

# ANTREX Electronics

Electronic Components Sourcing Information

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## Product Reference Information

**Part Number:** MBRB1045HE3\_B/P  
**Manufacturer:** Vishay General Semiconductor - Diodes Division  
**Package:** TO-263-3, D2PAK (2 Leads + Tab), TO-263AB  
**Availability:** Please confirm with sales

### Product Page:

<https://antrexco.com/product/details/vishay-general-semiconductor-diodes-division/mbrb1045he3-b-p.html>

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New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

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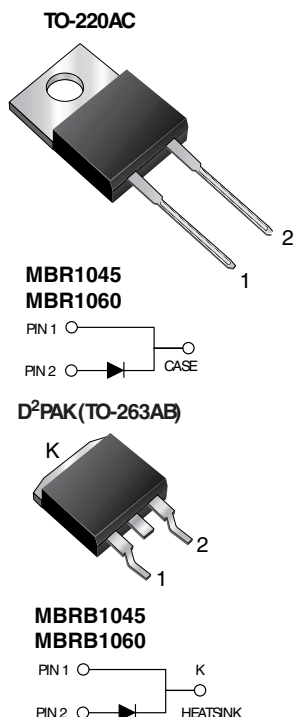
### Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

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## Schottky Barrier Rectifier



**RoHS**  
COMPLIANT  
**HALOGEN**  
**FREE**  
Available

### FEATURES

- Power pack
- 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 TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AC package)
- AEC-Q101 qualified available
  - Automotive ordering code: Base P/NHM3 (for D²PAK (TO-263AB package))
- 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, D²PAK (TO-263AB)

Molding compound meets UL 94 V-0 flammability rating

Base P/N-E3 - RoHS-compliant, commercial grade

Base P/N-M3 - RoHS-compliant, halogen-free, commercial grade

Base P/NHM3 - RoHS-compliant, halogen-free, AEC-Q101 qualified

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

E3 and M3 suffix meets JESD 201 class 1A whisker test, HM3 suffix meets JESD 201 class 2 whisker test

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs maximum (for TO-220AC package)

### LINKS TO ADDITIONAL RESOURCES



| PRIMARY CHARACTERISTICS |                            |
|-------------------------|----------------------------|
| $I_{F(AV)}$             | 10 A                       |
| $V_{RRM}$               | 45 V, 60 V                 |
| $I_{FSM}$               | 150 A                      |
| $V_F$                   | 0.57 V, 0.70 V             |
| $T_J \text{ max.}$      | 150 °C                     |
| Package                 | TO-220AC, D²PAK (TO-263AB) |
| Circuit configuration   | Single                     |

**MAXIMUM RATINGS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                                                          | SYMBOL             | MBR1045<br>MBRB1045 | MBR1060<br>MBRB1060 | UNIT |
|------------------------------------------------------------------------------------|--------------------|---------------------|---------------------|------|
| Maximum repetitive peak reverse voltage                                            | V <sub>RRM</sub>   | 45                  | 60                  | V    |
| Maximum average forward rectified current (fig. 1)                                 | 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>   | 150                 |                     | A    |
| 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 and storage temperature range                                   | T <sub>J</sub>     | -65 to +150         |                     | °C   |
|                                                                                    | T <sub>STG</sub>   | -65 to +175         |                     |      |

**ELECTRICAL CHARACTERISTICS** ( $T_C = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

| PARAMETER                                                    | SYMBOL      | TEST CONDITIONS                                         | MBR1045<br>MBRB1045                 | MBR1060<br>MBRB1060 | UNIT |
|--------------------------------------------------------------|-------------|---------------------------------------------------------|-------------------------------------|---------------------|------|
| Maximum instantaneous forward voltage                        | $V_F^{(1)}$ | $I_F = 10\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$  | -                                   | 0.80                | V    |
|                                                              |             | $I_F = 10\text{ A}$ $T_J = 125\text{ }^{\circ}\text{C}$ | 0.57                                | 0.70                |      |
|                                                              |             | $I_F = 20\text{ A}$ $T_J = 25\text{ }^{\circ}\text{C}$  | 0.84                                | 0.95                |      |
|                                                              |             | $I_F = 20\text{ A}$ $T_J = 125\text{ }^{\circ}\text{C}$ | 0.72                                | 0.85                |      |
| Maximum instantaneous reverse current at DC blocking voltage | $I_R^{(2)}$ | Rated $V_R$                                             | $T_J = 25\text{ }^{\circ}\text{C}$  | 0.10                | mA   |
|                                                              |             |                                                         | $T_J = 125\text{ }^{\circ}\text{C}$ | 15                  |      |

