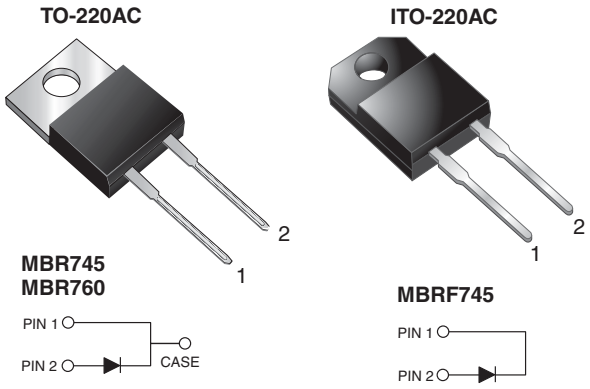
# Schottky Barrier Rectifier




## 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

RoHS COMPLIANT

## TYPICAL APPLICATIONS

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

| 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 |
| $T_J$ max. | 150 °C |
| Package | TO-220AC, ITO-220AC |
| Diode variations | Single |

## 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

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

| PARAMETER | SYMBOL | MBR745 | MBR760 | UNIT |
|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 45 | 60 | V |
| Working peak reverse voltage | $V_{RWM}$ | 45 | 60 | |
| Maximum DC blocking voltage | $V_{DC}$ | 45 | 60 | |
| Maximum average forward rectified current (fig. 1) | $I_{F(AV)}$ | 7.5 | | A |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | $I_{FSM}$ | 150 | | |
| Peak repetitive reverse surge current at $t_p$ = 2.0 µs, 1 kHz | $I_{RRM}$ | 1.0 | 0.5 | |
| Voltage rate of change (rated $V_R$) | dV/dt | 10 000 | | |
| Operating junction temperature range | $T_J$ | -65 to +150 | | °C |
| Operating storage temperature range | $T_{STG}$ | -65 to +175 | | |
| Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min | $V_{AC}$ | 1500 | | V |

| **ELECTRICAL CHARACTERISTICS** ($T_C$ = 25 °C unless otherwise noted) | | | | | | |
|---|---|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **TEST CONDITIONS** | | **MBR745** | **MBR760** | **UNIT** |
| Maximum instantaneous forward voltage | $V_F$ (1) | $I_F$ = 7.5 A | $T_C$ = 25 °C | - | 0.75 | V |
| | | $I_F$ = 7.5 A | $T_C$ = 125 °C | 0.57 | 0.65 | |
| | | $I_F$ = 15 A | $T_C$ = 25 °C | 0.84 | - | |
| | | $I_F$ = 15 A | $T_C$ = 125 °C | 0.72 | - | |
| Maximum reverse current at DC blocking voltage | $I_R$ (2) | Rated $V_R$ | $T_C$ = 25 °C | 0.1 | 0.5 | mA |
| | | | $T_C$ = 125 °C | 15 | 50 | |

**Notes**

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

(2) Pulse test: pulse width ≤ 40 ms

| **THERMAL CHARACTERISTICS** ($T_C$ = 25 °C unless otherwise noted) | | | | |
|---|---|---|---|---|
| **PARAMETER** | **SYMBOL** | **MBR** | **MBRF** | **UNIT** |
| Typical thermal resistance from junction to case | $R_{\theta JC}$ | 3.0 | 5.0 | °C/W |

| **ORDERING INFORMATION** (Example) | | | | | |
|---|---|---|---|---|---|
| **PACKAGE** | **PREFERRED P/N** | **UNIT WEIGHT (g)** | **PACKAGE CODE** | **BASE QUANTITY** | **DELIVERY MODE** |
| TO-220AC | MBR745-E3/45 (1) | 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 °C unless otherwise noted)

