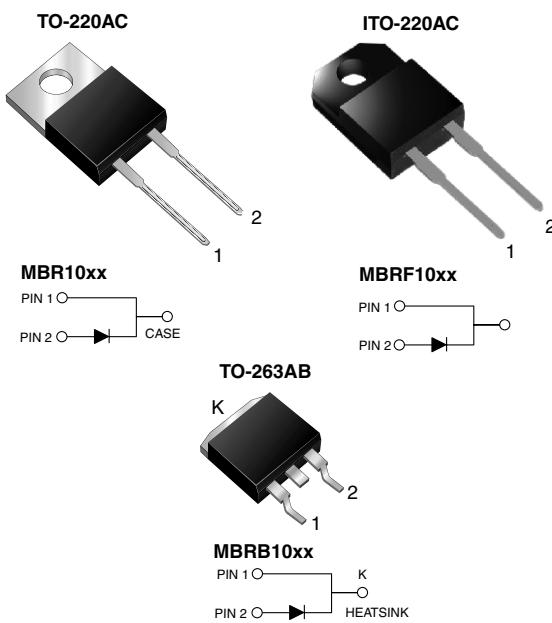


## Schottky Barrier Rectifier



### FEATURES

- Low power loss, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020C, LF maximum peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 s (for TO-220AC and ITO-220AC package)
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### TYPICAL APPLICATIONS

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

### MECHANICAL DATA

**Case:** TO-220AC, ITO-220AC, TO-263AB

Epoxy meets UL 94V-0 flammability rating

**Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D

E3 suffix for commercial grade, meets JESD 201 class 1A whisker test, HE3 suffix for high reliability grade (AEC Q101 qualified), meets JESD 201 class 2 whisker test

**Polarity:** As marked

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

### PRIMARY CHARACTERISTICS

$I_{F(AV)}$	10 A
$V_{RRM}$	35 V to 60 V
$I_{FSM}$	150 A
$V_F$	0.57 V, 0.70 V
$T_J$ max.	150 °C

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

PARAMETER	SYMBOL	MBR1035	MBR1045	MBR1050	MBR1060	UNIT
Maximum repetitive peak reverse voltage	$V_{RRM}$	35	45	50	60	V
Maximum average forward rectified current (Fig. 1)	$I_{F(AV)}$		10			A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per leg	$I_{FSM}$		150			A
Peak repetitive reverse current per leg at $t_p = 2.0$ µs, 1 kHz	$I_{RRM}$	1.0		0.5		A
Voltage rate of change (rated $V_R$ )	$dV/dt$		10000			V/µs
Operating junction temperature range	$T_J$		- 65 to + 150			°C
Storage temperature range	$T_{STG}$		- 65 to + 175			°C
Isolation voltage (ITO-220AC only) from terminal to heatsink t = 1 min	$V_{AC}$		1500			V

# MBR(F,B)1035 thru MBR(F,B)1060

Vishay General Semiconductor



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

PARAMETER	TEST CONDITIONS	SYMBOL	MBR1035	MBR1045	MBR1050	MBR1060	UNIT
Maximum instantaneous forward voltage per leg <sup>(1)</sup>	$I_F = 10 \text{ A}$ $I_F = 10 \text{ A}$ $I_F = 20 \text{ A}$ $I_F = 20 \text{ A}$	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	$V_F$	- 0.57 0.84 0.72	0.80 0.70 0.95 0.85	V	
Maximum instantaneous reverse current at rated DC blocking voltage <sup>(1)</sup>		$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$	$I_R$		0.10 15	mA	

Note:

(1) Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle

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

PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Maximum thermal resistance from junction to case	$R_{\theta JC}$	2.0	4.0	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
ITO-220AC	MBRF1045-E3/45	1.94	45	50/tube	Tube
TO-263AB	MBRB1045-E3/45	1.33	45	50/tube	Tube
TO-263AB	MBRB1045-E3/81	1.33	81	800/reel	Tape reel
TO-220AC	MBR1045HE3/45 <sup>(1)</sup>	1.80	45	50/tube	Tube
ITO-220AC	MBRF1045HE3/45 <sup>(1)</sup>	1.94	45	50/tube	Tube
TO-263AB	MBRB1045HE3/45 <sup>(1)</sup>	1.33	45	50/tube	Tube
TO-263AB	MBRB1045HE3/81 <sup>(1)</sup>	1.33	81	800/reel	Tape reel

