



BAP55LX

Silicon PIN diode

Rev. 5 — 12 February 2019

Product data sheet

1 Product profile

1.1 General description

Planar PIN diode in a SOD882D leadless ultra small plastic SMD package.

1.2 Features and benefits

- High-speed switching for RF signals
- Low diode capacitance
- Low forward resistance
- Very low series inductance
- For applications up to 3 GHz
- AEC-Q101 qualified

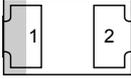
1.3 Applications

- RF attenuators and switches



2 Pinning information

Table 1. Discrete pinning

Pin	Description		Simplified outline	Symbol
1	cathode	[1]	 <p>Transparent top view</p>	 <i>sym006</i>
2	anode			

[1] The marking bar indicates the cathode.

3 Ordering information

Table 2. Ordering information

Type number	Package		
	Name	Description	Version
BAP55LX	DFN1006D-2	leadless ultra small plastic package; 2 terminals; body 1 × 0.6 × 0.4 mm	SOD882D

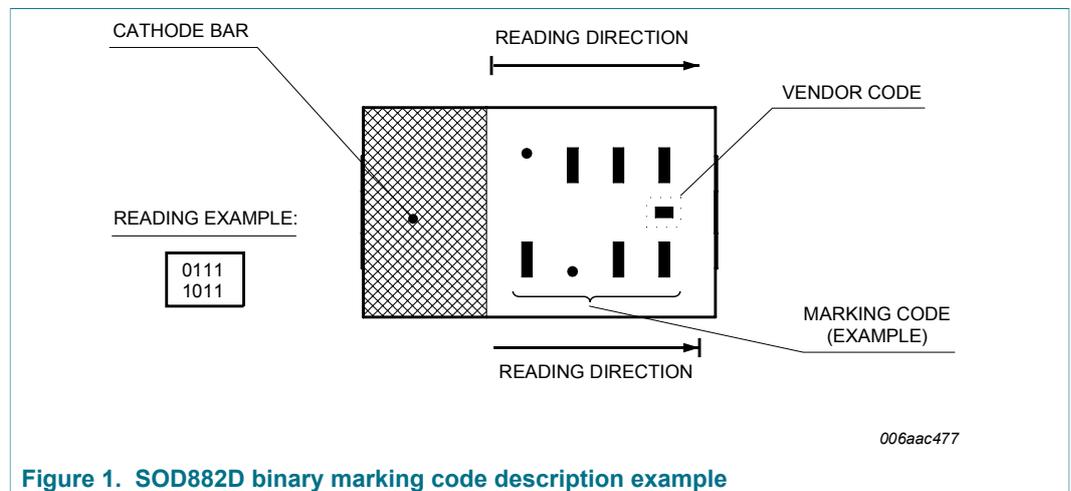
4 Marking

Table 3. Marking codes

Type number	Marking code ^[1]
BAP55LX	1111 1101

[1] For SOD882D binary marking code description (see [Figure 1](#)).

4.1 Binary marking code description



5 Limiting values

Table 4. Limiting values

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_R	reverse voltage		-	50	V
I_F	forward current		-	100	mA
P_{tot}	total power dissipation	$T_{sp} \leq 90\text{ °C}$	-	135	mW
T_{stg}	storage temperature		-65	+150	°C
T_j	junction temperature		-65	+150	°C

6 Thermal characteristics

Table 5. Thermal characteristics

Symbol	Parameter	Conditions	Typ	Unit
$R_{th(j-sp)}$	thermal resistance from junction to solder point		78	K/W

