

# MBR3045WT

## SWITCHMODE™ Power Rectifier

These state-of-the-art devices use the Schottky Barrier principle with a platinum barrier metal.

### Features

- Dual Diode Construction; Terminals 1 and 3 may be Connected for Parallel Operation at Full Rating
- Guardring for Stress Protection
- Low Forward Voltage
- 175°C Operating Junction Temperature
- Popular TO-247 Package
- Pb-Free Package is Available\*

### Mechanical Characteristics

- Case: Epoxy, Molded
- Weight: 4.3 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds

### MAXIMUM RATINGS

Rating	Symbol	Max	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	$V_{RRM}$ $V_{RWM}$ $V_R$	45	V
Average Rectified Forward Current (Rated $V_R$ , $T_C = 105^\circ\text{C}$ ) Per Device Per Diode	$I_{F(AV)}$	30 15	A
Peak Repetitive Forward Current, (Rated $V_R$ , Square Wave, 20 kHz) Per Diode	$I_{FRM}$	30	A
Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz)	$I_{FSM}$	200	A
Peak Repetitive Reverse Current (2.0 $\mu\text{s}$ , 1.0 kHz) Per Diode (See Figure 6)	$I_{RRM}$	2.0	A
Storage Temperature Range	$T_{stg}$	-65 to +175	°C
Operating Junction Temperature (Note 1)	$T_J$	-65 to +175	°C
Peak Surge Junction Temperature (Forward Current Applied)	$T_{J(pk)}$	175	°C
Voltage Rate of Change (Rated $V_R$ )	$dv/dt$	10,000	V/ $\mu\text{s}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .

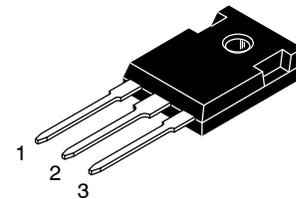
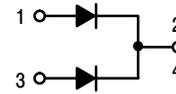
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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## SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 45 VOLTS



TO-247  
CASE 340L  
PLASTIC

### MARKING DIAGRAM



A = Assembly Location  
Y = Year  
WW = Work Week  
G = Pb-Free Package

### ORDERING INFORMATION

Device	Package	Shipping
MBR3045WT	TO-247	30 Units/Rail
MBR3045WTG	TO-247 (Pb-Free)	30 Units/Rail

# MBR3045WT

## THERMAL CHARACTERISTICS (Per Diode)

Rating	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.4	$^{\circ}C/W$
Junction-to-Ambient	$R_{\theta JA}$	40	$^{\circ}C/W$

## ELECTRICAL CHARACTERISTICS (Per Diode)

Instantaneous Forward Voltage (Note 2) ( $i_F = 20$ Amps, $T_C = 125^{\circ}C$ ) ( $i_F = 30$ Amps, $T_C = 125^{\circ}C$ ) ( $i_F = 30$ Amps, $T_C = 25^{\circ}C$ )	$v_F$	0.6 0.72 0.76	V
Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_C = 125^{\circ}C$ ) (Rated dc Voltage, $T_C = 25^{\circ}C$ )	$i_R$	100 1.0	mA

