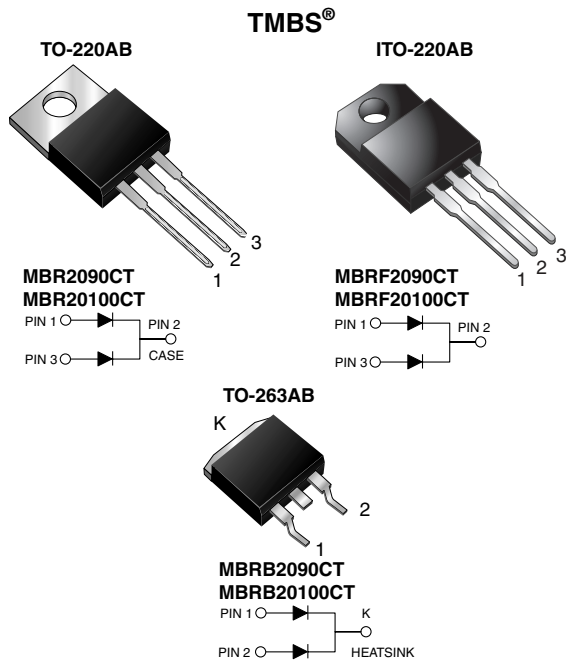


Dual Common-Cathode High-Voltage Schottky Rectifier



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-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/ μs
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

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



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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 per diode ⁽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 per diode at working peak reverse voltage ⁽²⁾			I_R	100	μA
				$T_J = 100\text{ }^\circ\text{C}$	6.0

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 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)

