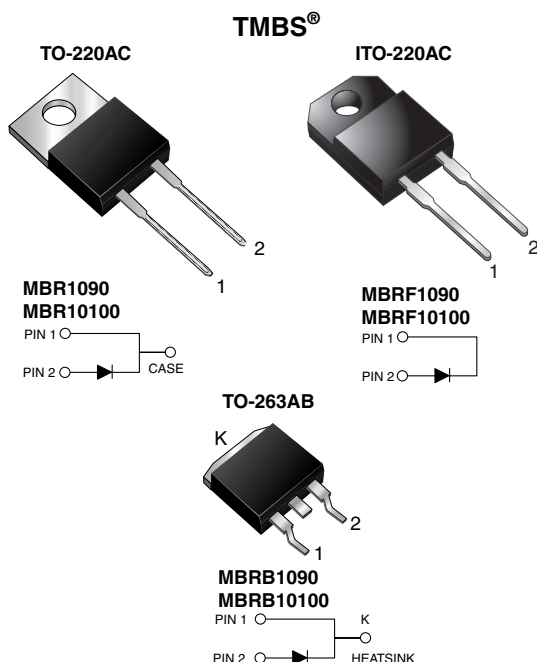




MBR(F,B)1090 & MBR(F,B)10100

Vishay General Semiconductor

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-020, LF maximum peak of 245 °C (for TO-263AB package)
- Solder bath temperature 275 °C maximum, 10 s, per JESD 22-B106 (for TO-220AC and ITO-220AC package)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

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

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

$I_{F(AV)}$	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
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$, $L = 60\text{ mH}$	E_{AS}	130		mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$, 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$	I_{RRM}	0.5		A
Voltage rate of change (rated V_R)	dV/dt	10 000		V/ μs
Isolation voltage (ITO-220AC only) From terminal to heatsink $t = 1\text{ min}$	V_{AC}	1500		V
Operating junction and storage temperature range	T_J, T_{STG}	- 65 to + 150		°C

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**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	0.80	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 ⁽²⁾		$T_J = 25\text{ }^{\circ}\text{C}$	I_R	100	μA
		$T_J = 100\text{ }^{\circ}\text{C}$		6.0	mA

Notes⁽¹⁾ Pulse test: 300 μs pulse width, 1 % duty cycle⁽²⁾ Pulse test: Pulse width $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ($T_C = 25\text{ }^{\circ}\text{C}$ 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	

ORDERING INFORMATION (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 and reel

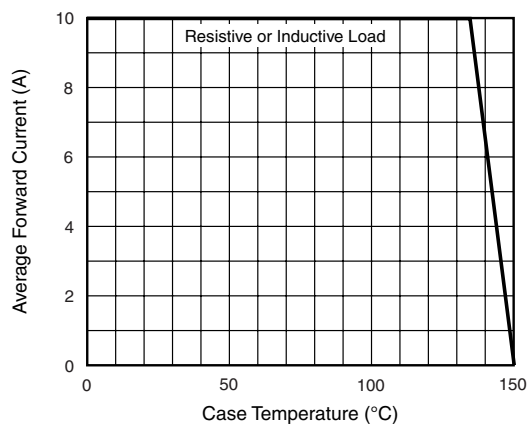
RATINGS AND CHARACTERISTICS CURVES $(T_A = 25\text{ }^{\circ}\text{C}$ unless otherwise noted)

