



MBR30...CT
MBRB30...CT
MBR30...CT-1

SCHOTTKY RECTIFIER

30 Amp

$I_{F(AV)} = 30\text{Amp}$
 $V_R = 30 - 45\text{V}$

Major Ratings and Characteristics

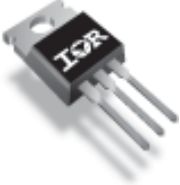


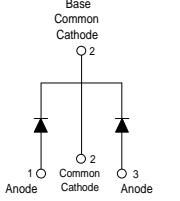
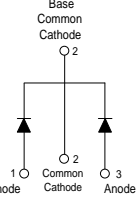
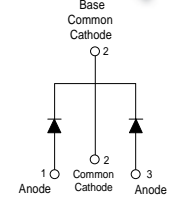
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	30	A
I_{FRM} @ $T_C = 123^\circ\text{C}$ (Per Leg)	30	A
V_{RRM}	35-45	V
I_{FSM} @ $t_p = 5 \mu\text{s}$ sine	1020	A
V_F @ 20Apk, $T_J = 125^\circ\text{C}$	0.6	V
T_J range	-65 to 150	$^\circ\text{C}$

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

MBR30..CT	MBR30.. S	MBR30.. -1
		
<p>Base Common Cathode</p>  <p>TO-220</p>	<p>Base Common Cathode</p>  <p>D²PAK</p>	<p>Base Common Cathode</p>  <p>TO-262</p>

Voltage Ratings

Parameters	MBR3035CT MBRB3035CT MBR3035CT-1	MBR3045CT MBRB3045CT MBR3045CT-1
V _R Max. DC Reverse Voltage (V)	35	45
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)	15	A	@ T _C = 123° C, (Rated V _R)
	30		
I _{FRM} Peak Repetitive Forward Current (Per Leg)	30	A	Rated V _R , square wave, 20kHz T _C = 123° C
I _{FSM} Non Repetitive Peak Surge Current	1020	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
	200		
E _{AS} Non-Repetitive Avalanche Energy	10	mJ	(Per Leg) T _J = 25° C, I _{AS} = 2 Amps, L = 5 mH
I _{AR} Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 µsec Frequency limited by T _J max. V _A = 1.5 x V _R typical

Electrical Specifications

Parameters	Values	Units	Conditions
V _{FM} Max. Forward Voltage Drop (1)	0.76	V	@ 30A T _J = 25° C
	0.6	V	@ 20A
	0.72	V	@ 30A T _J = 125° C
I _{RM} Max. Instantaneous Reverse Current (1)	1	mA	T _J = 25° C
	100	mA	T _J = 125° C
V _{F(TO)} Threshold Voltage	0.29	V	T _J = T _J max.
r _t Forward Slope Resistance	13.6	mΩ	
C _T Max. Junction Capacitance	800	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)	1.5	°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)		