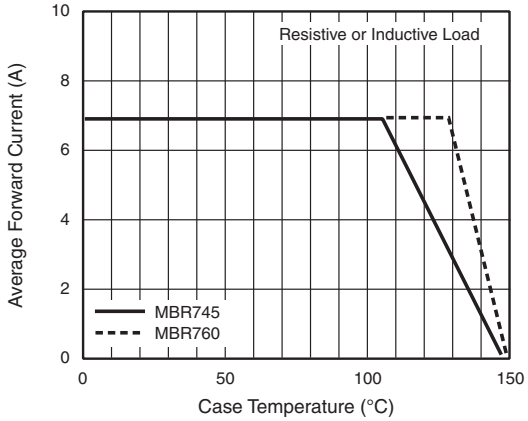



Fig. 1 - Forward Current Derating Curve

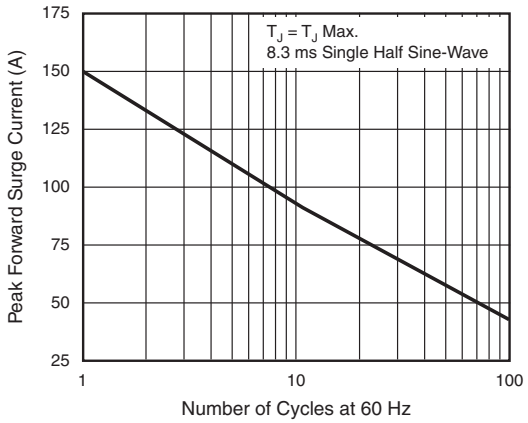



Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

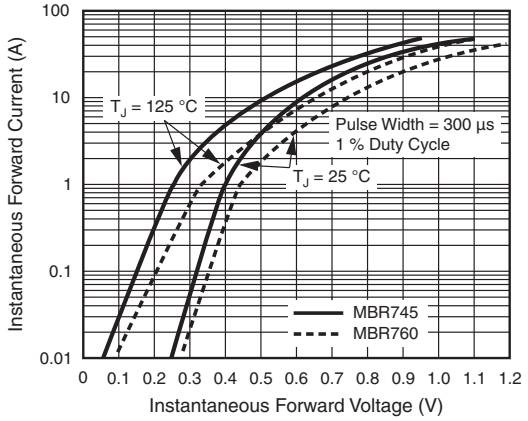



Fig. 3 - Typical Instantaneous Forward Characteristics

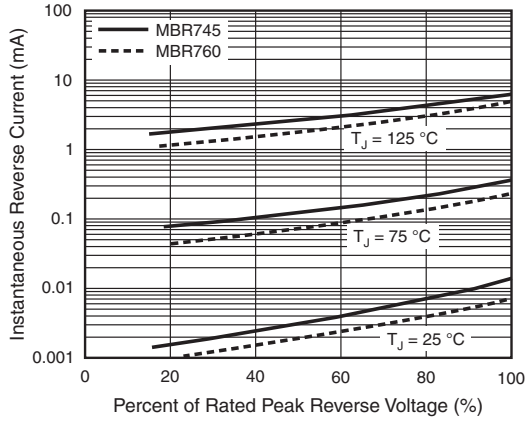



Fig. 4 - Typical Reverse Characteristics

