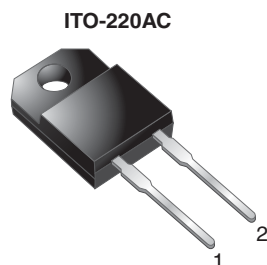
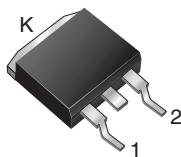


## Schottky Barrier Rectifier


**RoHS**  
COMPLIANT

**MBRF16xx**

**D<sup>2</sup>PAK (TO-263AB)**

**MBRB16xx**


### FEATURES

- Power pack
- Guardring for overvoltage protection
- Low power loss, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C (for D<sup>2</sup>PAK (TO-263AB) package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for 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)

### 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:** ITO-220AC, D<sup>2</sup>PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating  
Base P/N-E3 - RoHS-compliant, commercial grade  
Base P/NHE3\_X - RoHS-compliant, AEC-Q101 qualified  
("X" denotes revision code, e.g. A, B, ...)

**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 |                                          |
|-------------------------|------------------------------------------|
| $I_{F(AV)}$             | 16 A                                     |
| $V_{RRM}$               | 35 V to 60 V                             |
| $I_{FSM}$               | 150 A                                    |
| $V_F$                   | 0.57 V, 0.65 V                           |
| $T_J$ max.              | 150 °C                                   |
| Package                 | ITO-220AC, D <sup>2</sup> PAK (TO-263AB) |
| Circuit configuration   | Single                                   |

| MAXIMUM RATINGS (T <sub>C</sub> = 25 °C unless otherwise noted)                    |                    |             |          |          |      |
|------------------------------------------------------------------------------------|--------------------|-------------|----------|----------|------|
| PARAMETER                                                                          | SYMBOL             | MBRB1635    | MBRB1645 | MBRB1660 | UNIT |
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>   | 35          | 45       | 60       | V    |
| Working peak reverse voltage                                                       | V <sub>RWM</sub>   | 35          | 45       | 60       |      |
| Maximum DC blocking voltage                                                        | V <sub>DC</sub>    | 35          | 45       | 60       |      |
| Maximum average forward rectified current at T <sub>C</sub> = 125 °C               | I <sub>F(AV)</sub> | 16          |          |          | A    |
| Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load | I <sub>FSM</sub>   | 150         |          |          |      |
| Peak repetitive reverse 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      |          |          | V/μs |
| Operating junction temperature range                                               | T <sub>J</sub>     | -65 to +150 |          |          | °C   |
| 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** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                                    | SYMBOL      | TEST CONDITIONS     |                                     | MBRB1635 | MBRB1645 | MBRB1660 | UNIT |
|--------------------------------------------------------------|-------------|---------------------|-------------------------------------|----------|----------|----------|------|
| Maximum instantaneous forward voltage                        | $V_F^{(1)}$ | $I_F = 16\text{ A}$ | $T_C = 25\text{ }^{\circ}\text{C}$  | 0.63     |          | 0.75     | V    |
|                                                              |             | $I_F = 16\text{ A}$ | $T_C = 125\text{ }^{\circ}\text{C}$ | 0.57     |          | 0.65     |      |
| Maximum instantaneous reverse current at DC blocking voltage | $I_R^{(1)}$ | Rated $V_R$         | $T_C = 25\text{ }^{\circ}\text{C}$  | 0.2      |          | 1.0      | mA   |
|                                                              |             |                     | $T_C = 125\text{ }^{\circ}\text{C}$ | 40       |          | 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          | MBRF | MBRB | UNIT                 |
|--------------------------------------------------|-----------------|------|------|----------------------|
| Typical thermal resistance from junction to case | $R_{\theta JC}$ | 3.0  | 1.5  | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE   | PREFERRED P/N                     | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-----------|-----------------------------------|-----------------|--------------|---------------|---------------|
| ITO-220AC | MBRF1645-E3/45                    | 1.94            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB1645-E3/45 <sup>(2)</sup>     | 1.33            | 45           | 50/tube       | Tube          |
| TO-263AB  | MBRB1645-E3/81 <sup>(2)</sup>     | 1.33            | 81           | 800/reel      | Tape and reel |
| ITO-220AC | MBRF1645HE3_A/P <sup>(1)</sup>    | 1.94            | P            | 50/tube       | Tube          |
| TO-263AB  | MBRB1645HE3_B/P <sup>(1)(2)</sup> | 1.33            | P            | 50/tube       | Tube          |
| TO-263AB  | MBRB1645HE3_B/I <sup>(1)(2)</sup> | 1.33            | I            | 800/reel      | Tape and reel |

