WND60P16W

Standard power diode

Rev.04 - 22 May 2023 Product data sheet

1. General description

Standard reverse recovery power diode in a TO247-2L 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

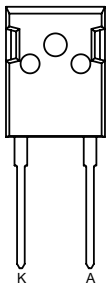
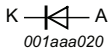
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V_{RRM}	repetitive peak reverse voltage		1600				V
$I_{F(AV)}$	average forward current	δ = 0.5 ; square-wave pulse; $T_{mb} \leq 130$ °C; Fig. 1; Fig. 2; Fig. 3	60				A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 4	950				A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	1045				A
Symbol	**Parameter**	**Conditions**		**Min**	**Typ**	**Max**	**Unit**
Static characteristics							
V_F	forward voltage	I_F = 60 A; T_j = 25 °C; Fig. 6		-	1.07	1.12	V
		I_F = 60 A; T_j = 150 °C; Fig. 6		-	0.99	1.05	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode	 TO247-2L	
2	A	anode		
mb	mb	mounting base; connected to cathod		

6. Ordering information

Table 3. Ordering information

Type number	Package Name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
WND60P16W	TO247-2L	WND60P16WQ	Tube	30	TO247L-2L (L)	12-Nov-2020
					TO247P-2L (P)	31-Mar-2023

7. Marking

Table 4. Marking codes

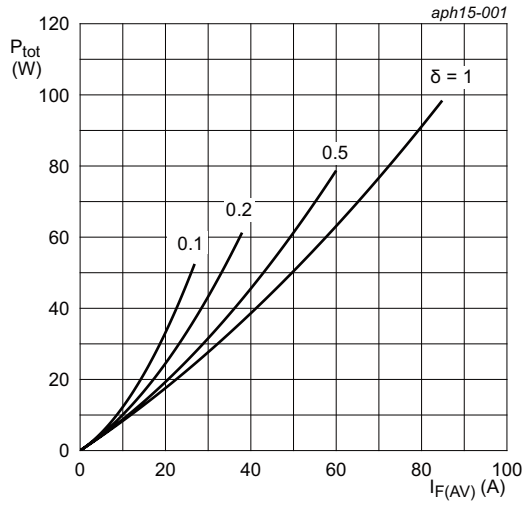
Type number	Marking codes	
	Assembly factory: L	Assembly factory: P
WND60P16W	D60P16 1600 PJLxxxx xx	D60P16 1600 PJPxxxx xx

8. Limiting values

Table 5. Limiting values

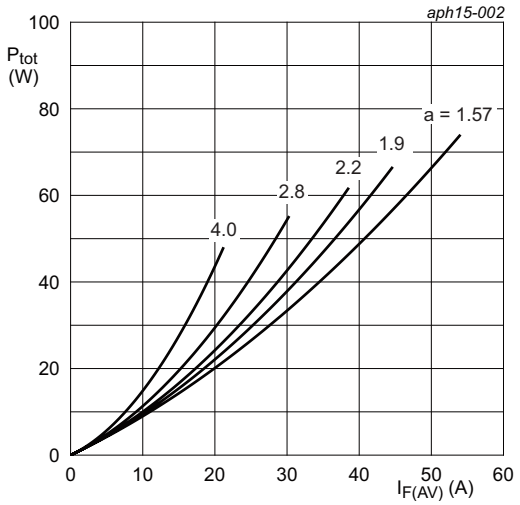
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		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; $T_{mb} \leq 130$ °C; Fig. 1; Fig. 2; Fig. 3	60	A
I_{FSM}	non-repetitive peak forward current	t_p = 10 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse; Fig. 4	950	A
		t_p = 8.3 ms; $T_{j(init)}$ = 25 °C; sine-wave pulse	1045	A
I^2t	I^2t for fusing	SIN; t_p = 10 ms	4513	A^2s
T_{stg}	storage temperature		-55 to 150	°C
T_j	junction temperature		150	°C



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$
V_o = 0.792 V; R_s = 0.0043 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 = 0.792 V; R_s = 0.0043 Ω