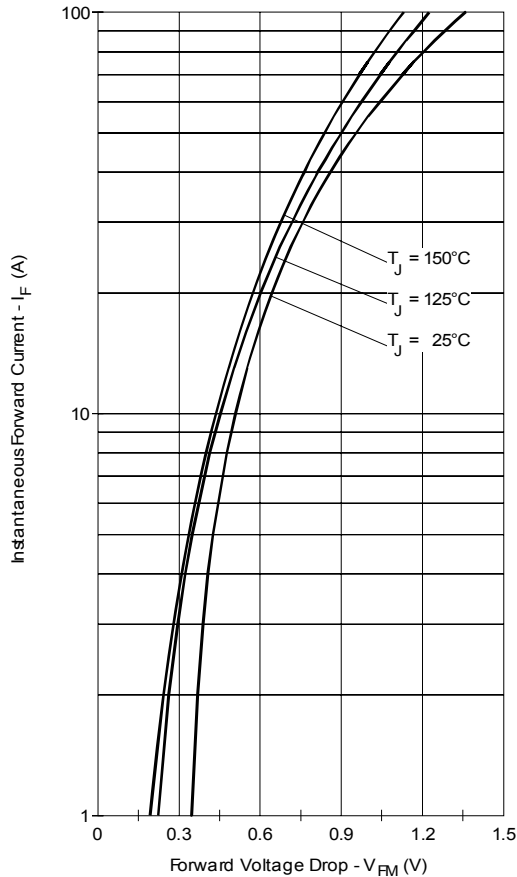


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

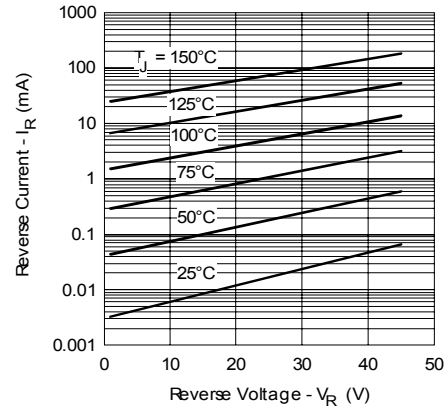


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

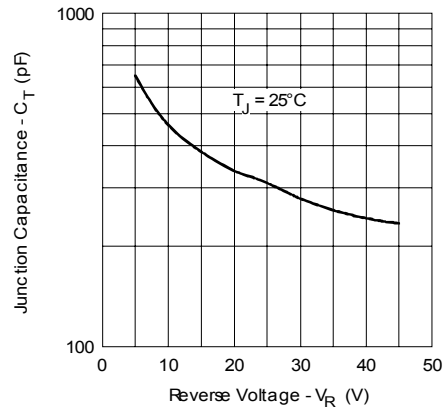


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

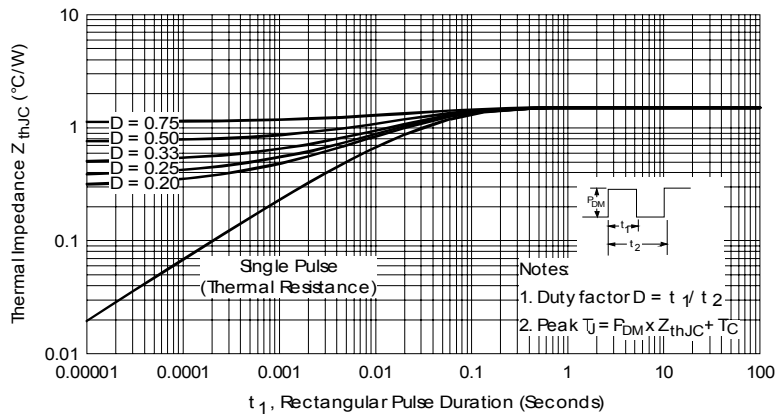


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

