

1. General description

Dual ultrafast power diode in a SOT226A (I2PAK) low-profile plastic package.

2. Features and benefits

- High reverse voltage surge capability
- High thermal cycling performance
- Low thermal resistance
- Very low on-state loss
- Soft recovery characteristic minimizes power consuming oscillations

3. Applications

- Output rectifiers in high-frequency switched-mode power supplies

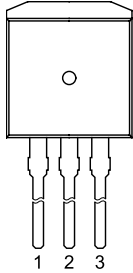
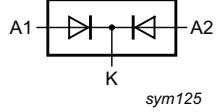
4. Quick reference data

Table 1. Quick reference data

| Symbol | Parameter | Conditions | Values | | | Unit |
|--------------------------------|-------------------------------------|---|--------|------|------|------|
| Absolute maximum rating | | | | | | |
| V_{RRM} | repetitive peak reverse voltage | | 200 | | | V |
| $I_{O(AV)}$ | average output current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 115\text{ °C}$; both diodes conducting; Fig. 1 ; Fig. 2 | 20 | | | A |
| I_{RRM} | repetitive peak reverse current | $\delta = 0.001$; $t_p = 2\ \mu\text{s}$; | 0.2 | | | A |
| V_{ESD} | electrostatic discharge voltage | HBM; $C = 250\ \text{pF}$; $R = 1.5\ \text{k}\Omega$; all pins | 8 | | | kV |
| I_{FRM} | repetitive peak forward current | $\delta = 0.5$; $t_p = 25\ \mu\text{s}$; $T_{mb} \leq 115\text{ °C}$; per diode | 20 | | | A |
| I_{FSM} | non-repetitive peak forward current | $t_p = 10\ \text{ms}$; sine-wave pulse; $T_{j(\text{init})} = 25\text{ °C}$; per diode | 125 | | | A |
| | | $t_p = 8.3\ \text{ms}$; sine-wave pulse; $T_{j(\text{init})} = 25\text{ °C}$; per diode | 137 | | | A |
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
| Static characteristics | | | | | | |
| V_F | forward voltage | $I_F = 8\ \text{A}$; $T_j = 150\text{ °C}$; Fig. 4 | - | 0.72 | 0.85 | V |
| Dynamic characteristics | | | | | | |
| t_{rr} | reverse recovery time | $I_F = 1\ \text{A}$; $V_R = 30\ \text{V}$; $di_F/dt = 100\ \text{A}/\mu\text{s}$; $T_j = 25\text{ °C}$; ramp recovery; Fig. 5 | - | 20 | 25 | ns |
| | | $I_F = 0.5\ \text{A}$ to $I_R = 1\ \text{A}$; $T_j = 25\text{ °C}$; measured at $I_R = 0.25\ \text{A}$; step recovery; Fig. 6 | - | 10 | 20 | ns |

5. Pinning information

Table 2. Pinning information

| Pin | Symbol | Description | Simplified outline | Graphic symbol |
|-----|--------|-------------------------------------|--|---|
| 1 | A1 | anode 1 |  |  |
| 2 | K | cathode | | |
| 3 | A2 | anode 2 | | |
| mb | K | mounting base; connected to cathode | | |

6. Ordering information

Table 3. Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| BYV32G-200 | I2PAK | plastic single-ended package (I2PAK); TO-262 | SOT226A |

