WND35P16X

Standard power diode

Rev.02 - 18 December 2023 Product data sheet

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

- Oring diode
- Bypass diode
- Input rectifier for bridge configurations

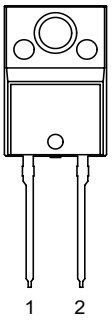
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Notes	Values			Unit
Absolute maximum rating							
V_{RRM}	repetitive peak reverse voltage			1600			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**	**Notes**	**Min**	**Typ**	**Max**	**Unit**
Static characteristics							
V_F	forward voltage	I_F = 35 A; T_j = 25 °C; Fig. 5		-	1.18	1.40	V
I_R	reverse current	V_R = 1600 V; T_j = 25 °C		-	-	50	µA

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
WND35P16X	TO220F-2L	WND35P16XQ	Tube	50	TO220Fd-2L	02-Aug-2022

7. Marking

Table 4. Marking codes

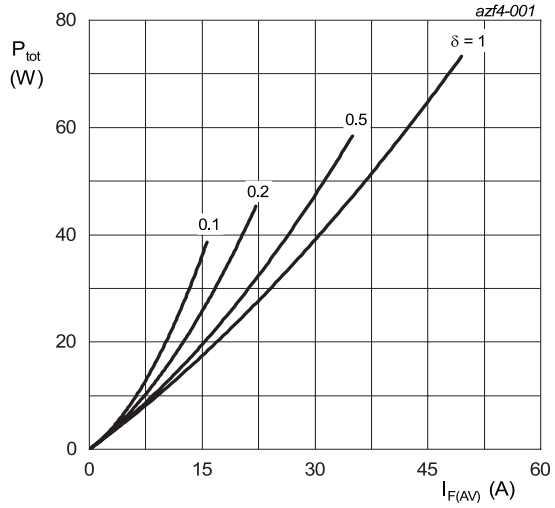
Type number	Marking codes
WND35P16X	WND35P16X

8. Limiting values

Table 5. Limiting values

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

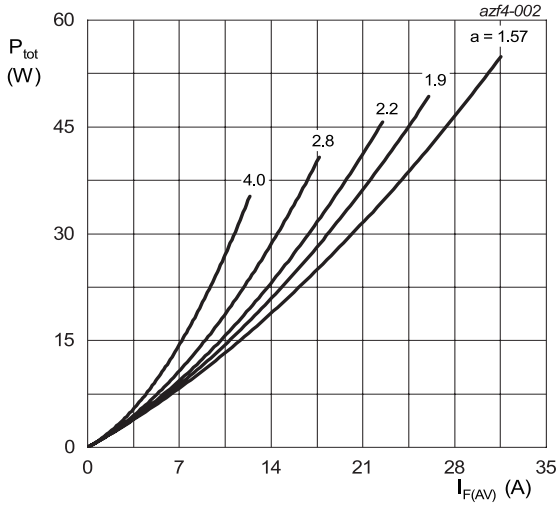
Symbol	Parameter	Conditions	Notes	Values	Unit
V_{RRM}	repetitive peak reverse voltage			1600	V
V_{RWM}	crest working reverse voltage			1600	V
V_R	reverse voltage	DC		1600	V
$I_{F(AV)}$	average forward current	δ = 0.5 ; square-wave pulse; Fig. 1; Fig. 2		35	A
I_{FSM}	non-repetitive peak forward current	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
I^2t	I^2t for fusing	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse		800	A^2s
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 V; R_s = 0.0092 Ω

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



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

V_o = 1.025 V; R_s = 0.0092 Ω

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

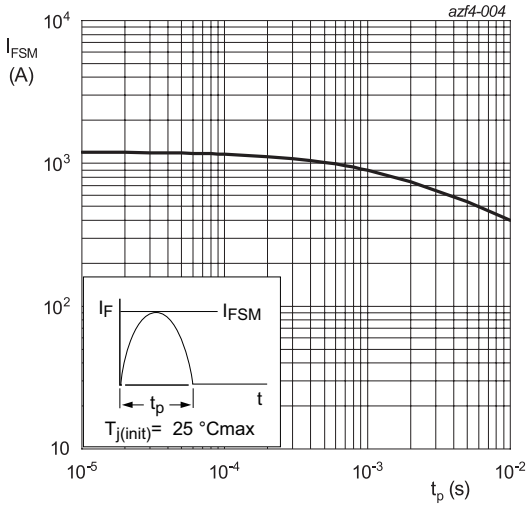


Fig. 3. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Notes	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

