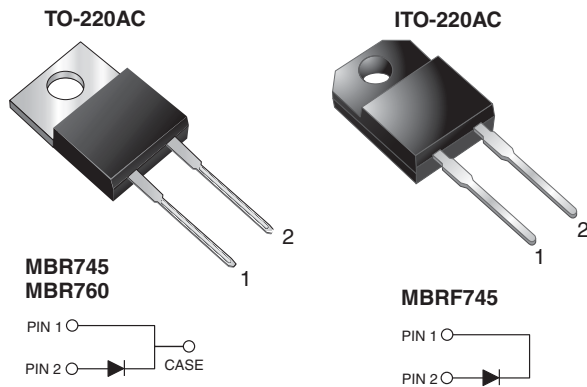




**THE DATASHEET OF  
MBRB745HE3\_B/I**



## 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](http://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 <sub>C</sub> = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	TEST CONDITIONS		MBR745	MBR760	UNIT
Maximum instantaneous forward voltage	V <sub>F</sub> <sup>(1)</sup>	I <sub>F</sub> = 7.5 A	T <sub>C</sub> = 25 °C	-	0.75	V
		I <sub>F</sub> = 7.5 A	T <sub>C</sub> = 125 °C	0.57	0.65	
		I <sub>F</sub> = 15 A	T <sub>C</sub> = 25 °C	0.84	-	
		I <sub>F</sub> = 15 A	T <sub>C</sub> = 125 °C	0.72	-	
Maximum reverse current at DC blocking voltage	I <sub>R</sub> <sup>(2)</sup>	Rated V <sub>R</sub>	T <sub>C</sub> = 25 °C	0.1	0.5	mA
			T <sub>C</sub> = 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 <sub>C</sub> = 25 °C unless otherwise noted)				
PARAMETER	SYMBOL	MBR	MBRF	UNIT
Typical thermal resistance from junction to case	R <sub>θJC</sub>	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 <sup>(1)</sup>	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)

