



# BYV32G-200

## Dual ultrafast power diode

Rev. 01 — 11 January 2011

Product data sheet

## 1. Product profile

### 1.1 General description

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

### 1.2 Features and benefits

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

### 1.3 Applications

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

### 1.4 Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{RRM}$	repetitive peak reverse voltage		-	-	200	V
$I_{O(AV)}$	average output current	square-wave pulse; $\delta = 0.5$ ; $T_{mb} \leq 115\text{ }^{\circ}\text{C}$ ; both diodes conducting; see <a href="#">Figure 1</a> ; see <a href="#">Figure 2</a>	-	-	20	A
$I_{FSM}$	non-repetitive peak forward current	$T_{j(init)} = 25\text{ }^{\circ}\text{C}$ ; $t_p = 10\text{ ms}$ ; sine-wave pulse; per diode	-	-	125	A
$I_{RRM}$	repetitive peak reverse current	$t_p = 2\text{ }\mu\text{s}$ ; $\delta = 0.001$	-	-	0.2	A
$V_{ESD}$	electrostatic discharge voltage	HBM; $C = 250\text{ pF}$ ; $R = 1.5\text{ k}\Omega$ ; all pins	-	-	8	kV
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 8\text{ A}$ ; $T_j = 150\text{ }^{\circ}\text{C}$ ; see <a href="#">Figure 4</a>	-	0.72	0.85	V

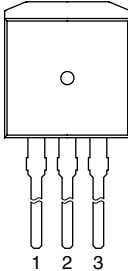
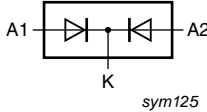


Table 1. Quick reference data ...continued

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Dynamic characteristics</b>						
$t_{rr}$	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; see <a href="#">Figure 5</a>	-	20	25	ns
		$I_R = 1\text{ A}$ ; $I_F = 0.5\text{ A}$ ; $T_j = 25\text{ }^\circ\text{C}$ ; step recovery; measured at reverse current $= 0.25\text{ A}$ ; see <a href="#">Figure 6</a>	-	10	20	ns

## 2. 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		

SOT226A (I2PAK)

## 3. Ordering information

Table 3. Ordering information

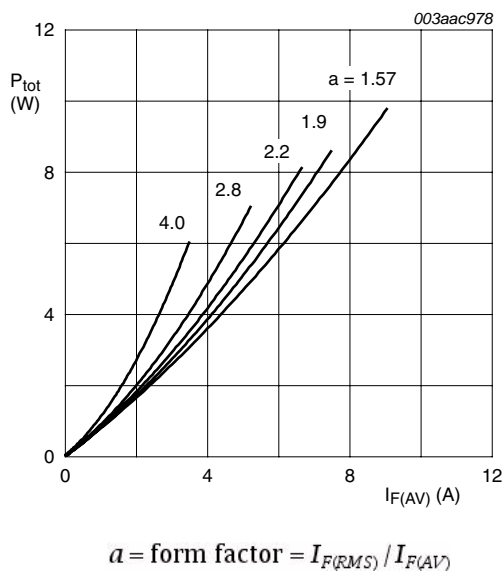
Type number	Package		Version
	Name	Description	
BYV32G-200	I2PAK	plastic single-ended package (I2PAK); TO-262	SOT226A