7. Marking

Table 4. Marking codes

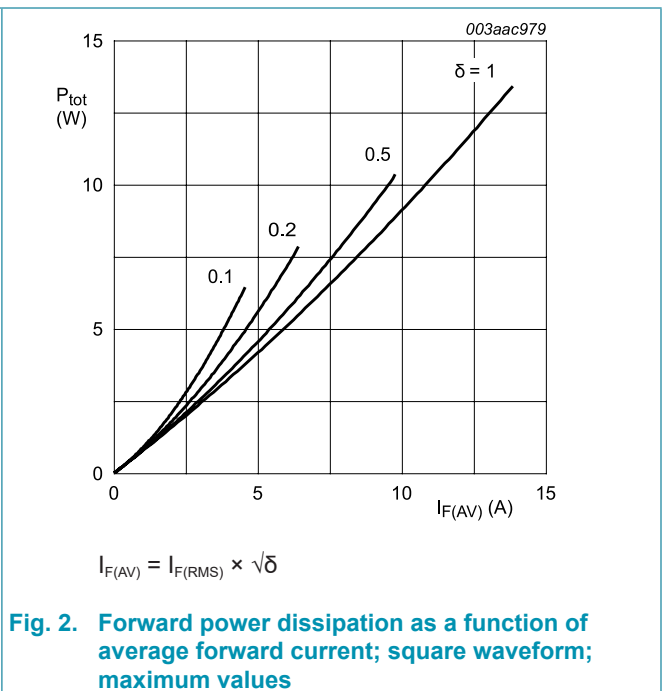
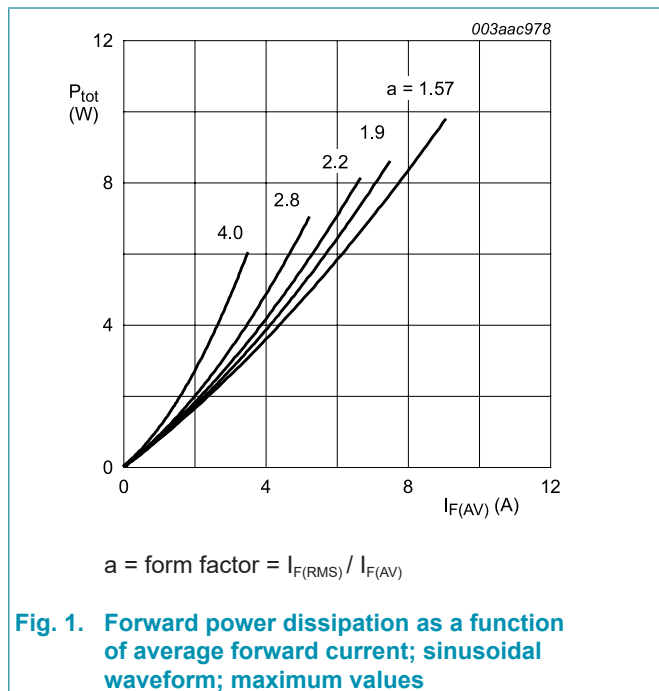
| Type number | Marking codes |
|-------------|---------------|
| BYV32G-200 | BYV32G-200 |

8. Limiting values

Table 5. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

| Symbol | Parameter | Conditions | Values | Unit |
|-------------|-------------------------------------|--|------------|------|
| V_{RRM} | repetitive peak reverse voltage | | 200 | V |
| V_{RWM} | crest working reverse voltage | | 200 | V |
| V_R | reverse voltage | DC | 200 | V |
| $I_{O(AV)}$ | average output current | $\delta = 0.5$; square-wave pulse; $T_{mb} \leq 115\text{ °C}$; both diodes conducting; Fig 1; Fig 2 | 20 | A |
| I_{FRM} | repetitive peak forward current | $\delta = 0.5$; $t_p = 25\ \mu\text{s}$; $T_{mb} \leq 115\text{ °C}$; per diode | 20 | A |
| I_{FSM} | non-repetitive peak forward current | $t_p = 10\text{ ms}$; sine-wave pulse; $T_{j(\text{init})} = 25\text{ °C}$; per diode | 125 | A |
| | | $t_p = 8.3\text{ ms}$; sine-wave pulse; $T_{j(\text{init})} = 25\text{ °C}$; per diode | 137 | A |
| I_{RRM} | repetitive peak reverse current | $\delta = 0.001$; $t_p = 2\ \mu\text{s}$; per diode | 0.2 | A |
| I_{RSM} | non-repetitive peak reverse current | $t_p = 100\ \mu\text{s}$; per diode | 0.2 | A |
| T_{stg} | storage temperature | | -40 to 150 | °C |
| T_j | junction temperature | | 150 | °C |
| V_{ESD} | electrostatic discharge voltage | HBM; all pins; C = 250 pF; R = 1.5 kΩ | 8 | kV |



