

DATA SHEET

BYV44 series Dual rectifier diodes ultrafast

Product specification

September 2018

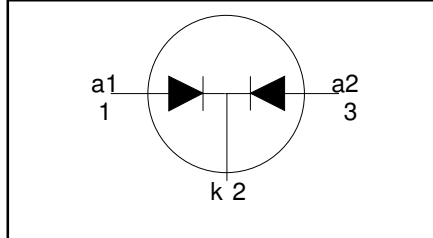
Dual rectifier diodes ultrafast

BYV44 series

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

$$V_R = 300 \text{ V} / 400 \text{ V} / 500 \text{ V}$$

$$V_F \leq 1.12 \text{ V}$$

$$I_{O(AV)} = 30 \text{ A}$$

$$t_{rr} \leq 60 \text{ ns}$$

GENERAL DESCRIPTION

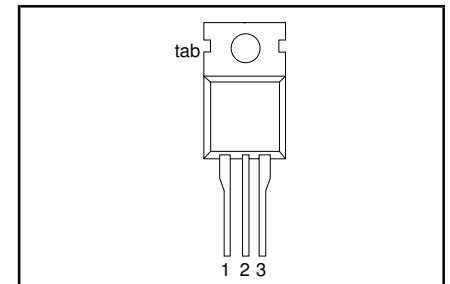
Dual, common cathode, ultra-fast, epitaxial rectifier diodes intended for use as output rectifiers in high frequency switched mode power supplies.

The BYV44 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 | BYV44 $T_{mb} \leq 136^\circ\text{C}$ square wave; $\delta = 0.5$; $T_{mb} \leq 94^\circ\text{C}$ $t = 25 \mu\text{s}$; $\delta = 0.5$; $T_{mb} \leq 94^\circ\text{C}$ $t = 10 \text{ ms}$ $t = 8.3 \text{ ms}$ sinusoidal; with reapplied $V_{RRM(max)}$ | - | -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 | | - | 30 | | | A |
| I_{FRM} | Repetitive peak forward current per diode | | - | 30 | | | A |
| I_{FSM} | Non-repetitive peak forward current per diode. | | - | 150 | | | A |
| | | | - | 160 | | | 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 |
| $R_{th j-a}$ | Thermal resistance junction to ambient | both diodes conducting in free air. | - | - | 1.4 | K/W |
| | | | - | 60 | - | K/W |

¹ Neglecting switching and reverse current losses.

For output currents in excess of 20 A, the cathode connection should be made to the metal mounting tab.

