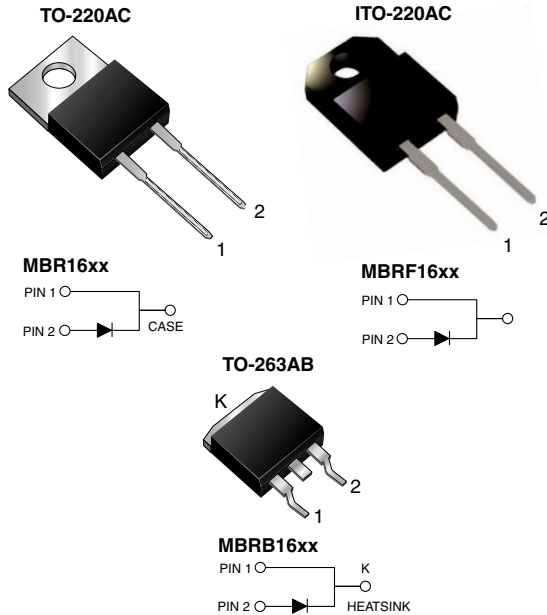


## Schottky Barrier Rectifier



### FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds (for TO-220AC & ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, free-wheeling diodes, dc-to-dc converters and polarity protection application.

### MECHANICAL DATA

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

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** As marked

**Mounting Torque:** 10 in-lbs maximum

| MAJOR RATINGS AND CHARACTERISTICS |                |
|-----------------------------------|----------------|
| $I_{F(AV)}$                       | 16 A           |
| $V_{RRM}$                         | 35 V to 60 V   |
| $I_{FSM}$                         | 150 A          |
| $V_F$                             | 0.57 V, 0.65 V |
| $T_J \text{ max}$                 | 150 °C         |

| MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)                     |             |               |         |         |         |                  |
|--|-------------|---------------|---------|---------|---------|------------------|
| PARAMETER  | SYMBOL      | MBR1635       | MBR1645 | MBR1650 | MBR1660 | UNIT             |
| Maximum repetitive peak reverse voltage  | $V_{RRM}$   | 35            | 45      | 50      | 60      | V                |
| Working peak reverse voltage   | $V_{RWM}$   | 35            | 45      | 50      | 60      | V                |
| Maximum DC blocking voltage  | $V_{DC}$    | 35            | 45      | 50      | 60      | V                |
| Maximum average forward rectified current at $T_C = 125\text{ °C}$                 | $I_{F(AV)}$ | 16            |         |         |         | A                |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$   | 150           |         |         |         | A                |
| Peak repetitive reverse current at $t_p = 2.0\ \mu\text{s}$ , 1 kHz                | $I_{RRM}$   | 1.0           |         | 0.5     |         | A                |
| Voltage rate of change (rated $V_R$ )  | $dv/dt$     | 10000         |         |         |         | V/ $\mu\text{s}$ |
| Operating junction temperature range   | $T_J$       | - 65 to + 150 |         |         |         | °C               |
| Storage temperature range  | $T_{STG}$   | - 65 to + 175 |         |         |         | °C               |
| Isolation voltage (ITO-220AC only)<br>From terminal to heatsink $t = 1$ minute     | $V_{AC}$    | 1500          |         |         |         | V                |

| ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |   |        |              |         |              |         |      |
|---|---|--------|--------------|---------|--------------|---------|------|
| PARAMETER   | TEST CONDITIONS   | SYMBOL | MBR1635      | MBR1645 | MBR1650      | MBR1660 | UNIT |
| Maximum instantaneous forward voltage <sup>(1)</sup>                                  | at $I_F = 16\text{ A}$ , $T_C = 25\text{ }^\circ\text{C}$<br>at $I_F = 16\text{ A}$ , $T_C = 125\text{ }^\circ\text{C}$ | $V_F$  | 0.63<br>0.57 |         | 0.75<br>0.65 |         | V    |
| Maximum instantaneous reverse current at rated DC blocking voltage <sup>(1)</sup>     | $T_C = 25\text{ }^\circ\text{C}$<br>$T_C = 125\text{ }^\circ\text{C}$   | $I_R$  | 0.2<br>40    |         | 1.0<br>50    |         | mA   |

