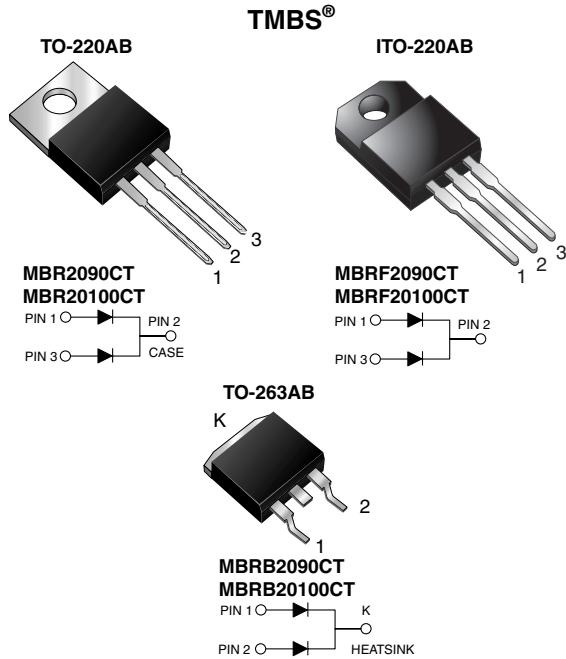




**KERSEMI**

# MBR(F,B)2090CT & MBR(F,B)20100CT



## 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)
- 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-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, 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	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 $T_C = 133 \text{ °C}$ total device per diode	$I_{F(AV)}$	20 10		A
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/ $\mu\text{s}$
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 150		°C
Isolation voltage (ITO-220AB only) From terminal to heatsink $t = 1 \text{ min}$	$V_{AC}$	1500		V



ELECTRICAL CHARACTERISTICS ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS		SYMBOL	VALUE	UNIT
Maximum instantaneous forward voltage per diode <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 per diode at working peak reverse voltage <sup>(2)</sup>			$I_R$	100	$\mu\text{A}$
				6.0	mA

**Notes**

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

<sup>(2)</sup> 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 per diode	$R_{\theta JA}$	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-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

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

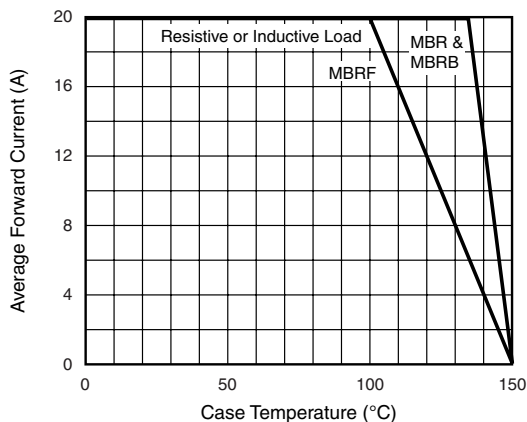


Figure 1. Forward Current Derating Curve

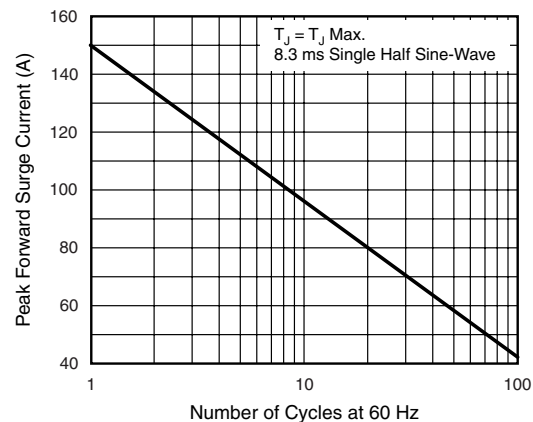


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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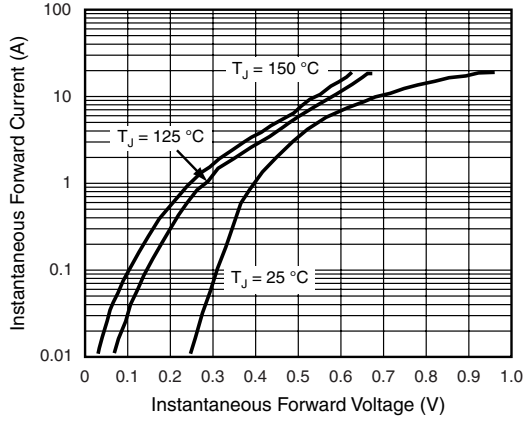


