

International
IR Rectifier

MBR6045WT

SCHOTTKY RECTIFIER

60 Amp

$$I_{F(AV)} = 60\text{Amp}$$

$$V_R = 45\text{V}$$

Major Ratings and Characteristics

Characteristics	Values	Units
$I_{F(AV)}$ Rectangular waveform	60	A
V_{RRM}	45	V
I_{FSM} @tp = 5 μ s sine	2900	A
V_F @30 Apk, $T_J = 125^\circ\text{C}$ (per leg)	0.55	V
T_J	-55 to 150	$^\circ\text{C}$

Description/ Features

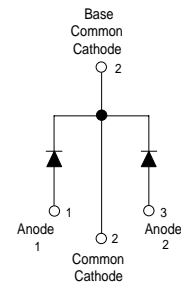
The MBR6045WT center tap Schottky rectifier has been optimized for very low forward voltage drop, with moderate leakage. The proprietary barrier technology allows for reliable operation up to 150 $^\circ\text{C}$ junction temperature. Typical applications are in switching power supplies, converters, free-wheeling diodes, and reverse battery protection.

- 150 $^\circ\text{C}$ 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

Case Styles



TO-247AC



Voltage Ratings

Part number	MBR6045WT
V _R Max. DC Reverse Voltage (V)	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) * See Fig. 5 (Per Device)	30	A	50% duty cycle @ T _C = 122°C, rectangular wave form
	60		
I _{FSM} Max. Peak One Cycle Non-Repetitive Surge Current (Per Leg) * See Fig. 7	2900	A	5µs Sine or 3µs Rect. pulse 10ms Sine or 6ms Rect. pulse
	360		
E _{AS} Non-Repetitive Avalanche Energy (Per Leg)	27	mJ	T _J = 25 °C, I _{AS} = 4 Amps, L = 3.4 mH
I _{AR} Repetitive Avalanche Current (Per Leg)	6	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 (Per Leg) * See Fig. 1 (1)	0.62	V	@ 30A T _J = 25 °C
	0.75	V	@ 60A
	0.55	V	@ 30A T _J = 125 °C
I _{RM} Max. Reverse Leakage Current (Per Leg) * See Fig. 2 (1)	1	mA	T _J = 25 °C
	150	mA	T _J = 125 °C
V _{F(TO)} Threshold Voltage	0.27	V	T _J = T _J max.
r _t Forward Slope Resistance	7.3	mΩ	
C _T Max. Junction Capacitance(Per Leg)	1400	pF	V _R = 5V _{DC} (test signal range 100Khz to 1Mhz) 25°C
L _S Typical Series Inductance (Per Leg)	7.5	nH	Measured lead to lead 5mm from package body
dv/dt Max. Voltage Rate of Change (Rated V _R)	10000	V/ µs	

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

Thermal-Mechanical Specifications

Parameters	Values	Units	Conditions
T _J Max. Junction Temperature Range	-55 to 150	°C	
T _{stg} Max. Storage Temperature Range	-55 to 150	°C	
R _{thJC} Max. Thermal Resistance Junction to Case (Per Leg) * See Fig. 4	1.0	°C/W	DC operation
R _{thJC} Max. Thermal Resistance Junction to Case (Per Package)	0.5	°C/W	DC operation
R _{thCS} Typical Thermal Resistance, Case to Heatsink	0.24	°C/W	Mounting surface , smooth and greased
wt Approximate Weight	6 (0.21)	g (oz.)	
T Mounting Torque	Min. 6 (5)	Kg-cm (lbf-in)	
	Max. 12 (10)		
Case Style	TO-247AC(TO-3P)	JEDEC	