Figure 1. Forward Current Derating Curve

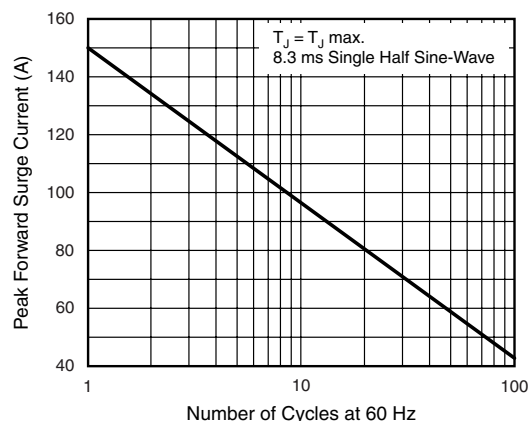


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current

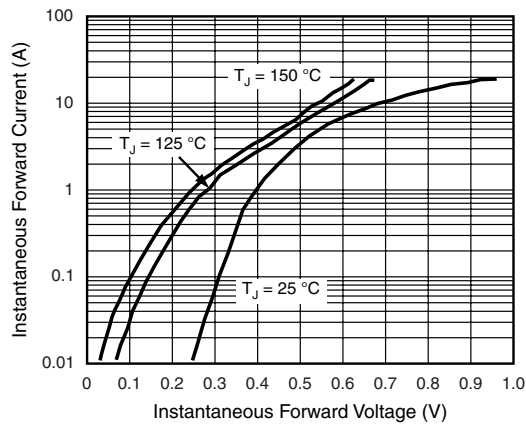


Figure 3. Typical Instantaneous Forward Characteristics

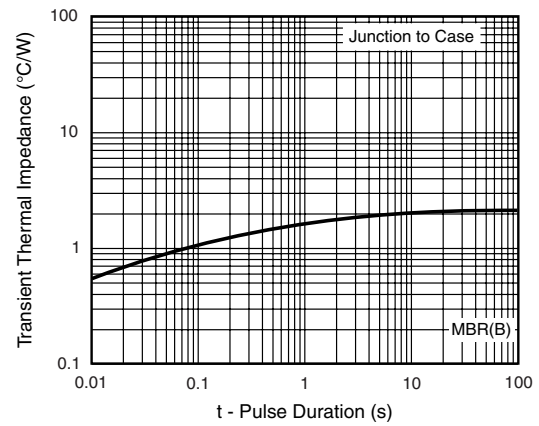


Figure 6. Typical Transient Thermal Impedance

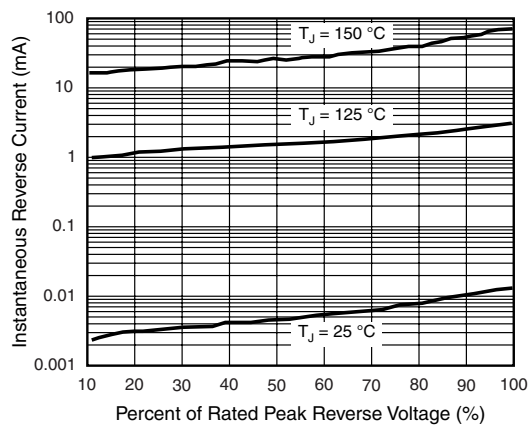


