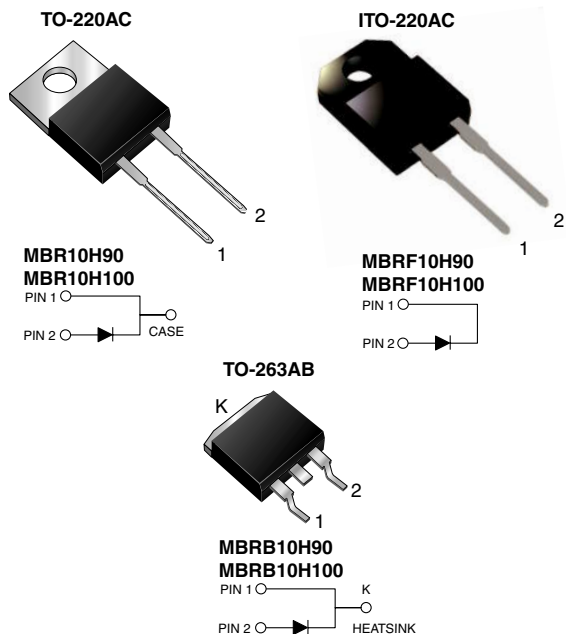


High-Voltage Schottky Rectifier

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-020C (for TO-263AB package)
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



TYPICAL APPLICATIONS

For use in 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-002B and JESD22-B102D

E3 suffix for commercial grade, HE3 suffix for high reliability grade (AEC Q101 qualified)

Polarity: As marked

Mounting Torque: 10 in-lbs maximum

MAJOR RATINGS AND CHARACTERISTICS

$I_{F(AV)}$	10 A
V_{RRM}	90 V, 100 V
I_{FSM}	250 A
V_F	0.64 V
I_R	4.5 μ A
$T_j \text{ max}$	175 °C

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

PARAMETER	SYMBOL	MBR10H90	MBR10H100	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	90	100	V
Working peak reverse voltage	V_{RWM}	90	100	V
Maximum DC blocking voltage	V_{DC}	90	100	V
Maximum average forward rectified current	$I_{F(AV)}$	10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I_{FSM}	250		A
Peak repetitive reverse current at $t_p = 2$ μ s, 1 kHz	I_{RRM}	0.5		A
Voltage rate of change (rated V_R)	dv/dt	10000		V/ μ s
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to + 175		°C
Isolation voltage (ITO-220AC only) From terminal to heatsink $t = 1$ minute	V_{AC}	1500		V

ELECTRICAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage ⁽¹⁾	$I_F = 10\text{ A}$, $T_C = 25\text{ }^{\circ}\text{C}$	V_F	0.77	V
	$I_F = 10\text{ A}$, $T_C = 125\text{ }^{\circ}\text{C}$		0.64	
	$I_F = 20\text{ A}$, $T_C = 25\text{ }^{\circ}\text{C}$		0.88	
	$I_F = 20\text{ A}$, $T_C = 125\text{ }^{\circ}\text{C}$		0.73	
Maximum reverse current at working peak reverse voltage ⁽¹⁾	$T_J = 25\text{ }^{\circ}\text{C}$	I_R	4.5	μA
	$T_J = 125\text{ }^{\circ}\text{C}$		6.0	mA

Note:

(1) Pulse test: 300 μs pulse width, 1 % duty cycle

THERMAL CHARACTERISTICS ($T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Typical thermal resistance	$R_{\theta JC}$	2.7	5.8	2.7	$^{\circ}\text{C/W}$

ORDERING INFORMATION					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	MBR10H100-E3/45	1.80	45	50/Tube	Tube
ITO-220AC	MBRF10H100-E3/45	1.94	45	50/Tube	Tube
TO-263AB	MBRB10H100-E3/45	1.33	45	50/Tube	Tube
TO-263AB	MBRB10H100-E3/81	1.33	81	800/Reel	Tape Reel

