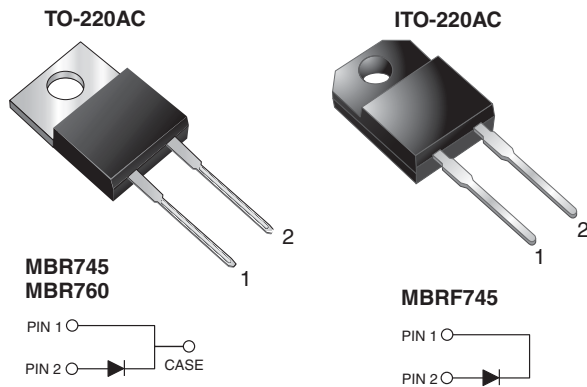


Schottky Barrier Rectifier



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.

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

| MAXIMUM RATINGS ($T_C = 25\text{ °C}$ 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 $t_p = 2.0\ \mu\text{s}$, 1 kHz | I_{RRM} | 1.0 | 0.5 | |
| Voltage rate of change (rated V_F) | 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 $t = 1\ \text{min}$ | 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 _{θJC} | 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 ($T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)

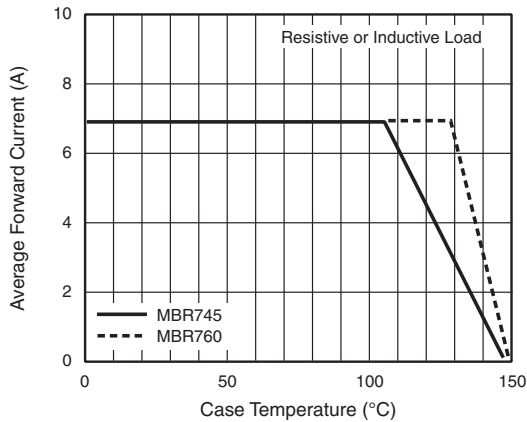


