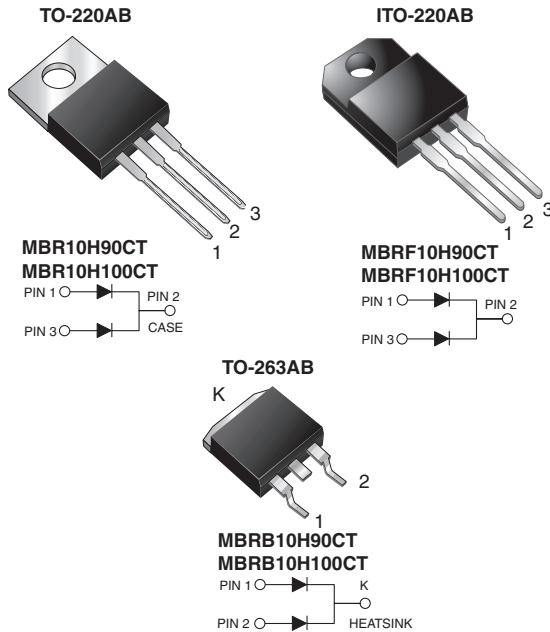


Dual Common-Cathode High-Voltage Schottky Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Guardring for overvoltage protection
- Lower power losses, 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 Dip 260 °C, 40 s (for TO-220AB and ITO-220AB package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



RoHS
COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or polarity protection application.

MECHANICAL DATA

Case: TO-220AB, ITO-220AB, TO-263AB

Epoxy meets UL 94V-0 flammability rating

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix for consumer grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

PRIMARY CHARACTERISTICS

| | |
|-------------|-------------|
| $I_{F(AV)}$ | 5 A x 2 |
| V_{RRM} | 90 V, 100 V |
| I_{FSM} | 150 A |
| V_F | 0.61 V |
| I_R | 3.5 μ A |
| T_J max. | 175 °C |

MAXIMUM RATINGS ($T_C = 25$ °C unless otherwise noted)

| PARAMETER | SYMBOL | MBR10H90CT | MBR10H100CT | 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 $T_C = 105$ °C total device per diode | $I_{F(AV)}$ | 10 5.0 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 150 | | A |
| Peak repetitive reverse current per diode at $t_p = 2$ μ s, 1 kHz | I_{RRM} | 0.5 | | 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 + 175 | | °C |
| Isolation voltage (ITO-220AB only) from terminals to heatsink $t = 1$ min | V_{AC} | 1500 | | V |

MBR(F,B)10H90CT & MBR(F,B)10H100CT

Vishay General Semiconductor



| ELECTRICAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted) | | | | | |
|----------------------------------------------------------------------------------|------------------------|-------------------------|----------------|-------|------|
| PARAMETER | TEST CONDITIONS | | SYMBOL | VALUE | UNIT |
| Maximum instantaneous forward voltage per diode ⁽¹⁾ | I _F = 5.0 A | T _J = 25 °C | V _F | 0.76 | V |
| | I _F = 5.0 A | T _J = 125 °C | | 0.61 | |
| | I _F = 10 A | T _J = 25 °C | | 0.85 | |
| | I _F = 10 A | T _J = 125 °C | | 0.71 | |
| Maximum reverse current per diode at working peak reverse voltage ⁽¹⁾ | | | I _R | 3.5 | μA |
| | | | | 4.5 | |

Note:

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

| THERMAL CHARACTERISTICS (T _C = 25 °C unless otherwise noted) | | | | | |
|-------------------------------------------------------------------------|------------------|-----|------|------|------|
| PARAMETER | SYMBOL | MBR | MBRF | MBRB | UNIT |
| Typical thermal resistance per diode | R _{θJC} | 2.2 | 5.2 | 2.2 | °C/W |

| ORDERING INFORMATION (Example) | | | | | |
|--------------------------------|-----------------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE | PREFERRED P/N | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AB | MBR10H100CT-E3/45 | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF10H100CT-E3/45 | 1.79 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100CT-E3/45 | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100CT-E3/81 | 1.35 | 81 | 800/reel | Tape reel |
| TO-220AB | MBR10H100CTHE3/45 ⁽¹⁾ | 1.85 | 45 | 50/tube | Tube |
| ITO-220AB | MBRF10H100CTHE3/45 ⁽¹⁾ | 1.79 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100CTHE3/45 ⁽¹⁾ | 1.35 | 45 | 50/tube | Tube |
| TO-263AB | MBRB10H100CTHE3/81 ⁽¹⁾ | 1.35 | 81 | 800/reel | Tape reel |