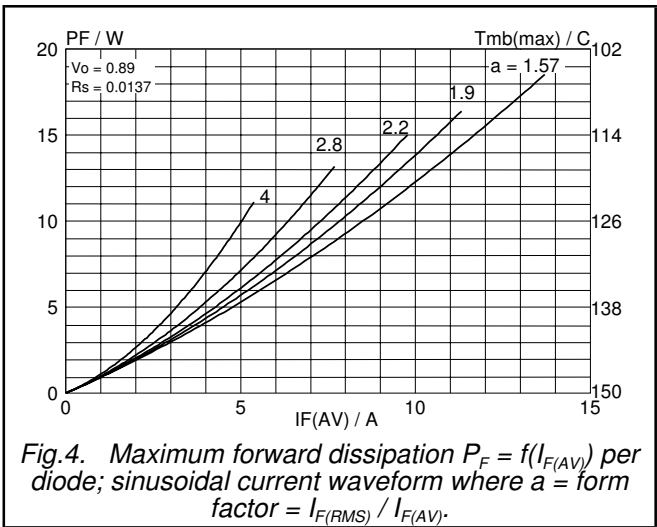
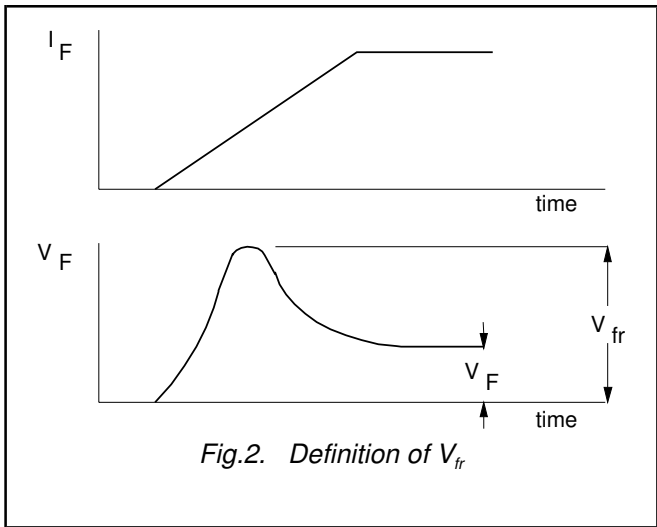
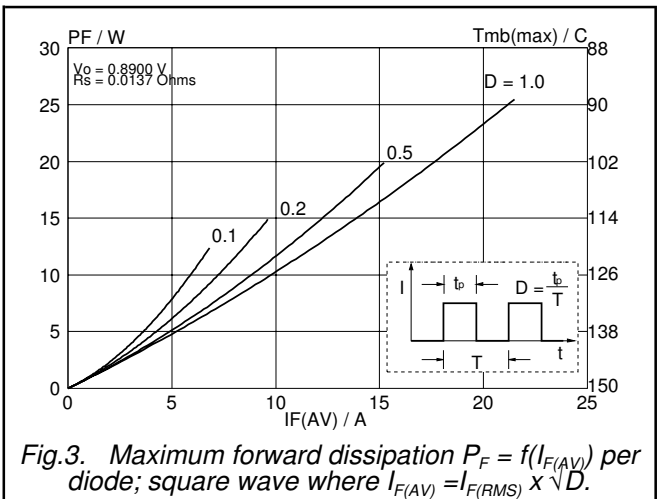
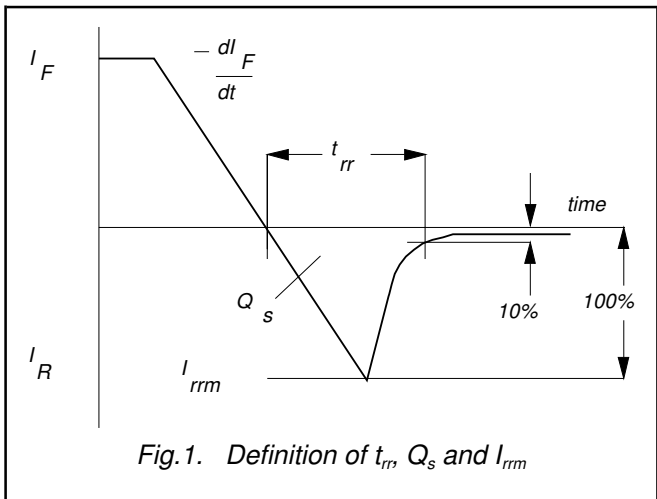
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ELECTRICAL CHARACTERISTICS