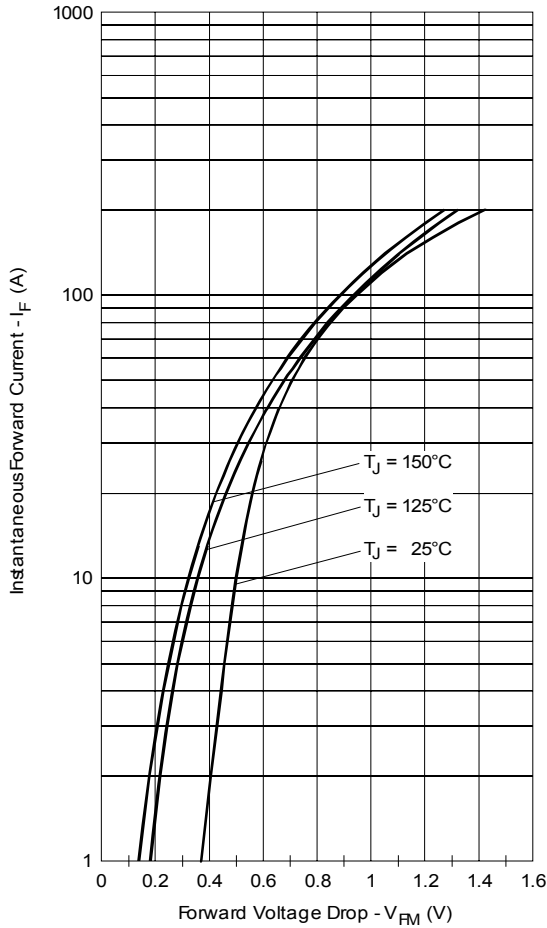


Fig. 1 - Max. Forward Voltage Drop Characteristics (Per Leg)

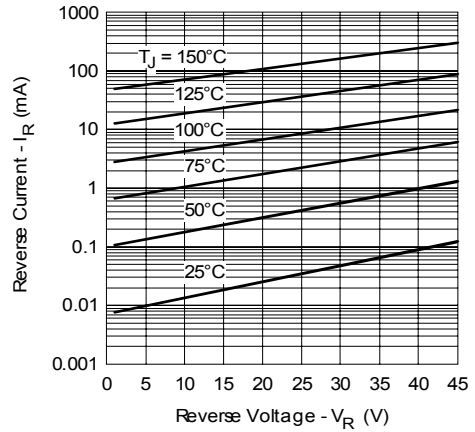


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage (Per Leg)

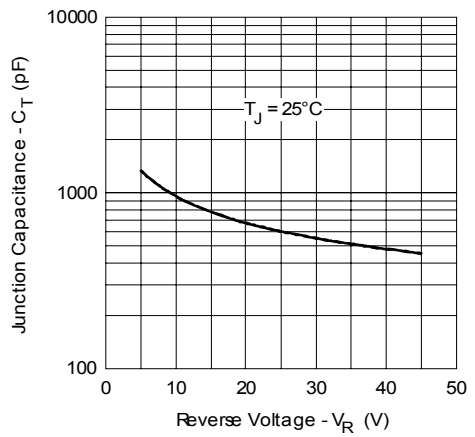


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage (Per Leg)

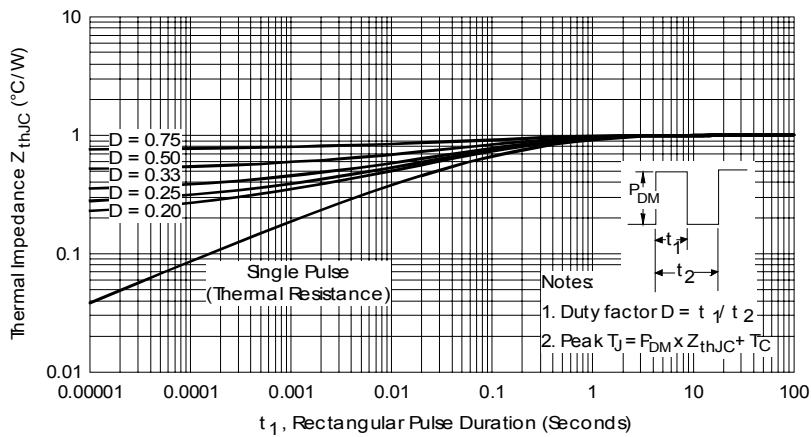


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics (Per Leg)

