

International IOR Rectifier

MBR3035WT MBR3045WT

SCHOTTKY RECTIFIER

30 Amp



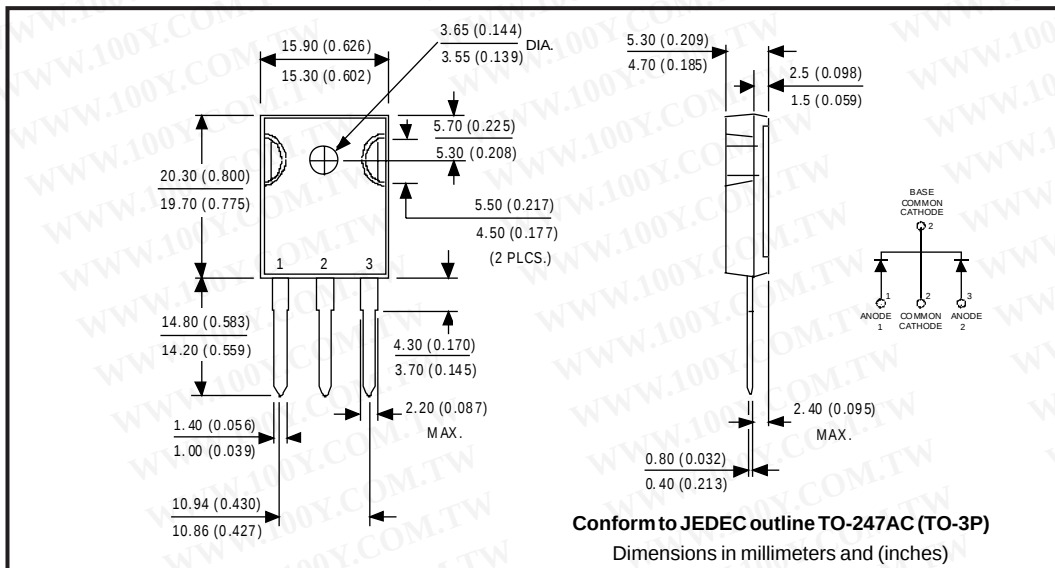
Major Ratings and Characteristics

Characteristics	MBR30..WT	Units
$I_{F(AV)}$ Rectangular waveform (Per Device)	30	A
I_{FRM} @ $T_C = 125^\circ\text{C}$ (Per Leg)	30	A
V_{RRM}	35/45	V
I_{FSM} @ $t_p = 5\mu\text{s}$ sine	1020	A
V_F @ 20A , $T_J = 125^\circ\text{C}$	0.60	V
T_J range	-65 to 150	$^\circ\text{C}$

Description/Features

The MBR30..WT center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. 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-247 package
- High purity, high temperature epoxy encapsulation for enhanced mechanical strength and moisture resistance
- Very low forward voltage drop
- High frequency operation
- Guard ring for enhanced ruggedness and long term reliability



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MBR3035WT, MBR3045WT

PD-2.324 rev. B 03/99

International
IR Rectifier

Voltage Ratings

Part number	MBR3035WT	MBR3045WT
V_R Max. DC Reverse Voltage (V)	35	45
V_{RRM} 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	@ $T_C = 125^\circ\text{C}$, (Rated V_R)
I_{FRM} Peak Repetitive Forward Current (Per Leg)	30	A	Rated V_R , square wave, 20kHz $T_C = 125^\circ\text{C}$
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
I_{RRM} Peak Repetitive Reverse Surge Current	2.0	A	2.0 μsec 1.0KHz

Electrical Specifications

Parameters	Values	Units	Conditions
V_{FM} Max. Forward Voltage Drop (1)	0.76 0.60 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)	1.0 100	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	13.8	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	7.5	nH	Measured from top of terminal to mounting plane
dv/dt Max. Voltage Rate of Change (Rated V_R)	1,000	V/ μs	

