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Electronic Components Sourcing Information

Product Reference Information

Part Number: PMEG3002AELD,315
Manufacturer: Nexperia USA Inc.
Package: 2-XDFN
Availability: Please confirm with sales

Product Page:

<https://antrexco.com/product/details/nexperia-usa-inc/pmeg3002aeld-315.html>

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Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.



PMEG3002AELD

30 V, 0.2 A low VF Schottky barrier rectifier

8 October 2024

Product data sheet

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: $I_F \leq 0.2$ A
- Reverse voltage: $V_R \leq 30$ V
- Low forward voltage: $V_F \leq 480$ mV
- Ultra small and leadless SMD plastic package
- Solderable side pads
- Package height typ. 0.37 mm

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

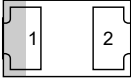
Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_R	reverse voltage	$T_j = 25$ °C	-	-	30	V
$I_{F(AV)}$	average forward current	$\delta = 0.5$; $f = 20$ kHz; square wave; $T_{amb} \leq 125$ °C	-	-	0.2	A
		$\delta = 0.5$; $f = 20$ kHz; square wave; $T_{sp} \leq 140$ °C	-	-	0.2	A
V_F	forward voltage	$I_F = 200$ mA; $t_p \leq 300$ μ s; $\delta \leq 0.02$; $T_{amb} = 25$ °C	-	430	480	mV
I_R	reverse current	$V_R = 10$ V; $T_{amb} = 25$ °C	-	3.5	10	μ A

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

5. Pinning information

Table 2. Pinning information

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

[1] The marking bar indicates the cathode.

6. Ordering information

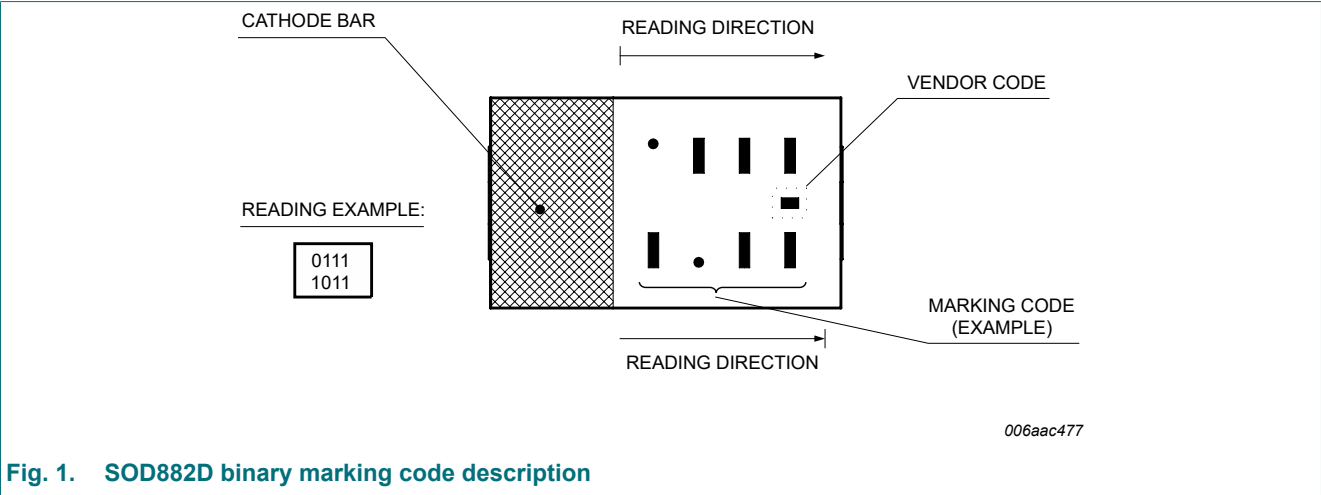
Table 3. Ordering information

Type number	Package		
	Name	Description	Version
PMEG3002AELD	DFN1006D-2	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	SOD882D

7. Marking

Table 4. Marking codes

Type number	Marking code
PMEG3002AELD	1101 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	T _j = 25 °C	-	30	V

