# BYV32-200

# Switch-mode Power Rectifier

**ON Semiconductor®**

www.onsemi.com

**ULTRAFAST RECTIFIER**
**16 AMPERES, 200 VOLTS**
**$t_{rr}$ = 35 ns**

### Features and Benefits

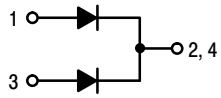
- Low Forward Voltage
- Low Power Loss/High Efficiency
- High Surge Capacity
- 175°C Operating Junction Temperature
- 16 A Total (8 A Per Diode Leg)
- These Devices are Pb−Free and are RoHS Compliant*

### Applications

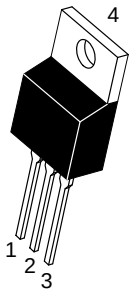
- Power Supply − Output Rectification
- Power Management
- Instrumentation

### Mechanical Characteristics

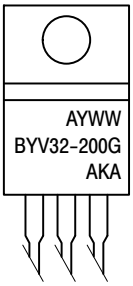
- Case: Epoxy, Molded
- Epoxy Meets UL 94 V−0 @ 0.125 in
- Weight: 1.9 Grams (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- ESD Rating: Human Body Model 3B
  Machine Model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




**MARKING DIAGRAM**




**TO−220**
**CASE 221**
**STYLE 6**




| | |
|---|---|
| A | = Assembly Location |
| Y | = Year |
| WW | = Work Week |
| BYV32−200 | = Device Code |
| G | = Pb−Free Package |
| AKA | = Diode Polarity |

**ORDERING INFORMATION**

| Device | Package | Shipping |
|---|---|---|
| BYV32−200G | 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.

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## MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 200 | V |
| Average Rectified Forward Current, $T_C$ = 156°C<br>Per Leg<br>Total Device | $I_{F(AV)}$ | <br>8.0<br>16 | A |
| Peak Rectified Forward Current (Square Wave, 20 kHz),<br>$T_C$ = 154°C − Per Diode Leg | $I_{FM}$ | 16 | A |
| Nonrepetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$ | 100 | A |
| Operating Junction Temperature and Storage Temperature | $T_J$, $T_{stg}$ | −65 to +175 | °C |

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.

## THERMAL CHARACTERISTICS

| Characteristic | Conditions | Symbol | Value | Unit |
|---|---|---|---|---|
| Maximum Thermal Resistance, Junction−to−Case | Min. Pad | $R_{\theta JC}$ | 3.0 | °C/W |
| Maximum Thermal Resistance, Junction−to−Ambient | Min. Pad | $R_{\theta JA}$ | 60 | |

## ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Min | Typical | Max | Unit |
|---|---|---|---|---|---|
| Instantaneous Forward Voltage (Note 1)<br>($i_F$ = 5.0 A, $T_j$ = 100°C)<br>($i_F$ = 20 A, $T_j$ = 25°C) | $v_F$ | <br>−<br>− | <br>0.74<br>1.01 | <br>0.85<br>1.15 | V |
| Instantaneous Reverse Current (Note 1)<br>(Rated dc Voltage, $T_j$ = 100°C)<br>(Rated dc Voltage, $T_j$ = 25°C) | $i_R$ | <br>−<br>− | <br>21<br>3.5 | <br>600<br>50 | μA |
| Maximum Reverse Recovery Time<br>($I_F$ = 1.0 A, di/dt = 50 A/μs)<br>($I_F$ = 0.5 A, $I_R$ = 1.0 A, $I_{REC}$ = 0.25 A) | $t_{rr}$ | <br>−<br>− | <br>−<br>− | <br>35<br>25 | ns |

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.

