Product data sheet

1. General description

Ultrafast power diode in a SOT226A (I2PAK) plastic package.

2. Features and benefits

- Fast switching
- High thermal cycling performance
- Low forward voltage drop
- · Low profile package facilitates compact/slim designs
- Low switching losses
- Low thermal resistance
- Soft recovery minimizes power-consuming oscillations

3. Applications

- Discontinuous Current Mode (DCM) Power Factor Correction (PFC)
- High frequency switched-mode power supplies

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
V_R	reverse voltage	DC; T _{mb} ≤ 100 °C		-	-	600	V
I _{F(AV)}	average forward current	δ = 0.5; $T_{mb} \le 135$ °C; SQW; <u>Fig. 1</u> ; <u>Fig. 2</u>		-	-	5	Α
I _{FSM}	non-repetitive peak	$t_p = 8.3 \text{ ms; } T_{j(init)} = 25 \text{ °C; SIN}$		-	-	66	Α
	forward current $t_p = 10$	t_p = 10 ms; $T_{j(init)}$ = 25 °C; SIN		-	-	60	Α
Static characte	eristics						
V _F	forward voltage	I _F = 5 A; <u>Fig. 4</u>		-	1.12	1.3	V
		I _F = 5 A; T _{mb} ≤ 150 °C; <u>Fig. 4</u>		-	0.97	1.11	V
Dynamic characteristics							
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 100 \text{ A/}\mu\text{s};$ $T_j = 25 \text{ °C}; Fig. 5$		-	50	60	ns

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5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol	
1	n.c.	not connected	0	K — A	
2	K	cathode			001aaa020
3	Α	anode			
mb	К	mounting base; cathode			
			I2PAK (SOT226A)		

6. Ordering information

Table 3. Ordering information

Type number	Package						
	Name	Description	Version				
BYV25G-600	I2PAK	plastic single-ended package (I2PAK); TO-262	SOT226A				

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7. 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		-	600	V
V_{RWM}	crest working reverse voltage		-	600	V
V_R	reverse voltage	DC; T _{mb} ≤ 100 °C	-	600	V
I _{F(AV)}	average forward current	$δ = 0.5 ; T_{mb} \le 135 °C; SQW; Fig. 1;$ Fig. 2	-	5	Α
I _{FRM}	repetitive peak forward current	$\delta = 0.5$; $T_{mb} \le 135$ °C; SQW	-	10	Α
I _{FSM}	non-repetitive peak	t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; SIN	-	66	Α
	forward current	t _p = 10 ms; T _{j(init)} = 25 °C; SIN	-	60	Α
T _{stg}	storage temperature		-40	150	°C
T _j	junction temperature		-	150	°C

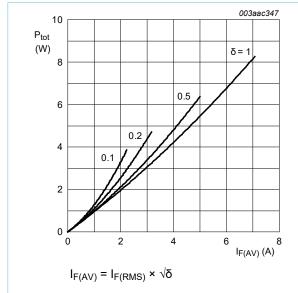


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values

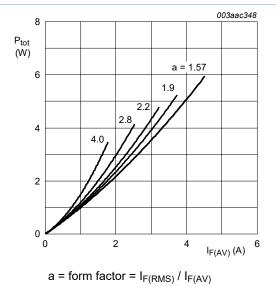


Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

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8. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
R _{th(j-mb)}	thermal resistance from junction to mounting base	with heasink compound; Fig. 3	-	-	2.5	K/W
R _{th(j-a)}	thermal resistance from junction to ambient free air		-	60	-	K/W

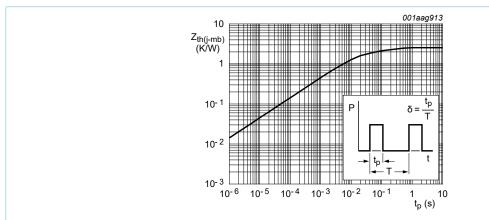


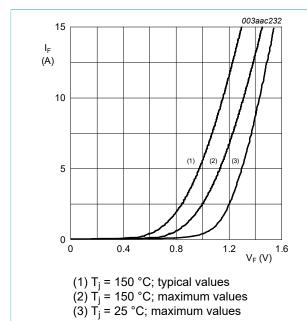
Fig. 3. Transient thermal impedance from junction to mounting base as a function of pulse width

