

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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Thank you for your cooperation and understanding,

WeEn Semiconductors



NUR460

Ultrafast power diode

Rev. 2 — 20 July 2011

Product data sheet

1. Product profile

1.1 General description

Ultrafast epitaxial power diode in a SOD141 (DO-201AD) axial lead plastic package.

1.2 Features and benefits

- Axial leaded plastic package
- Fast switching
- High voltage capability
- Low forward voltage drop
- Low thermal resistance
- Soft recovery characteristic

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 data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	-	600	V
$I_{F(AV)}$	average forward current	square-wave pulse; $\delta = 0.5$; see Figure 1 ; see Figure 2	-	-	4	A
Static characteristics						
V_F	forward voltage	$I_F = 4$ A; $T_j = 25$ °C; see Figure 4	-	-	1.28	V
Dynamic characteristics						
t_{rr}	reverse recovery time	$I_F = 1$ A; $V_R = 30$ V; $dI_F/dt = 50$ A/ μ s; $T_j = 25$ °C; Ramp Recovery; see Figure 5	-	33	65	ns
		$I_R = 1$ A; $I_F = 0.5$ A; $I_{R(meas)} = 0.25$ A; $T_j = 25$ °C; Step Recovery; see Figure 6	-	25	50	ns



2. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode		
2	A	anode		

SOD141 (DO-201AD)

3. Ordering information

Table 3. Ordering information

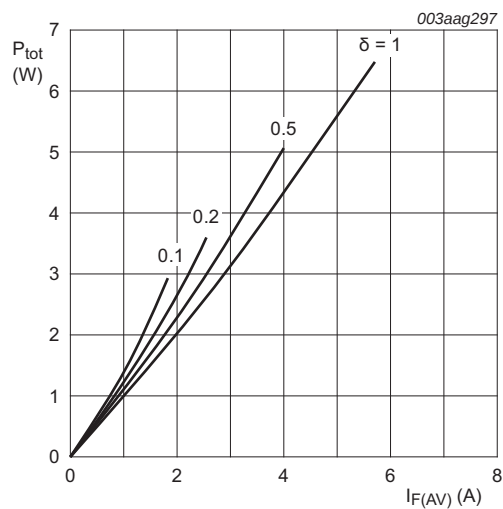
Type number	Package		
	Name	Description	Version
NUR460	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141

4. Limiting values

Table 4. Limiting values

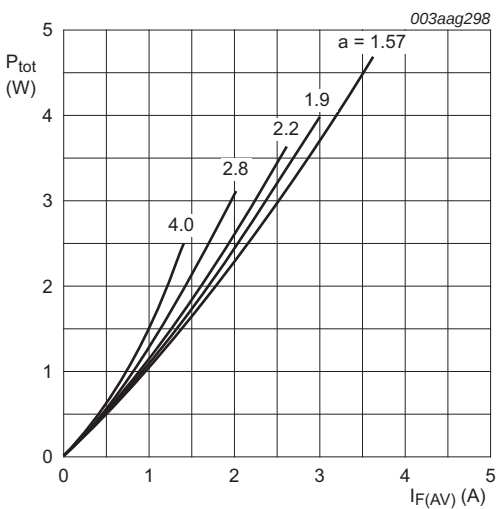
In accordance with the Absolute Maximum Rating System (IEC 60134).

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	DC	-	600	V
$I_{F(AV)}$	average forward current	square-wave pulse; $\delta = 0.5$; see Figure 1 ; see Figure 2	-	4	A
I_{FRM}	repetitive peak forward current	square-wave pulse; $\delta = 0.5$	-	8	A
I_{FSM}	non-repetitive peak forward current	$t_p = 8.3$ ms; sine-wave pulse; $T_{j(init)} = 25$ °C; see Figure 3	-	110	A
		$t_p = 10$ ms; sine-wave pulse; $T_{j(init)} = 25$ °C; see Figure 3	-	100	A
T_{stg}	storage temperature		-40	150	°C
T_j	junction temperature		-	150	°C



$$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$$
$$V_O = 0.968 \text{ V}; R_s = 0.036 \Omega$$

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



$$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$$
$$V_O = 0.968 \text{ V}; R_s = 0.036 \Omega$$

