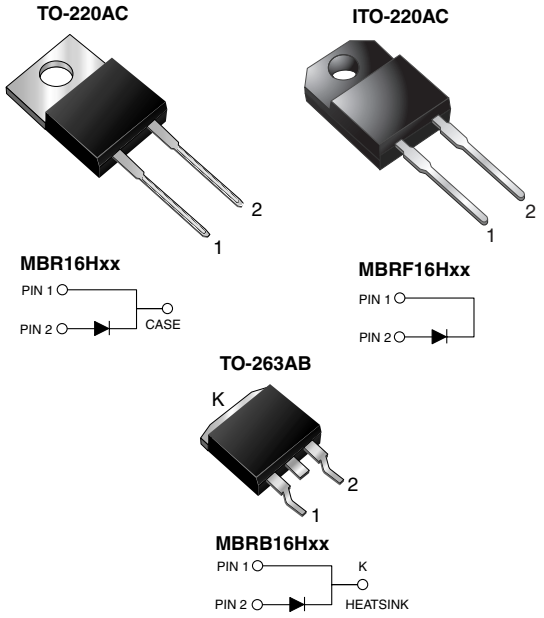
Schottky Barrier Rectifier

High Barrier Technology for Improved High Temperature Performance



FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- Low leakage current
- 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 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

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in low voltage, high frequency rectifier of switching mode power supplies, freewheeling diodes, dc-to-dc converters or 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-002 and JESD22-B102

E3 suffix for consumer 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	
$I_{F(AV)}$	16 A
V_{RRM}	35 V to 60 V
I_{FSM}	150 A
V_F	0.56 V, 0.62 V
I_R	100 µA
T_J max.	175 °C

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

PARAMETER	SYMBOL	MBR16H35	MBR16H45	MBR16H50	MBR16H60	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	35	45	50	60	V
Working peak reverse voltage	V_{RWM}	35	45	50	60	V
Maximum DC blocking voltage	V_{DC}	35	45	50	60	V
Max. average forward rectified current (Fig. 1)	$I_{F(AV)}$	16				A
Non-repetitive avalanche energy at 25 °C, I_{AS} = 4 A, L = 10 mH	E_{AS}	80				mJ
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	150				A
Peak repetitive reverse surge current at t_p = 2.0 µs, 1 kHz	I_{RRM}	1.0		0.5		A
Peak non-repetitive reverse energy (8/20 µs waveform)	E_{RSM}	20				mJ
Electrostatic discharge capacitor voltage human body model: C = 100 pF, R = 1.5 kΩ	V_C	25				kV
Voltage rate of change (rated V_R)	dV/dt	10 000				V/µs

MAXIMUM RATINGS (T_C = 25 °C unless otherwise noted)						
PARAMETER	**SYMBOL**	**MBR16H35**	**MBR16H45**	**MBR16H50**	**MBR16H60**	**UNIT**
Operating junction temperature range	T_J	- 65 to + 175				°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

ELECTRICAL CHARACTERISTICS (T_C = 25 °C unless otherwise noted)								
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**MBR16H35 MBR16H45**		**MBR16H50 MBR16H60**		**UNIT**
				TYP.	**MAX.**	**TYP.**	**MAX.**	
Maximum instantaneous forward voltage (1)	I_F = 16 A I_F = 16 A	T_J = 25 °C T_J = 125 °C	V_F	- 0.52	0.66 0.56	- 0.58	0.73 0.62	V
Maximum reverse current at rated V_R (2)		T_J = 25 °C T_J = 125 °C	I_R	- 6.0	100 20	- 4.0	100 20	µA mA

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**	**MBRB**	**UNIT**
Thermal resistance, junction to case	$R_{\theta JC}$	1.5	3.0	1.5	°C/W

ORDERING INFORMATION (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-220AC	MBR16H45-E3/45	1.80	45	50/tube	Tube
ITO-220AC	MBRF16H45-E3/45	1.94	45	50/tube	Tube
TO-263AB	MBRB16H45-E3/45	1.33	45	50/tube	Tube
TO-263AB	MBRB16H45-E3/81	1.33	81	800/reel	Tape and reel
TO-220AC	MBR16H45HE3/45 (1)	1.80	45	50/tube	Tube
ITO-220AC	MBRF16H45HE3/45 (1)	1.94	45	50/tube	Tube
TO-263AB	MBRB16H45HE3/45 (1)	1.33	45	50/tube	Tube
TO-263AB	MBRB16H45HE3/81 (1)	1.33	81	800/reel	Tape and reel

