

International
IR Rectifier

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

SCHOTTKY RECTIFIER

30 Amp

Major Ratings and Characteristics

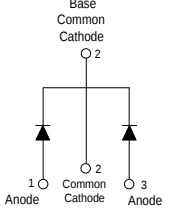
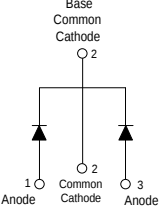
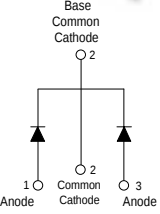
Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	30	A
I_{FRM} @ $T_C = 123^\circ\text{C}$ (Per Leg)	30	A
V_{RRM}	35/45	V
I_{FSM} @ $t_p = 5\mu\text{s}$ sine	1020	A
V_F @ 20Apk, $T_J = 125^\circ\text{C}$	0.6	V
T_J range	-65 to 150	$^\circ\text{C}$

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
  TO-220	  D ² PAK	  TO-262

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 30	A	@ $T_C = 123^\circ\text{C}$, (Rated V_R)
I_{FRM} Peak Repetitive Forward Current (Per Leg)	30	A	Rated V_R , square wave, 20kHz $T_C = 123^\circ\text{C}$
I_{FSM} Non Repetitive Peak Surge Current	1020 200	A	5 μs Sine or 3 μs Rect. pulse Following any rated load condition and with rated V_{RRM} applied Surge applied at rated load conditions halfwave, single phase, 60Hz
E_{AS} Non-Repetitive Avalanche Energy	10	mJ	(Per Leg) $T_J = 25^\circ\text{C}$, $I_{AS} = 2\text{Amps}$, $L = 5\text{mH}$
I_{AR} Repetitive Avalanche Current (Per Leg)	2	A	Current decaying linearly to zero in 1 μsec Frequency limited by T_J max. $V_A = 1.5 \times V_R$ typical

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.76 0.6 0.72	V	@ 30A @ 20A @ 30A $T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$
I_{RM} Max. Instantaneous Reverse Current (1)	1 100	mA	$T_J = 25^\circ\text{C}$ $T_J = 125^\circ\text{C}$ Rated DC voltage
$V_{F(To)}$ Threshold Voltage	0.29	V	$T_J = T_J \text{ max.}$
r_t Forward Slope Resistance	13.6	m Ω	
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 < 300 μs , 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)	1.5	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance Case to Heatsink	0.50	$^\circ\text{C/W}$	Mounting surface, smooth and greased Only for TO-220
R_{thJA} Max. Thermal Resistance Junction to Ambient	50	$^\circ\text{C/W}$	DC operation For D ² Pak and TO-262
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min. 6(5) Max. 12(10)	Kg-cm (lbf-in)	Non-lubricated threads