Fig. 1 - Forward Current Derating Curve

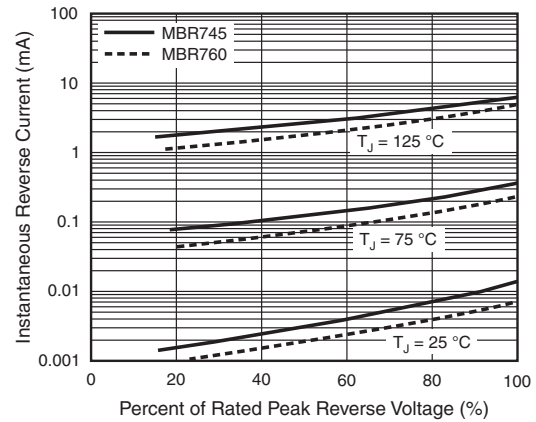


Fig. 4 - Typical Reverse Characteristics

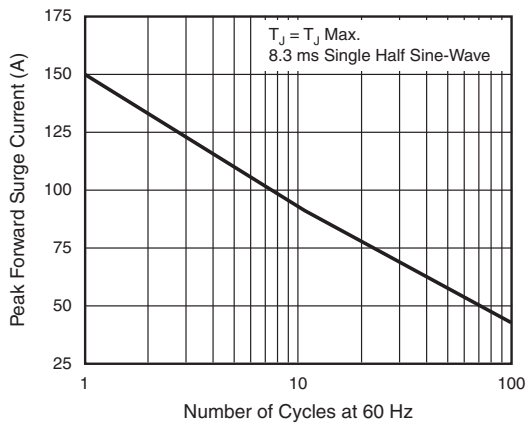


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

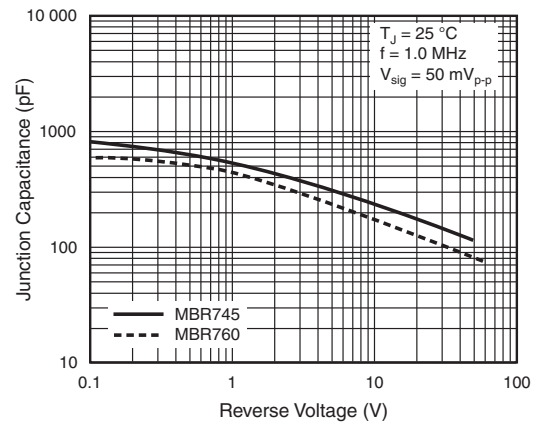


Fig. 5 - Typical Junction Capacitance

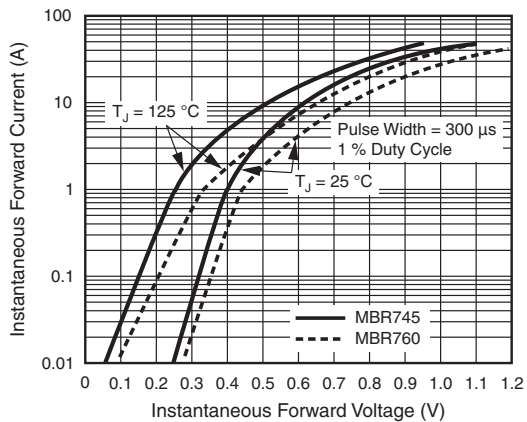


Fig. 3 - Typical Instantaneous Forward Characteristics

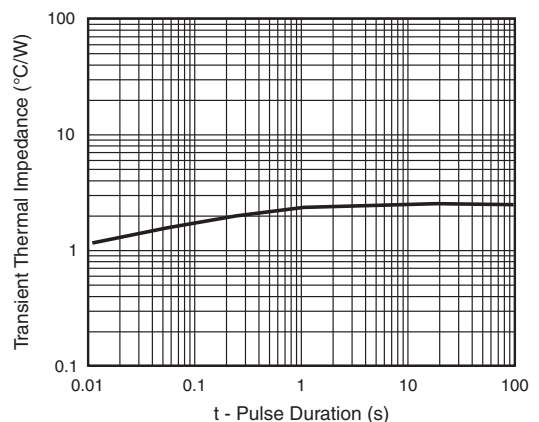
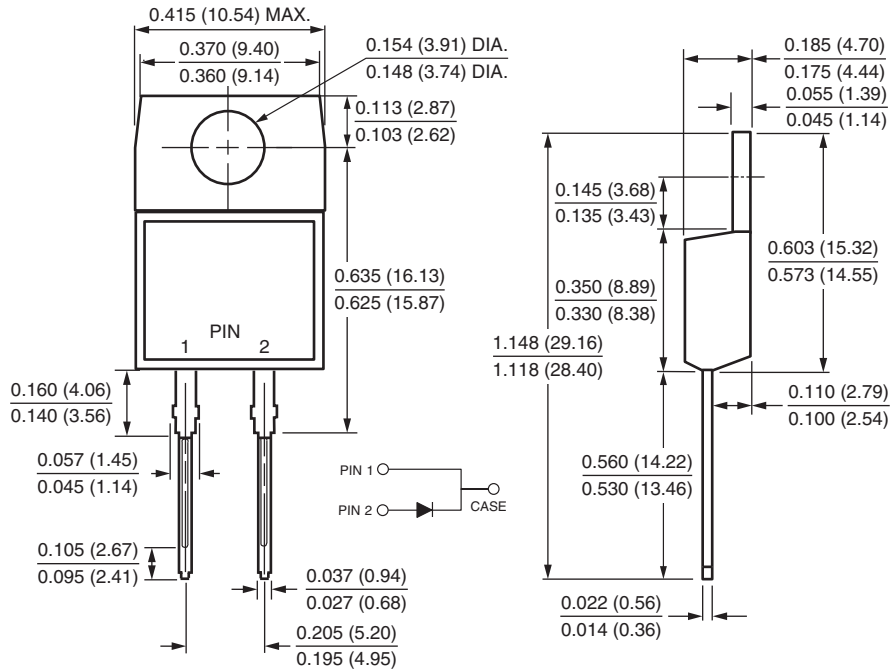


Fig. 6 - Typical Transient Thermal Impedance

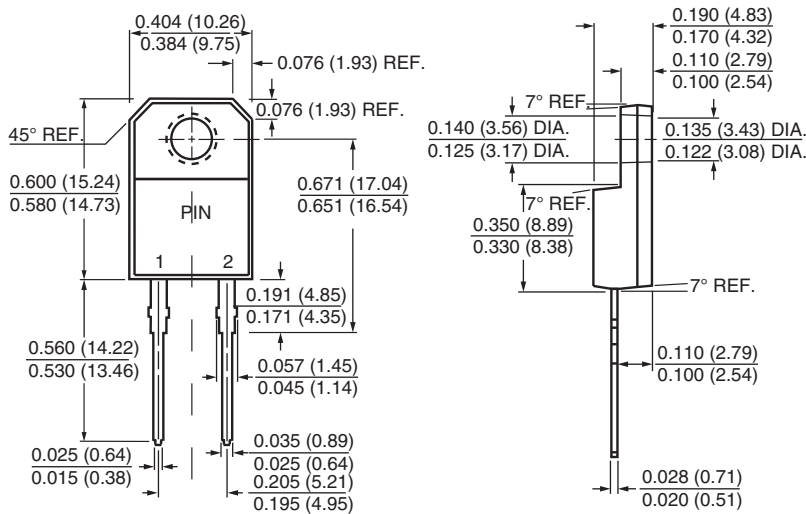


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC



ITO-220AC





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