

International
IOR 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	MBRB30...CT	MBR30...CT-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 (PerLeg) Current (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	A	5 μs Sine or 3 μs Rect. pulse
	200		Following any rated load condition and with rated V_{RRM} applied Surge applied at rated load conditions halfwave, single phase, 60Hz
I_{RRM} Peak Repetitive Reverse Surge Current	2.0	A	2.0 μsec 1.0 KHz

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.76	V	@ 30A $T_J = 25^\circ\text{C}$
	0.6	V	@ 20A $T_J = 125^\circ\text{C}$
	0.72	V	@ 30A
I_{RM} Max. Instantaneous Reverse Current (1)	1	mA	$T_J = 25^\circ\text{C}$
	100	mA	$T_J = 125^\circ\text{C}$
$V_{F(TO)}$ Threshold Voltage	0.29	V	$T_J = T_J \text{ max.}$
r_f 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 (Rated V_R)	10,000	V/ μs	

(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
w_t Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min.	6(5)	Non-lubricated threads
	Max.	12(10)	

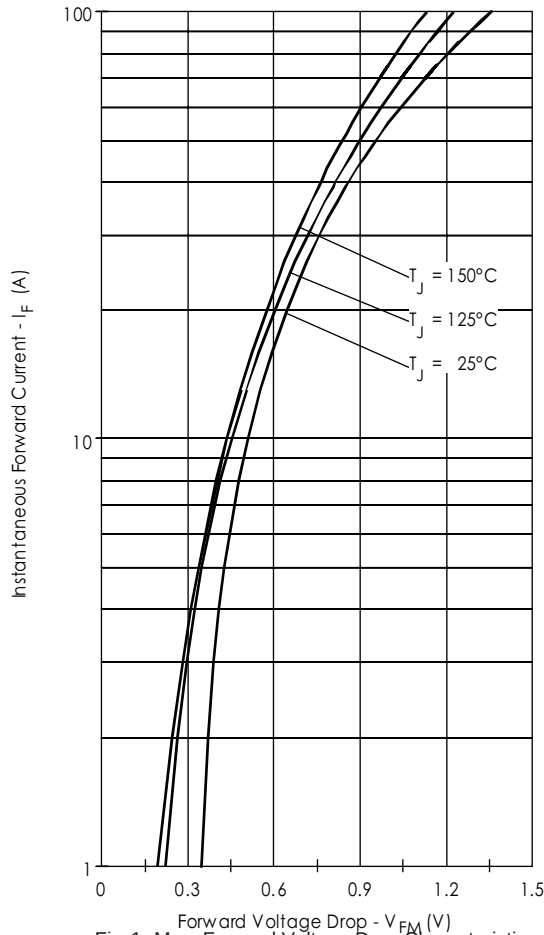


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

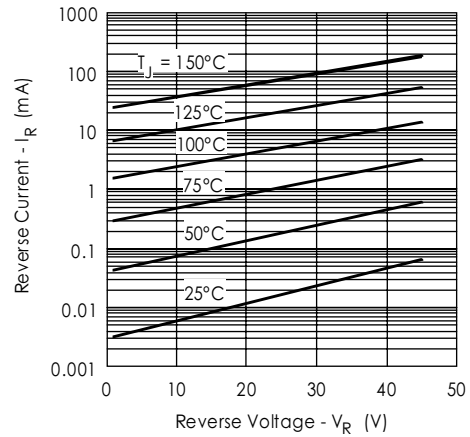


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

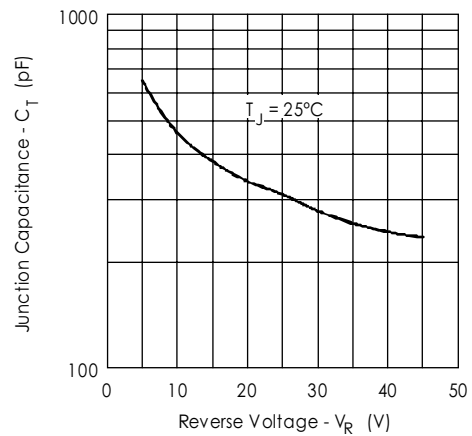


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

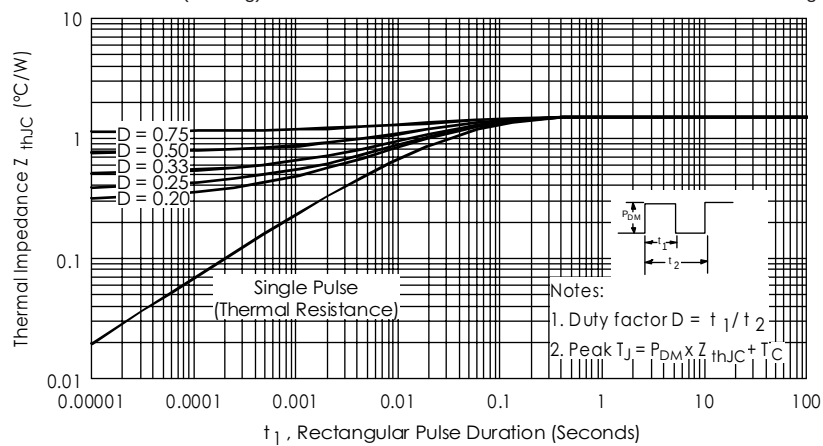


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

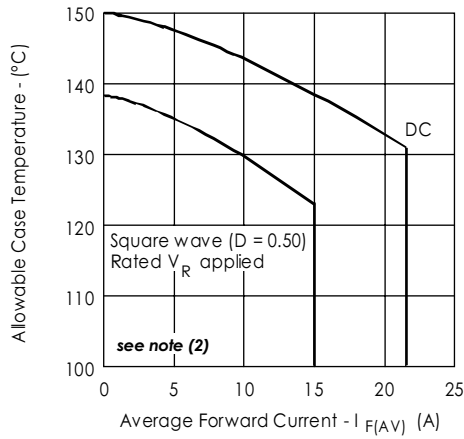


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

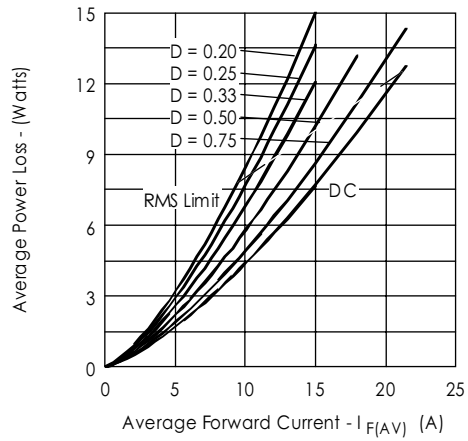


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

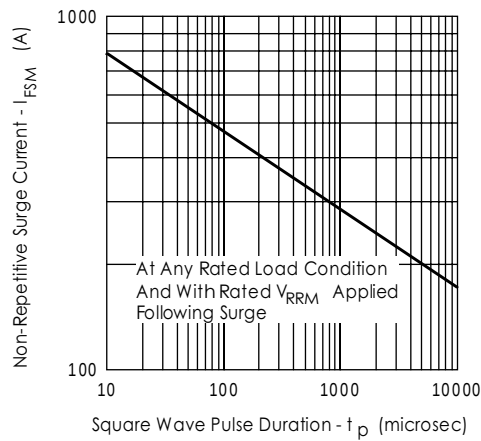
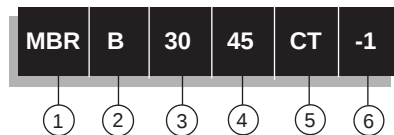