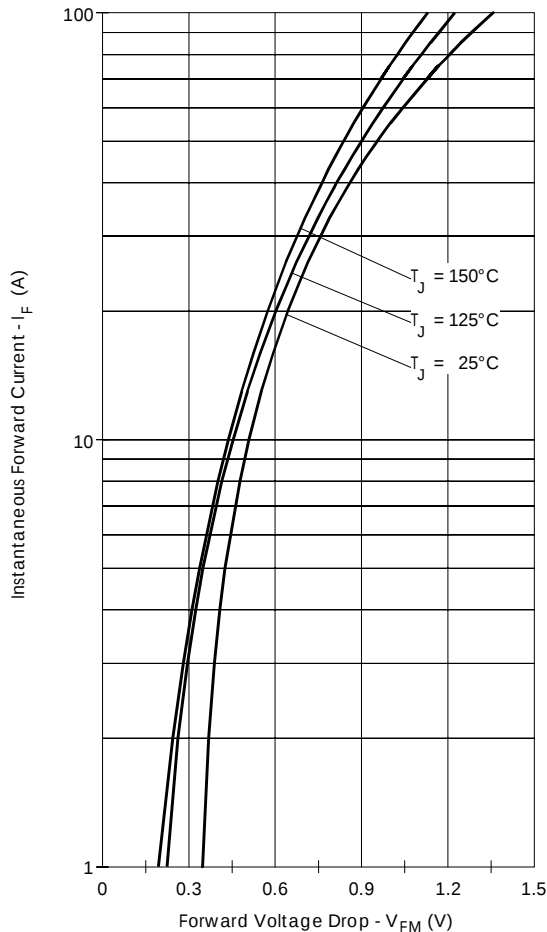


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

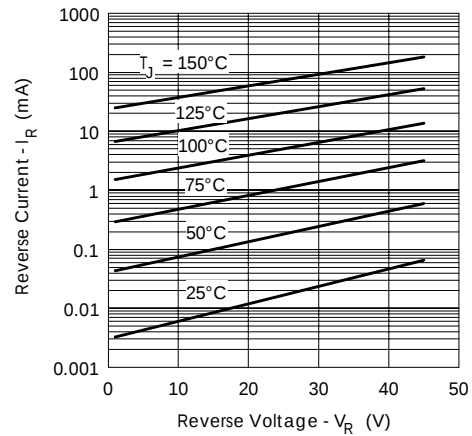


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

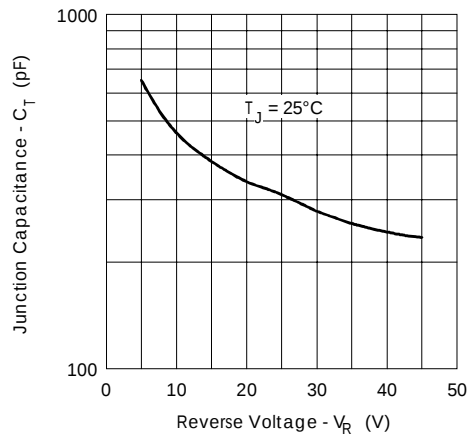


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

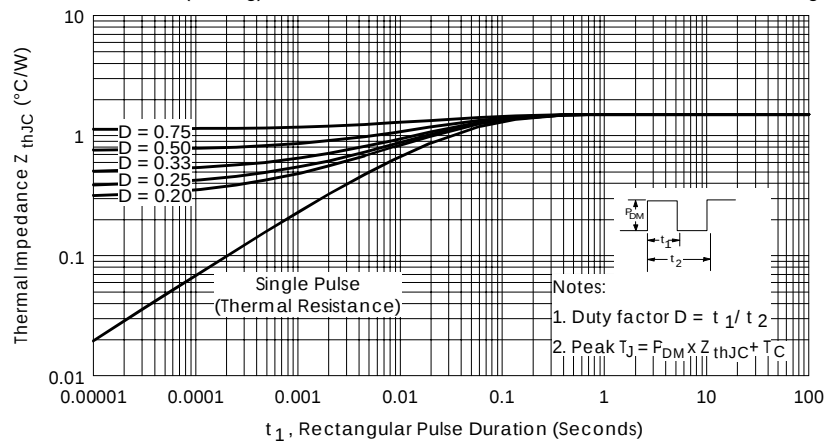


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

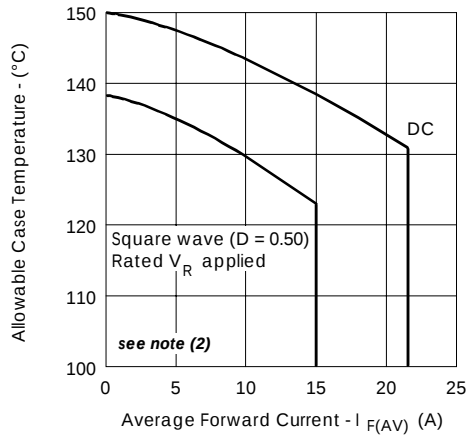


