# MBR16100CT

# SWITCHMODE™ Power Rectifier

### Features and Benefits

- Low Forward Voltage
- Low Power Loss / High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- Low Stored Charge Majority Carrier Conduction
- 16 A Total (8.0 A Per Diode Leg)
- Pb−Free Package is Available*

### Applications

- Power Supply − Output Rectification
- Power Management
- Instrumentation

### Mechanical Characteristics

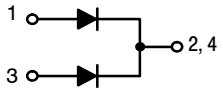
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model = 3B
  Machine Model = C

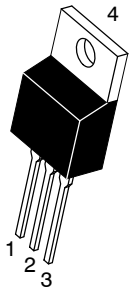
*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

**ON Semiconductor®**

**http://onsemi.com**

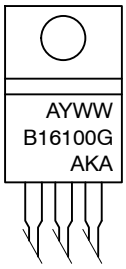
## SCHOTTKY BARRIER RECTIFIER 16 AMPERES, 100 VOLTS




**TO−220AB**
**CASE 221A**
**PLASTIC**
**STYLE 6**

**MARKING DIAGRAM**




| | |
|---|---|
| A | = Assembly Location |
| Y | = Year |
| WW | = Work Week |
| B16100 | = Device Code |
| G | = Pb−Free Package |
| AKA | = Diode Polarity |

**ORDERING INFORMATION**

| Device | Package | Shipping |
|---|---|---|
| MBR16100CT | TO−220 | 50 Units/Rail |
| MBR16100CTG | TO−220 (Pb−Free) | 50 Units/Rail |

**MAXIMUM RATINGS** (Per Diode Leg)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 100 | V |
| Average Rectified Forward Current<br>($T_C$ = 166°C) Per Diode<br>Per Device | $I_{F(AV)}$ | <br>8.0<br>16 | A |
| Peak Repetitive Forward Current<br>(Square Wave, 20 kHz)<br>$T_C$ = 165°C | $I_{FRM}$ | 16 | A |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$ | 150 | A |
| Peak Repetitive Reverse Surge Current (2.0 μs, 1.0 kHz) | $I_{RRM}$ | 0.5 | A |
| Operating Junction Temperature (Note 1) | $T_J$ | −65 to +175 | °C |
| Storage Temperature | $T_{stg}$ | −65 to +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: $dP_D/dT_J < 1/R_{\theta JA}$.

**THERMAL CHARACTERISTICS**

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Maximum Thermal Resistance, Junction−to−Case (Min. Pad)<br>Junction−to−Ambient (Min. Pad) | $R_{\theta JC}$<br>$R_{\theta JA}$ | 2.0<br>60 | °C/W |

**ELECTRICAL CHARACTERISTICS** (Per Diode Leg)

| Characteristic | Symbol | Min | Typical | Max | Unit |
|---|---|---|---|---|---|
| Maximum Instantaneous Forward Voltage (Note 2)<br>($i_F$ = 8.0 A, $T_J$ = 125°C)<br>($i_F$ = 8.0 A, $T_J$ = 25°C)<br>($i_F$ = 16 A, $T_J$ = 125°C)<br>($i_F$ = 16 A, $T_J$ = 25°C) | $v_F$ | <br>−<br>−<br>−<br>− | <br>0.56<br>0.68<br>0.67<br>0.79 | <br>0.60<br>0.74<br>0.69<br>0.84 | V |
| Maximum Instantaneous Reverse Current (Note 2)<br>(Rated dc Voltage, $T_J$ = 125°C)<br>(Rated dc Voltage, $T_J$ = 25°C) | $i_R$ | <br>−<br>− | <br>0.95<br>0.0013 | <br>5.0<br>0.1 | mA |

