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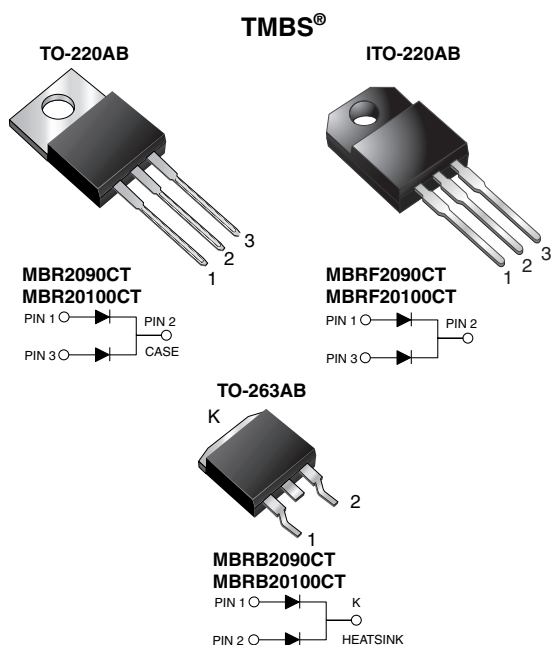


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# MBR20xxxCT-E3, MBRF20xxxCT-E3, MBRB20xxxCT-E3

Vishay General Semiconductor

## Dual Common-Cathode High Voltage Trench MOS Barrier 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-220AB and ITO-220AB package)
- 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 high frequency rectifier of switching mode power supplies, freewheeling diodes, DC/DC converters or polarity protection application.

### MECHANICAL DATA

**Case:** TO-220AB, ITO-220AB, 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	
$I_{F(AV)}$	2 x 10 A
$V_{RRM}$	90 V to 100 V
$I_{FSM}$	150 A
$V_F$	0.65 V
$T_J$ max.	150 °C
Package	TO-220AB, ITO-220AB, TO-263AB
Diode variation	Common cathode

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	MBR2090CT	MBR20100CT	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 $T_C = 133\text{ °C}$ <small>total device per diode</small>	$I_{F(AV)}$	20		A
		10		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	$I_{FSM}$	150		A
Non-repetitive avalanche energy at $T_J = 25\text{ °C}$ , $L = 60\text{ mH}$ per diode	$E_{AS}$	130		mJ
Peak repetitive reverse current at $t_p = 2\text{ }\mu\text{s}$ , 1 kHz, $T_J = 38\text{ °C} \pm 2\text{ °C}$ per diode	$I_{RRM}$	0.5		A
Voltage rate of change (rated $V_R$ )	dV/dt	10 000		V/ $\mu\text{s}$
Isolation voltage (ITO-220AB 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 <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	MAX.	UNIT
Maximum instantaneous forward voltage per diode	I <sub>F</sub> = 10 A	T <sub>C</sub> = 25 °C	V <sub>F</sub> <sup>(1)</sup>	0.80	V
	I <sub>F</sub> = 10 A	T <sub>C</sub> = 125 °C		0.65	
	I <sub>F</sub> = 20 A	T <sub>C</sub> = 125 °C		0.75	
Maximum reverse current per diode at working peak reverse voltage			I <sub>R</sub> <sup>(2)</sup>	100	μA
				6.0	mA

**Notes**

- (1) Pulse test: 300 μs pulse width, 1 % duty cycle
- (2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	MBR	MBRF	MBRB	UNIT
Typical thermal resistance per diode	R <sub>θJA</sub>	60	-	60	°C/W
	R <sub>θJC</sub>	2.0	3.5	2.0	

ORDERING INFORMATION (Example)					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR20100CT-E3/4W	1.88	4W	50/tube	Tube
ITO-220AB	MBRF20100CT-E3/4W	1.75	4W	50/tube	Tube
TO-263AB	MBRB20100CT-E3/4W	1.38	4W	50/tube	Tube
TO-263AB	MBRB20100CT-E3/8W	1.38	8W	800/reel	Tape and reel