## 4. Limiting values

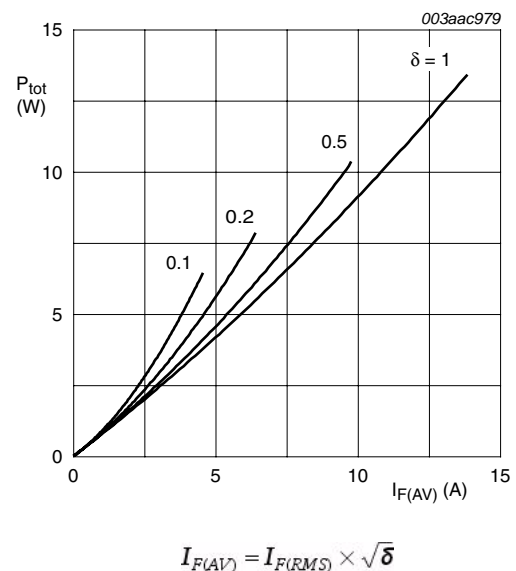
**Table 4. Limiting values**

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

Symbol	Parameter	Conditions	Min	Max	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	square-wave pulse; $\delta = 0.5$ ; $T_{mb} \leq 115^\circ\text{C}$ ; both diodes conducting; see <a href="#">Figure 1</a> ; see <a href="#">Figure 2</a>	-	20	A
$I_{FRM}$	repetitive peak forward current	$\delta = 0.5$ ; $t_p = 25\ \mu\text{s}$ ; $T_{mb} \leq 115^\circ\text{C}$ ; per diode	-	20	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8.3\ \text{ms}$ ; sine-wave pulse; $T_{j(\text{init})} = 25^\circ\text{C}$ ; per diode	-	137	A
		$t_p = 10\ \text{ms}$ ; sine-wave pulse; $T_{j(\text{init})} = 25^\circ\text{C}$ ; per diode	-	125	A
$I_{RRM}$	repetitive peak reverse current	$\delta = 0.001$ ; $t_p = 2\ \mu\text{s}$	-	0.2	A
$I_{RSM}$	non-repetitive peak reverse current	$t_p = 100\ \mu\text{s}$	-	0.2	A
$T_{stg}$	storage temperature		-40	150	$^\circ\text{C}$
$T_j$	junction temperature		-	150	$^\circ\text{C}$
$V_{ESD}$	electrostatic discharge voltage	HBM; $C = 250\ \text{pF}$ ; $R = 1.5\ \text{k}\Omega$ ; all pins	-	8	kV



**Fig 1. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values**



**Fig 2. Forward power dissipation as a function of average forward current; square wave; maximum values**

5. Thermal characteristics

Table 5. 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; see <a href="#">Figure 3</a>	-	-	2.4	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient		-	60	-	K/W

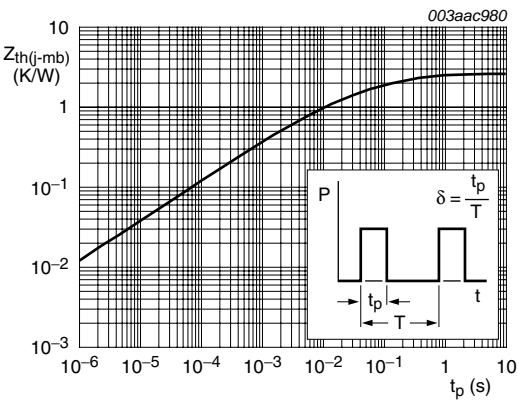
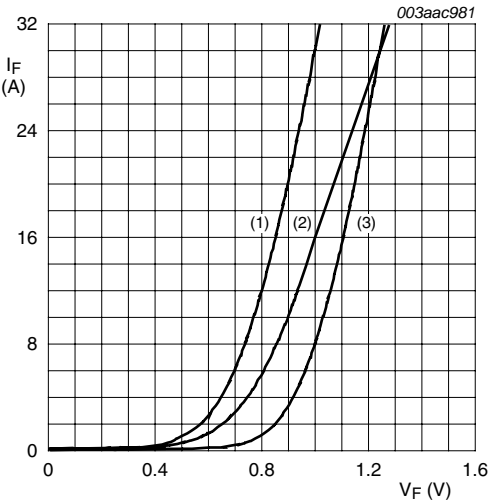


Fig 3. Transient thermal impedance from junction to mounting base as a function of pulse width

6. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 20 A; T <sub>j</sub> = 25 °C	-	1	1.15	V
		I <sub>F</sub> = 8 A; T <sub>j</sub> = 150 °C; see <a href="#">Figure 4</a>	-	0.72	0.85	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 200 V; T <sub>j</sub> = 100 °C	-	0.2	0.6	mA
		V <sub>R</sub> = 200 V; T <sub>j</sub> = 25 °C	-	6	30	μA
Dynamic characteristics						
Q <sub>r</sub>	recovered charge	I <sub>F</sub> = 2 A; V <sub>R</sub> = 30 V; dI <sub>F</sub> /dt = 20 A/μs; T <sub>j</sub> = 25 °C	-	8	12.5	nC
t <sub>rr</sub>	reverse recovery time	I <sub>F</sub> = 1 A; V <sub>R</sub> = 30 V; dI <sub>F</sub> /dt = 100 A/μs; ramp recovery; T <sub>j</sub> = 25 °C; see <a href="#">Figure 5</a>	-	20	25	ns
		I <sub>F</sub> = 0.5 A; I <sub>R</sub> = 1 A; step recovery; measured at reverse current = 0.25 A; T <sub>j</sub> = 25 °C; see <a href="#">Figure 6</a>	-	10	20	ns
V <sub>FR</sub>	forward recovery voltage	I <sub>F</sub> = 1 A; dI <sub>F</sub> /dt = 10 A/μs; T <sub>j</sub> = 25 °C; see <a href="#">Figure 7</a>	-	-	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

