

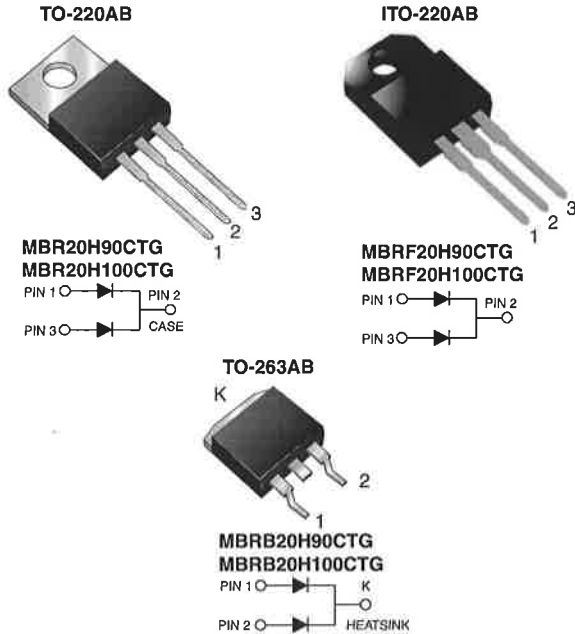


# MBR(F,B)20H90CTG thru MBR(F,B)20H100CTG

Vishay General Semiconductor

## Dual Common-Cathode High-Voltage Schottky Rectifier

High Barrier Technology for improved high temperature performance



### FEATURES

- Guardring for overvoltage protection
- Lower power losses, high efficiency
- Low forward voltage drop
- Low leakage current
- 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-220AB & ITO-220AB 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-220AB, ITO-220AB, 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, HE3 suffix for high reliability grade (AEC Q101 qualified)

**Polarity:** As marked

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

### MAJOR RATINGS AND CHARACTERISTICS

$I_{F(AV)}$	10 A x 2
$V_{RRM}$	90 V, 100 V
$I_{FSM}$	150 A
$V_F$	0.70 V
$I_R$	3.5 $\mu$ A
$T_j \text{ max}$	175 °C

### MAXIMUM RATINGS ( $T_C = 25$ °C unless otherwise noted)

PARAMETER	SYMBOL	MBR20H90CTG	MBR20H100CTG	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 $T_C = 155$ °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
Peak repetitive reverse current per diode at $t_p = 2$ $\mu$ s, 1 kHz	$I_{RRM}$	0.5		A
Voltage rate of change (rated $V_R$ )	$dv/dt$	10000		V/ $\mu$ s
Operating junction and storage temperature range	$T_J, T_{STG}$	- 65 to + 175		°C
Isolation voltage (ITO-220AB only) From terminal to heatsink $t = 1$ minute	$V_{AC}$	1500		V

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<b>ELECTRICAL CHARACTERISTICS</b> ( $T_C = 25\text{ }^\circ\text{C}$ unless otherwise noted)					
PARAMETER	TEST CONDITIONS	SYMBOL	TYP. VALUE	MAX. VALUE	UNIT
Maximum instantaneous forward voltage per diode (1)	at $I_F = 10\text{ A}$ , $T_j = 25\text{ }^\circ\text{C}$	$V_F$	0.80	0.85	V
	at $I_F = 10\text{ A}$ , $T_j = 125\text{ }^\circ\text{C}$		0.64	0.70	
	at $I_F = 20\text{ A}$ , $T_j = 25\text{ }^\circ\text{C}$		0.87	0.93	
	at $I_F = 20\text{ A}$ , $T_j = 125\text{ }^\circ\text{C}$		0.74	0.80	
Maximum reverse current per diode at working peak reverse voltage (1)	$T_j = 25\text{ }^\circ\text{C}$	$I_R$	-	3.5	$\mu\text{A}$
	$T_j = 125\text{ }^\circ\text{C}$		-	4.5	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 per diode	$R_{\theta JC}$	2.0	5.8	2.0	$^\circ\text{C/W}$

<b>ORDERING INFORMATION</b>					
PACKAGE	PREFERRED P/N	UNIT WEIGHT (G)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	MBR20H100CTG-E3/45	1.85	45	50/Tube	Tube
ITO-220AB	MBRF20H100CTG-E3/45	1.99	45	50/Tube	Tube
TO-263AB	MBRB20H100CTG-E3/45	1.35	45	50/Tube	Tube
TO-263AB	MBRB20H100CTG-E3/81	1.35	81	800/Reel	Tape Reel