1. Pulse Test: Pulse Width = 300 s, Duty Cycle ≤ 2.0%

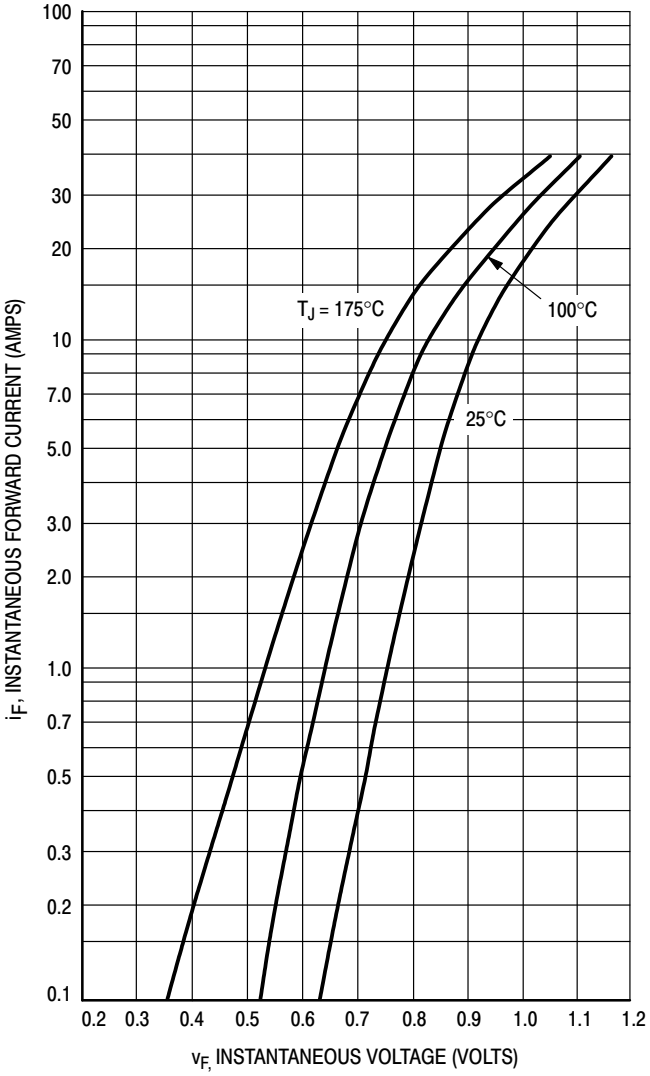



**Figure 1. Typical Forward Voltage, Per Leg**

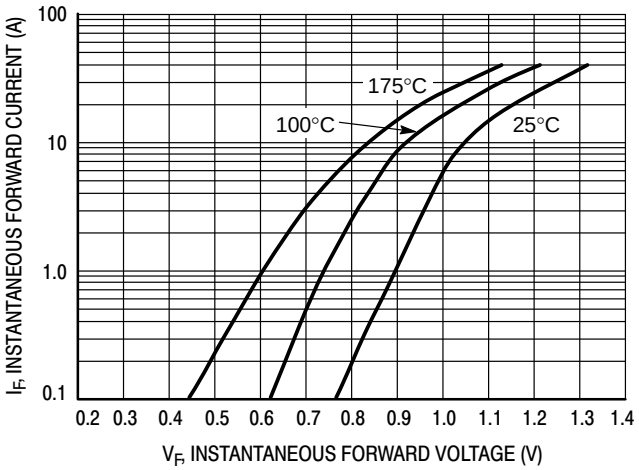



**Figure 2. Maximum Forward Voltage**

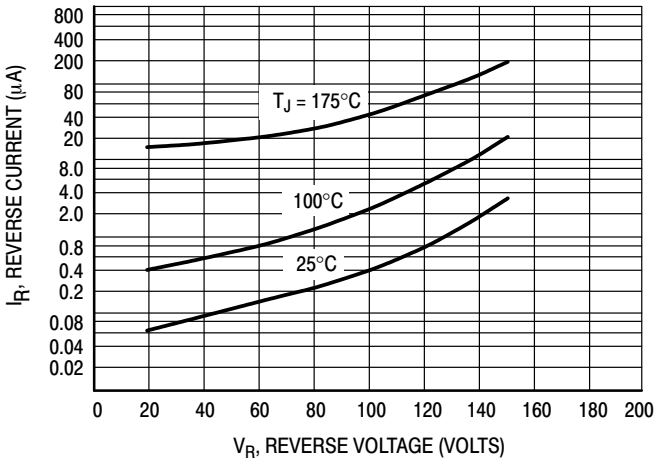



**Figure 3. Typical Reverse Current, Per Leg***

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if $V_R$ is sufficiently below rated $V_R$.

