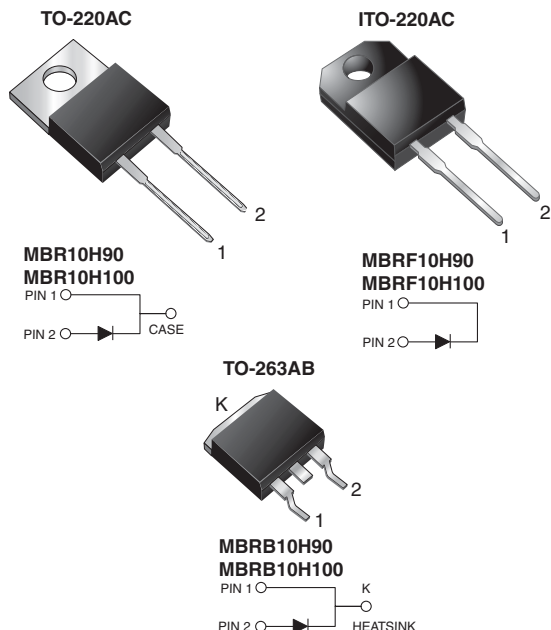


## High Voltage Schottky Rectifier

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](http://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 $\mu$ A |
| $T_J$ max.              | 175 °C      |

| MAXIMUM RATINGS (T <sub>C</sub> = 25 °C unless otherwise noted)                    |                                   |             |           |      |
|------------------------------------------------------------------------------------|-----------------------------------|-------------|-----------|------|
| PARAMETER                                                                          | SYMBOL                            | MBR10H90    | MBR10H100 | UNIT |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>                  | 90          | 100       | V    |
| Working peak reverse voltage                                                       | V <sub>RWM</sub>                  | 90          | 100       |      |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>                   | 90          | 100       |      |
| Maximum average forward rectified current                                          | I <sub>F(AV)</sub>                | 10          |           | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>                  | 250         |           |      |
| Peak repetitive reverse current at t <sub>p</sub> = 2.0 μs, 1 kHz                  | I <sub>RRM</sub>                  | 0.5         |           |      |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt                             | 10 000      |           | V/μs |
| Operating junction and storage temperature range                                   | T <sub>J</sub> , T <sub>STG</sub> | - 65 to 175 |           | °C   |
| Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min             | V <sub>AC</sub>                   | 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   | $\mu\text{A}$ |
|                                                                                         |             |                     | $T_J = 125\text{ }^{\circ}\text{C}$ | 6.0   | mA            |

**Notes**(1) Pulse test: 300  $\mu\text{s}$  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 <sup>(1)</sup>  | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                      | MBRF10H100HE3/45 <sup>(1)</sup> | 1.94            | 45           | 50/tube       | Tube          |
| TO-263AB                       | MBRB10H100HE3/45 <sup>(1)</sup> | 1.33            | 45           | 50/tube       | Tube          |
| TO-263AB                       | MBRB10H100HE3/81 <sup>(1)</sup> | 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)

