

**SCHOTTKY RECTIFIER**

**20 Amp**

**Major Ratings and Characteristics**




Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	20	A
$I_{FRM}$ @ $T_C = 133^\circ\text{C}$ (Per Leg)	20	A
$V_{RRM}$	80/90/100	V
$I_{FSM}$ @ tp = 5 $\mu\text{s}$ sine	850	A
$V_F$ @ 10Apk, $T_J = 125^\circ\text{C}$	0.70	V
$T_J$ range	-65 to 150	$^\circ\text{C}$

**Description/Features**

This center tap Schottky rectifier has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150° C junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150° C  $T_J$  operation
- Center tap TO-220, D<sup>2</sup>Pak and TO-262 packages
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability

**Case Styles**

MBR20...CT	MBRB20...CT	MBR20...CT-1
		
TO-220	D <sup>2</sup> PAK	TO-262

### Voltage Ratings

Parameters	MBR2080CT MBRB2080CT MBR2080CT-1	MBR2090CT MBRB2090CT MBR2090CT-1	MBR20100CT MBRB20100CT MBR20100CT-1
V <sub>R</sub> Max. DC Reverse Voltage (V)	80	90	100
V <sub>RRM</sub> Max. Working Peak Reverse Voltage (V)			

### Absolute Maximum Ratings

Parameters	Values	Units	Conditions
I <sub>F(AV)</sub> Max. Average Forward Current (Per Leg) (Per Device)	10	A	@ T <sub>C</sub> = 133°C, (Rated V <sub>R</sub> )
	20		
I <sub>FRM</sub> Peak Repetitive Forward Current (Per Leg)	20	A	Rated V <sub>R</sub> , square wave, 20kHz T <sub>C</sub> = 133°C
I <sub>FSM</sub> Non Repetitive Peak Surge Current	850	A	5µs Sine or 3µs Rect. pulse Following any rated load condition and with rated V <sub>RRM</sub> applied Surge applied at rated load conditions halfwave, single phase, 60Hz
	150		
I <sub>RRM</sub> Peak Repetitive Reverse Surge Current	0.5	A	2.0 µsec 1.0 KHz
E <sub>AS</sub> Non-Repetitive Avalanche Energy (Per Leg)	24	mJ	T <sub>J</sub> = 25°C, I <sub>AS</sub> = 2 Amps, L = 60 mH

### Electrical Specifications

Parameters	Values	Units	Conditions
V <sub>FM</sub> Max. Forward Voltage Drop (1)	0.80	V	@ 10A T <sub>J</sub> = 25°C
	0.95	V	@ 20A
	0.70	V	@ 10A T <sub>J</sub> = 125°C
	0.85	V	@ 20A
I <sub>RM</sub> Max. Instantaneous Reverse Current (1)	0.10	mA	T <sub>J</sub> = 25°C Rated DC voltage
	6	mA	T <sub>J</sub> = 125°C
V <sub>F(TO)</sub> Threshold Voltage	0.433	V	T <sub>J</sub> = T <sub>J</sub> max.
r <sub>t</sub> Forward Slope Resistance	15.8	mΩ	
C <sub>T</sub> Max. Junction Capacitance	400	pF	V <sub>R</sub> = 5V <sub>DC</sub> , (test signal range 100Khz to 1Mhz) 25°C
L <sub>S</sub> Typical Series Inductance	8.0	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change (Rated V <sub>R</sub> )	10,000	V/µs	

(1) Pulse Width < 300µs, Duty Cycle < 2%

### Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T <sub>J</sub> Max. Junction Temperature Range	-65 to 150	°C	
T <sub>stg</sub> Max. Storage Temperature Range	-65 to 175	°C	
R <sub>thJC</sub> Max. Thermal Resistance Junction to Case (Per Leg)	2.0	°C/W	DC operation
R <sub>thCS</sub> Typical Thermal Resistance Case to Heatsink	0.50	°C/W	Mounting surface, smooth and greased Only for TO-220
R <sub>thJA</sub> Max. Thermal Resistance Junction to Ambient	50	°C/W	DC operation For D <sup>2</sup> Pak and TO-262
wt Approximate Weight	2 (0.07)	g (oz.)	
T Mounting Torque	Min.	6 (5)	Non-lubricated threads
	Max.	12 (10)	

