NUR460

Ultrafast power diode

Rev. 00 — 9 June 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

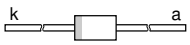
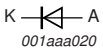
- Fast switching
- Soft recovery characteristic
- Low thermal resistance
- Low forward voltage drop

1.3 Applications

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

2. Pinning information

Table 1. Pinning

Pin	Description	Simplified outline	Symbol
K	cathode	 SOD141 (DO-201AD)	
A	anode		

3. Ordering information

Table 2. Ordering information

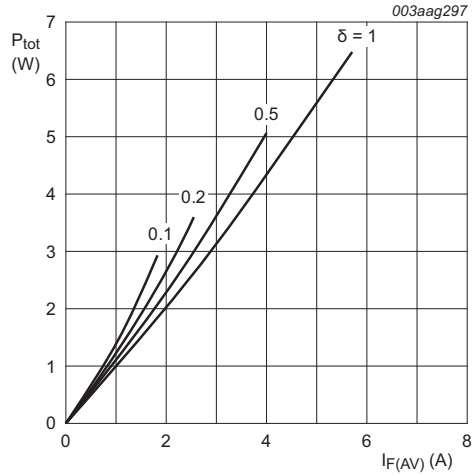
Type number	Package		
	Name	Description	Version
NUR460	DO-201AD	Hermetically sealed plastic package; axial leaded; 2 leads	SOD141

4. Limiting values

Table 3. Limiting values

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

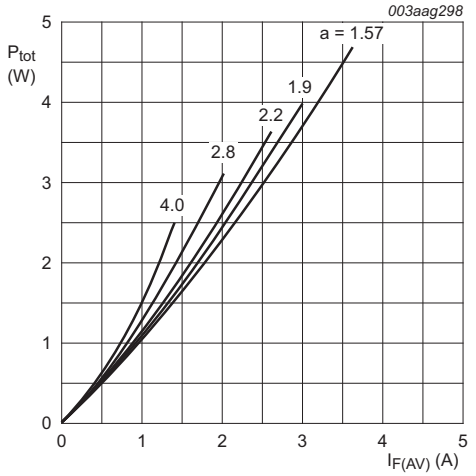
Symbol	Parameter	Conditions	Min	Max	Unit
V_{RRM}	repetitive peak reverse voltage		-	600	V
V_{RWM}	crest working reverse voltage		-	600	V
V_R	reverse voltage	DC	-	600	V
$I_{F(AV)}$	average forward current	square waveform; δ = 0.5; See Figure 1; See Figure 2	-	4	A
I_{FRM}	repetitive peak forward current	square waveform; δ = 0.5	-	8	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; sinusoidal waveform; See Figure 3	-	100	A
		t_p = 8.3 ms; sinusoidal waveform; See Figure 3	-	110	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=0.96775V; R_s=0.0358Ω

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=0.96775V; R_s=0.0358Ω

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

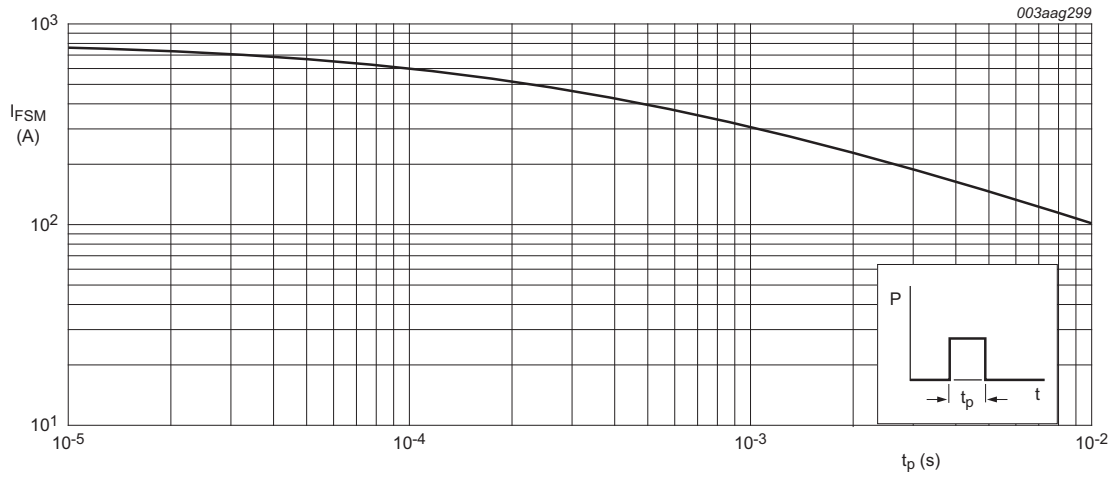


Fig 3. Non-repetitive peak forward current as a function of pulse width; square waveform; maximum values

