

1. General description

Planar Schottky barrier rectifier with an integrated guard ring for stress protection, encapsulated in a SOD882D leadless ultra small Surface-Mounted Device (SMD) plastic package with visible and solderable side pads.

2. Features and benefits

- Forward current: I_F ≤ 0.5 A
- Reverse voltage: V_R ≤ 20 V
- Low forward voltage: V_F ≤ 440 mV
- · Ultra small and leadless SMD plastic package
- Solderable side pads
- Package height typ. 0.37 mm
- Qualified according to AEC-Q101 and recommended for use in automotive applications

3. Applications

- Low voltage rectification
- High efficiency DC-to-DC conversion
- Switch Mode Power Supply (SMPS)
- Reverse polarity protection
- Low power consumption applications
- Ultra high-speed switching

4. Quick reference data

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Symbol	Parameter	Conditions		Min	Тур	Max	Unit
I _{F(AV)}	average forward current	square-wave pulse; $\delta = 0.5$; f = 20 kHz; T _{amb} ≤ 85 °C	[1]	-	-	0.5	A
		square-wave pulse; δ = 0.5; f = 20 kHz; T _{sp} ≤ 130 °C		-	-	0.5	A
I _R	reverse current	V _R = 10 V; T _{amb} = 25 °C		-	300	600	μA
V _R	reverse voltage			-	-	20	V
V _F	forward voltage	I _F = 500 mA; single pulse; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C		-	365	440	mV

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

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5. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	К	cathode[1]		
2	A	anode		к -Қ -А
			Transparent top view DFN1006D-2 (SOD882D)	sym001

[1] The marking bar indicates the cathode.

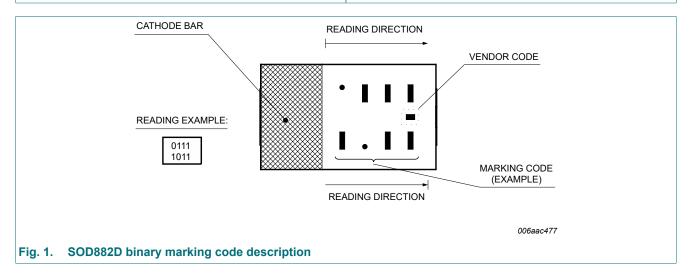
6. Ordering information

Table 3. Ordering information

Type number	Package				
	Name	Description	Version		
PMEG2005AELD-Q		leadless ultra small plastic package with side-wettable flanks (SWF); 2 terminals; 0.65 mm pitch; 1 mm x 0.6 mm x 0.4 mm body	<u>SOD882D</u>		

7. Marking

Table 4. Marking codes Type number Marking code PMEG2005AELD-Q 1001 0000



8. Limiting values

Table 5. Limiting values

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

Symbol	Parameter	Conditions		Min	Max	Unit
V _R	reverse voltage			-	20	V
I _{F(AV)}	average forward current	square-wave pulse; δ = 0.5; f = 20 kHz; T _{amb} ≤ 85 °C	[1]	-	0.5	A
		square-wave pulse; δ = 0.5; f = 20 kHz; T _{sp} ≤ 130 °C		-	0.5	A
I _{FRM}	repetitive peak forward current	$t_p \le 1 \text{ ms}; \delta \le 0.25$		-	2.5	A
I _{FSM}	non-repetitive peak forward current	square-wave pulse; t _p = 8 ms; T _{j(init)} = 25 °C		-	3	A
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[2]	-	340	mW
			[1]	-	660	mW
			[3]	-	1	W
Tj	junction temperature			-	150	°C
T _{amb}	ambient temperature			-55	150	°C
T _{stg}	storage temperature			-65	150	°C

[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².

[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[3] Device mounted on a ceramic PCB, Al₂O₃, standard footprint.

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
R _{th(j-a)}	h(j-a) thermal resistance from junction to ambient	in free air [1	[1] [2]	-	-	370	K/W
			[1] [3]	-	-	190	K/W
			[1] [4]	-	-	125	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point		[5]	-	-	50	K/W

[1] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses.