## RATINGS AND CHARACTERISTICS CURVES

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

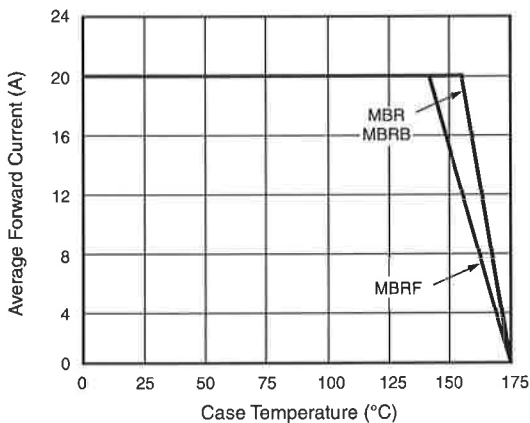


Figure 1. Forward Derating Curve

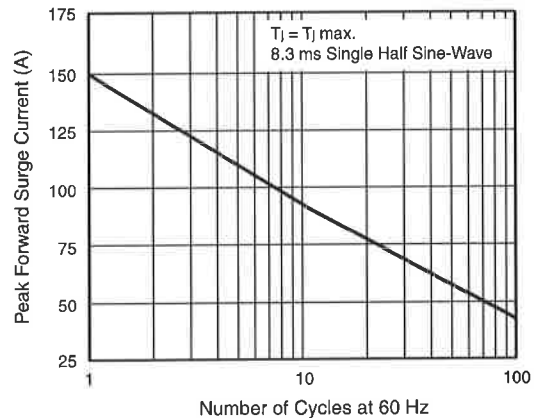


Figure 2. Maximum Non-Repetitive Peak Forward Surge Current Per Diode



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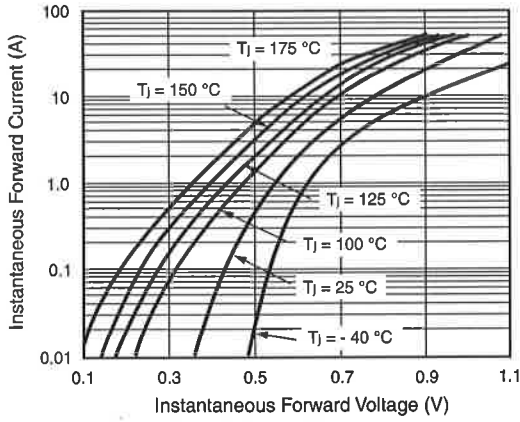