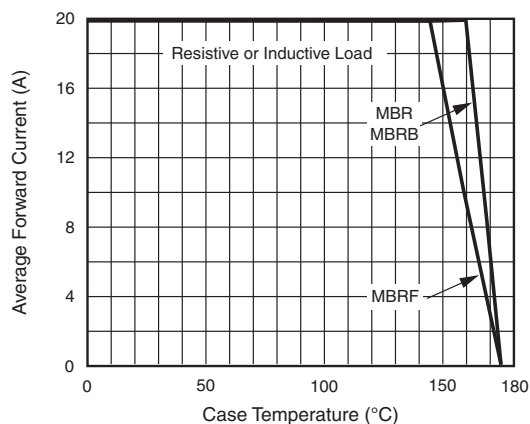


Fig. 1 - Forward Current Derating Curve

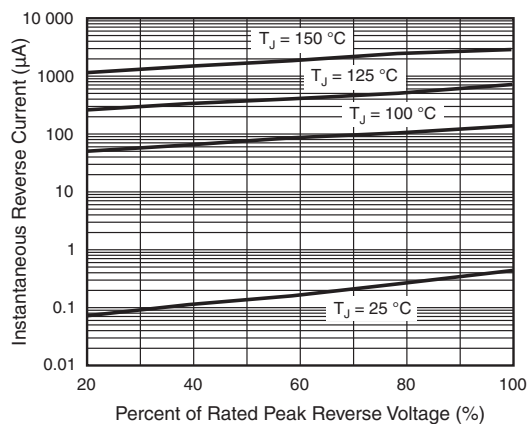


Fig. 4 - Typical Reverse Characteristics

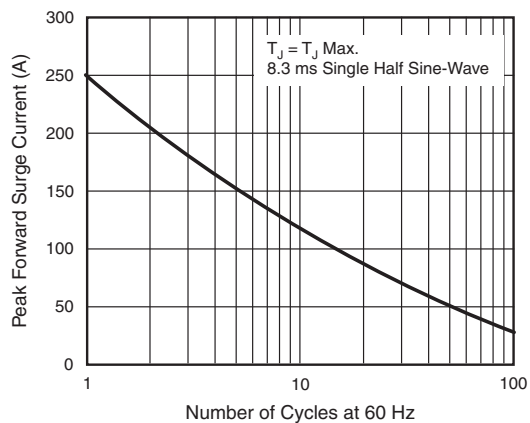


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

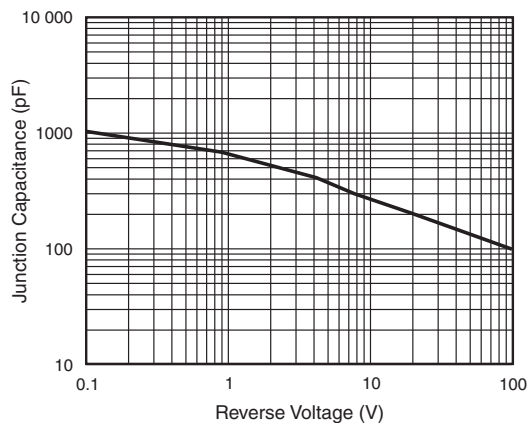


Fig. 5 - Typical Junction Capacitance

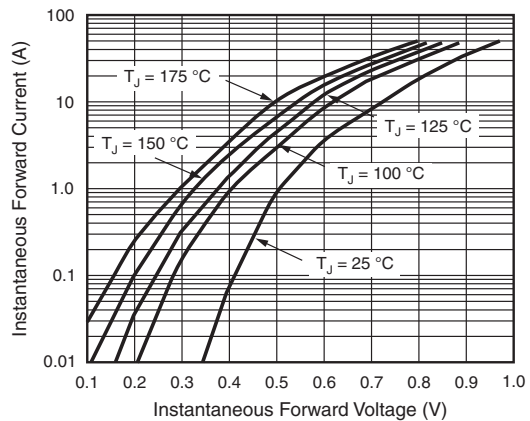


Fig. 3 - Typical Instantaneous Forward Characteristics

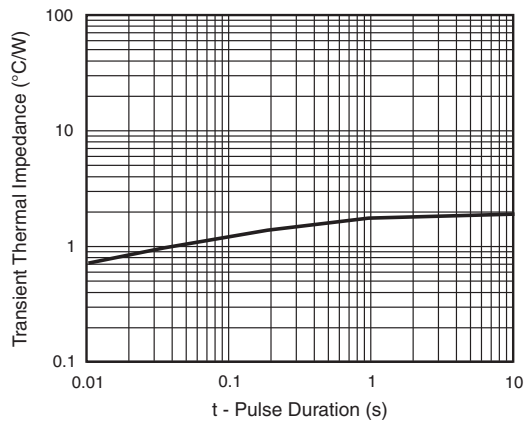
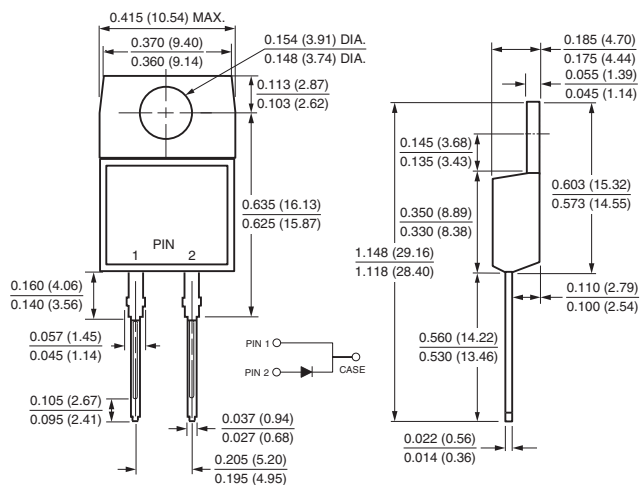


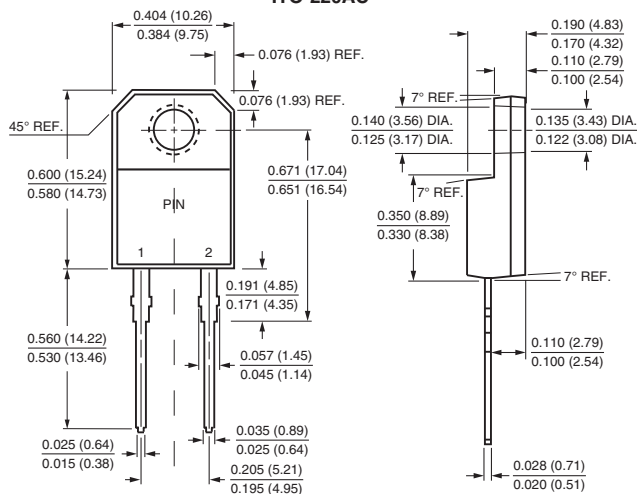
Fig. 6 - Typical Transient Thermal Impedance

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

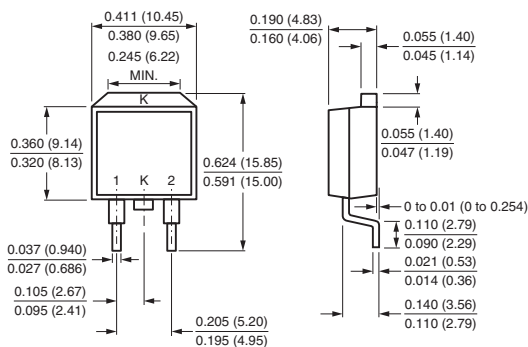
## TO-220AC



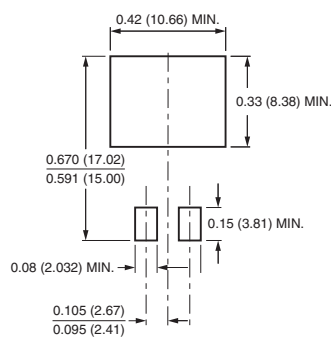
ITO-220AC



TO-263AB



### Mounting Pad Layout





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