

# Rectifier diodes ultrafast

## BYV32 series

### GENERAL DESCRIPTION

Glass passivated high efficiency dual rectifier diodes in a plastic envelope, featuring low forward voltage drop, ultra-fast recovery times and soft recovery characteristic. They are intended for use in switched mode power supplies and high frequency circuits in general where low conduction and switching losses are essential.

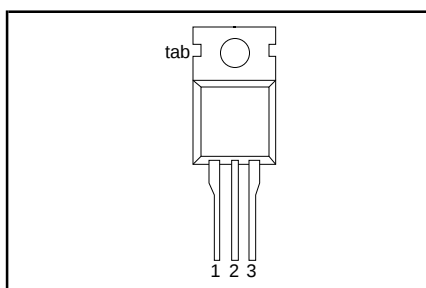
### QUICK REFERENCE DATA

| SYMBOL      | PARAMETER                                        | MAX.              | MAX.              | MAX.              | UNIT |
|-------------|--------------------------------------------------|-------------------|-------------------|-------------------|------|
| $V_{RRM}$   | <b>BYV32-</b><br>Repetitive peak reverse voltage | <b>100</b><br>100 | <b>150</b><br>150 | <b>200</b><br>200 | V    |
| $V_F$       | Forward voltage                                  | 0.85              | 0.85              | 0.85              | V    |
| $I_{O(AV)}$ | Output current (both diodes conducting)          | 20                | 20                | 20                | A    |
| $t_{rr}$    | Reverse recovery time                            | 25                | 25                | 25                | ns   |

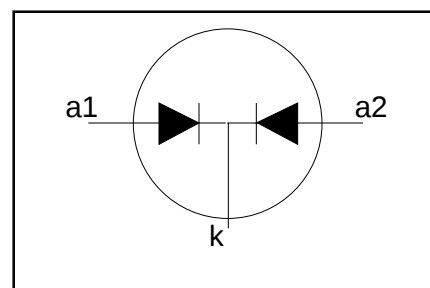
### PINNING - TO220AB

| PIN | DESCRIPTION |
|-----|-------------|
| 1   | anode 1 (a) |
| 2   | cathode (k) |
| 3   | anode 2 (a) |
| tab | cathode (k) |

### PIN CONFIGURATION



### SYMBOL



### LIMITING VALUES

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

| SYMBOL       | PARAMETER                                            | CONDITIONS                                                                                                                                        | MIN. | MAX. |      |      | UNIT               |
|--------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------|------|------|------|--------------------|
| $V_{RRM}$    | Repetitive peak reverse voltage                      | square wave<br>$\delta = 0.5$ ; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$<br>sinusoidal<br>$a = 1.57$ ; $T_{mb} \leq 118\text{ }^{\circ}\text{C}$ | -    | -100 | -150 | -200 | V                  |
| $V_{RWM}$    | Crest working reverse voltage                        |                                                                                                                                                   | -    | 100  | 150  | 200  | V                  |
| $V_R$        | Continuous reverse voltage                           |                                                                                                                                                   | -    | 100  | 150  | 200  | V                  |
| $I_{O(AV)}$  | Output current (both diodes conducting) <sup>1</sup> |                                                                                                                                                   | -    | 20   |      |      | A                  |
|              |                                                      |                                                                                                                                                   | -    | 18   |      |      | A                  |
| $I_{O(RMS)}$ | RMS forward current                                  |                                                                                                                                                   | -    | 28   |      |      | A                  |
| $I_{FRM}$    | Repetitive peak forward current per diode            | $t = 25\text{ }\mu\text{s}$ ; $\delta = 0.5$ ;<br>$T_{mb} \leq 115\text{ }^{\circ}\text{C}$                                                       | -    | 20   |      |      | A                  |
| $I_{FSM}$    | Non-repetitive peak forward current per diode        | $t = 10\text{ ms}$                                                                                                                                | -    | 125  |      |      | A                  |
|              |                                                      | $t = 8.3\text{ ms}$<br>sinusoidal; with reapplied<br>$V_{RWM(max)}$<br>$t = 10\text{ ms}$                                                         | -    | 137  |      |      | A                  |
| $I^2t$       | $I^2t$ for fusing                                    |                                                                                                                                                   | -    | 78   |      |      | A <sup>2</sup> s   |
| $T_{stg}$    | Storage temperature                                  |                                                                                                                                                   | -40  | 150  |      |      | $^{\circ}\text{C}$ |
| $T_i$        | Operating junction temperature                       |                                                                                                                                                   | -    | 150  |      |      | $^{\circ}\text{C}$ |