**RATINGS AND CHARACTERISTICS CURVES (T<sub>A</sub> = 25 °C unless otherwise noted)**

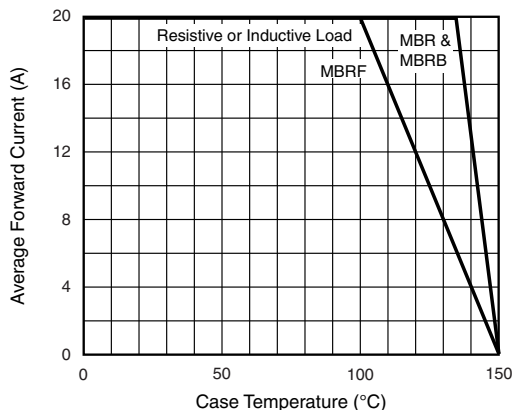


Fig. 1 - Forward Current Derating Curve

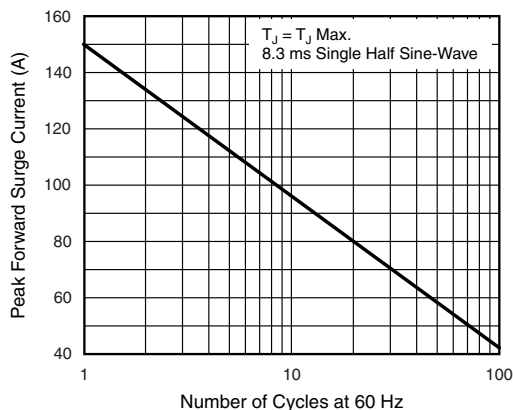


Fig. 2 - Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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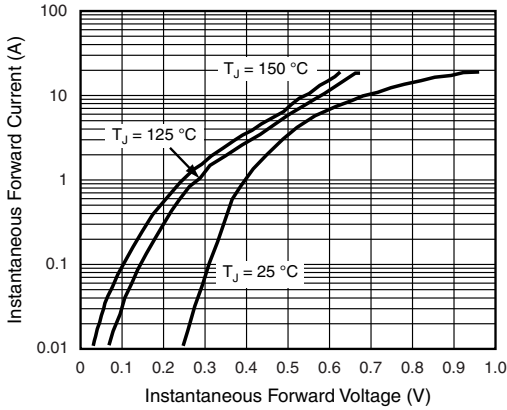


