

1. General description

2000V 90A Standard Rectifier 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 UL94V0 which guaranteed by Epoxy Mold Compound

3. Applications

- Input rectifier
- Bypass diode
- Off-board EV/HEV battery chargers

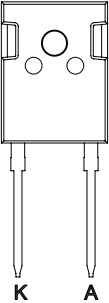
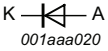
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Values				Unit
Absolute maximum rating							
V _{RRM}	repetitive peak reverse voltage		2000				V
I _{F(AV)}	average forward current	δ = 0.5 ; square-wave pulse; T _{mb} ≤ 129 °C; Fig. 1 ; Fig. 2 ; Fig. 3	90				A
I _{FSM}	non-repetitive peak forward current	t _p = 10 ms; T _{j(init)} = 25 °C; sine-wave pulse; Fig. 4	1440				A
		t _p = 8.3 ms; T _{j(init)} = 25 °C; sine-wave pulse	1584				A
Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 90 A; T _j = 25 °C; Fig. 6		-	1.07	1.15	V
		I _F = 90 A; T _j = 150 °C; Fig. 6		-	1.00	-	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 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
WND90P20W6	TO247-2L	WND90P20W6Q	Tube	30	TO247HA-2L	19-Nov-2025

7. Marking

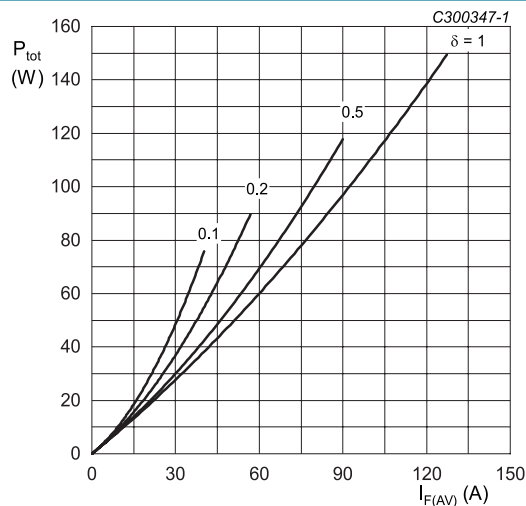
Table 4. Marking codes

Type number	Marking codes
WND90P20W6	D90P20W6 2000

8. Limiting values

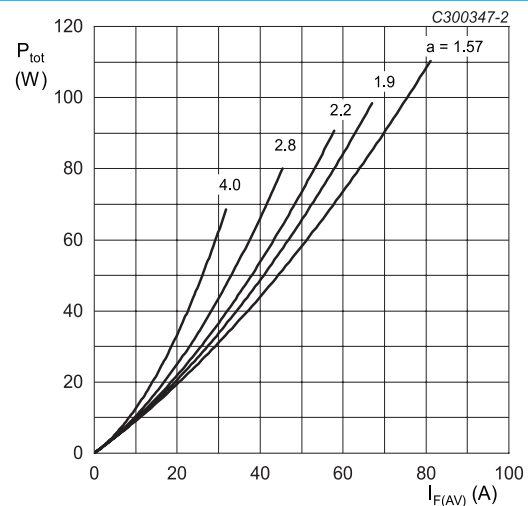
Table 5. Limiting values
In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Values	Unit
V_{RRM}	repetitive peak reverse voltage		2000	V
V_{RWM}	crest working reverse voltage		2000	V
V_R	reverse voltage	DC	2000	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; square-wave pulse; $T_{mb} \leq 129\text{ }^{\circ}\text{C}$; Fig. 1 ; Fig. 2 ; Fig. 3	90	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	1440	A
		$t_p = 8.3\text{ ms}$; $T_{j(init)} = 25\text{ }^{\circ}\text{C}$; sine-wave pulse	1584	A
I^2t	I^2t for fusing	SIN; $t_p = 10\text{ ms}$	10368	A^2s
T_{stg}	storage temperature		-55 to 150	$^{\circ}\text{C}$
T_j	junction temperature		-55 to 150	$^{\circ}\text{C}$



$I_{F(AV)} = I_{F(RMS)} \times \sqrt{\delta}$
 $V_o = 0.846\text{ V}$; $R_s = 0.0026\text{ }\Omega$

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



$a = \text{form factor} = I_{F(RMS)} / I_{F(AV)}$
 $V_o = 0.846\text{ V}$; $R_s = 0.0026\text{ }\Omega$

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

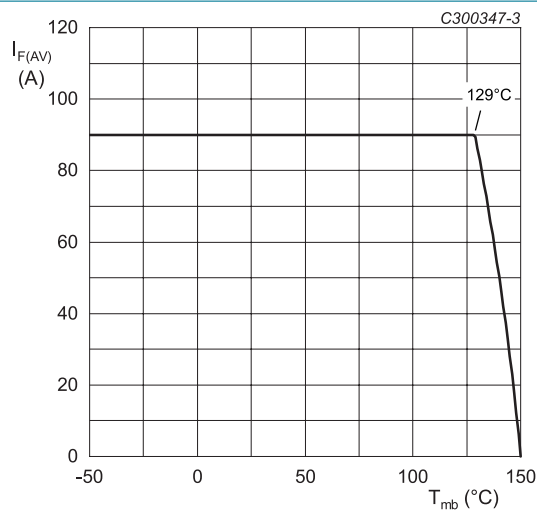


Fig. 3. Forward current as a function of mounting base temperature; maximum values

