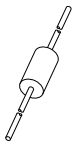


NUR460

Ultrafast power diode

Rev. 1 — 4 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

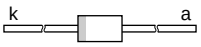
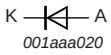
1.4 Quick reference data

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; δ = 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/µs; 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	 SOD141 (DO-201AD)	 001aaa020
2	A	anode		

3. Ordering information

Table 3. Ordering information

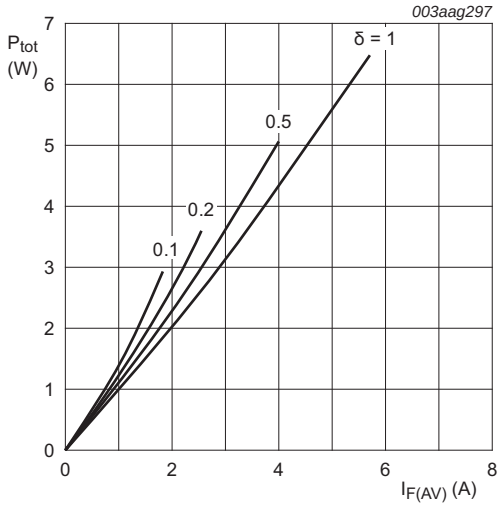
Type number	Package		
	Name	Description	Version
NUR460	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141

4. Limiting values

Table 4. Limiting values

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

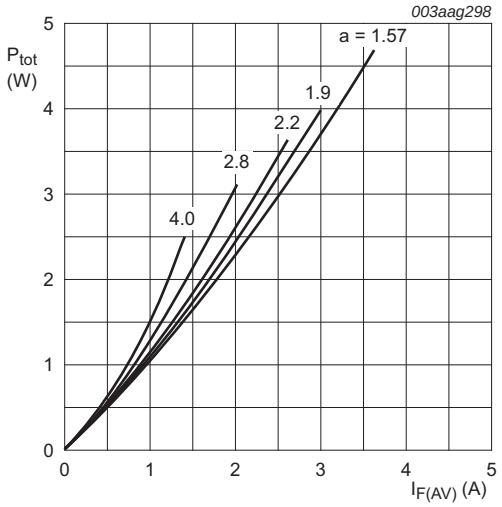
Symbol	Parameter	Conditions	Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	600	V
V_{RWM}	crest working reverse voltage		-	600	V
V_R	reverse voltage	DC	-	600	V
$I_{F(AV)}$	average forward current	square-wave pulse; δ = 0.5 ; see Figure 1; see Figure 2	-	4	A
I_{FRM}	repetitive peak forward current	square-wave pulse; δ = 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



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

$$V_O = 0.968\ V;\ R_s = 0.036\Omega$$

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



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

$$V_O = 0.968V;\ R_s = 0.036\Omega$$

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

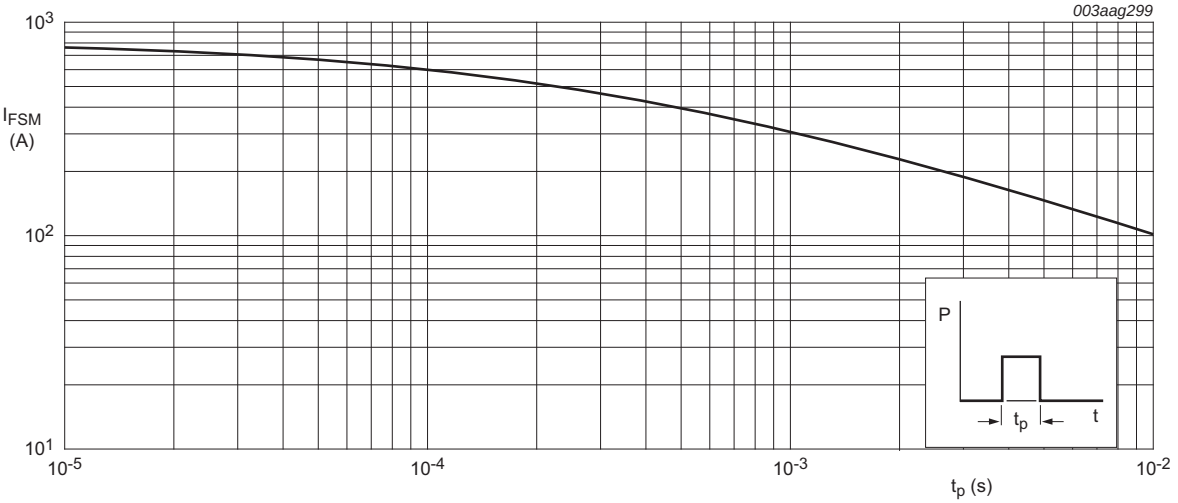


Fig 3. Non-repetitive peak forward current as a function of pulse width; square waveform; maximum values