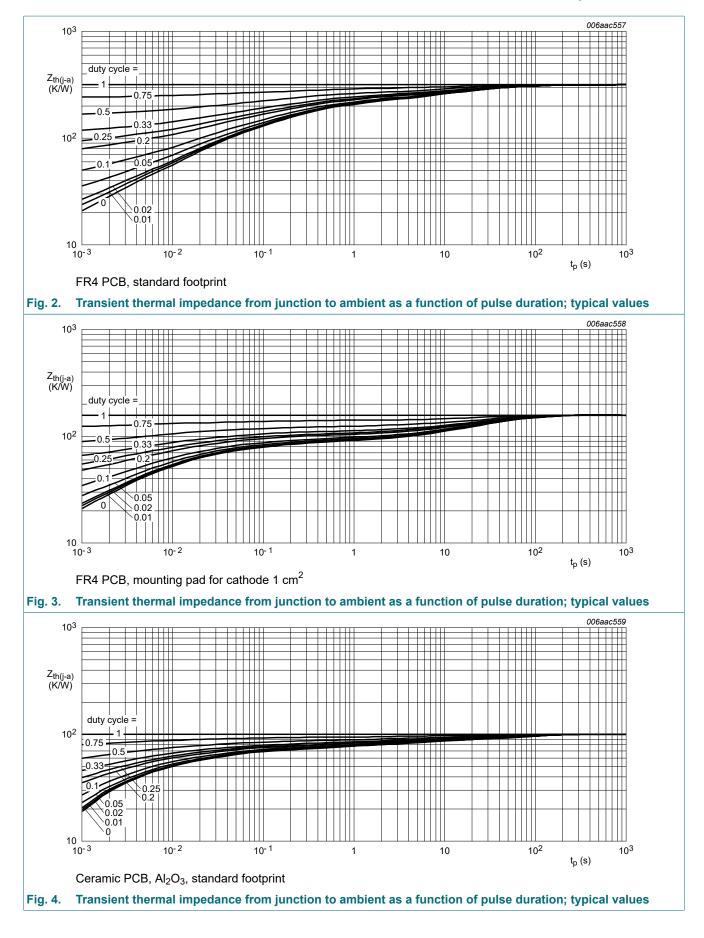
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

[3] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1cm².

[4] Device mounted on a ceramic PCB, Al₂O₃, standard footprint.

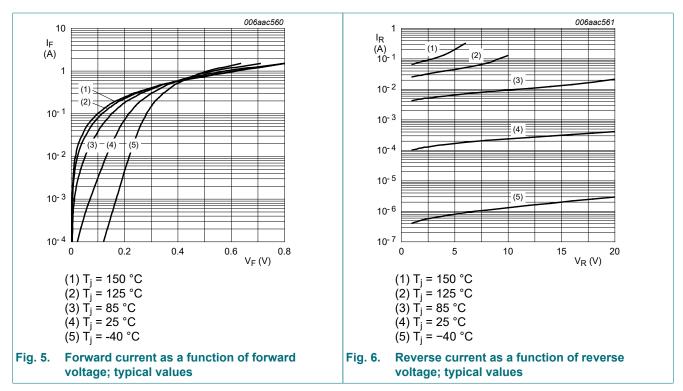
[5] Soldering point of cathode tab.

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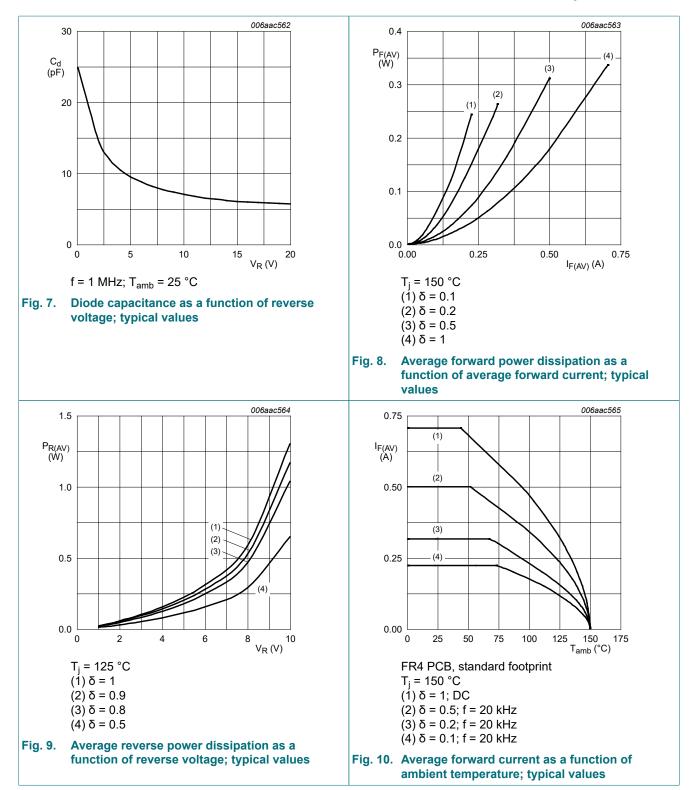


