

**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
$V_R$ Max. DC Reverse Voltage (V)	80	90	100
$V_{RWM}$ Max. Working Peak Reverse Voltage (V)			

### Absolute Maximum Ratings

Parameters	Values	Units	Conditions
$I_{F(AV)}$ Max. Average Forward Current (Per Leg) (Per Device)	10	A	@ $T_C = 133^\circ\text{C}$ , (Rated $V_R$ )
	20		
$I_{FRM}$ Peak Repetitive Forward Current (Per Leg)	20	A	Rated $V_R$ , square wave, 20kHz $T_C = 133^\circ\text{C}$
$I_{FSM}$ Non Repetitive Peak Surge Current	850	A	5 $\mu\text{s}$ Sine or 3 $\mu\text{s}$ Rect. pulse Following any rated load condition and with rated $V_{RWM}$ applied Surge applied at rated load conditions halfwave, single phase, 60Hz
	150		
$I_{RRM}$ Peak Repetitive Reverse Surge Current	0.5	A	2.0 $\mu\text{sec}$ 1.0 KHz
$E_{AS}$ Non-Repetitive Avalanche Energy (Per Leg)	24	mJ	$T_J = 25^\circ\text{C}$ , $I_{AS} = 2$ Amps, $L = 60$ mH

### Electrical Specifications

Parameters	Values	Units	Conditions
$V_{FM}$ Max. Forward Voltage Drop (1)	0.80	V	@ 10A $T_J = 25^\circ\text{C}$
	0.95	V	@ 20A
	0.70	V	@ 10A $T_J = 125^\circ\text{C}$
	0.85	V	@ 20A
$I_{RM}$ Max. Instantaneous Reverse Current (1)	0.10	mA	$T_J = 25^\circ\text{C}$ Rated DC voltage
	6	mA	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold Voltage	0.433	V	$T_J = T_J \text{ max.}$
$r_t$ Forward Slope Resistance	15.8	m $\Omega$	
$C_T$ Max. Junction Capacitance	400	pF	$V_R = 5V_{DC}$ , (test signal range 100Khz to 1Mhz) $25^\circ\text{C}$
$L_S$ Typical Series Inductance	8.0	nH	Measured from top of terminal to mounting plane
$dv/dt$ Max. Voltage Rate of Change (Rated $V_R$ )	10,000	V/ $\mu\text{s}$	

(1) Pulse Width < 300 $\mu\text{s}$ , Duty Cycle < 2%

### Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
$T_J$ Max. Junction Temperature Range	-65 to 150	$^\circ\text{C}$	
$T_{stg}$ Max. Storage Temperature Range	-65 to 175	$^\circ\text{C}$	
$R_{thJC}$ Max. Thermal Resistance Junction to Case (Per Leg)	2.0	$^\circ\text{C}/\text{W}$	DC operation
$R_{thCS}$ Typical Thermal Resistance Case to Heatsink	0.50	$^\circ\text{C}/\text{W}$	Mounting surface, smooth and greased Only for TO-220
$R_{thJA}$ Max. Thermal Resistance Junction to Ambient	50	$^\circ\text{C}/\text{W}$	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

