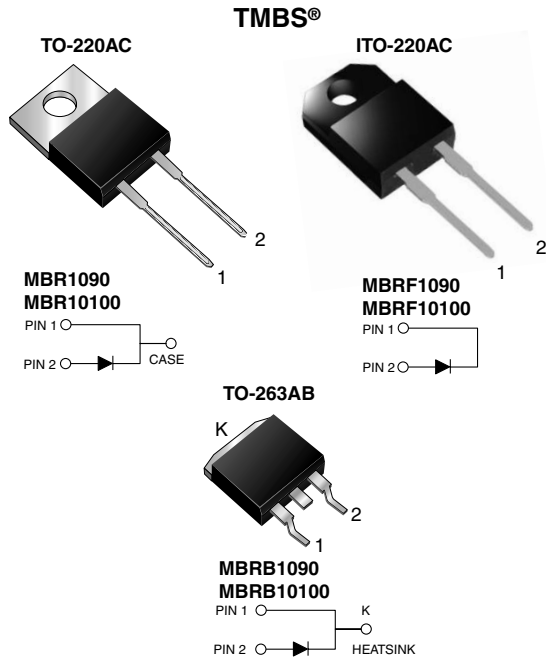


## High-Voltage Schottky Rectifier



### FEATURES

- Trench MOS Schottky technology
- Lower power losses, high efficiency
- Low forward voltage drop
- High forward surge capability
- High frequency operation
- Meets MSL level 1, per J-STD-020C, LF max peak of 245 °C (for TO-263AB package)
- Solder dip 260 °C, 40 seconds (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 high frequency rectifier of switching mode power supplies, free-wheeling 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

**Polarity:** As marked

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	10 A
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	150 A
$V_F$	0.65 V
$T_J \text{ max.}$	150 °C

MAXIMUM RATINGS ( $T_C = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	MBR1090	MBR10100	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 at $T_C = 133\text{ °C}$	$I_{F(AV)}$	10		A
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	150		A
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz	$I_{RRM}$	0.5		A
Voltage rate of change (rated $V_R$ )	$dv/dt$	10000		V/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 150		°C
Isolation voltage (ITO-220AC only) From terminal to heatsink $t = 1\text{ minute}$	$V_{AC}$	1500		V



<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)				
PARAMETER	TEST CONDITIONS	SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage <sup>(1)</sup>	$I_F = 10\text{ A}$ , $T_C = 25\text{ }^\circ\text{C}$	$V_F$	0.80	V
	$I_F = 10\text{ A}$ , $T_C = 125\text{ }^\circ\text{C}$		0.65	
	$I_F = 20\text{ A}$ , $T_C = 125\text{ }^\circ\text{C}$		0.75	
Maximum reverse current at working peak reverse voltage <sup>(1)</sup>	$T_J = 25\text{ }^\circ\text{C}$	$I_R$	100	$\mu\text{A}$
	$T_J = 100\text{ }^\circ\text{C}$		6.0	mA

**Note:**

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

<b>THERMAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Typical thermal resistance	$R_{\theta JA}$	60	-	60	$^\circ\text{C/W}$
	$R_{\theta JC}$	2.0	3.5	2.0	

<b>ORDERING INFORMATION</b> (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AC	MBR10100-E3/4W	1.845	4W	50/Tube	Tube
ITO-220AC	MBRF10100-E3/4W	1.661	4W	50/Tube	Tube
TO-263AB	MBRB10100-E3/4W	1.384	4W	50/Tube	Tube
TO-263AB	MBRB10100-E3/8W	1.384	8W	800/Reel	Tape reel