**Note**

(1) AEC-Q101 qualified

(2) 60 V available in D<sup>2</sup>PAK (TO-263AB) package only



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

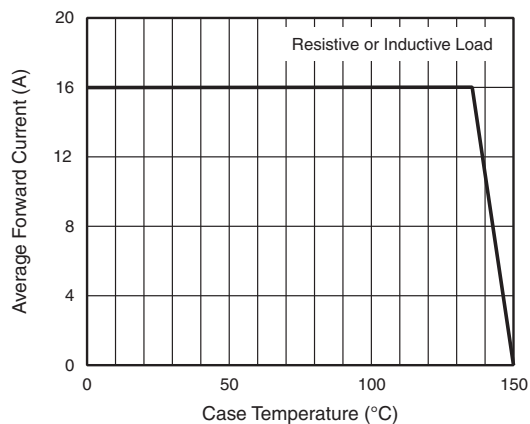


Fig. 1 - Forward Current Derating Curve

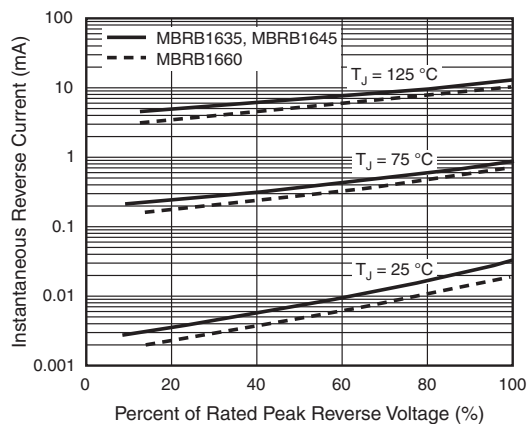


Fig. 4 - Typical Reverse Characteristics

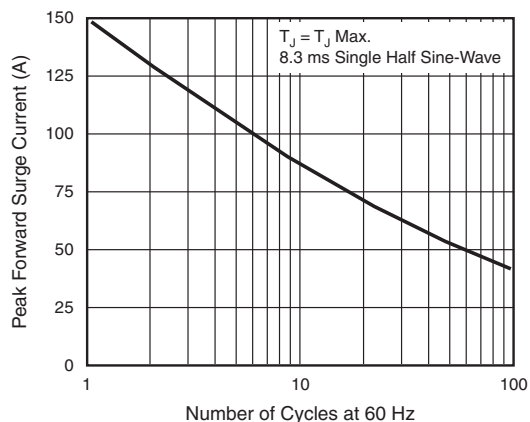


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

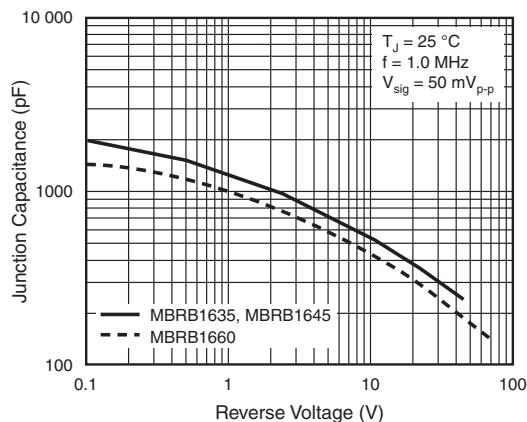


Fig. 5 - Typical Junction Capacitance