Note:

(1) Automotive grade AEC Q101 qualified

RATINGS AND CHARACTERISTICS CURVES

(T_A = 25 °C unless otherwise noted)

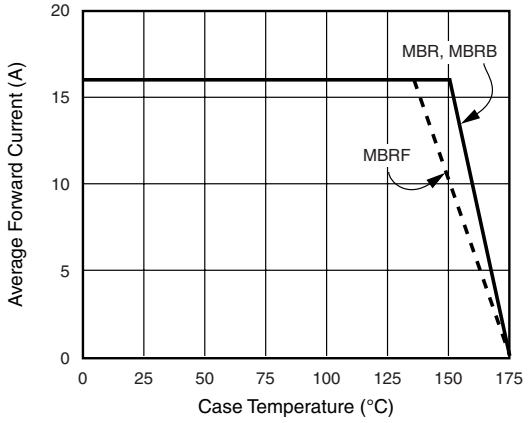


Figure 1. Forward Current Derating Curve

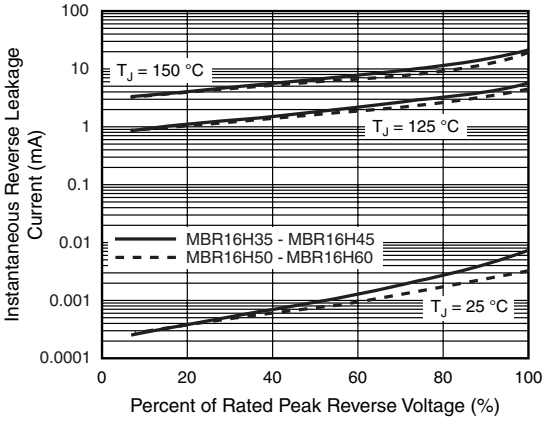


Figure 4. Typical Reverse Characteristics

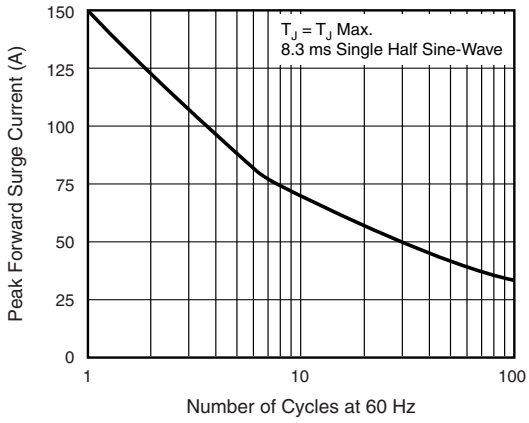


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

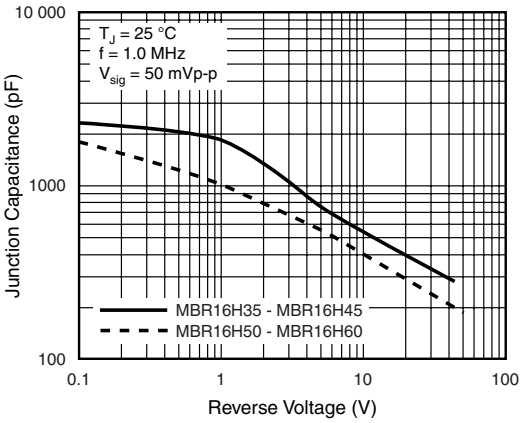


Figure 5. Typical Junction Capacitance

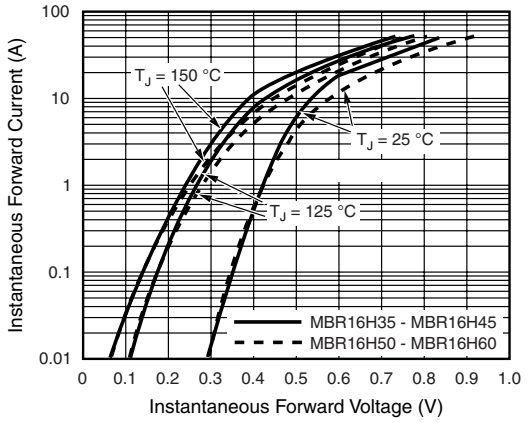


