# Switch Mode Power Rectifier

# MBR3045WTG

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
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant*

### 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<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 45 | V |
| Average Rectified Forward Current (Rated $V_R$, $T_C$ = 105°C) Per Device<br>Per Diode | $I_{F(AV)}$ | 30<br>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 those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

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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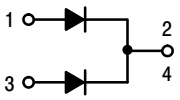
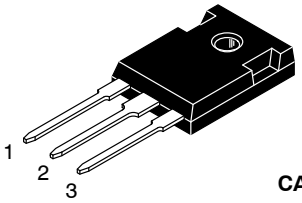
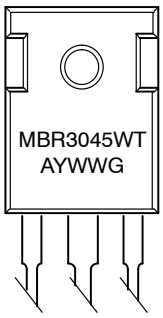
## SCHOTTKY BARRIER RECTIFIER 30 AMPERES, 45 VOLTS




**TO−247**
**CASE 340AL**

### MARKING DIAGRAM




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

### ORDERING INFORMATION

| Device | Package | Shipping |
|---|---|---|
| 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<br>Junction−to−Ambient | $R_{\theta JC}$<br>$R_{\theta JA}$ | 1.4<br>40 | °C/W |

**ELECTRICAL CHARACTERISTICS** (Per Diode)

| | | | |
|---|---|---|---|
| Instantaneous Forward Voltage (Note 2)<br>($i_F$ = 20 Amps, $T_C$ = 125°C)<br>($i_F$ = 30 Amps, $T_C$ = 125°C)<br>($i_F$ = 30 Amps, $T_C$ = 25°C) | $v_F$ | <br>0.62<br>0.72<br>0.76 | V |
| Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_C$ = 125°C)<br>(Rated dc Voltage, $T_C$ = 25°C) | $i_R$ | <br>100<br>1.0 | mA |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

2. Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 2.0%.

