



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.

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Thank you for your cooperation and understanding,

WeEn Semiconductors

1. General description

Ultrafast, epitaxial rectifier diode in a SOD59 (TO-220AC) plastic package

2. Features and benefits

- Fast switching
- Low thermal resistance
- Soft recovery characteristic
- Low forward voltage drop
- Low switching loss
- High thermal cycling performance

3. Applications

- Output rectifiers in high frequency switched-mode power supplies
- Discontinuous Current Mode (DCM) Power Factor Correction (PFC)

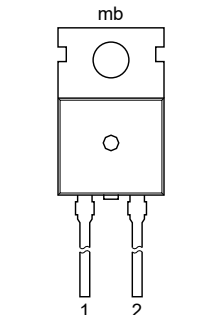
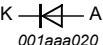
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V _R	reverse voltage	Square-wave; δ = 1.0		-	-	600	V
I _{F(AV)}	average forward current	δ = 0.5 ; T _{mb} ≤ 108 °C; square-wave pulse; Fig. 1 ; Fig. 2 ; Fig. 3		-	-	15	A
I _{FRM}	repetitive peak forward current	δ = 0.5 ; t _p = 25 μs; T _{mb} ≤ 108 °C; Square-wave		-	-	30	A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; Sinusoidal waveform; Fig. 4		-	-	130	A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; Sinusoidal waveform		-	-	143	A
Static characteristics							
V _F	forward voltage	I _F = 15 A; T _j = 150 °C; Fig. 6		-	1	1.2	V
		I _F = 15 A; T _j = 25 °C; Fig. 6		-	1.17	1.38	V
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; Fig. 7		-	50	60	ns

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 TO-220AC (SOD59)	 001aaa020
2	A	anode		
mb	mb	mounting base; cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BYT79-600	TO-220AC	plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC	SOD59

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	Square-wave; $\delta = 1.0$	-	600	V
I _{F(AV)}	average forward current	$\delta = 0.5$; $T_{mb} \leq 108\text{ }^{\circ}\text{C}$; square-wave pulse; Fig. 1; Fig. 2; Fig. 3	-	15	A
I _{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25\text{ }\mu\text{s}$; $T_{mb} \leq 108\text{ }^{\circ}\text{C}$; Square-wave	-	30	A
I _{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$; Sinusoidal waveform; Fig. 4	-	130	A
		$t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^{\circ}\text{C}$; Sinusoidal waveform	-	143	A
T _{stg}	storage temperature		-55	150	$^{\circ}\text{C}$
T _j	junction temperature		-	150	$^{\circ}\text{C}$

