



MBR20...CT
MBRB20...CT
MBR20...CT-1

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} @ $t_p = 5 \mu\text{s}$ sine	850	A
V_F @ 10 Apk, $T_J = 125^\circ\text{C}$	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, D²Pak 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		
<p>MBR20...CT</p>  <p>TO-220</p>	<p>MBRB20...CT</p>  <p>D²PAK</p>	<p>MBR20...CT-1</p>  <p>TO-262</p>

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°C, (Rated V _R)
	20		
I _{FRM} Peak Repetitive Forward Current (Per Leg)	20	A	Rated V _R , squarewave, 20kHz T _C = 133°C
I _{FSM} Non Repetitive Peak Surge Current	850	A	5µs Sine or 3µs Rect. pulse Following any rated load condition and with rated V _{RRM} applied Surge applied at rated load conditions halfwave, single phase, 60Hz
	150		
I _{RRM} Peak Repetitive Reverse Surge Current	0.5	A	2.0 µsec 1.0 KHz
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	24	mJ	T _J = 25°C, I _{AS} = 2 Amps, L = 12 mH

Electrical Specifications

Parameters	Values	Units	Conditions
V _{FM} Max. Forward Voltage Drop (1)	0.80	V	@ 10A T _J = 25°C
	0.95	V	@ 20A
	0.70	V	@ 10A T _J = 125°C
	0.85	V	@ 20A
I _{RM} Max. Instantaneous Reverse Current (1)	0.10	mA	T _J = 25°C
	6	mA	T _J = 125°C Rated DC voltage
V _{F(TO)} Threshold Voltage	0.433	V	T _J = T _J max.
r _t Forward Slope Resistance	15.8	mΩ	
C _T Max. Junction Capacitance	400	pF	V _R = 5V _{DC} , (test signal range 100Khz to 1Mhz) 25°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/µs	

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

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T _J Max. Junction Temperature Range	-65 to 150	°C	
T _{stg} Max. Storage Temperature Range	-65 to 175	°C	
R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	2.0	°C/W	DC operation
R _{thCS} Typical Thermal Resistance Case to Heatsink	0.50	°C/W	Mounting surface, smooth and greased Only for TO-220
R _{thJA} Max. Thermal Resistance Junction to Ambient	50	°C/W	DC operation For D2Pak and TO-262
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min.	6(5)	Non-lubricated threads
	Max.	12(10)	