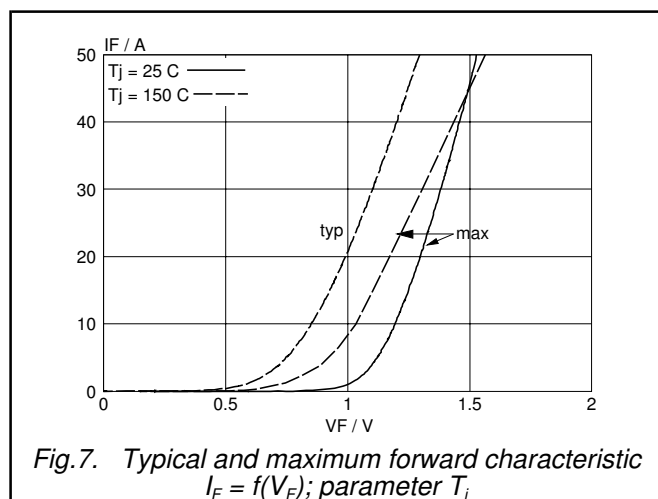
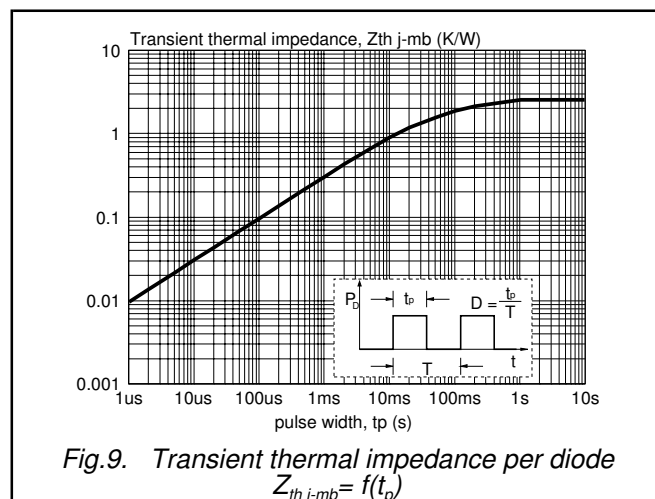
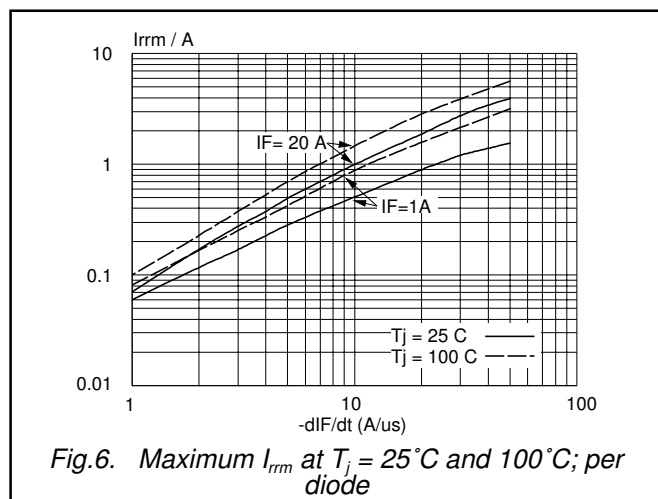
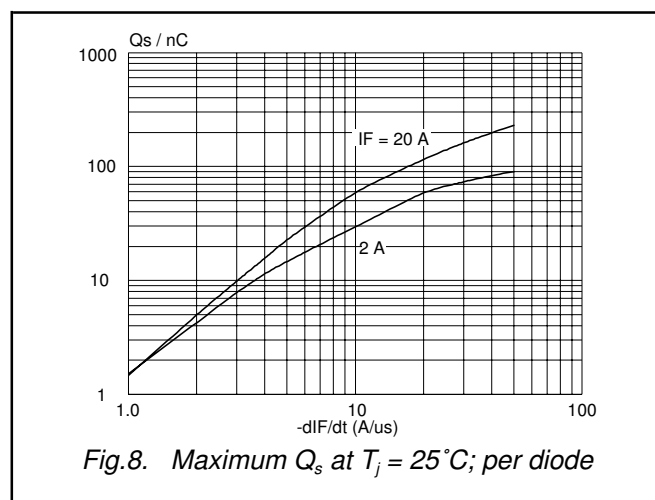
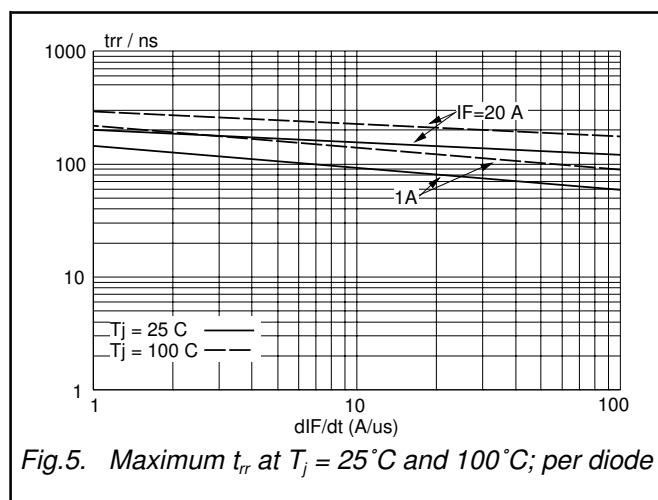
characteristics are per diode at $T_j = 25\text{ }^{\circ}\text{C}$ unless otherwise stated