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

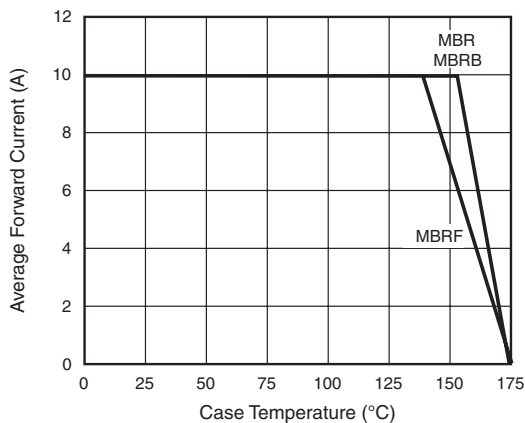


Figure 1. Forward Derating Curve Per Diode

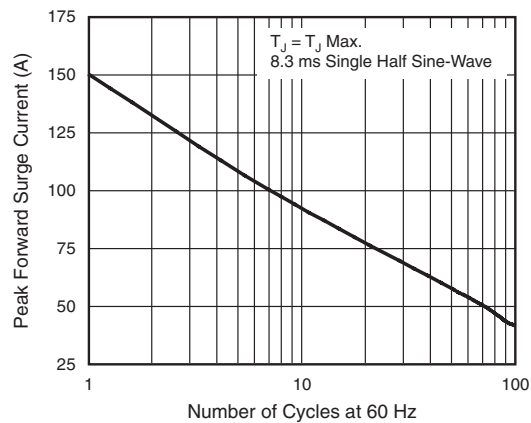


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

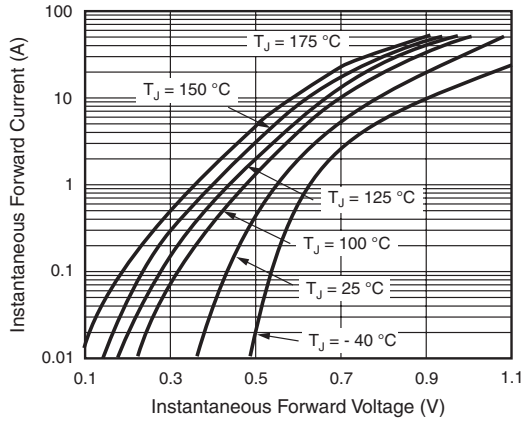


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

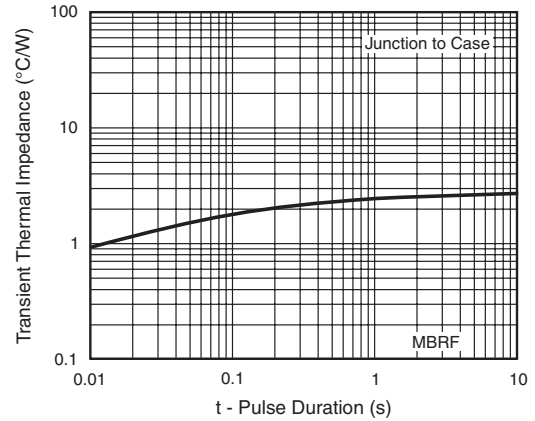


Figure 6. Typical Transient Thermal Impedance Per Diode

