

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 μs , 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/ μs |

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: $dP_D/dT_J < 1/R_{\theta JA}$.

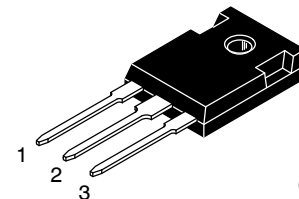
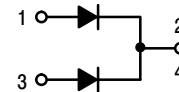
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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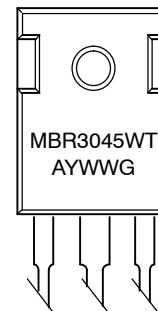
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SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 45 VOLTS



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 |

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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 μs , Duty Cycle $\leq 2.0\%$.

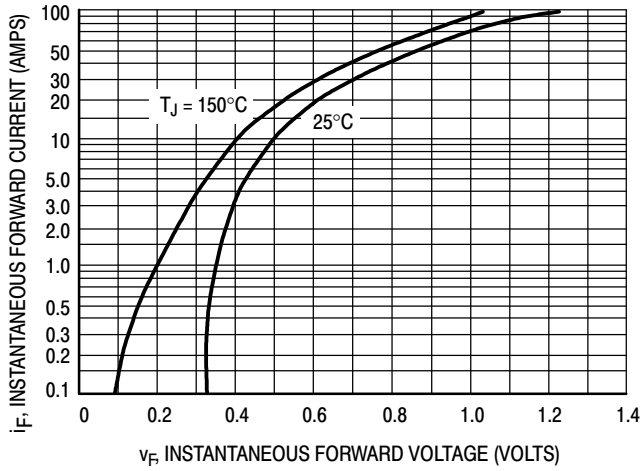


Figure 1. Typical Forward Voltage

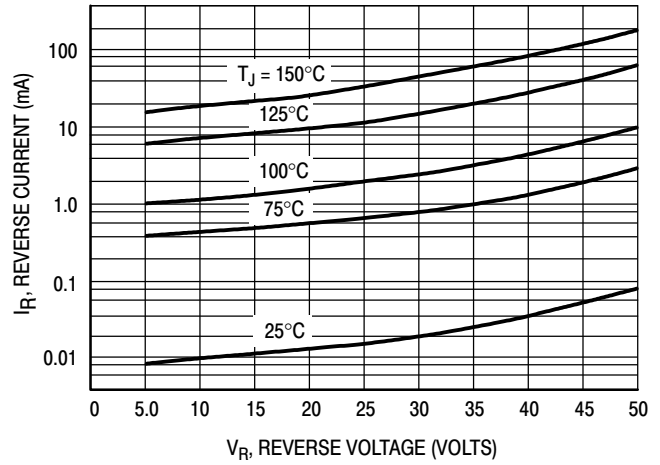


Figure 2. Typical Reverse Current

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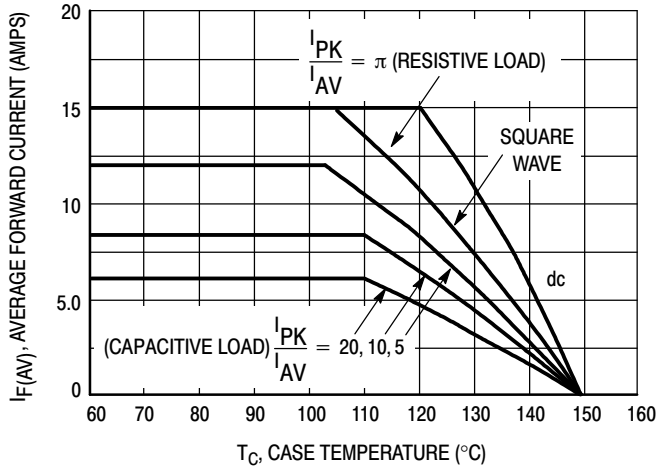


Figure 3. Current Derating (Per Leg)