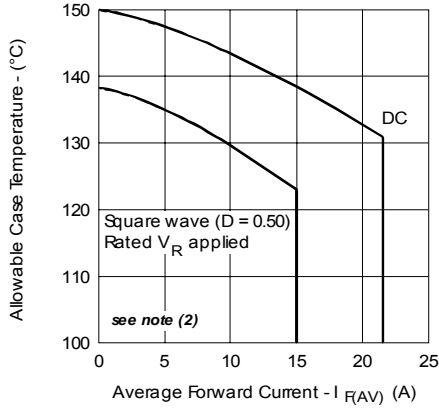


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

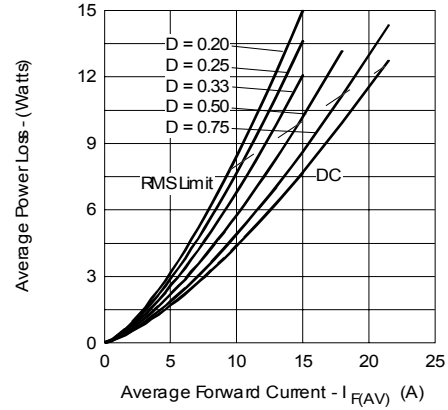


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

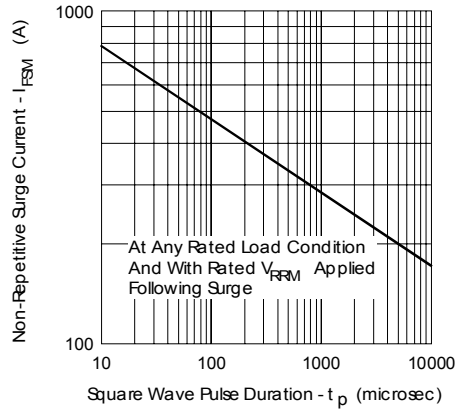


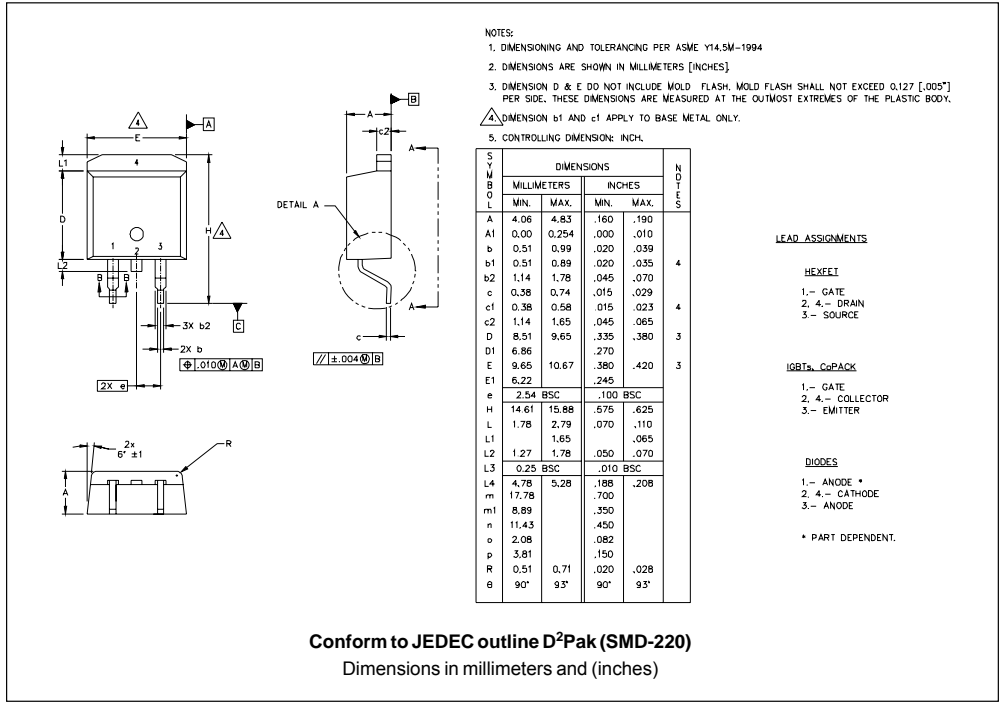
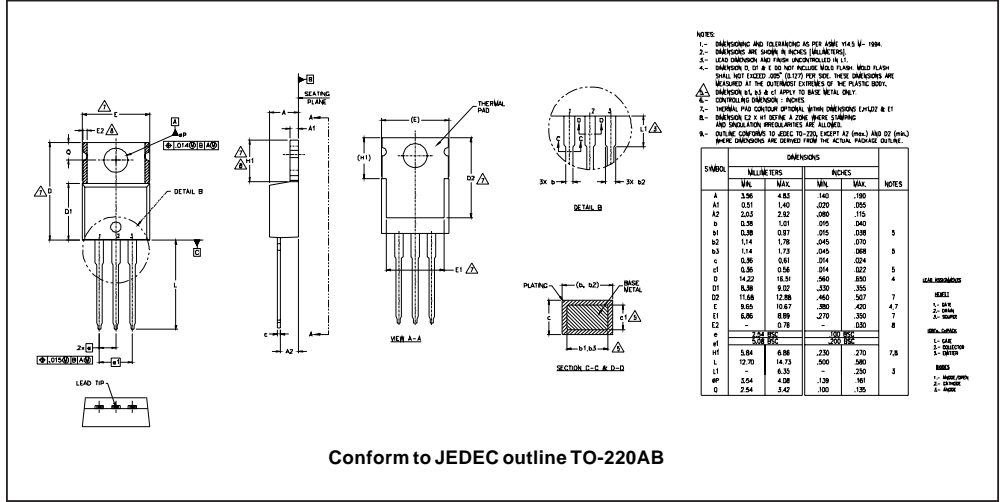
Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;