MBR20100CT  
MBRB20100CT  
MBR20100CT-1

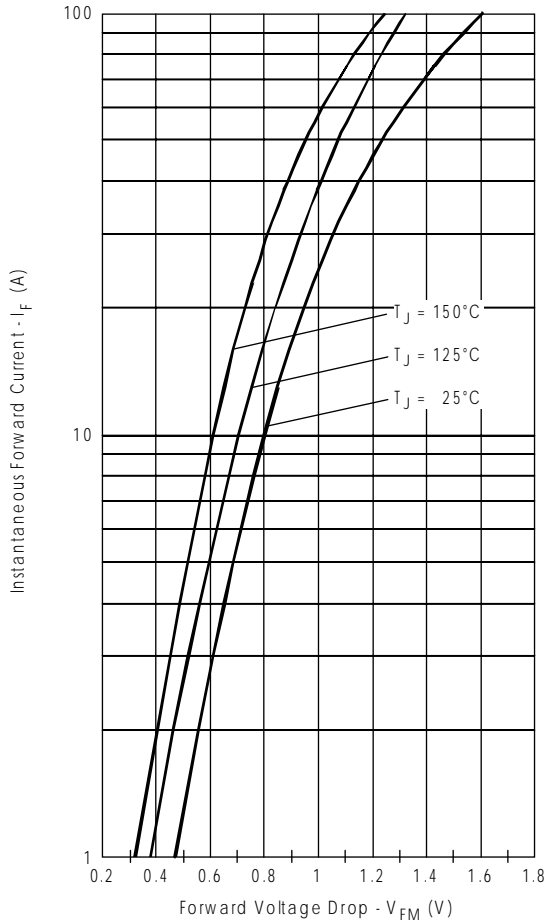


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

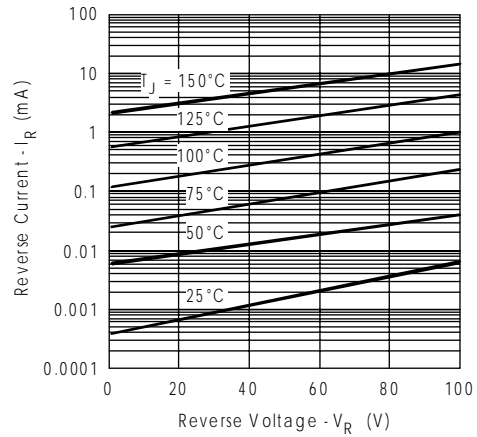


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

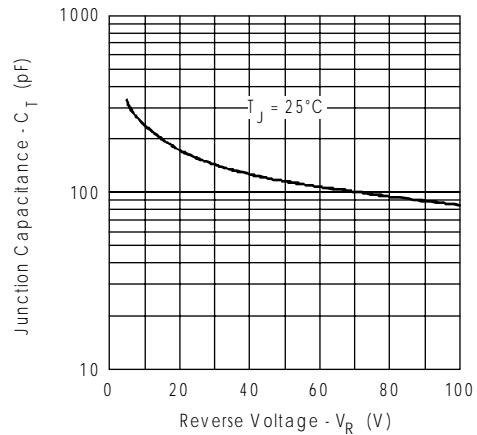


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

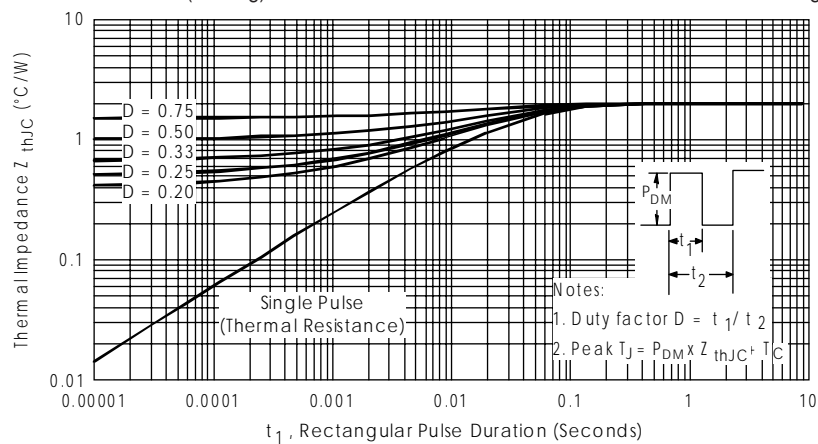


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

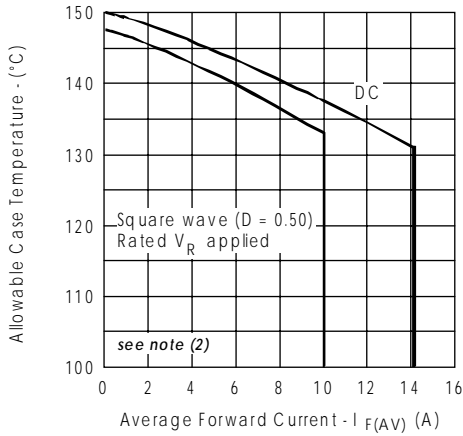


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

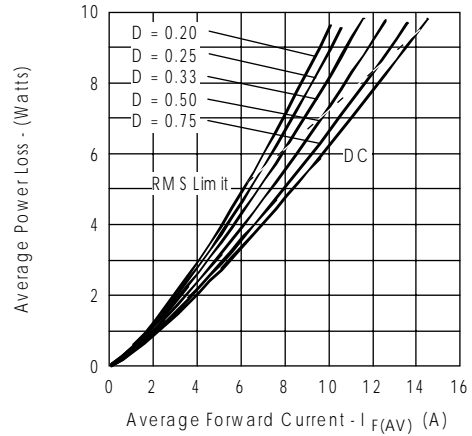


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

