

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

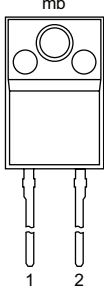
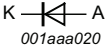
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V _{RRM}	repetitive peak reverse voltage		800				V
I _{F(AV)}	average forward current	δ = 0.5 ; square-wave pulse; Fig. 1 ; Fig. 2	35				A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; Fig. 3	400				A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse	435				A
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 20 A; T _j = 25 °C; Fig. 5		-	1.05	1.25	V
		I _F = 20 A; T _j = 150 °C; Fig. 5		-	1.00	1.20	V
		I _F = 35 A; T _j = 25 °C; Fig. 5		-	1.18	1.40	V
		I _F = 35 A; T _j = 150 °C; Fig. 5		-	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

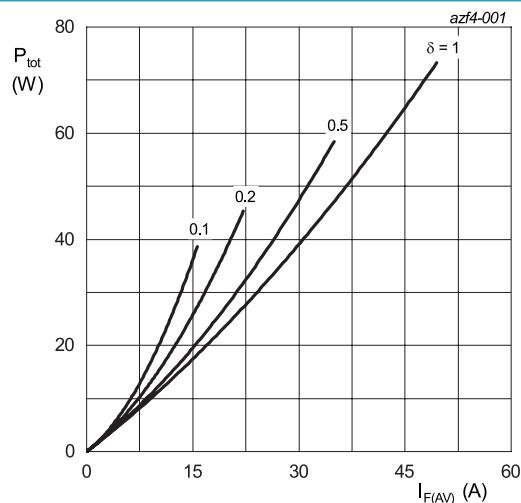
Type number	Marking codes
WND35P08X	WND35P08X

8. Limiting values

Table 5. Limiting values

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

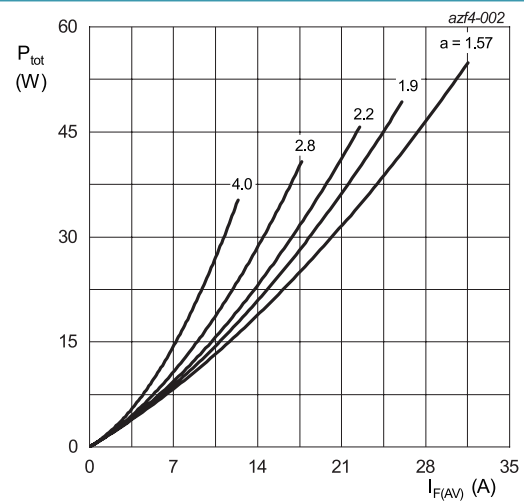
Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		800	V
V_{RWM}	crest working reverse voltage		800	V
V_R	reverse voltage	DC	800	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; Fig. 1; Fig. 2	35	A
I_{FSM}	non-repetitive peak forward current	$t_p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



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

$$V_o = 1.025 \text{ V}; R_s = 0.0092 \text{ } \Omega$$

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



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

$$V_o = 1.025 \text{ V}; R_s = 0.0092 \text{ } \Omega$$

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

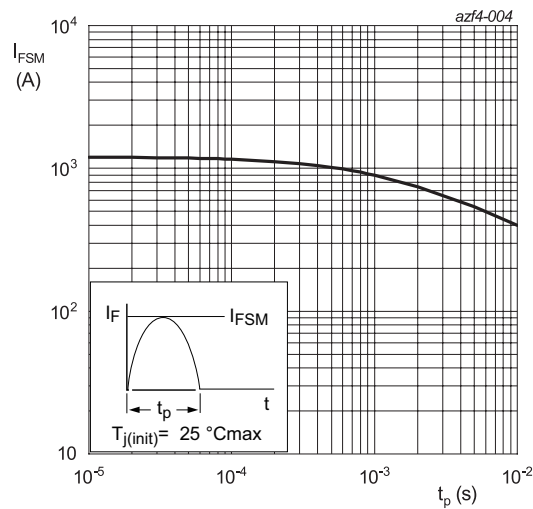


Fig. 3. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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. 4	-	-	3.2	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air	-	60	-	K/W

