IMPORTANT NOTICE

10 December 2015

1. Global joint venture starts operations as WeEn Semiconductors

Dear customer,

As from November 9th, 2015 NXP Semiconductors N.V. and Beijing JianGuang Asset Management Co. Ltd established Bipolar Power joint venture (JV), **WeEn Semiconductors**, which will be used in future Bipolar Power documents together with new contact details.

In this document where the previous NXP references remain, please use the new links as shown below.

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If you have any questions related to this document, please contact our nearest sales office via e-mail or phone (details via salesaddresses@ween-semi.com).

Thank you for your cooperation and understanding,

WeEn Semiconductors

BYV25G-600

Ultrafast rectifier diode

Rev. 01 — 4 February 2010 Product data sheet

1. Product profile

1.1 General description

Ultrafast epitaxial rectifier diode in a SOT226 (I2PAK) plastic package.

1.2 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

1.3 Applications

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

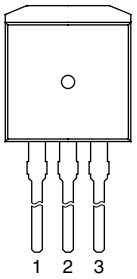
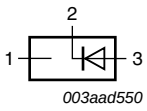
1.4 Quick reference data

Table 1. Quick reference

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	-	600	V
$I_{F(AV)}$	average forward current	square-wave pulse; δ = 0.5; T_{mb} ≤ 135 °C; see Figure 1 and 2	-	-	5	A
Dynamic characteristics						
t_{rr}	reverse recovery time	I_F = 1 A; V_R ≥ 30 V; dI_F/dt = 100 A/µs; T_j = 25 °C; see Figure 5	-	50	60	ns

2. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	n.c.	not connected		
2	K	cathode		
3	A	anode		
mb	K	mounting base; cathode		

SOT226A (I2PAK)

3. Ordering information

Table 3. Ordering information

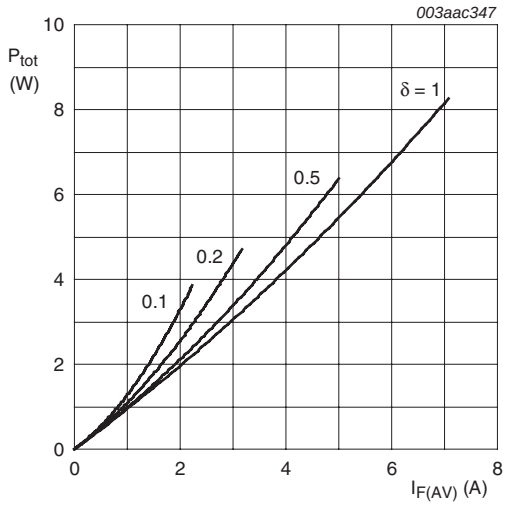
Type number	Package		
	Name	Description	Version
BYV25G-600	I2PAK	plastic single-ended package (I2PAK); TO-262	SOT226A

4. Limiting values

Table 4. Limiting values

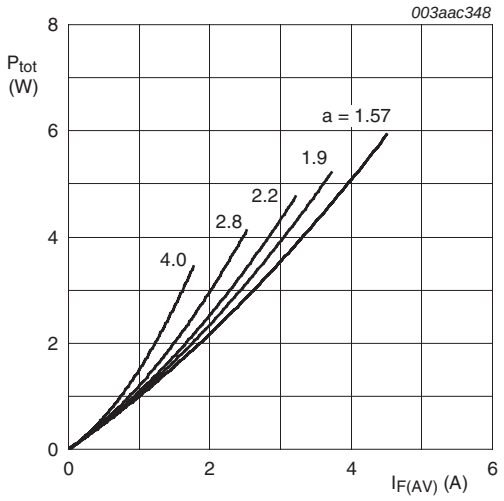
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	600	V
V_{RWM}	crest working reverse voltage		-	600	V
V_R	reverse voltage	$T_{mb} \leq 100$ °C; DC	-	600	V
$I_{F(AV)}$	average forward current	square-wave pulse; $\delta = 0.5$; $T_{mb} \leq 135$ °C; see Figure 1 and 2	-	5	A
I_{FRM}	repetitive peak forward current	square-wave pulse; $\delta = 0.5$; $T_{mb} \leq 135$ °C	-	10	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8.3$ ms; sine-wave pulse; $T_{j(init)} = 25$ °C	-	66	A
		$t_p = 10$ ms; sine-wave pulse; $T_{j(init)} = 25$ °C	-	60	A
T_{stg}	storage temperature		-40	150	°C
T_j	junction temperature		-	150	°C