7 Characteristics

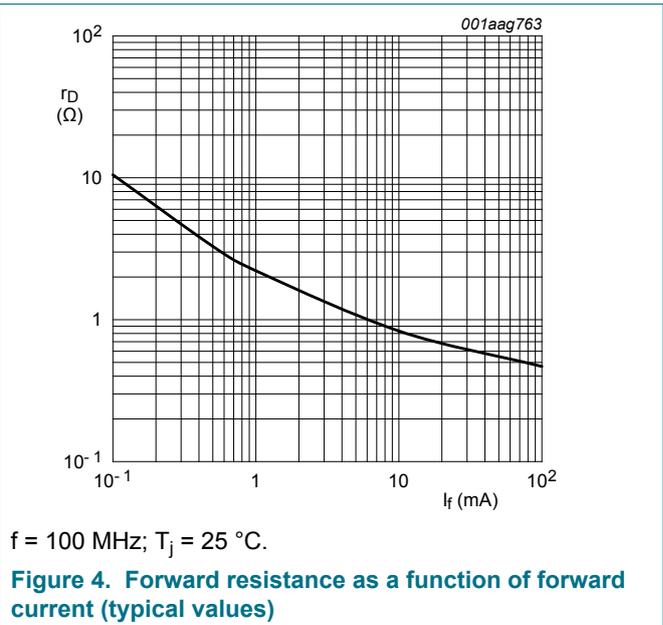
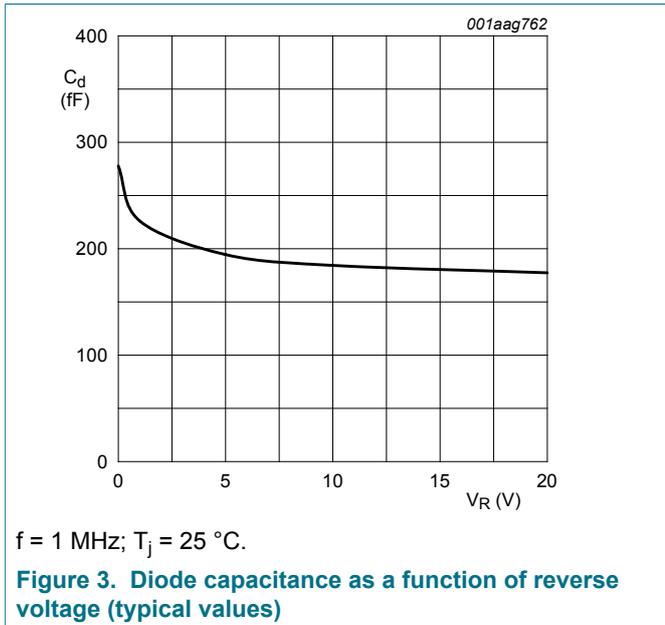
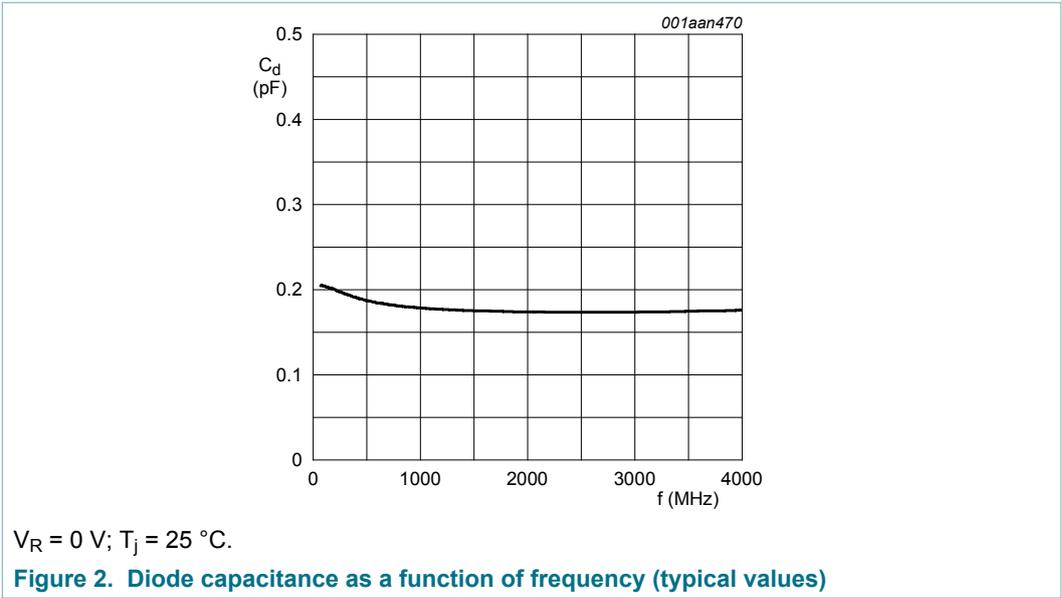
Table 6. Characteristics