Figure 3. Typical Instantaneous Forward Characteristics

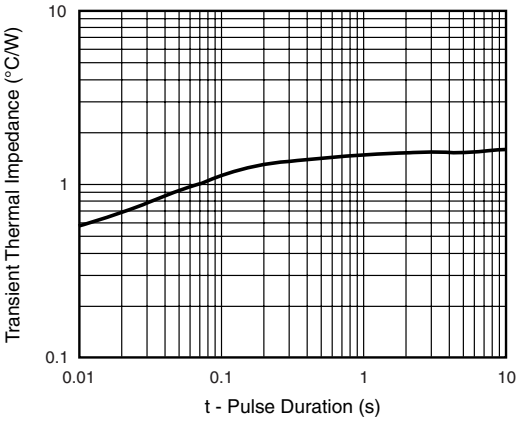
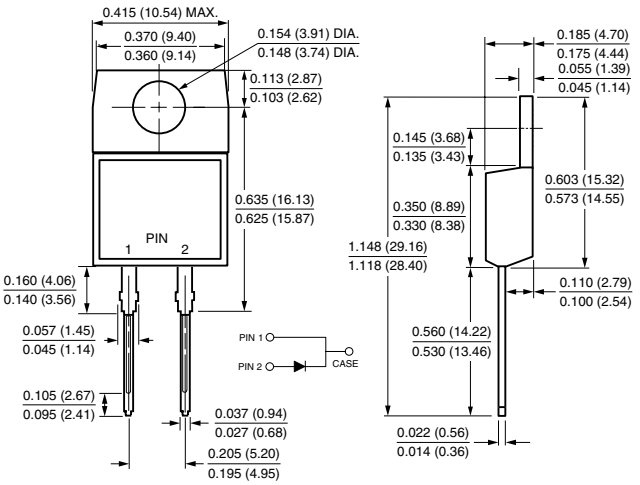


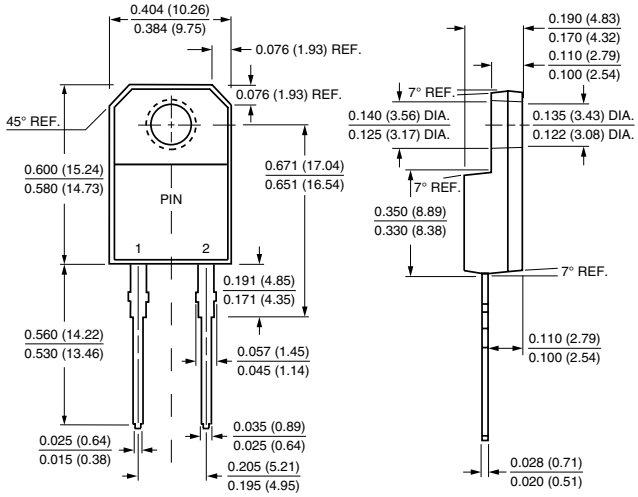
Figure 6. Typical Transient Thermal Impedance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

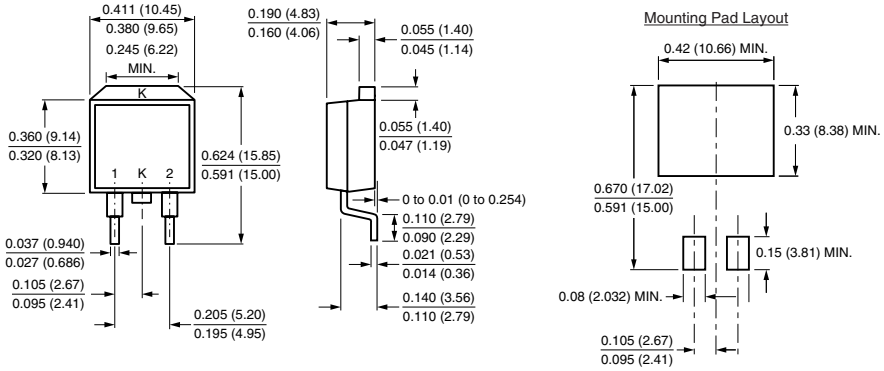
TO-220AC



ITO-220AC



TO-263AB



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, “Vishay”), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.