

**Dual rectifier diodes
ultrafast**

BYV34 series

FEATURES

- Low forward volt drop
- Fast switching
- Soft recovery characteristic
- High thermal cycling performance
- Low thermal resistance

SYMBOL



QUICK REFERENCE DATA

| |
|--|
| $V_R = 300\text{ V} / 400\text{ V} / 500\text{ V}$ |
| $V_F \leq 1.05\text{ V}$ |
| $I_{O(AV)} = 20\text{ A}$ |
| $t_{rr} \leq 60\text{ ns}$ |

GENERAL DESCRIPTION

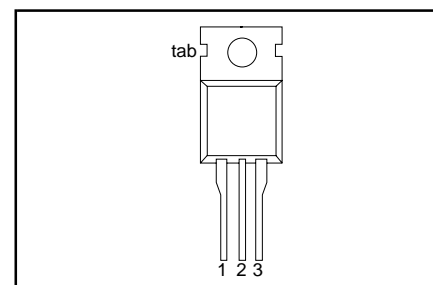
Dual, common cathode, ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYV34 series is supplied in the conventional leaded SOT78 (TO220AB) package.

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | anode 1 |
| 2 | cathode |
| 3 | anode 2 |
| tab | cathode |

SOT78 (TO220AB)



LIMITING VALUES

Limiting values in accordance with the Absolute Maximum System (IEC 134).

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | | | UNIT |
|-------------|--|---|------|-------------|-------------|-------------|------------------|
| V_{RRM} | Peak repetitive reverse voltage | BYV34 $T_{mb} \leq 138\text{ }^\circ\text{C}$ | - | -300 | -400 | -500 | V |
| V_{RWM} | Crest working reverse voltage | | - | 300 | 400 | 500 | V |
| V_R | Continuous reverse voltage | | - | 300 | 400 | 500 | V |
| $I_{O(AV)}$ | Average rectified output current (both diodes conducting) ¹ | square wave; $\delta = 0.5$; $T_{mb} \leq 115\text{ }^\circ\text{C}$ | - | 20 | | | A |
| I_{FRM} | Repetitive peak forward current per diode | $t = 25\text{ }\mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 115\text{ }^\circ\text{C}$ | - | 20 | | | A |
| I_{FSM} | Non-repetitive peak forward current per diode. | $t = 10\text{ ms}$ $t = 8.3\text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$ | - | 120 132 | | | A A |
| T_{stg} | Storage temperature | | -40 | 150 | | | $^\circ\text{C}$ |
| T_j | Operating junction temperature | | - | 150 | | | $^\circ\text{C}$ |

THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|----------------|---|------------------------|------|------|------|------|
| $R_{th\ j-hs}$ | Thermal resistance junction to heatsink | per diode | - | - | 2.4 | K/W |
| | | both diodes conducting | - | - | 1.6 | K/W |
| $R_{th\ j-a}$ | Thermal resistance junction to ambient | in free air. | - | 60 | - | K/W |