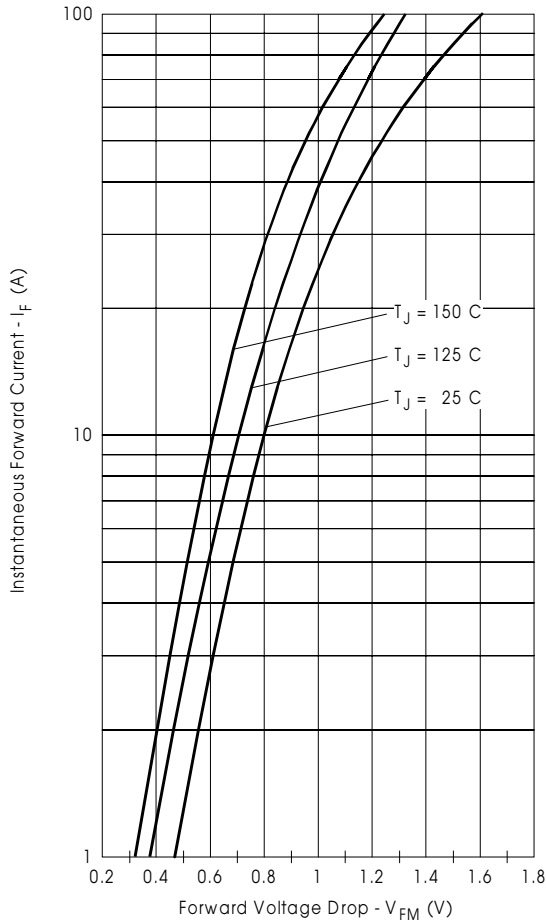


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

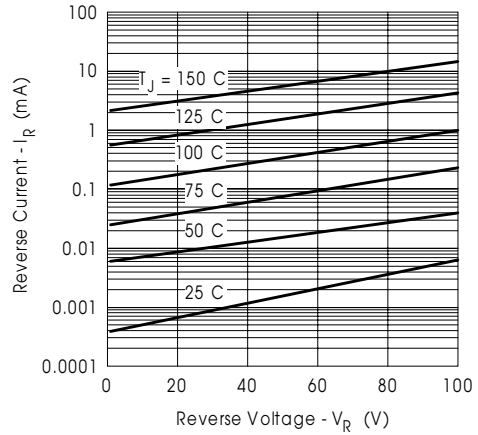


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

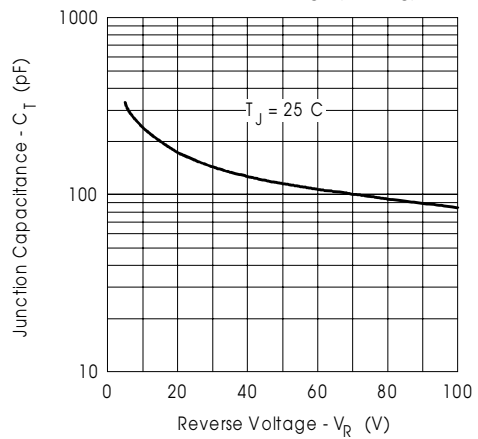