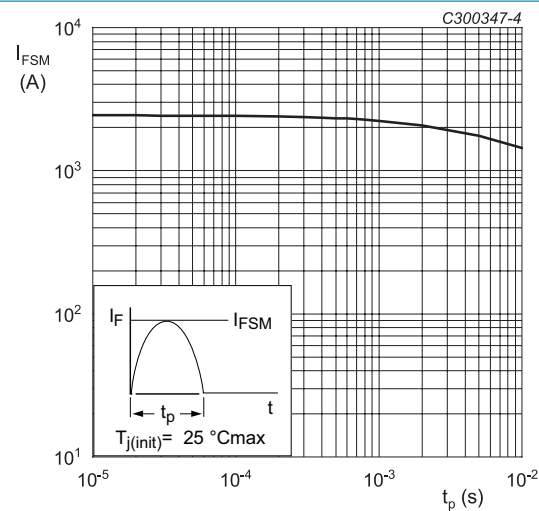


Fig. 4. Non-repetitive peak forward current as a function of pulse width; sinusoidal waveform; maximum values

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
$R_{th(j-mb)}$	thermal resistance from junction to mounting base	Fig. 5		-	-	0.18	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	in free air		-	40	-	K/W

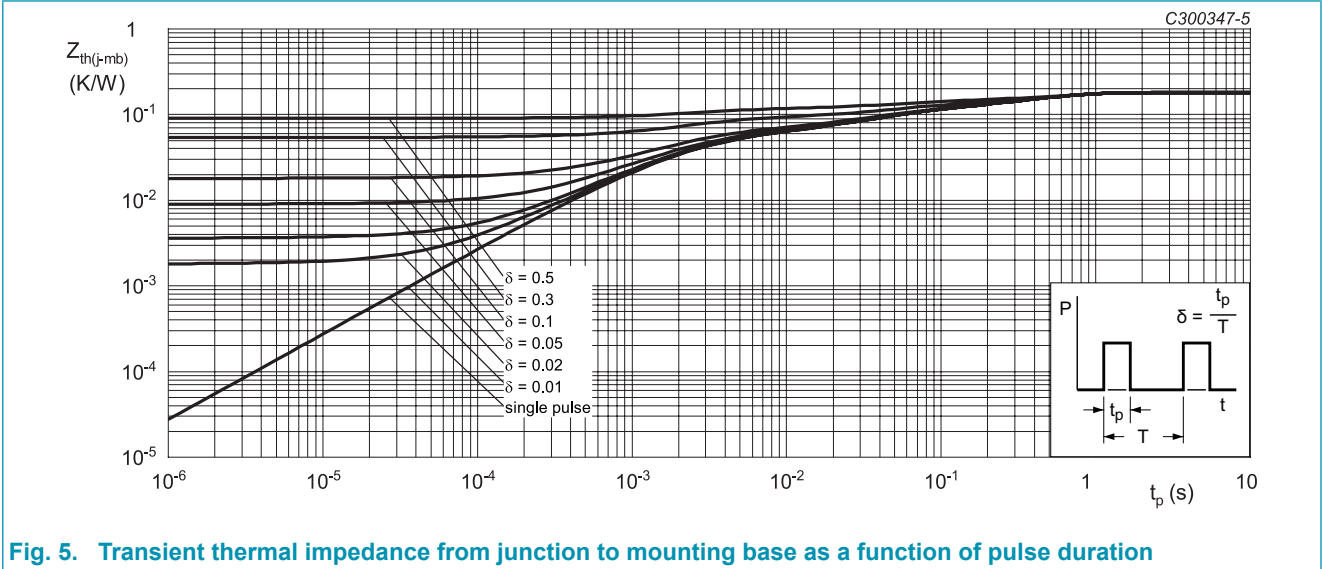
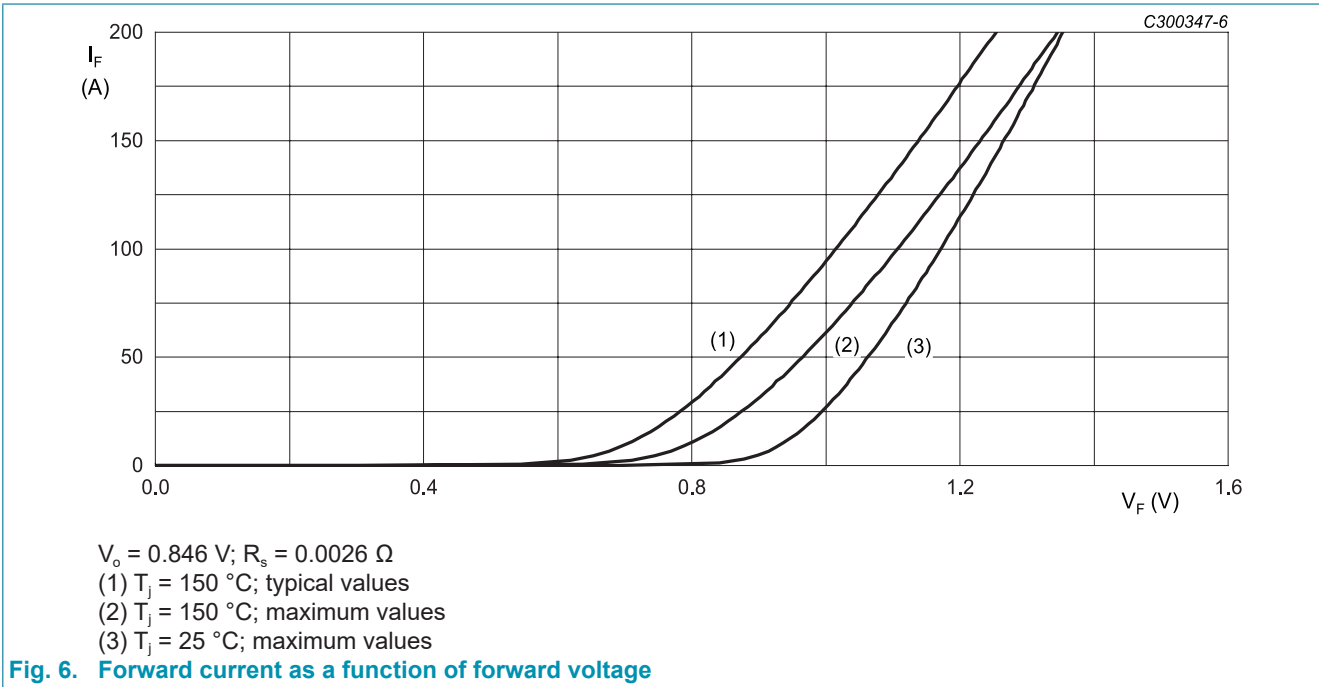