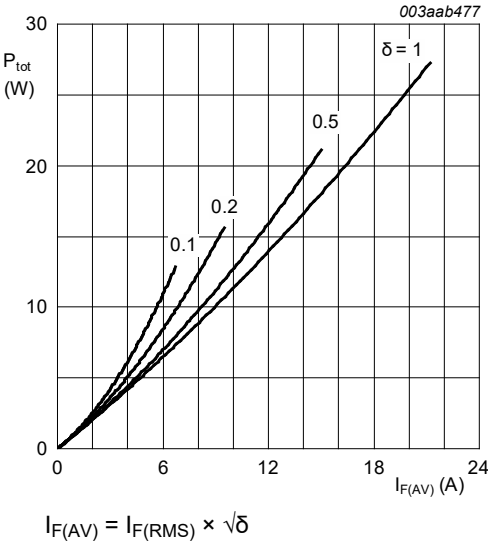


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values

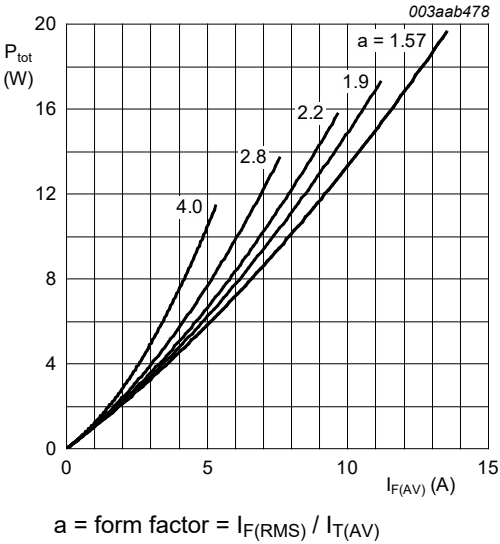


Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

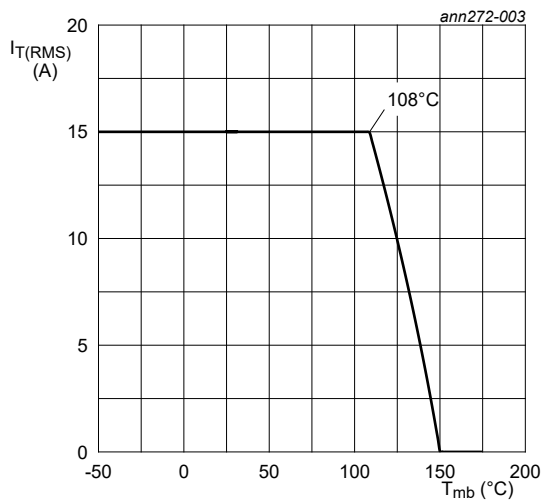


Fig. 3. RMS on-state current as a function of mounting base temperature; maximum values

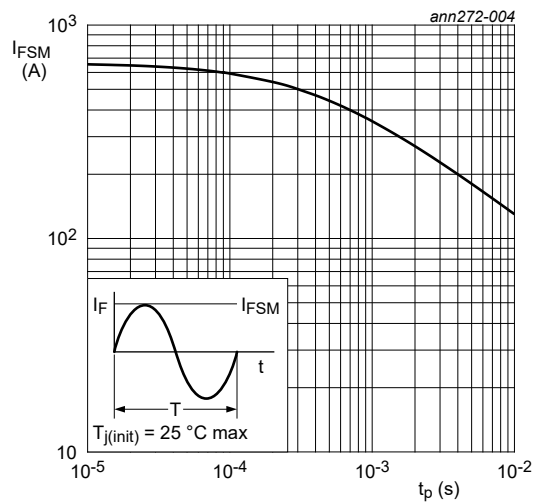
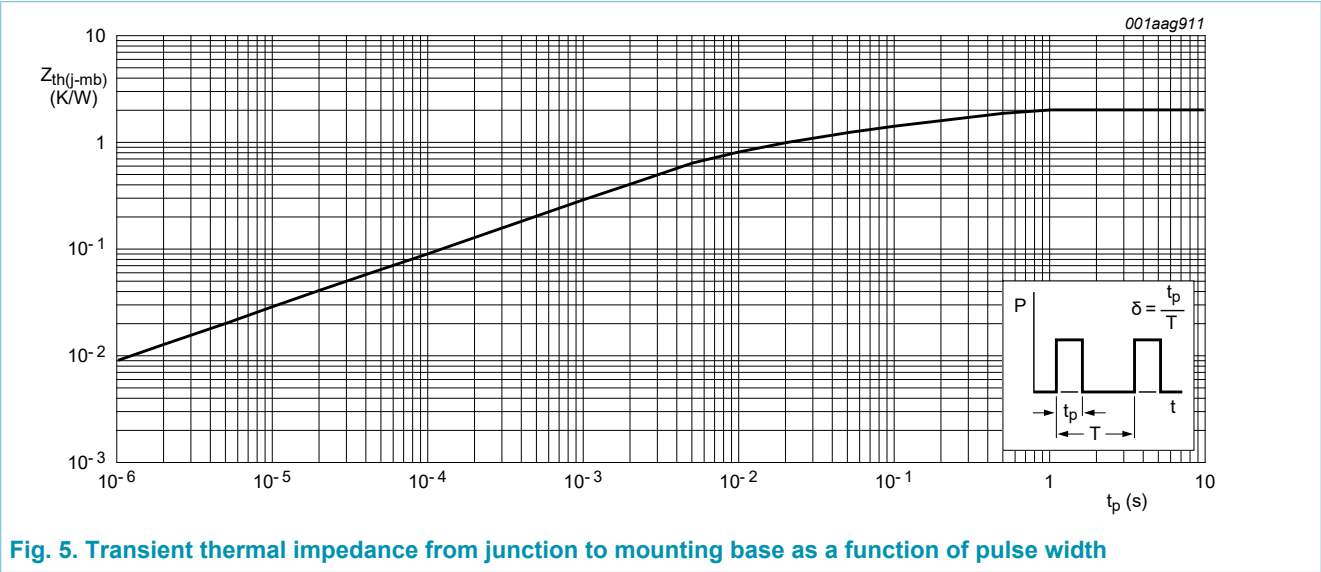


