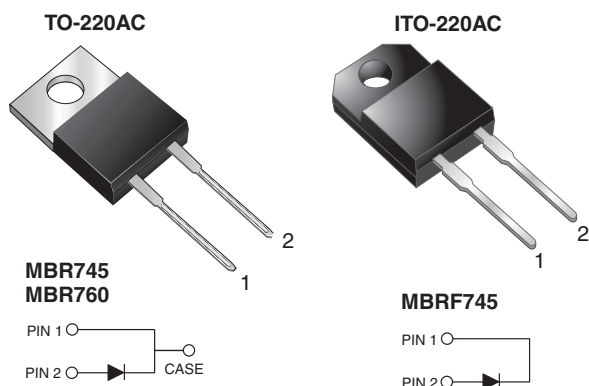


## Schottky Barrier Rectifier



### FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters, and polarity protection application.

### MECHANICAL DATA

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

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

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

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** as marked

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

| PRIMARY CHARACTERISTICS |                     |
|-------------------------|---------------------|
| $I_{F(AV)}$             | 7.5 A               |
| $V_{RRM}$               | 45 V, 60 V          |
| $I_{FSM}$               | 150 A               |
| $V_F$                   | 0.57 V, 0.65 V      |
| $T_J \text{ max.}$      | 150 °C              |
| Package                 | TO-220AC, ITO-220AC |
| Diode variations        | Single              |

| MAXIMUM RATINGS (T <sub>C</sub> = 25 °C unless otherwise noted)                    |                    |             |        |      |
|------------------------------------------------------------------------------------|--------------------|-------------|--------|------|
| PARAMETER                                                                          | SYMBOL             | MBR745      | MBR760 | UNIT |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>   | 45          | 60     | V    |
| Working peak reverse voltage                                                       | V <sub>RWM</sub>   | 45          | 60     |      |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>    | 45          | 60     |      |
| Maximum average forward rectified current (fig. 1)                                 | I <sub>F(AV)</sub> | 7.5         |        | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>   | 150         |        |      |
| Peak repetitive reverse surge current at t <sub>p</sub> = 2.0 μs, 1 kHz            | I <sub>RRM</sub>   | 1.0         | 0.5    |      |
| Voltage rate of change (rated V <sub>R</sub> )                                     | dV/dt              | 10 000      |        |      |
| Operating junction temperature range                                               | T <sub>J</sub>     | -65 to +150 |        | °C   |
| Operating storage temperature range                                                | T <sub>STG</sub>   | -65 to +175 |        |      |
| Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min             | V <sub>AC</sub>    | 1500        |        | V    |



| ELECTRICAL CHARACTERISTICS (T <sub>C</sub> = 25 °C unless otherwise noted) |                               |                        |                         |        |        |      |
|----------------------------------------------------------------------------|-------------------------------|------------------------|-------------------------|--------|--------|------|
| PARAMETER                                                                  | SYMBOL                        | TEST CONDITIONS        |                         | MBR745 | MBR760 | UNIT |
| Maximum instantaneous forward voltage                                      | V <sub>F</sub> <sup>(1)</sup> | I <sub>F</sub> = 7.5 A | T <sub>C</sub> = 25 °C  | -      | 0.75   | V    |
|                                                                            |                               | I <sub>F</sub> = 7.5 A | T <sub>C</sub> = 125 °C | 0.57   | 0.65   |      |
|                                                                            |                               | I <sub>F</sub> = 15 A  | T <sub>C</sub> = 25 °C  | 0.84   | -      |      |
|                                                                            |                               | I <sub>F</sub> = 15 A  | T <sub>C</sub> = 125 °C | 0.72   | -      |      |
| Maximum reverse current at DC blocking voltage                             | I <sub>R</sub> <sup>(2)</sup> | Rated V <sub>R</sub>   | T <sub>C</sub> = 25 °C  | 0.1    | 0.5    | mA   |
|                                                                            |                               |                        | T <sub>C</sub> = 125 °C | 15     | 50     |      |

**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 | UNIT                 |
| Typical thermal resistance from junction to case                                     | $R_{\theta JC}$ | 3.0 | 5.0  | $^{\circ}\text{C/W}$ |

| ORDERING INFORMATION (Example) |                             |                 |              |               |               |
|--------------------------------|-----------------------------|-----------------|--------------|---------------|---------------|
| PACKAGE                        | PREFERRED P/N               | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
| TO-220AC                       | MBR745-E3/45 <sup>(1)</sup> | 1.80            | 45           | 50/tube       | Tube          |
| ITO-220AC                      | MBRF745-E3/45               | 1.94            | 45           | 50/tube       | Tube          |