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

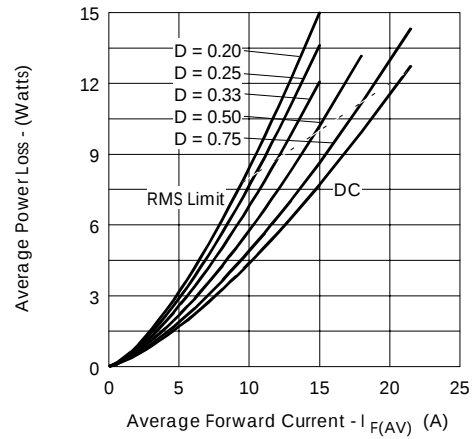


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

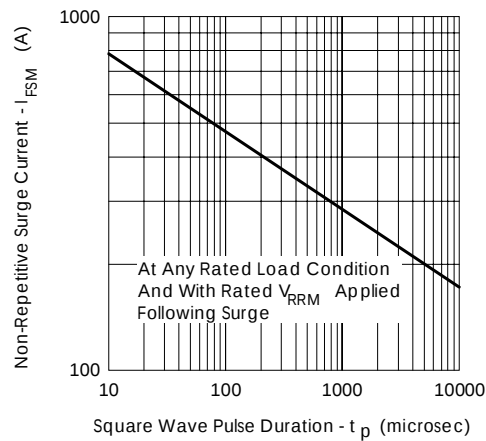


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

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

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

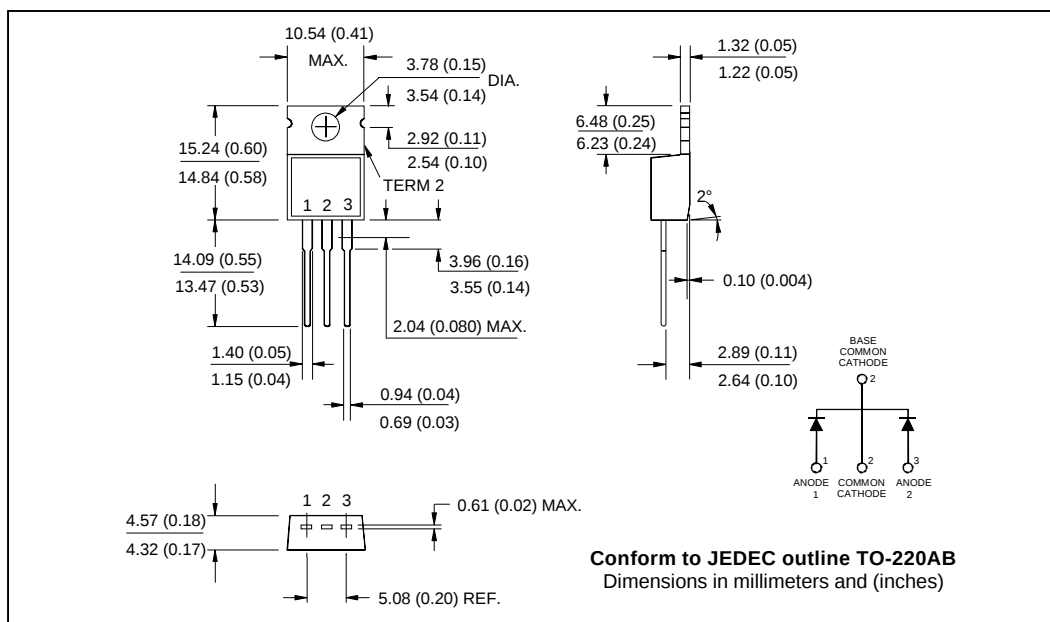
$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1}$ = rated V_R

