

# BYV32-200

## SWITCHMODE™ Power Rectifier

### 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)
- Pb-Free Packages are 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

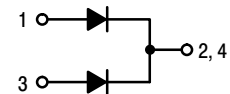


**ON Semiconductor®**

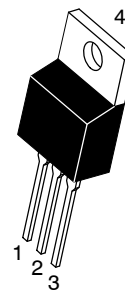
<http://onsemi.com>

**ULTRAFAST RECTIFIER  
16 AMPERES, 200 VOLTS**

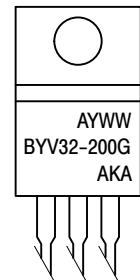
**$t_{rr} = 35 \text{ ns}$**



### MARKING DIAGRAM



**TO-220AB  
CASE 221A  
PLASTIC**



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

### ORDERING INFORMATION

| Device     | Package             | Shipping        |
|------------|---------------------|-----------------|
| BYV32-200  | TO-220              | 50 Units / Rail |
| BYV32-200G | TO-220<br>(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.

# BYV32-200

## 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, $T_C = 156^\circ\text{C}$<br>Per Leg<br>Total Device                    | $I_{F(AV)}$                     | 8.0<br>16   | A                |
| Peak Rectified Forward Current (Square Wave, 20 kHz),<br>$T_C = 154^\circ\text{C}$ – 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 | $^\circ\text{C}$ |

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.

## THERMAL CHARACTERISTICS

| Characteristic                                  | Conditions | Symbol          | Value | Unit                      |
|---|------------|-----------------|-------|---------------------------|
| Maximum Thermal Resistance, Junction-to-Case    | Min. Pad   | $R_{\theta JC}$ | 3.0   | $^\circ\text{C}/\text{W}$ |
| 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>( $I_F = 5.0\text{ A}$ , $T_j = 100^\circ\text{C}$ )<br>( $I_F = 20\text{ A}$ , $T_j = 25^\circ\text{C}$ )                         | $V_F$    | –<br>– | 0.74<br>1.01 | 0.85<br>1.15 | V             |
| Instantaneous Reverse Current (Note 1)<br>(Rated dc Voltage, $T_j = 100^\circ\text{C}$ )<br>(Rated dc Voltage, $T_j = 25^\circ\text{C}$ )                                    | $i_R$    | –<br>– | 21<br>3.5    | 600<br>50    | $\mu\text{A}$ |
| Maximum Reverse Recovery Time<br>( $I_F = 1.0\text{ A}$ , $di/dt = 50\text{ A}/\mu\text{s}$ )<br>( $I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{REC} = 0.25\text{ A}$ ) | $t_{rr}$ | –<br>– | –<br>–       | 35<br>25     | ns            |

1. Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

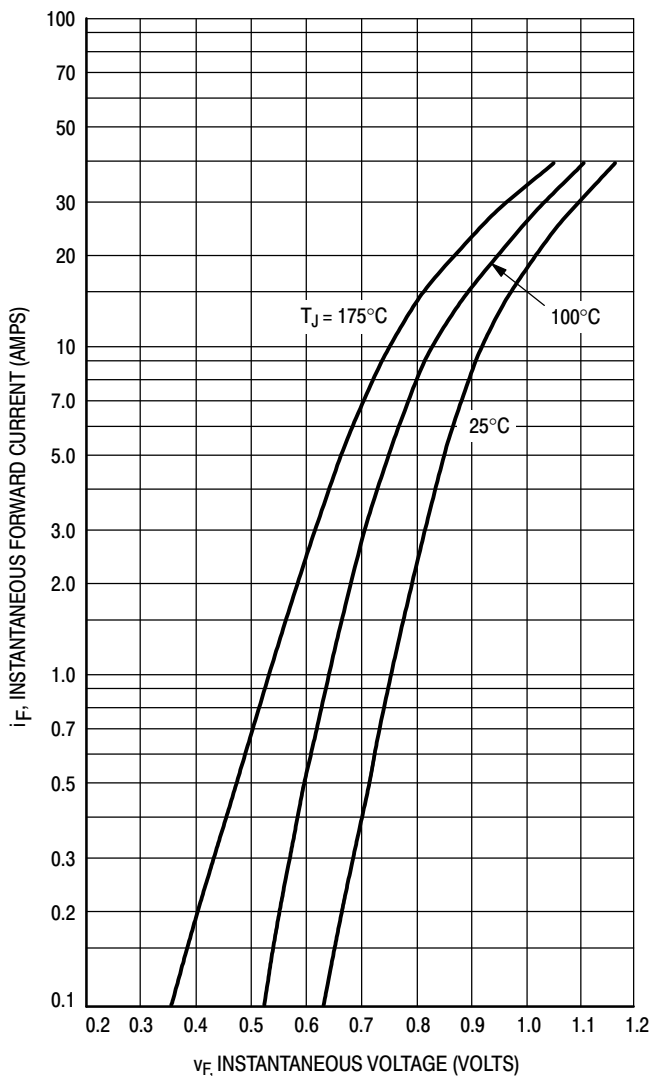


Figure 1. Typical Forward Voltage, Per Leg

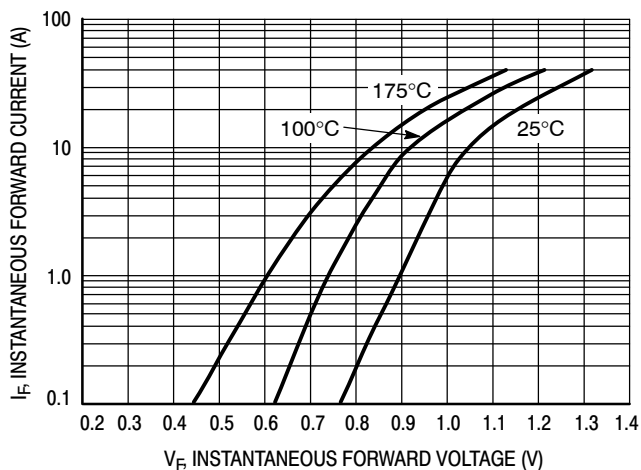


Figure 2. Maximum Forward Voltage

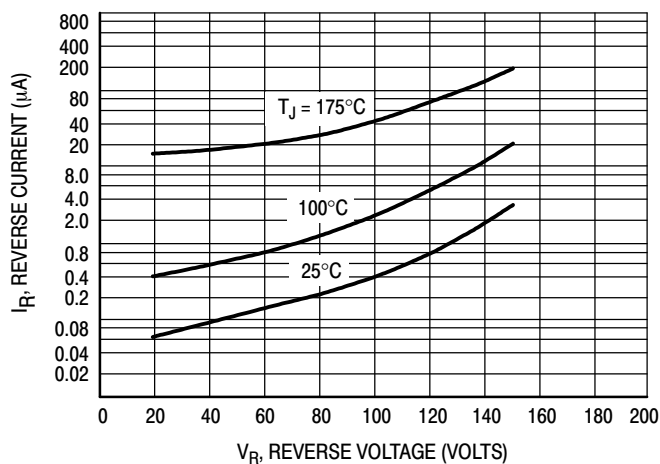


Figure 3. Typical Reverse Current, Per Leg\*

\* 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  $V_R$ .