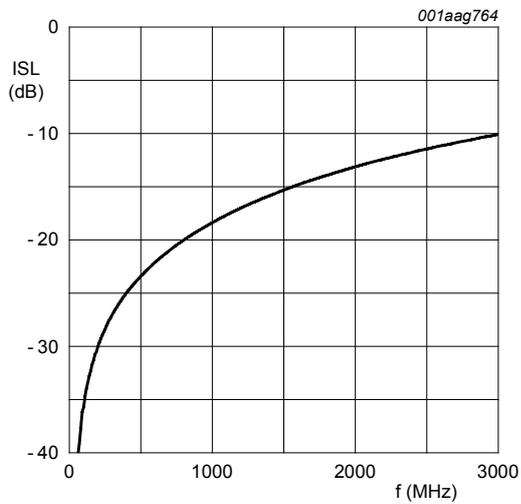
$T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_F	forward voltage	$I_F = 50\text{ mA}$	-	0.95	1.1	V
I_R	reverse current	$V_R = 20\text{ V}$	-	-	10	nA
		$V_R = 50\text{ V}$	-	-	100	nA
C_d	diode capacitance	f = 1 MHz (see Figure 3)				
		$V_R = 0\text{ V}$	-	0.28	-	pF
		$V_R = 1\text{ V}$	-	0.23	-	pF
		$V_R = 20\text{ V}$	-	0.18	0.28	pF
r_D	diode forward resistance	f = 100 MHz (see Figure 4)				
		$I_F = 0.5\text{ mA}$	-	3.3	4.5	Ω
		$I_F = 1\text{ mA}$	-	2.2	3.3	Ω
		$I_F = 10\text{ mA}$	-	0.8	1.2	Ω
		$I_F = 100\text{ mA}$	-	0.5	0.8	Ω
ISL	isolation	$V_R = 0\text{ V}$ (see Figure 5)				
		f = 900 MHz	-	19	-	dB
		f = 1800 MHz	-	14	-	dB
		f = 2450 MHz	-	12	-	dB
L_{ins}	insertion loss	(See Figure 6)				
		$I_F = 0.5\text{ mA}$				
		f = 900 MHz	-	0.24	-	dB
		f = 1800 MHz	-	0.25	-	dB
		f = 2450 MHz	-	0.26	-	dB
		$I_F = 1\text{ mA}$				
		f = 900 MHz	-	0.17	-	dB
		f = 1800 MHz	-	0.18	-	dB
		f = 2450 MHz	-	0.19	-	dB
		$I_F = 10\text{ mA}$;				
		f = 900 MHz	-	0.08	-	dB
		f = 1800 MHz	-	0.09	-	dB
		f = 2450 MHz	-	0.10	-	dB
		$I_F = 100\text{ mA}$;				
		f = 900 MHz	-	0.05	-	dB
		f = 1800 MHz	-	0.07	-	dB
f = 2450 MHz	-	0.08	-	dB		

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
τ_L	charge carrier life time	when switched from $I_F = 10 \text{ mA}$ to $I_R = 6 \text{ mA}$; $R_L = 100 \text{ }\Omega$; measured at $I_R = 3 \text{ mA}$	0.225	0.27	-	μs
L_S	series inductance	$I_F = 100 \text{ mA}$; $f = 100 \text{ MHz}$	-	0.4	-	nH