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

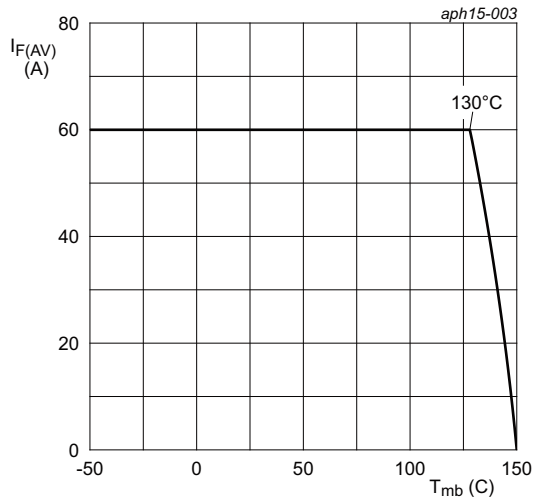


Fig. 3. Forward current as a function of mounting base temperature; maximum values

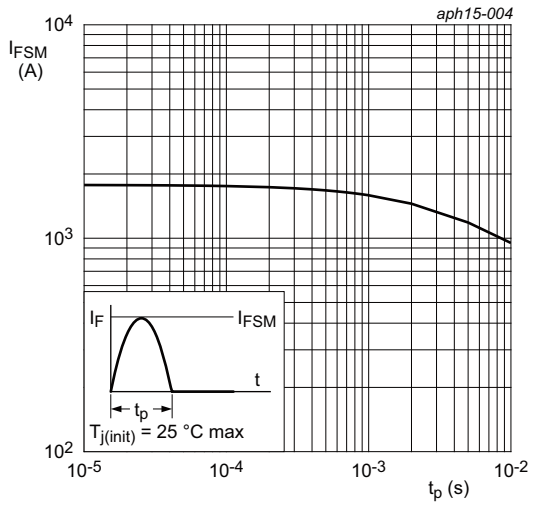


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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		-	-	0.25	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	40	-	K/W

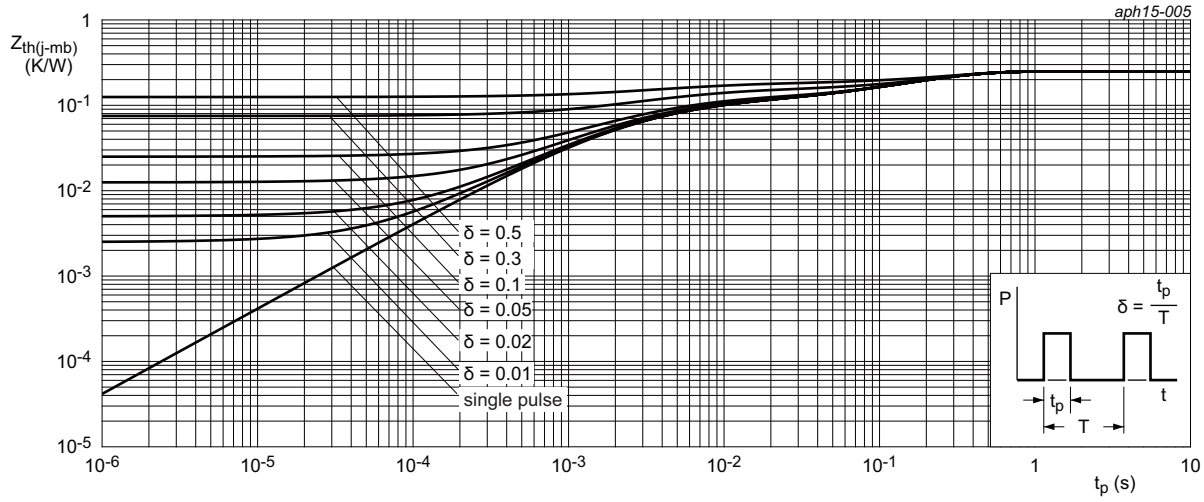
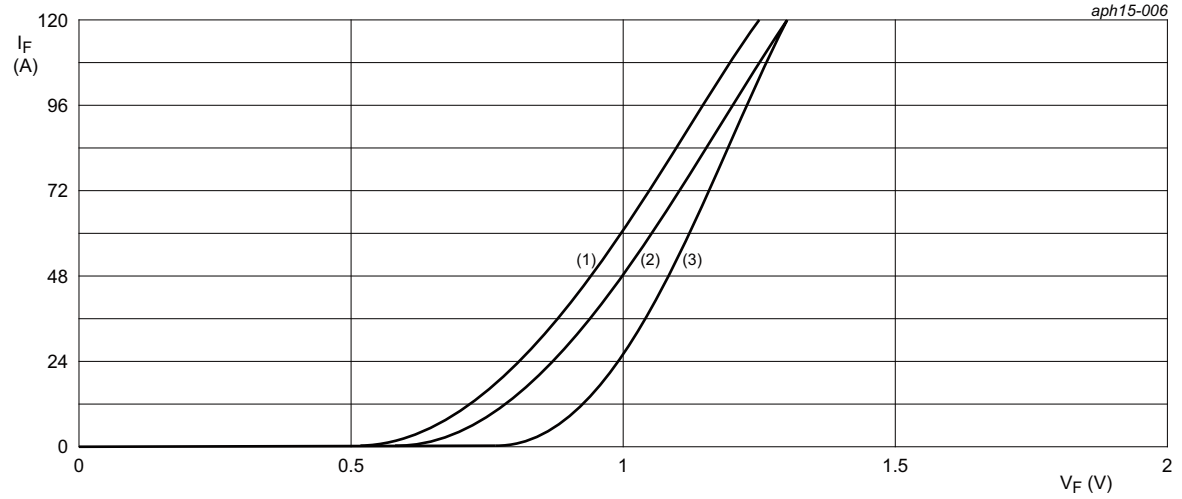