**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 | MBRB | UNIT                 |
|--------------------------------------------------|-----------------|-----|------|----------------------|
| Typical thermal resistance from junction to case | $R_{\theta JC}$ | 2.0 | 2.0  | $^{\circ}\text{C/W}$ |

**ORDERING INFORMATION** (Example)

| PACKAGE                       | PREFERRED P/N                | UNIT WEIGHT (g) | PACKAGE CODE | BASE QUANTITY | DELIVERY MODE |
|-------------------------------|------------------------------|-----------------|--------------|---------------|---------------|
| TO-220AC                      | MBR1045-E3/45                | 1.80            | 45           | 50/tube       | Tube          |
| D <sup>2</sup> PAK (TO-263AB) | MBRB1045-M3/I                | 1.33            | I            | 800/reel      | Tape and reel |
| D <sup>2</sup> PAK (TO-263AB) | MBRB1045HM3/I <sup>(1)</sup> | 1.33            | I            | 800/reel      | Tape and reel |

**Note**(1) AEC-Q101 qualified, available in and D<sup>2</sup>PAK (TO-263AB) package



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

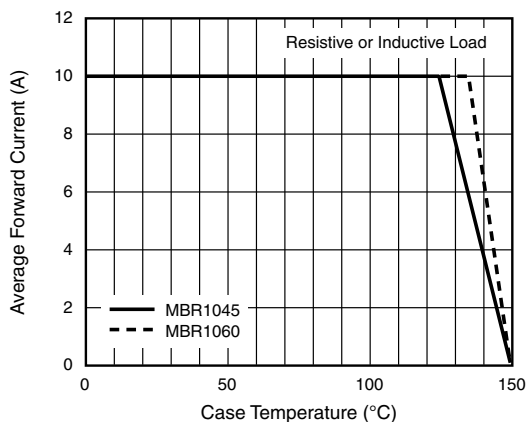


Fig. 1 - Forward Current Derating Curve

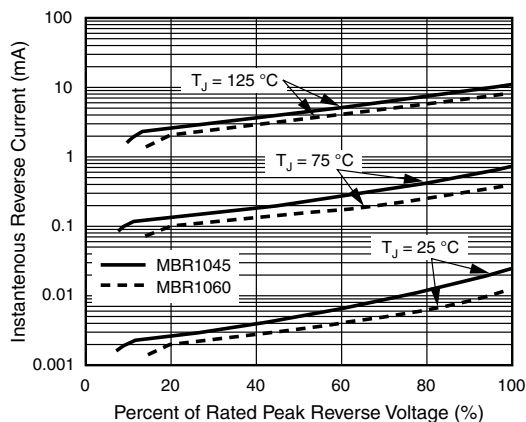


Fig. 4 - Typical Reverse Characteristics

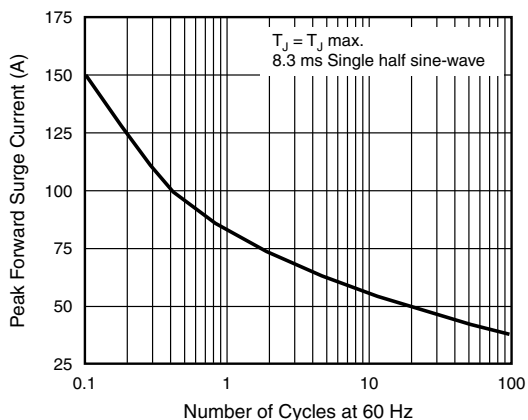


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

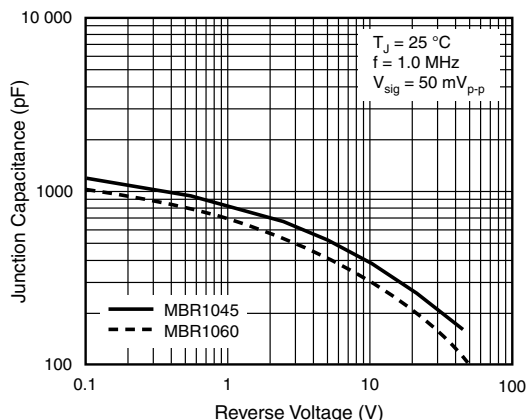


Fig. 5 - Typical Junction Capacitance

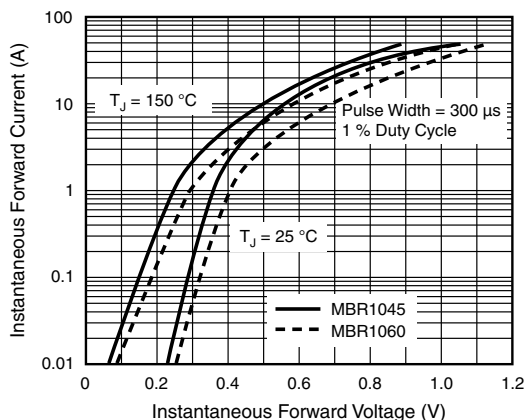


Fig. 3 - Typical Instantaneous Forward Characteristics

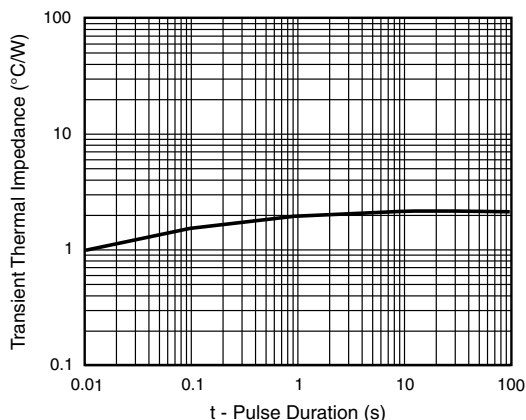
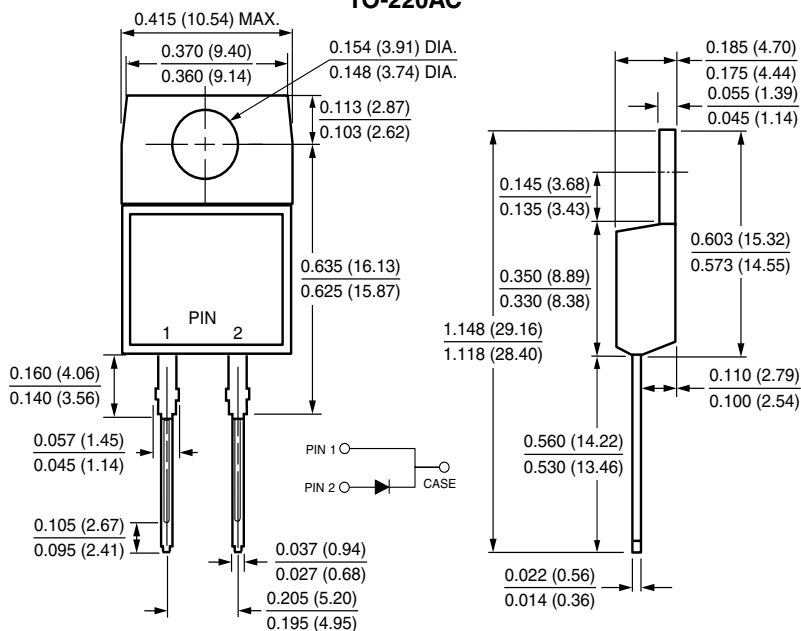


Fig. 6 - Typical Transient Thermal Impedance

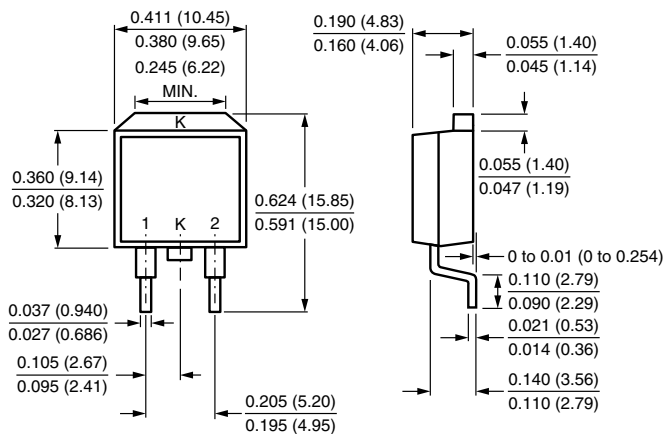


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

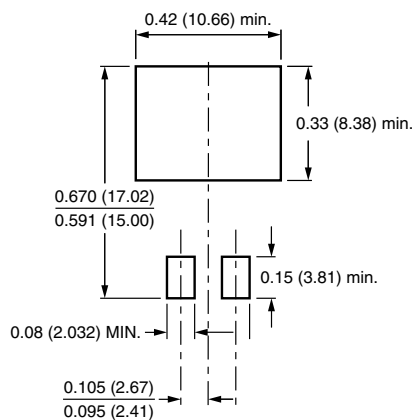
TO-220AC



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



Mounting Pad Layout





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