



## BYW98-200

### HIGH EFFICIENCY FAST RECOVERY RECTIFIER DIODES

#### MAIN PRODUCT CHARACTERISTICS

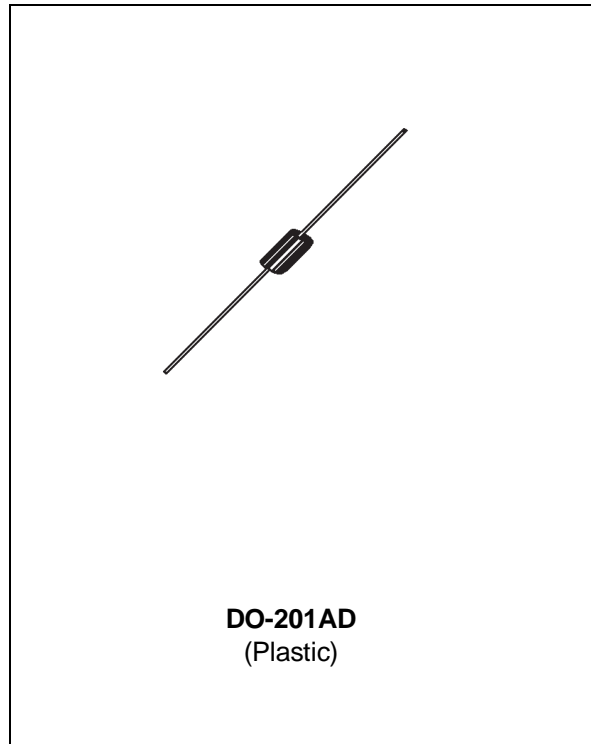
|               |        |
|---------------|--------|
| $I_{F(AV)}$   | 3A     |
| $V_{RRM}$     | 200 V  |
| $T_j(max)$    | 150 °C |
| $V_F(max)$    | 0.85 V |
| $t_{rr}(max)$ | 35 ns  |

#### FEATURES AND BENEFITS

- VERY LOW CONDUCTION LOSSES
- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD AND REVERSE RECOVERY TIMES

#### DESCRIPTION

Low voltage drop and rectifier suited for switching mode base drive and transistor circuits.



#### ABSOLUTE RATINGS (limiting values)

| Symbol    | Parameter  |                                      | Value         | Unit |
|-----------|--|--------------------------------------|---------------|------|
| $V_{RRM}$ | Repetitive peak reverse voltage                                    |                                      | 200           | V    |
| $I_{FRM}$ | Repetitive peak forward current *                                  | $t_p=5 \mu s$<br>$F=1KHz$            | 110           | A    |
| $I_F(AV)$ | Average forward current*   | $T_a = 75^\circ C$<br>$\delta = 0.5$ | 3             | A    |
| $I_{FSM}$ | Surge non repetitive forward current                               | $t_p = 10ms$<br>Sinusoidal           | 70            | A    |
| $T_{stg}$ | Storage temperature range  |                                      | - 65 to + 150 | °C   |
| $T_j$     | Maximum operating junction temperature                             |                                      | 150           | °C   |
| $T_L$     | Maximum lead temperature for soldering during 10s at 4mm from case |                                      | 230           | °C   |

\* On infinite heatsink with 10mm lead length.

## BYW98-200

### THERMAL RESISTANCE

| Symbol    | Parameter          | Value | Unit |
|-----------|--------------------|-------|------|
| Rth (j-a) | Junction-ambient * | 25    | °C/W |

\* On infinite heatsink with 10mm lead length.

