

1. General description

Standard power diode in a TO220F-2L plastic package

2. Features and benefits

- Low forward voltage drop
- High voltage capability
- High inrush current capability
- High operating temperature capability ($T_{j(max)} = 150^{\circ}\text{C}$)

3. Applications

- Power supplies
- Rectifiers for DC motor field supplies
- Bypass diode

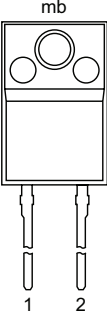
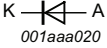
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit
Absolute maximum rating						
V_{RRM}	repetitive peak reverse voltage		600			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_h \leq 111^{\circ}\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3	10			A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(init)} = 25^{\circ}\text{C}$; sine-wave pulse; Fig. 4	350			A
		$t_p = 8.3\text{ ms}$; $T_{j(init)} = 25^{\circ}\text{C}$; sine-wave pulse	385			A
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward voltage	$I_F = 10\text{ A}$; $T_j = 25^{\circ}\text{C}$; Fig. 6	-	0.95	0.98	V
		$I_F = 10\text{ A}$; $T_j = 150^{\circ}\text{C}$; Fig. 6	-	0.82	0.85	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode		
2	A	anode		
mb	n.c.	mounting base; isolated		

6. Ordering information

Table 3. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WND10M600X	TO220F-2L	WND10M600XQ	Tube	50	SOD113A	10-April-2014

7. Marking

Table 4. Marking codes

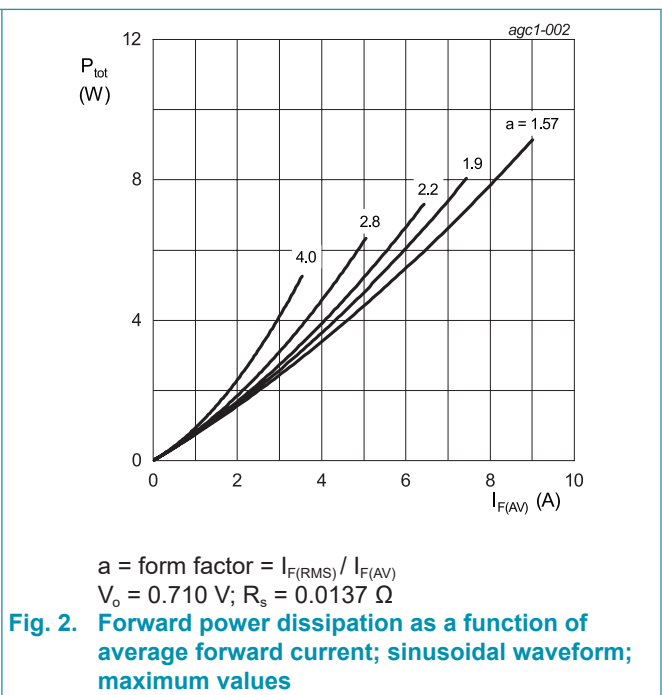
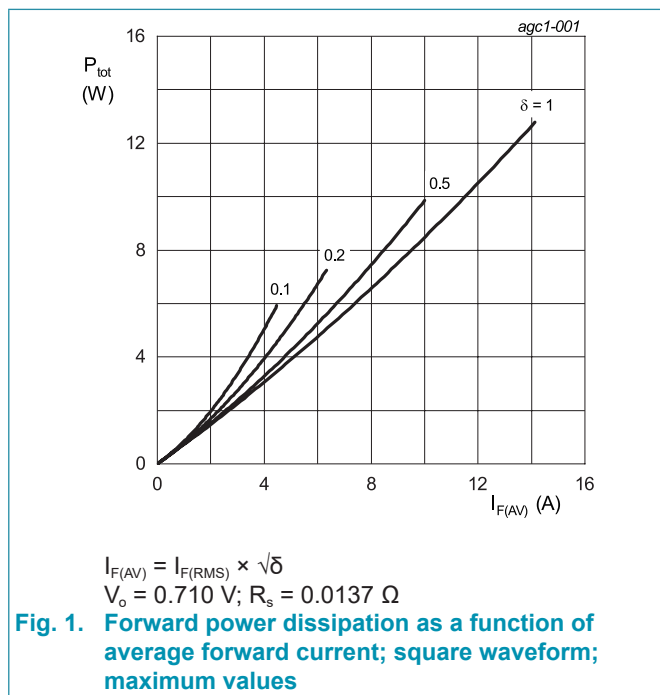
Type number	Marking codes
WND10M600X	WND10M600X

