



MBRB20...CTPbF
MBR20...CT-1PbF

SCHOTTKY RECTIFIER

20 Amp

$I_{F(AV)} = 20\text{Amp}$
 $V_R = 80/ 100\text{V}$

Major Ratings and Characteristics


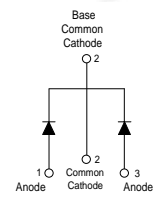

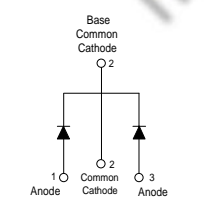
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	20	A
I_{FRM} @ $T_C = 133^\circ\text{C}$ (PerLeg)	20	A
V_{RRM}	80/90/100	V
I_{FSM} @ $t_p = 5\ \mu\text{s}$ sine	850	A
V_F @ 10Apk, $T_J = 125^\circ\text{C}$	0.70	V
T_J range	-65 to 150	$^\circ\text{C}$

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, 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>MBRB20...CTPbF</p>   <p>D²PAK</p>	<p>MBR20...CT-1PbF</p>   <p>TO-262</p>
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Voltage Ratings

Parameters	MBRB2080CTPbF MBR2080CT-1PbF	MBRB2090CTPbF MBR2090CT-1PbF	MBRB20100CTPbF MBR20100CT-1PbF
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 (PerLeg) (PerDevice)	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 1.0KHz
E _{AS} Non-Repetitive Avalanche Energy (PerLeg)	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
	0.95	V	@ 20A
	0.70	V	@ 10A
	0.85	V	@ 20A
I _{RM} Max. Instantaneous Reverse Current (1)	0.10	mA	T _J = 25 °C
	6	mA	T _J = 125 °C
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	10000	V/ µs	(Rated V _R)

(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 D ² Pak and TO-262
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min. 6(5)	Kg-cm (lbf-in)	Non-lubricated threads
	Max. 12(10)		
Marking Device	MBRB20...CT	Case style D ² Pak	
	MBR20...CT-1	Case style TO-262	

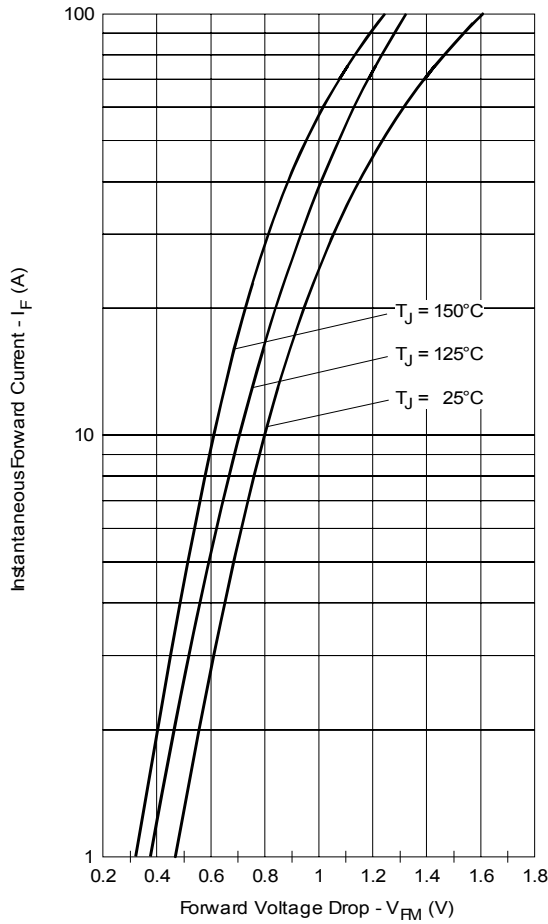


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

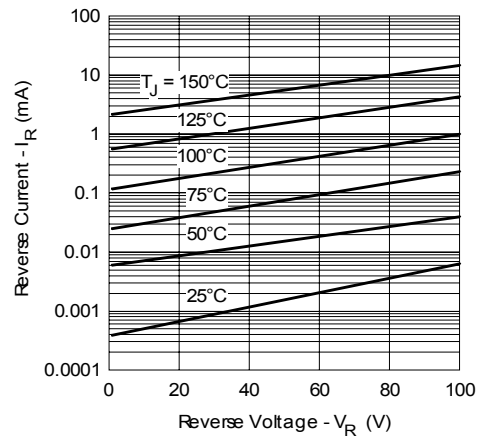


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (PerLeg)