Symbol	Parameter	Conditions		Min	Max	Unit
I _{F(AV)}	average forward current	δ = 0.5; f = 20 kHz; square wave; T _{amb} ≤ 125 °C	[1]	-	0.2	A
		δ = 0.5; f = 20 kHz; square wave; T _{sp} ≤ 140 °C		-	0.2	A
I _{FRM}	repetitive peak forward current	t _p ≤ 1 ms; δ ≤ 0.25		-	1	A
I _{FSM}	non-repetitive peak forward current	t _p = 8 ms; square wave; T _{j(init)} = 25 °C		-	3	A
P _{tot}	total power dissipation	T _{amb} ≤ 25 °C	[2]	-	0.34	W
			[1]	-	0.66	W
			[3]	-	1	W
T _j	junction temperature			-	150	°C
T _{amb}	ambient temperature			-55	150	°C
T _{stg}	storage temperature			-65	150	°C

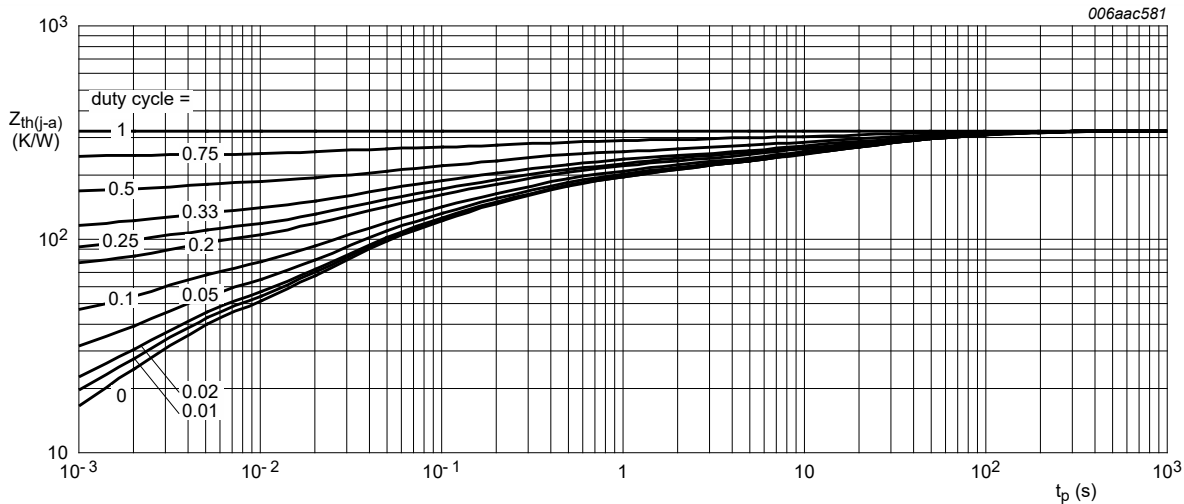
- [1] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².
[2] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.
[3] Device mounted on a ceramic PCB, Al₂O₃, standard footprint.