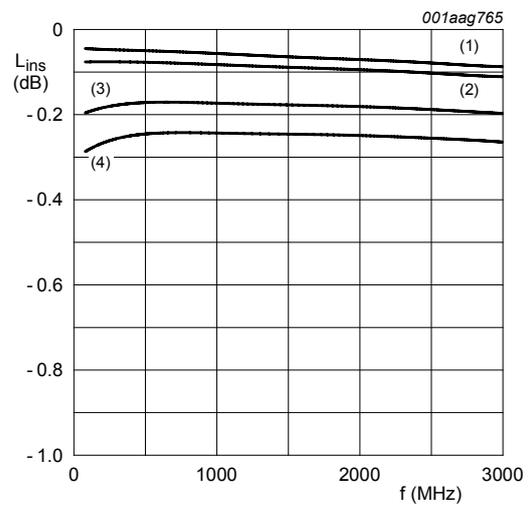
7.1 Graphical data





$T_{amb} = 25\text{ }^{\circ}\text{C}$
 Diode zero biased and inserted in series with a 50 Ω stripline circuit

Figure 5. Isolation of the diode as a function of frequency (typical values)



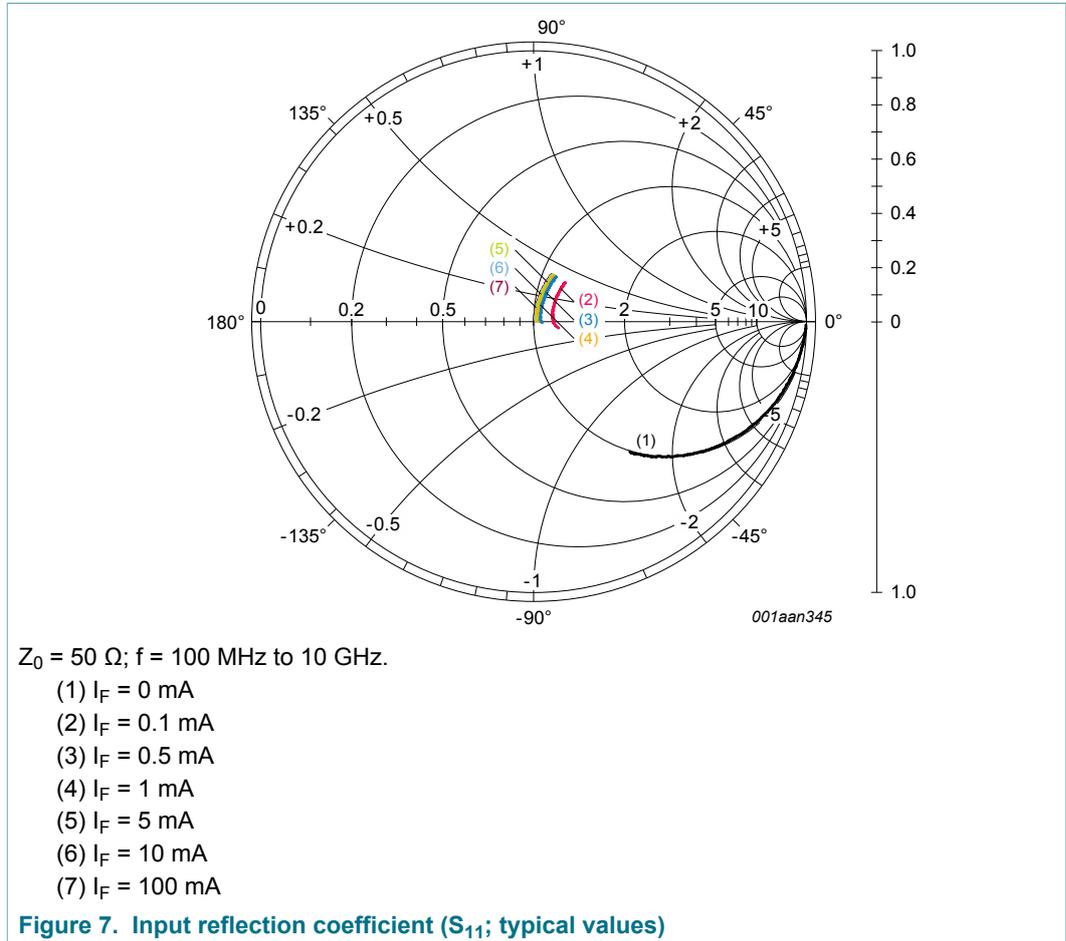
$T_{amb} = 25\text{ }^{\circ}\text{C}$
 Diode inserted in series with a 50 Ω stripline circuit and biased via the analyzer T-network