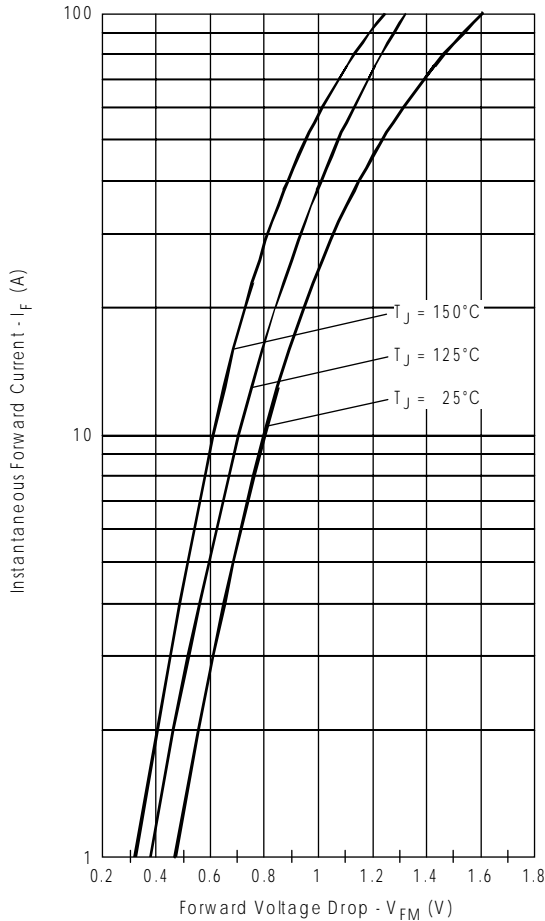


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

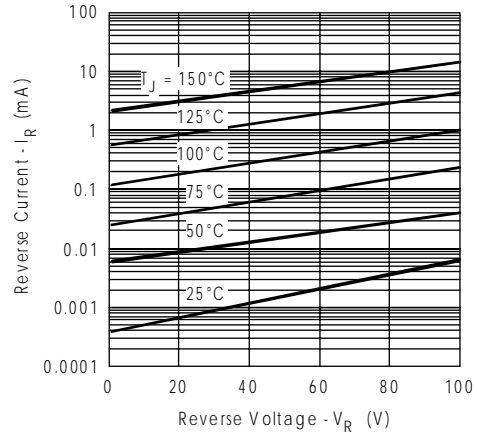


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

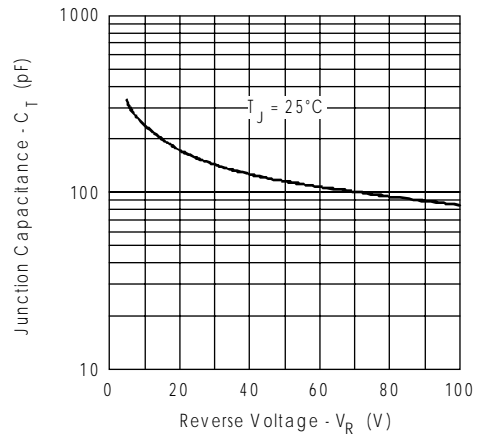


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

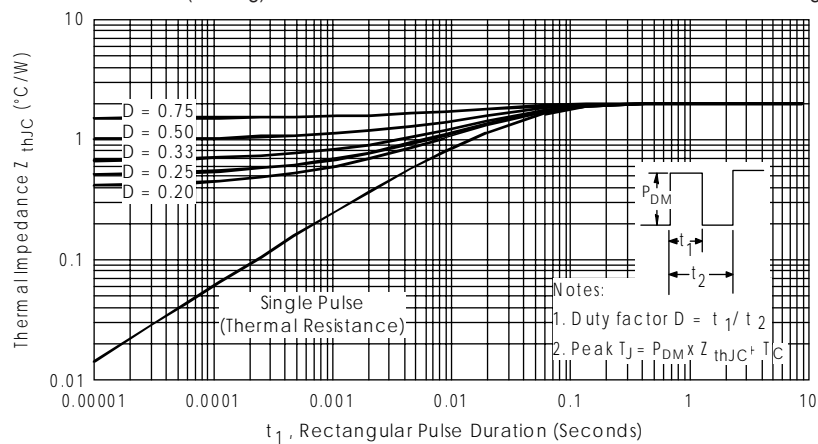


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

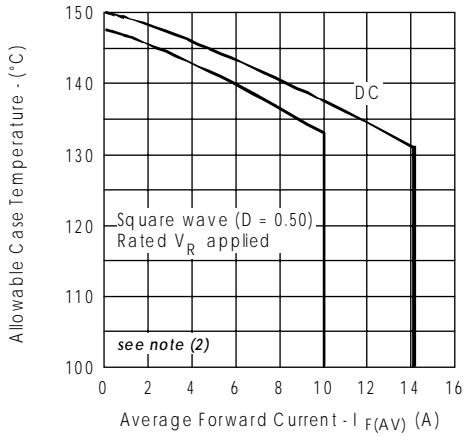


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

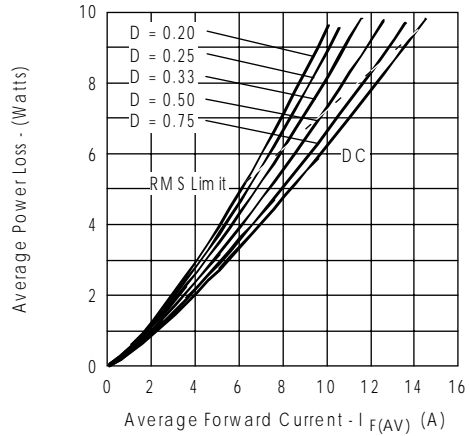


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