9. Thermal characteristics

Table 6. Thermal characteristics

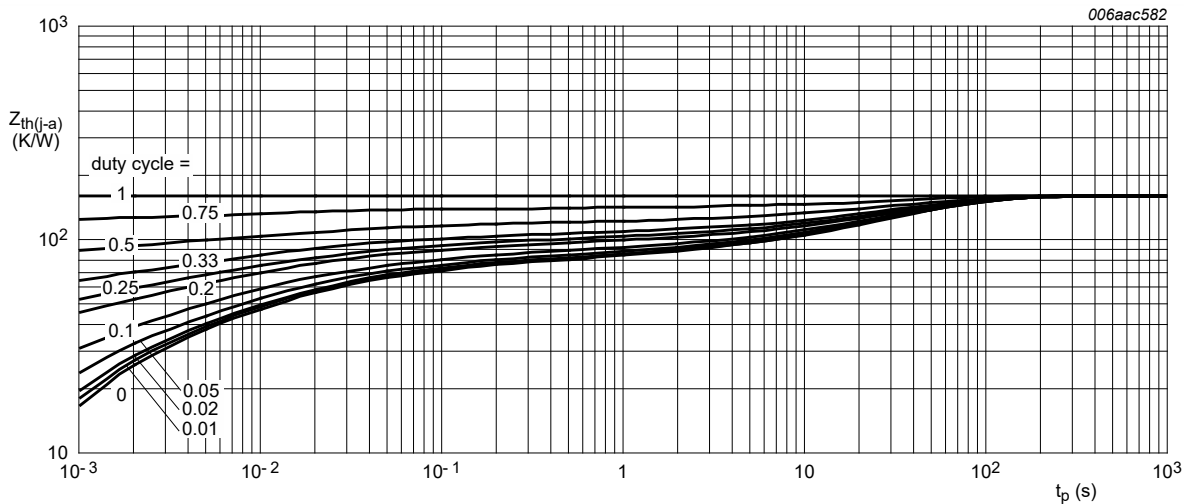
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R _{th(j-a)}	thermal resistance from junction to ambient	in free air	[1] [2] [3]	-	-	370	K/W
			[1] [4] [3]	-	-	190	K/W
			[1] [5] [3]	-	-	125	K/W
R _{th(j-sp)}	thermal resistance from junction to solder point		[6]	-	-	50	K/W

- [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] Reflow soldering is the only recommended soldering method.
[4] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for cathode 1 cm².
[5] Device mounted on a ceramic PCB, Al₂O₃, standard footprint.
[6] Soldering point of cathode tab.