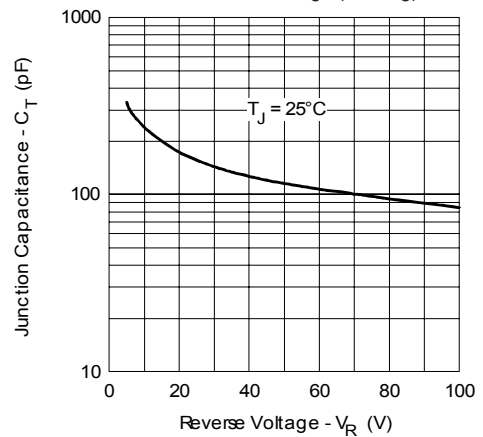


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (PerLeg)

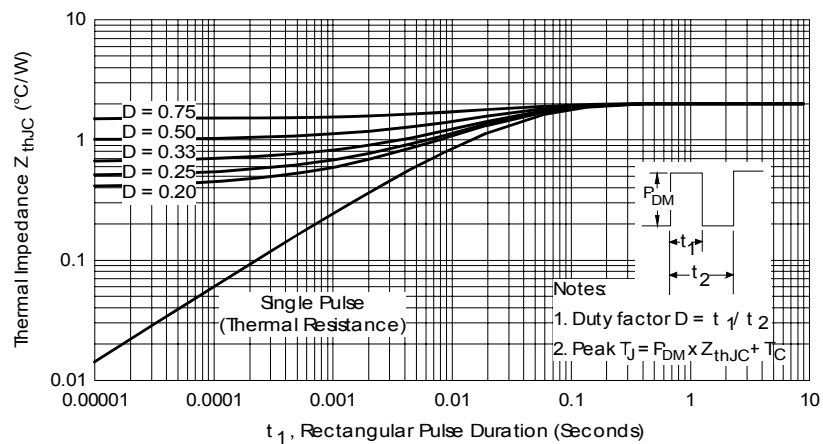


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

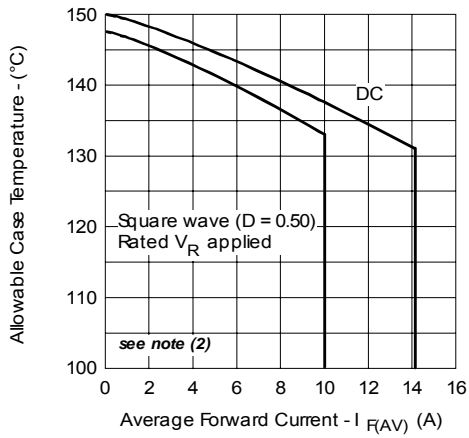


Fig. 5- Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

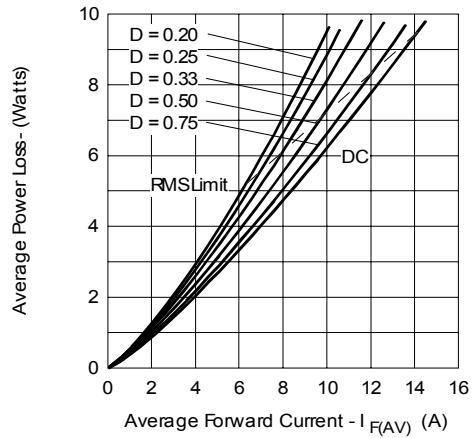


Fig. 6- Forward Power Loss Characteristics (Per Leg)