(1) Pulse Width < 300 μs , Duty Cycle < 2%

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T_J Max. Junction Temperature Range	-65to150	$^\circ\text{C}$	
T_{stg} Max. Storage Temperature Range	-65to175	$^\circ\text{C}$	
R_{thJC} Max. Thermal Resistance Junction to Case (Per Leg)	1.40	$^\circ\text{C/W}$	DC operation
R_{thCS} Typical Thermal Resistance Case to Heatsink	0.24	$^\circ\text{C/W}$	Mounting surface, smooth and greased
wt Approximate Weight	6(0.21)	g(oz.)	
T Mounting Torque	Min. 6(5) Max. 12(10)	Kg-cm (lbf-in)	
Case Style	TO-247AC(TO-3P)	JEDEC	

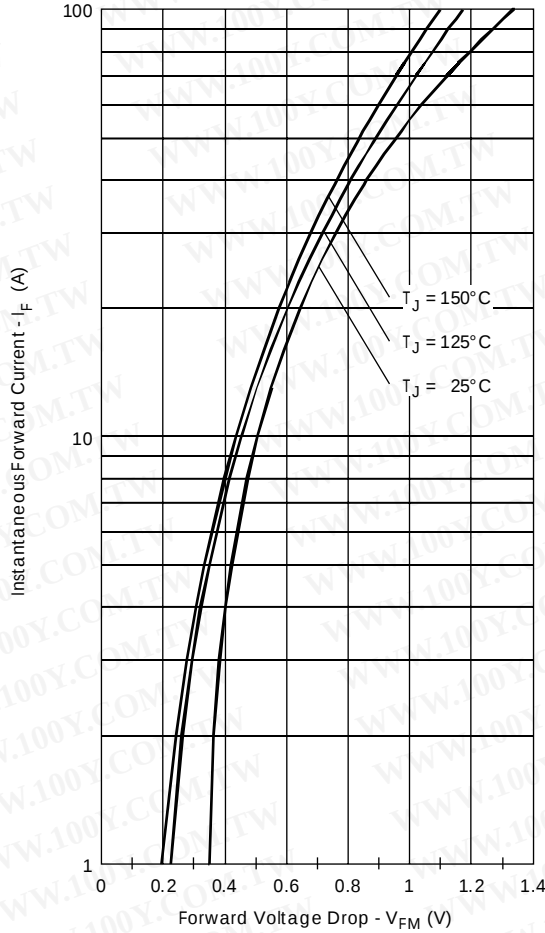


Fig. 1 - Max. Forward Voltage Drop Characteristics (PerLeg)