<sup>1</sup> Neglecting switching and reverse current losses

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### THERMAL RESISTANCES

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

### STATIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$  unless otherwise stated

| SYMBOL | PARAMETER                   | CONDITIONS                                        | MIN. | TYP. | MAX. | UNIT          |
|--------|-----------------------------|---------------------------------------------------|------|------|------|---------------|
| $V_F$  | Forward voltage (per diode) | $I_F = 8\ \text{A}$ ; $T_j = 150\ ^\circ\text{C}$ | -    | 0.72 | 0.85 | V             |
|        |                             | $I_F = 20\ \text{A}$                              | -    | 1.00 | 1.15 | V             |
| $I_R$  | Reverse current (per diode) | $V_R = V_{RWM}$ ; $T_j = 100\ ^\circ\text{C}$     | -    | 0.2  | 0.6  | mA            |
|        |                             | $V_R = V_{RWM}$                                   | -    | 6    | 30   | $\mu\text{A}$ |

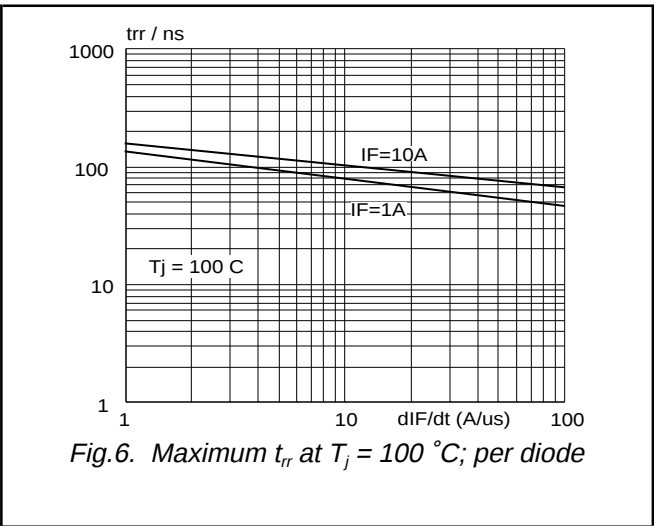
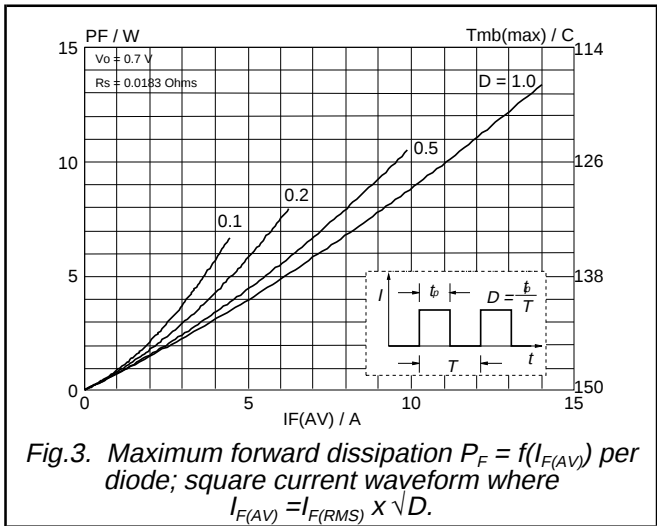
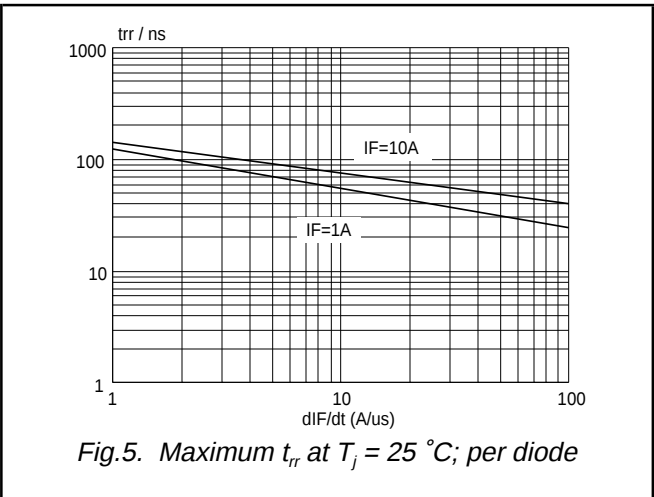
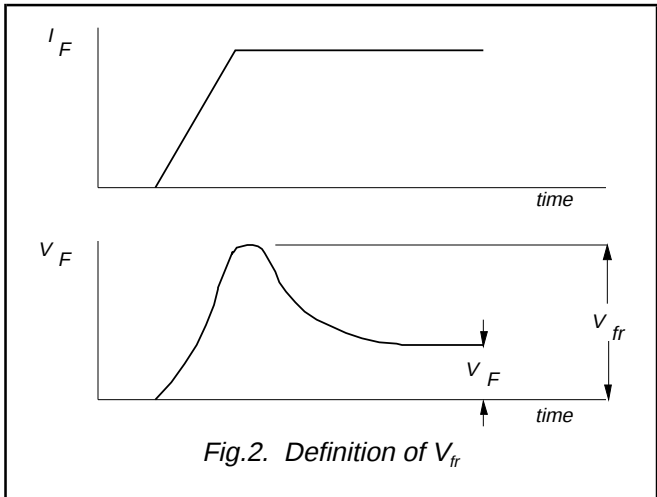
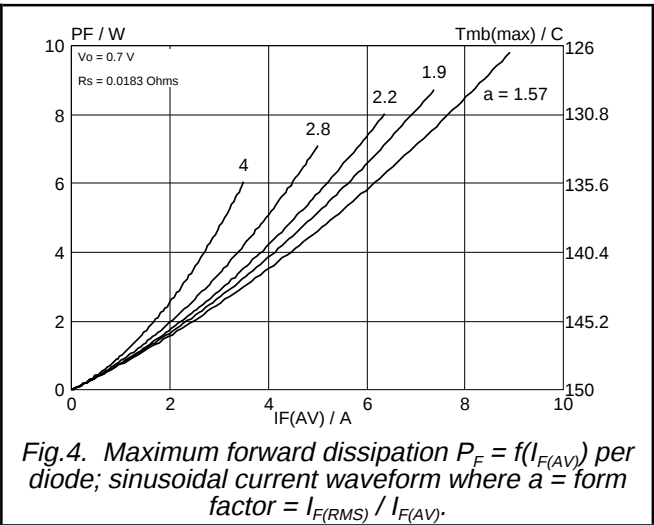
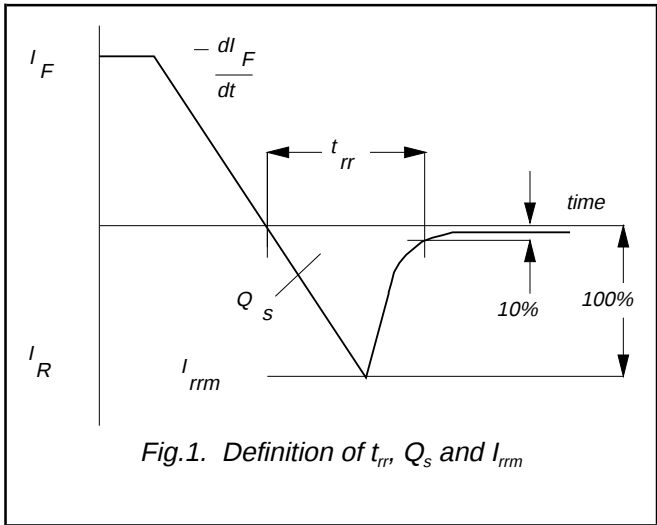
### DYNAMIC CHARACTERISTICS