9. Thermal characteristics

Table 6. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|----------------|---|--|-----|-----|-----|------|
| $R_{th(j-mb)}$ | thermal resistance from junction to mounting base | with heatsink compound; both diodes conducting | - | - | 1.6 | K/W |
| | | with heatsink compound; per diode; Fig 3 | - | - | 2.4 | K/W |
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | | - | 60 | - | K/W |

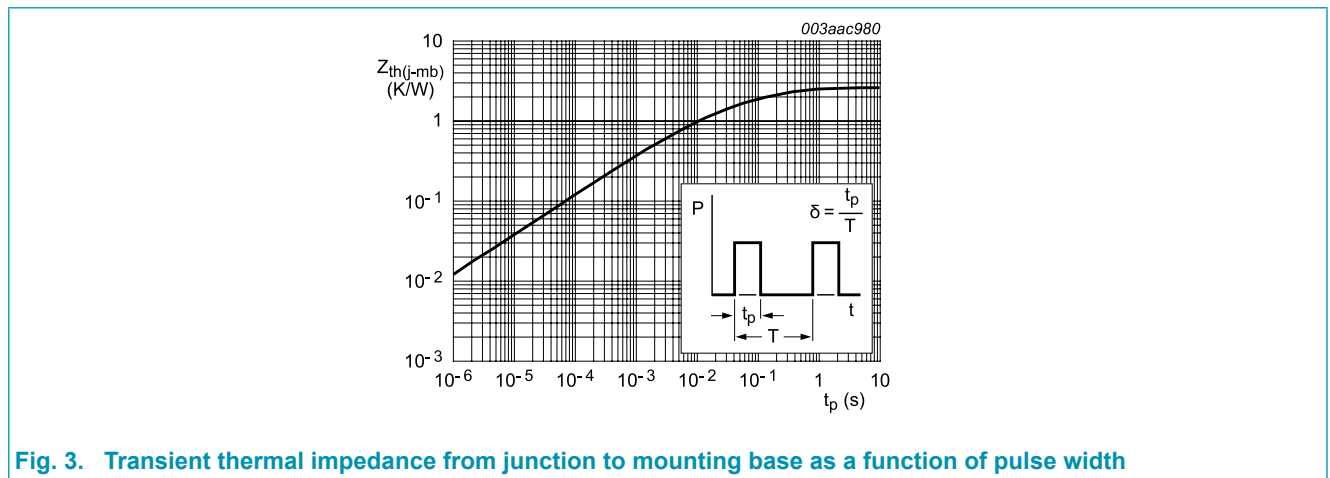
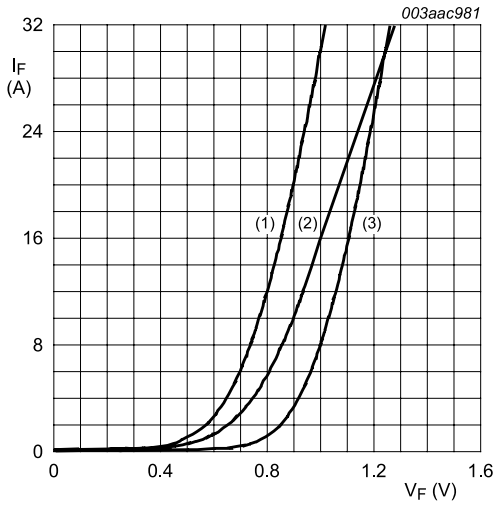


Fig. 3. Transient thermal impedance from junction to mounting base as a function of pulse width

