

PD-2.320 rev. B 06/99

International
IR Rectifier

MBR2045CT
MBRB2045CT
MBR2045CT-1

SCHOTTKY RECTIFIER

20 Amp

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	20	A
I_{FRM} @ $T_C = 135^\circ\text{C}$ (Per Leg)	20	A
V_{RRM}	35/45	V
I_{FSM} @ $t_p = 5 \mu\text{s}$ sine	1060	A
V_F @ 10 Apk, $T_J = 125^\circ\text{C}$	0.57	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 and D²Pak 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>MBR2035CT MBR2045CT</p>  <p>TO-220</p>	<p>MBRB2035CT MBRB2045CT</p>  <p>D²PAK</p>	<p>MBR2035CT-1 MBR2045CT-1</p>  <p>TO-262</p>
--	--	--



Voltage Ratings

Parameters	MBR2035CT MBRB2035CT MBR2035CT-1	MBR2045CT MBRB2045CT MBR2045CT-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)	10 20	A	@ T _C = 135° C, (Rated V _R)
I _{FRM} Peak Repetitive Forward Current (Per Leg)	20	A	Rated V _R , square wave, 20kHz T _C = 135° C
I _{FSM} Non Repetitive Peak Surge Current	1060 150	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
I _{RRM} Peak Repetitive Reverse Surge Current	1.0	A	2.0 μsec 1.0KHz

Electrical Specifications

Parameters	Values	Units	Conditions
V _{FM} Max. Forward Voltage Drop (1)	0.84 0.57 0.72	V	@ 20A T _J = 25 °C @ 10A T _J = 125 °C @ 20A T _J = 125 °C
I _{RM} Max. Instantaneous Reverse Current (1)	0.1 15	mA	T _J = 25 °C T _J = 125 °C Rated DC voltage
V _{F(TO)} Threshold Voltage	0.354	V	T _J = T _J max.
r _t Forward Slope Resistance	17.6	mΩ	
C _T Max. Junction Capacitance	600	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)	1000	V/ μs	

(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
wt Approximate Weight	2(0.07)	g(oz.)	
T Mounting Torque	Min. 6(5) Max. 12(10)	Kg-cm (lbf-in)	Non-lubricated threads