$$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$$

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



$$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$$

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

5. Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j\text{-}mb)}$	thermal resistance from junction to mounting base	with heatsink compound; see Figure 3	-	-	2.5	K/W
$R_{th(j\text{-}a)}$	thermal resistance from junction to ambient free air		-	60	-	K/W

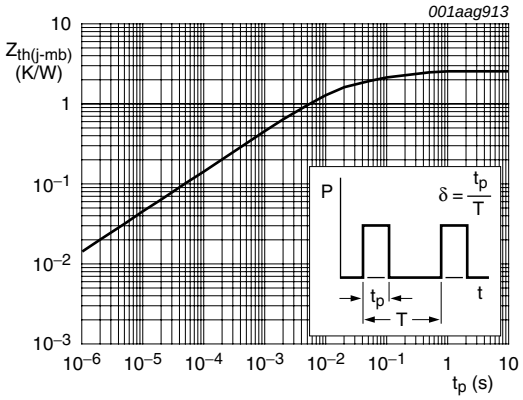
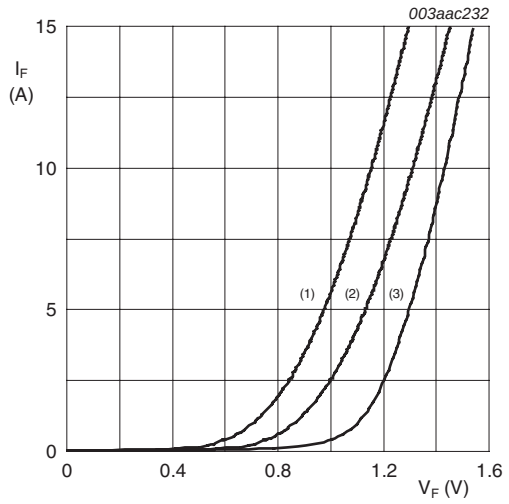


Fig 3. Transient thermal impedance from junction to mounting base as a function of pulse width

6. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	I_F = 5 A; see Figure 4	-	1.12	1.3	V
		I_F = 5 A; T_{mb} ≤ 150 °C; see Figure 4	-	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 characteristics						
Q_r	recovered charge	I_F = 2 A; V_R ≥ 30 V; dI_F/dt = 20 A/µs; see Figure 5	-	40	70	nC
t_{rr}	reverse recovery time	I_F = 1 A; V_R ≥ 30 V; dI_F/dt = 100 A/µs; T_j = 25 °C; see Figure 5	-	50	60	ns
V_{FR}	forward recovery voltage	I_F = 10 A; dI_F/dt = 10 A/µs; see Figure 6	-	3.2	-	V
I_{RM}	peak reverse recovery current	I_F = 10 A; V_R ≤ 30 V; dI_F/dt = 50 A/µs; T_j = 100 °C; see Figure 5	-	3	5.5	A



(1) $T_j = 150\ °C$; typical values
(2) $T_j = 150\ °C$; maximum values
(3) $T_j = 25\ °C$; maximum values