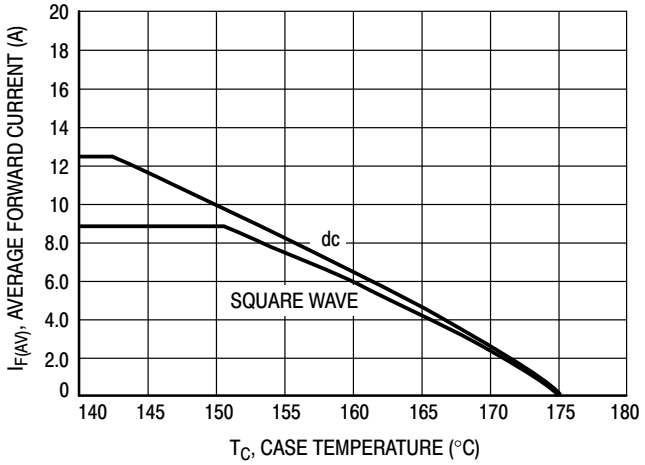



**Figure 4. Current Derating, Case, Per Leg**

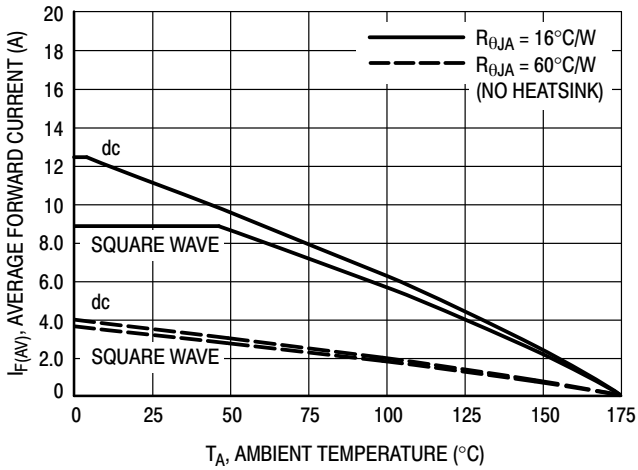



**Figure 5. Current Derating, Ambient, Per Leg**

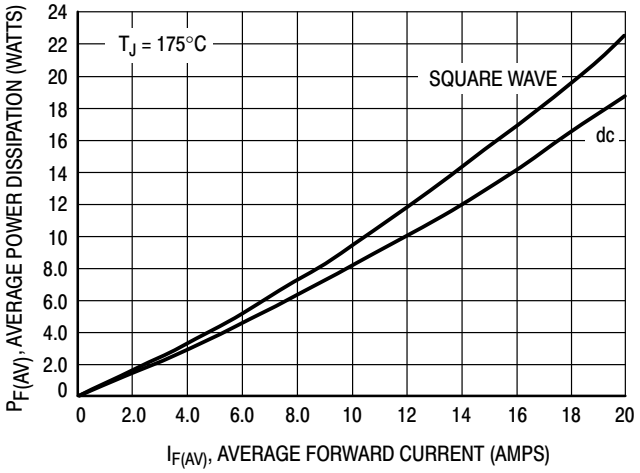



**Figure 6. Power Dissipation, Per Leg**

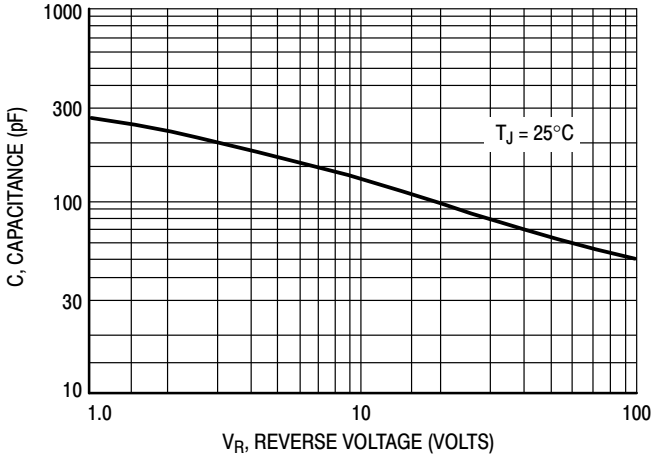



**Figure 7. Typical Capacitance, Per Leg**

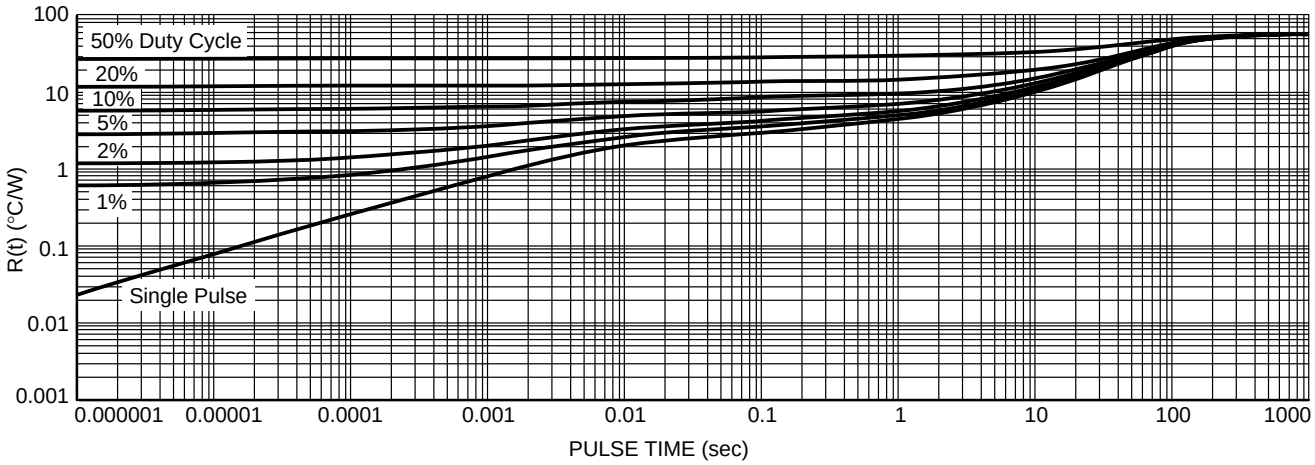



**Figure 8. Thermal Response, Junction−to−Ambient**

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