Fig. 3 - Typical Instantaneous Forward Characteristics Per Diode

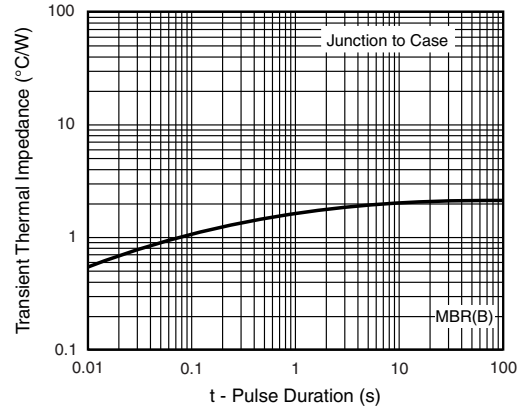


Fig. 6 - Typical Transient Thermal Impedance Per Diode

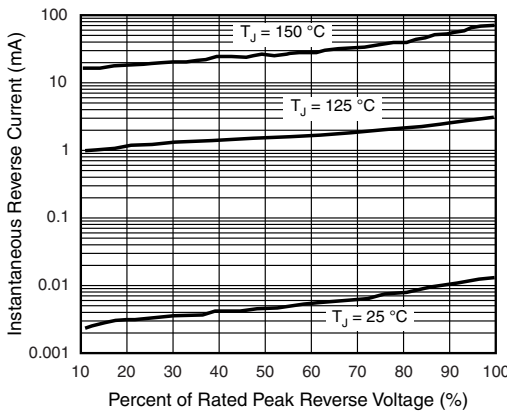


Fig. 4 - Typical Reverse Characteristics Per Diode

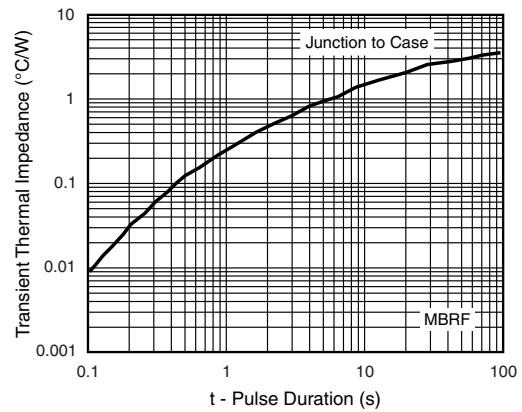


Fig. 7 - Typical Transient Thermal Impedance Per Diode

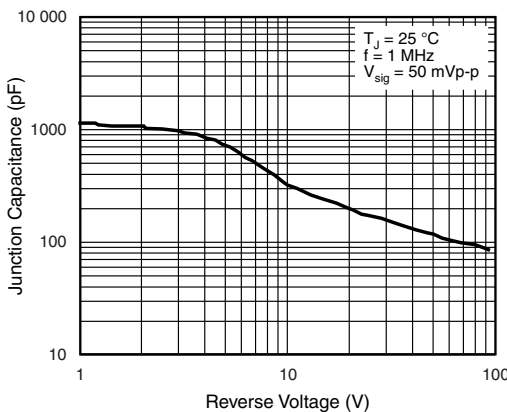
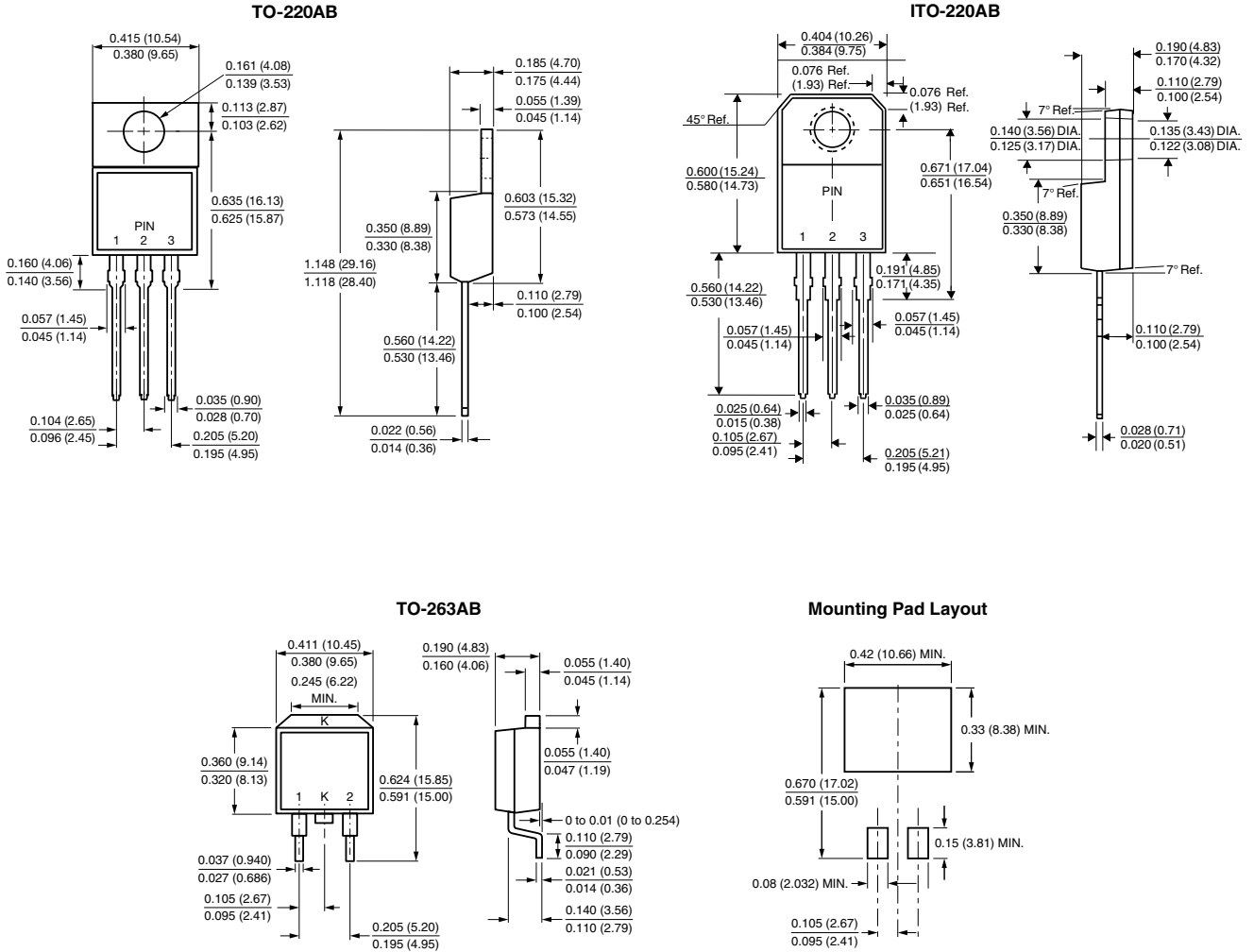


Fig. 5 - Typical Junction Capacitance Per Diode



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**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)





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