## RATINGS AND CHARACTERISTICS CURVES

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

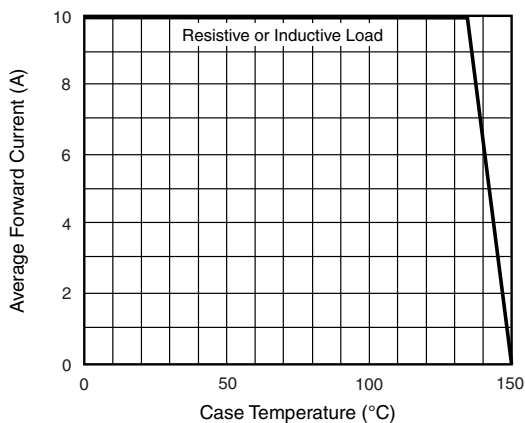


Figure 1. Forward Current Derating Curve

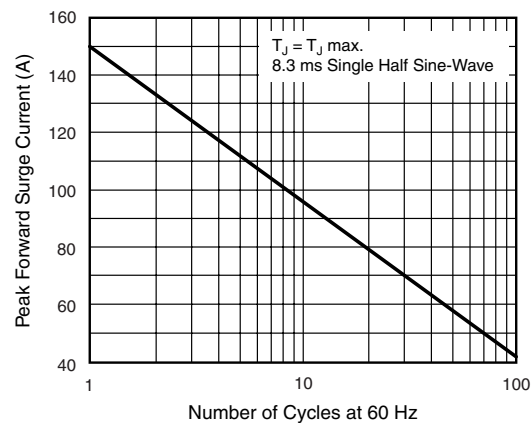


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

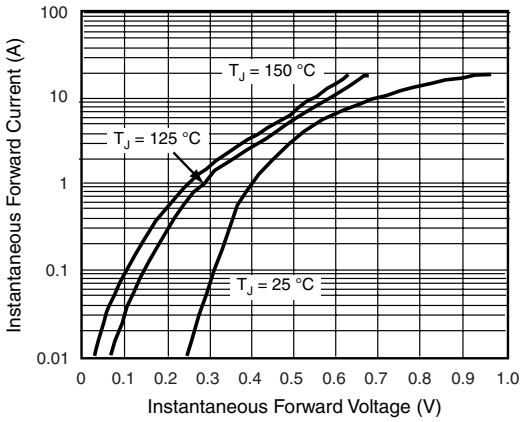


Figure 3. Typical Instantaneous Forward Characteristics

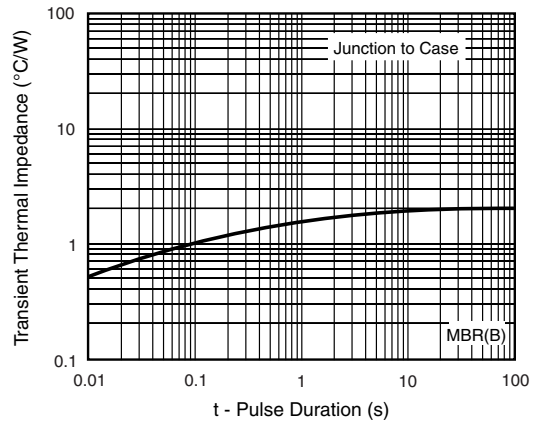


Figure 6. Typical Transient Thermal Impedance