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

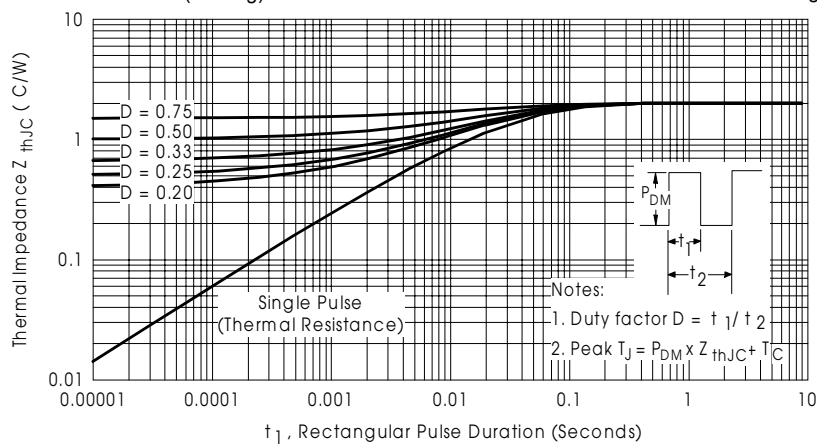


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

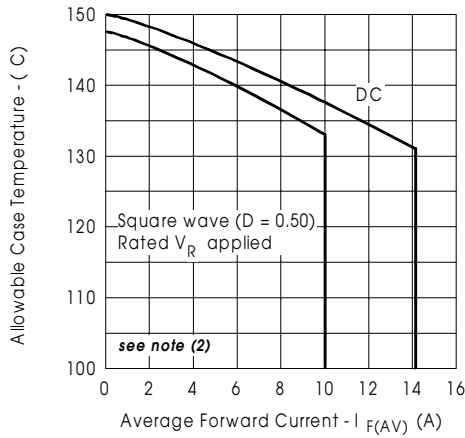


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