10. Characteristics

Table 7. Characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------------------------------|--------------------------|---|-----|------|------|---------------|
| Static characteristics | | | | | | |
| V_F | forward voltage | $I_F = 8 \text{ A}; T_j = 150 \text{ }^\circ\text{C};$ Fig. 4 | - | 0.72 | 0.85 | V |
| | | $I_F = 20 \text{ A}; T_j = 25 \text{ }^\circ\text{C}$ | - | 1 | 1.15 | V |
| I_R | reverse current | $V_R = 200 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$ | - | 6 | 30 | μA |
| | | $V_R = 200 \text{ V}; T_j = 100 \text{ }^\circ\text{C}$ | - | 0.2 | 0.6 | mA |
| Dynamic characteristics | | | | | | |
| Q_r | recovered charge | $I_F = 2 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 20 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C}$ | - | 8 | 12.5 | nC |
| t_{rr} | reverse recovery time | $I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A}/\mu\text{s};$ $T_j = 25 \text{ }^\circ\text{C};$ ramp recovery; Fig. 5 | - | 20 | 25 | ns |
| | | $I_F = 0.5 \text{ A to } I_R = 1 \text{ A}; T_j = 25 \text{ }^\circ\text{C};$ measured at $I_R = 0.25 \text{ A};$ step recovery; Fig. 6 | - | 10 | 20 | ns |
| V_{FR} | forward recovery voltage | $I_F = 1 \text{ A}; dI_F/dt = 10 \text{ A}/\mu\text{s}; T_j = 25 \text{ }^\circ\text{C};$ Fig. 7 | - | - | 1 | V |



- (1) $T_j = 150\text{ }^\circ\text{C}$; typical values
- (2) $T_j = 150\text{ }^\circ\text{C}$; maximum values
- (3) $T_j = 25\text{ }^\circ\text{C}$; maximum values