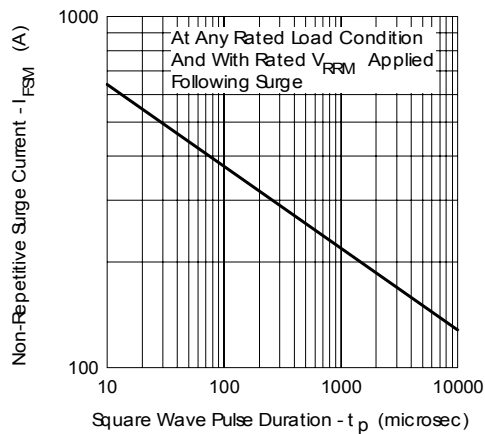
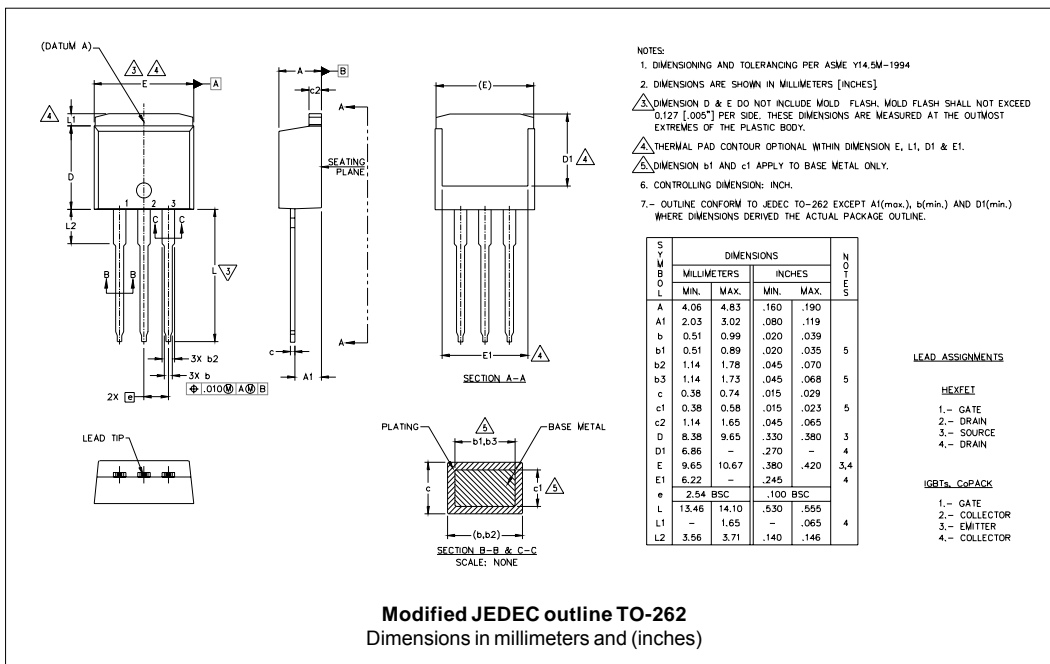
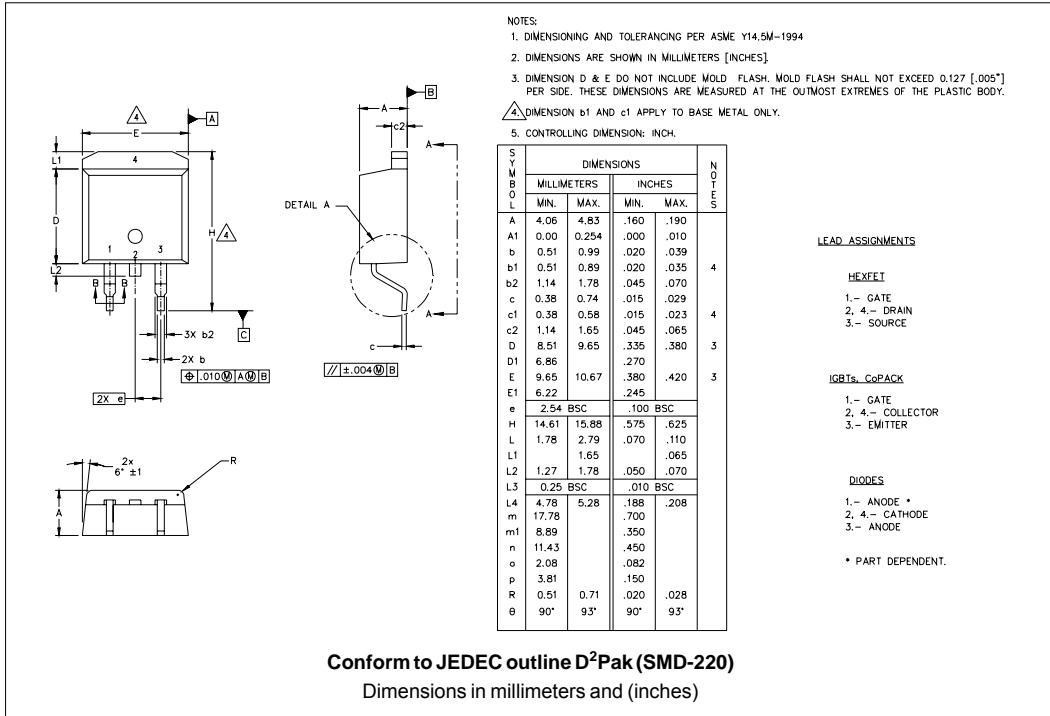


Fig. 7- Max. Non-Repetitive Surge Current (Per Leg)

- (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);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = \text{rated } V_R$