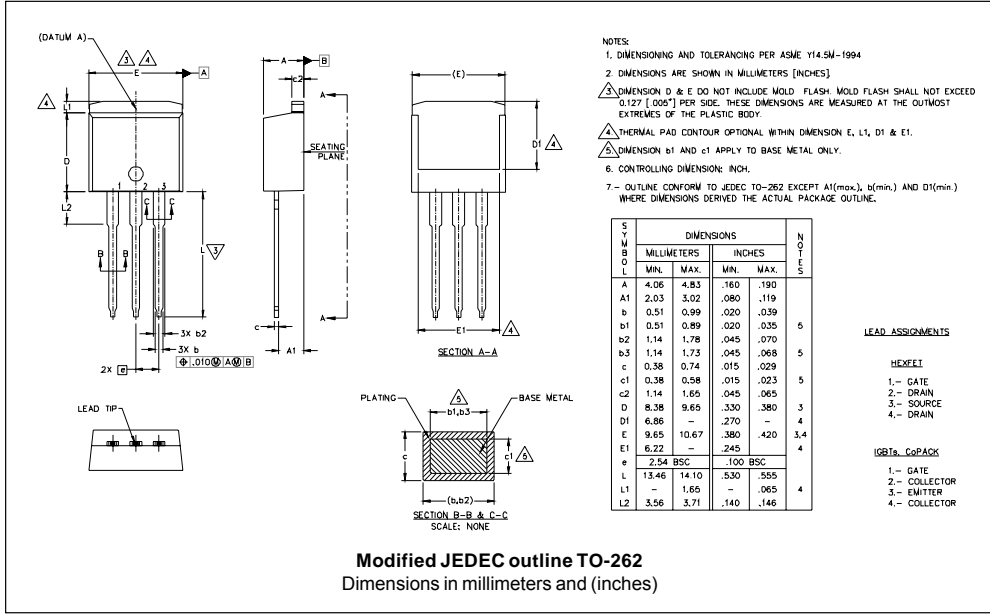
Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