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

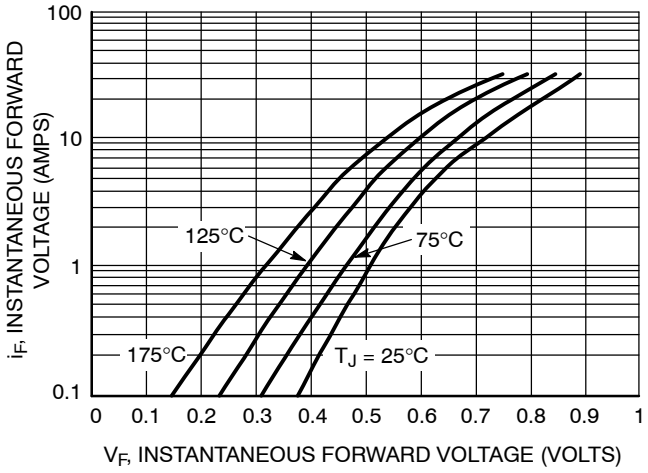



**Figure 1. Typical Forward Voltage Per Diode**

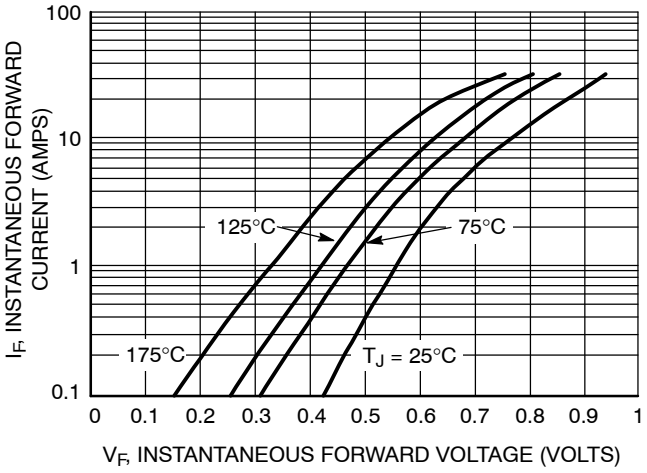



**Figure 2. Maximum Forward Voltage Per Diode**

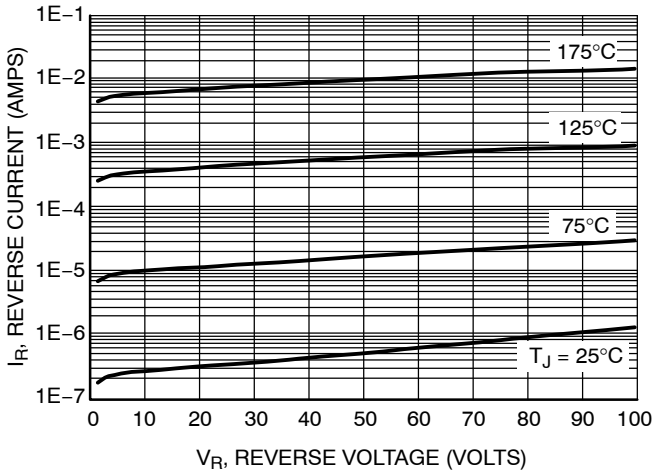



**Figure 3. Typical Reverse Current Per Diode**

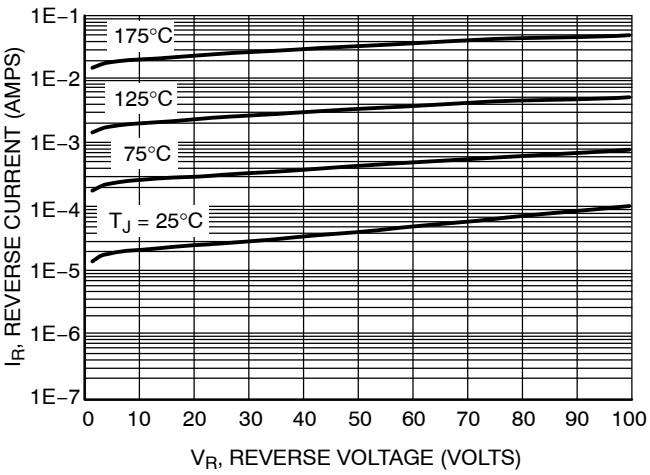



**Figure 4. Typical Capacitance Per Diode**

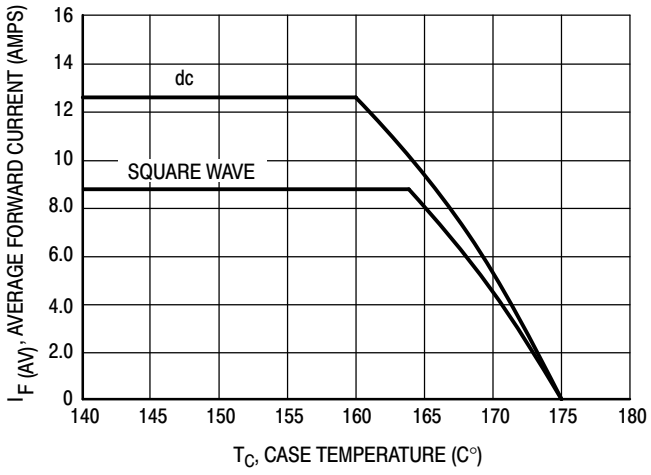



**Figure 5. Current Derating, Case Per Leg**

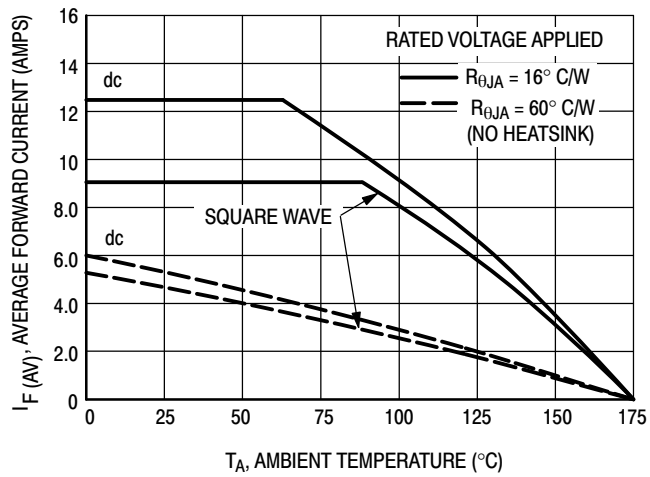



**Figure 6. Current Derating, Ambient Per Leg**

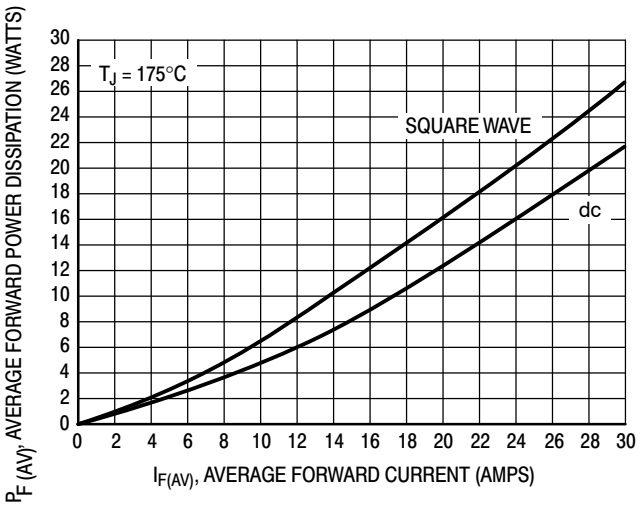



**Figure 7. Forward Power Dissipation**

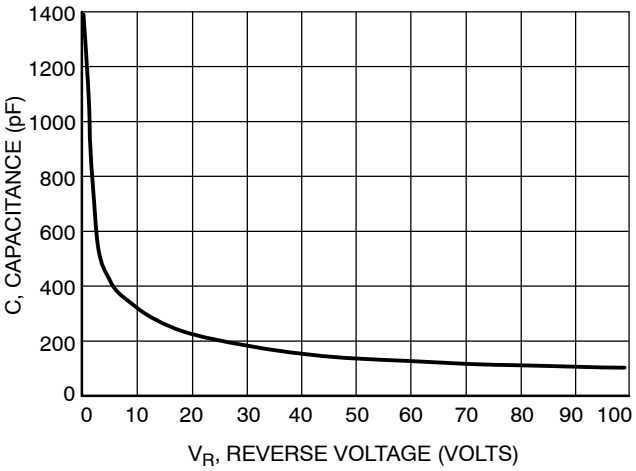
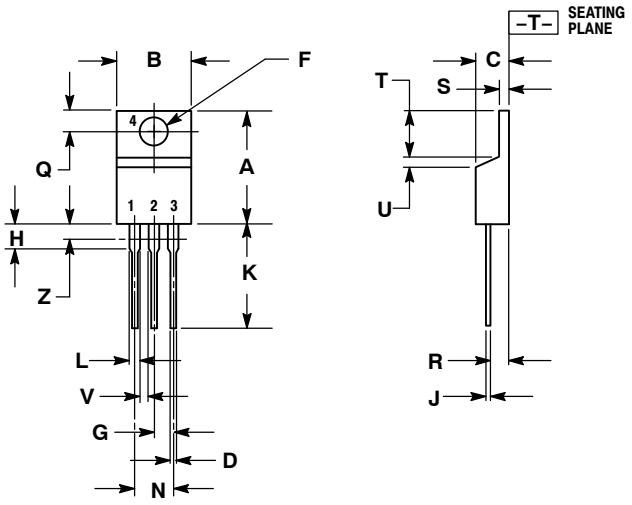



**Figure 8. Typical Capacitance Per Diode**

## PACKAGE DIMENSIONS

**TO−220**
CASE 221A−09
ISSUE AF