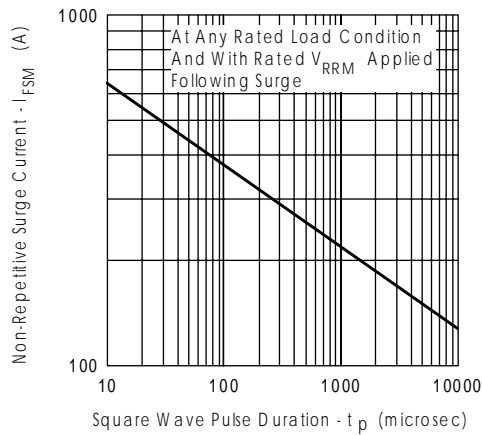


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

- (2) Formula used:  $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$ ;  
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)}/D)$  (see Fig. 6);  
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D); I_R @ V_{R1} = \text{rated } V_R$

Ordering Information Table

**Device Code**

MBR	B	20	100	CT	-1
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①
②
③
④
⑤
⑥

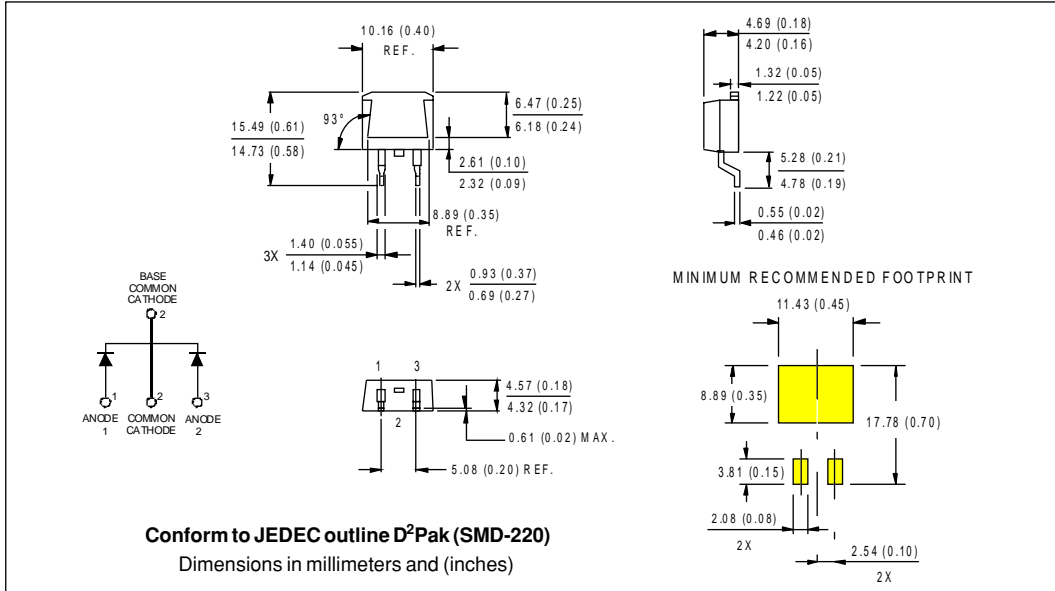
- 1** - Essential Part Number
- 2** - B = Surface Mount  
None = TO-220
- 3** - Current Rating
- 4** - Voltage code: Code =  $V_{RRM}$ 