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-----------|-------------------------------|--|------|------|------|---------------|
| V_F | Forward voltage | $I_F = 15\text{ A}$; $T_j = 150\text{ }^{\circ}\text{C}$ | - | 0.95 | 1.12 | V |
| | | $I_F = 15\text{ A}$ | - | 1.08 | 1.25 | V |
| | | $I_F = 30\text{ A}$ | - | 1.15 | 1.36 | V |
| I_R | Reverse current | $V_R = V_{RRM}$ | - | 10 | 50 | μA |
| | | $V_R = V_{RRM}$; $T_j = 100\text{ }^{\circ}\text{C}$ | - | 0.3 | 0.8 | mA |
| Q_s | Reverse recovery charge | $I_F = 2\text{ A}$ to $V_R \geq 30\text{ V}$; $di_F/dt = 20\text{ A}/\mu\text{s}$ | - | 40 | 60 | nC |
| t_{rr} | Reverse recovery time | $I_F = 1\text{ A}$ 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 $V_R \geq 30\text{ V}$; $di_F/dt = 50\text{ A}/\mu\text{s}$; $T_j = 100\text{ }^{\circ}\text{C}$ | - | 4.2 | 5.2 | 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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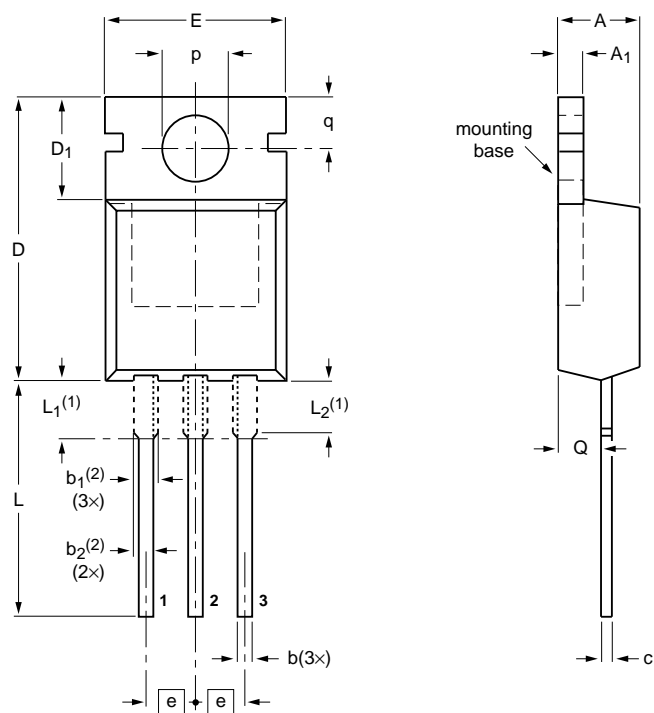
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MECHANICAL DATA

Plastic single-ended package; heatsink mounted; 1 mounting hole; 3-lead TO-220AB

SOT78

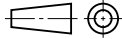


DIMENSIONS (mm are the original dimensions)

| UNIT | A | A ₁ | b | b ₁ (2) | b ₂ (2) | c | D | D ₁ | E | e | L | L ₁ (1) | L ₂ (1) max. | p | q | Q |
|------|------------|----------------|------------|--------------------|--------------------|------------|--------------|----------------|-------------|------|--------------|--------------------|----------------------------|------------|------------|------------|
| mm | 4.7 4.1 | 1.40 1.25 | 0.9 0.6 | 1.6 1.0 | 1.3 1.0 | 0.7 0.4 | 16.0 15.2 | 6.6 5.9 | 10.3 9.7 | 2.54 | 15.0 12.8 | 3.30 2.79 | 3.0 | 3.8 3.5 | 3.0 2.7 | 2.6 2.2 |

Notes

- Lead shoulder designs may vary.
- Dimension includes excess dambar.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|--------------------|------------|-----------------|-------|--|---|----------------------|
| | IEC | JEDEC | JEITA | | | |
| SOT78 | | 3-lead TO-220AB | SC-46 | |  | 08-04-23 08-06-13 |

Legal information

Data sheet status

| Document status [1][2] | Product status [3] | Definition |
|--------------------------------|--------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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