## TYPICAL CHARACTERISTICS

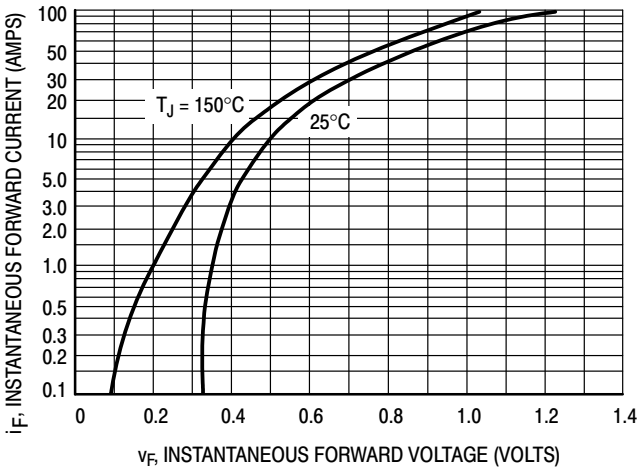


**Figure 1. Typical Forward Voltage**

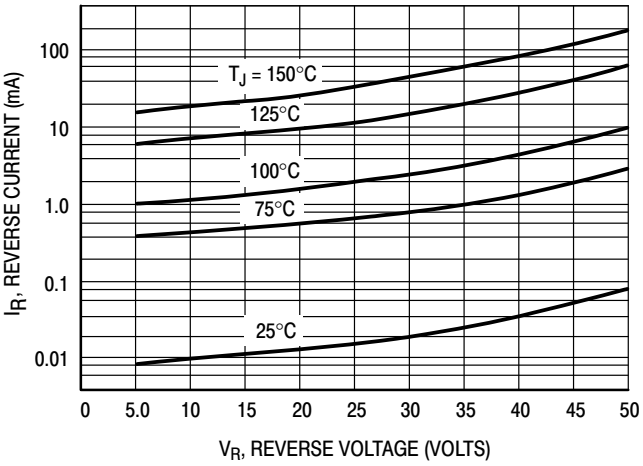


**Figure 2. Typical Reverse Current**



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## TYPICAL CHARACTERISTICS

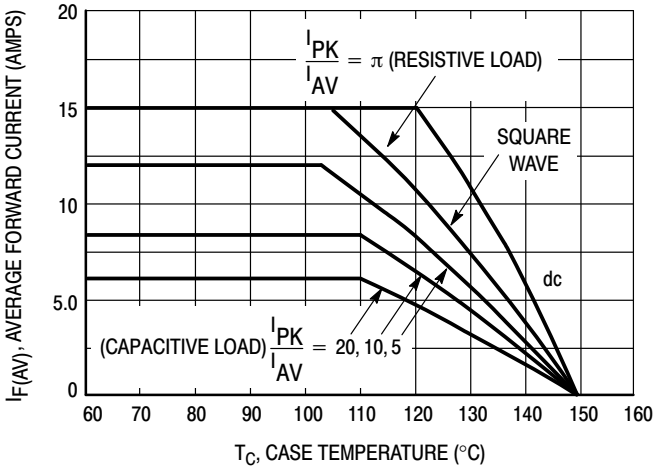


**Figure 3. Current Derating (Per Leg)**

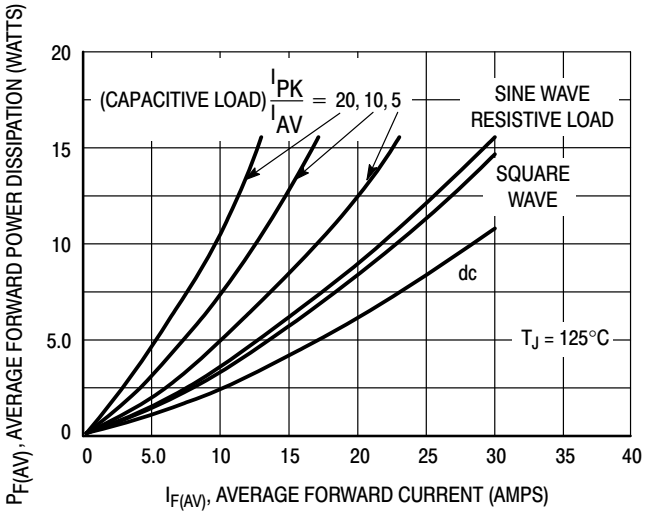


**Figure 4. Forward Power Dissipation (Per Leg)**

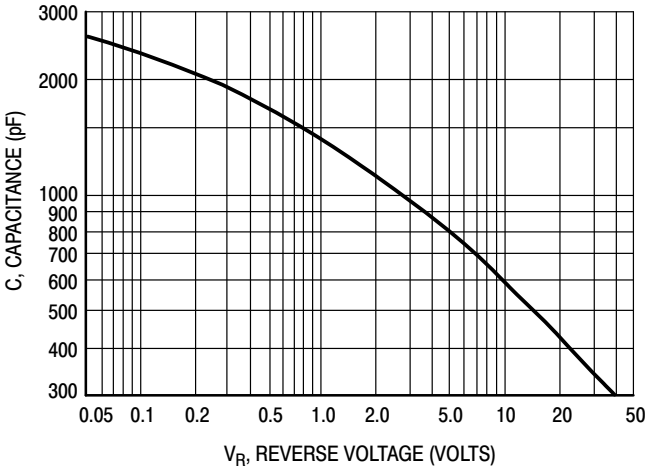


**Figure 5. Capacitance**

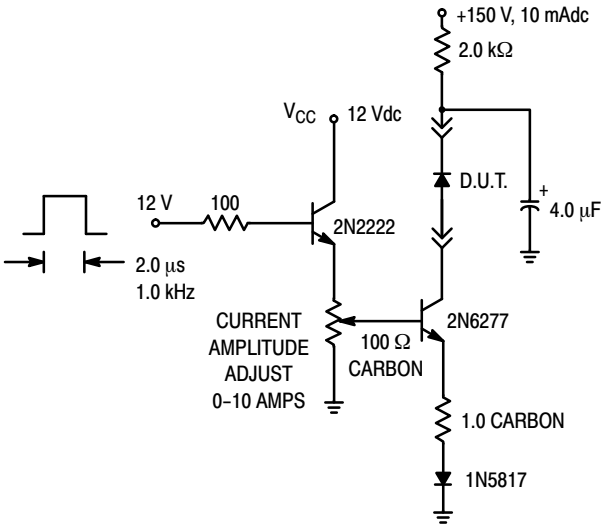


**Figure 6. Test Circuit for Repetitive Reverse Current**



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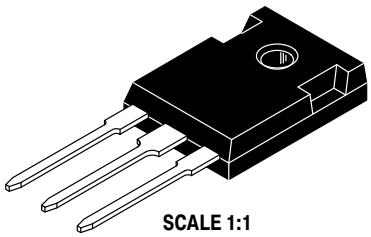
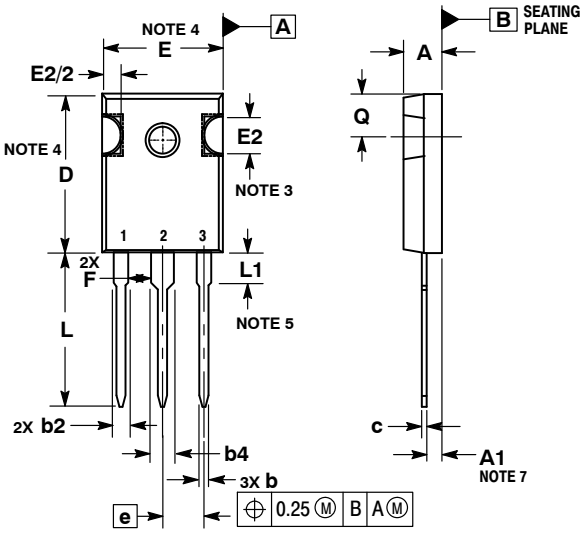


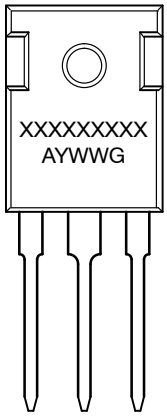
SCALE 1:1




NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. SLOT REQUIRED, NOTCH MAY BE ROUNDED.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH. MOLD FLASH SHALL NOT EXCEED 0.13 PER SIDE. THESE DIMENSIONS ARE MEASURED AT THE OUTERMOST EXTREME OF THE PLASTIC BODY.
