

## 1. General description

Standard reverse recovery power diode in a TO220F package.



## 2. Features and benefits

- Low forward voltage drop
- Low leakage current
- High voltage capability
- High inrush current capability

## 3. Applications

- Input rectifier
- Bypass diode

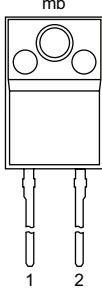
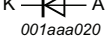
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values			Unit
<b>Absolute maximum rating</b>						
$V_{RRM}$	repetitive peak reverse voltage		800			V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a>	35			A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse; <a href="#">Fig. 3</a>	400			A
		$t_p = 8.3$ ms; $T_{j(init)} = 25$ °C; sine-wave pulse	435			A
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward voltage	$I_F = 20$ A; $T_j = 25$ °C; <a href="#">Fig. 5</a>	-	1.05	1.25	V
		$I_F = 20$ A; $T_j = 150$ °C; <a href="#">Fig. 5</a>	-	1.00	1.20	V
		$I_F = 35$ A; $T_j = 25$ °C; <a href="#">Fig. 5</a>	-	1.18	1.40	V
		$I_F = 35$ A; $T_j = 150$ °C; <a href="#">Fig. 5</a>	-	1.15	1.35	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
WND35P08X	TO220F-2L	WND35P08XQ	Tube	50	SOD113A	10-April-2014

## 7. Marking

Table 4. Marking codes

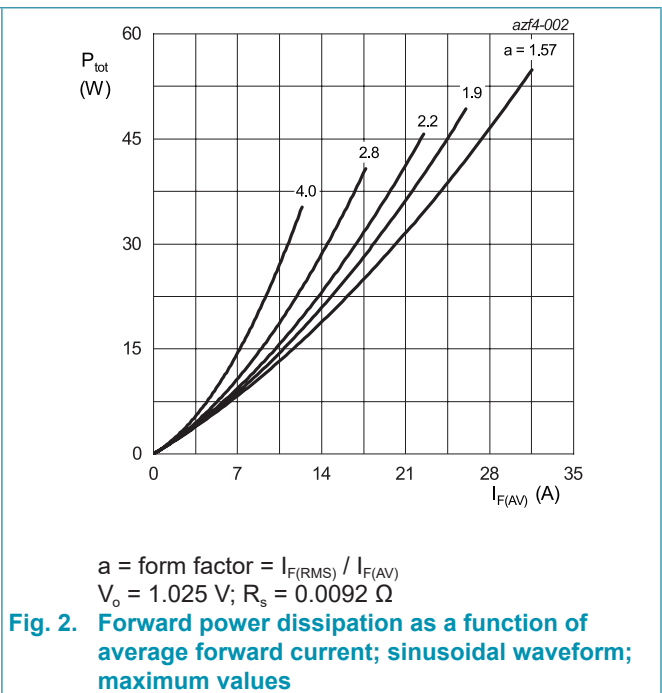
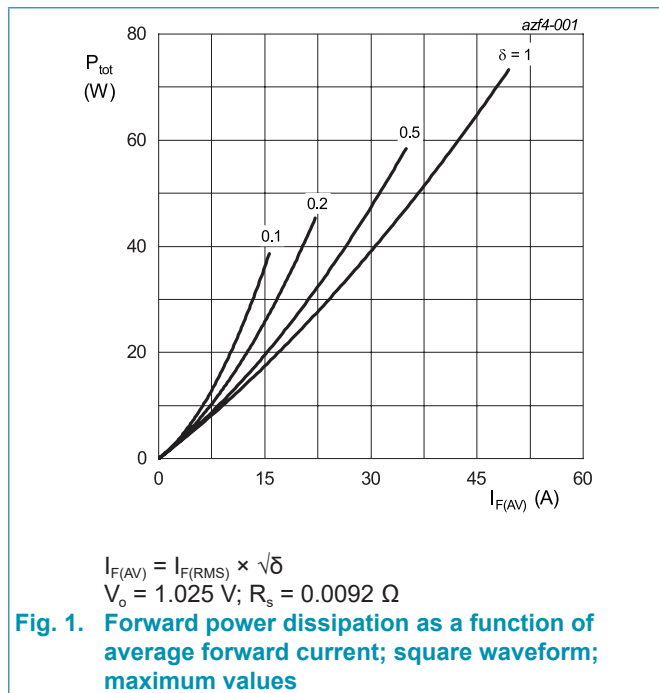
Type number	Marking codes
WND35P08X	WND35P08X