¹ Neglecting switching and reverse current losses

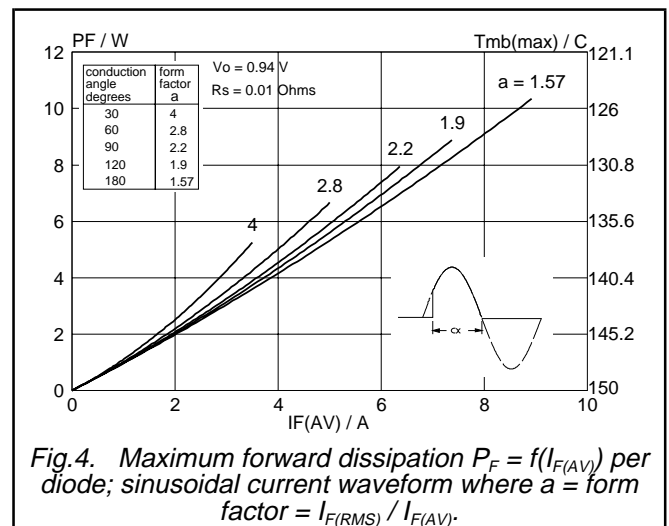
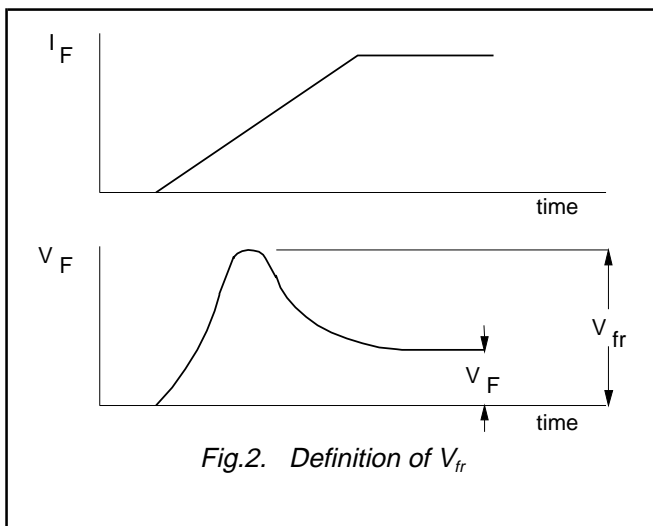
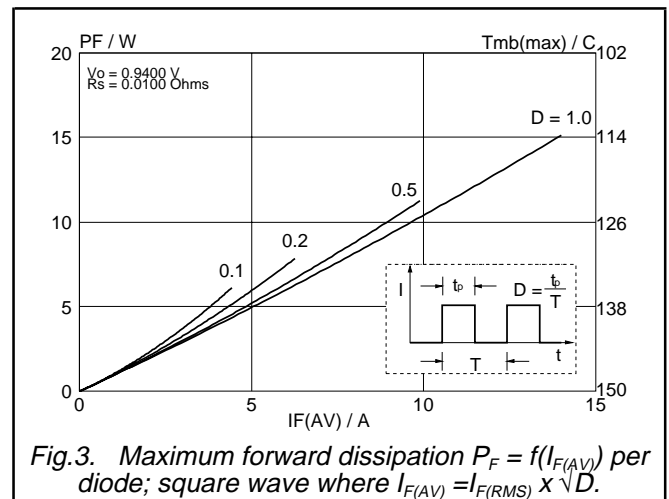
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ELECTRICAL CHARACTERISTICS