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V_F	forward current	I_F = 60 A; T_j = 25 °C; Fig. 6		-	1.07	1.12	V
		I_F = 60 A; T_j = 150 °C; Fig. 6		-	0.99	1.05	V
I_R	reverse current	V_R = 1600 V; T_j = 25 °C		-	-	50	µA
		V_R = 1600 V; T_j = 150 °C		-	-	1.5	mA



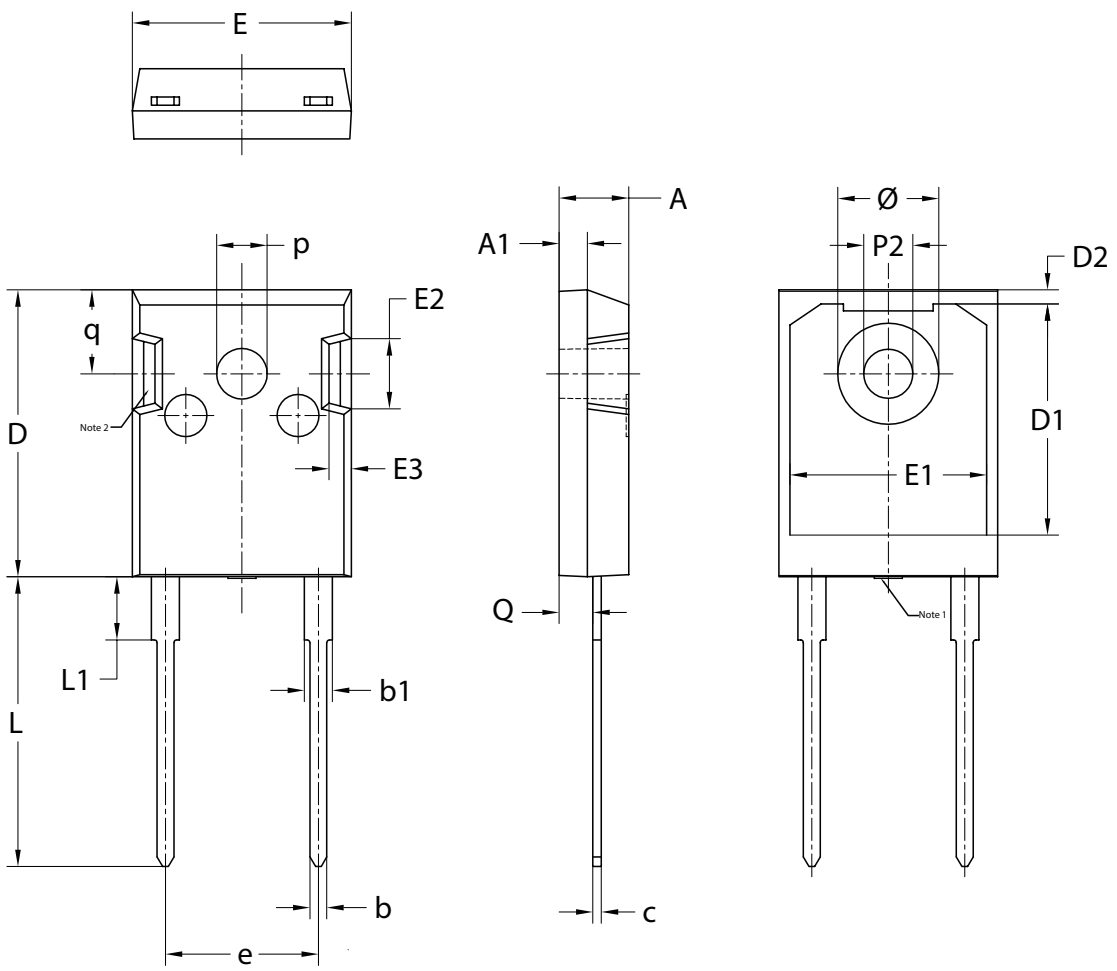
V_o = 0.792 V; R_s = 0.0043 Ω
(1) T_j = 150 °C; typical values
(2) T_j = 150 °C; maximum values
(3) T_j = 25 °C; maximum values