Ordering Information Table

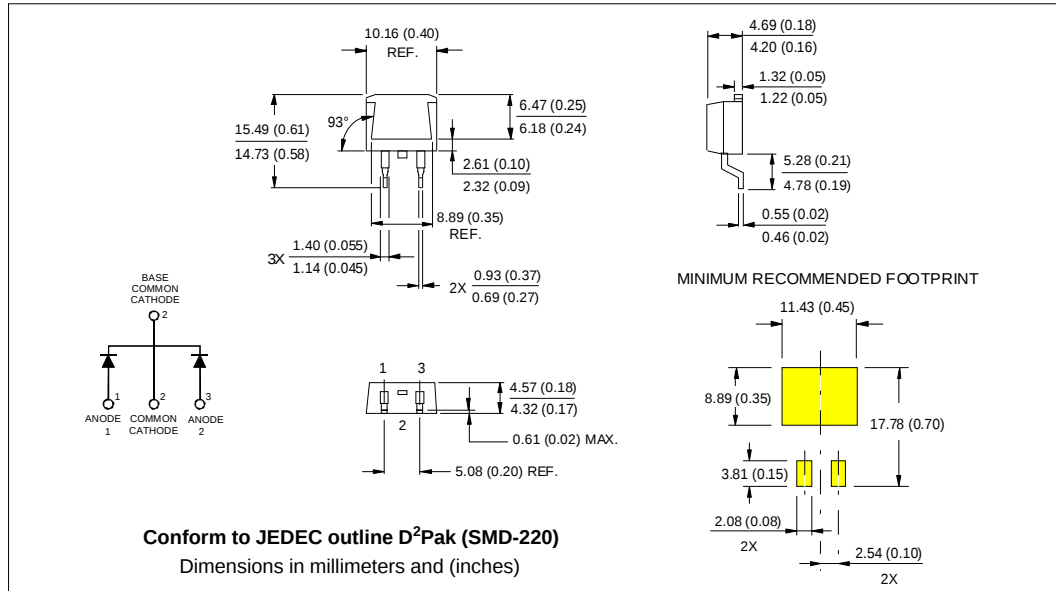
Device Code					
1	2	3	4	5	6
MBR	B	30	45	CT	-1
1	2	3	4	5	6
1	- Essential Part Number				
2	- B = Surface Mount None = TO-220				
3	- Current Rating				
4	- Voltage code: Code = V_{RRM}				
5	- CT= Essential Part Number				
6	- -1 = TO-262 None = TO-220				