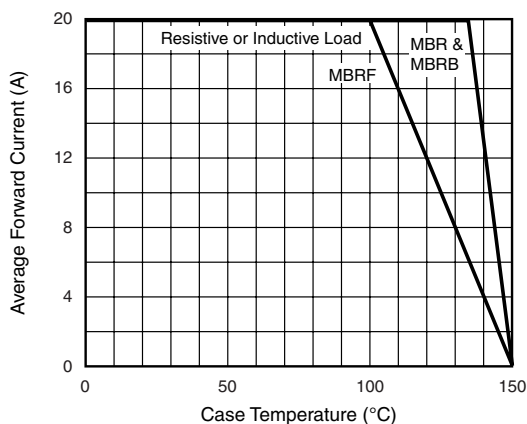


Figure 1. Forward Current Derating Curve

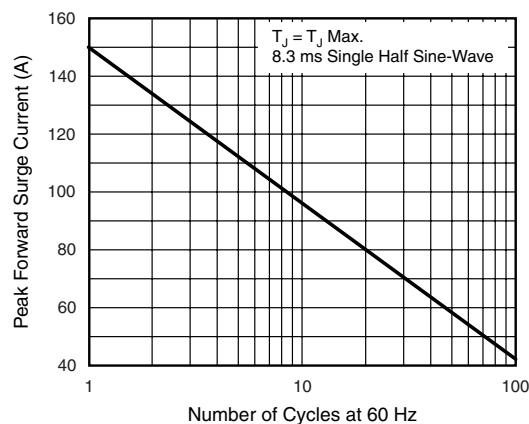


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode

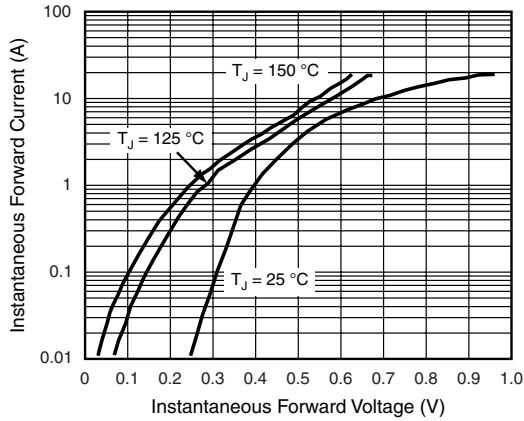


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

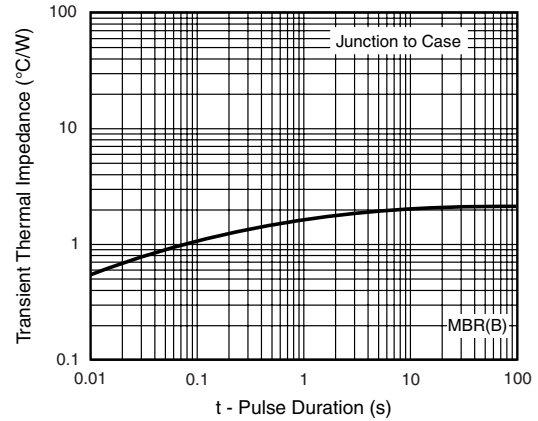


Figure 6. Typical Transient Thermal Impedance Per Diode

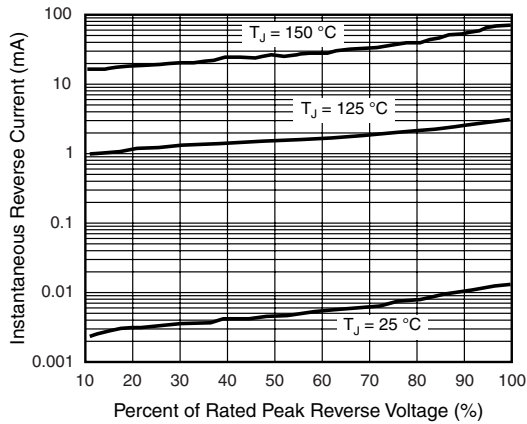


Figure 4. Typical Reverse Characteristics Per Diode

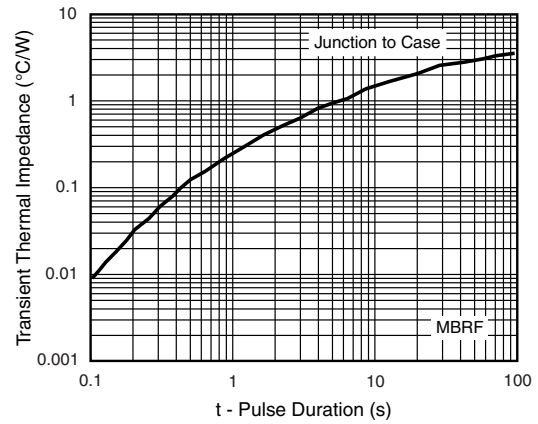


Figure 7. Typical Transient Thermal Impedance Per Diode

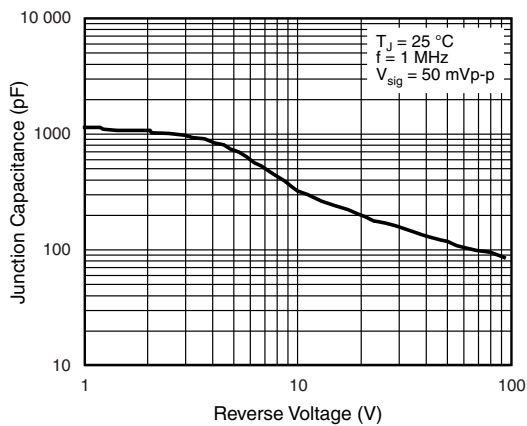


Figure 5. Typical Junction Capacitance Per Diode

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



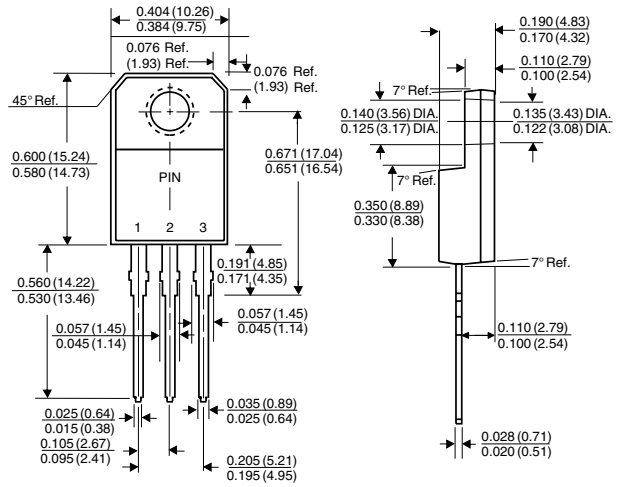
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

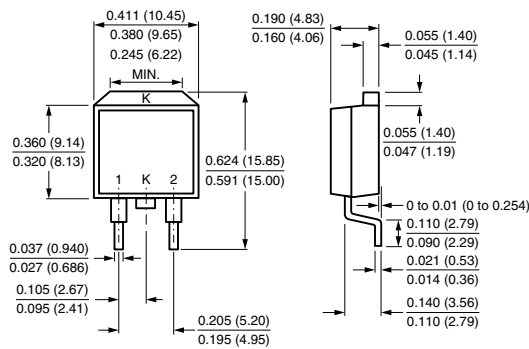
TO-220AB



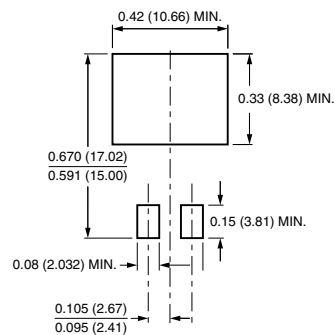
ITO-220AB



TO-263AB



Mounting Pad Layout





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