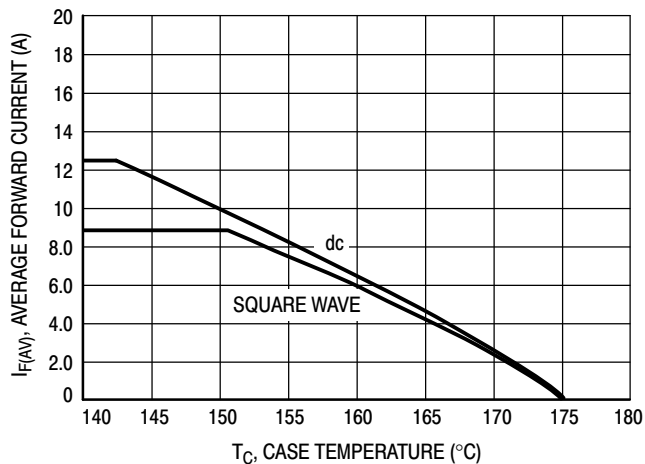


Figure 4. Current Derating, Case, Per Leg

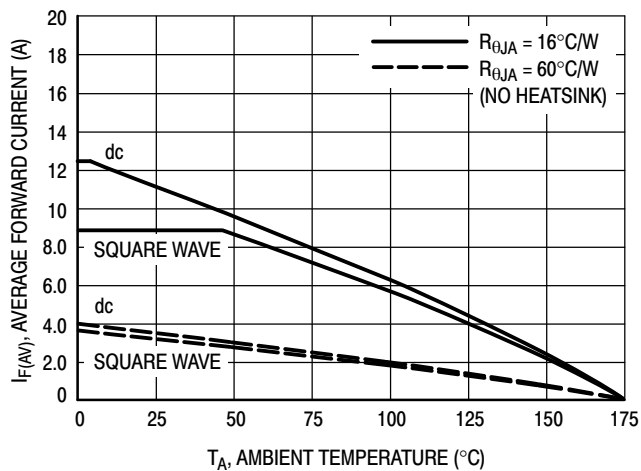


Figure 5. Current Derating, Ambient, Per Leg

# BYV32-200

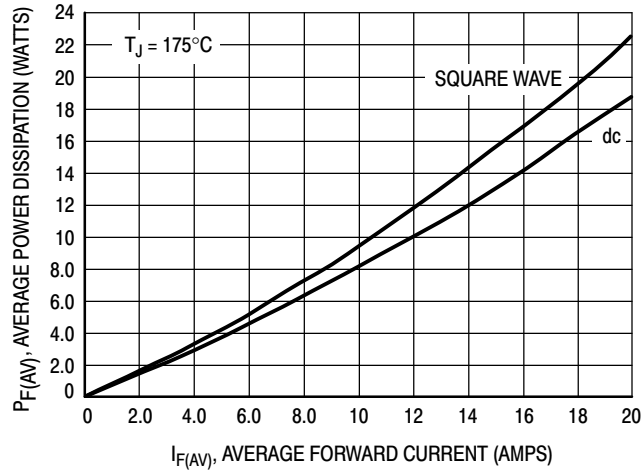


Figure 6. Power Dissipation, Per Leg

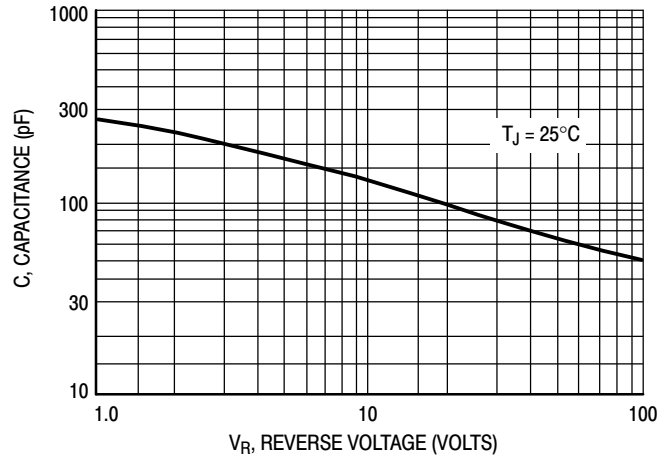


Figure 7. Typical Capacitance, Per Leg

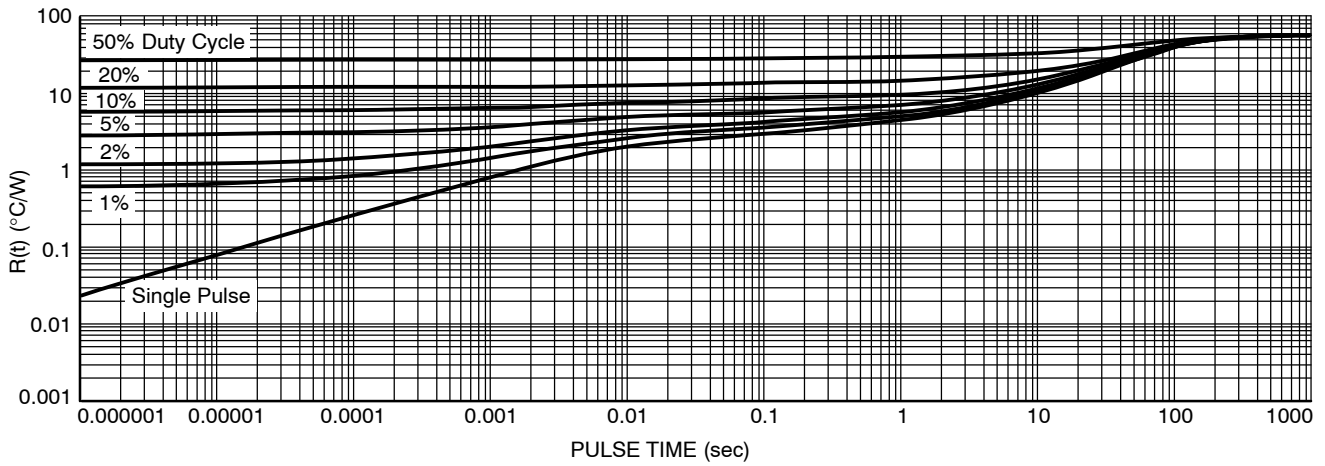
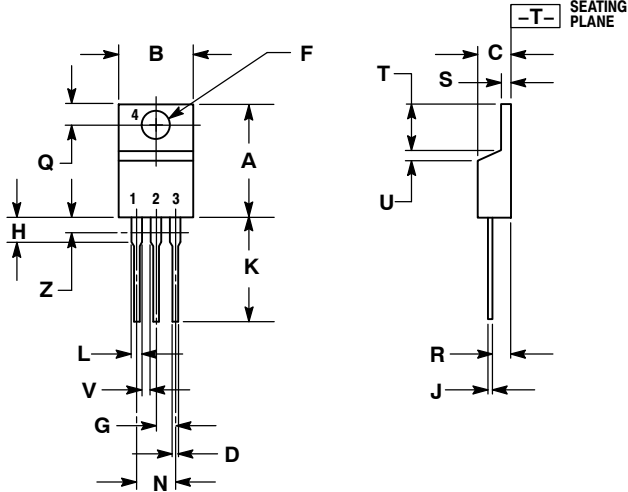


Figure 8. Thermal Response, Junction-to-Ambient

# BYV32-200

## 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
- CATHODE
- ANODE
- CATHODE

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