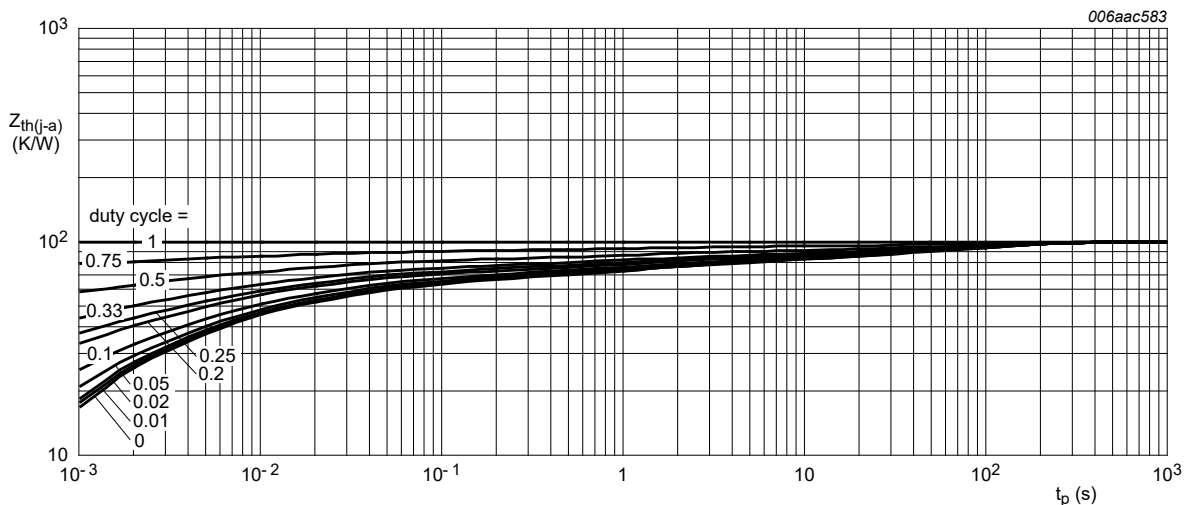
FR4 PCB, standard footprint

Fig. 2. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



FR4 PCB, mounting pad for cathode 1 cm²

Fig. 3. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values



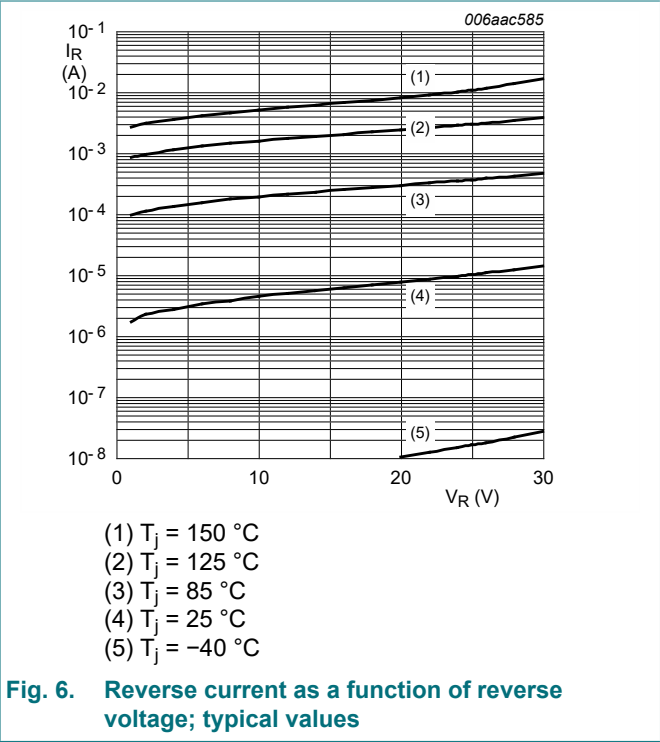
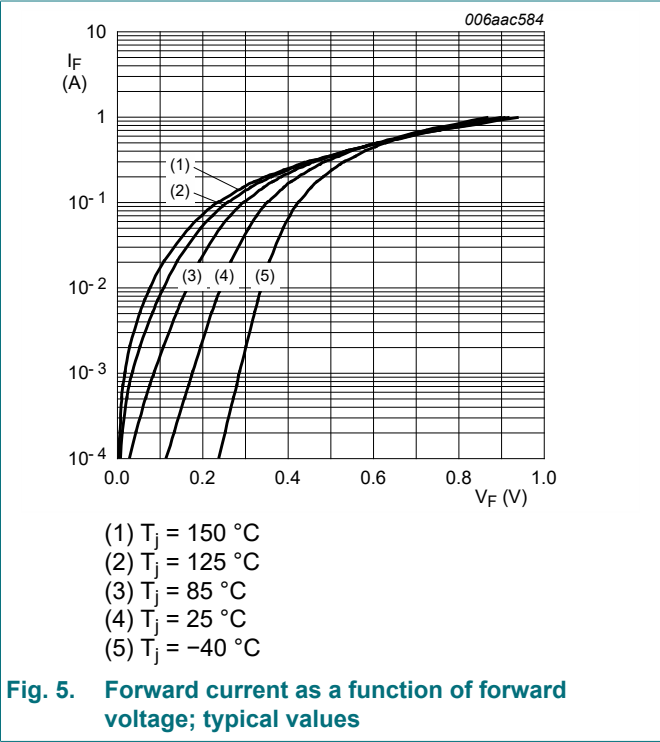
Ceramic PCB, Al₂O₃, standard footprint

Fig. 4. Transient thermal impedance from junction to ambient as a function of pulse duration; typical values

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V _F	forward voltage	I _F = 0.1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C		-	120	190	mV
		I _F = 1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _j = 25 °C		-	180	250	mV
		I _F = 10 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C		-	250	300	mV
		I _F = 100 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C		-	355	400	mV
		I _F = 200 mA; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C		-	430	480	mV
I _R	reverse current	V _R = 10 V; T _{amb} = 25 °C		-	3.5	10	μA
		V _R = 30 V; T _{amb} = 25 °C		-	12	50	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C		-	18	25	pF
t _{rr}	reverse recovery time	I _F = 10 mA; I _R = 10 mA; I _{R(meas)} = 1 mA; R _L = 100 Ω; T _j = 25 °C		-	6	-	ns



