

Silicon Dual Diode

BYV32EB-200

200V/20A

DATASHEET

OEM – Philips

Source: Philips Databook 1999

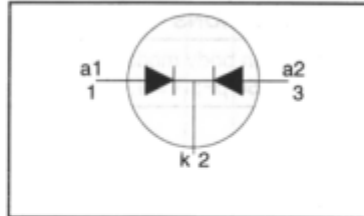
Rectifier diodes ultrafast, rugged

BYV32E, BYV32EB series

FEATURES

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

SYMBOL



QUICK REFERENCE DATA

$$V_R = 150 \text{ V} / 200 \text{ V}$$

$$V_F \leq 0.85 \text{ V}$$

$$I_{O(AV)} = 20 \text{ A}$$

$$I_{RRM} = 0.2 \text{ A}$$

$$t_{rr} \leq 25 \text{ ns}$$

GENERAL DESCRIPTION

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

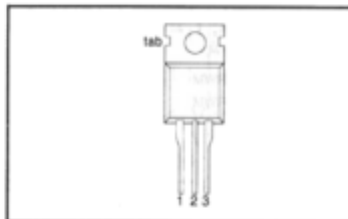
The BYV32E series is supplied in the SOT78 conventional leaded package.

The BYV32EB series is supplied in the SOT404 surface mounting package.

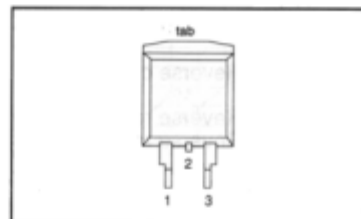
PINNING

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

SOT78 (TO220AB)



SOT404



LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | | UNIT |
|-------------|---|--|------|------------------|-------------|------------------|
| | | | | BYV32E / BYV32EB | | |
| V_{RRM} | Peak repetitive reverse voltage | | - | -150 150 | -200 200 | V |
| V_{RWM} | Crest working reverse voltage | | - | 150 | 200 | V |
| V_R | Continuous reverse voltage | | - | 150 | 200 | V |
| $I_{O(AV)}$ | Average rectified output current (both diodes conducting) | 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 | $t = 10 \text{ ms}$ | - | 125 | | A |
| | | $t = 8.3 \text{ ms}$ | - | 137 | | A |
| I_{RRM} | Repetitive peak reverse current per diode | sinusoidal; with reappplied $V_{RWM(max)}$ $t_p = 2 \text{ } \mu\text{s}$; $\delta = 0.001$ | - | 0.2 | | A |
| I_{RSM} | Non-repetitive peak reverse current per diode | $t_p = 100 \text{ } \mu\text{s}$ | - | 0.2 | | A |
| T_{stg} | Storage temperature | | -40 | 150 | | $^\circ\text{C}$ |
| T_j | Operating junction temperature | | - | 150 | | $^\circ\text{C}$ |

¹ It is not possible to make connection to pin 2 of the SOT404 package

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ESD LIMITING VALUE

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|--------|---|---|------|------|------|
| V_C | Electrostatic discharge capacitor voltage | Human body model; $C = 250 \text{ pF}$; $R = 1.5 \text{ k}\Omega$ | - | 8 | kV |

THERMAL RESISTANCES

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|--------------|--|---|------|------|------|------|
| R_{thj-mb} | Thermal resistance junction to mounting base | per diode both diodes | - | - | 2.4 | K/W |
| R_{thj-a} | Thermal resistance junction to ambient | SOT78 package, in free air | - | 60 | - | K/W |
| | | SOT404 and SOT428 packages, pcb mounted, minimum footprint, FR4 board | - | 50 | - | K/W |