Figure 3. Typical Instantaneous Forward Characteristics Per Diode

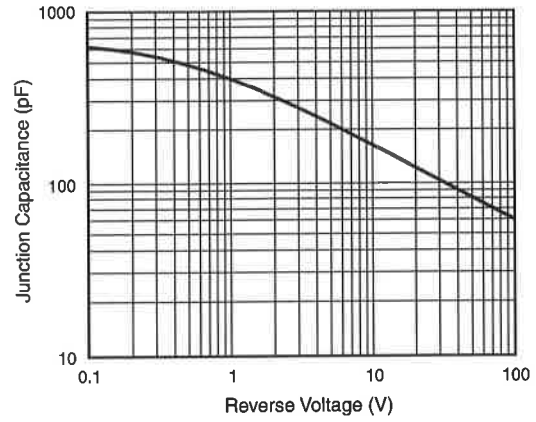


Figure 5. Typical Junction Capacitance Per Diode

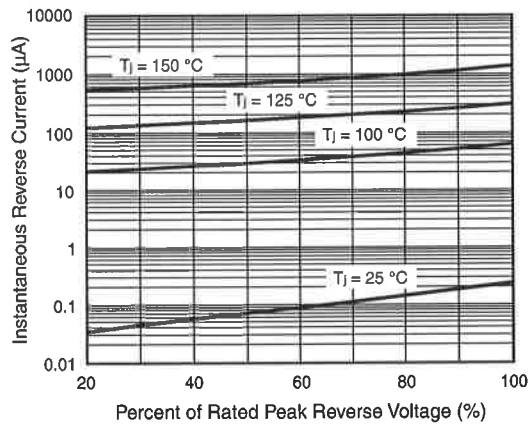


Figure 4. Typical Reverse Characteristics Per Diode

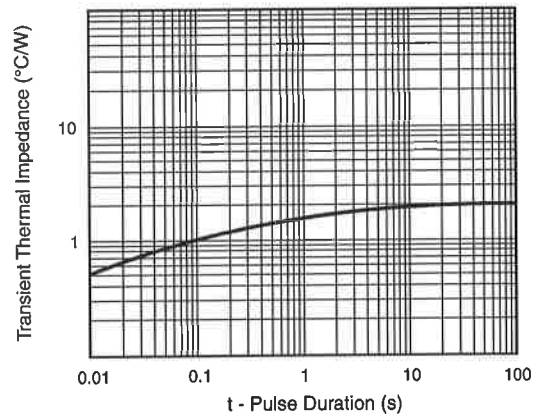


Figure 6. Typical Transient Thermal Impedance Per Diode

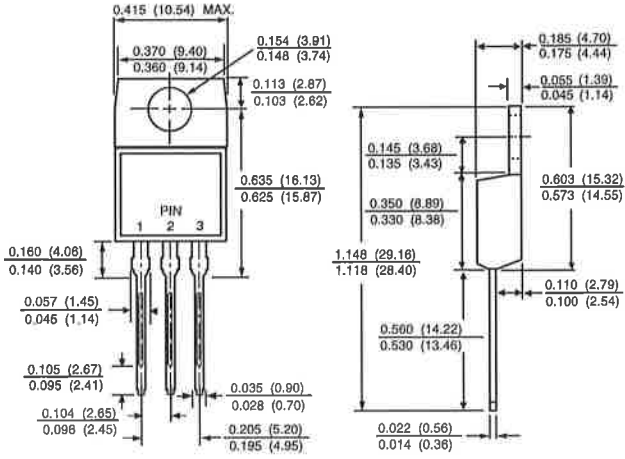
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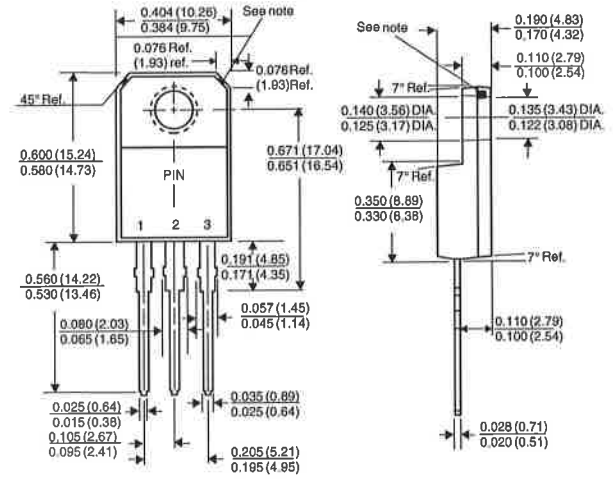
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## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

**TO-220AB**

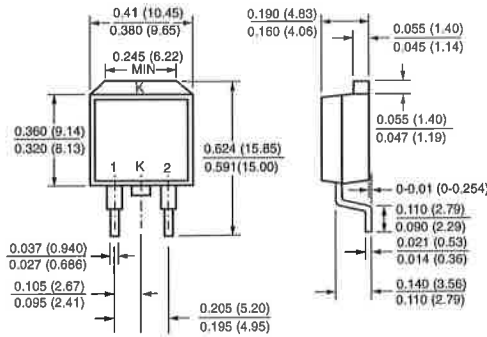


**ITO-220AB**

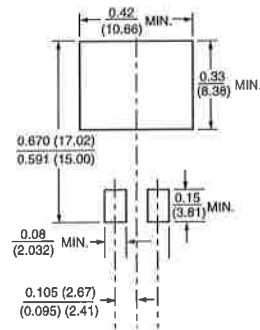


Note: Copper exposure is allowable for 0.005 (0.13) Max. from the body

**TO-263AB**



**Mounting Pad Layout**





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