8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions	Values	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; $T_n \leq 111\text{ }^\circ\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3	10	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse; Fig. 4	350	A
		$t_p = 8.3\text{ ms}$; $T_{j(\text{init})} = 25\text{ }^\circ\text{C}$; sine-wave pulse	385	A
T_{stg}	storage temperature		-55 to 150	$^\circ\text{C}$
T_j	junction temperature		150	$^\circ\text{C}$



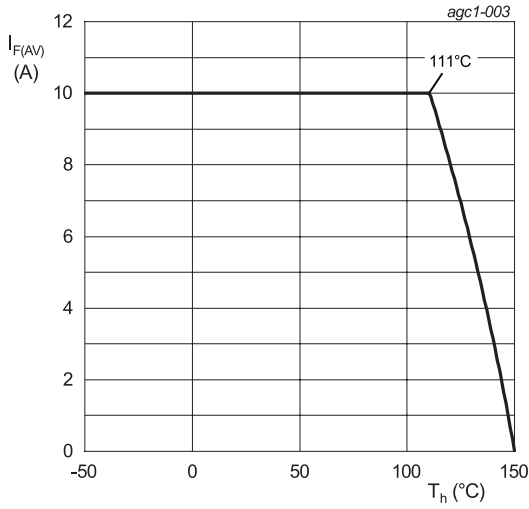


Fig. 3. Forward current as a function of heatsink temperature; maximum values

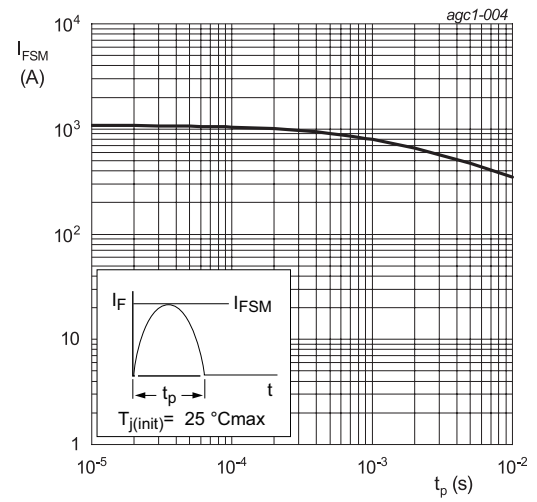


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{th(j-h)}$	thermal resistance from junction to heatsink	Fig. 5	-	-	4	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	60	-	K/W