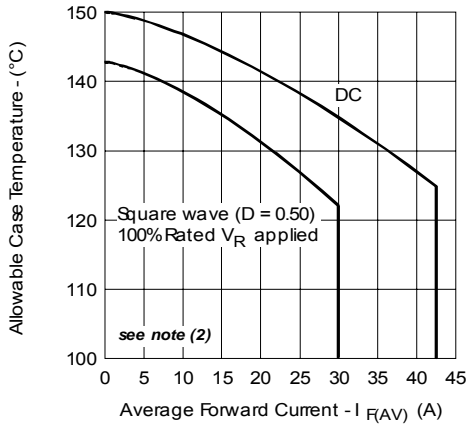


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current (Per Leg)

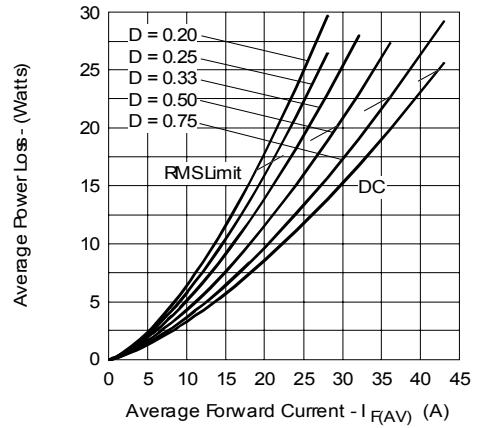


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

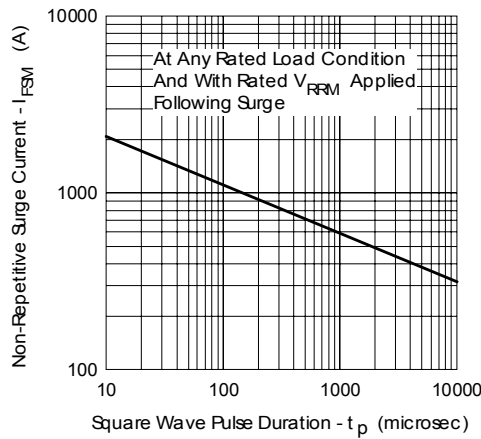


Fig. 7 - Max. Non-Repetitive Surge Current (Per Leg)