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

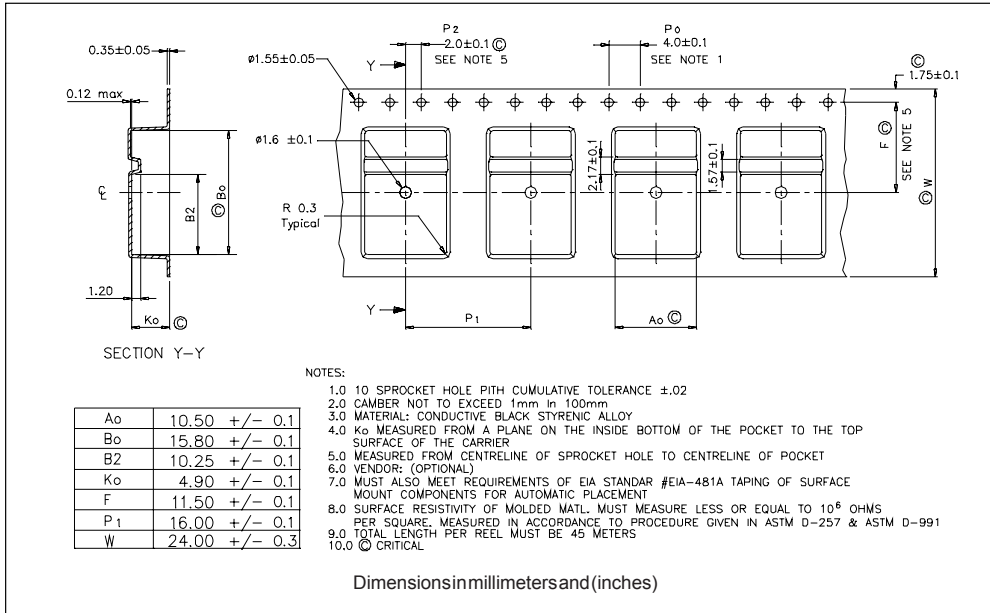
Outline Table



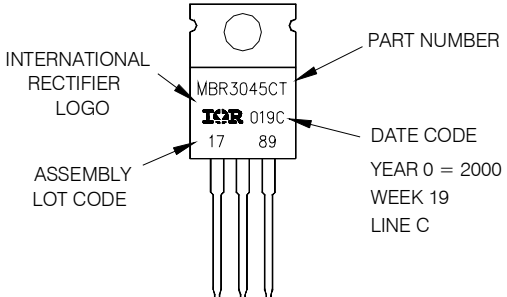
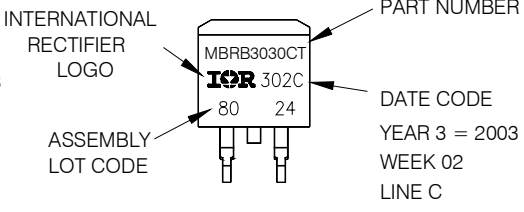
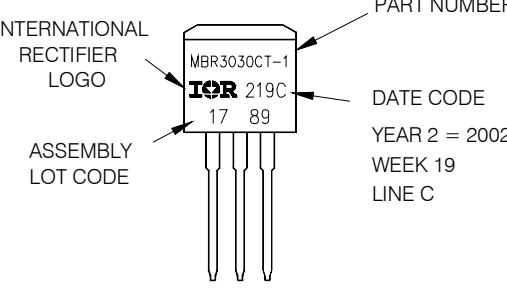
Outline Table



Tape & Reel Information



Part Marking Information

<p>TO-220</p> <p>EXAMPLE: THIS IS A MBR3045CT LOT CODE 1789 ASSEMBLED ON WW 19, 2000 IN THE ASSEMBLY LINE "C"</p>	 <p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 0 = 2000 WEEK 19 LINE C</p>
<p>D²PAK</p> <p>EXAMPLE: THIS IS A MBRB3030CT LOT CODE 8024 ASSEMBLED ON WW 02, 2003 IN ASSEMBLY LINE "C"</p>	 <p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 3 = 2003 WEEK 02 LINE C</p>
<p>TO-262</p> <p>EXAMPLE: THIS IS A MBR3030CT-1 LOT CODE 1789 ASSEMBLED ON WW 19, 2002 IN ASSEMBLY LINE "C"</p>	 <p>INTERNATIONAL RECTIFIER LOGO</p> <p>ASSEMBLY LOT CODE</p> <p>PART NUMBER</p> <p>DATE CODE YEAR 2 = 2002 WEEK 19 LINE C</p>

Ordering Information Table

Device Code																	
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MBR	B	30	45	CT	-1	TRL	-										
①	②	③	④	⑤	⑥	⑦	⑧										
1	- Essential Part Number																
2	- <ul style="list-style-type: none"> • B = D²Pak 6 none • none = TO-220 6 none • none = TO-262 6 = -1 																
3	- Current Rating (30 = 30A)																
4	- Voltage Ratings 35 = 35V 45 = 45V																
5	- CT = Essential Part Number																
6	- <ul style="list-style-type: none"> • none = TO-220 2 none • none = D²Pak 2 = B • -1 = TO-262 2 none 																
7	- <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) 																
8	- <ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free (for TO-220TO-262 and D²Pak tube) • P = Lead-Free (for D²Pak TRR and TRL) 																

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.