Note:

(1) Automotive grade AEC Q101 qualified

## RATINGS AND CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

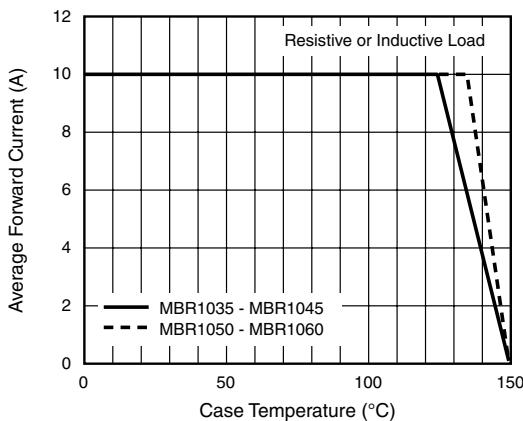


Figure 1. Forward Current Derating Curve

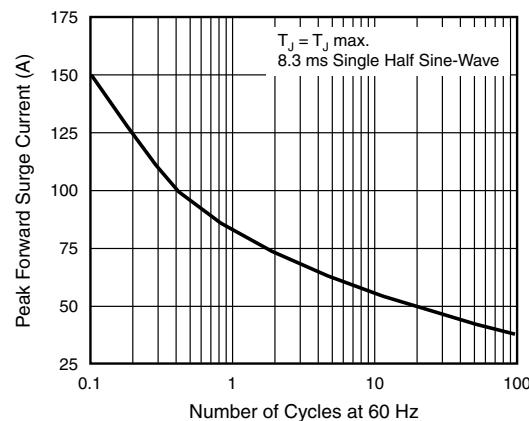


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

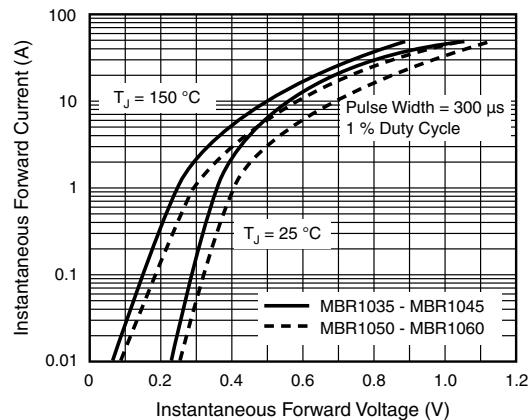


Figure 3. Typical Instantaneous Forward Characteristics

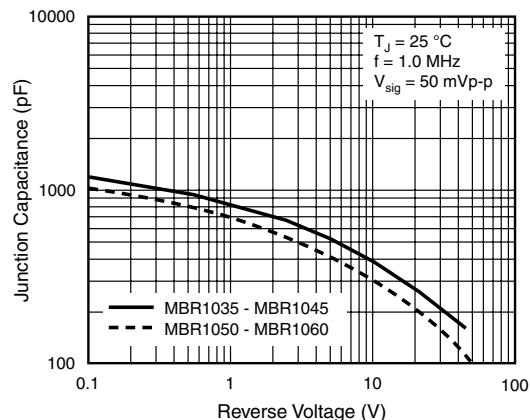


Figure 5. Typical Junction Capacitance

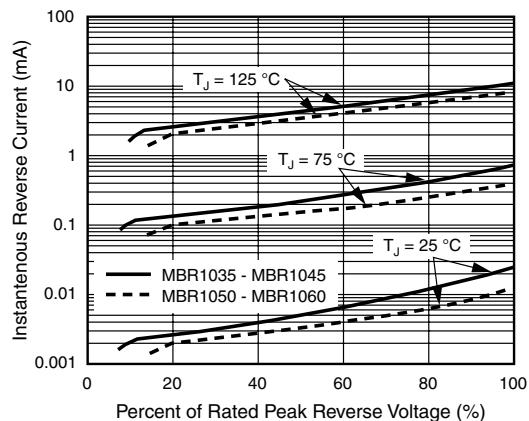


Figure 4. Typical Reverse Characteristics