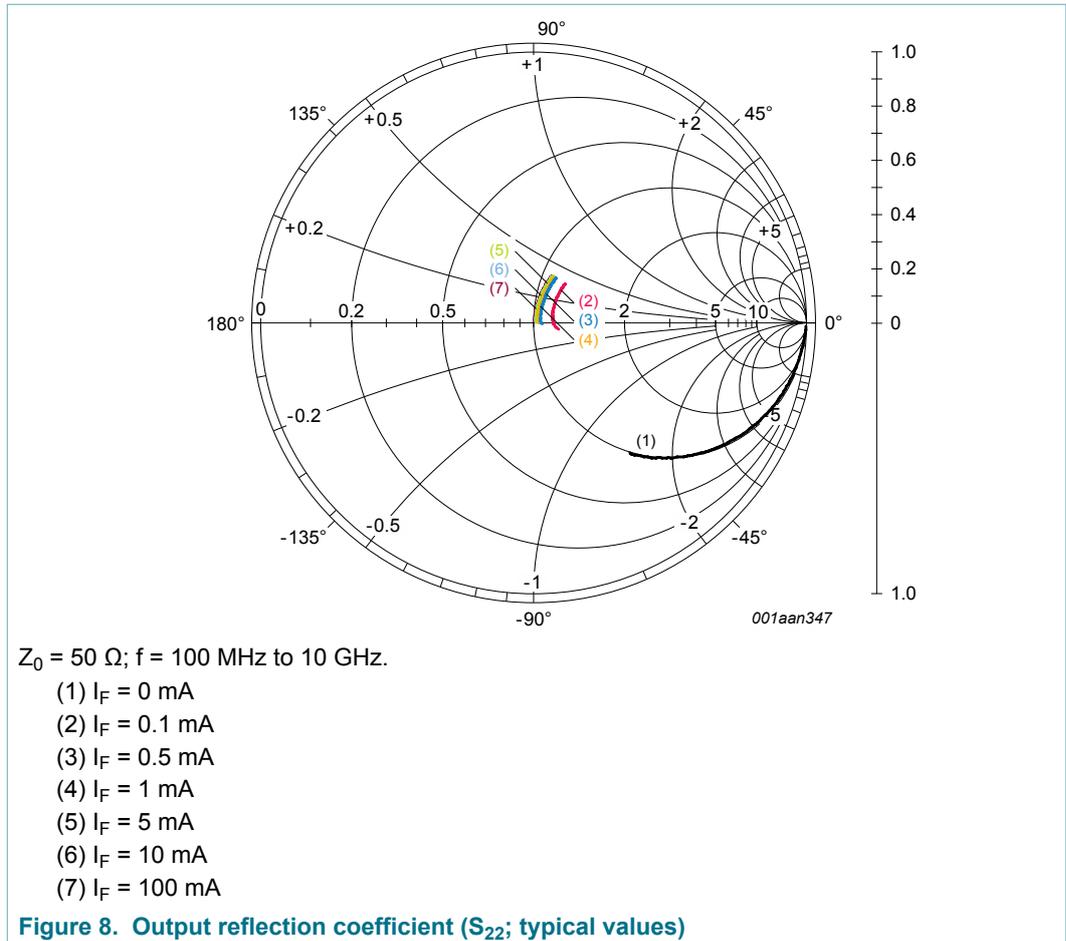
- (1) $I_F = 100\text{ mA}$
- (2) $I_F = 10\text{ mA}$
- (3) $I_F = 1\text{ mA}$
- (4) $I_F = 0.5\text{ mA}$