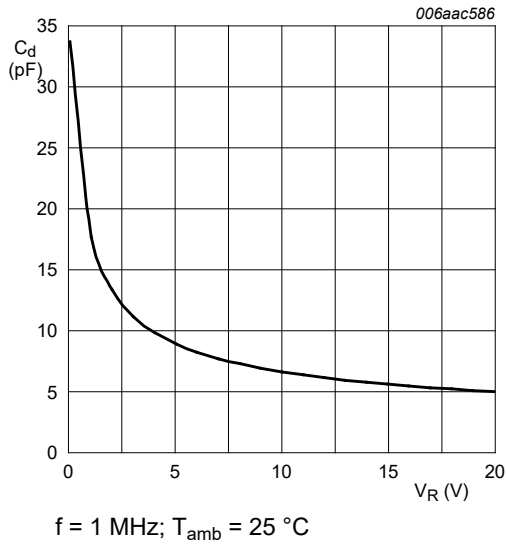


Fig. 7. Diode capacitance as a function of reverse voltage; typical values

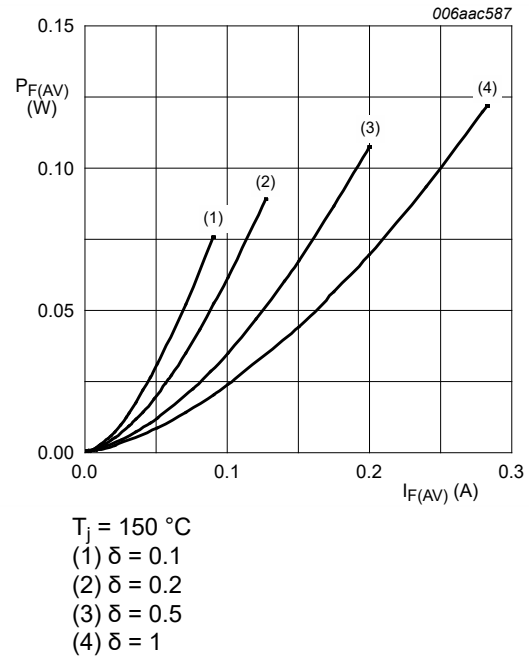


Fig. 8. Average forward power dissipation as a function of average forward current; typical values

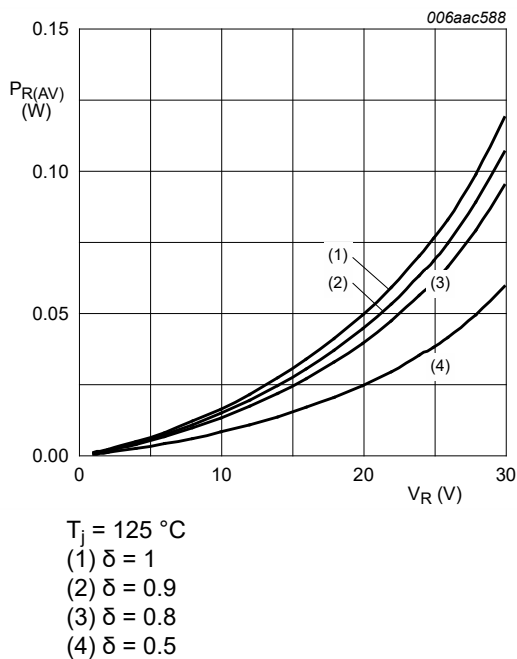


Fig. 9. Average reverse power dissipation as a function of reverse voltage; typical values