RATINGS AND CHARACTERISTICS CURVES

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

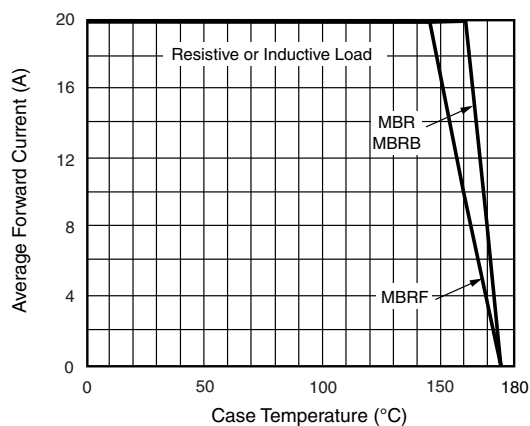


Figure 1. Forward Current Derating Curve

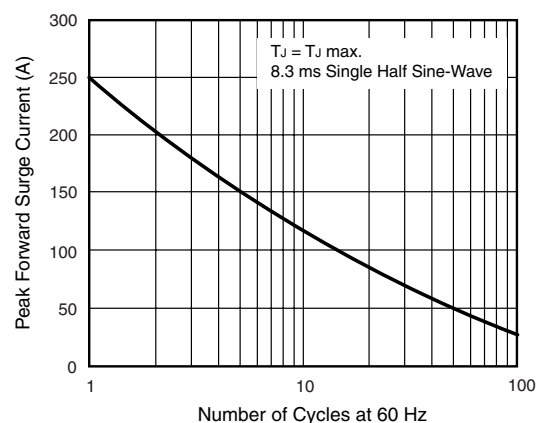


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

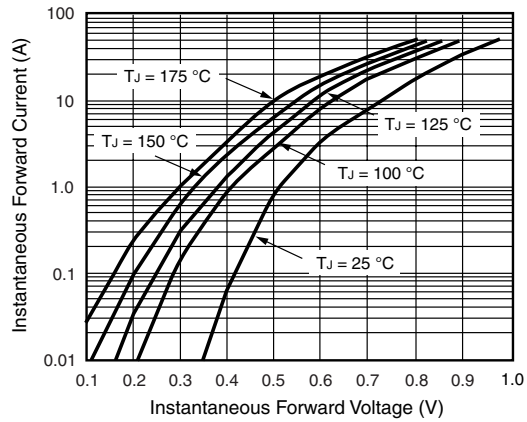


Figure 3. Typical Instantaneous Forward Characteristics

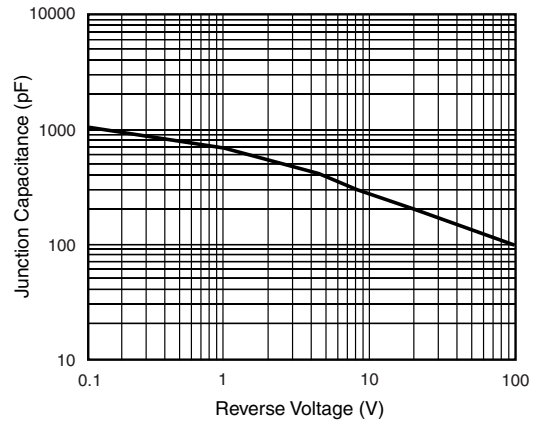


Figure 5. Typical Junction Capacitance Per Leg

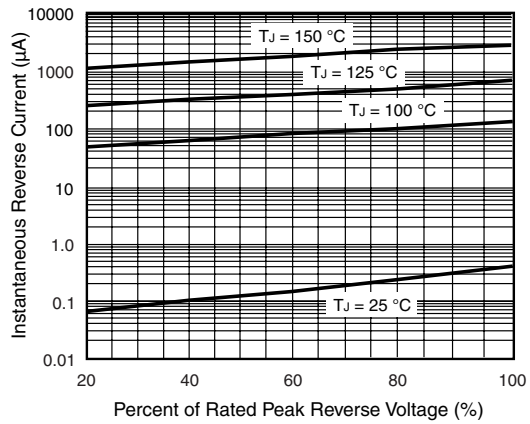


Figure 4. Typical Reverse Characteristics