### STATIC ELECTRICAL CHARACTERISTICS

| Symbol            | Parameter               | Test Conditions        | Min.                              | Typ. | Max. | Unit |    |
|-------------------|-------------------------|------------------------|-----------------------------------|------|------|------|----|
| I <sub>R</sub> *  | Reverse leakage current | T <sub>j</sub> = 25°C  | V <sub>R</sub> = V <sub>RRM</sub> |      |      | 10   | μA |
|                   |                         | T <sub>j</sub> = 100°C |                                   |      |      | 0.5  | mA |
| V <sub>F</sub> ** | Forward voltage drop    | T <sub>j</sub> = 25°C  | I <sub>F</sub> = 9A               |      |      | 1.2  | V  |
|                   |                         | T <sub>j</sub> = 100°C | I <sub>F</sub> = 3A               |      | 0.78 | 0.85 |    |

Pulse test : \* tp = 5 ms, δ < 2 %

\*\* tp = 380 μs, δ < 2 %

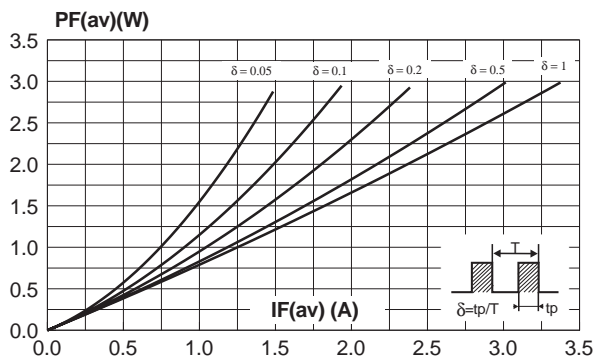
To evaluate the conduction losses use the following equations:

$$P = 0.75 \times I_F(AV) + 0.04 I_F^2(RMS)$$

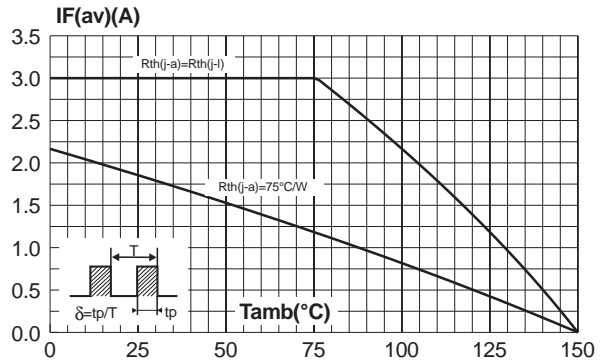
### RECOVERY CHARACTERISTICS

| Symbol          | Test Conditions  | Min. | Typ. | Max. | Unit |
|-----------------|--|------|------|------|------|
| t <sub>rr</sub> | T <sub>j</sub> = 25°C<br>I <sub>F</sub> = 1A<br>dI <sub>F</sub> /dt = - 50A/μs<br>V <sub>R</sub> = 30V                 |      |      | 35   | ns   |
| Q <sub>rr</sub> | T <sub>j</sub> = 25°C<br>I <sub>F</sub> = 3A<br>dI <sub>F</sub> /dt = - 20A/μs<br>V <sub>R</sub> ≤ 30V                 |      | 15   |      | nC   |
| t <sub>fr</sub> | T <sub>j</sub> = 25°C<br>I <sub>F</sub> = 3A<br>dI <sub>F</sub> /dt = - 50A/μs<br>Measured at 1.1 x V <sub>F</sub> max |      | 20   |      | ns   |
| V <sub>FP</sub> | T <sub>j</sub> = 25°C<br>I <sub>F</sub> = 3A<br>dI <sub>F</sub> /dt = - 50A/μs   |      | 5    |      | V    |

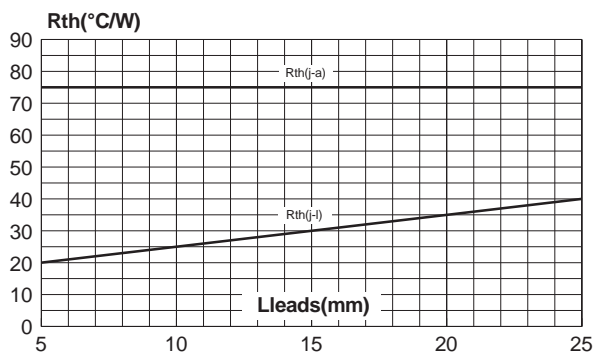
**Fig. 1:** Average forward power dissipation versus average forward current.