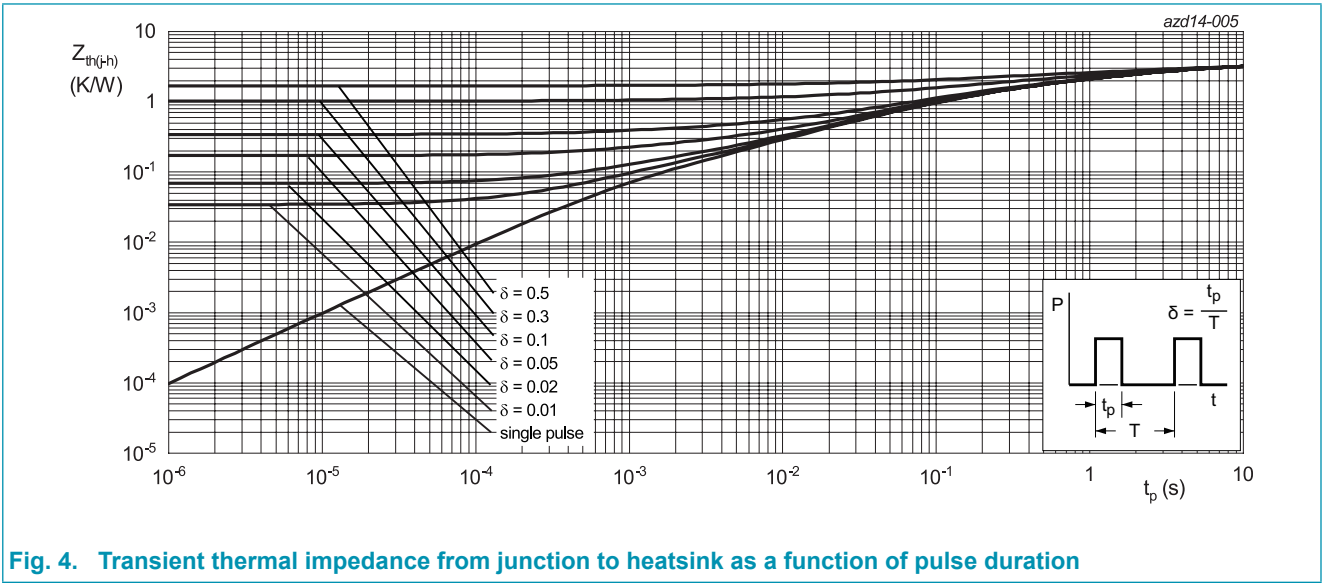


Fig. 4. Transient thermal impedance from junction to heatsink as a function of pulse duration

10. Isolation characteristics

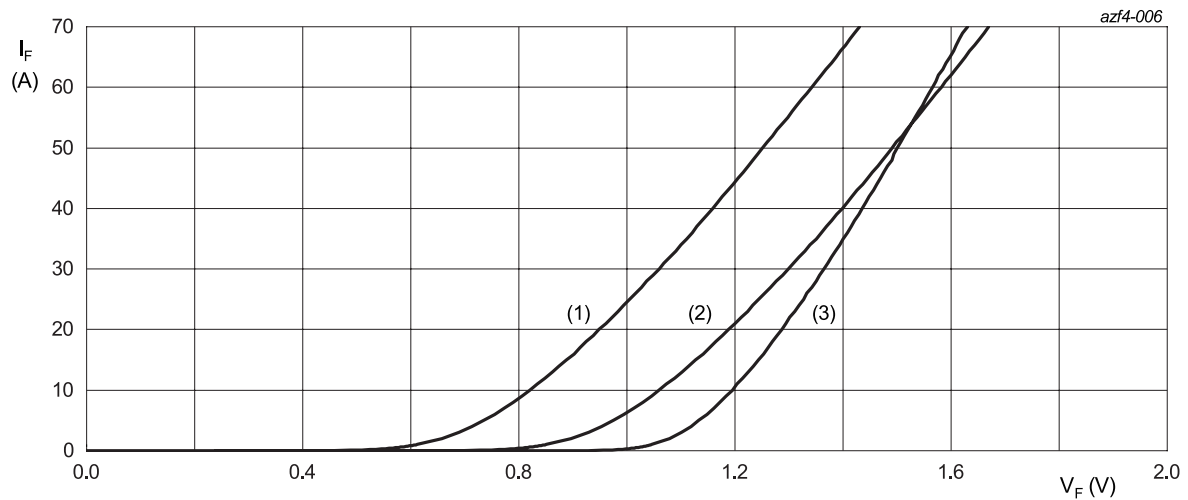
Table 7. Isolation characteristics

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
Static characteristics						
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	μA
		$V_R = 1600 \text{ V}; T_J = 150 \text{ }^\circ\text{C}$	-	-	1	mA



$V_o = 1.025 \text{ V}; R_s = 0.0092 \text{ } \Omega$

(1) $T_J = 150 \text{ }^\circ\text{C}$; typical values

(2) $T_J = 150 \text{ }^\circ\text{C}$; maximum values

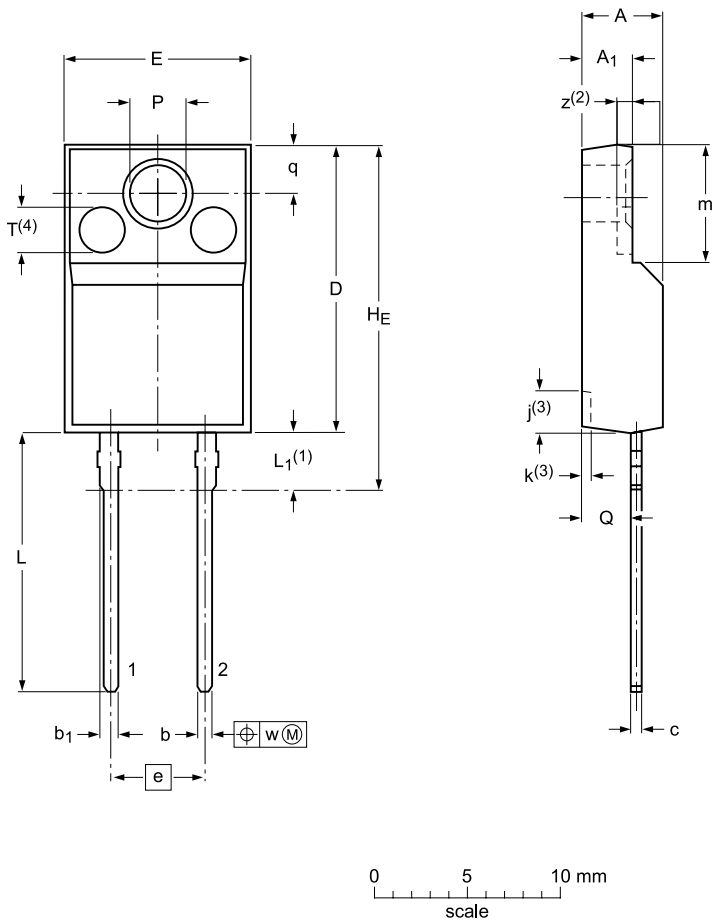
(3) $T_J = 25 \text{ }^\circ\text{C}$; maximum values

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

12. Package outline

Plastic single-ended package; isolated heasink 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⁾
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				
nom								5.08	19.0								2.6	2.55	0.4	0.8
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.
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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