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9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Static chara	acteristics					
V _F	forward voltage	I _F = 5 A; <u>Fig. 4</u>	-	1.12	1.3	V
		I _F = 5 A; T _{mb} ≤ 150 °C; <u>Fig. 4</u>	-	0.97	1.11	V
I _R	reverse current	V _R = 600 V; T _j = 100 °C	-	0.1	0.35	mA
		V _R = 600 V	-	2	50	μA
Dynamic ch	naracteristics					,
t _{rr}	reverse recovery time	$I_F = 1 \text{ A}$; $V_R = 30 \text{ V}$; $dI_F/dt = 100 \text{ A/}\mu\text{s}$; $T_j = 25 \text{ °C}$; $\frac{\text{Fig. 5}}{}$	-	50	60	ns
I _{RM}	peak reverse recovery current	$I_F = 10 \text{ A}; V_R = 30 \text{ V}; dI_F/dt = 50 \text{ A/µs};$ $T_j = 100 ^{\circ}\text{C}; Fig. 5$	-	3	5.5	Α
Q _r	recovered charge	$I_F = 2 \text{ A}$; $V_R = 30 \text{ V}$; $dI_F/dt = 20 \text{ A/}\mu\text{s}$; Fig. 5	-	40	70	nC
V_{FR}	forward recovery voltage	$I_F = 10 \text{ A}; dI_F/dt = 10 \text{ A/}\mu\text{s}; Fig. 6$	-	3.2	-	V





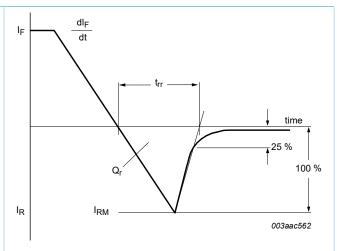
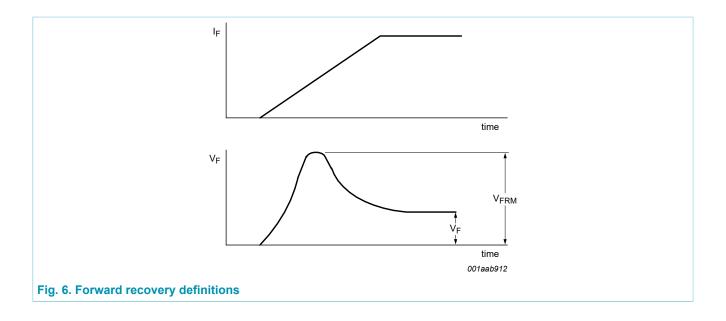


Fig. 5. Reverse recovery definitions; ramp recovery

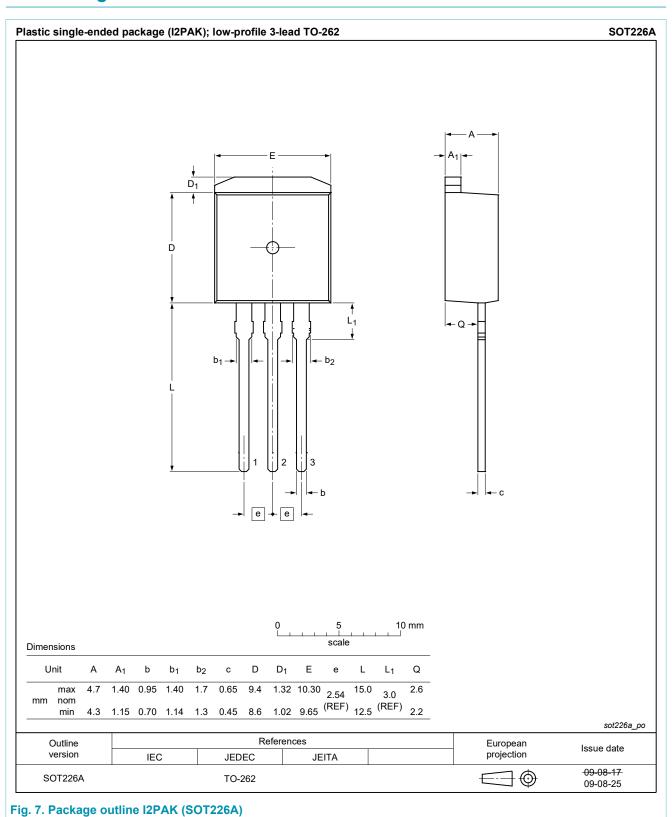
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10. Package outline



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11. 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.
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BYV25G-600

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