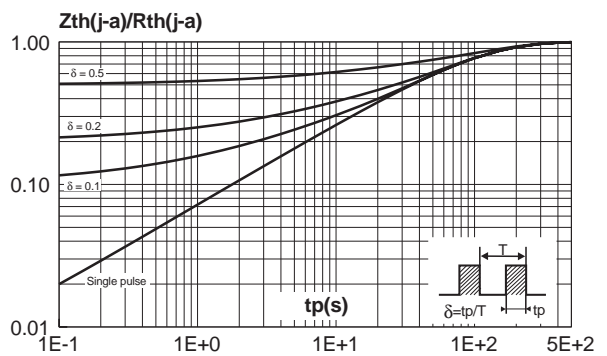
**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



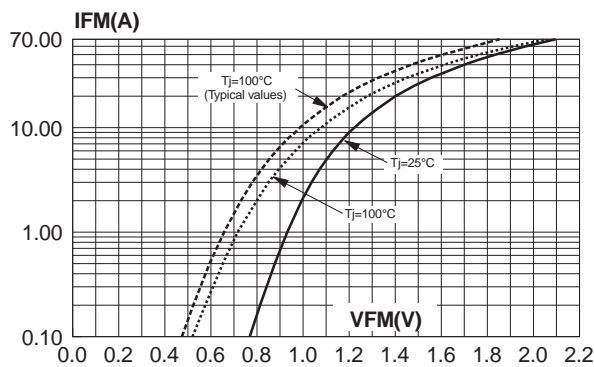
**Fig. 3:** Thermal resistance versus lead length.



**Fig. 4:** Variation of thermal impedance junction to ambient versus pulse duration (recommended pad layout, epoxy FR4,  $e(\text{Cu})=35\mu\text{m}$ ).



**Fig. 5:** Forward voltage drop versus forward current (maximum values).



**Fig. 6:** Junction capacitance versus reverse voltage applied (typical values).

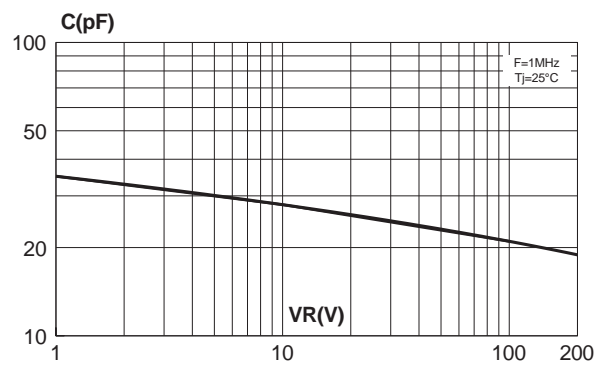


Fig. 7: Reverse recovery time versus  $dI_F/dt$ .

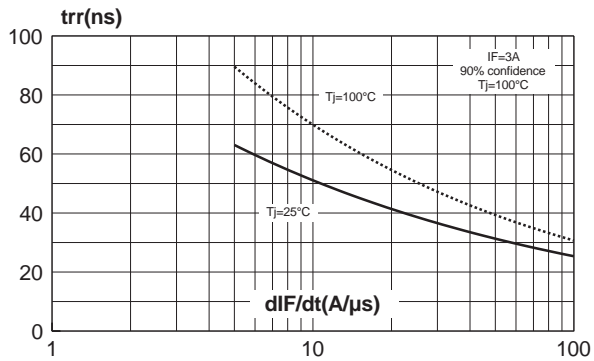


Fig. 8: Peak reverse recovery current versus  $dI_F/dt$ .

