 | 2.7 | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|---------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC | MBR10H100-E3/45 | 1.80 | 45 | 50/tube | Tube |
| ITO-220AC | MBRF10H100-E3/45 | 1.94 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100-E3/45 | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100-E3/81 | 1.33 | 81 | 800/reel | Tape and reel |
| TO-220AC | MBR10H100HE3/45 ⁽¹⁾ | 1.80 | 45 | 50/tube | Tube |
| ITO-220AC | MBRF10H100HE3/45 ⁽¹⁾ | 1.94 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100HE3/45 ⁽¹⁾ | 1.33 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100HE3/81 ⁽¹⁾ | 1.33 | 81 | 800/reel | Tape and reel |

Note

(1) AEC-Q101 qualified



RATINGS AND CHARACTERISTICS CURVES

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

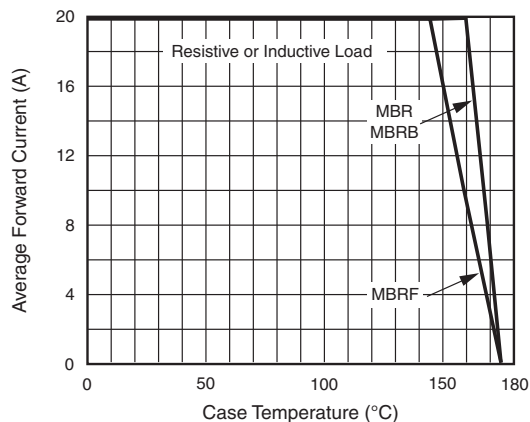


Fig. 1 - Forward Current Derating Curve

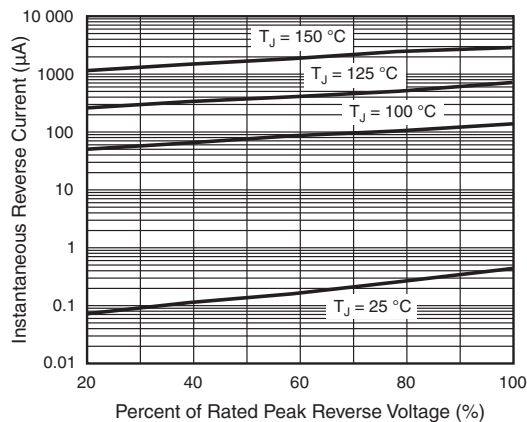


Fig. 4 - Typical Reverse Characteristics

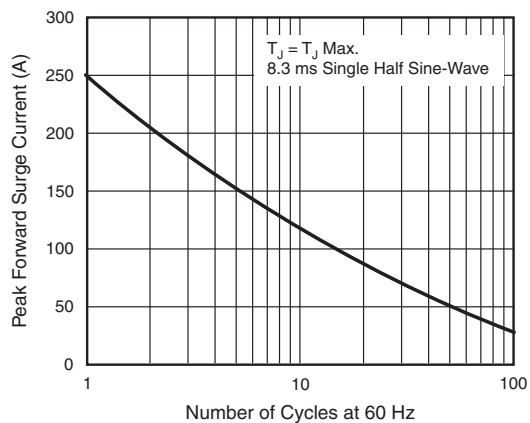


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

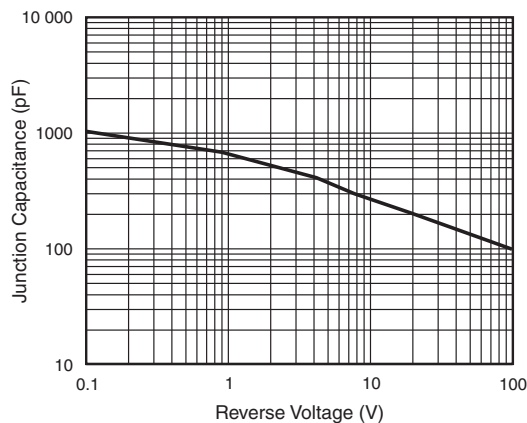


Fig. 5 - Typical Junction Capacitance

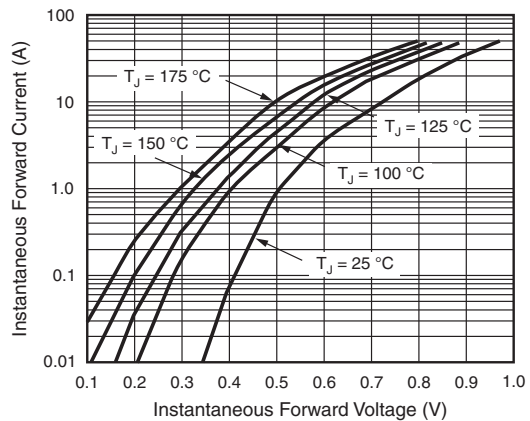


Fig. 3 - Typical Instantaneous Forward Characteristics

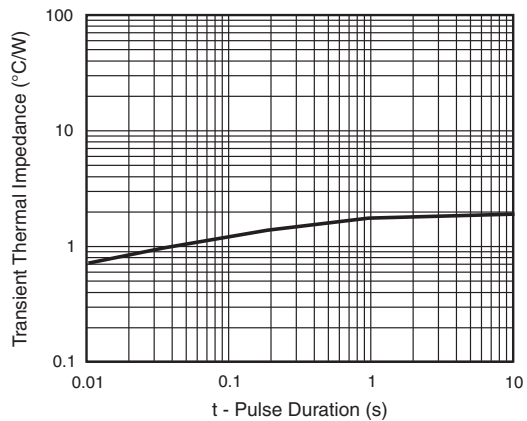
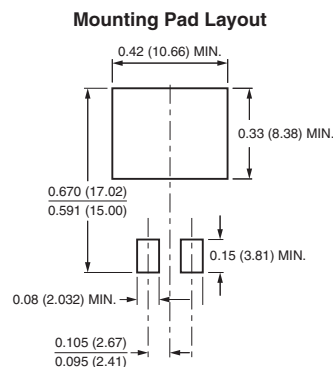
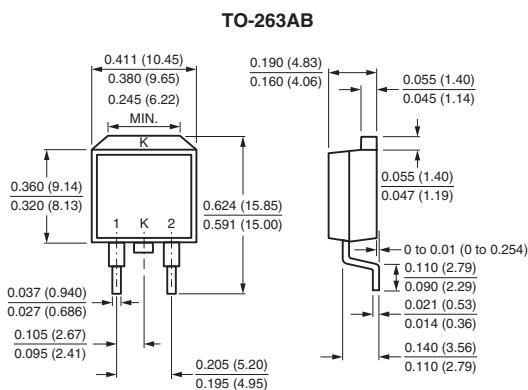
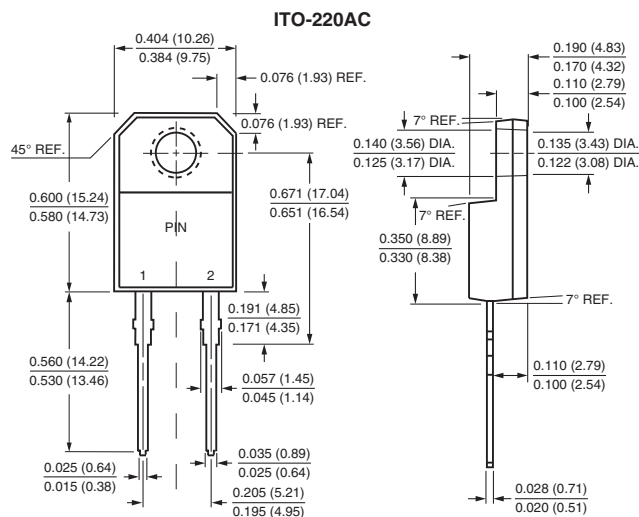
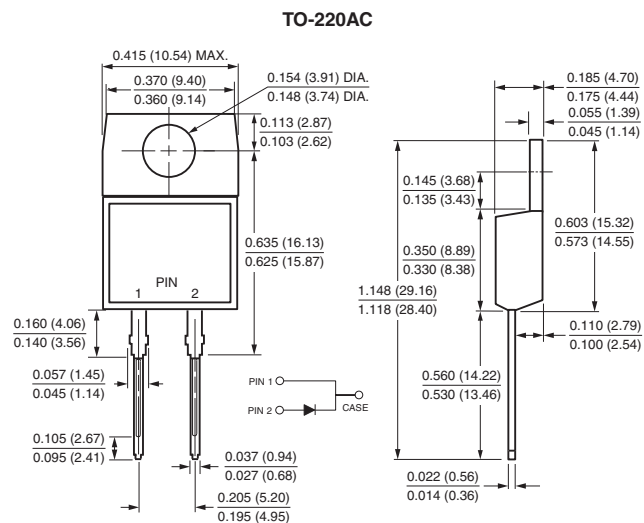


Fig. 6 - Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



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