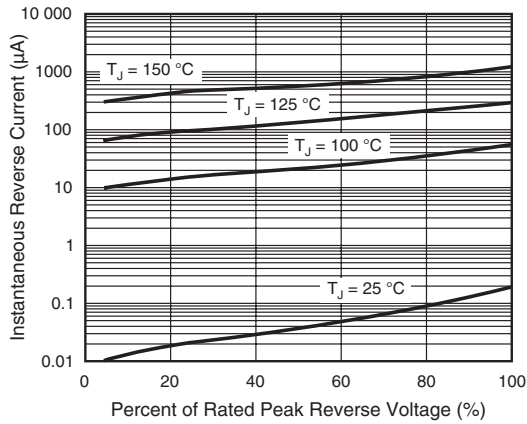


Figure 4. Typical Reverse Characteristics Per Diode

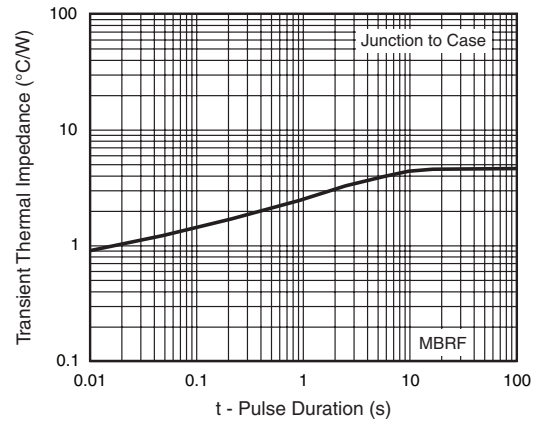


Figure 7. Typical Transient Thermal Impedance Per Diode

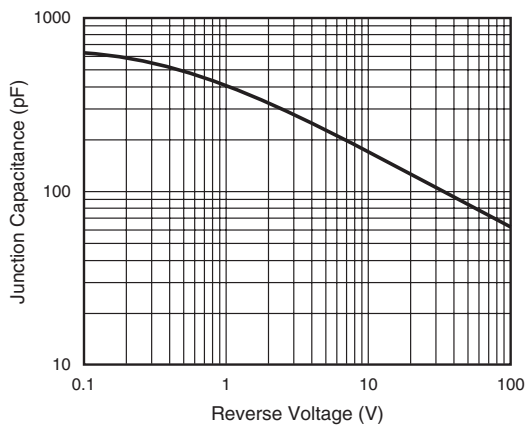


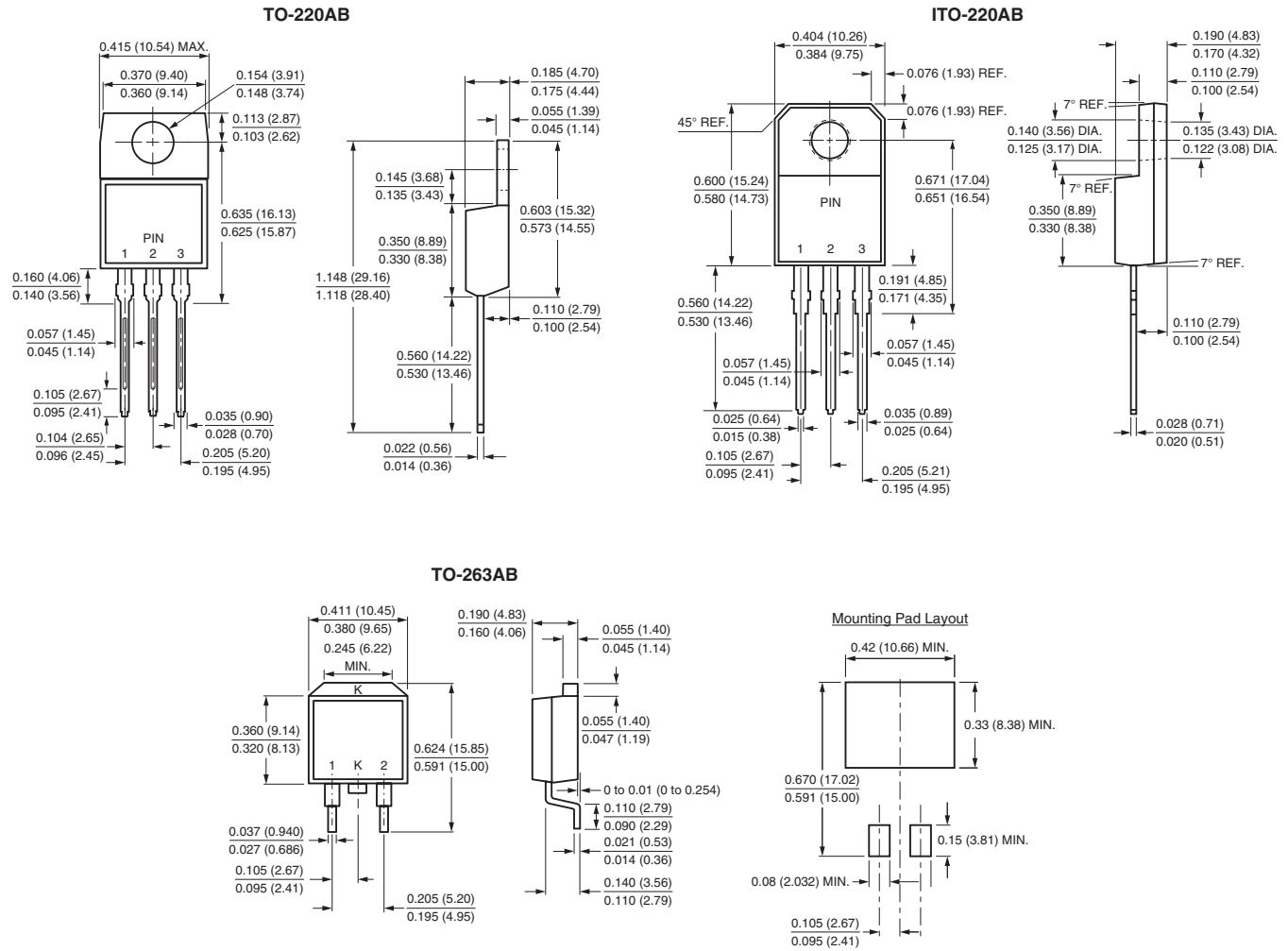
Figure 5. Typical Junction Capacitance Per Diode

MBR(F,B)10H90CT & MBR(F,B)10H100CT

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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