

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

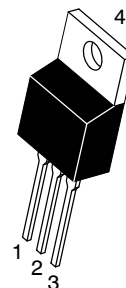
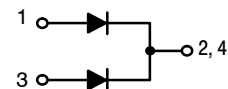
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V-0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes:
260°C Max. for 10 Seconds
- ESD Rating: Human Body Model = 3B
Machine Model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



ON Semiconductor®

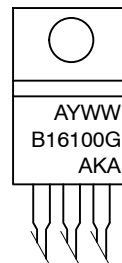
<http://onsemi.com>

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 |

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

MBR16100CT

MAXIMUM RATINGS (Per Diode Leg)

| Rating | Symbol | Value | Unit |
|--|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 100 | V |
| Average Rectified Forward Current ($T_C = 166^\circ\text{C}$) Per Diode Per Device | $I_{F(AV)}$ | 8.0 16 | A |
| Peak Repetitive Forward Current (Square Wave, 20 kHz) $T_C = 165^\circ\text{C}$ | I_{FRM} | 16 | A |
| Nonrepetitive Peak Surge Current (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 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -65 to +175 | $^\circ\text{C}$ |
| 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.

- 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) Junction-to-Ambient (Min. Pad) | $R_{\theta JC}$ $R_{\theta JA}$ | 2.0 60 | $^\circ\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS (Per Diode Leg)

| Characteristic | Symbol | Min | Typical | Max | Unit |
|--|--------|-----|------------------------------|------------------------------|------|
| Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 8.0\text{ A}$, $T_J = 125^\circ\text{C}$) ($i_F = 8.0\text{ A}$, $T_J = 25^\circ\text{C}$) ($i_F = 16\text{ A}$, $T_J = 125^\circ\text{C}$) ($i_F = 16\text{ A}$, $T_J = 25^\circ\text{C}$) | V_F | - | 0.56 0.68 0.67 0.79 | 0.60 0.74 0.69 0.84 | V |
| Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_J = 125^\circ\text{C}$) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) | i_R | - | 0.95 0.0013 | 5.0 0.1 | mA |

- Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

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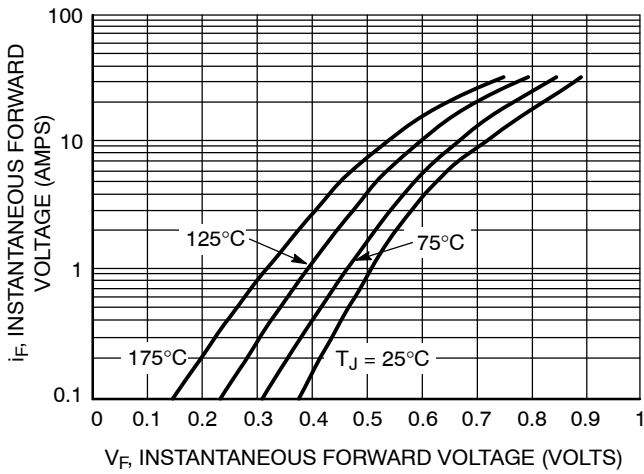