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

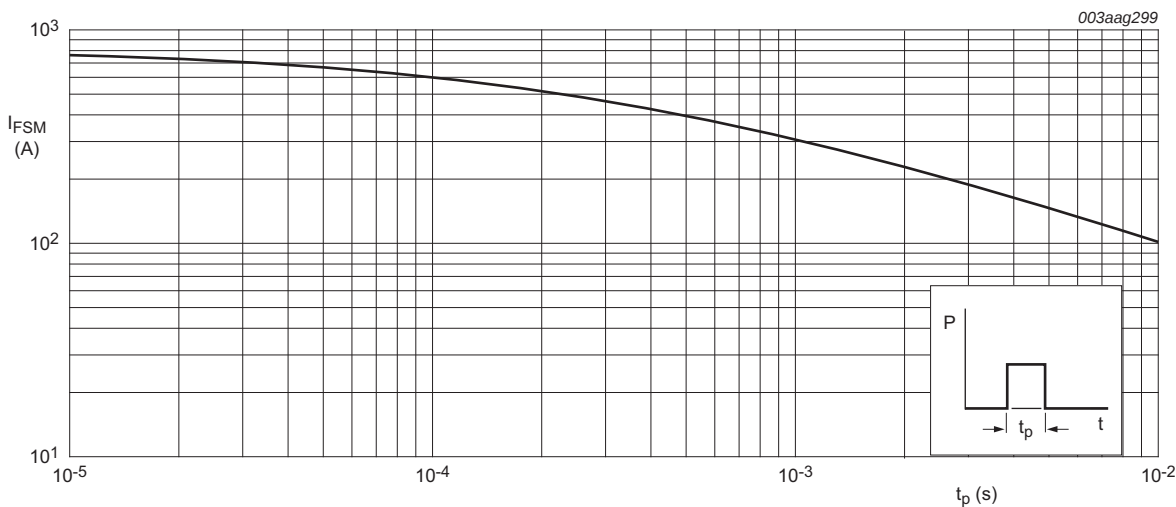


Fig 3. Non-repetitive peak forward current as a function of pulse width; square waveform; maximum values

5. Thermal characteristics

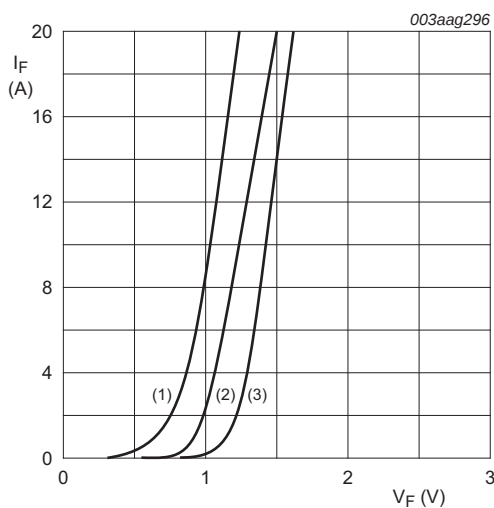
Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	-	55	-	K/W

6. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	$I_F = 4\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; see Figure 4	-	-	1.28	V
		$I_F = 4\text{ A}$; $T_j = 150\text{ }^\circ\text{C}$; see Figure 4	-	0.88	1.05	V
I_R	reverse current	$V_R = 600\text{ V}$; $T_j = 25\text{ }^\circ\text{C}$	-	-	50	μA
Dynamic characteristics						
t_{rr}	reverse recovery time	$I_F = 1\text{ A}$; $V_R = 30\text{ V}$; $dI_F/dt = 50\text{ A}/\mu\text{s}$; Ramp Recovery; $T_j = 25\text{ }^\circ\text{C}$; see Figure 5	-	33	65	ns
		$I_F = 0.5\text{ A}$; $I_R = 1\text{ A}$; Step Recovery; $I_{R(meas)} = 0.25\text{ A}$; $T_j = 25\text{ }^\circ\text{C}$; see Figure 6	-	25	50	ns



$V_o = 0.968\text{ V}$; $R_s = 0.036\Omega$;
 (1) $T_j = 150\text{ }^\circ\text{C}$; typical value;
 (2) $T_j = 150\text{ }^\circ\text{C}$; maximum value;
 (3) $T_j = 25\text{ }^\circ\text{C}$; maximum value