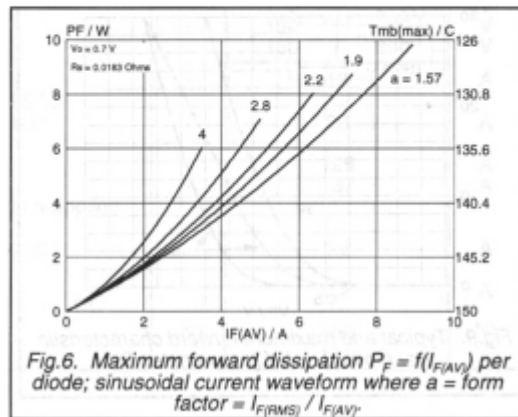
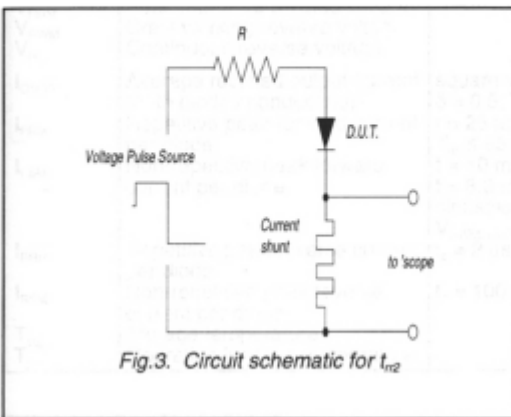
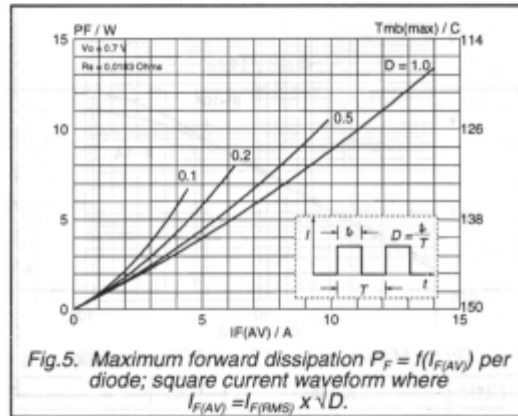
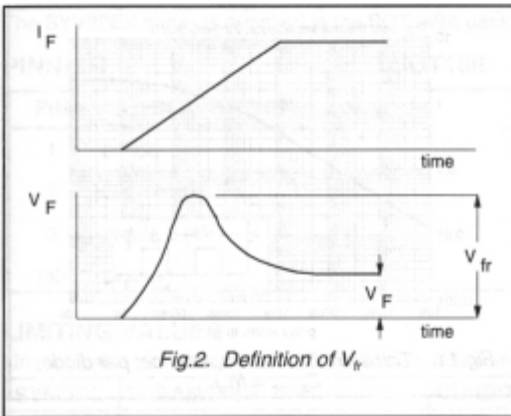
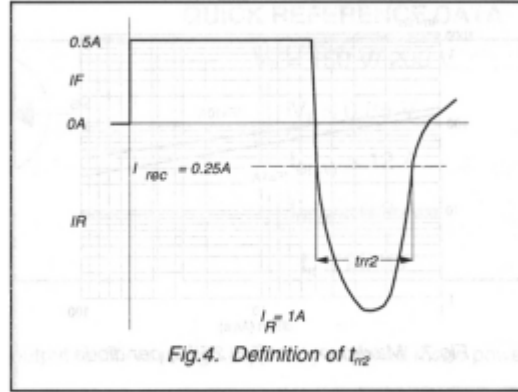
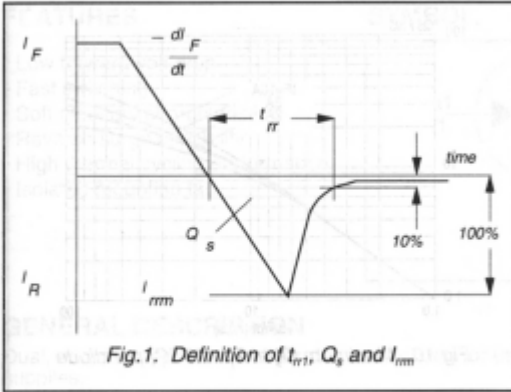
ELECTRICAL CHARACTERISTICS

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 | $I_F = 8 \text{ A}$; $T_j = 150 \text{ }^\circ\text{C}$ | - | 0.72 | 0.85 | V |
| | | $I_F = 20 \text{ A}$ | - | 1.00 | 1.15 | V |
| I_R | Reverse current | $V_R = V_{RWM}$; $T_j = 100 \text{ }^\circ\text{C}$ | - | 0.2 | 0.6 | mA |
| | | $V_R = V_{RWM}$ | - | 6 | 30 | μA |
| Q_s | Reverse recovery charge | $I_F = 2 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 20 \text{ A}/\mu\text{s}$ | - | 8 | 12.5 | nC |
| t_{rr1} | Reverse recovery time | $I_F = 1 \text{ A}$; $V_R \geq 30 \text{ V}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ | - | 20 | 25 | ns |
| t_{rr2} | Reverse recovery time | $I_F = 0.5 \text{ A}$ to $I_R = 1 \text{ A}$; $I_{rec} = 0.25 \text{ A}$ | - | 10 | 20 | ns |
| V_{fr} | Forward recovery voltage | $I_F = 1 \text{ A}$; $di_F/dt = 10 \text{ A}/\mu\text{s}$ | - | 1 | - | V |

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