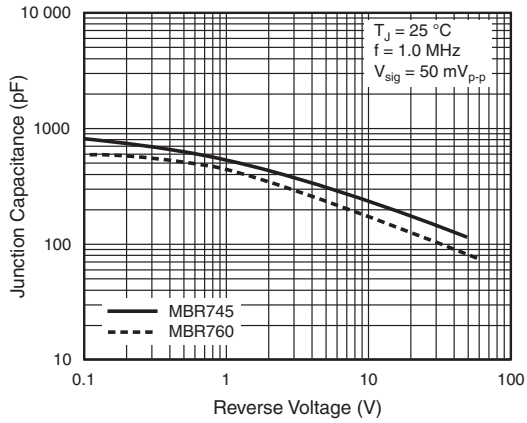



Fig. 5 - Typical Junction Capacitance

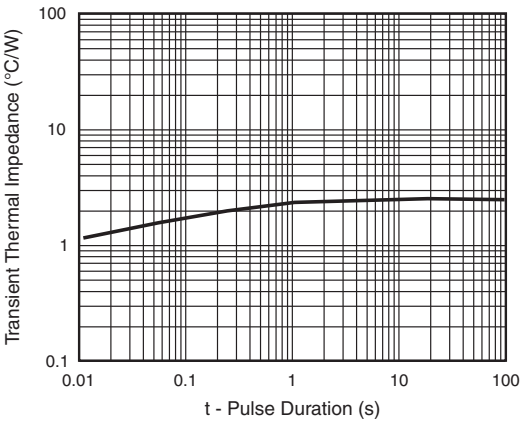
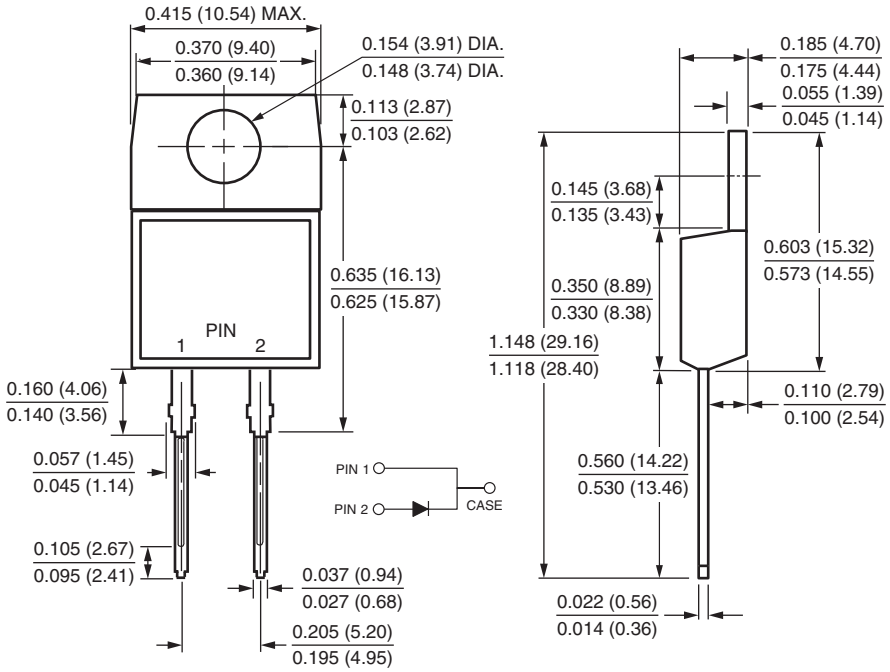


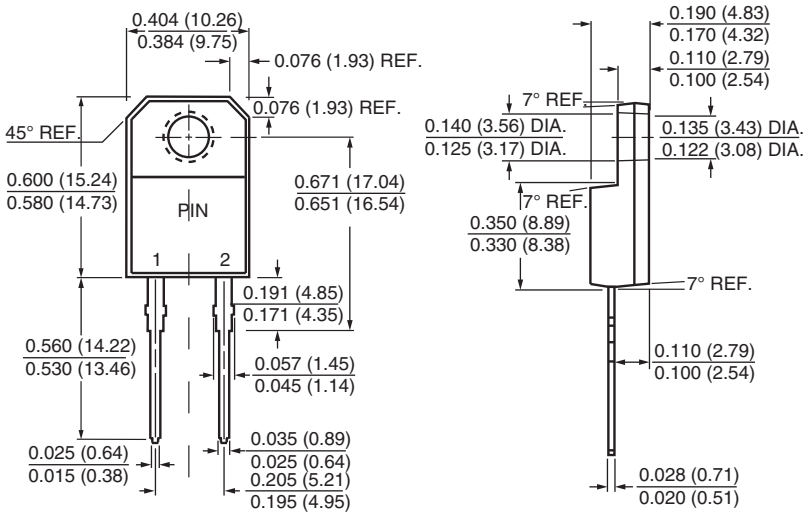

Fig. 6 - Typical Transient Thermal Impedance

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

### TO-220AC




### ITO-220AC



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