Figure 1. Typical Forward Voltage Per Diode

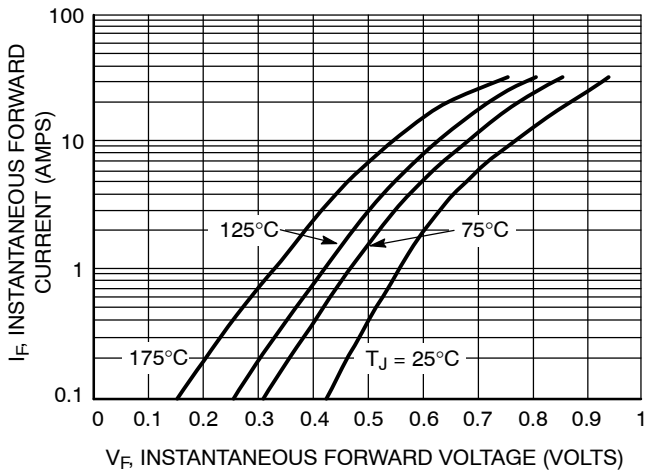


Figure 2. Maximum Forward Voltage Per Diode

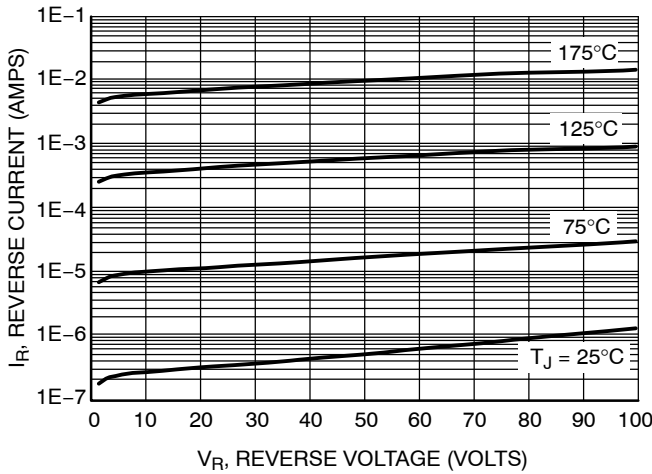


Figure 3. Typical Reverse Current Per Diode

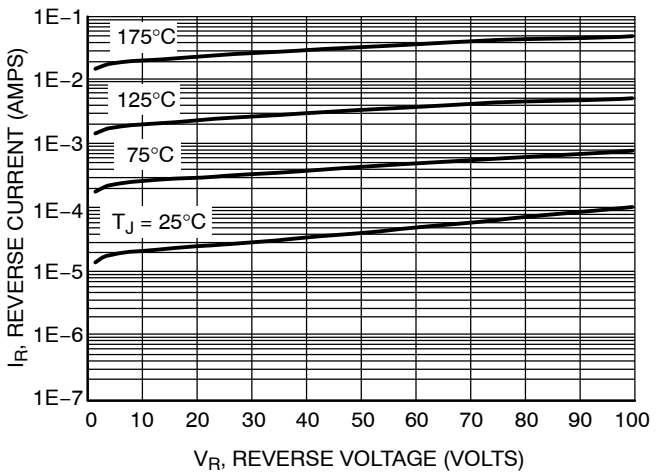


Figure 4. Typical Capacitance Per Diode

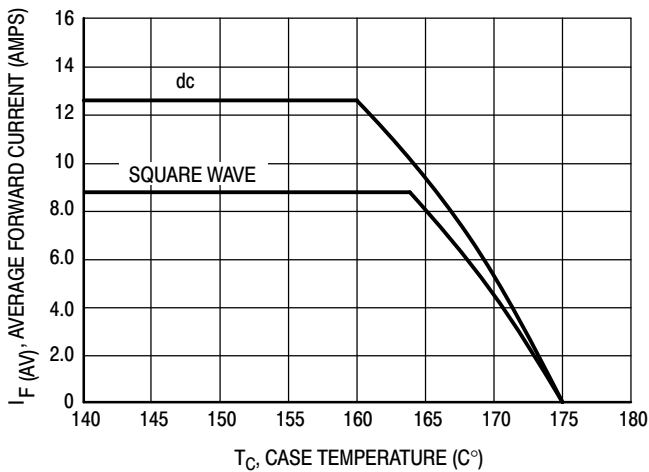


Figure 5. Current Derating, Case Per Leg

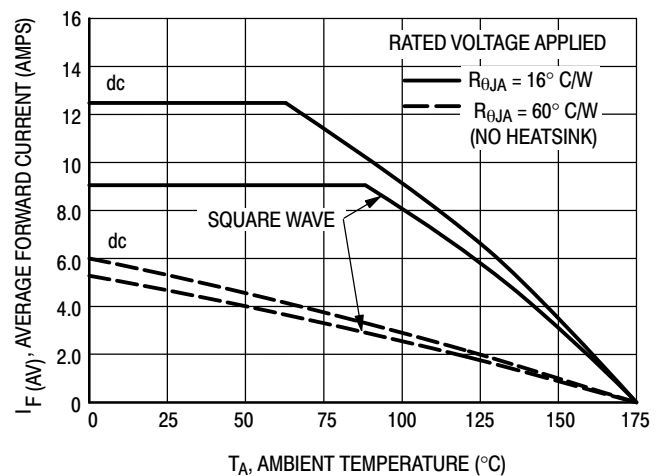


Figure 6. Current Derating, Ambient Per Leg