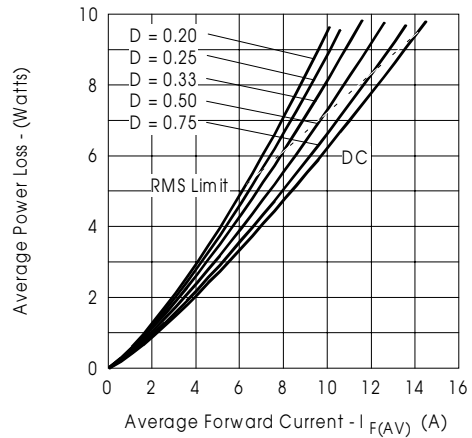


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

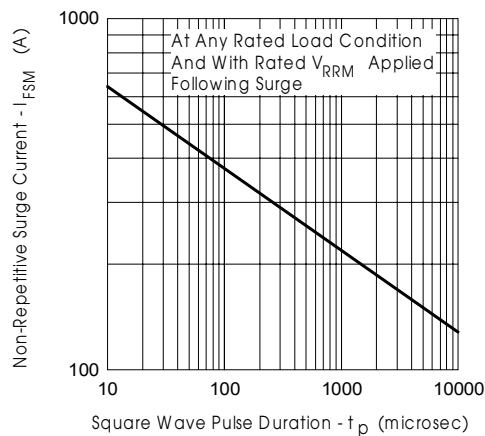
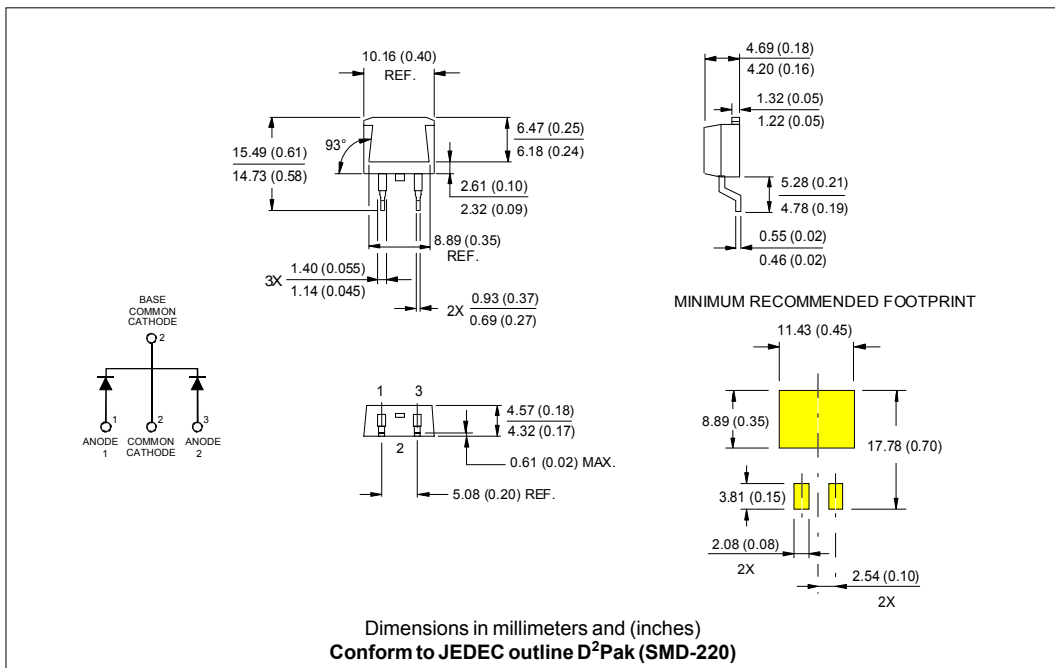
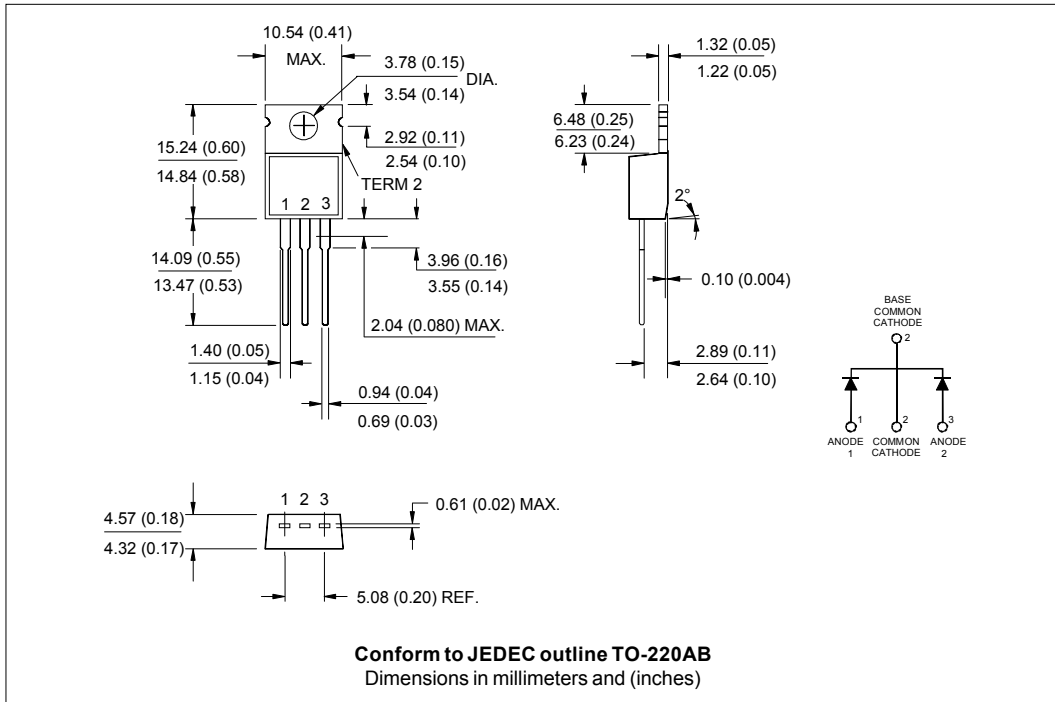
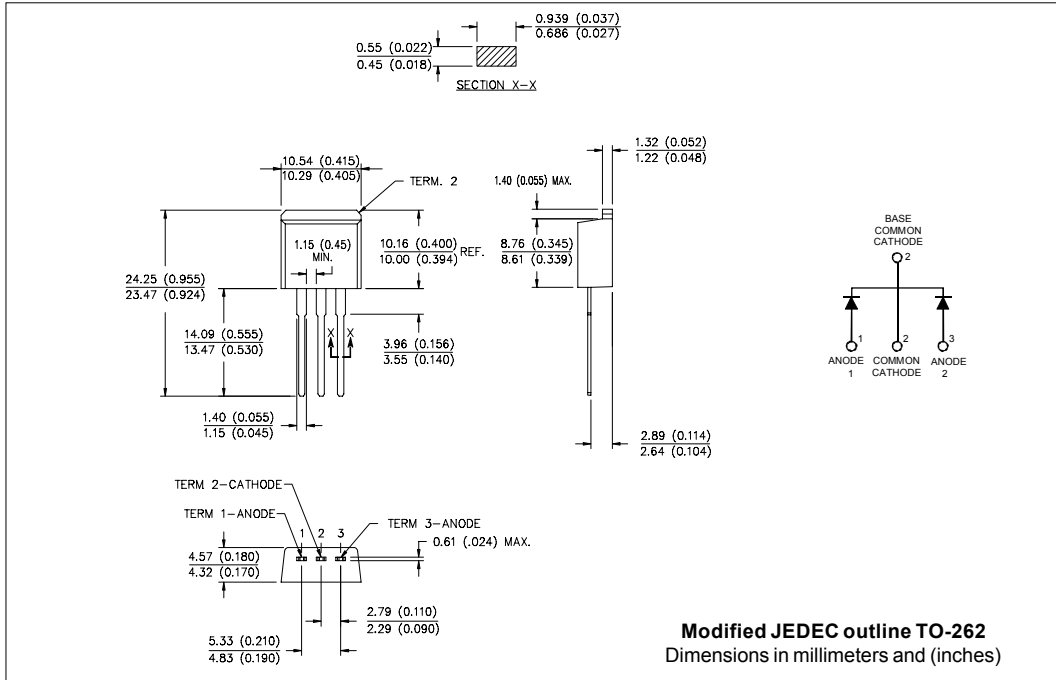