Outlines Table



Part Marking Information

D²PAK

EXAMPLE: THIS IS A MBRB20100CTPbF
LOT CODE 8024
ASSEMBLED ON WW 02, 2000

Note: "P" in assembly line position indicates "Lead-Free"

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

PART NUMBER

DATE CODE
YEAR 0 = 2000
WEEK 02
P = LEAD-FREE

TO-262

EXAMPLE: THIS IS A MBR20100CT-1PbF
LOT CODE 1789
ASSEMBLED ON WW 19, 1999

Note: "P" in assembly line position indicates "Lead-Free"

INTERNATIONAL RECTIFIER LOGO

ASSEMBLY LOT CODE

PART NUMBER

DATE CODE
YEAR 9 = 1999
WEEK 19
P = LEAD-FREE

Tape & Reel Information

SECTION Y-Y

Ao	10.50	+/- 0.1
Bo	15.80	+/- 0.1
B2	10.25	+/- 0.1
Ko	4.90	+/- 0.1
F	11.50	+/- 0.1
P1	16.00	+/- 0.1
W	24.00	+/- 0.3

NOTES:

- 1.0 10 SPROCKET HOLE PITH CUMULATIVE TOLERANCE ±.02
- 2.0 CAMBER NOT TO EXCEED 1mm In 100mm
- 3.0 MATERIAL: CONDUCTIVE BLACK STYRENIC ALLOY
- 4.0 Ko MEASURED FROM A PLANE ON THE INSIDE BOTTOM OF THE POCKET TO THE TOP SURFACE OF THE CARRIER
- 5.0 MEASURED FROM CENTRELINE OF SPROCKET HOLE TO CENTRELINE OF POCKET
- 6.0 VENDOR: (OPTIONAL)
- 7.0 MUST ALSO MEET REQUIREMENTS OF EIA STANDAR #EIA-481A TAPING OF SURFACE MOUNT COMPONENTS FOR AUTOMATIC PLACEMENT
- 8.0 SURFACE RESISTIVITY OF MOLDED MATL. MUST MEASURE LESS OR EQUAL TO 10⁶ OHMS PER SQUARE. MEASURED IN ACCORDANCE TO PROCEDURE GIVEN IN ASTM D-257 & ASTM D-991
- 9.0 TOTAL LENGTH PER REEL MUST BE 45 METERS
- 10.0 © CRITICAL

Dimensions in millimeters and (inches)

Ordering Information Table

Device Code																	
	<table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">MBR</td> <td style="padding: 5px;">B</td> <td style="padding: 5px;">20</td> <td style="padding: 5px;">100</td> <td style="padding: 5px;">CT</td> <td style="padding: 5px;">-1</td> <td style="padding: 5px;">TRL</td> <td style="padding: 5px;">P</td> </tr> <tr> <td style="text-align: center;">①</td> <td style="text-align: center;">②</td> <td style="text-align: center;">③</td> <td style="text-align: center;">④</td> <td style="text-align: center;">⑤</td> <td style="text-align: center;">⑥</td> <td style="text-align: center;">⑦</td> <td style="text-align: center;">⑧</td> </tr> </table>	MBR	B	20	100	CT	-1	TRL	P	①	②	③	④	⑤	⑥	⑦	⑧
MBR	B	20	100	CT	-1	TRL	P										
①	②	③	④	⑤	⑥	⑦	⑧										
<p>1 - Essential Part Number</p> <p>2 -</p> <ul style="list-style-type: none"> • B = D²Pak 6 none • none = TO-262 6 = -1 <p>3 - Current Rating (20 = 20A)</p> <p>4 - Voltage Ratings</p> <p>5 - CT = Essential Part Number</p> <p>6 -</p> <ul style="list-style-type: none"> • none = D²Pak 2 = B • -1 = TO-262 2 none <p>7 -</p> <ul style="list-style-type: none"> • none = Tube (50 pieces) • TRL = Tape & Reel (Left Oriented - for D²Pak only) • TRR = Tape & Reel (Right Oriented - for D²Pak only) <p>8 -</p> <ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free (for TO-262 and D²Pak tube) • P = Lead-Free (for D²Pak TRR and TRL) 	<table border="1" style="margin: auto;"> <tr> <td style="padding: 2px;">80 = 80V</td> </tr> <tr> <td style="padding: 2px;">90 = 90V</td> </tr> <tr> <td style="padding: 2px;">100 = 100V</td> </tr> </table>	80 = 80V	90 = 90V	100 = 100V													
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Data and specifications subject to change without notice.
 This product has been designed and qualified for Industrial Level and Lead-Free.
 Qualification Standards can be found on IR's Web site.