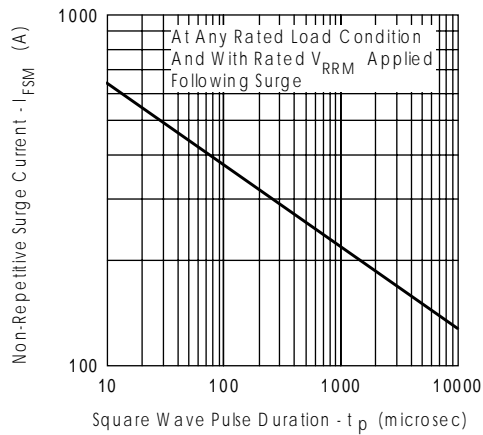


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

- (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

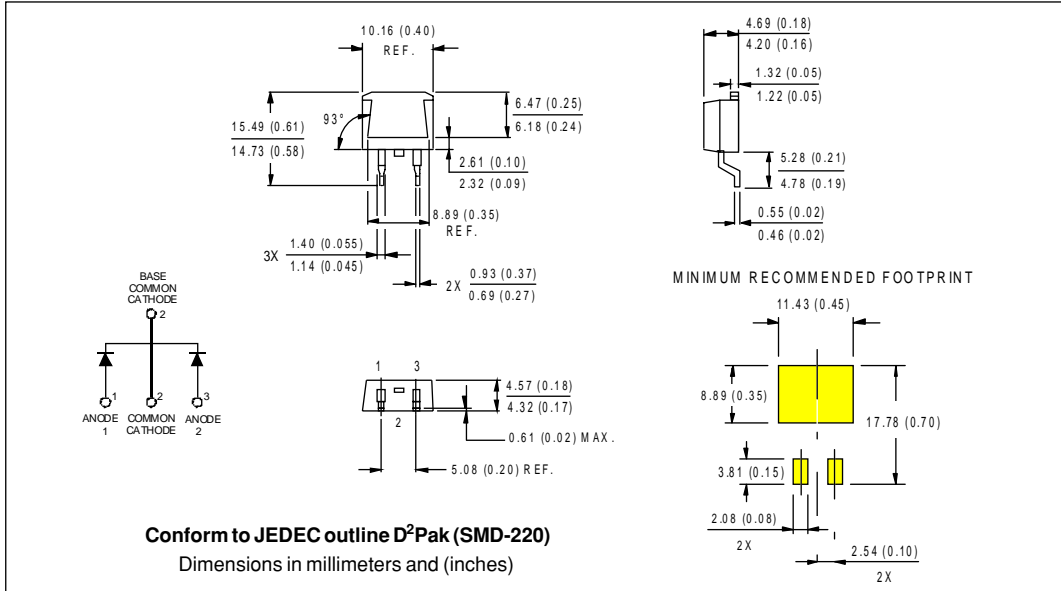
- 1** - Essential Part Number
- 2** - B = Surface Mount  
None = TO-220
- 3** - Current Rating
- 4** - Voltage code: Code =  $V_{RRM}$
- 5** - CT= Essential Part Number
- 6** - -1 = TO-262  
None = TO-220

080 = 80V  
 090 = 90V  
 100 = 100V

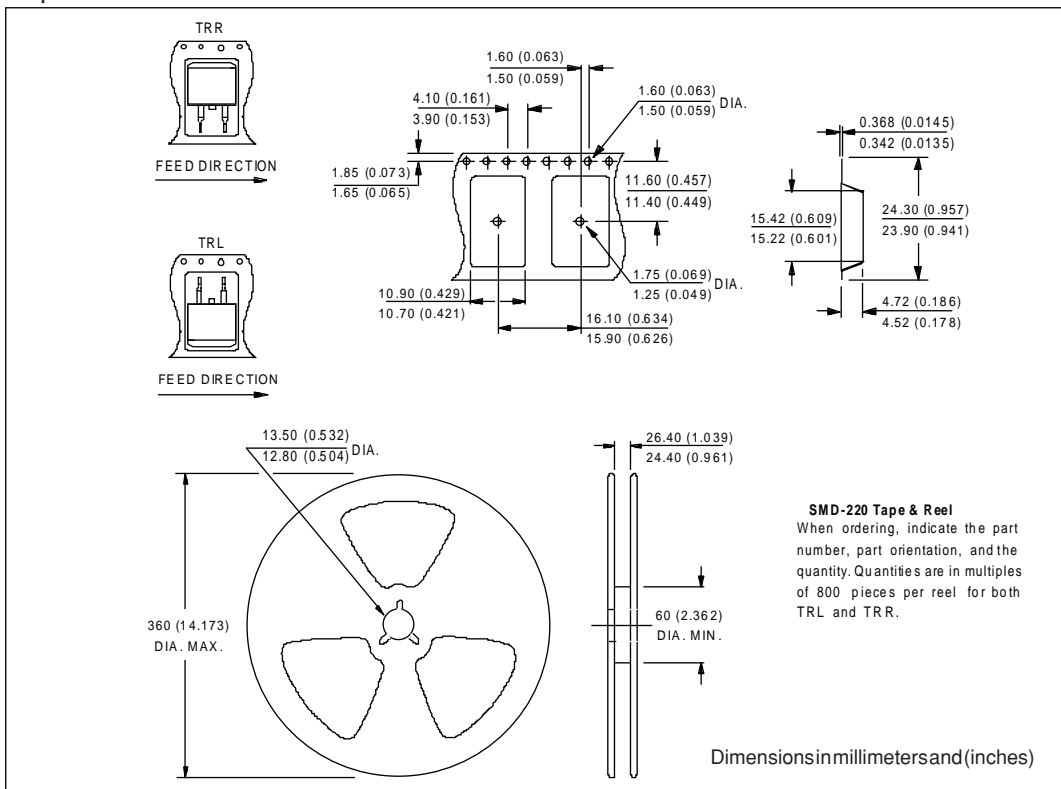
Outline Table

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

Outline Table



Tape & Reel Information



Outline Table