35	= 35V
45	= 45V

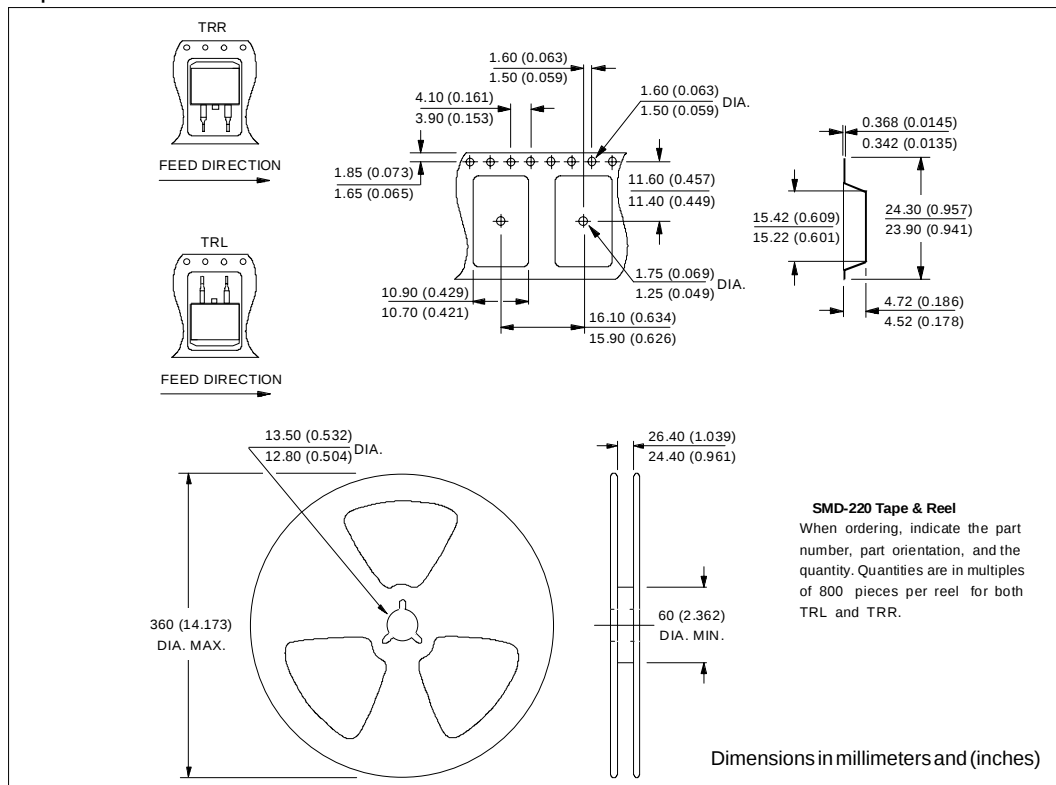
Outline Table



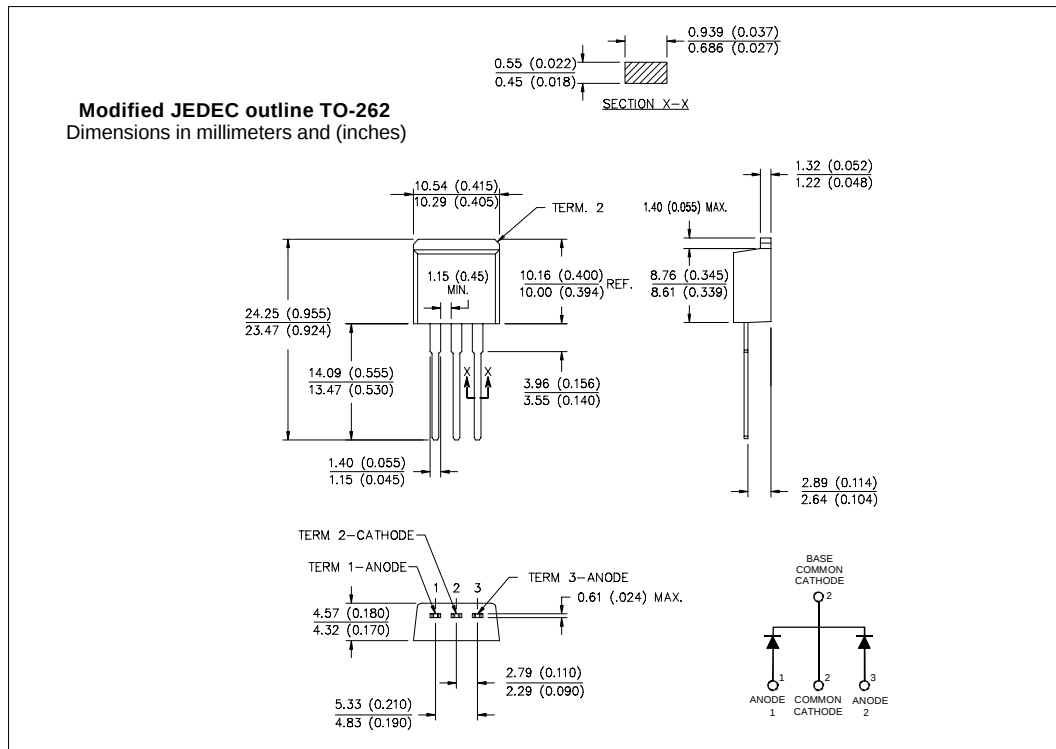
Outline Table



Tape & Reel Information



Outline Table



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.