5. LEAD FINISH IS UNCONTROLLED IN THE REGION DEFINED BY L1.
6. ∅P SHALL HAVE A MAXIMUM DRAFT ANGLE OF 1.5° TO THE TOP OF THE PART WITH A MAXIMUM DIAMETER OF 3.91.
7. DIMENSION A1 TO BE MEASURED IN THE REGION DEFINED BY L1.

| | MILLIMETERS | |
|---|---|---|
| DIM | MIN | MAX |
| A | 4.70 | 5.30 |
| A1 | 2.20 | 2.60 |
| b | 1.07 | 1.33 |
| b2 | 1.65 | 2.35 |
| b4 | 2.60 | 3.40 |
| c | 0.45 | 0.68 |
| D | 20.80 | 21.34 |
| E | 15.50 | 16.25 |
| E2 | 4.32 | 5.49 |
| e | 5.45 BSC | |
| F | 2.655 | --- |
| L | 19.80 | 20.80 |
| L1 | 3.81 | 4.32 |
| P | 3.55 | 3.65 |
| Q | 5.40 | 6.20 |
| S | 6.15 BSC | |

## GENERIC MARKING DIAGRAM*




XXXXX = Specific Device Code
A = Assembly Location
Y = Year
WW = Work Week
G = Pb−Free Package

*This information is generic. Please refer to device data sheet for actual part marking.
Pb−Free indicator, “G” or microdot “ ▪”, may or may not be present.

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| DESCRIPTION: | TO−247 | PAGE 1 OF 1 |

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