$T_j = 25\ ^\circ\text{C}$  unless otherwise stated

| SYMBOL    | PARAMETER                                 | CONDITIONS                                                                                                          | MIN. | TYP. | MAX. | UNIT |
|-----------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------|------|------|------|
| $Q_s$     | Reverse recovery charge (per diode)       | $I_F = 2\ \text{A}$ ; $V_R \geq 30\ \text{V}$ ; $-di_F/dt = 20\ \text{A}/\mu\text{s}$                               | -    | 8    | 12.5 | nC   |
| $t_{rr}$  | Reverse recovery time (per diode)         | $I_F = 1\ \text{A}$ ; $V_R \geq 30\ \text{V}$ ; $-di_F/dt = 100\ \text{A}/\mu\text{s}$                              | -    | 20   | 25   | ns   |
| $I_{rrm}$ | Peak reverse recovery current (per diode) | $I_F = 1\ \text{A}$ ; $V_R \geq 30\ \text{V}$ ; $-di_F/dt = 50\ \text{A}/\mu\text{s}$ ; $T_j = 100\ ^\circ\text{C}$ | -    | 1.5  | 2    | A    |
| $V_{fr}$  | Forward recovery voltage (per diode)      | $I_F = 1\ \text{A}$ ; $di_F/dt = 10\ \text{A}/\mu\text{s}$                                                          | -    | 1    | -    | V    |