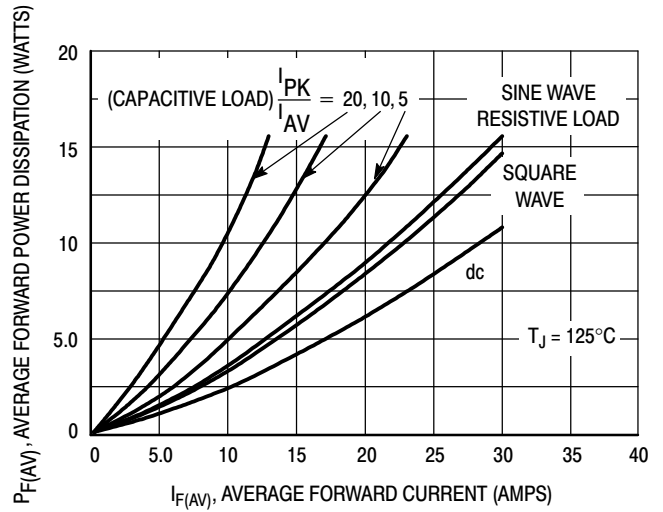


Figure 4. Forward Power Dissipation (Per Leg)

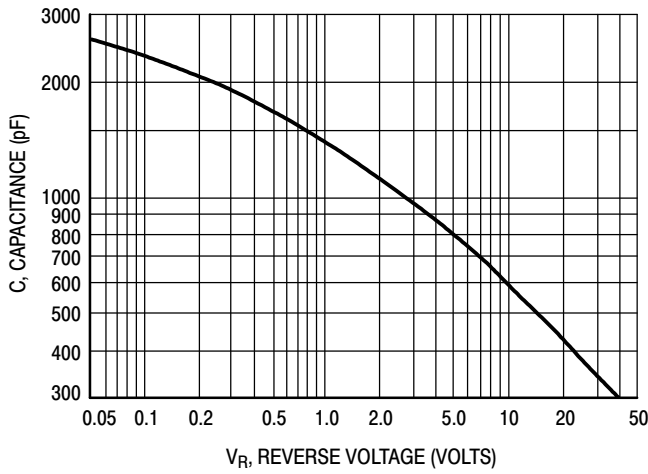


Figure 5. Capacitance

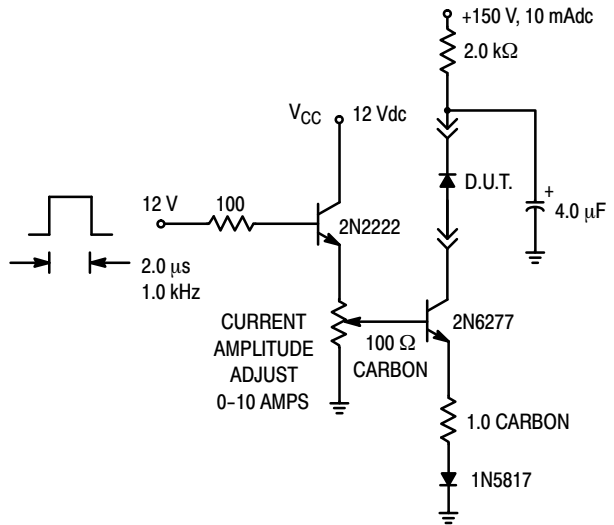
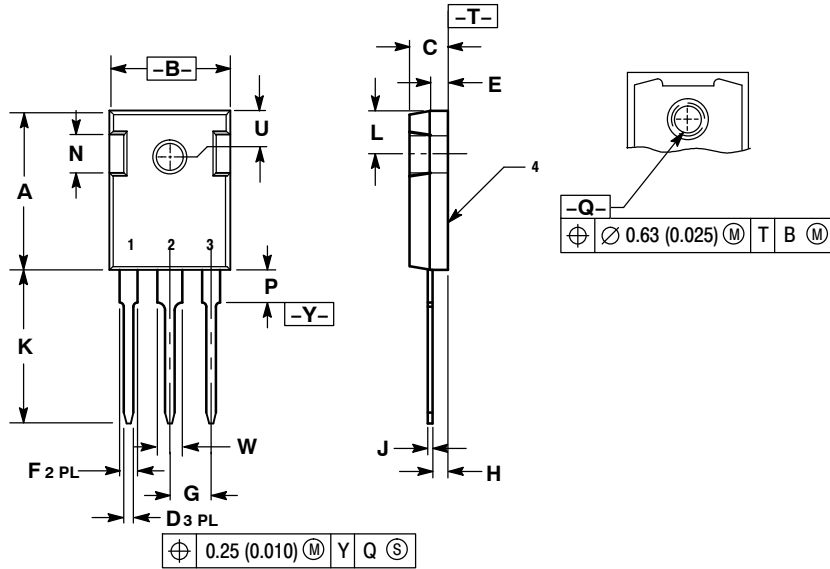


Figure 6. Test Circuit for Repetitive Reverse Current

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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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