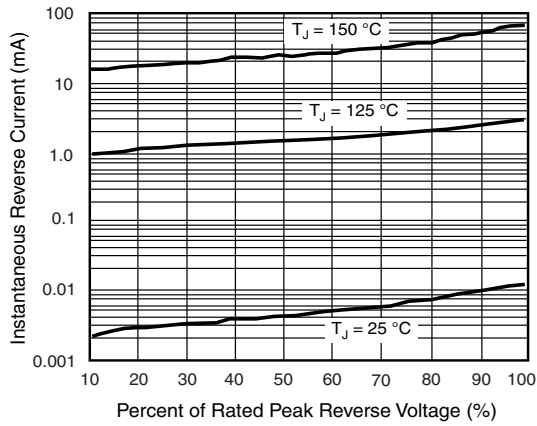


Figure 4. Typical Reverse Characteristics

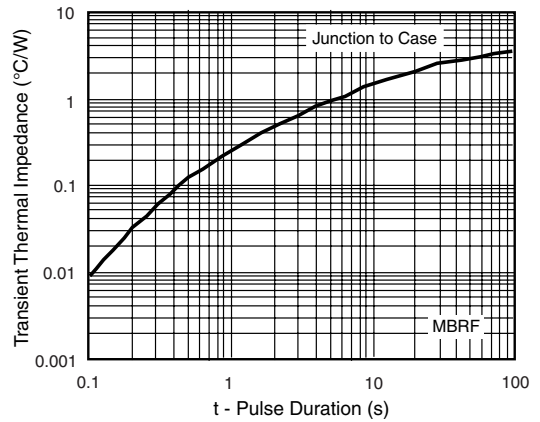


Figure 7. Typical Transient Thermal Impedance

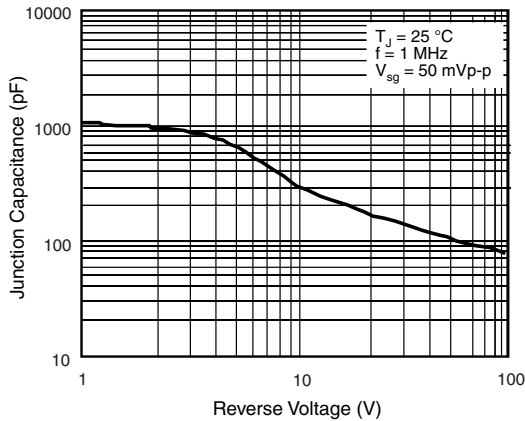


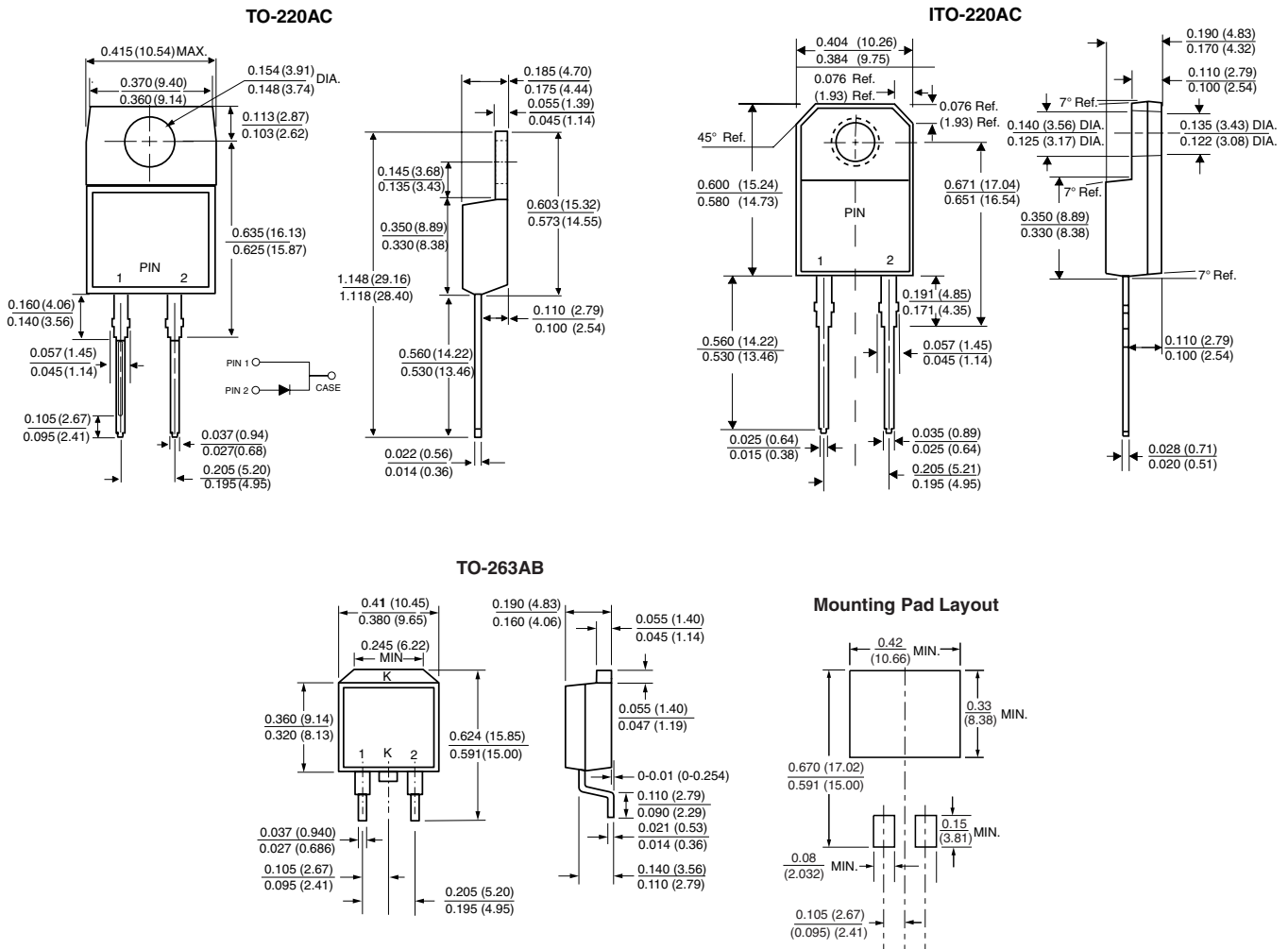
Figure 5. Typical Junction Capacitance

# MBR(F,B)1090 & MBR(F,B)10100

Vishay General Semiconductor



## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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