



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





NUR460P

Ultrafast power diode

3 January 2014

Product data sheet

1. General description

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

2. Features and benefits

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

3. Applications

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

4. Quick reference data

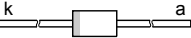
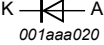
Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	-	600	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; Fig. 1 ; Fig. 2	-	-	4	A
Static characteristics						
V_F	forward voltage	$I_F = 3$ A; $T_j = 150$ °C; Fig. 4	-	0.82	1.05	V
Dynamic characteristics						
t_{rr}	reverse recovery time	$I_F = 1$ A; $V_R = 30$ V; $dI_F/dt = 100$ A/ μ s; $T_j = 25$ °C; Ramp Recovery; Fig. 5	-	35	-	ns
		$I_R = 1$ A; $I_F = 0.5$ A; $I_{R(meas)} = 0.25$ A; $T_j = 25$ °C; Step Recovery; Fig. 6	-	-	50	ns



5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 DO-201AD (SOD141)	 001aaa020
2	A	anode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
NUR460P	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L01	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L02	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L03	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L04	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L05	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L06	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141
NUR460P/L07	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141

7. Marking

Table 4. Marking codes

Type number	Marking code
NUR460P	NXPNU460P
NUR460P/L01	
NUR460P/L02	
NUR460P/L03	
NUR460P/L04	
NUR460P/L05	
NUR460P/L06	
NUR460P/L07	

8. Limiting values

Table 5. 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	$\delta = 0.5$; square-wave pulse; Fig. 1; Fig. 2	-	4	A
I_{FRM}	repetitive peak forward current	$\delta = 0.5$; $t_p = 25 \mu s$; square-wave pulse	-	8	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10 ms$; $T_{j(init)} = 25 \text{ }^\circ C$; sine-wave pulse; Fig. 3	-	100	A
		$t_p = 8.3 ms$; $T_{j(init)} = 25 \text{ }^\circ C$; sine-wave pulse; Fig. 3	-	110	A
T_{stg}	storage temperature		-65	175	$^\circ C$
T_j	junction temperature		-	175	$^\circ C$

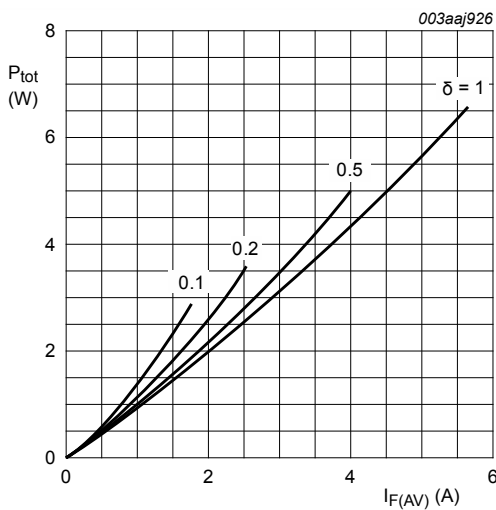


Fig. 1. Forward power dissipation as a function of average forward current; square waveform; maximum values

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

$$V_O = 0.947 \text{ V}; R_S = 0.037 \text{ } \Omega$$

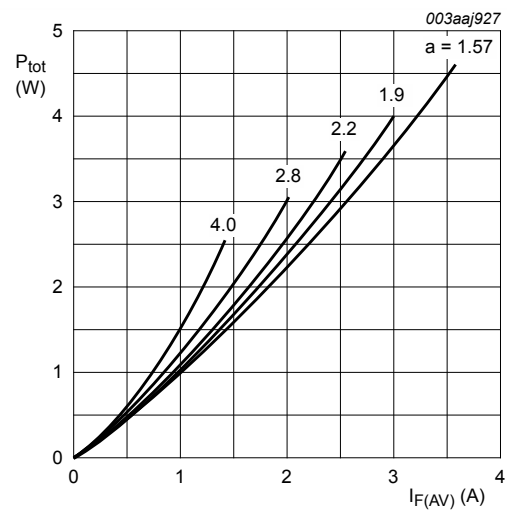


Fig. 2. Forward power dissipation as a function of average forward current; sinusoidal waveform; maximum values