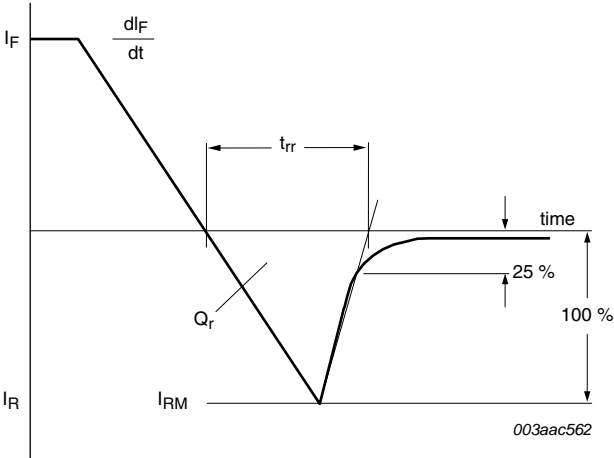


Fig 5. Reverse recovery definitions; ramp recovery

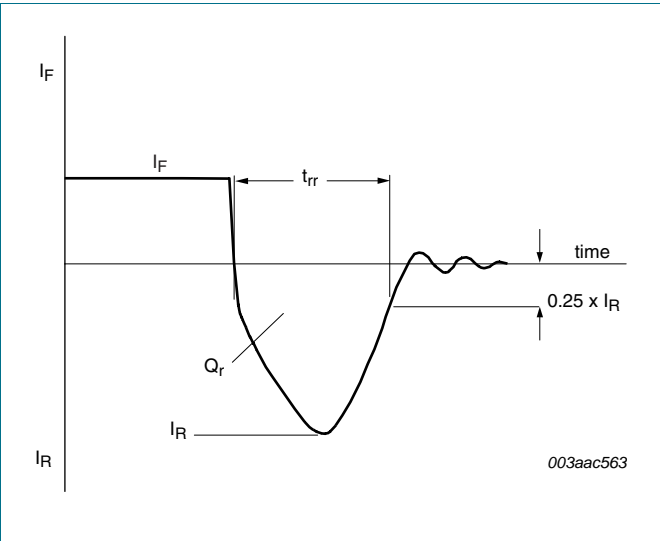


Fig 6. Reverse recovery definitions; step recovery

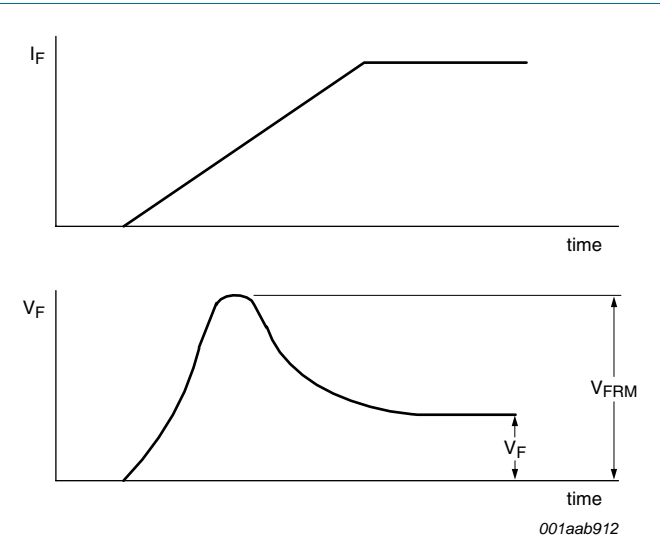


Fig 7. Forward recovery definitions

7. Package outline

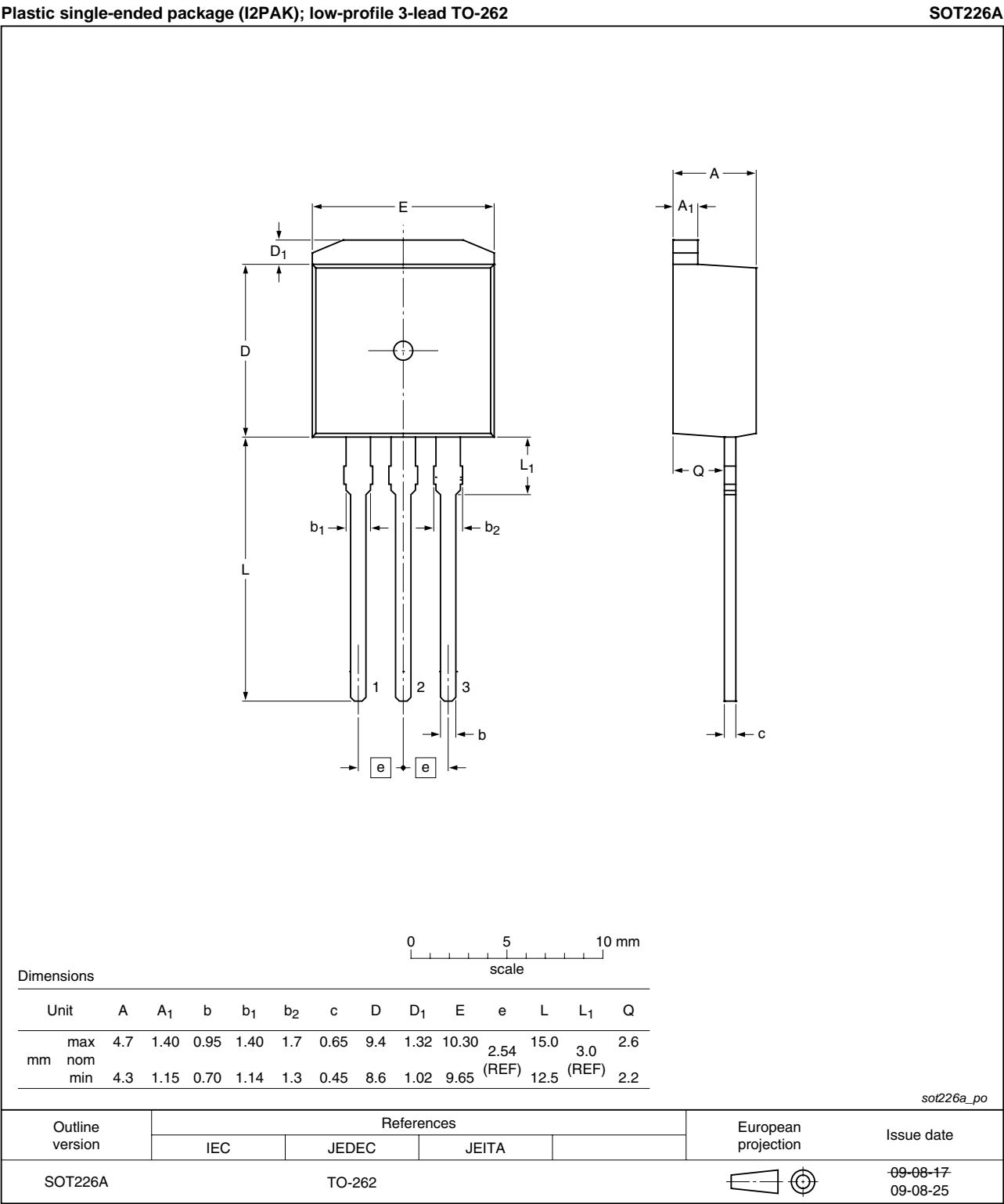


Fig 8. Package outline SOT226A (I2PAK)

8. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BYV32G-200 v.1	20110111	Product data sheet	-	-



## 9. Legal information

### 9.1 Data sheet status

Document status <sup>[1][2]</sup>	Product status <sup>[3]</sup>	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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