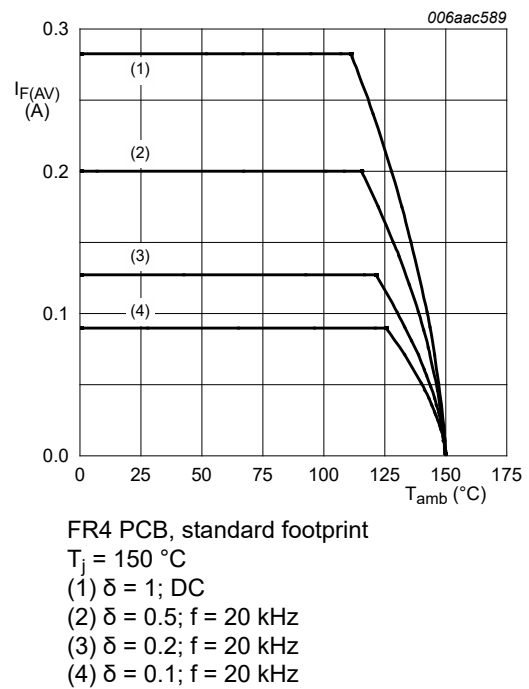
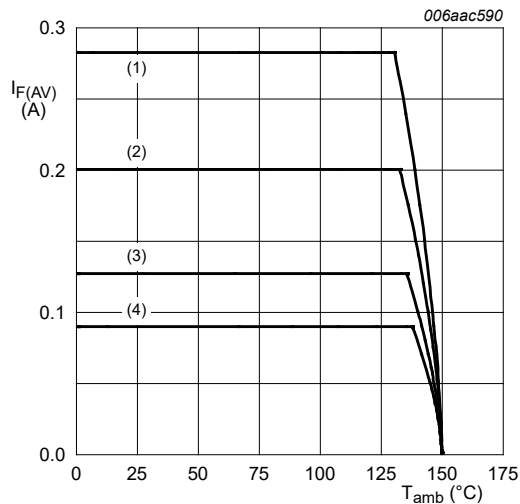
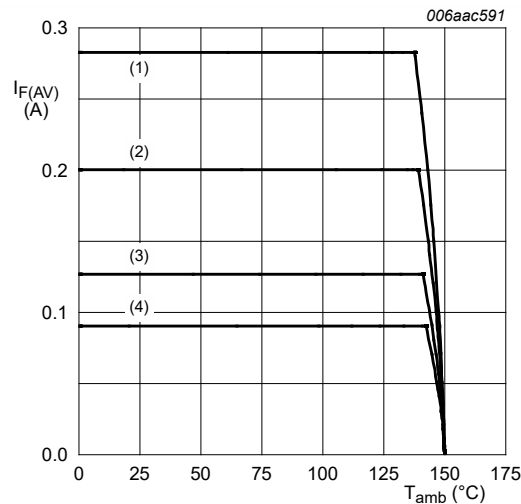


Fig. 10. Average forward current as a function of ambient temperature; typical values



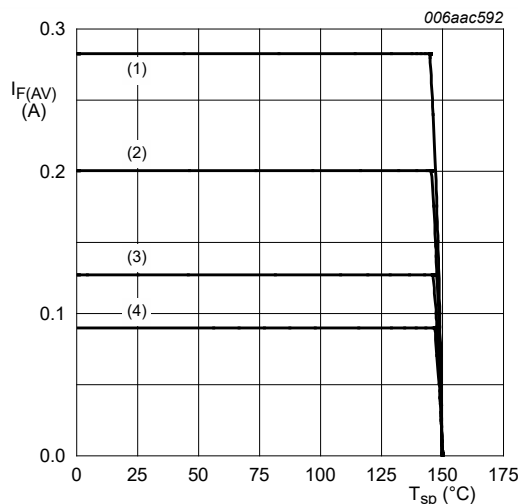
FR4 PCB, mounting pad for cathode 1 cm²
 $T_j = 150\text{ }^{\circ}\text{C}$
(1) $\delta = 1$; DC
(2) $\delta = 0.5$; $f = 20\text{ kHz}$
(3) $\delta = 0.2$; $f = 20\text{ kHz}$
(4) $\delta = 0.1$; $f = 20\text{ kHz}$

Fig. 11. Average forward current as a function of ambient temperature; typical values



Ceramic PCB, Al₂O₃, standard footprint
 $T_j = 150\text{ }^{\circ}\text{C}$
(1) $\delta = 1$; DC
(2) $\delta = 0.5$; $f = 20\text{ kHz}$
(3) $\delta = 0.2$; $f = 20\text{ kHz}$
(4) $\delta = 0.1$; $f = 20\text{ kHz}$

Fig. 12. Average forward current as a function of ambient temperature; typical values



$T_j = 150\text{ }^{\circ}\text{C}$
(1) $\delta = 1$; DC
(2) $\delta = 0.5$; $f = 20\text{ kHz}$
(3) $\delta = 0.2$; $f = 20\text{ kHz}$
(4) $\delta = 0.1$; $f = 20\text{ kHz}$