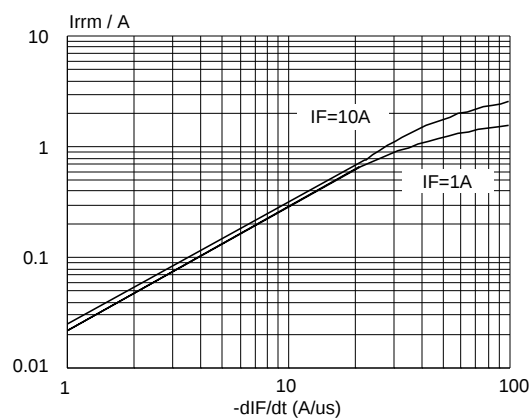
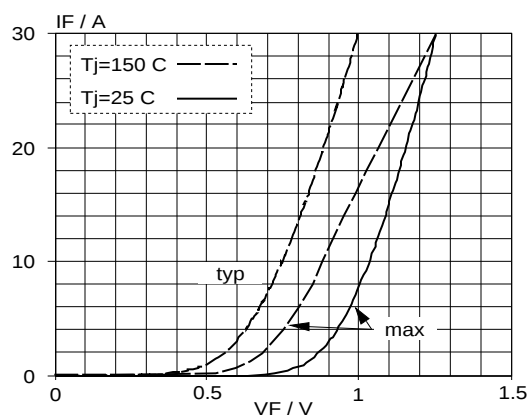
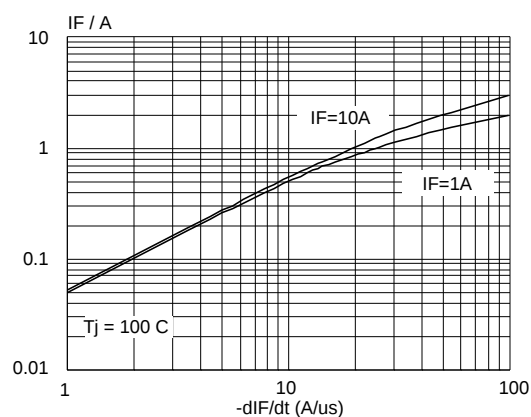
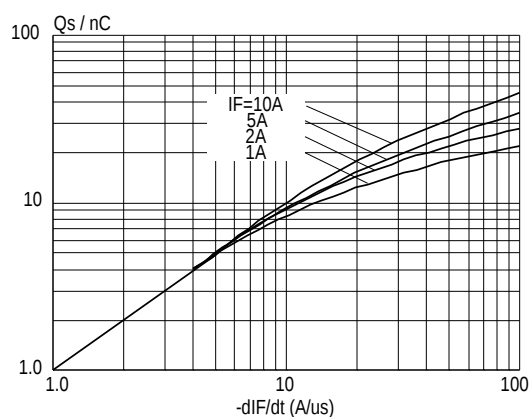
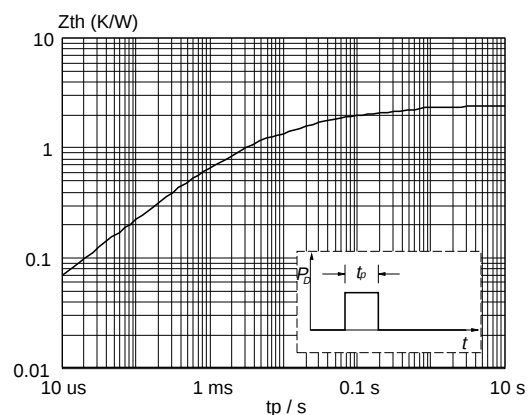
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Fig.7. Maximum  $I_{rms}$  at  $T_j = 25\text{ °C}$ ; per diodeFig.9. Typical and maximum forward characteristic  $I_F = f(V_F)$ ; parameter  $T_j$ Fig.8. Maximum  $I_{rms}$  at  $T_j = 100\text{ °C}$ ; per diodeFig.10. Maximum  $Q_s$  at  $T_j = 25\text{ °C}$ ; per diodeFig.11. Transient thermal impedance; per diode;  
 $Z_{th\ j-mb} = f(t_p)$ .