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

11. Package outline

Assembly factory: L

Plastic single-ended through-hole package; heatsink mounted;1 mounting hole; 2 leads TO-247 TO247-2L

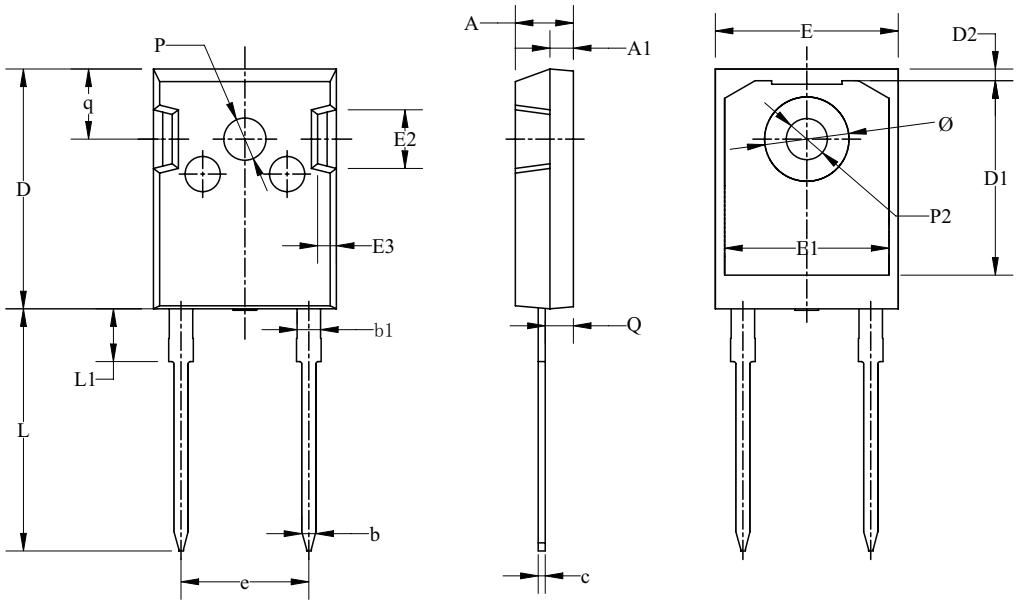


UNIT	A	A_1	b	b_1	c	D	D_1 (2)	D_2	E	E_1	E_2	E_3	e	L	L_1	P_2	p	Q	q	Ø
mm	5.20 4.70	2.10 1.90	1.40 1.00	2.20 1.80	0.70 0.50	20.60 20.30	16.20 16.87	1.20 0.80	15.75 15.45	14.22 13.82	5.20 4.80	1.80 1.40	10.90 BSC	20.72 20.22	4.75 4.25	3.60 3.40	3.70 3.50	2.60 2.20	6.18 5.78	7.30 7.10

Note:
1. Mold resin protrusion max 0.127mm.
2. Metal exposed with Sn plating.

Assembly factory: P

Plastic single-ended through-hole pack age; headsink mounted; 1 mounting hole; 2 leads TO-247 TO247-2L



Dim	All Dimensions in Millimeters		
	Min	Typ	Max
A	4.70	4.95	5.20
A1	1.90	2.00	2.10
b	1.00	1.20	1.40
b1	1.80	2.00	2.20
c	0.50	0.60	0.70
D	20.30	20.45	20.60
D1	16.20	16.58	16.87
D2	0.80	1.00	1.20
E	15.45	15.60	15.75
E1	13.82	14.02	14.22
E2	4.80	5.00	5.20
E3	1.40	1.60	1.80
e	10.90 BSC		
L	20.40	20.65	20.90
L1	4.25	4.50	4.75
P2	3.40	3.50	3.60
P	3.50	3.60	3.70
Q	2.20	2.40	2.60
q	5.78	5.98	6.18
Ø	7.10	7.19	7.30

12. Legal information

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

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