

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
- Package meets UL94V-0 flammability requirement

3. Applications

- Input rectification
- Bypass diode
- On board and off-board xEV battery chargers

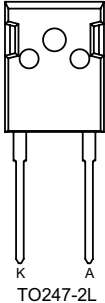

4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V _{RRM}	repetitive peak reverse voltage		1200				V
I _{F(AV)}	average forward current	δ = 0.5 ; square-wave pulse; T _{mb} ≤ 113 °C; Fig. 1 ; Fig. 2 ; Fig. 3	45				A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; Fig. 4	475				A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse	523				A
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 45 A; T _j = 25 °C; Fig. 6		-	1.2	1.4	V
		I _F = 45 A; T _j = 150 °C; Fig. 6		-	1.1	1.3	V

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K	cathode		
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
WND45P12W-A	TO247-2L	WND45P12W-AQ	Tube	30	TO247N-2L	03-Aug-2023

7. Marking

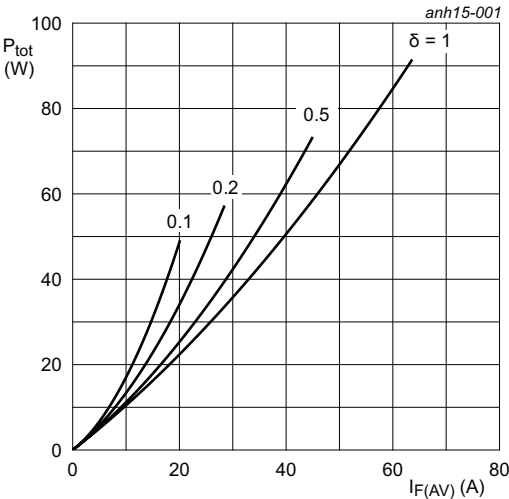
Table 4. Marking codes

Type number	Marking codes
WND45P12W-A	WND 45P12W-A

8. Limiting values

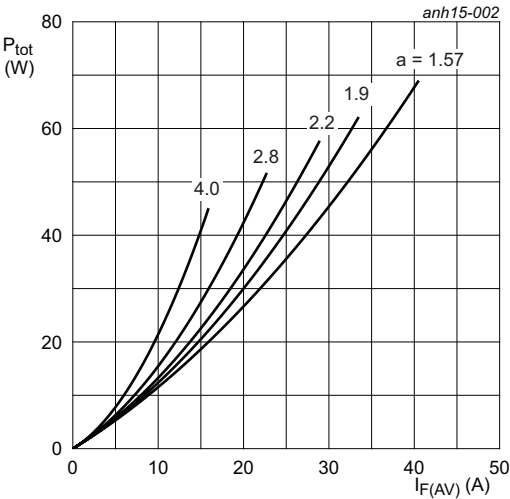
Table 5. Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		1200	V
V_{RWM}	crest working reverse voltage		1200	V
V_R	reverse voltage	DC	1200	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_{mb} \leq 113\text{ }^{\circ}\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3	45	A
I_{FSM}	non-repetitive peak forward current	$t_p = 10\text{ ms}$; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; sine-wave pulse; Fig. 4	475	A
		$t_p = 8.3\text{ ms}$; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; sine-wave pulse	523	A
T_{stg}	storage temperature		-55 to 150	$^{\circ}\text{C}$
T_j	junction temperature		150	$^{\circ}\text{C}$



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$
 $V_o = 0.973\text{ V}$; $R_s = 0.0073\text{ }\Omega$

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



$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$
 $V_o = 0.973\text{ V}$; $R_s = 0.0073\text{ }\Omega$

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

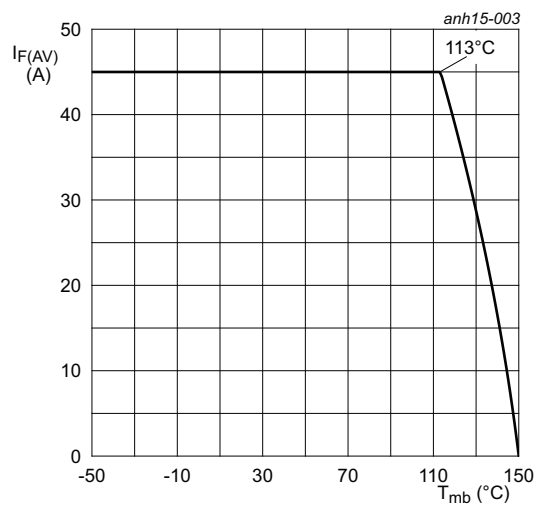


Fig. 3. Forward current as a function of mounting base temperature; maximum values