2. Pulse Test: Pulse Width = 300  $\mu s$ , Duty Cycle  $\leq 2.0\%$ .

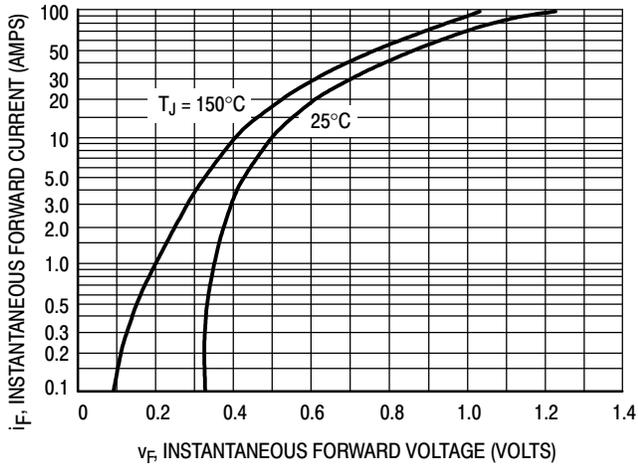


Figure 1. Typical Forward Voltage

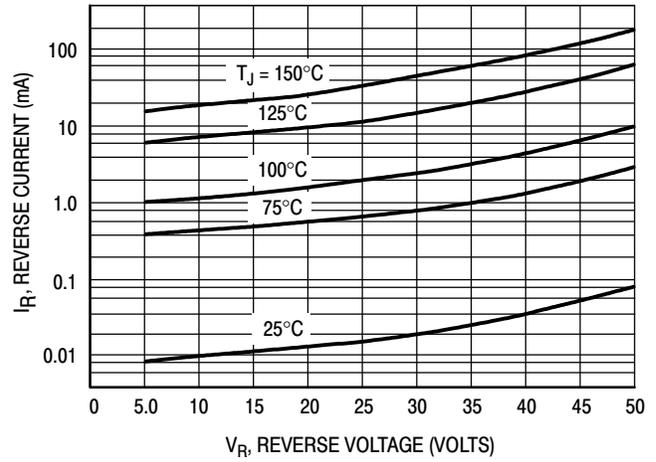


Figure 2. Typical Reverse Current

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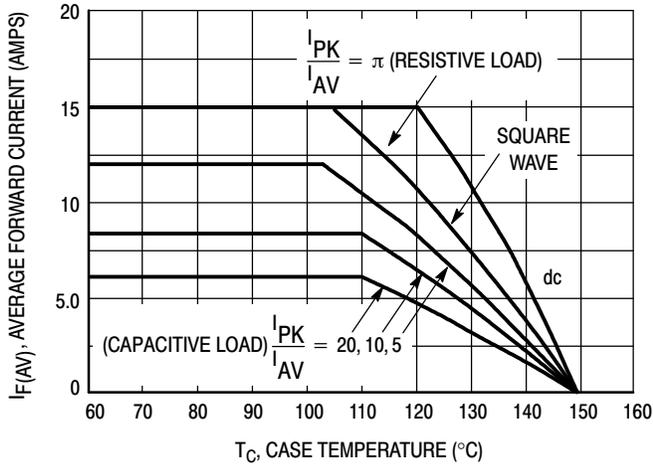


Figure 3. Current Derating (Per Leg)

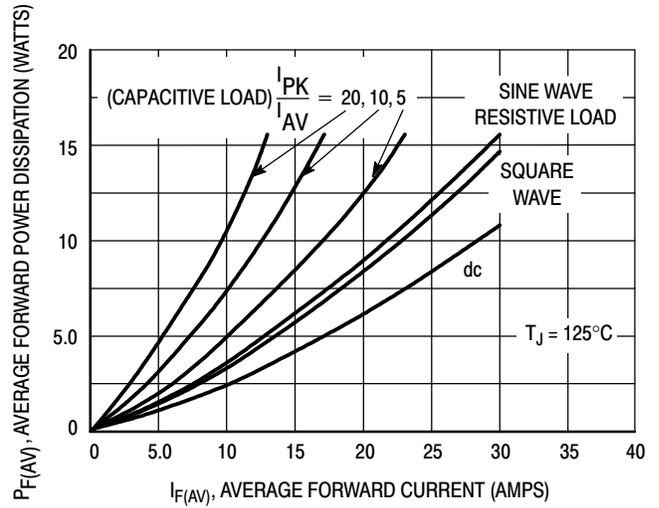


Figure 4. Forward Power Dissipation (Per Leg)