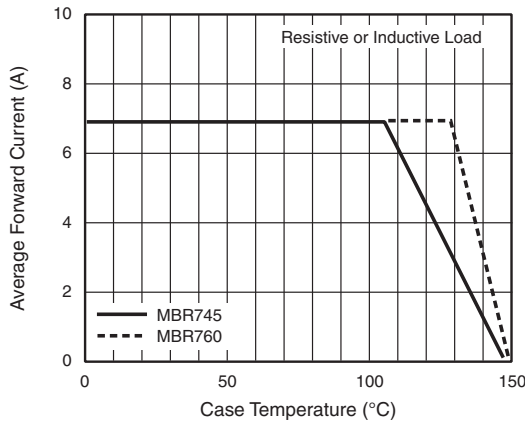


Fig. 1 - Forward Current Derating Curve

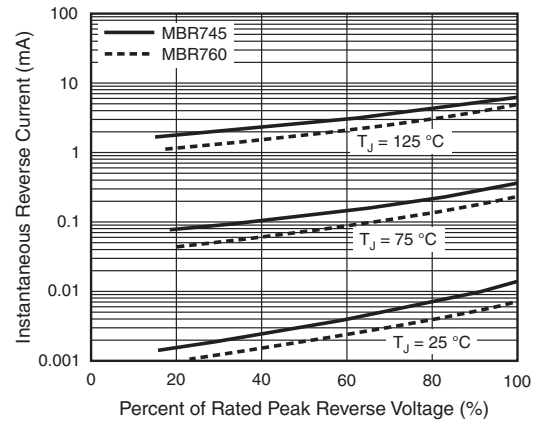


Fig. 4 - Typical Reverse Characteristics

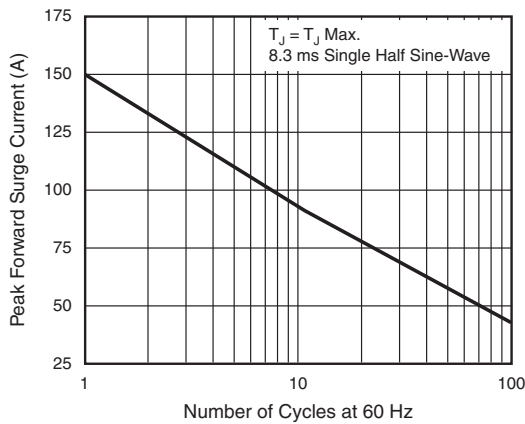


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current

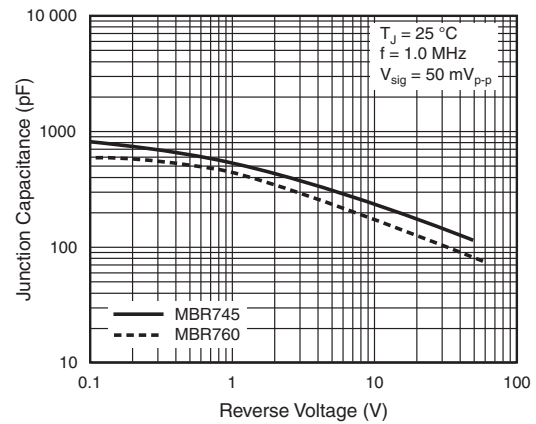


Fig. 5 - Typical Junction Capacitance

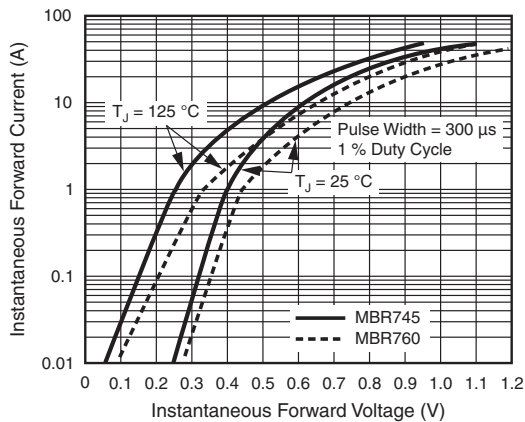


Fig. 3 - Typical Instantaneous Forward Characteristics

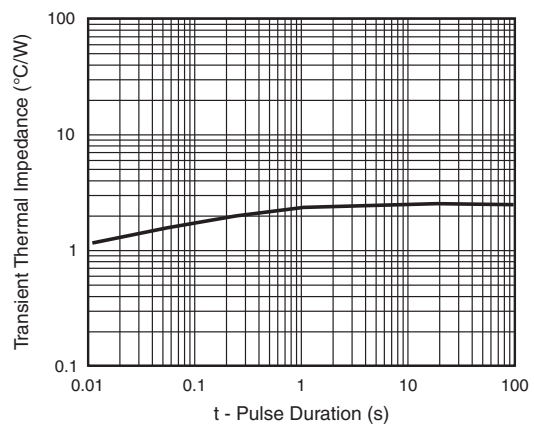
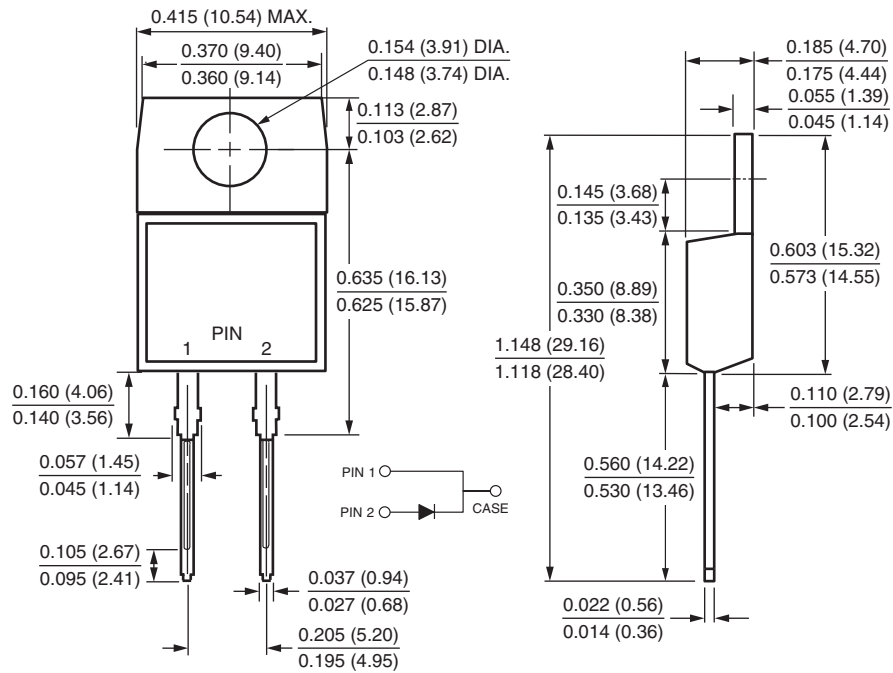


Fig. 6 - Typical Transient Thermal Impedance

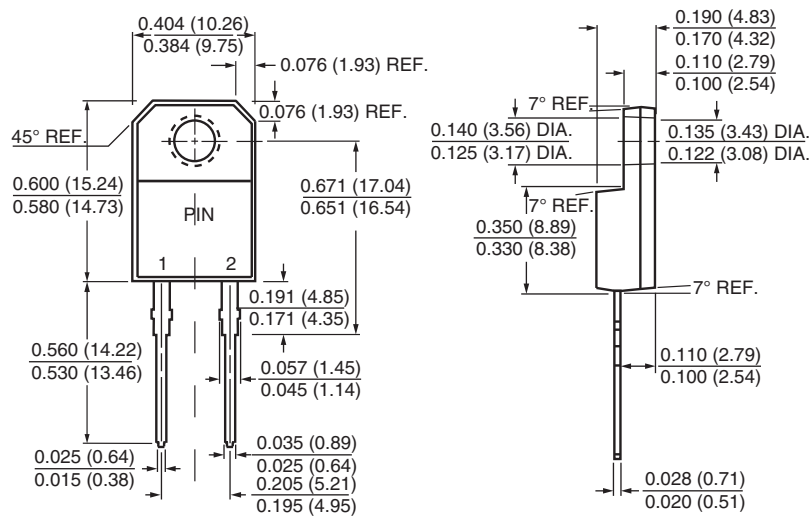


### PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

#### TO-220AC



#### ITO-220AC





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