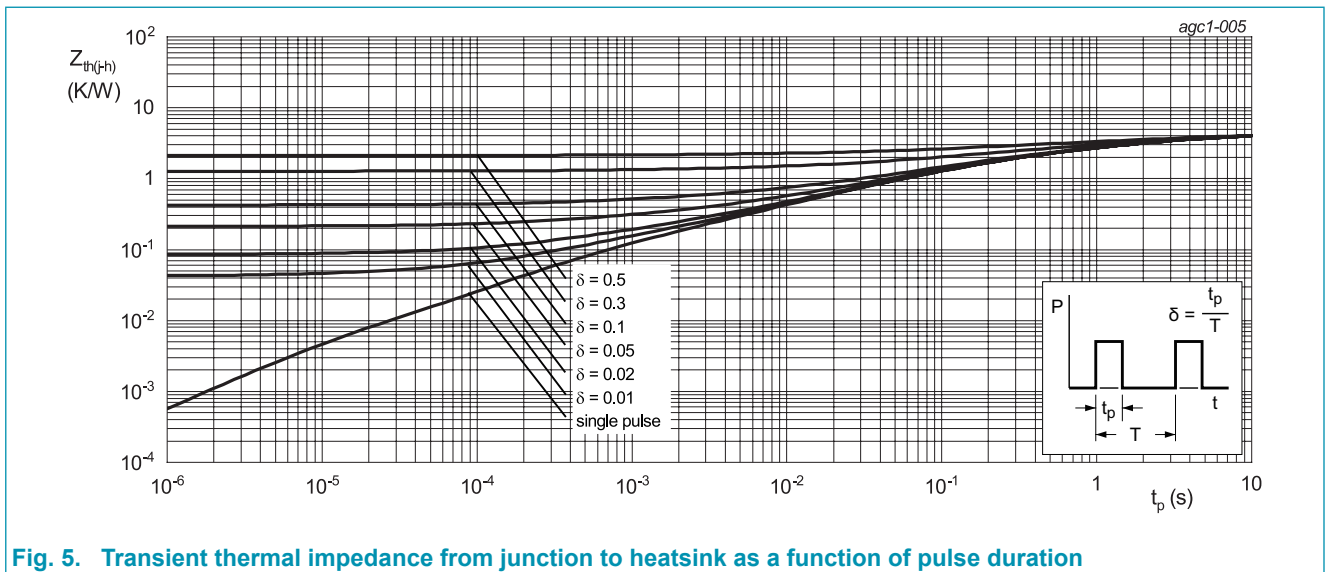
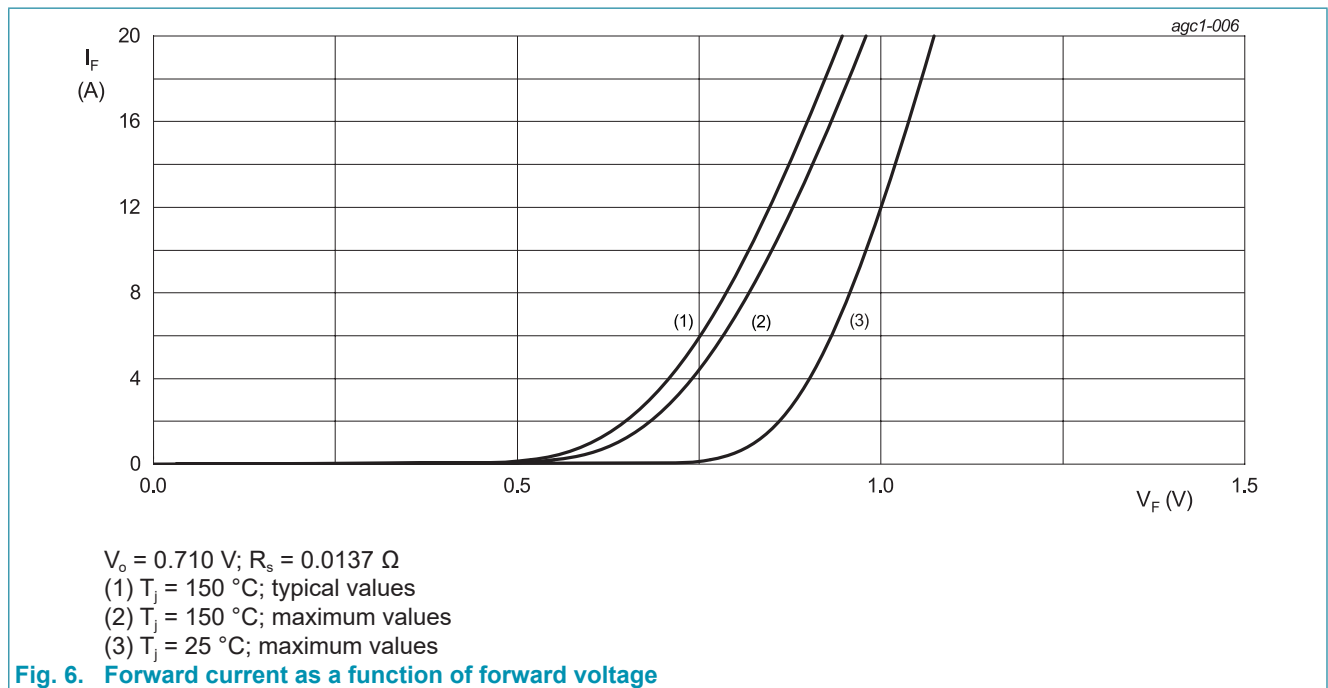