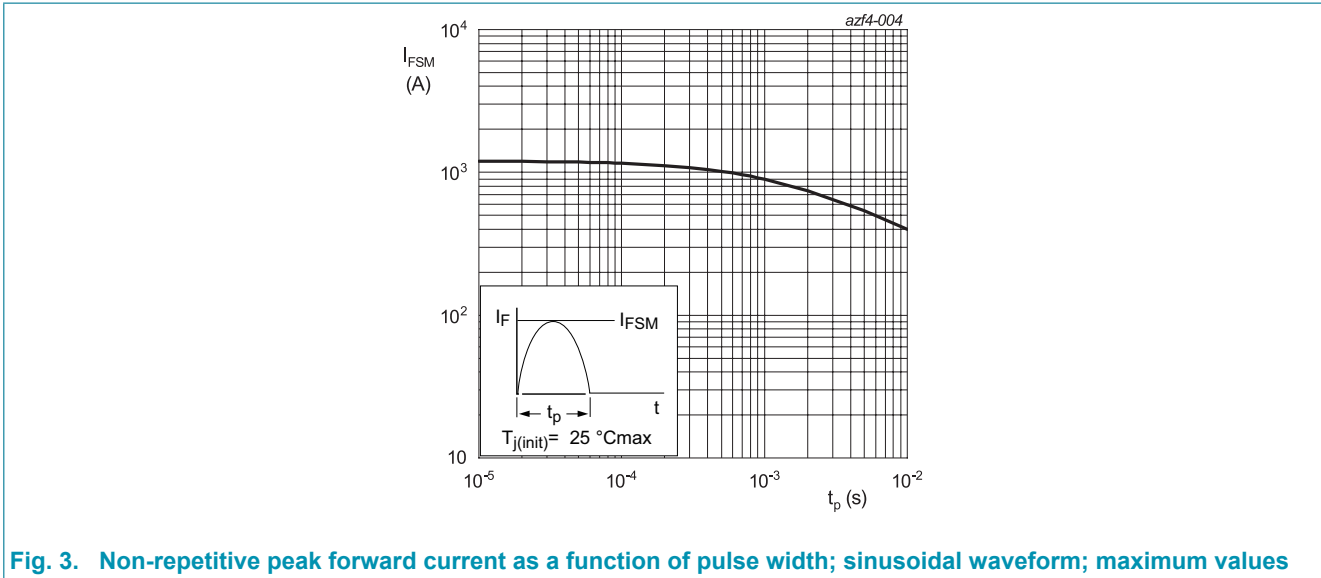
## 8. Limiting values

**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		800	V
$V_{RWM}$	crest working reverse voltage		800	V
$V_R$	reverse voltage	DC	800	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$ ; square-wave pulse; <a href="#">Fig. 1</a> ; <a href="#">Fig. 2</a>	35	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 10$ ms; $T_{j(\text{init})} = 25$ °C; sine-wave pulse; <a href="#">Fig. 3</a>	400	A
		$t_p = 8.3$ ms; $T_{j(\text{init})} = 25$ °C; sine-wave pulse	435	A
$I^2t$	$I^2t$ for fusing	sine-wave pulse; $T_{j(\text{init})} = 25$ °C; $t_p = 10$ ms	800	A <sup>2</sup> s
$T_{stg}$	storage temperature		-40 to 150	°C
$T_j$	junction temperature		-40 to 150	°C





**Fig. 3. 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	<a href="#">Fig. 4</a>	-	-	3.2	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	60	-	K/W