**Note**

(1) 60 V device available in TO-220AC package only



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

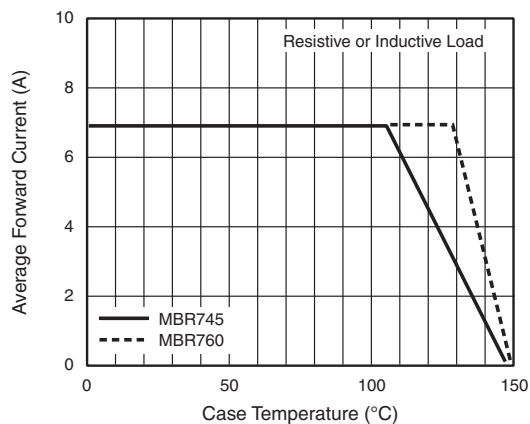


Fig. 1 - Forward Current Derating Curve

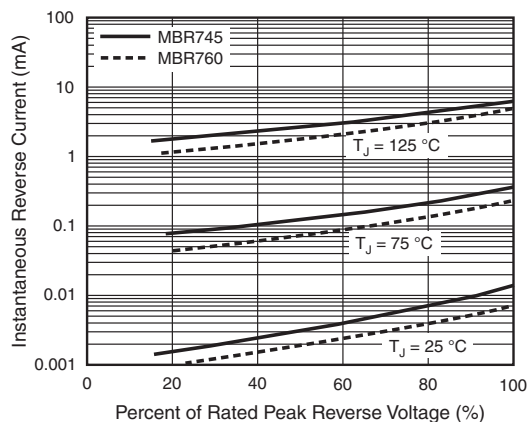


Fig. 4 - Typical Reverse Characteristics

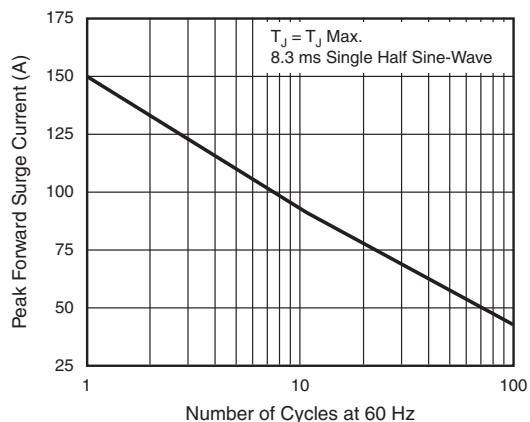


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

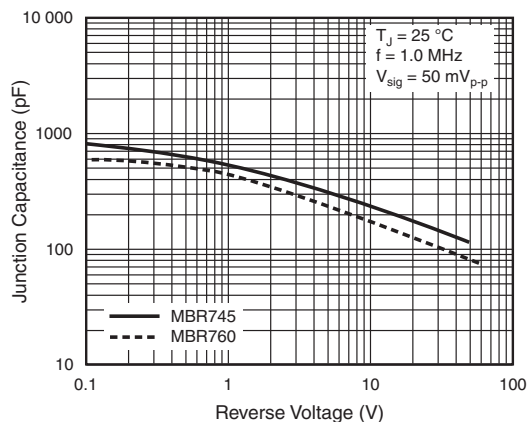