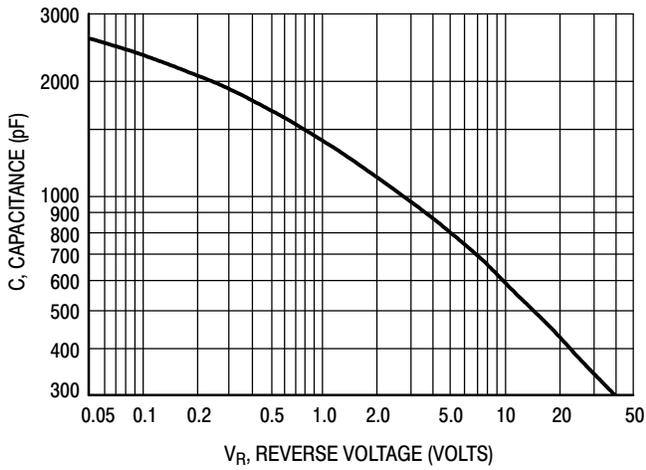


Figure 5. Capacitance

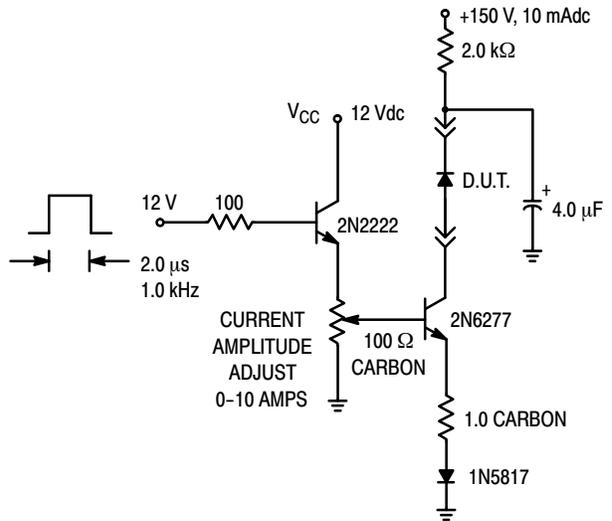
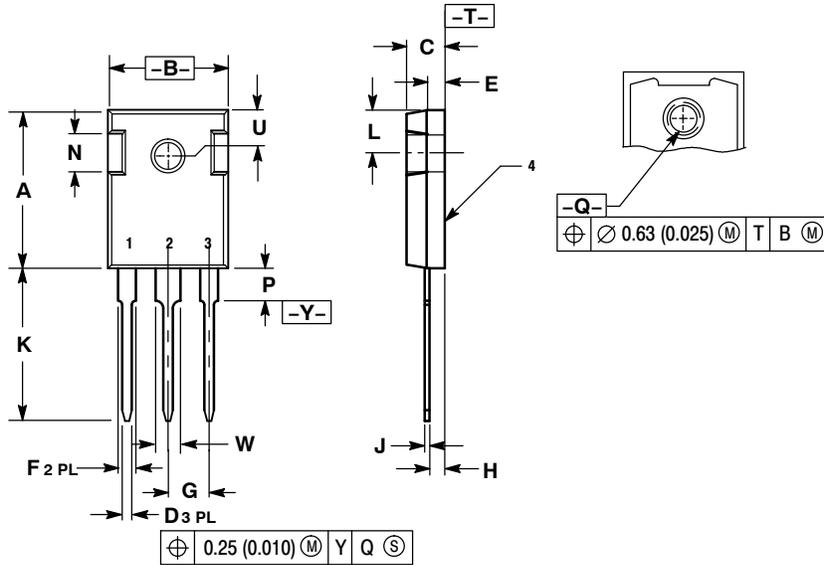


Figure 6. Test Circuit for Repetitive Reverse Current

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## PACKAGE DIMENSIONS

TO-247  
CASE 340L-02  
ISSUE E



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	20.32	21.08	0.800	0.830
B	15.75	16.26	0.620	0.640
C	4.70	5.30	0.185	0.209
D	1.00	1.40	0.040	0.055
E	1.90	2.60	0.075	0.102
F	1.65	2.13	0.065	0.084
G	5.45 BSC		0.215 BSC	
H	1.50	2.49	0.059	0.098
J	0.40	0.80	0.016	0.031
K	19.81	20.83	0.780	0.820
L	5.40	6.20	0.212	0.244
N	4.32	5.49	0.170	0.216
P	---	4.50	---	0.177
Q	3.55	3.65	0.140	0.144
U	6.15 BSC		0.242 BSC	
W	2.87	3.12	0.113	0.123

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