

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

**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
$V_{RRM}$	100	V
$I_{FSM}$ @ tp = 5 $\mu\text{s}$ sine	850	A
$V_F$ @ 10 Apk, $T_J = 125^\circ\text{C}$	0.65	V
$T_J$ range	-65 to 150	$^\circ\text{C}$

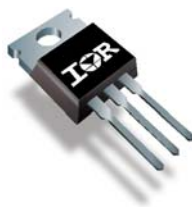
**Description/ Features**

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.

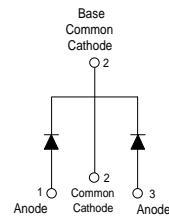
- 150° C  $T_J$  operation
- Center tap package
- Low forward voltage drop
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability
- Lead- Free ("PbF" suffix)

**Case Styles**

MBR20100CTKPbF



TO-220



Voltage Ratings

Parameters	MBR20100CTKPbF
V <sub>R</sub> Max. DC Reverse Voltage (V)	100
V <sub>RWM</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>R</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 = 12 mH

Electrical Specifications

Parameters	Values	Units	Conditions
V <sub>FM</sub> Max. Forward Voltage Drop (1)	0.80	V	@ 10A
	0.95	V	@ 20A
	0.65	V	@ 10A
	0.80	V	@ 20A
I <sub>IRM</sub> Max. Instantaneous Reverse Current (1)	0.10	mA	T <sub>J</sub> = 25°C
	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	10000	V/µs	(Rated V <sub>R</sub> )

(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)	Kg-cm (lbf-in)	Non-lubricated threads
	Max. 12 (10)		
Device Marking	MBR20100CTK		TO-220 package style