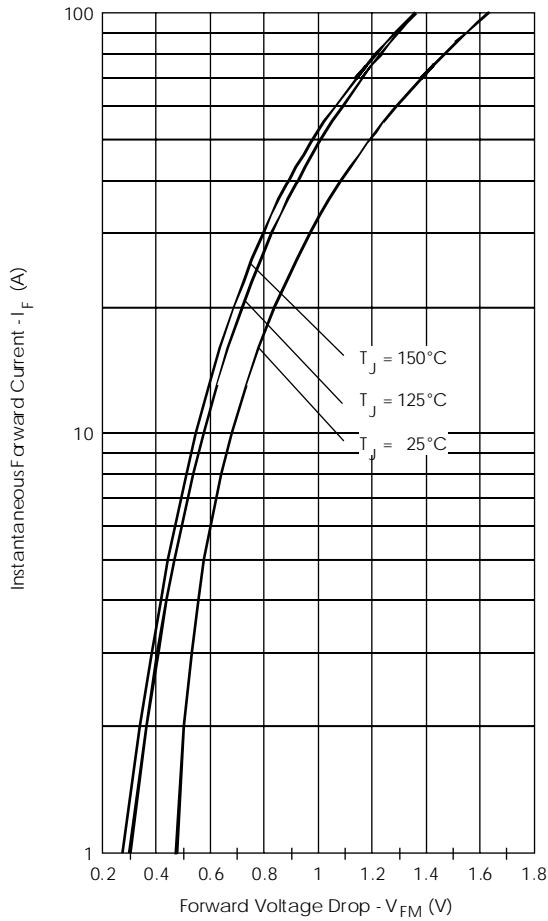


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

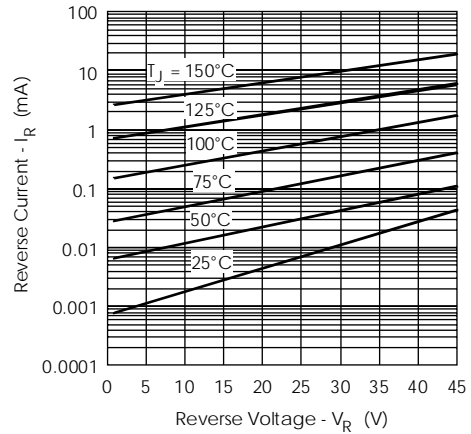


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

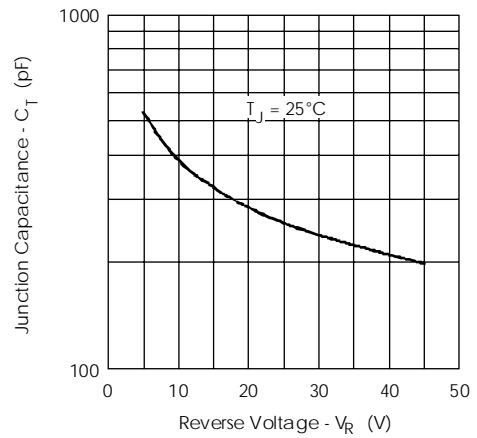


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

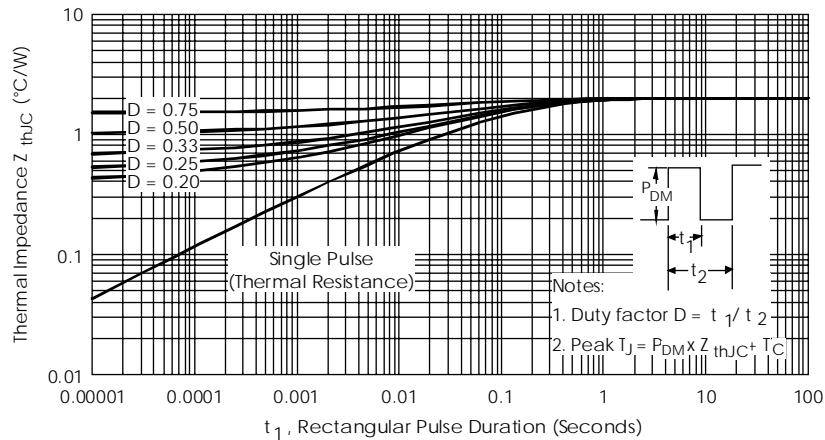


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

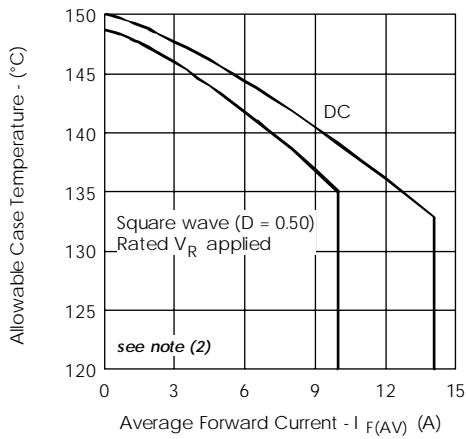


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

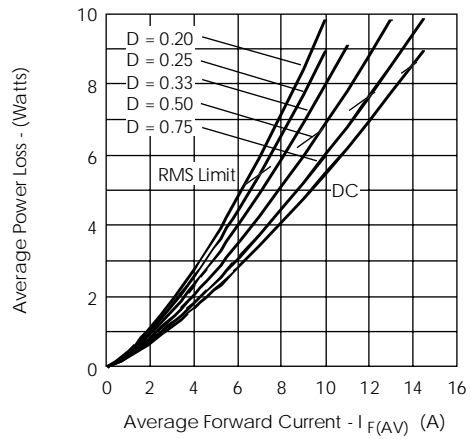


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

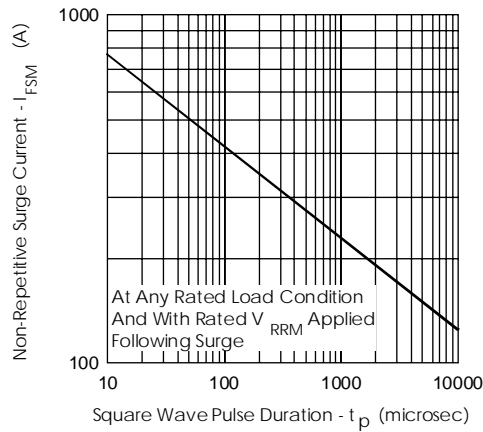


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

(2) Formula used: $T_c = T_j - (Pd + Pd_{REV}) \times R_{thJC}$;
 $Pd = \text{Forward Power Loss} = I_{F(AV)} \times V_{FM} @ (I_{F(AV)}/D)$ (see Fig. 6);
 $Pd_{REV} = \text{Inverse Power Loss} = V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = \text{rated } V_R$