10. Characteristics

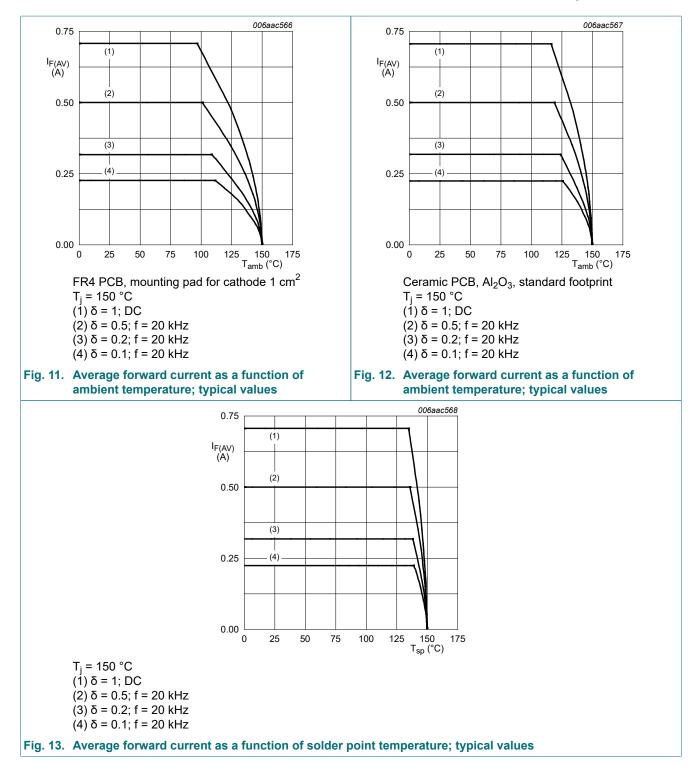
Symbol	Parameter	Conditions	Min	Тур	Мах	Unit
V _F	forward voltage	I_F = 0.1 mA; pulsed; $t_p \le 300 \ \mu s$; δ ≤ 0.02 ; T_{amb} = 25 °C	-	20	60	mV
		I_F = 1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	65	110	mV
		I _F = 10 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	125	190	mV
		I _F = 100 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	210	290	mV
		$I_{F} = 500 \text{ mA; single pulse; } t_{p} \le 300 \mu\text{s;}$ $\delta \le 0.02; T_{amb} = 25 ^{\circ}\text{C}$	-	365	440	mV
I _R	reverse current	V _R = 10 V; T _{amb} = 25 °C	-	300	600	μA
		V _R = 20 V; T _{amb} = 25 °C	-	500	1500	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C	-	19	25	pF
t _{rr}	reverse recovery time	I_F = 10 mA; I_R = 10 mA; $I_{R(meas)}$ = 1 mA; R _L = 100 Ω	-	6	-	ns



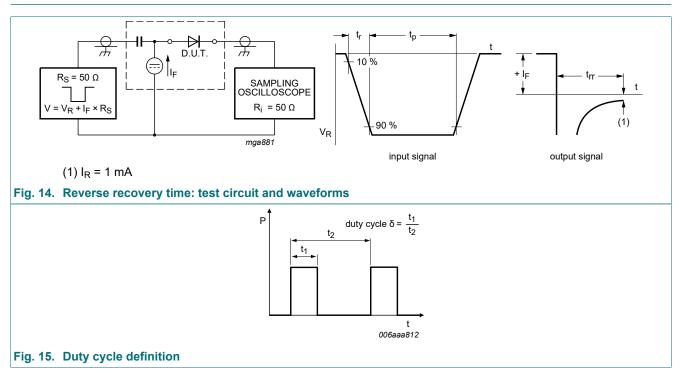
20 V, 0.5 A low VF Schottky barrier rectifier



20 V, 0.5 A low VF Schottky barrier rectifier



11. Test information



The current ratings for the typical waveforms are calculated according to the equations:

 $I_{F(AV)} = I_M \times \delta$ with I_M defined as peak current

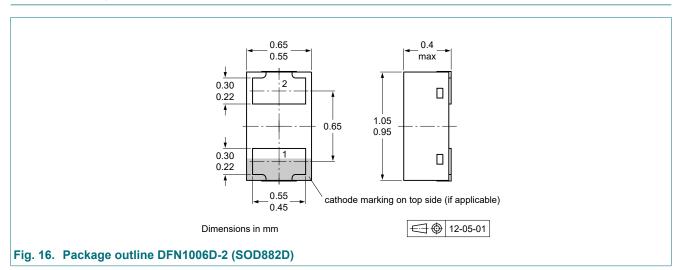
I_{RMS} = I_{F(AV)} at DC

 $I_{RMS} = I_M \times \sqrt{\delta}$ with I_{RMS} defined as RMS current

Quality information

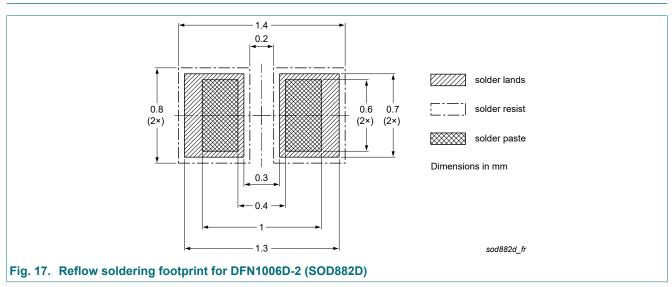
This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

12. Package outline



20 V, 0.5 A low VF Schottky barrier rectifier

13. Soldering



14. Revision history

Table 8. Revision history						
Data sheet ID	Release date	Data sheet status	Change notice	Supersedes		
PMEG2005AELD-Q v.1	20240709	Product data sheet	-	-		

15. 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.

 Please consult the most recently issued document before initiating or completing a design.

- [2] The term 'short data sheet' is explained in section "Definitions".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <u>https://www.nexperia.com</u>.

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