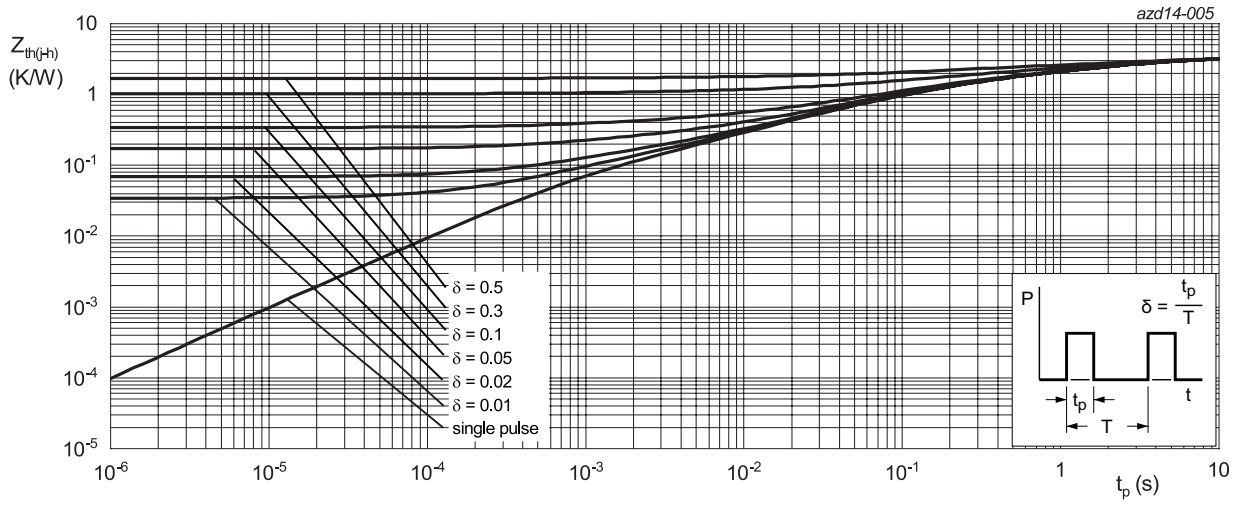


Fig. 4. Transient thermal impedance from junction to heatsink as a function of pulse duration

10. Isolation characteristics

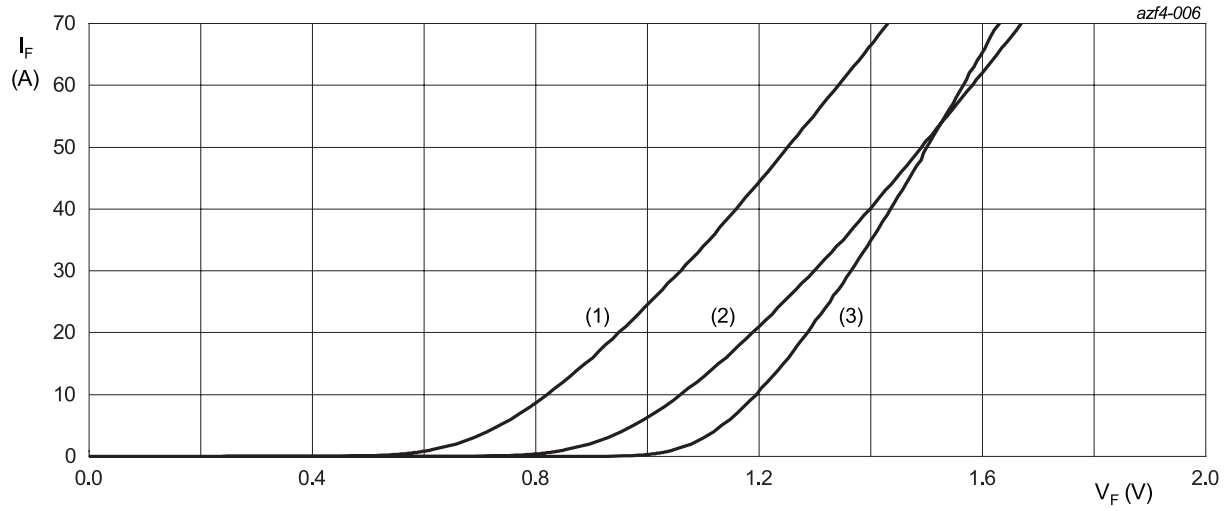
Table 7. Isolation characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
$V_{isol(RMS)}$	RMS isolation voltage	50 Hz ≤ f ≤ 60 Hz; RH ≤ 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	Notes	Min	Typ	Max	Unit
Static characteristics							
V_F	forward current	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
I_R	reverse current	V_R = 1600 V; T_j = 25 °C		-	-	50	µA
		V_R = 1600 V; T_j = 150 °C		-	-	1	mA