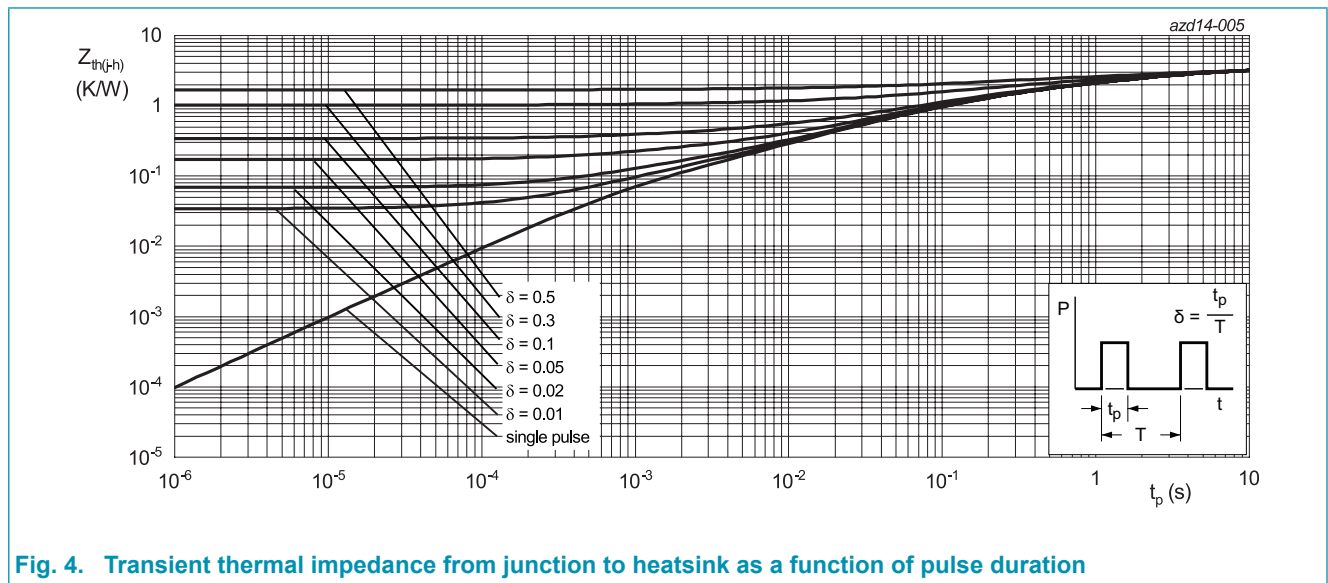


Fig. 4. Transient thermal impedance from junction to heatsink as a function of pulse duration

## 10. Isolation characteristics

Table 7. Isolation characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{isol(RMS)}$	RMS isolation voltage	50 Hz $\leq$ f $\leq$ 60 Hz; RH $\leq$ 65 %; from all pins to external heatsink; sinusoidal waveform; clean and dust free	-	-	2500	V
$C_{isol}$	isolation capacitance	from cathode to external heatsink	-	10	-	PF

## 11. Characteristics

Table 8. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static characteristics</b>						
$V_F$	forward current	$I_F = 20 \text{ A}; T_j = 25 \text{ }^\circ\text{C}; \text{ Fig. 5}$	-	1.05	1.25	V
		$I_F = 20 \text{ A}; T_j = 150 \text{ }^\circ\text{C}; \text{ Fig. 5}$	-	1.00	1.20	V
		$I_F = 35 \text{ A}; T_j = 25 \text{ }^\circ\text{C}; \text{ Fig. 5}$	-	1.18	1.40	V
		$I_F = 35 \text{ A}; T_j = 150 \text{ }^\circ\text{C}; \text{ Fig. 5}$	-	1.15	1.35	V
$I_R$	reverse current	$V_R = 1600 \text{ V}; T_j = 25 \text{ }^\circ\text{C}$	-	-	50	$\mu\text{A}$
		$V_R = 1600 \text{ V}; T_j = 150 \text{ }^\circ\text{C}$	-	-	1	mA