Fig. 13. Average forward current as a function of solder point temperature; typical values

11. Test information

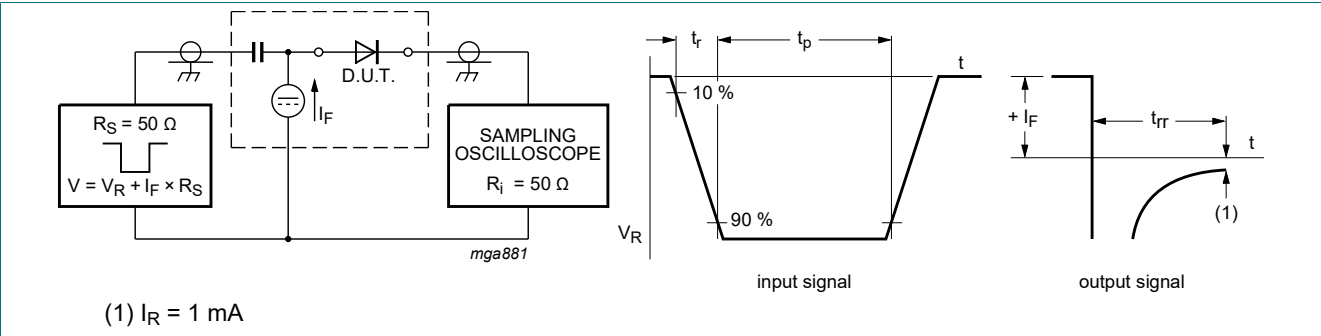


Fig. 14. Reverse recovery time: test circuit and waveforms

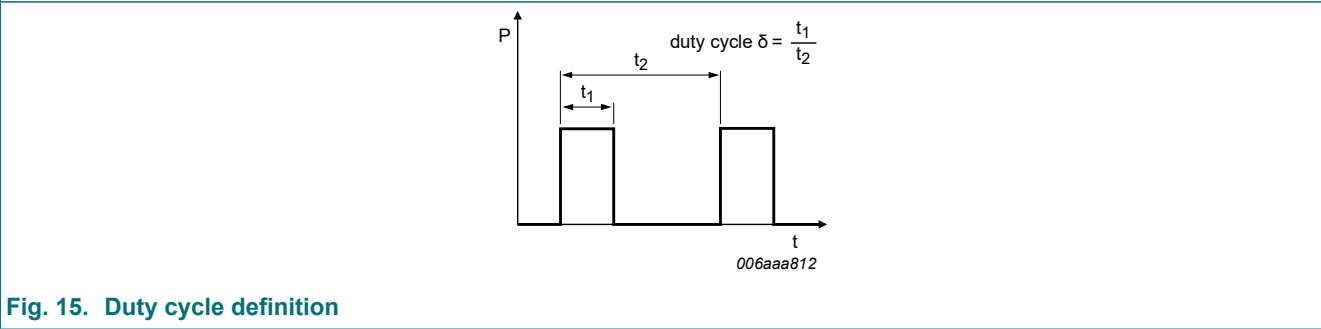


Fig. 15. Duty cycle definition

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

12. Package outline

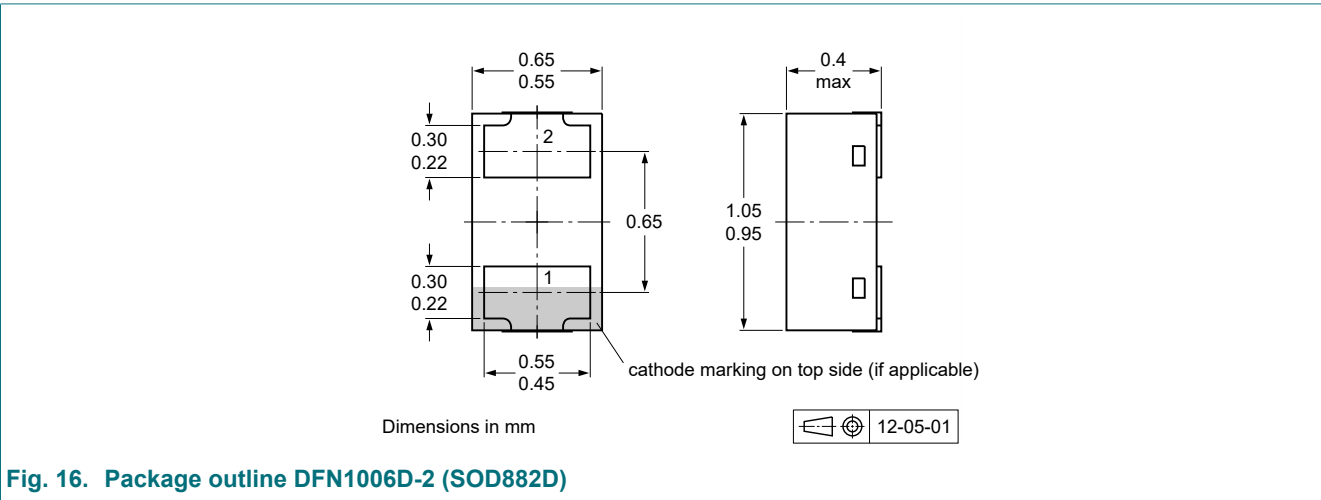


Fig. 16. Package outline DFN1006D-2 (SOD882D)

13. Soldering

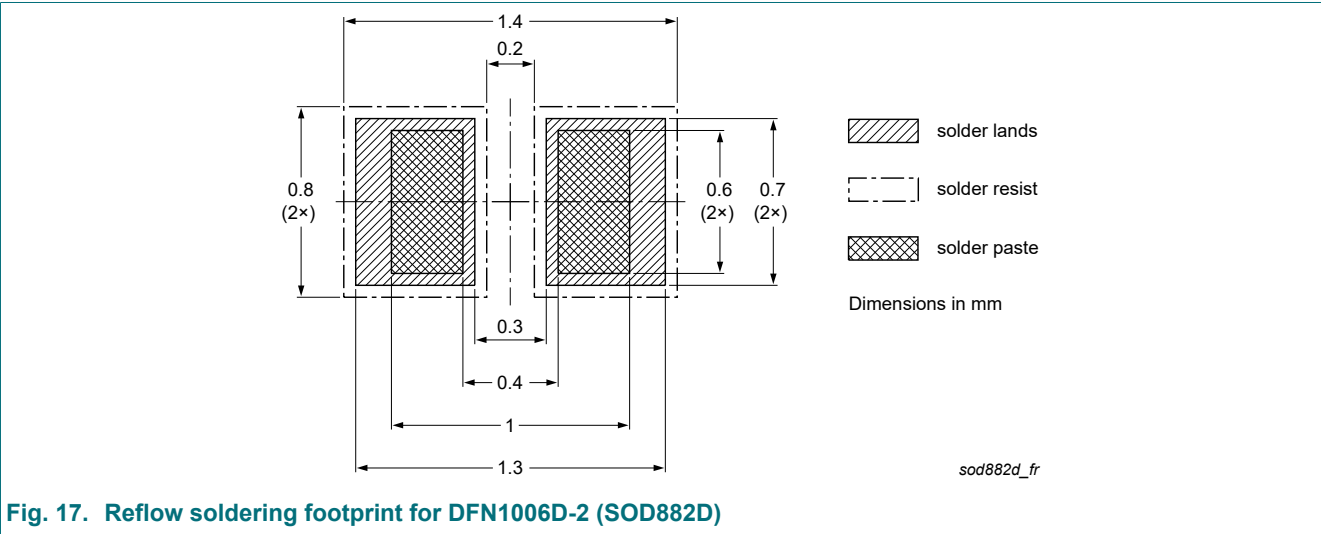


Fig. 17. Reflow soldering footprint for DFN1006D-2 (SOD882D)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
PMEG3002AELD v.2	20241008	Product data sheet	-	-
Modifications:	- Section "Packing information" removed. - Product(s) changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).			
PMEG3002AELD v.1	YYYYMMDD	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.

- [1] 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 <https://www.nexperia.com>.

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