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

$$V_O = 0.947 \text{ V}; R_S = 0.037 \text{ } \Omega$$

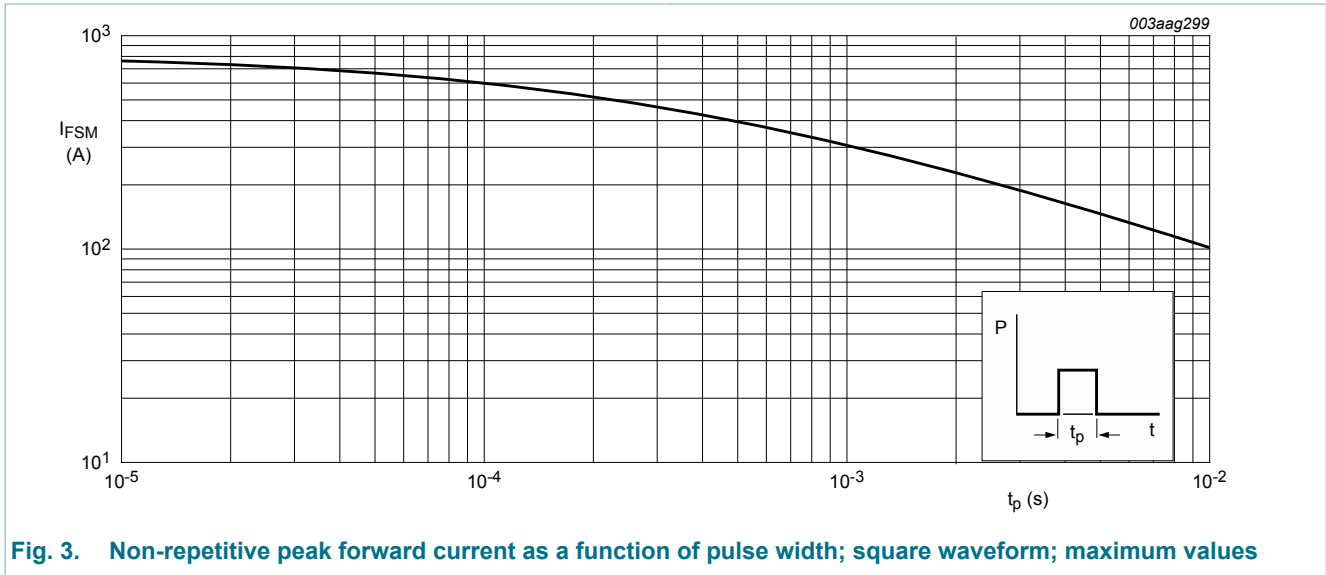


Fig. 3. Non-repetitive peak forward current as a function of pulse width; square waveform; maximum values

9. Thermal characteristics

Table 6. 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

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	$I_F = 3\text{ A}; T_j = 25\text{ °C};$ Fig. 4	-	-	1.25	V
		$I_F = 3\text{ A}; T_j = 150\text{ °C};$ Fig. 4	-	0.82	1.05	V
		$I_F = 4\text{ A}; T_j = 25\text{ °C};$ Fig. 4	-	-	1.28	V
I_R	reverse current	$V_R = 600\text{ V}; T_j = 25\text{ °C}$	-	-	10	μA
		$V_R = 600\text{ V}; T_j = 150\text{ °C}$	-	-	250	μA
Dynamic characteristics						
t_{rr}	reverse recovery time	$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 50\text{ A}/\mu\text{s}; T_j = 25\text{ °C};$ Ramp Recovery; Fig. 5	-	-	75	ns
		$I_F = 1\text{ A}; V_R = 30\text{ V}; dI_F/dt = 100\text{ A}/\mu\text{s}; T_j = 25\text{ °C};$ Ramp Recovery; Fig. 5	-	35	-	ns
		$I_F = 0.5\text{ A}; I_R = 1\text{ A}; I_{R(meas)} = 0.25\text{ A}; T_j = 25\text{ °C};$ Step Recovery; Fig. 6	-	-	50	ns

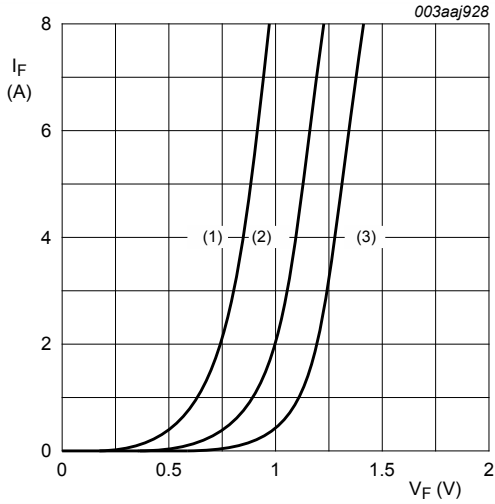


Fig. 4. Forward current as a function of forward voltage

- (1) $T_j = 150\text{ °C}$; typical values;
 - (2) $T_j = 150\text{ °C}$; maximum values;
 - (3) $T_j = 25\text{ °C}$; maximum values;
- $V_O = 0.947\text{ V}$; $R_S = 0.037\text{ }\Omega$