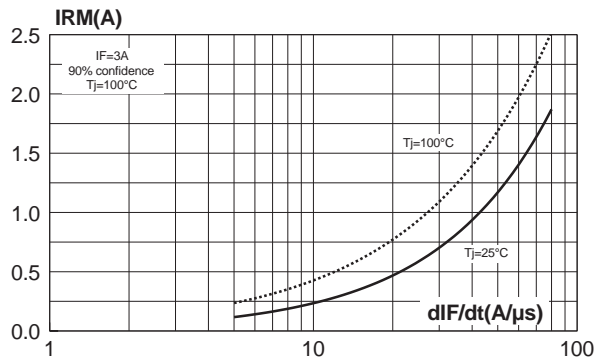
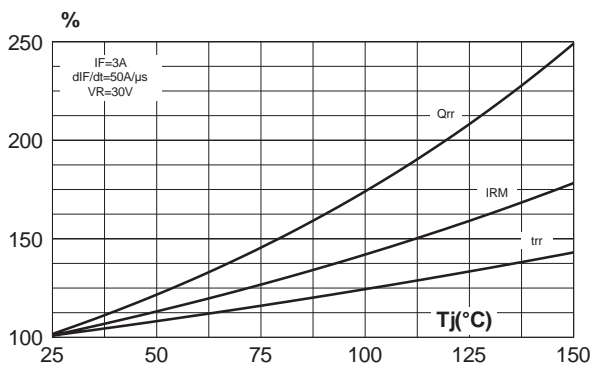
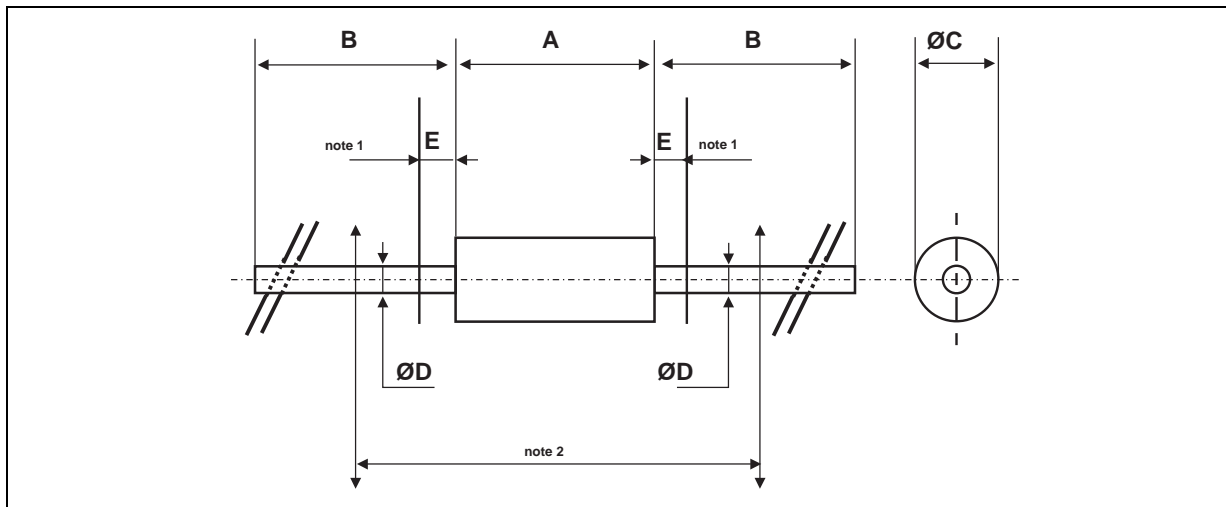


Fig. 9: Dynamic parameters versus junction temperature.



## PACKAGE MECHANICAL DATA

DO-201AD



| REF.            | DIMENSIONS  |      |        |       | NOTES  |
|-----------------|-------------|------|--------|-------|--|
|                 | Millimeters |      | Inches |       |  |
|                 | Min.        | Max. | Min.   | Max.  |  |
| A               |             | 9.50 |        | 0.374 | 1 - The lead diameter $\varnothing D$ is not controlled over zone E<br><br>2 - The minimum axial length within which the device may be placed with its leads bent at right angles is 0.59" (15 mm) |
| B               | 25.40       |      | 1.000  |       |  |
| $\varnothing C$ |             | 5.30 |        | 0.209 |  |
| $\varnothing D$ |             | 1.30 |        | 0.051 |  |
| E               |             | 1.25 |        | 0.049 |  |

| Ordering code | Marking   | Package  | Weight  | Base qty | Delivery mode |
|---------------|-----------|----------|---------|----------|---------------|
| BYW98-200     | BYW98-200 | DO-201AD | 1.16 g. | 600      | Box           |
| BYW98-200RL   | BYW98-200 | DO-201AD | 1.16 g. | 1900     | Tape and reel |

- White band indicates cathode
- Epoxy meets UL94,V0

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