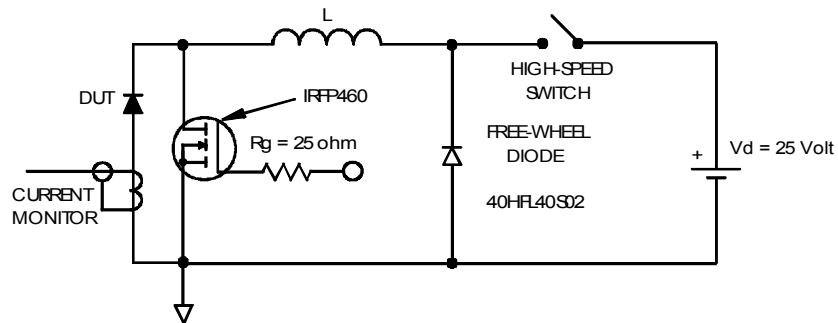


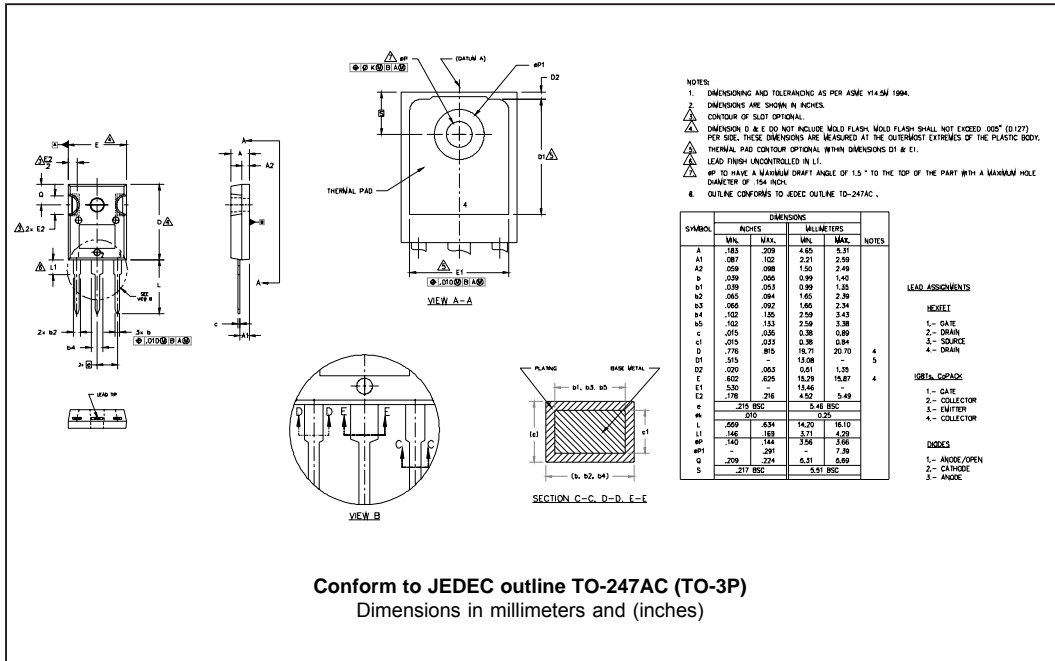
Fig. 8 - Unclamped Inductive Test Circuit

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

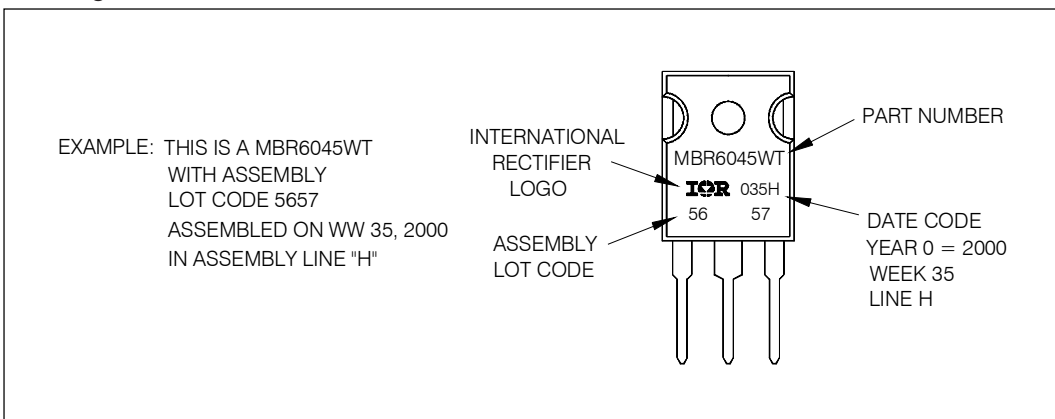
P_d = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

$P_{d_{REV}}$ = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 100\%$ rated V_R

Outline Table



Marking Information



Ordering Information Table

Device Code	MBR	60	45	WT	-
	①	②	③	④	⑤
1	-	Schottky MBR Series			
2	-	Current Rating (60 = 60A)			
3	-	Voltage Rating (45 = 45V)			
4	-	Circuit Configuration : Center Tap (Dual) TO-247			
5	-	<ul style="list-style-type: none"> • none = Standard Production • PbF = Lead-Free 			

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.