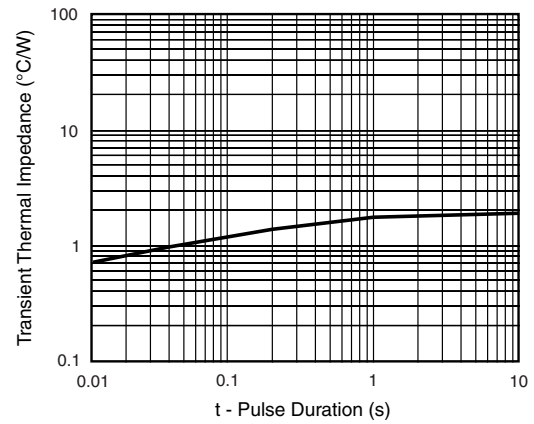


Figure 6. Typical Transient Thermal Impedance Per Leg

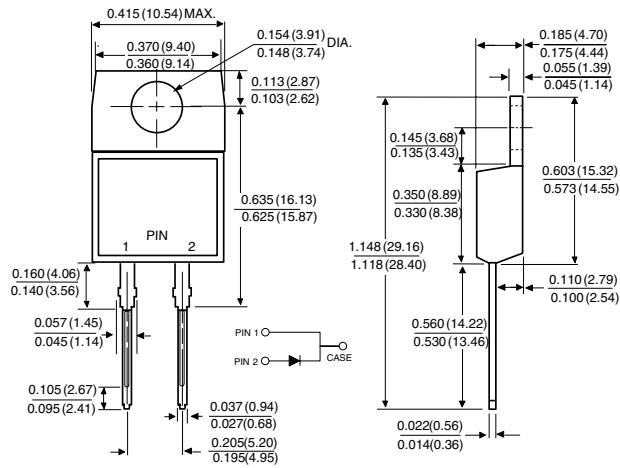
MBR(F,B)10H90 & MBR(F,B)10H100

Vishay General Semiconductor

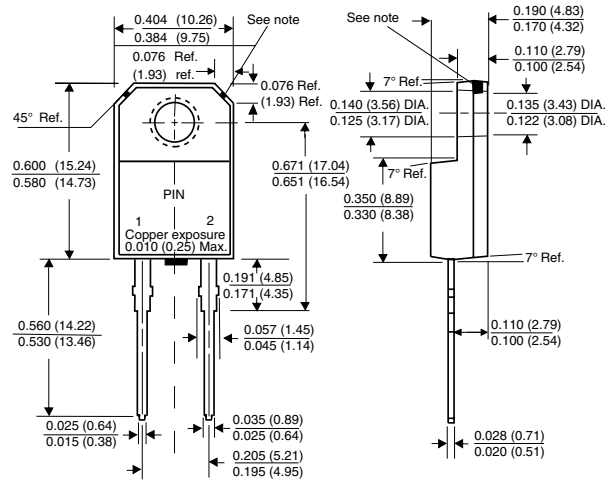


PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

TO-220AC

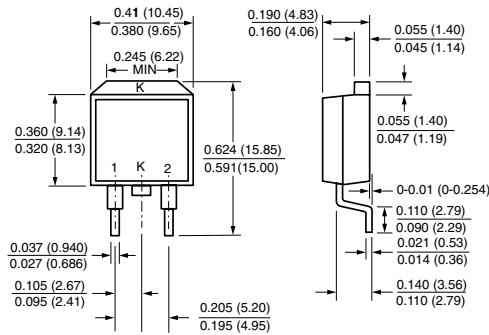


ITO-220AC

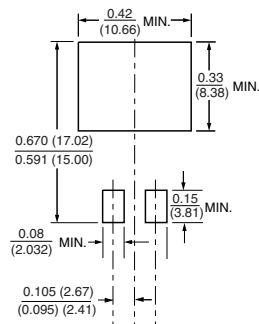


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

TO-263AB



Mounting Pad Layout





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