5. Thermal characteristics

Table 4. Thermal characteristics

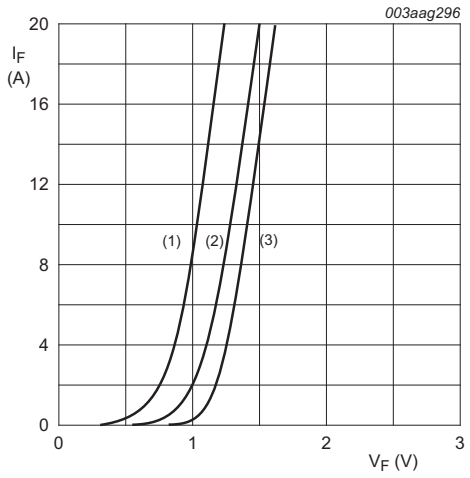
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	-	55	-	K/W

6. Characteristics

Table 5. Characteristics

T_j = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	I_F = 4 A; T_j = 150 °C; See Figure 4	-	-	1.05	V
		I_F = 4 A; See Figure 4	-	-	1.28	V
I_R	reverse current	V_R = 600 V	-	2	50	µA
		V_R = 600 V; T_j = 100 °C	-	0.1	0.35	mA
Dynamic characteristics						
Q_r	recovered charge	I_F = 2 A to $V_R \geq$ 30 V; dI_F/dt = 20 A/µs; See Figure 5	-	40	70	nC
t_{rr}	reverse recovery time	I_F = 1 A to $V_R \geq$ 30 V; dI_F/dt = 100 A/µs; See Figure 5	-	50	60	ns
I_{RM}	peak reverse recovery current	I_F = 10 A to $V_R \geq$ 30 V; dI_F/dt = 50 A/µs; T_j = 100 °C; See Figure 5	-	3	5.5	A
V_{FRM}	forward recovery voltage	I_F = 10 A; dI_F/dt = 10 A/µs; See Figure 6	-	3.2	-	V



(1) T_j = 150 °C; typical values;

(2) T_j = 150 °C; maxium values;

(3) T_j = 25°C; maxium values;
V_o=0.96775V ; R_s=0.0358Ω

Fig 4. Forward current as a function of forward voltage

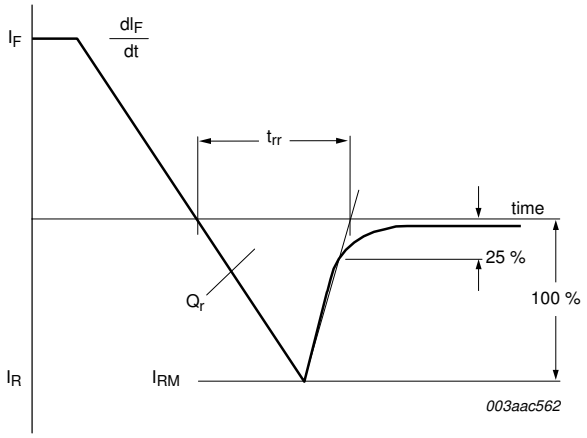


Fig 5. Reverse recovery definitions; ramp recovery

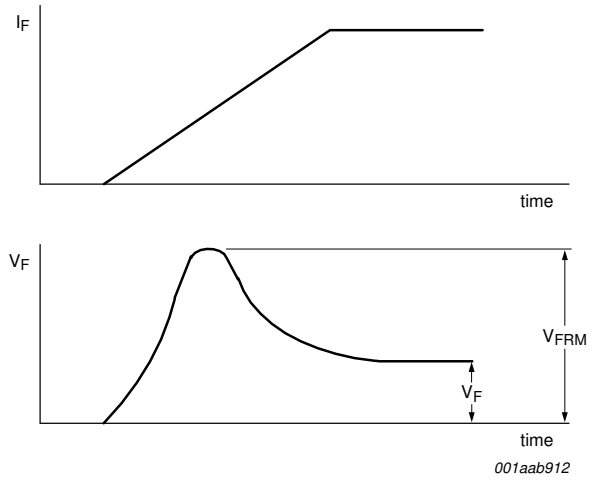
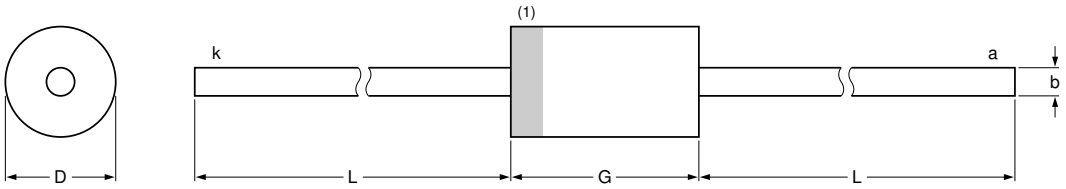


Fig 6. Forward recovery definitions

7. Package outline

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						~~10-05-17~~ 10-05-18

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

8. Revision history

Table 6. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
NUR460	20110608	Product data sheet	-	-

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Document status[1][2]	Product status[3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
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