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## MECHANICAL DATA

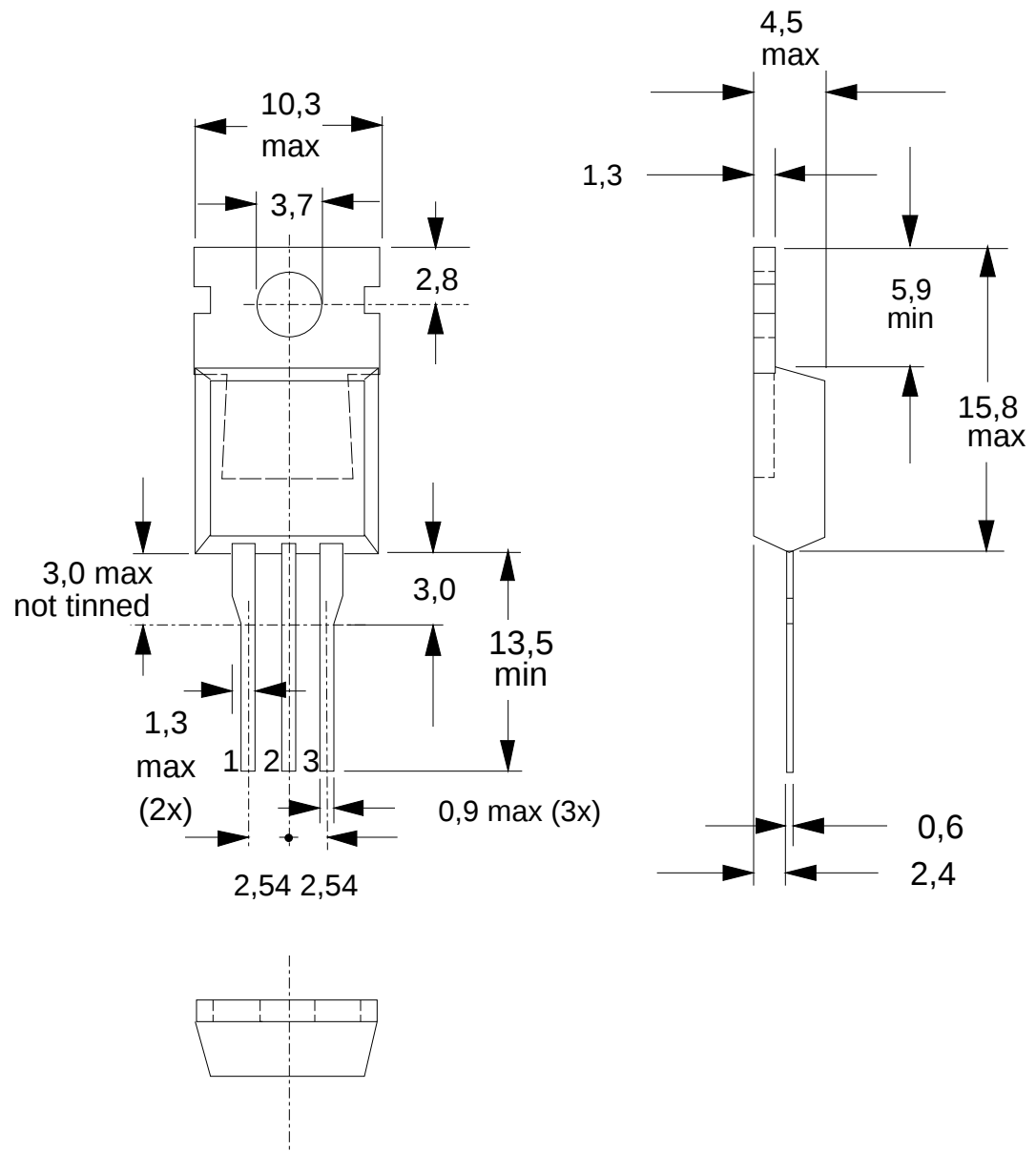
*Dimensions in mm**Net Mass: 2 g*

Fig.12. TO220AB; pin 2 connected to mounting base.

**Notes**

1. Accessories supplied on request: refer to mounting instructions for TO220 envelopes.
2. Epoxy meets UL94 V0 at 1/8".

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### DEFINITIONS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>Data sheet status</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                       |
| 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.                                |
| <b>Limiting values</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| 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. |                                                                                       |
| <b>Application information</b>                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| Where application information is given, it is advisory and does not form part of the specification.                                                                                                                                                                                                                                                                                                                                                        |                                                                                       |
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