WND35P08

Standard power diode

Rev.02 - 20 April 2022 Product data sheet

1. General description

Standard reverse recovery power diode in a 2-lead TO220 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

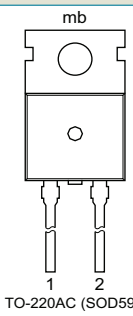
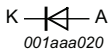
4. Quick reference data

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; $T_{mb} \leq 97$ °C; Fig. 1; Fig. 2; Fig. 3	35				A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 4	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. 6		-	1.05	1.25	V
		I_F = 20 A; T_j = 150 °C; Fig. 6		-	1.00	1.20	V
		I_F = 35 A; T_j = 25 °C; Fig. 6		-	1.18	1.40	V
		I_F = 35 A; T_j = 150 °C; Fig. 6		-	1.15	1.35	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 TO-220AC (SOD59)	
2	A	anode		
mb	mb	mounting base; connected to cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WND35P08	TO220-2L	WND35P08Q	Tube	50	SOD59	27-Nov-2012

7. Marking

Table 4. Marking codes

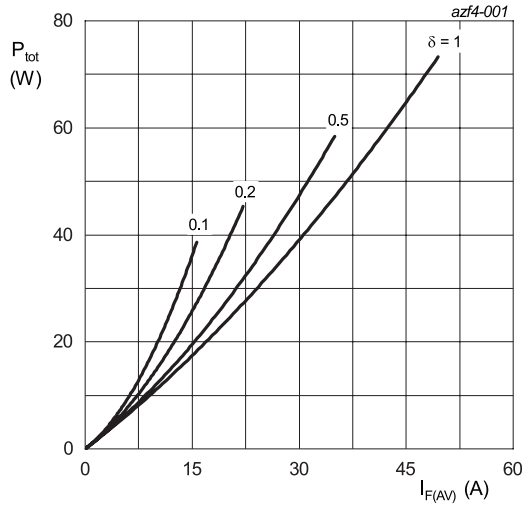
Type number	Marking codes
WND35P08	WND35P08

8. Limiting values

Table 5. Limiting values

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

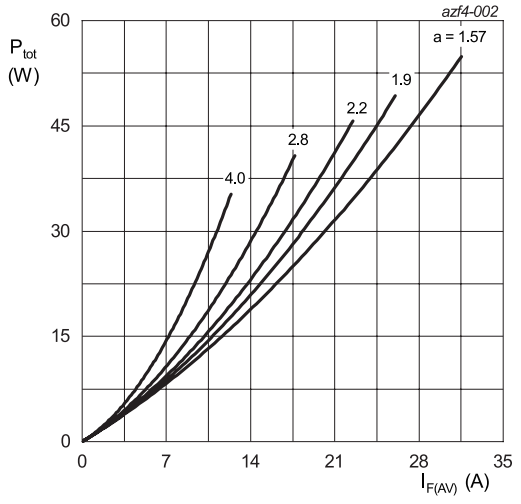
Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		800	V
V_{RWM}	crest working reverse voltage		800	V
V_R	reverse voltage	DC	800	V
$I_{F(AV)}$	average forward current	δ = 0.5 ; square-wave pulse; $T_{mb} \leq 97$ °C; Fig. 1; Fig. 2; Fig. 3	35	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 4	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^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

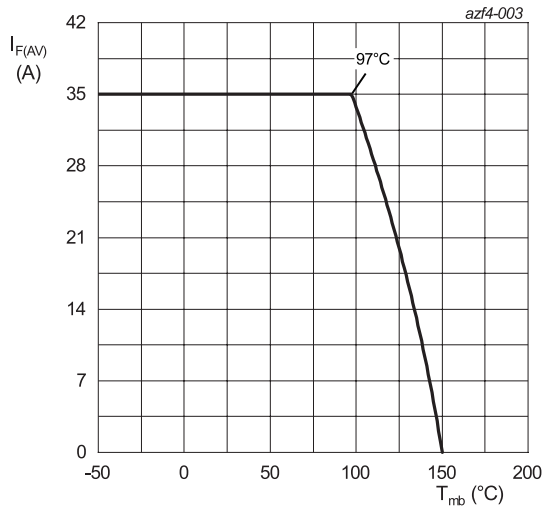


Fig. 3. Forward current as a function of mounting base temperature; maximum values