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

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

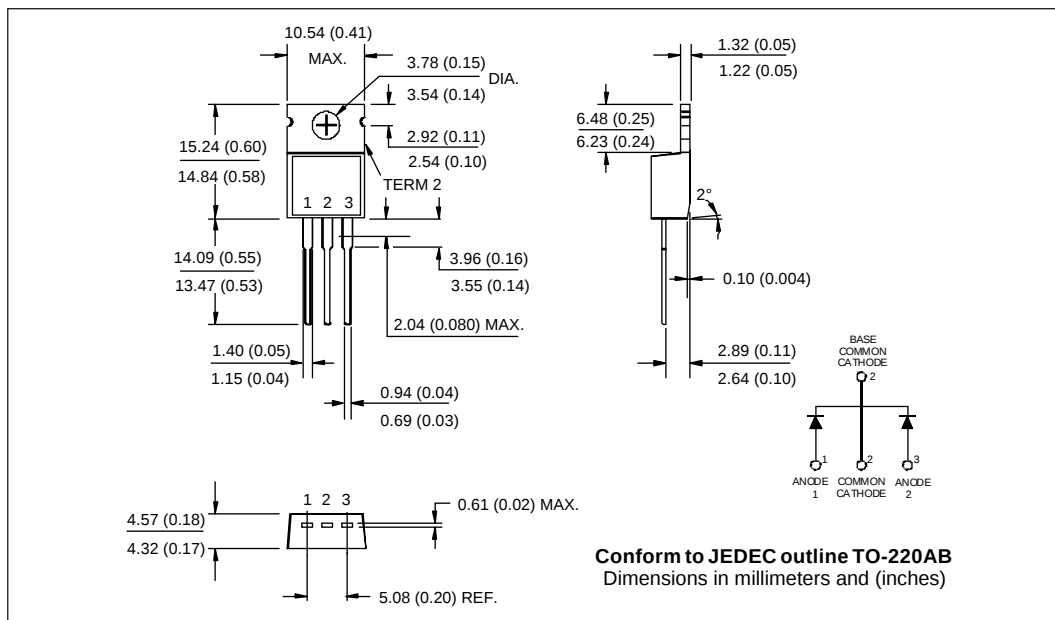
Device Code



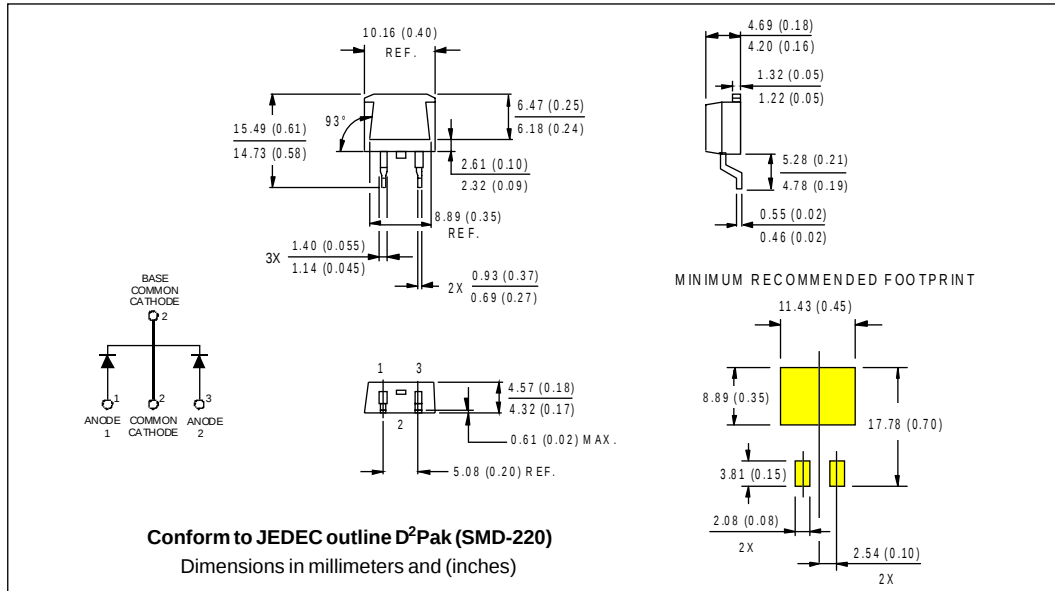
- 1** - Essential Part Number
- 2** - B = Surface Mount
None = TO-220
- 3** - Current Rating
- 4** - Voltage code: Code = V_{RRM}
- 5** - CT= Essential Part Number
- 6** - -1 = TO-262
None = TO-220

35	= 35V
45	= 45V

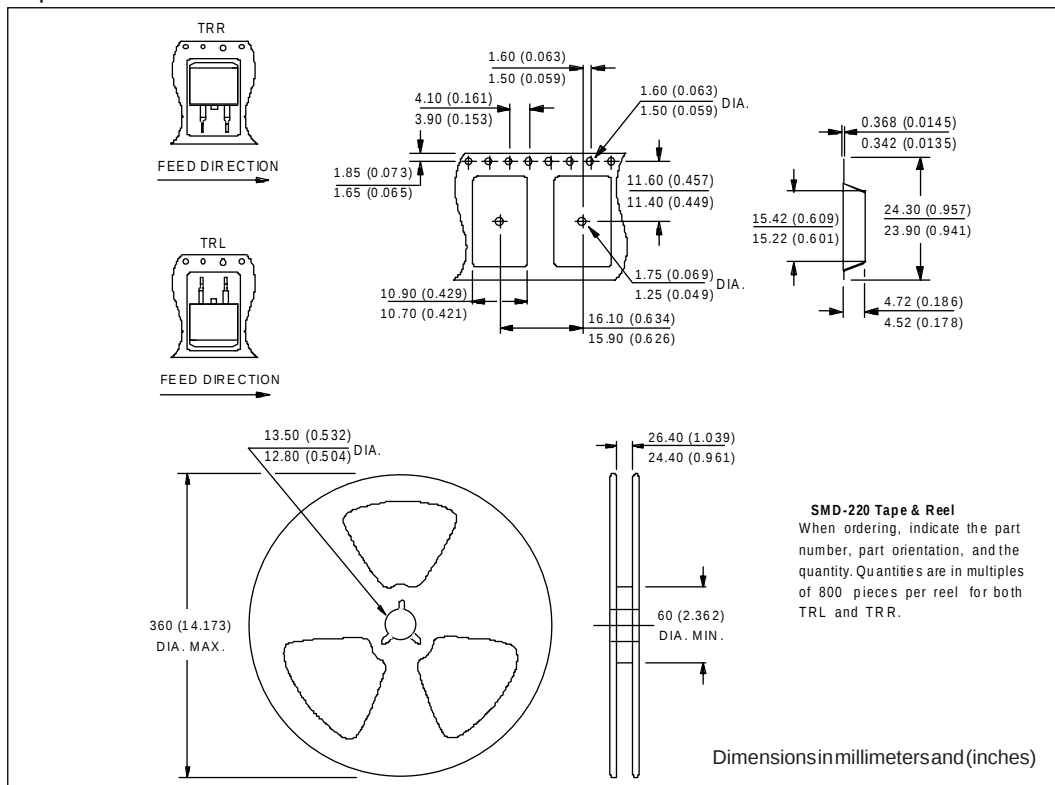
Outline Table



Outline Table



Tape & Reel Information



Outline Table