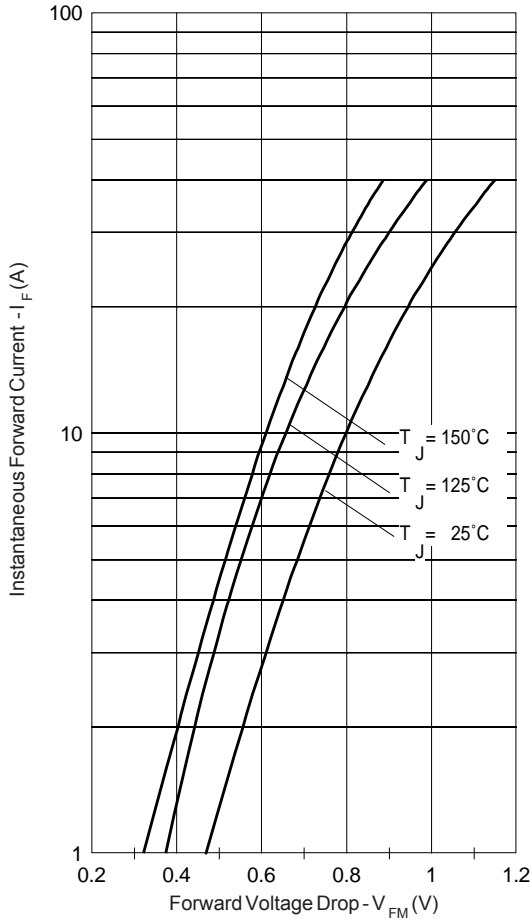


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

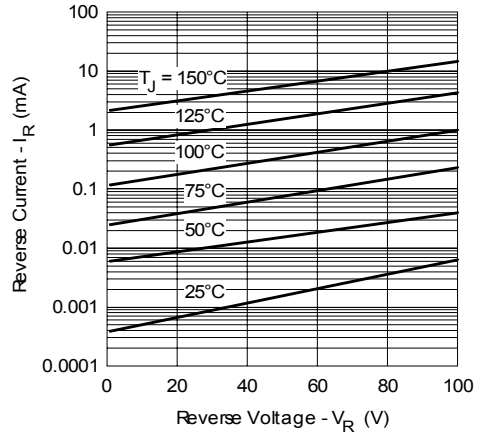


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

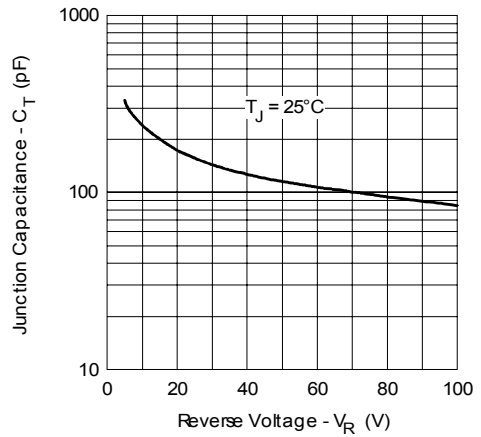


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

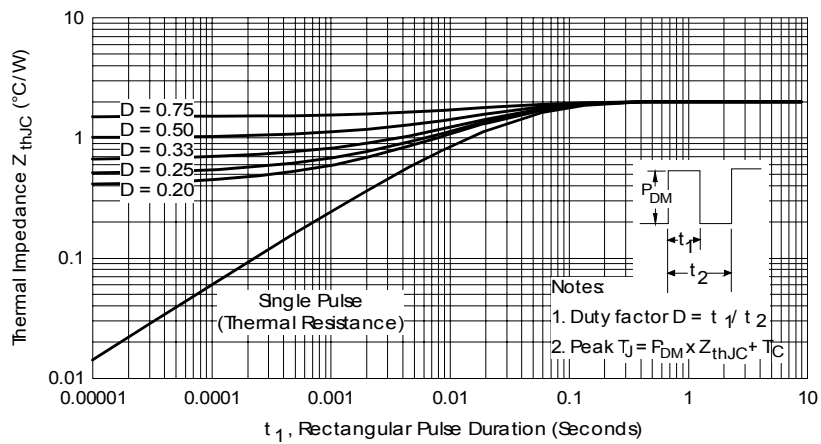


Fig. 4 - Max. Thermal Impedance  $Z_{thJC}$  Characteristics (Per Leg)