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

8. Thermal characteristics

Table 5. Thermal characteristics

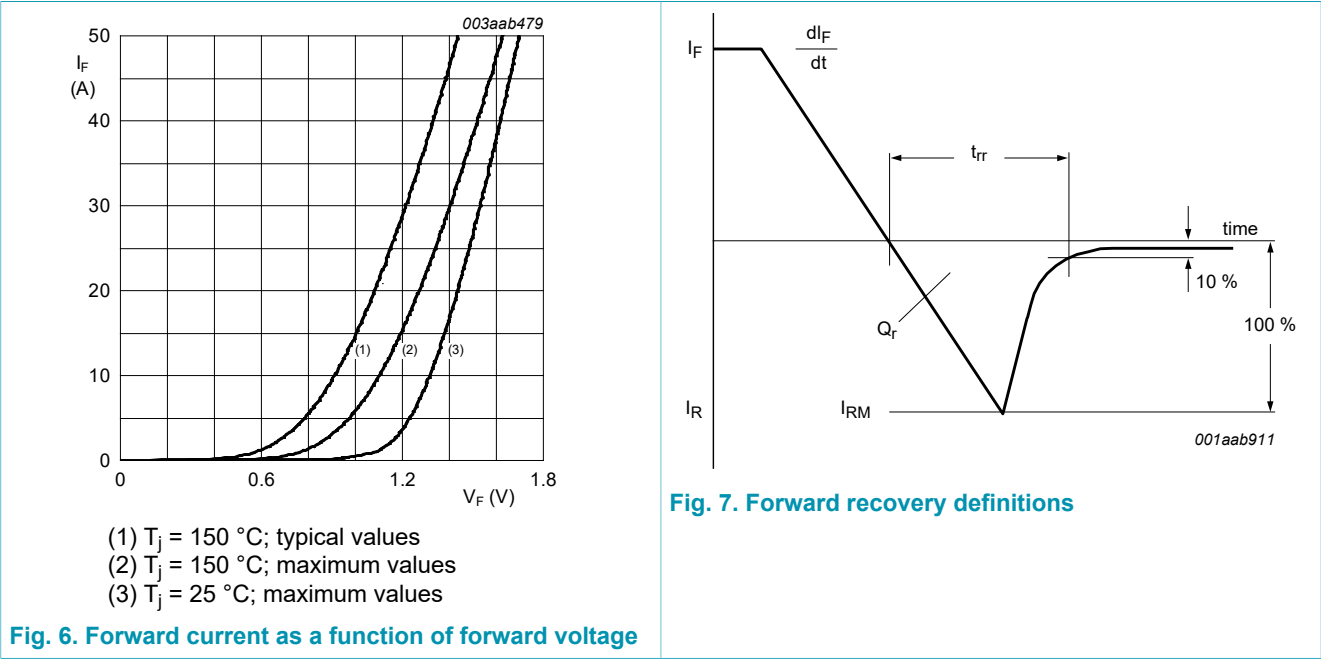
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	with heatsink compound; Fig. 5		-	-	2	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air			-	60	-	K/W



9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 15 A; T _j = 150 °C; Fig. 6		-	1	1.2	V
		I _F = 15 A; T _j = 25 °C; Fig. 6		-	1.17	1.38	V
I _R	reverse current	V _R = 600 V; T _j = 25 °C		-	5	50	μA
		V _R = 600 V; T _j = 100 °C		-	0.2	0.8	mA
Dynamic characteristics							
Q _r	recovered charge	I _F = 2 A; V _R = 30 V; dI _F /dt = 20 A/μs; Fig. 7		-	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; Fig. 7		-	50	60	ns
I _{RM}	peak reverse recovery current	I _F = 10 A; V _R = 30 V; dI _F /dt = 50 A/μs; T _j = 100 °C; Fig. 7		-	3	5.2	A
V _{FR}	forward recovery voltage	I _F = 10 A; dI _F /dt = 10 A/μs; Fig. 8		-	3.2	-	V