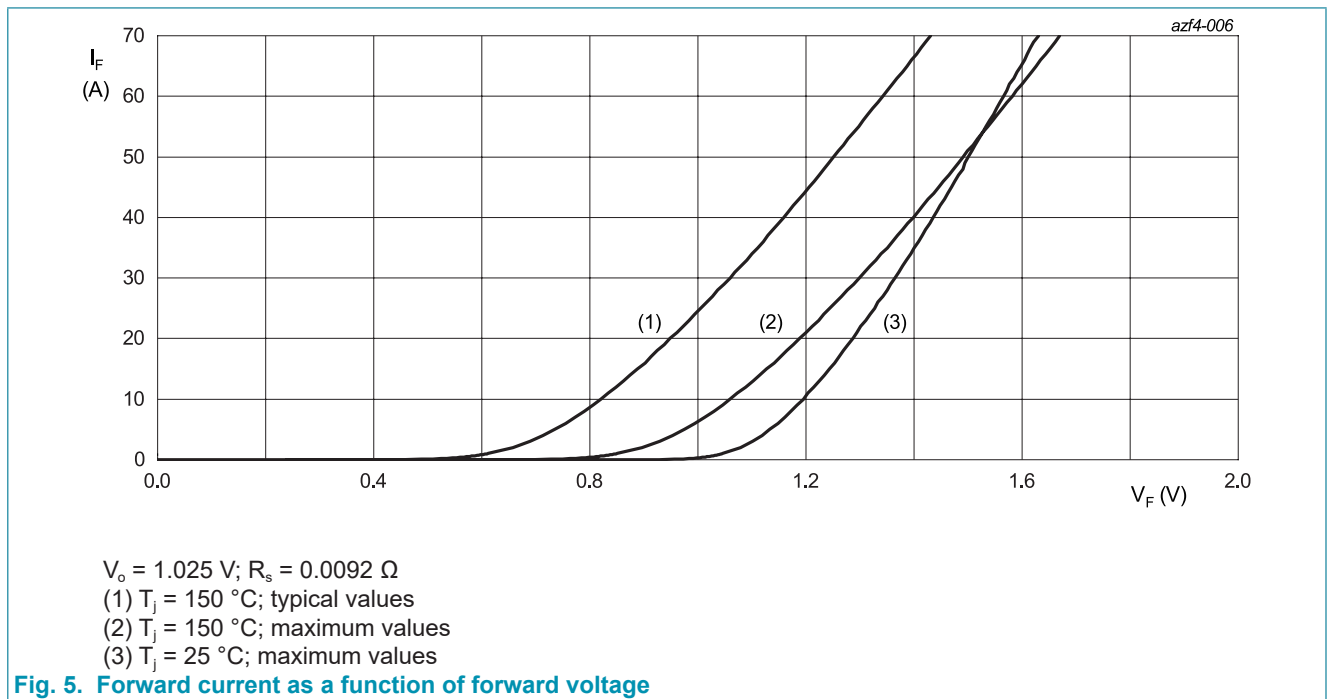
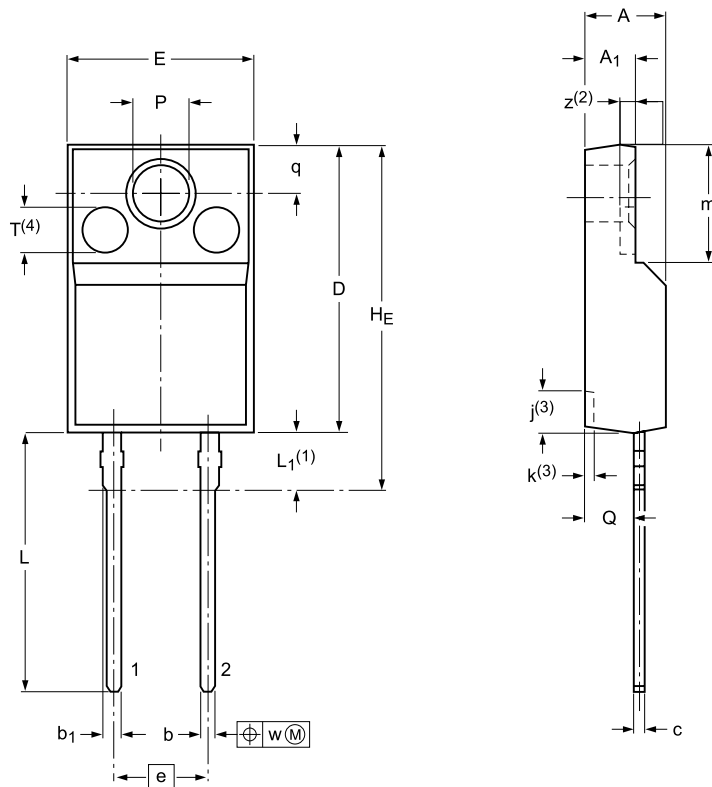


Fig. 5. Forward current as a function of forward voltage

## 12. 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 <sub>1</sub>	b	b <sub>1</sub>	c	D	E	e	H <sub>E</sub> max	j <sup>(3)</sup>	k <sup>(3)</sup>	L	L <sub>1</sub> <sup>(1)</sup>	m	P	Q	q	T <sup>(4)</sup>	W	z <sup>(2)</sup>	
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

## 13. 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.
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