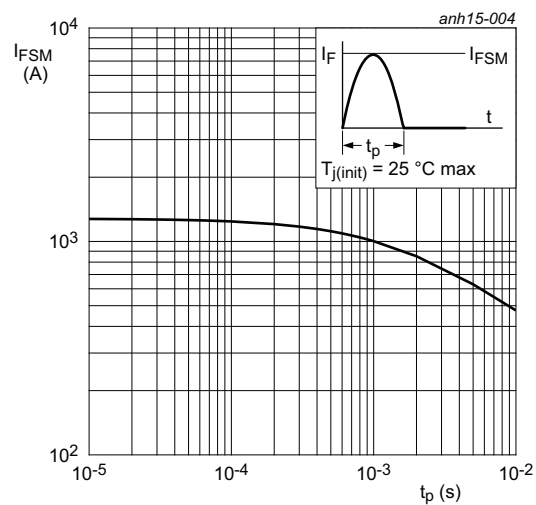


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

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

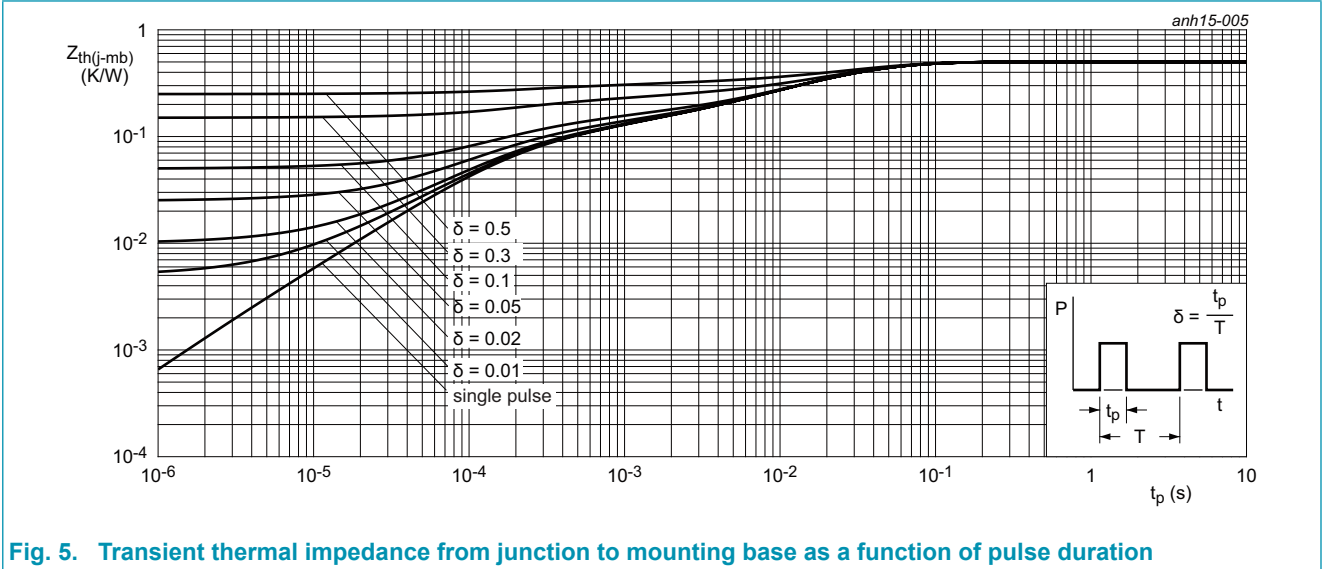
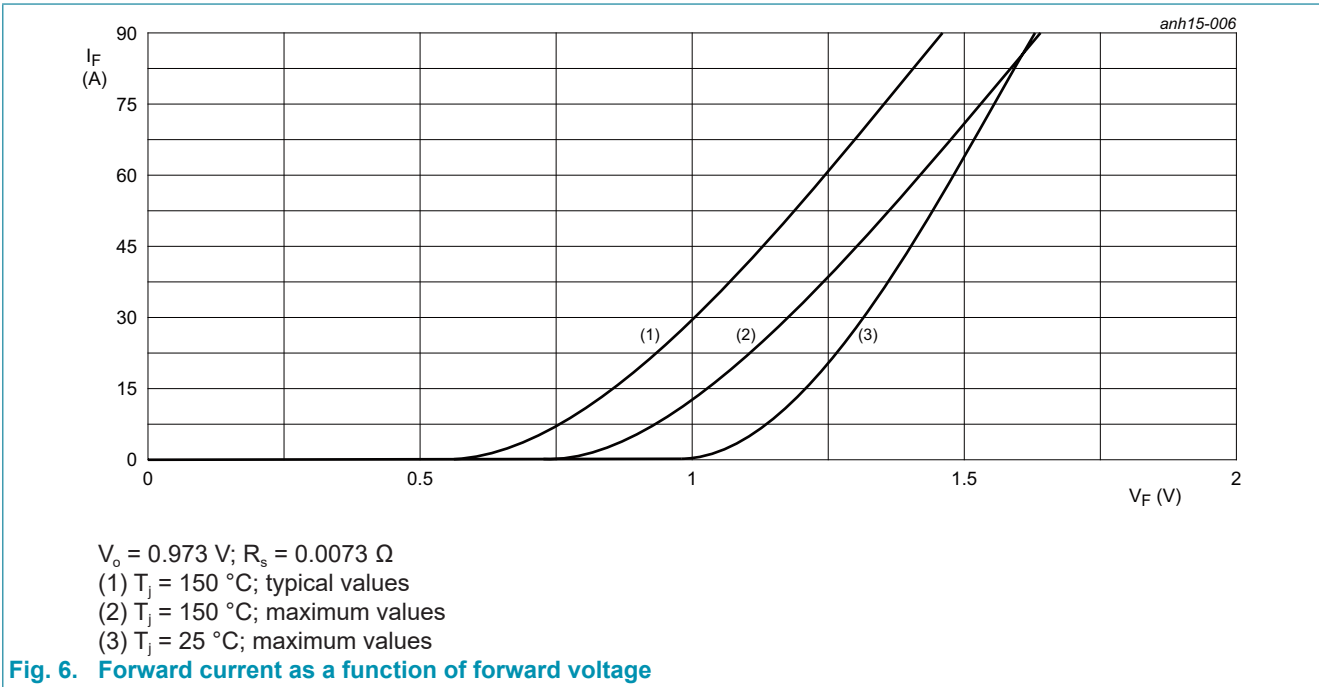