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

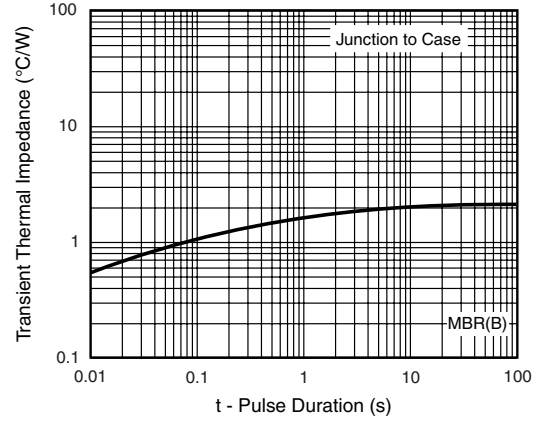


Figure 6. Typical Transient Thermal Impedance Per Diode

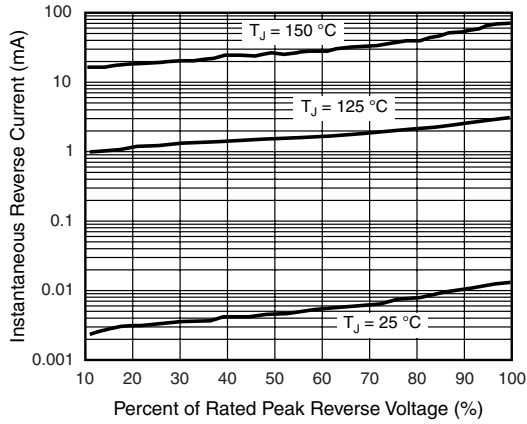


Figure 4. Typical Reverse Characteristics Per Diode

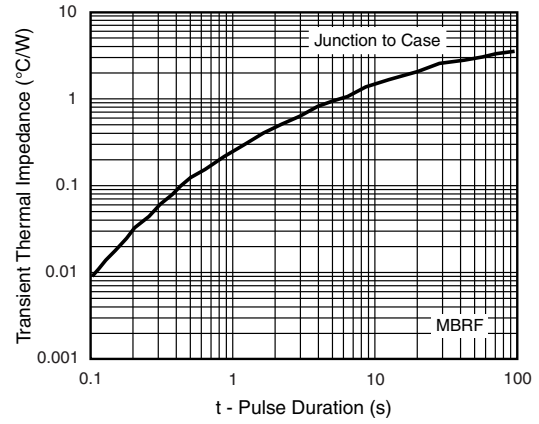


Figure 7. Typical Transient Thermal Impedance Per Diode

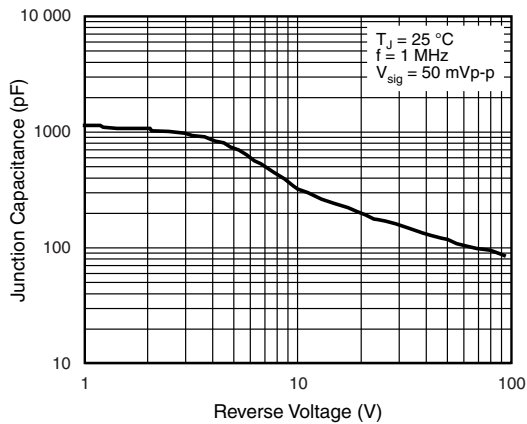
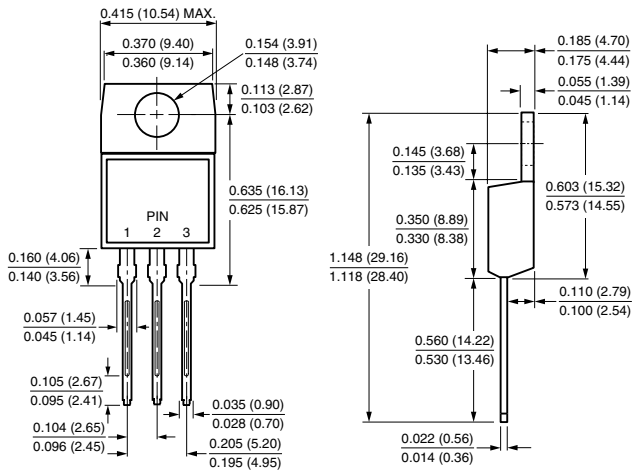


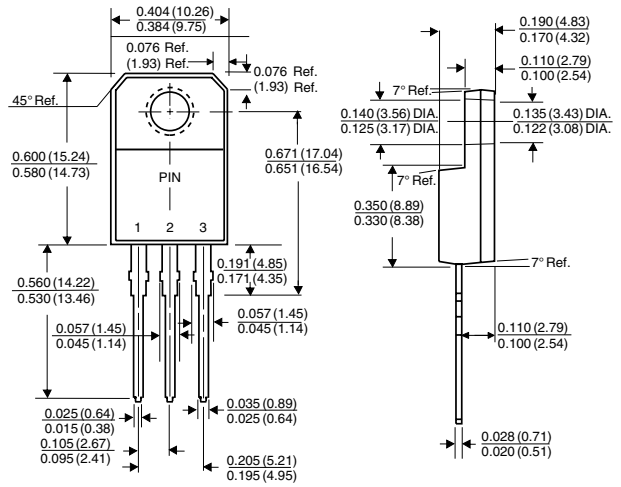
Figure 5. Typical Junction Capacitance Per Diode

### PACKAGE OUTLINE DIMENSIONS

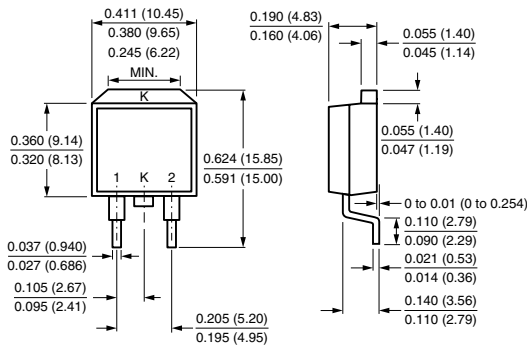
TO-220AB



ITO-220AB



TO-263AB



Mounting Pad Layout