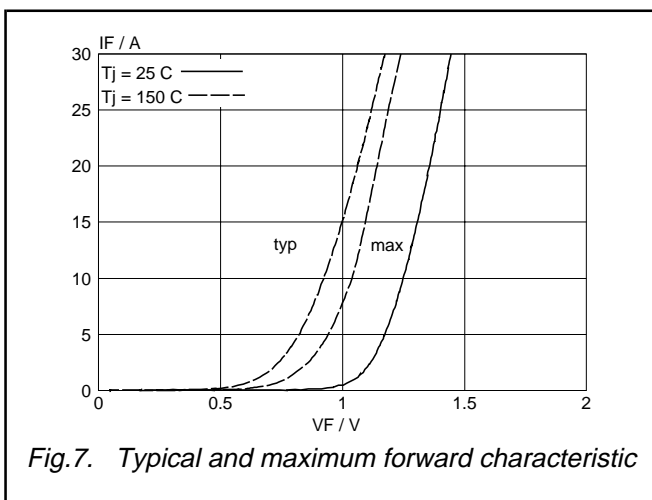
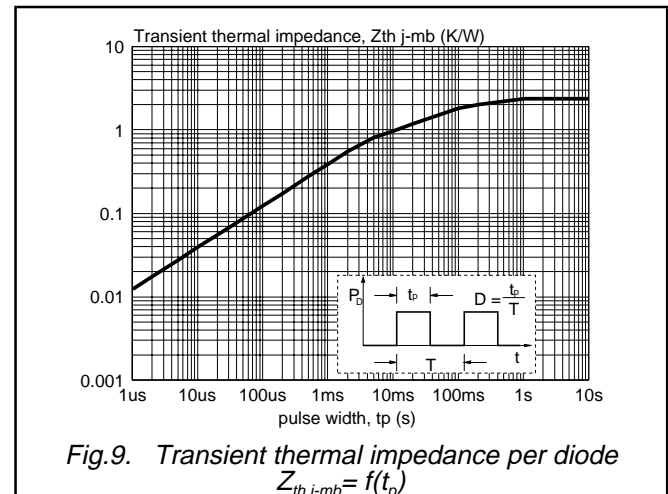
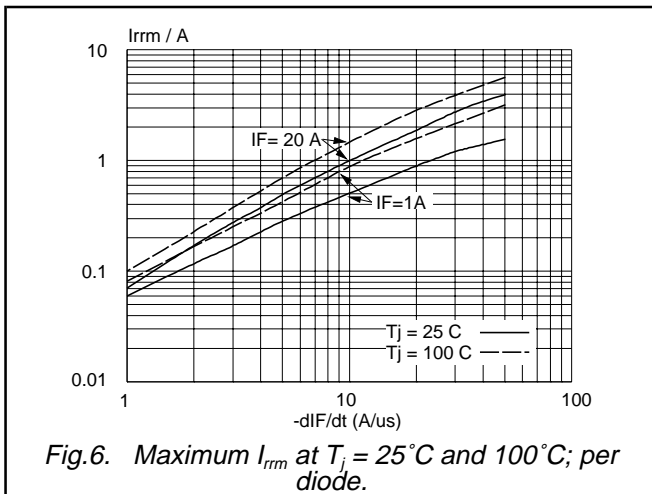
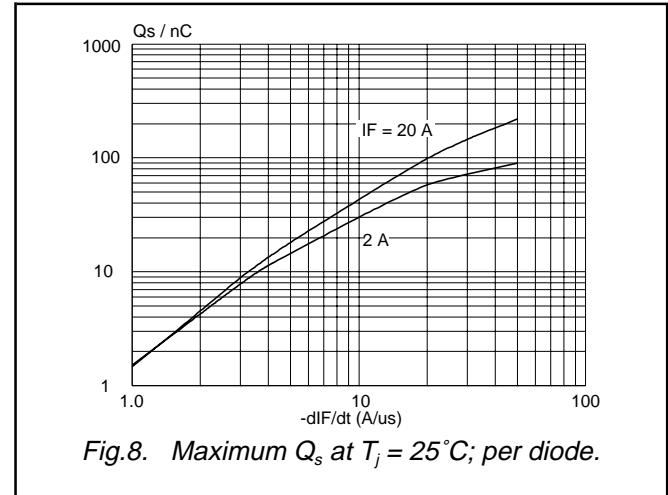
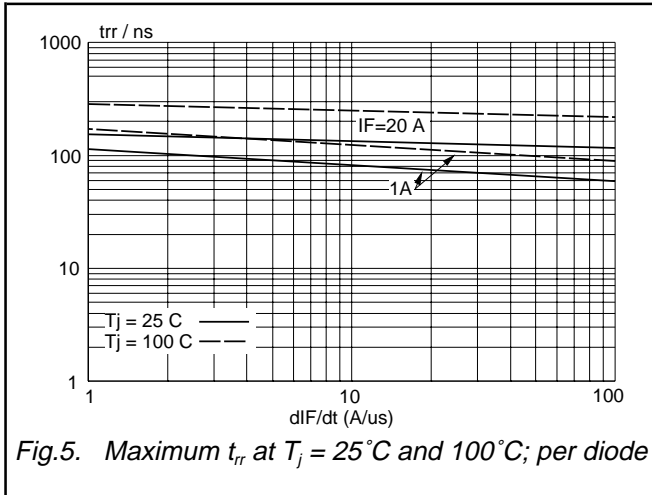
characteristics are per diode at $T_j = 25^\circ\text{C}$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-----------|-------------------------------|---|------|------|------|---------------|
| V_F | Forward voltage | $I_F = 10\text{ A}; T_j = 150^\circ\text{C}$ | - | 0.87 | 1.05 | V |
| | | $I_F = 20\text{ A}$ | - | 1.10 | 1.35 | V |
| I_R | Reverse current | $V_R = V_{RRM}$ | - | 10 | 50 | μA |
| Q_s | Reverse recovery charge | $V_R = V_{RRM}; T_j = 100^\circ\text{C}$ $I_F = 2\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 20\text{ A}/\mu\text{s}$ | - | 0.2 | 0.6 | mA |
| t_{rr} | Reverse recovery time | $I_F = 2\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 100\text{ A}/\mu\text{s}$ | - | 50 | 60 | ns |
| I_{rrm} | Peak reverse recovery current | $I_F = 10\text{ A to } V_R \geq 30\text{ V};$ $di_F/dt = 50\text{ A}/\mu\text{s}; T_j = 100^\circ\text{C}$ | - | 4.0 | 5.0 | A |
| V_{fr} | Forward recovery voltage | $I_F = 10\text{ A}; di_F/dt = 10\text{ A}/\mu\text{s}$ | - | 2.5 | - | V |