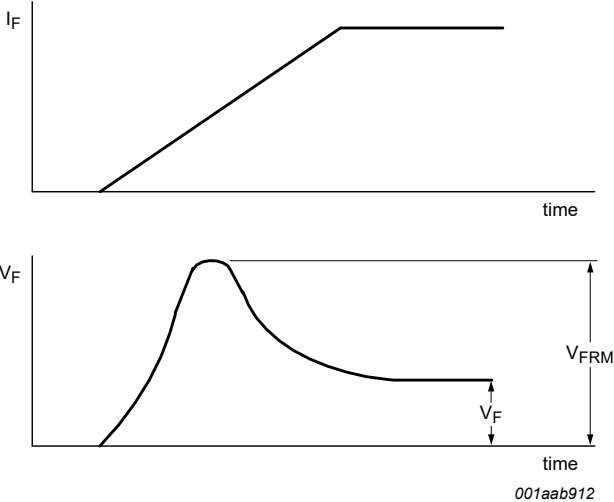


Fig. 8. Forward recovery definitions

10. Package outline

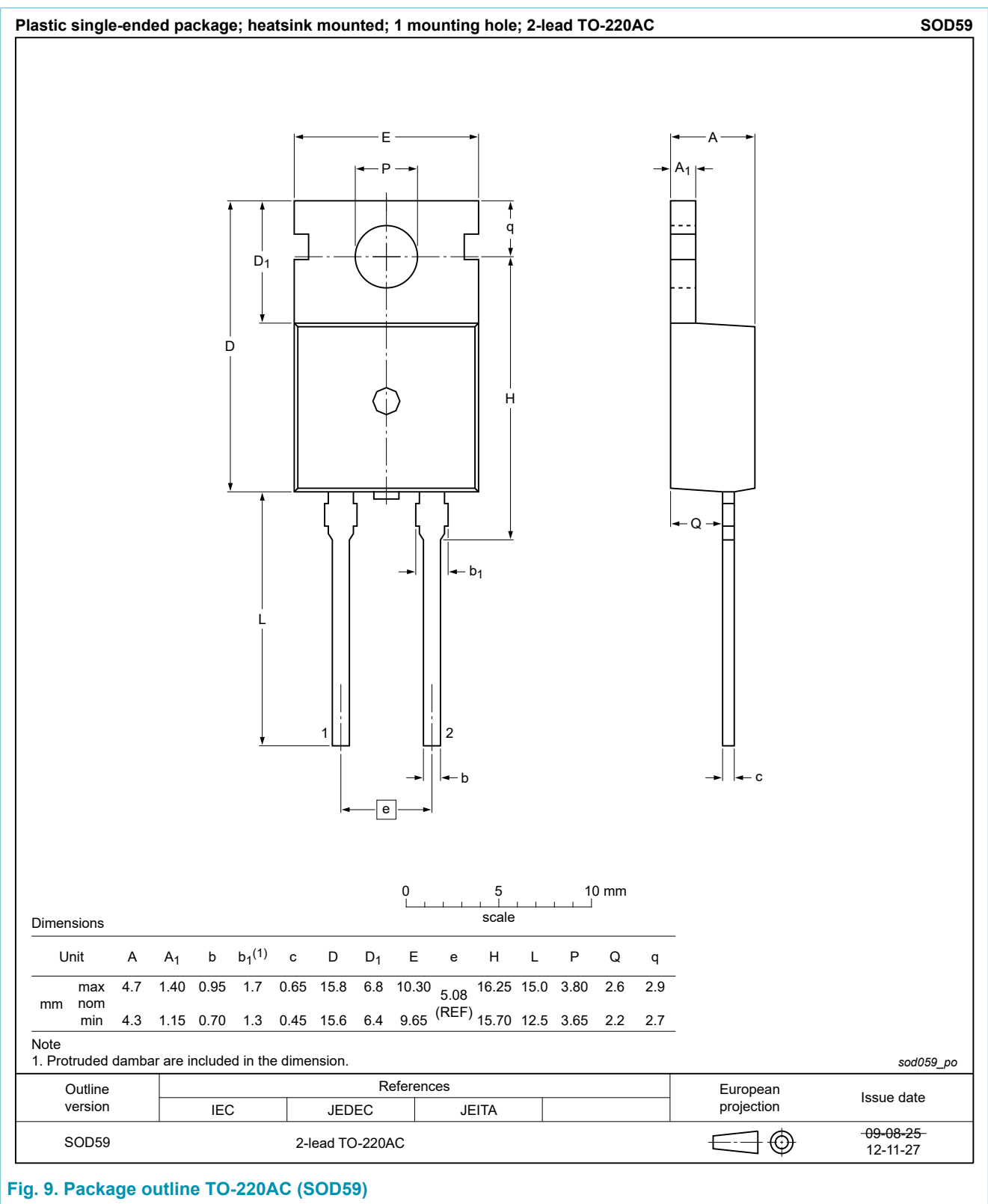


Fig. 9. Package outline TO-220AC (SOD59)

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.
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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