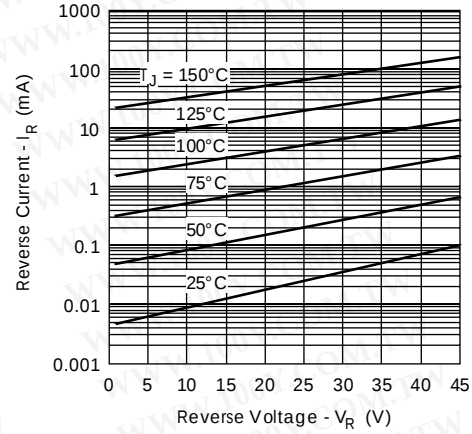


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

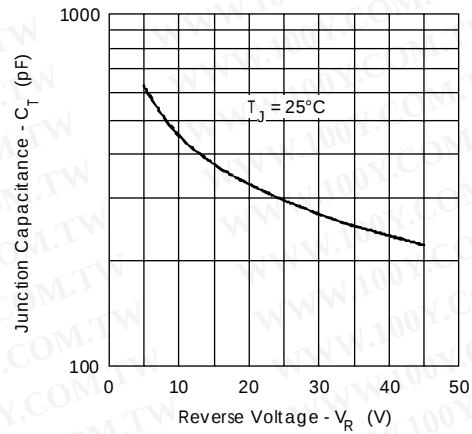


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

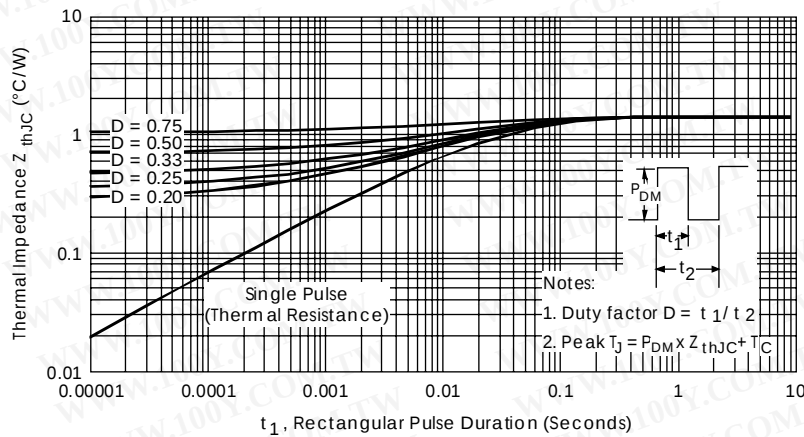


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (PerLeg)

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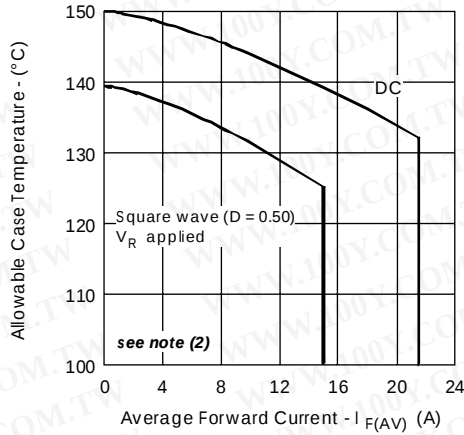


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

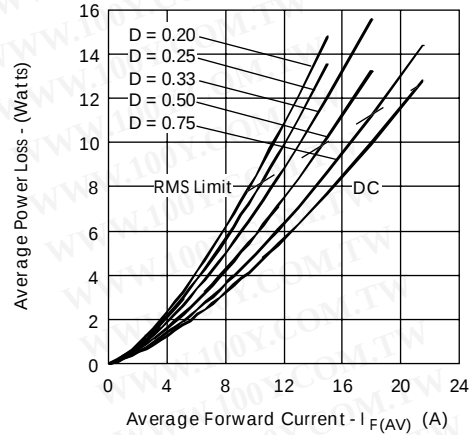


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

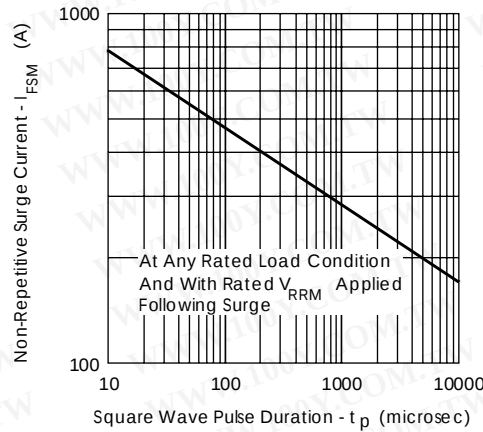


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

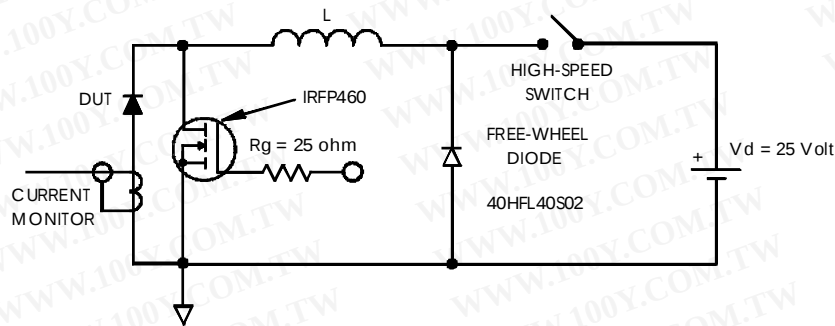


Fig. 8 - Unclamped Inductive Test Circuit

- (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			
MBR	30	45	WT
①	②	③	④
1	-	Essential Part Number	
2	-	Current Rating	
3	-	Voltage code: Code = V_{RRM}	35 = 35V 45 = 45V
4	-	Center Tap TO-247	

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