5. Thermal characteristics

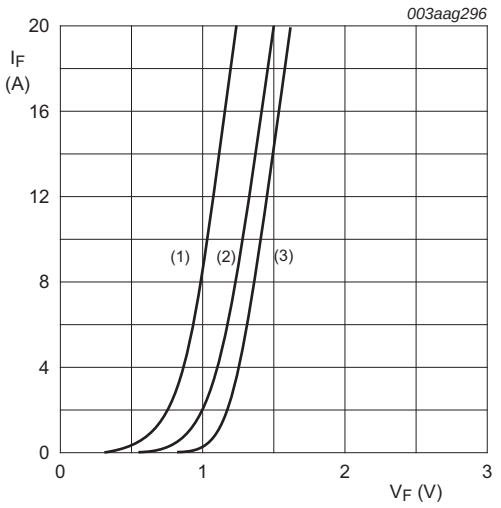
Table 5. Thermal characteristics

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 A; T_j = 25 °C; see Figure 4	-	-	1.28	V
		I_F = 4 A; T_j = 150 °C; see Figure 4	-	-	1.05	V
I_R	reverse current	V_R = 600 V; T_j = 25 °C	-	-	50	µA
Dynamic characteristics						
t_{rr}	reverse recovery time	I_F = 1 A; V_R = 30 V; dI_F/dt = 50 A/µs; Ramp Recovery; T_j 25 °C; see Figure 5	-	33	65	ns
		I_F = 0.5 A; I_R = 1 A; Step Recovery; $I_{R(meas)}$ = 0.25 A; T_j = 25 °C; see Figure 6	-	25	50	ns



$V_o = 0.968$ V; $R_s = 0.036\Omega$;
(1) $T_j = 150$ °C; typical value;
(2) $T_j = 150$ °C; maximum value;
(3) $T_j = 25$ °C; maximum value

Fig 4. Forward current as a function of forward voltage

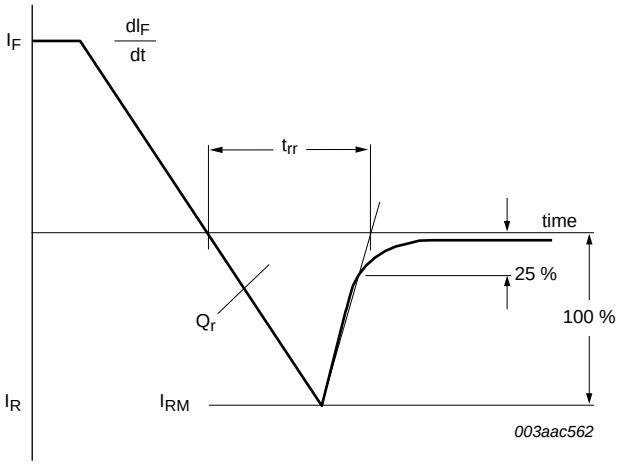


Fig 5. Reverse recovery definitions; ramp recovery

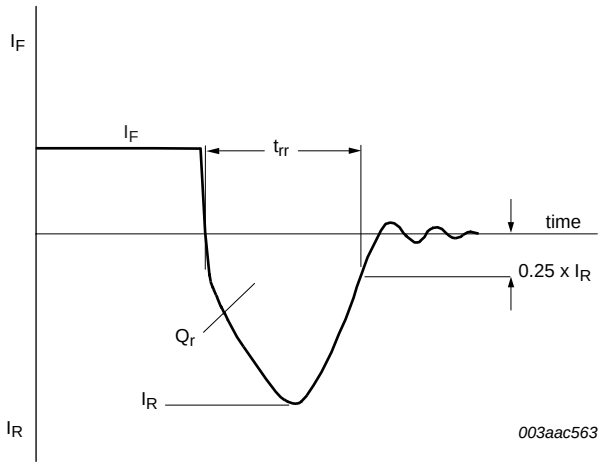
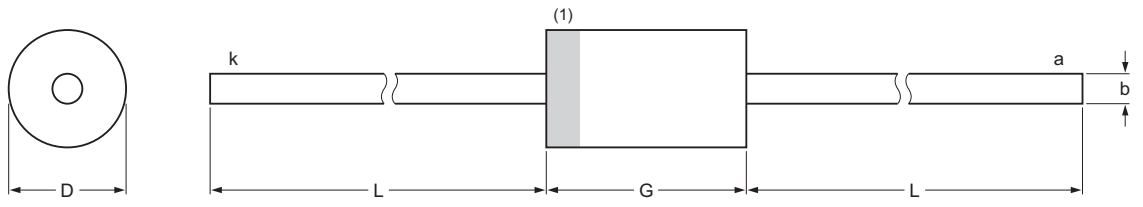


Fig 6. Reverse recovery definitions; step recovery

7. Package outline

Hermetically sealed plastic package; axial leaded; 2 leads **SOD141**



Dimensions

Unit		b	D	G	L
mm	max	1.30	5.3	9.6	
	nom				
	min	1.18	4.8	7.2	25.4
inches	max	0.052	0.21	0.375	
	nom				
	min	0.046	0.19	0.285	1.00

0 2.5 5 mm
scale

Note
1. The marking band indicates the cathode.

sod141_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD141		DO-201AD				~~10-05-18~~ 11-06-22

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.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".

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11. Contents

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