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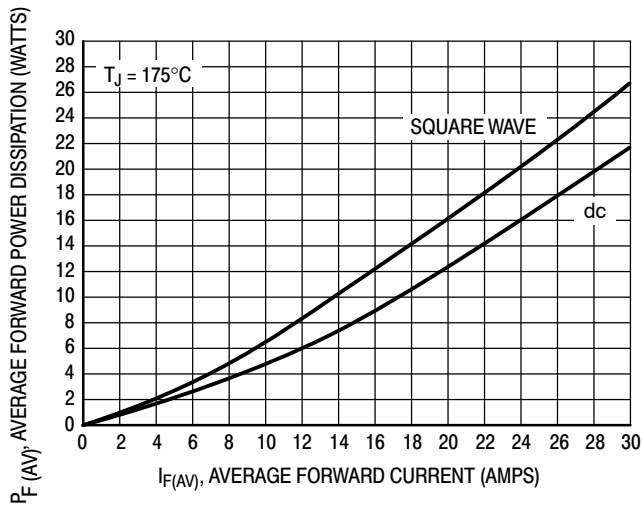


Figure 7. Forward Power Dissipation

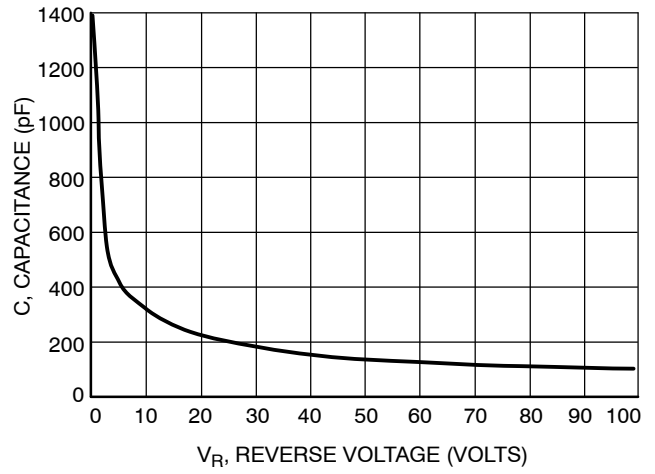
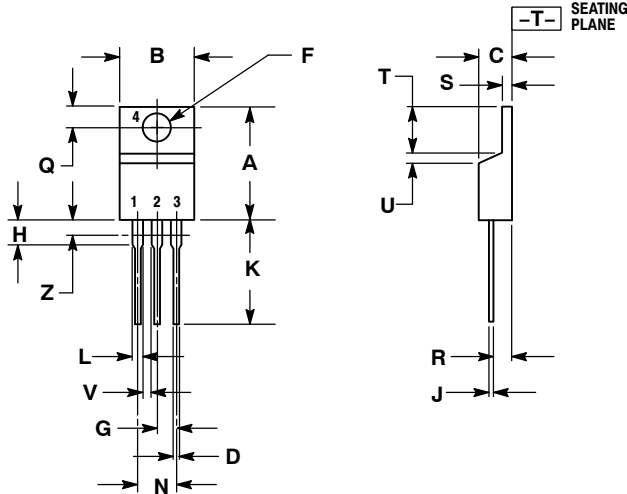


Figure 8. Typical Capacitance Per Diode

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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.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|-------|
| | 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

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