Ordering Information Table

Device Code

MBR	B	20	45	CT	-1
-----	---	----	----	----	----

①

②

③

④

⑤

⑥

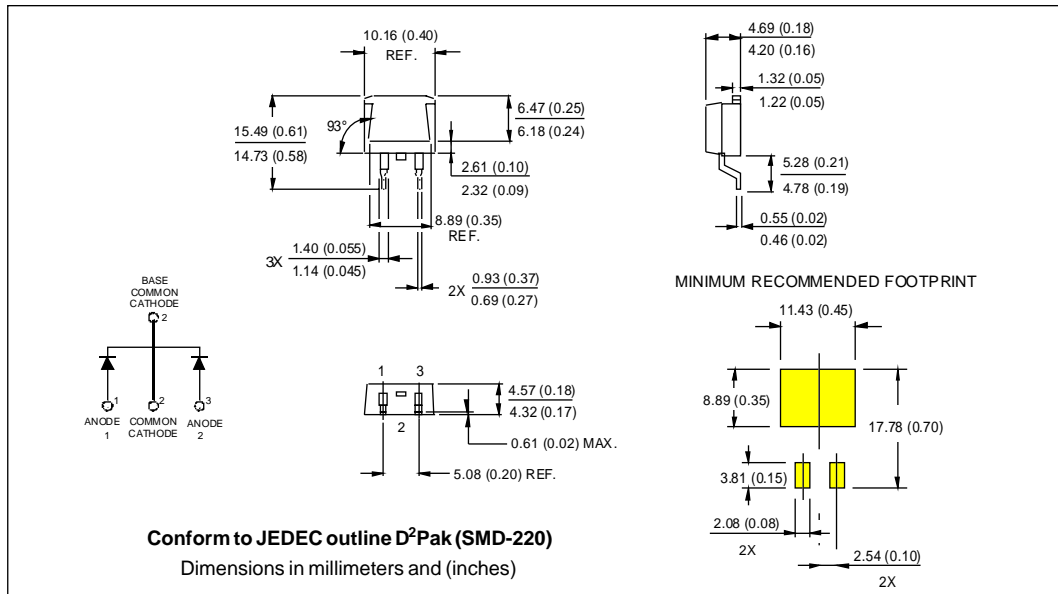
- 1** - Essential Part Number
- 2** - B = Surface Mount
None = TO-220
- 3** - Current Rating
- 4** - Voltage code: Code = V_{RRM}

35	= 35V
45	= 45V
- 5** - CT= Essential Part Number
- 6** - -1 = TO-262
None = TO-220

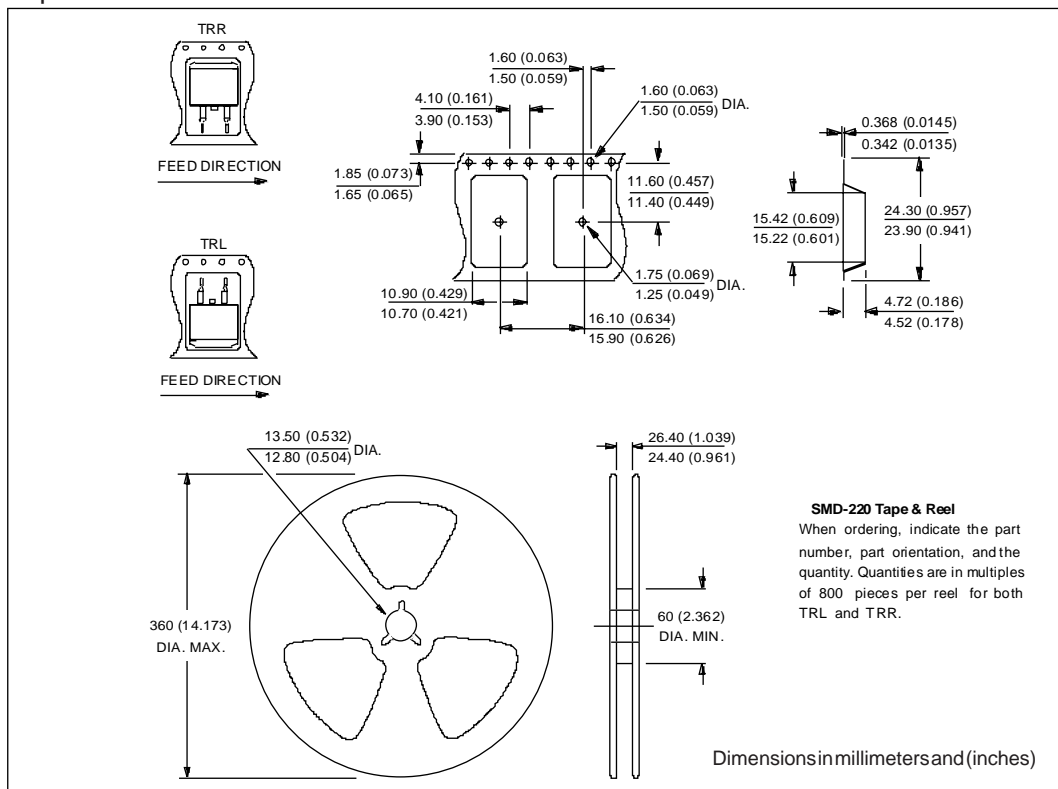
Outline Table

Conform to JEDEC outline TO-220AB
 Dimensions in millimeters and (inches)

Outline Table



Tape & Reel Information



Outline Table