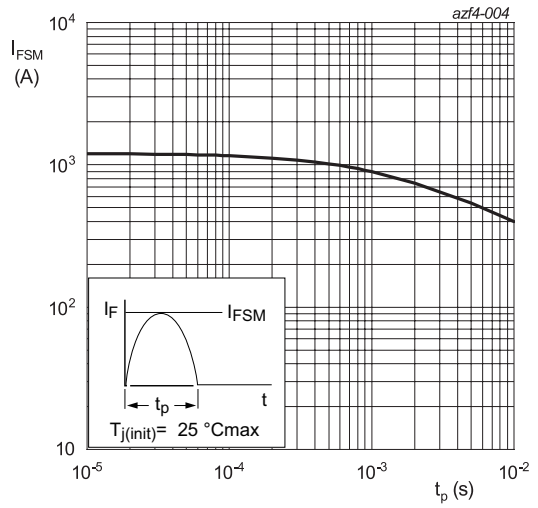


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 5		-	-	0.9	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	60	-	K/W

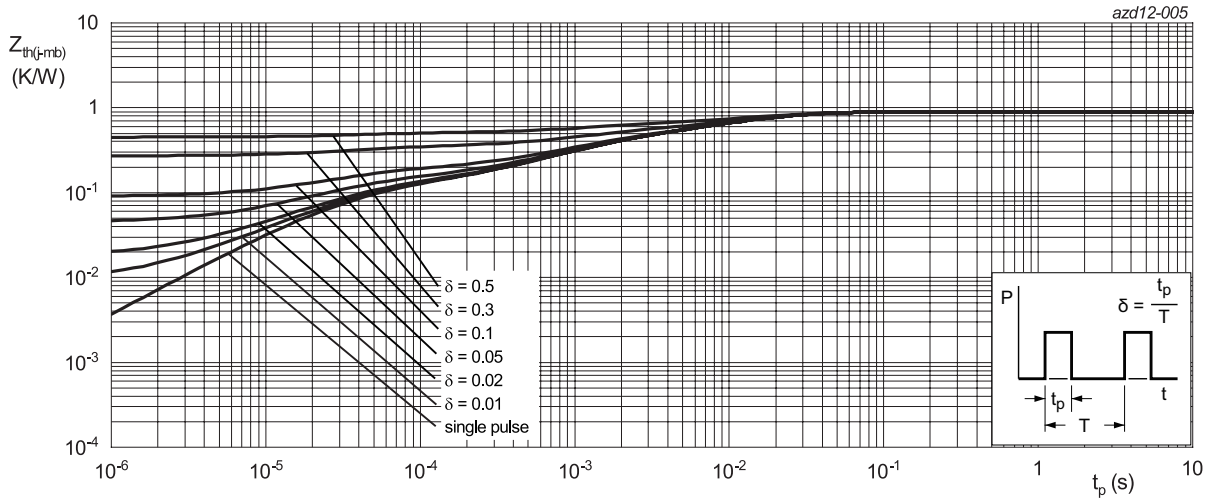
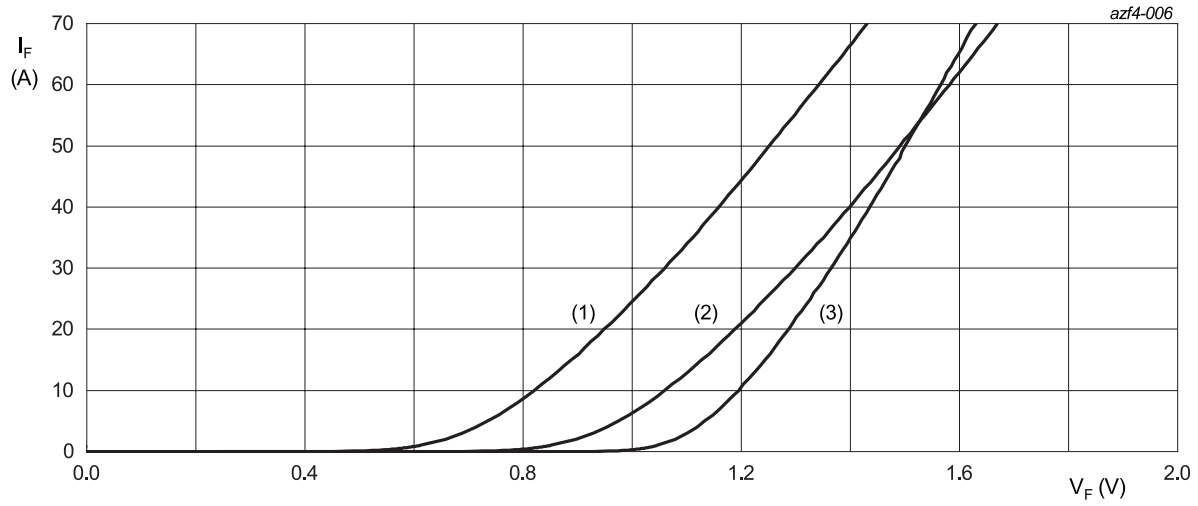