Fig 4. Forward current as a function of forward voltage

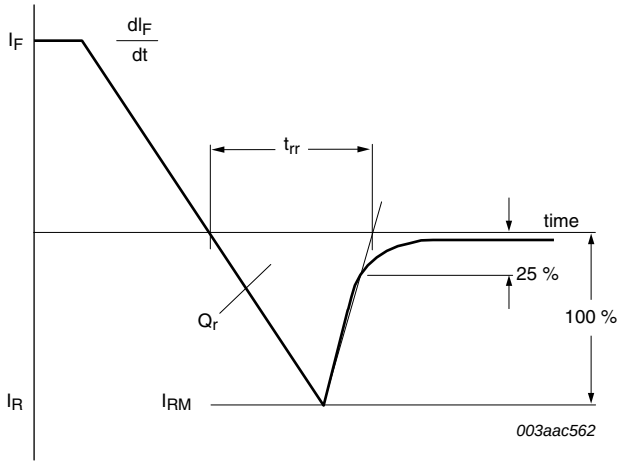


Fig 5. Reverse recovery definitions; ramp recovery

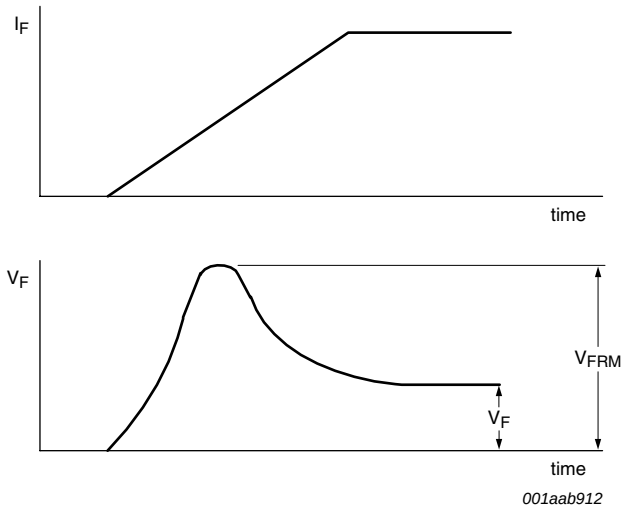
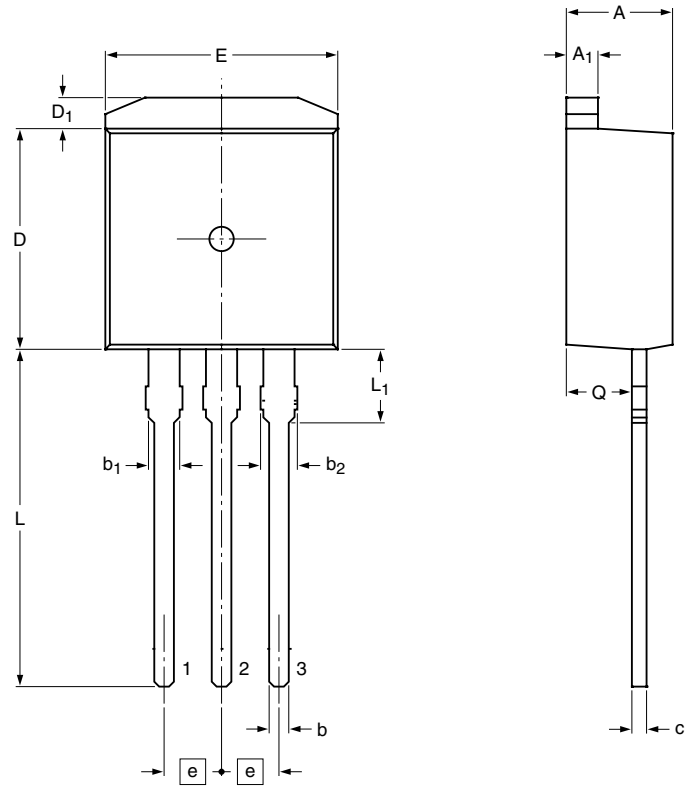


Fig 6. Forward recovery definitions

7. Package outline

Plastic single-ended package (I2PAK); low-profile 3-lead TO-262 **SOT226A**



0 5 10 mm

scale

Dimensions

Unit		A	A_1	b	b_1	b_2	c	D	D_1	E	e	L	L_1	Q
mm	max	4.7	1.40	0.95	1.40	1.7	0.65	9.4	1.32	10.30	2.54 (REF)	15.0	3.0 (REF)	2.6
	nom													
	min	4.3	1.15	0.70	1.14	1.3	0.45	8.6	1.02	9.65		12.5		2.2

sot226a_po

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

Fig 7. Package outline SOT226A (I2PAK)

8. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BYV25G-600_1	20100204	Product data sheet	-	-

9. Legal information

9.1 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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11. Contents

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