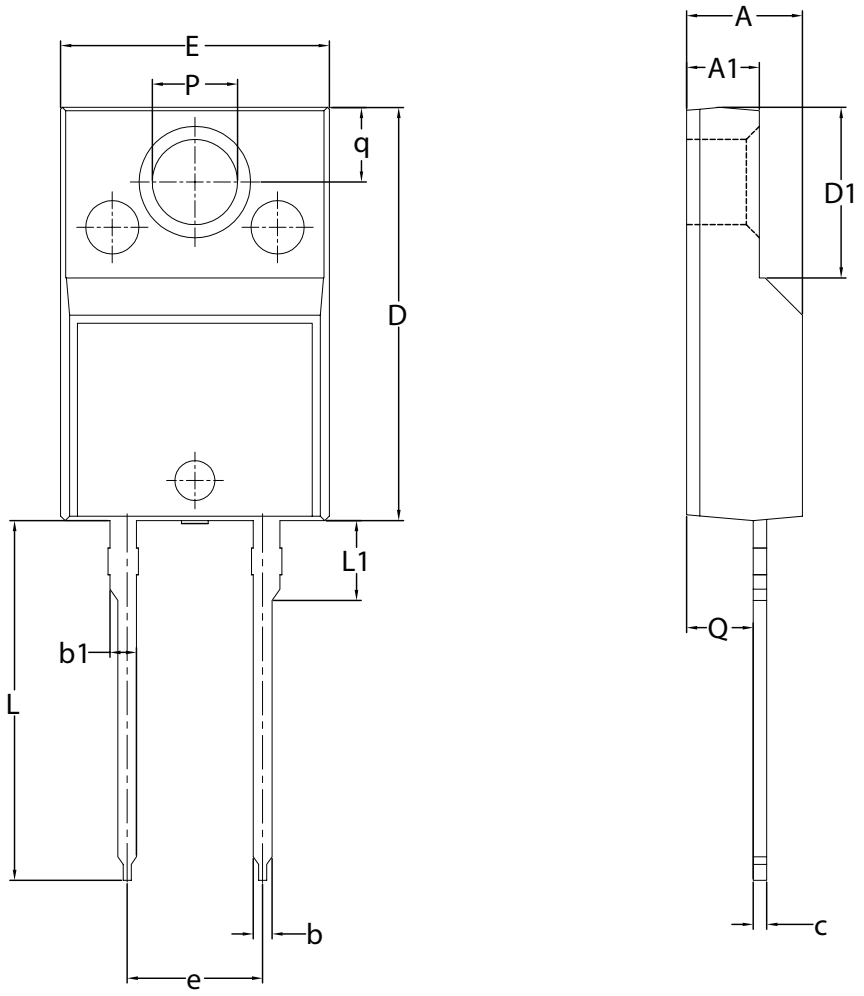


V_o = 1.025 V; R_s = 0.0092 Ω
(1) T_j = 150 °C; typical values
(2) T_j = 150 °C; maximum values
(3) T_j = 25 °C; maximum values

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

12. Package outline

Plastic single-ended package; isolated heatsink mounted;1 mounting hole; 2 leads TO-220 'full pack' TO220F-2L



Unit		A	A1	b	b1	c	D	D1	E	e	L	L1	P	Q	q
MM	min	4.00	2.50	0.70	0.90	0.40	15.20	6.30	9.80	5.08 (BSC)	13.50	2.80	3.00	2.30	2.60
	max	4.60	3.10	0.90	1.10	0.70	15.80	6.50	10.30		14.40	3.30	3.40	2.80	3.00

Note:

1. All dimensions don't include mold flash and metal protrusion.

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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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