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V_F	forward current	I_F = 20 A; T_j = 25 °C; Fig. 6		-	1.05	1.25	V
		I_F = 20 A; T_j = 150 °C; Fig. 6		-	1.00	1.20	V
		I_F = 35 A; T_j = 25 °C; Fig. 6		-	1.18	1.40	V
		I_F = 35 A; T_j = 150 °C; Fig. 6		-	1.15	1.35	V
I_R	reverse current	V_R = 800 V; T_j = 25 °C		-	-	50	µA
		V_R = 800 V; T_j = 150 °C		-	-	1	mA

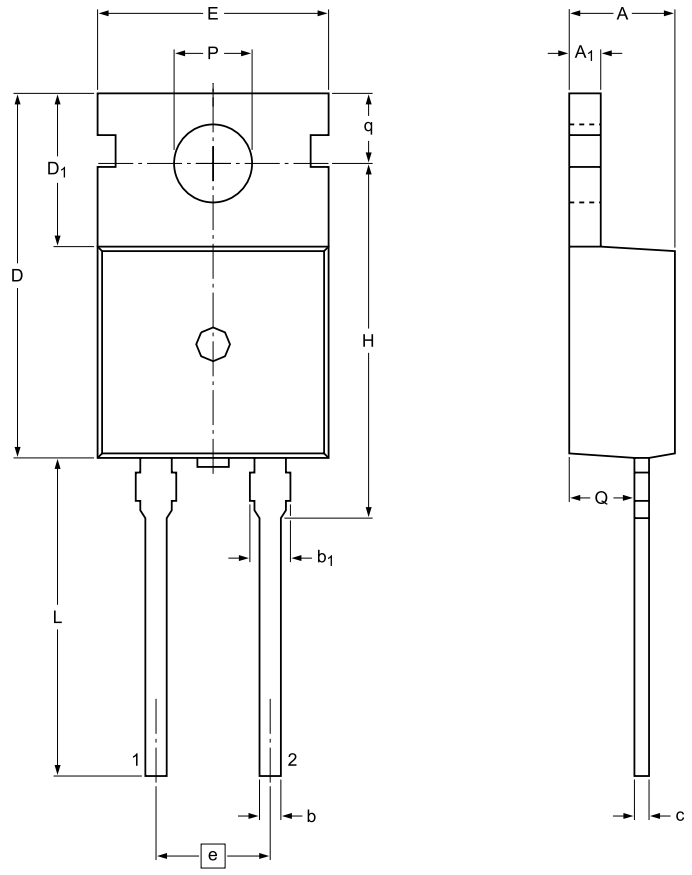


V_o = 1.025 V; R_s = 0.0092 Ω
(1) T_j = 150 °C; typical values
(2) T_j = 150 °C; maximum values
(3) T_j = 25 °C; maximum values

Fig. 6. Forward current as a function of forward voltage

11. Package outline

Plastic single-ended package; heatsink mounted; 1 mounting hole; 2-lead TO-220AC **SOD59**



Dimensions

Unit		A	A_1	b	b_1[1]	c	D	D_1	E	e	H	L	P	Q	q
mm	max	4.7	1.40	0.95	1.7	0.65	15.8	6.8	10.30	5.08 (REF)	16.25	15.0	3.80	2.6	2.9
	nom														
	min	4.3	1.15	0.70	1.3	0.45	15.6	6.4	9.65		15.70	12.5	3.65	2.2	2.7

Note
1. Protruded dambar are included in the dimension.

sod059_po

Outline version	References				European projection	Issue date
	IEC	JEDEC	JEITA			
SOD59		2-lead TO-220AC				~~09-08-25~~ 12-11-27

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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