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

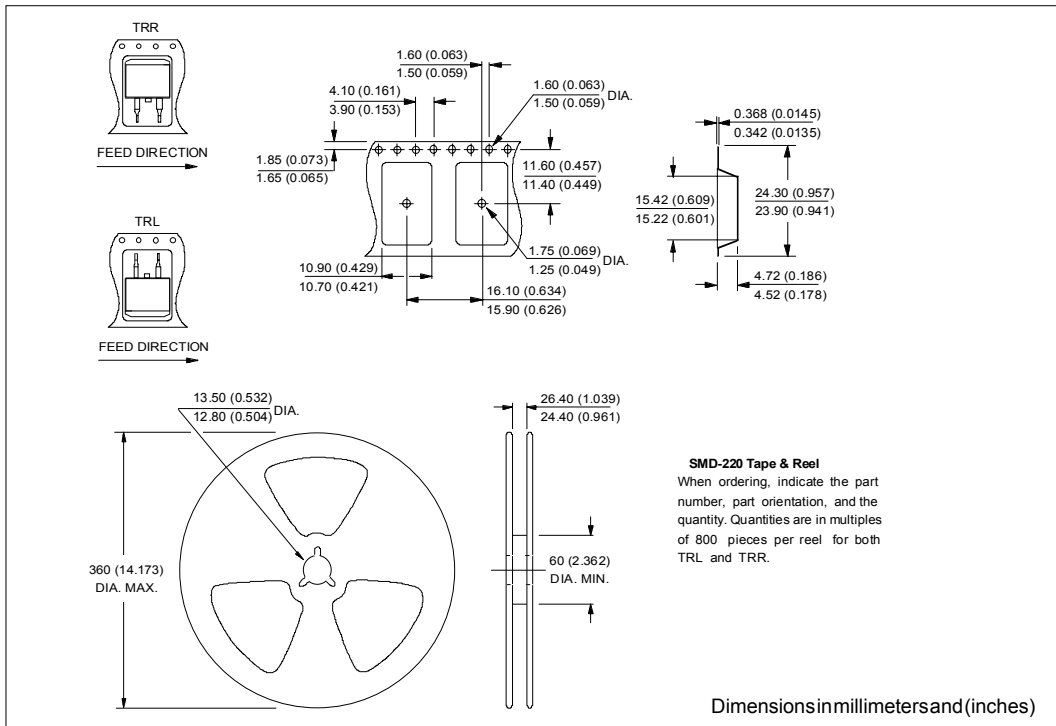
- (2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
 Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);
 Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = rated V_R

Outline Table

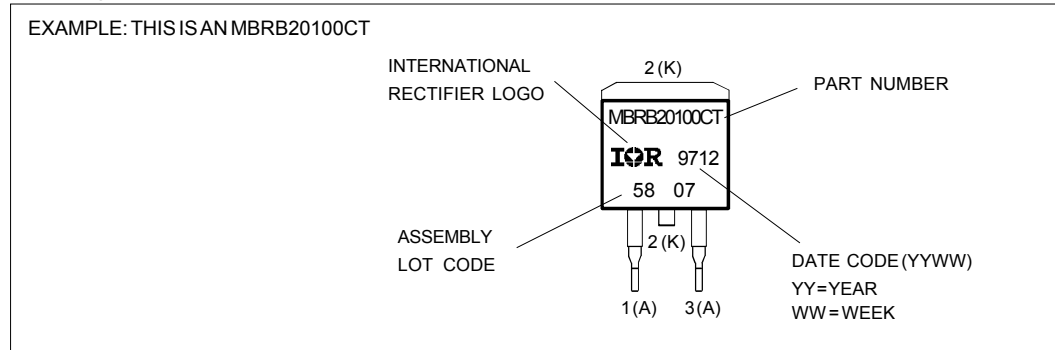




Tape & Reel Information



Marking Information



Ordering Information Table

Device Code	
1	MBR
2	B
3	20
4	100
5	CT
6	-1

<p>1 - Essential Part Number</p> <p>2 - B = Surface Mount None = TO-220</p> <p>3 - Current Rating</p> <p>4 - Voltage code: Code = V_{RRM}</p> <p>5 - CT = Essential Part Number</p> <p>6 - -1 = TO-262 None = TO-220</p>	<table border="1"> <tr> <td>080 = 80V</td> </tr> <tr> <td>090 = 90V</td> </tr> <tr> <td>100 = 100V</td> </tr> </table>	080 = 80V	090 = 90V	100 = 100V
080 = 80V				
090 = 90V				
100 = 100V				

Data and specifications subject to change without notice.
 This product has been designed and qualified for Industrial Level.
 Qualification Standards can be found on IR's Web site.