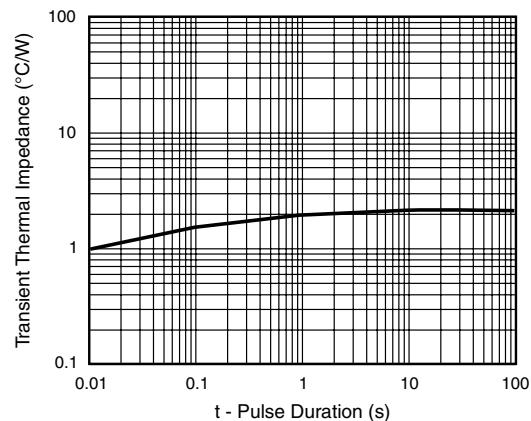


Figure 6. Typical Transient Thermal Impedance

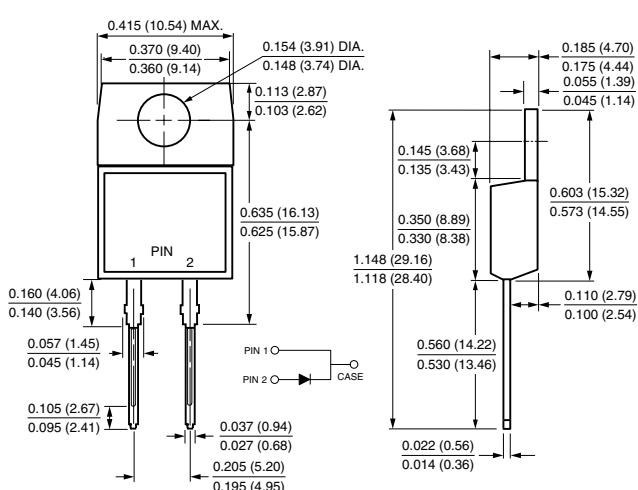
# MBR(F,B)1035 thru MBR(F,B)1060

Vishay General Semiconductor

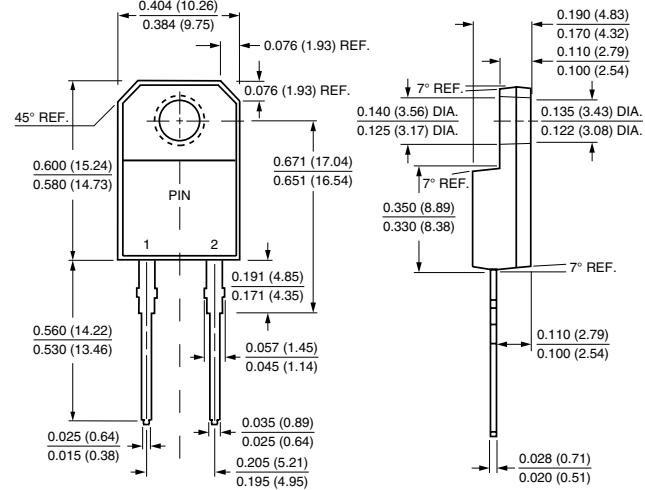


## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

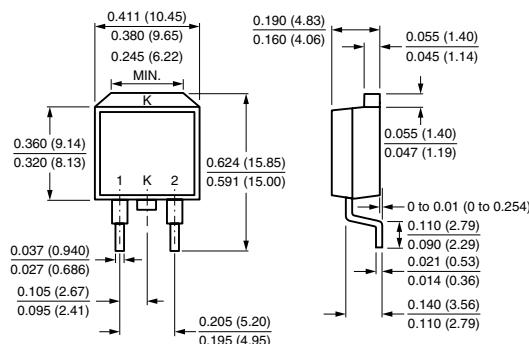
TO-220AC



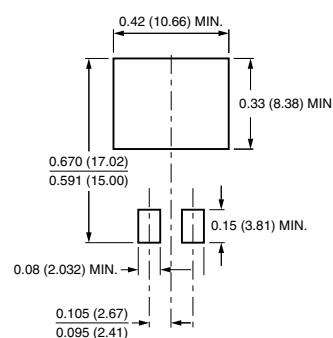
ITO-220AC



TO-263AB



Mounting Pad Layout





## Legal Disclaimer Notice

Vishay

### Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.