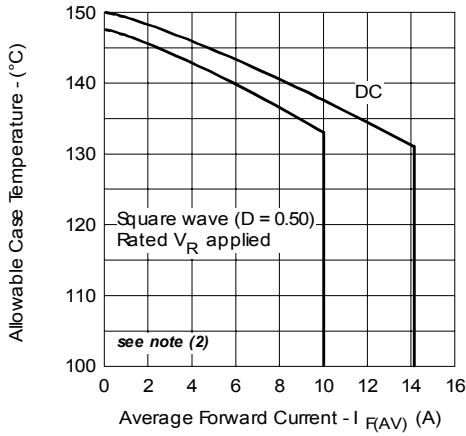


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

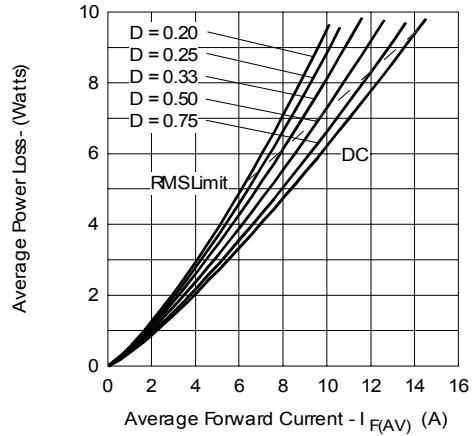


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

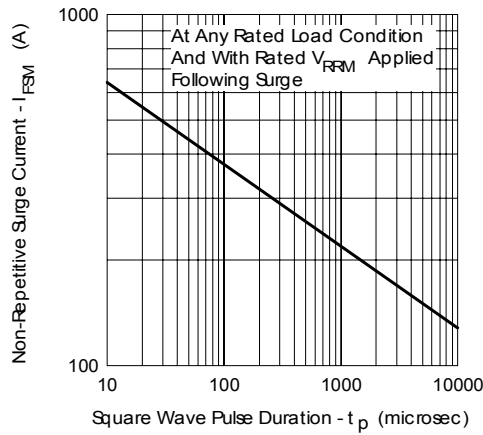
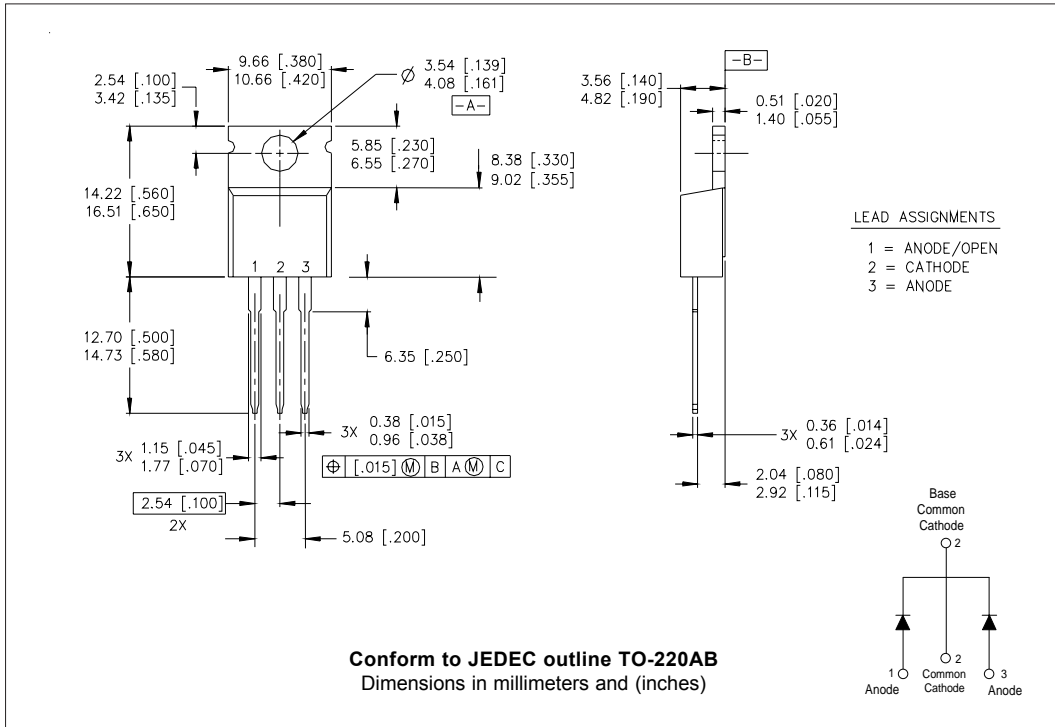


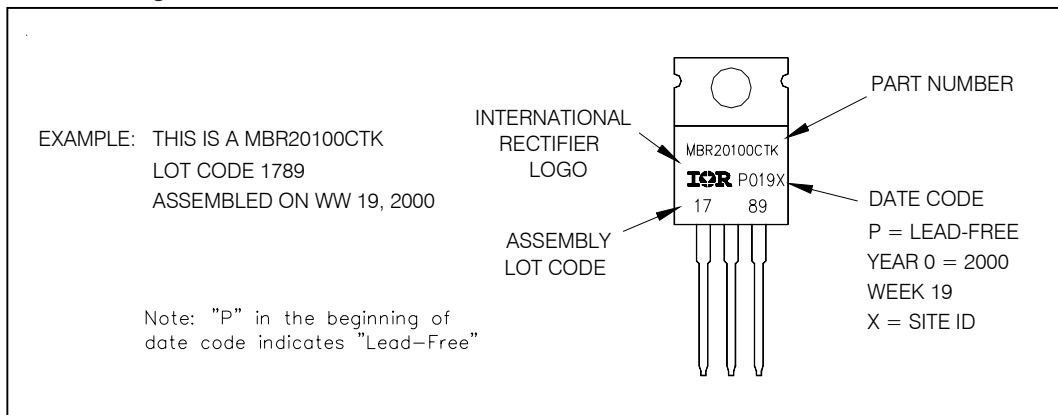
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

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

Outline Table



Part Marking Information



Ordering Information Table

Device Code					
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>MBR</b>	<b>20</b>	<b>100</b>	<b>CT</b>	<b>K</b>	<b>PbF</b>

<b>1</b>	- MBR Series
<b>2</b>	- Current Rating (20 = 20A)
<b>3</b>	- Voltage Rating (100 = 100V)
<b>4</b>	- CT = Center Tap (Dual)
<b>5</b>	- K = Schottky Generation
<b>6</b>	- PbF = Lead-Free

Tube Standard Pack Quantity : 50 pieces

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.