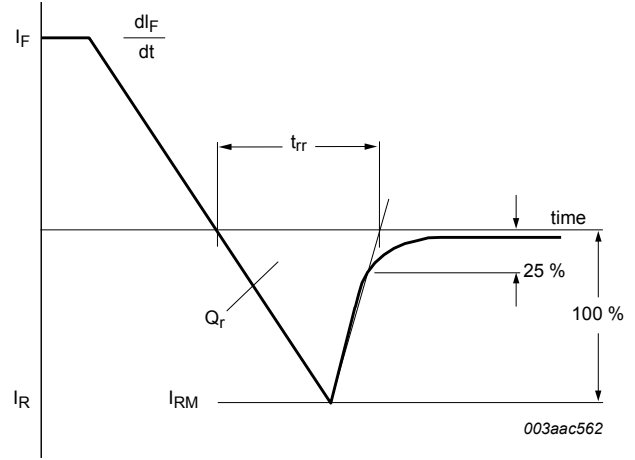


Fig. 5. Reverse recovery definitions; ramp recovery

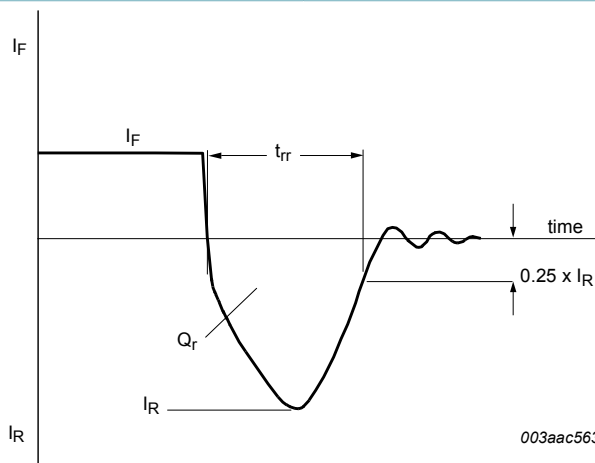


Fig. 6. Reverse recovery definitions; step recovery

11. Package outline

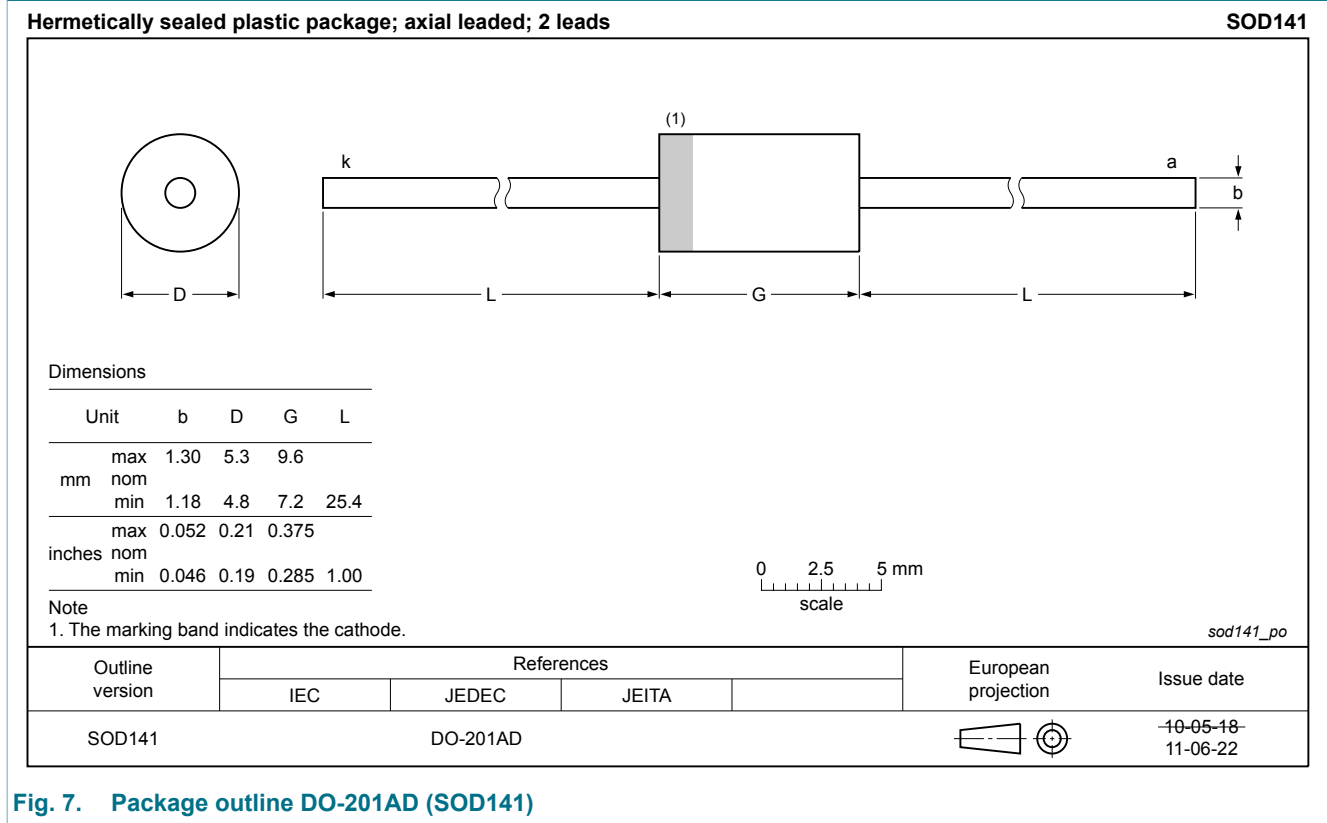


Fig. 7. Package outline DO-201AD (SOD141)

12. Legal information

12.1 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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