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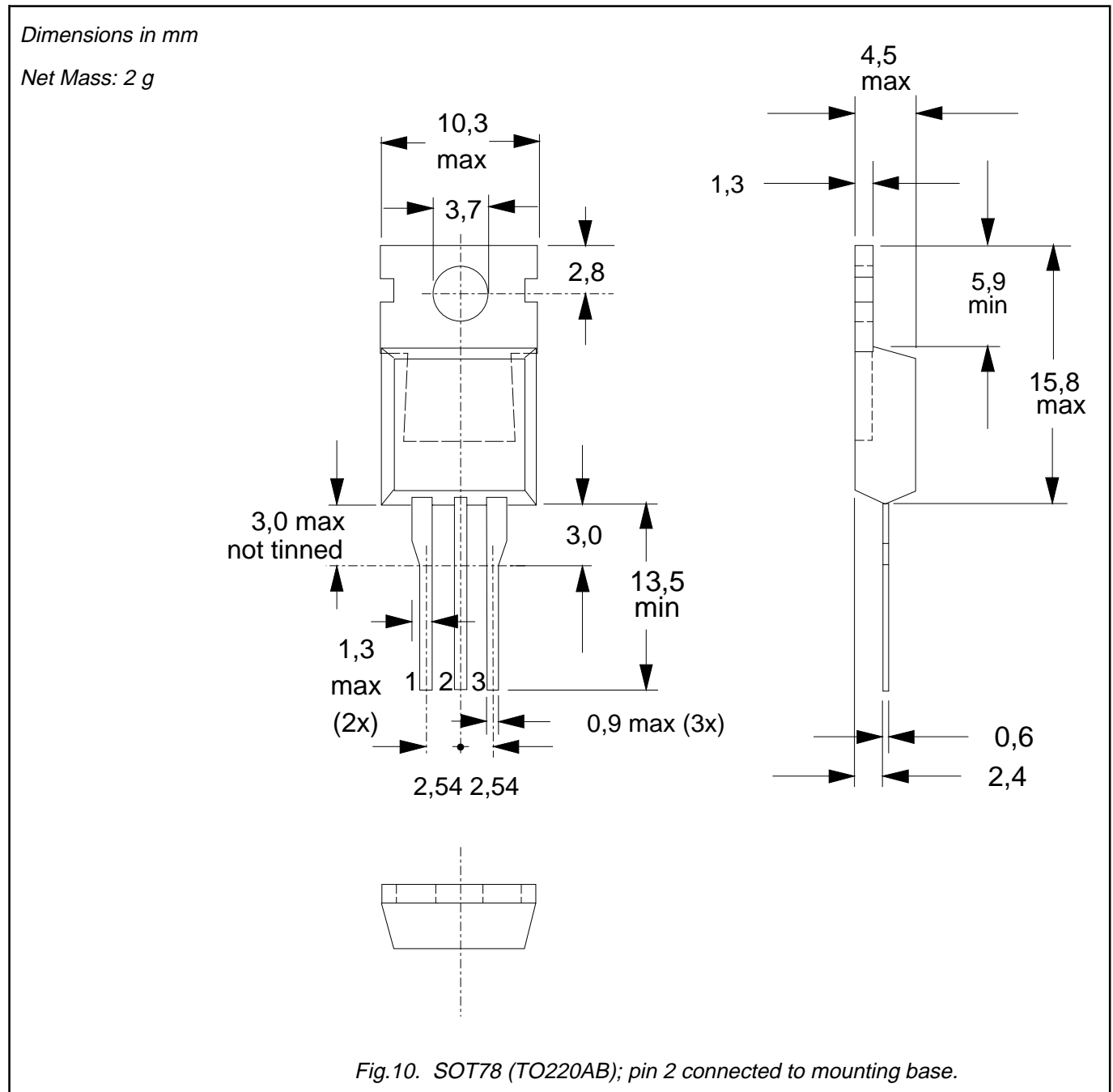
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MECHANICAL DATA



Notes

1. Refer to mounting instructions for SOT78 (TO220) envelopes.
2. Epoxy meets UL94 V0 at 1/8".

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BYV34 series**DEFINITIONS**

| | |
|--|---|
| Data sheet status | |
| Objective specification | This data sheet contains target or goal specifications for product development. |
| Preliminary specification | This data sheet contains preliminary data; supplementary data may be published later. |
| Product specification | This data sheet contains final product specifications. |
| Limiting values | |
| Limiting values are given in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of this specification is not implied. Exposure to limiting values for extended periods may affect device reliability. | |
| Application information | |
| Where application information is given, it is advisory and does not form part of the specification. | |
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