Fig. 5 - Typical Junction Capacitance

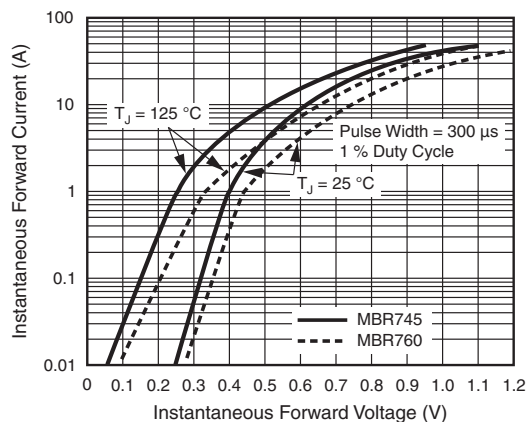


Fig. 3 - Typical Instantaneous Forward Characteristics

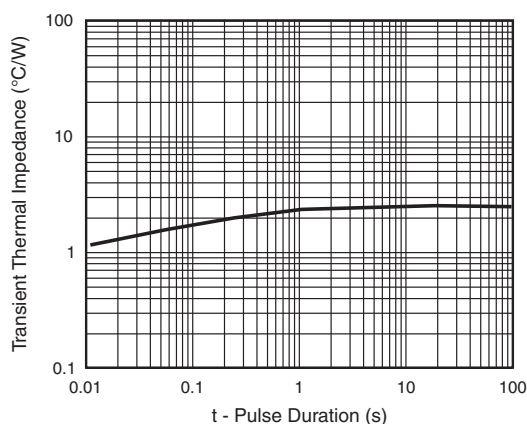
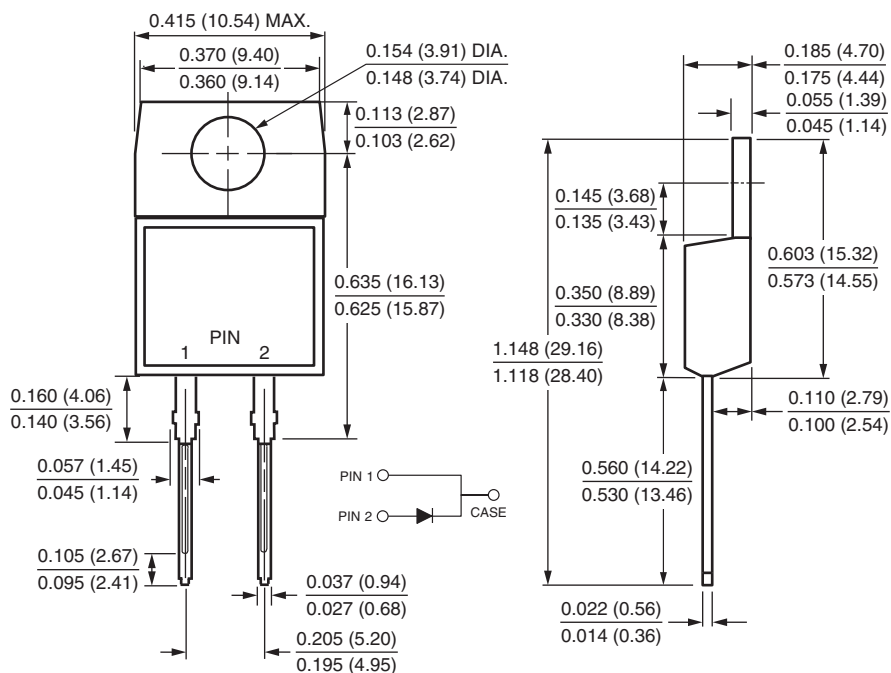


Fig. 6 - Typical Transient Thermal Impedance

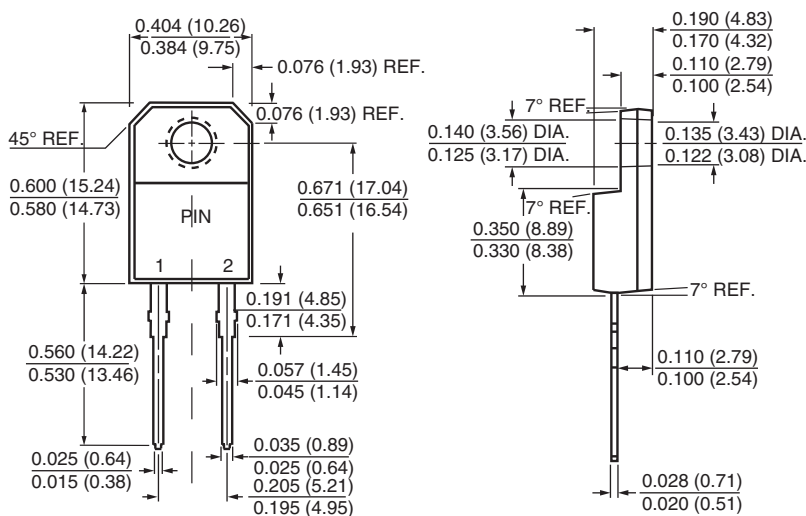


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

### TO-220AC



### ITO-220AC





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