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

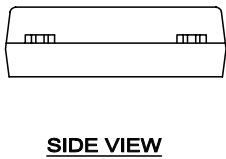
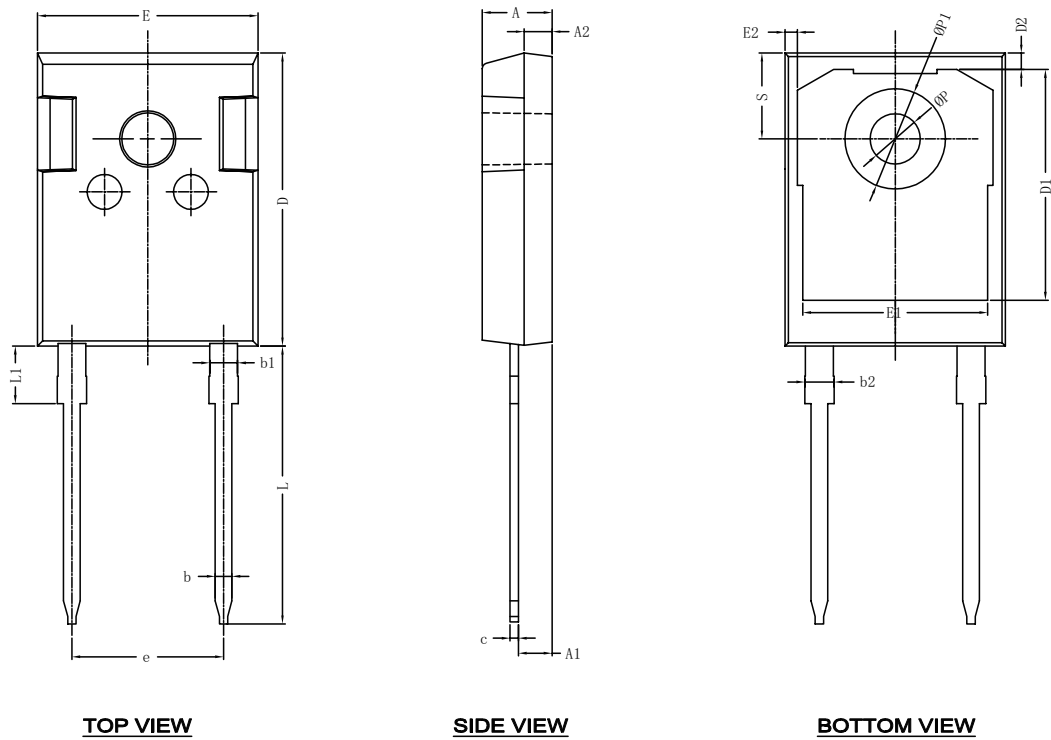
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Static characteristics							
V _F	forward current	I _F = 45 A; T _J = 25 °C; Fig. 6		-	1.2	1.4	V
		I _F = 45 A; T _J = 150 °C; Fig. 6		-	1.1	1.3	V
I _R	reverse current	V _R = 1200 V; T _J = 25 °C		-	-	10	μA
		V _R = 1200 V; T _J = 150 °C		-	-	1.5	mA



11. Package outline

Plastic single-ended through-hole package; heatsink mounted; 1 mounting hole; 2-lead TO-247



UNIT	A	A1	A2	b	b1	b2	c	D	D1	D2	E	E1	E2	e	L	L1	P	P1	S
MAX	5.10	2.51	2.10	1.29	2.06	2.25	0.66	21.10	16.85	1.35	15.90	13.46	0.95	10.98	20.15	4.46	3.70	7.40	6.25
NOM																			
MIN	4.90	2.31	1.90	1.16	1.96		0.59	20.90	16.25	1.05	15.70	13.06	0.35	10.78	19.80	3.93	3.50	7.00	6.05

Note:
All dimensions do not include mold flash or protrusion.

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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