Fig 4. Forward current as a function of forward voltage

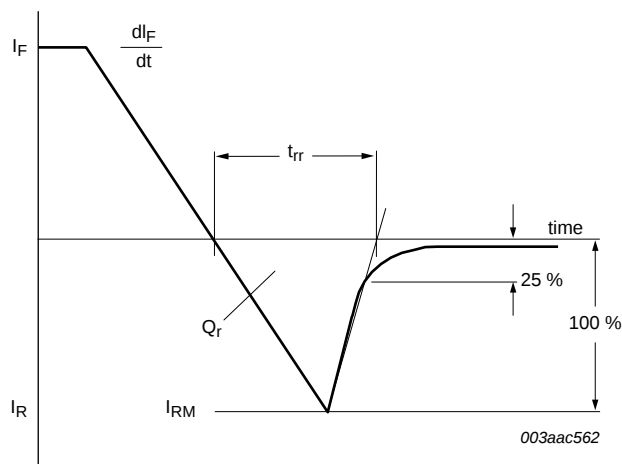


Fig 5. Reverse recovery definitions; ramp recovery

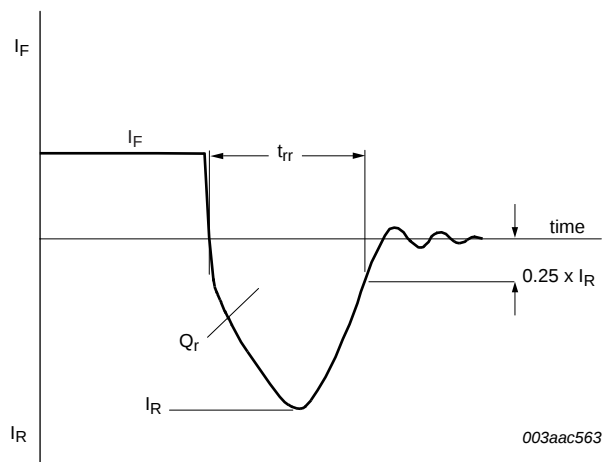


Fig 6. Reverse recovery definitions; step recovery

7. Package outline

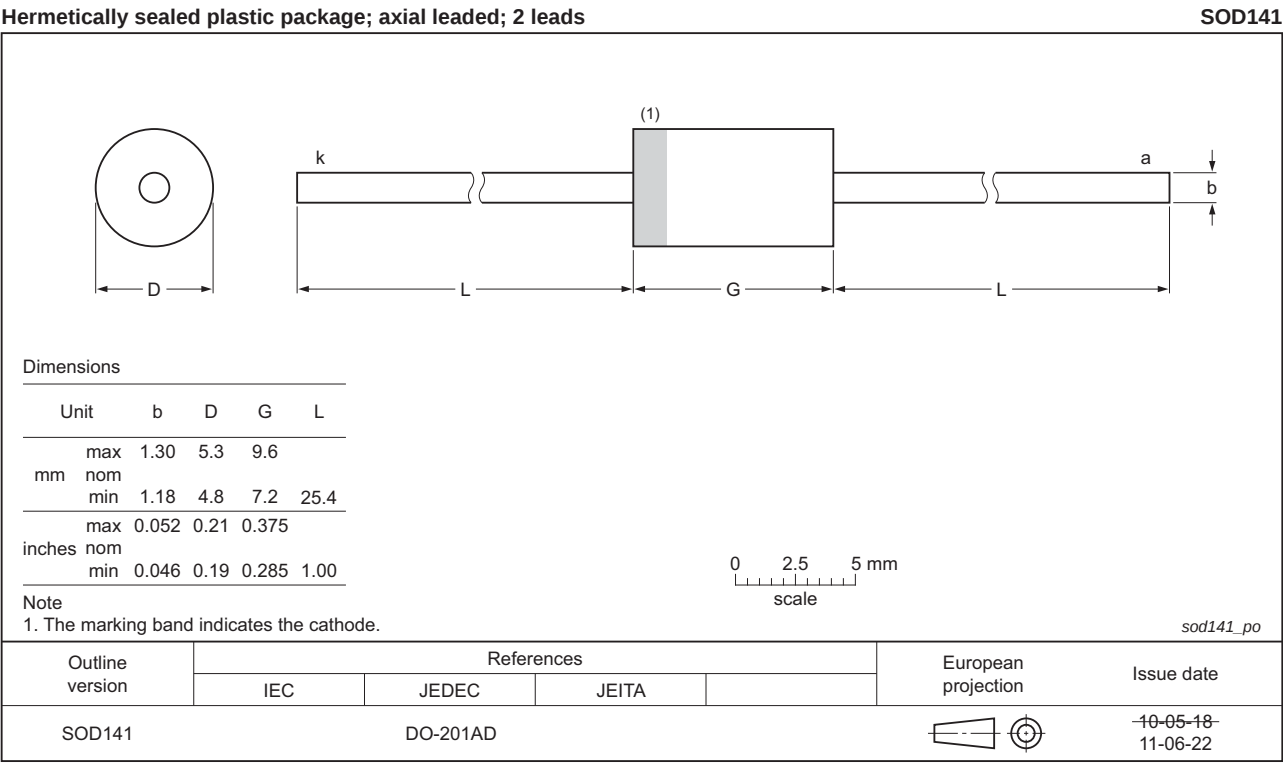


Fig 7. Package outline SOD141 (DO-201AD)

8. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NUR460 v.2	20110720	Product data sheet	-	NUR460 v.1
Modifications:	• Various changes to content.			
NUR460 v.1	20110704	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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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