Figure 4. Typical Reverse Characteristics

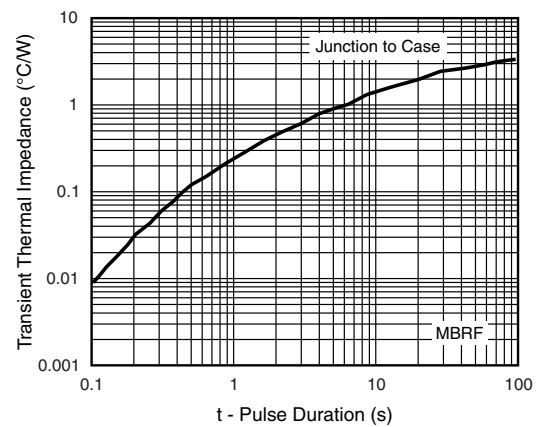


Figure 7. Typical Transient Thermal Impedance

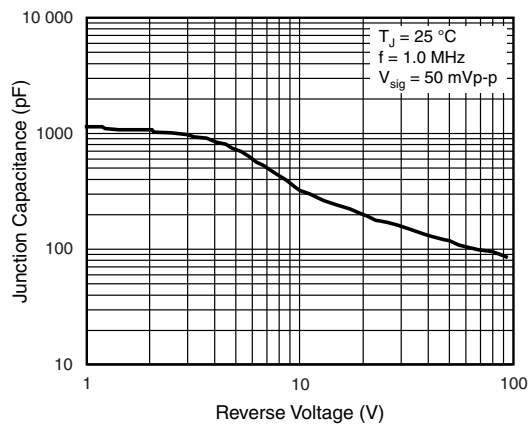


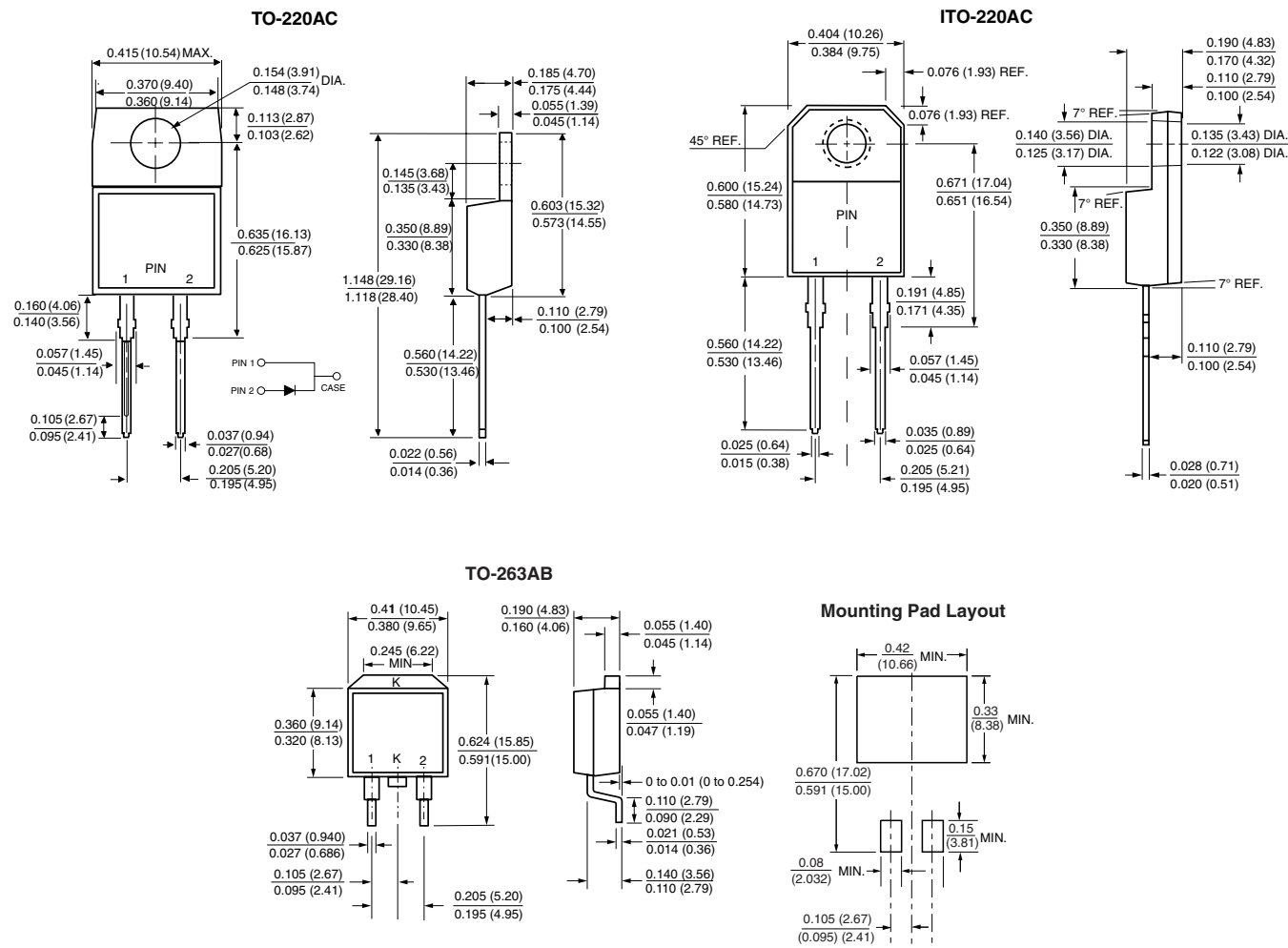
Figure 5. Typical Junction Capacitance

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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)





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