Fig. 4. Forward current as a function of forward voltage

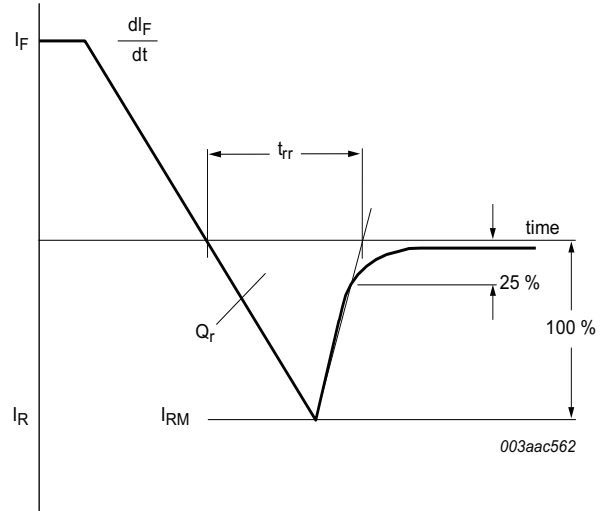


Fig. 5. Reverse recovery definitions; ramp recovery

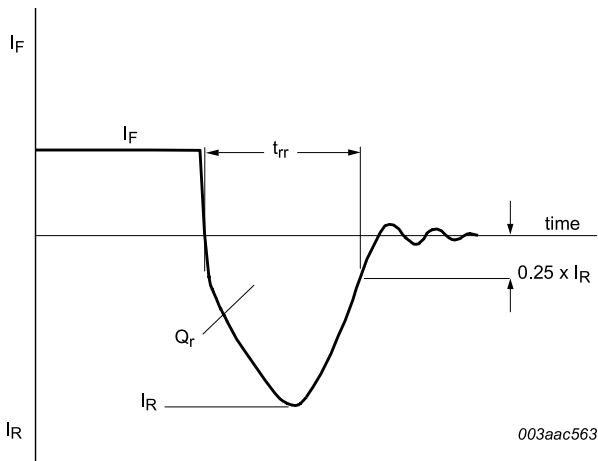


Fig. 6. Reverse recovery definitions; step recovery

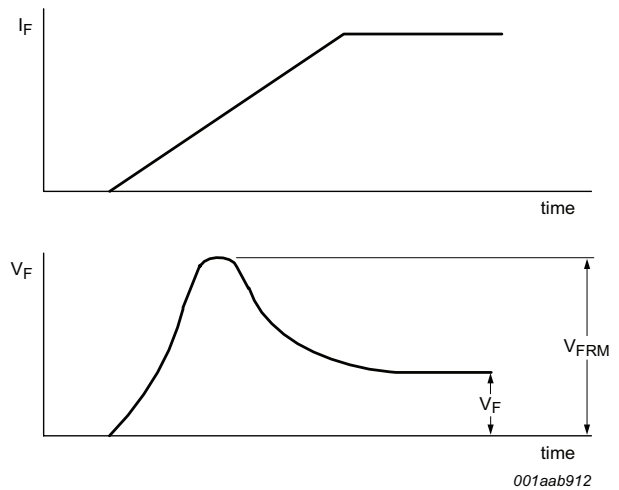
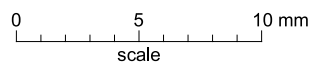
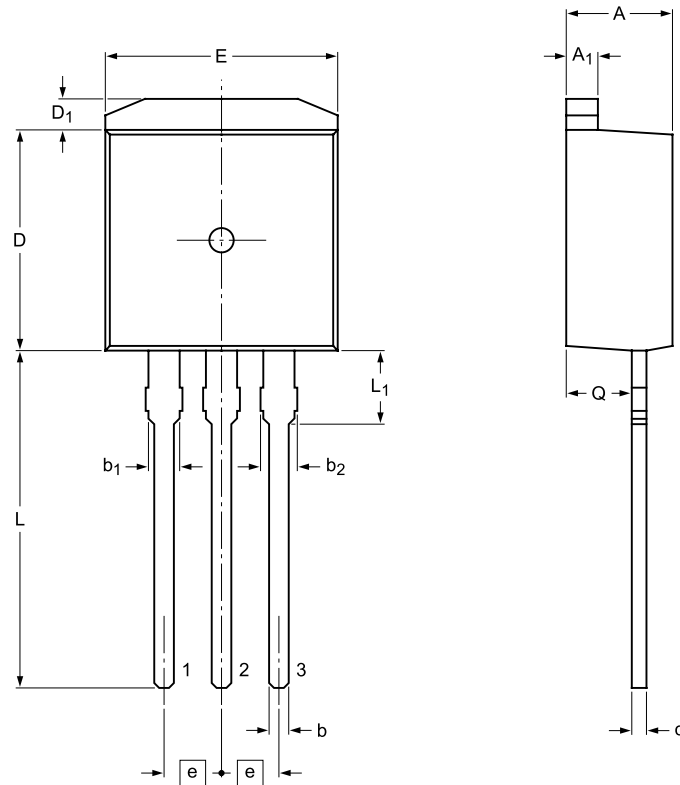


Fig. 7. Forward recovery definitions

11. Package outline

Plastic single-ended package (I2PAK); low-profile 3-lead TO-262

SOT226A



Dimensions

| Unit | A | A ₁ | b | b ₁ | b ₂ | c | D | D ₁ | E | e | L | L ₁ | Q |
|------|-----|----------------|------|----------------|----------------|------|-----|----------------|-------|-------|------|----------------|-----|
| max | 4.7 | 1.40 | 0.95 | 1.40 | 1.7 | 0.65 | 9.4 | 1.32 | 10.30 | 2.54 | 15.0 | 3.0 | 2.6 |
| nom | | | | | | | | | | (REF) | | (REF) | |
| min | 4.3 | 1.15 | 0.70 | 1.14 | 1.3 | 0.45 | 8.6 | 1.02 | 9.65 | | 12.5 | | 2.2 |

sof226a_po

| Outline version | References | | | European projection | Issue date |
|-----------------|------------|--------|-------|---------------------|----------------------|
| | IEC | JEDEC | JEITA | | |
| SOT226A | | TO-262 | | | 09-08-17 09-08-25 |

12. Revision history

Table 8. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|----------------|--------------|---|---------------|----------------|
| BYV32G-200 v.2 | 20180307 | Product data sheet | - | BYV32G-200 v.1 |
| Modifications: | | Change from NXP version to WeEn version | | |
| BYV32G-200 v.1 | 20110111 | Product data sheet | - | - |

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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14. Contents

| | |
|----------------------------------|----|
| 1. General description..... | 1 |
| 2. Features and benefits | 1 |
| 3. Applications | 1 |
| 4. Quick reference data | 1 |
| 5. Pinning information..... | 2 |
| 6. Ordering information..... | 2 |
| 7. Marking..... | 2 |
| 8. Limiting values | 3 |
| 9. Thermal characteristics | 4 |
| 10. Characteristics..... | 5 |
| 11. Package outline | 7 |
| 12. Revision history..... | 8 |
| 13. Legal information | 9 |
| 14. Contents | 11 |

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