080 = 80V
090 = 90V
100 = 100V
- 5** - CT= Essential Part Number
- 6** - -1 = TO-262  
None = TO-220

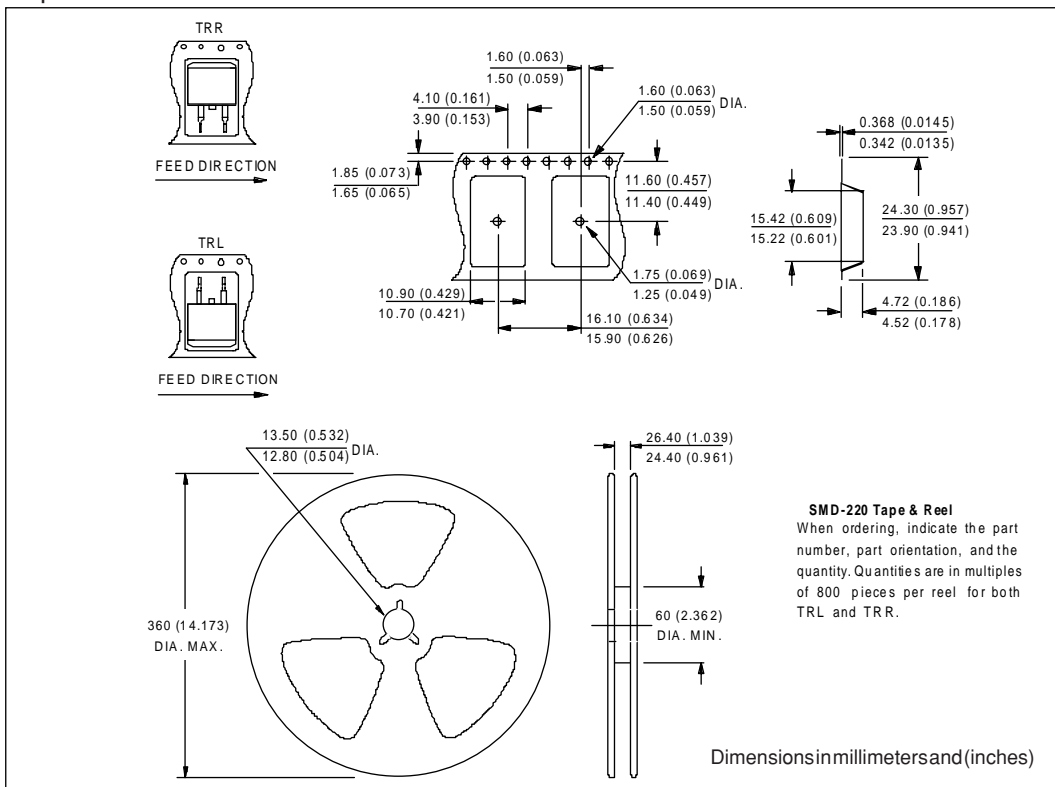
Outline Table

**Conform to JEDEC outline TO-220AB**  
 Dimensions in millimeters and (inches)

Outline Table



Tape & Reel Information



Outline Table