Fig. 5. Transient thermal impedance from junction to heatsink as a function of pulse duration

10. Characteristics

Table 7. Characteristics

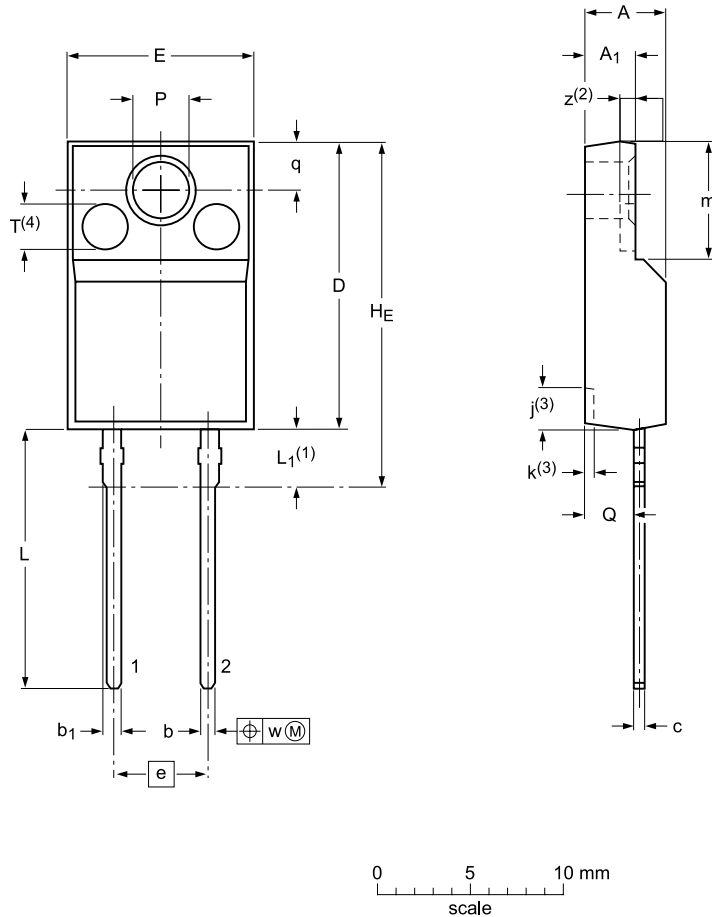
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V_F	forward current	$I_F = 10\text{ A}; T_j = 25\text{ °C}; \text{Fig. 6}$	-	0.95	0.98	V
		$I_F = 10\text{ A}; T_j = 150\text{ °C}; \text{Fig. 6}$	-	0.82	0.85	V
I_R	reverse current	$V_R = 600\text{ V}; T_j = 25\text{ °C}$	-	-	10	μA
		$V_R = 600\text{ V}; T_j = 150\text{ °C}$	-	-	300	μA



11. Package outline

Plastic single-ended package; isolated heatsink mounted;
1 mounting hole; 2-lead TO-220F 'full pack'

SOD113A



Dimensions (mm are the original dimensions)

Unit	A	A ₁	b	b ₁	c	D	E	e	H _E max	j ⁽³⁾	k ⁽³⁾	L	L ₁ ⁽¹⁾	m	P	Q	q	T ⁽⁴⁾	W	z ⁽²⁾	
mm	max	4.6	3.1	0.9	1.1	0.7	15.8	10.3		2.7	0.8	14.4	3.3	6.5	3.2	2.8		2.6	2.55	0.4	0.8
	nom							5.08	19.0												
	min	4.0	2.5	0.7	0.9	0.4	15.2	9.7		1.7	0.4	13.5	2.8	6.3	3.0	2.3					

Note

- 1. Terminals are uncontrolled within zone L1.
- 2. z is depth of T.
- 3. Dot lines area designs may vary.
- 4. Eject pin mark is for reference only.

sod113a_po

Outline version	References			European projection	Issue date
	IEC	JEDEC	JEITA		
SOD113A	2 LEADS TO220F				14-01-14 14-04-10

12. 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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