Fig. 5. Transient thermal impedance from junction to mounting base as a function of pulse duration

10. Characteristics

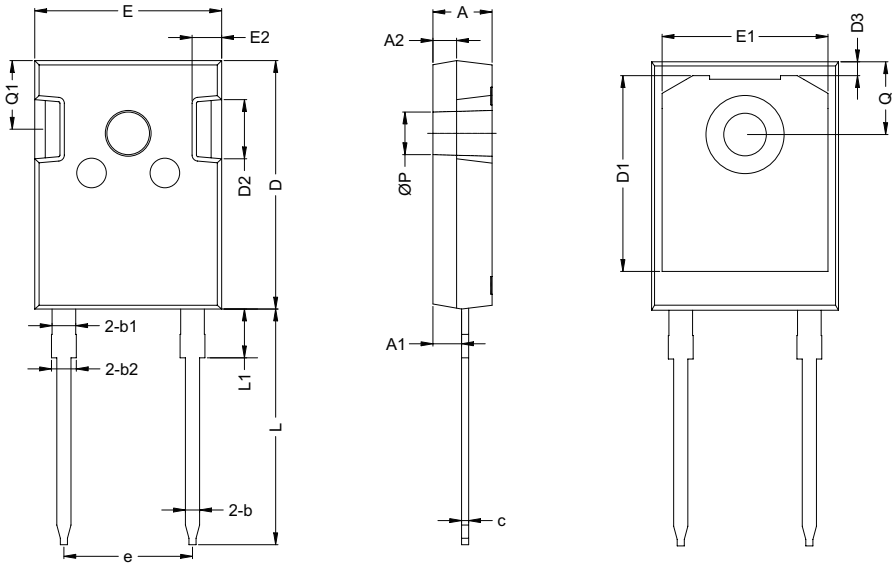
Table 7. Characteristics

Symbol	Parameter	Conditions	Notes	Min	Typ	Max	Unit
Static characteristics							
V _F	forward voltage	I _F = 90 A; T _J = 25 °C; Fig. 6		-	1.07	1.15	V
		I _F = 90 A; T _J = 150 °C; Fig. 6		-	1.00	-	V
I _R	reverse current	V _R = 2000 V; T _J = 25 °C		-	-	50	μA
		V _R = 2000 V; T _J = 150 °C		-	-	2	mA



11. Package outline

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



UNIT	A	A1	A2	b	b1	b2	c	D	D1	D2	D3	E	E1	E2	e	L	L1	P	Q	Q1
mm	5.20	2.61	2.15	1.35	2.06	2.25	0.75	21.30	16.85	5.20	1.35	15.90	14.22	2.5	10.88	20.22	4.30	3.80	6.15	6.00
	4.80	2.21	1.85	1.11	1.96	1.91	0.51	20.70	16.25	4.80	1.05	15.70	13.82	(TYP)	(BSC)	19.62		3.40	(BSC)	5.60

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.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
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- [2] The term 'short data sheet' is explained in section "Definitions".
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