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

| | INCHES | | MILLIMETERS | |
|---|---|---|---|---|
| DIM | MIN | MAX | MIN | MAX |
| A | 0.570 | 0.620 | 14.48 | 15.75 |
| B | 0.380 | 0.405 | 9.66 | 10.28 |
| C | 0.160 | 0.190 | 4.07 | 4.82 |
| D | 0.025 | 0.035 | 0.64 | 0.88 |
| F | 0.142 | 0.161 | 3.61 | 4.09 |
| G | 0.095 | 0.105 | 2.42 | 2.66 |
| H | 0.110 | 0.155 | 2.80 | 3.93 |
| J | 0.014 | 0.025 | 0.36 | 0.64 |
| K | 0.500 | 0.562 | 12.70 | 14.27 |
| L | 0.045 | 0.060 | 1.15 | 1.52 |
| N | 0.190 | 0.210 | 4.83 | 5.33 |
| Q | 0.100 | 0.120 | 2.54 | 3.04 |
| R | 0.080 | 0.110 | 2.04 | 2.79 |
| S | 0.045 | 0.055 | 1.15 | 1.39 |
| T | 0.235 | 0.255 | 5.97 | 6.47 |
| U | 0.000 | 0.050 | 0.00 | 1.27 |
| V | 0.045 | --- | 1.15 | --- |
| Z | --- | 0.080 | --- | 2.04 |

STYLE 6:
PIN 1. ANODE
2. CATHODE
3. ANODE
4. CATHODE



## PUBLICATION ORDERING INFORMATION

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