**Note:**

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

| THERMAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted) |                 |     |      |      |                    |
|--|-----------------|-----|------|------|--------------------|
| PARAMETER  | SYMBOL          | MBR | MBRF | MBRB | UNIT               |
| Typical thermal resistance from junction to case                                   | $R_{\theta JC}$ | 1.5 | 3.0  | 1.5  | $^\circ\text{C/W}$ |

| ORDERING INFORMATION |                |                 |              |               |               |
|----------------------|----------------|-----------------|--------------|---------------|---------------|
| PACKAGE              | PREFERRED P/N  | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC             | MBR1645-E3/45  | 1.80            | 45           | 50/Tube       | Tube          |
| ITO-220AC            | MBRF1645-E3/45 | 1.94            | 45           | 50/Tube       | Tube          |
| TO-263AB             | MBRB1645-E3/45 | 1.33            | 45           | 50/Tube       | Tube          |
| TO-263AB             | MBRB1645-E3/81 | 1.33            | 81           | 800/Reel      | Tape Reel     |

## RATINGS AND CHARACTERISTICS CURVES

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

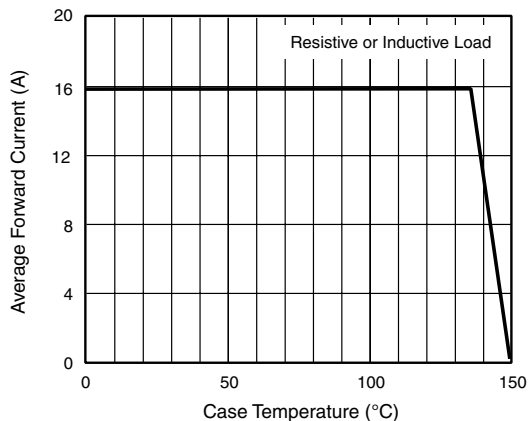


Figure 1. Forward Current Derating Curve

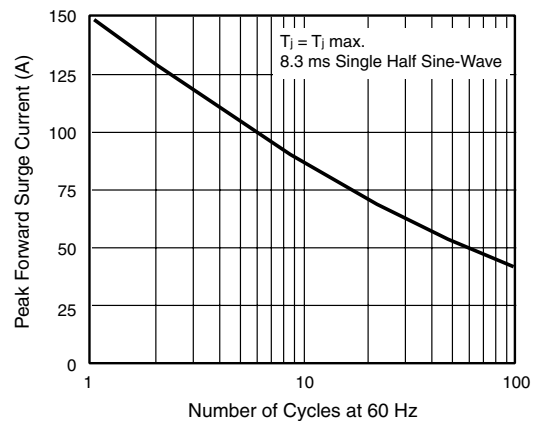


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

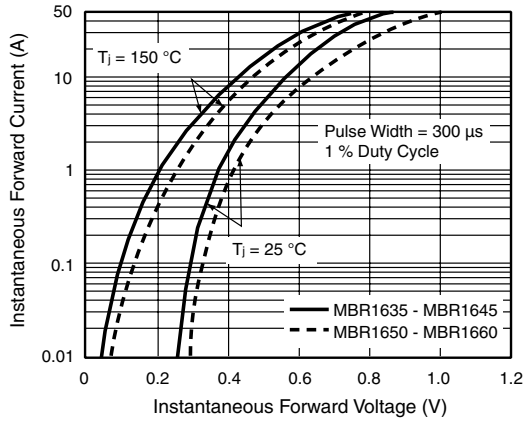


Figure 3. Typical Instantaneous Forward Characteristics

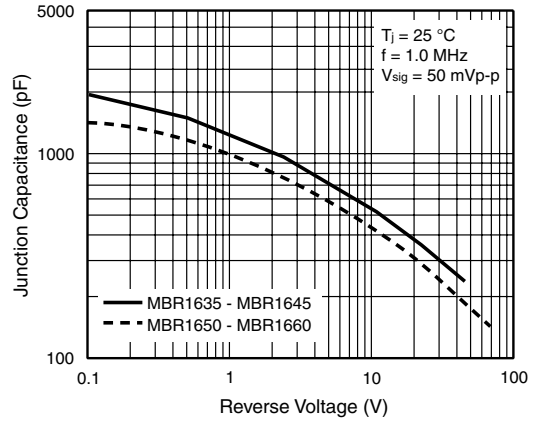


Figure 5. Typical Junction Capacitance

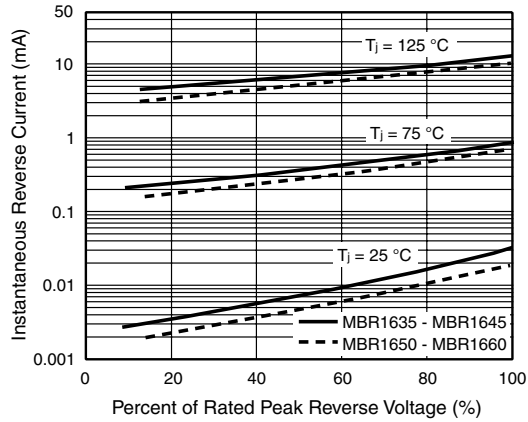


Figure 4. Typical Reverse Characteristics

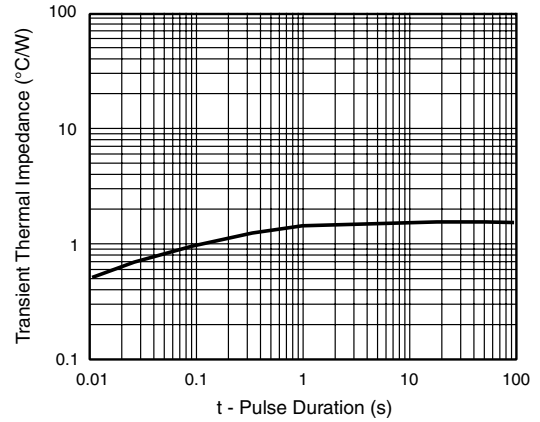


Figure 6. Typical Transient Thermal Impedance

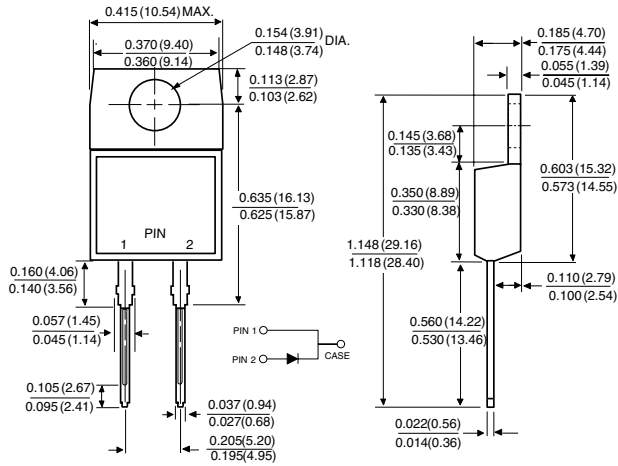
# MBR(F,B)1635 thru MBR(F,B)1660

Vishay General Semiconductor

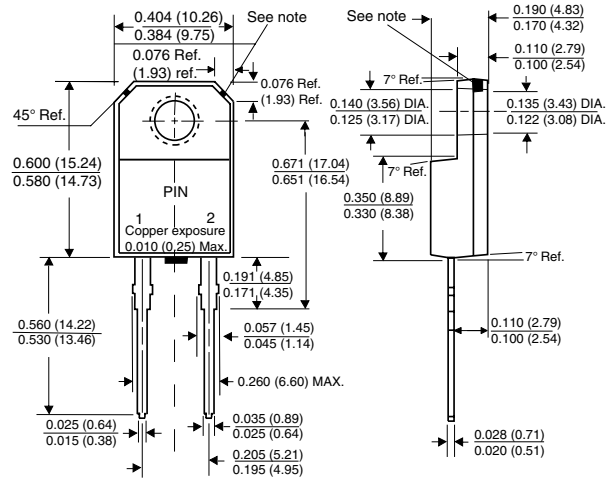


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

**TO-220AC**

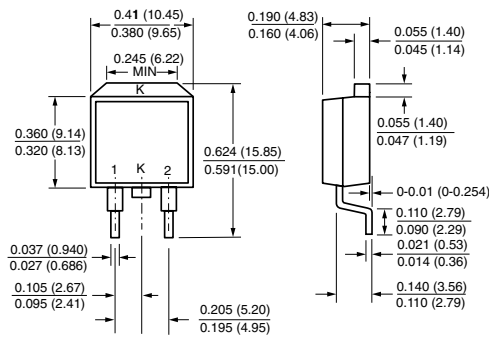


**ITO-220AC**

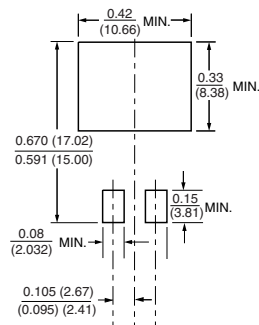


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

**TO-263AB**



**Mounting Pad Layout**





## Notice

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