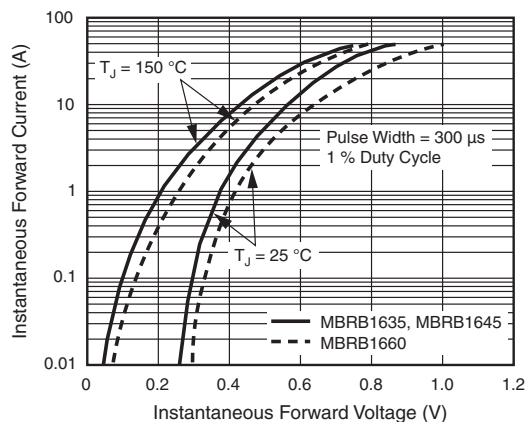


Fig. 3 - Typical Instantaneous Forward Characteristics

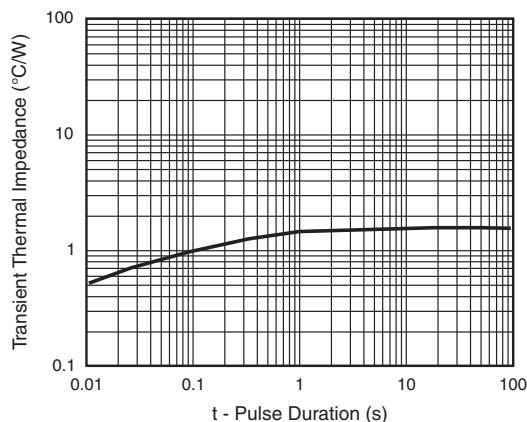
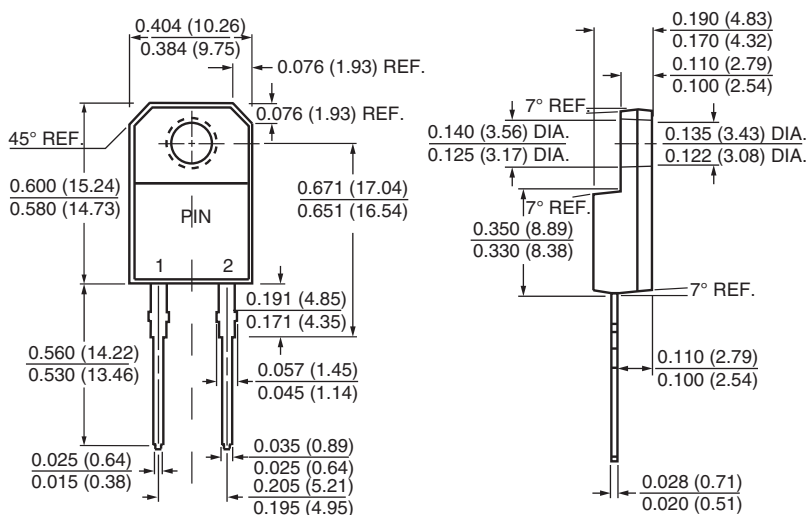


Fig. 6 - Typical Transient Thermal Impedance

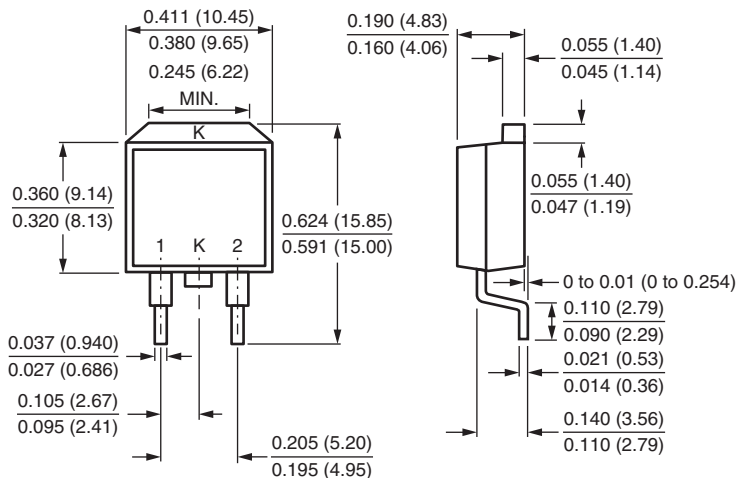


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

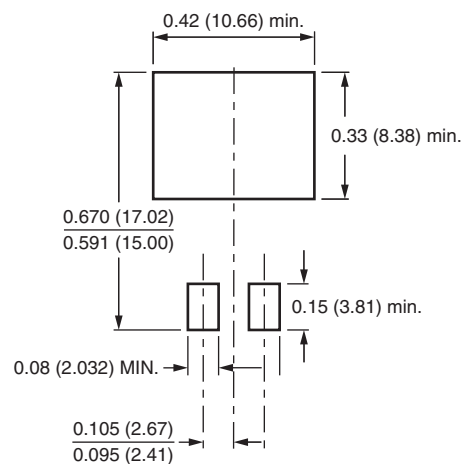
### ITO-220AC



### D<sup>2</sup>PAK (TO-263AB)



### Mounting Pad Layout





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