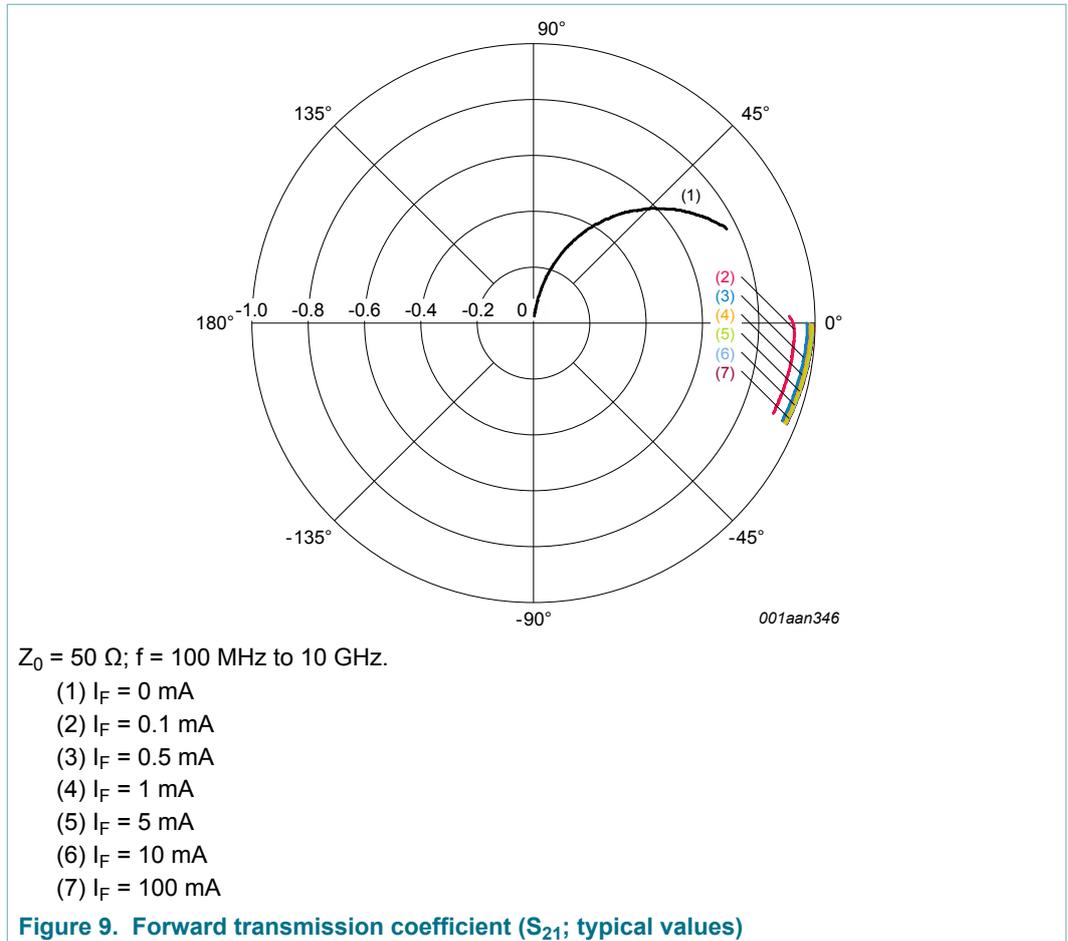
Figure 6. Insertion loss of the diode as a function of frequency (typical values)

7.2 S-parameters

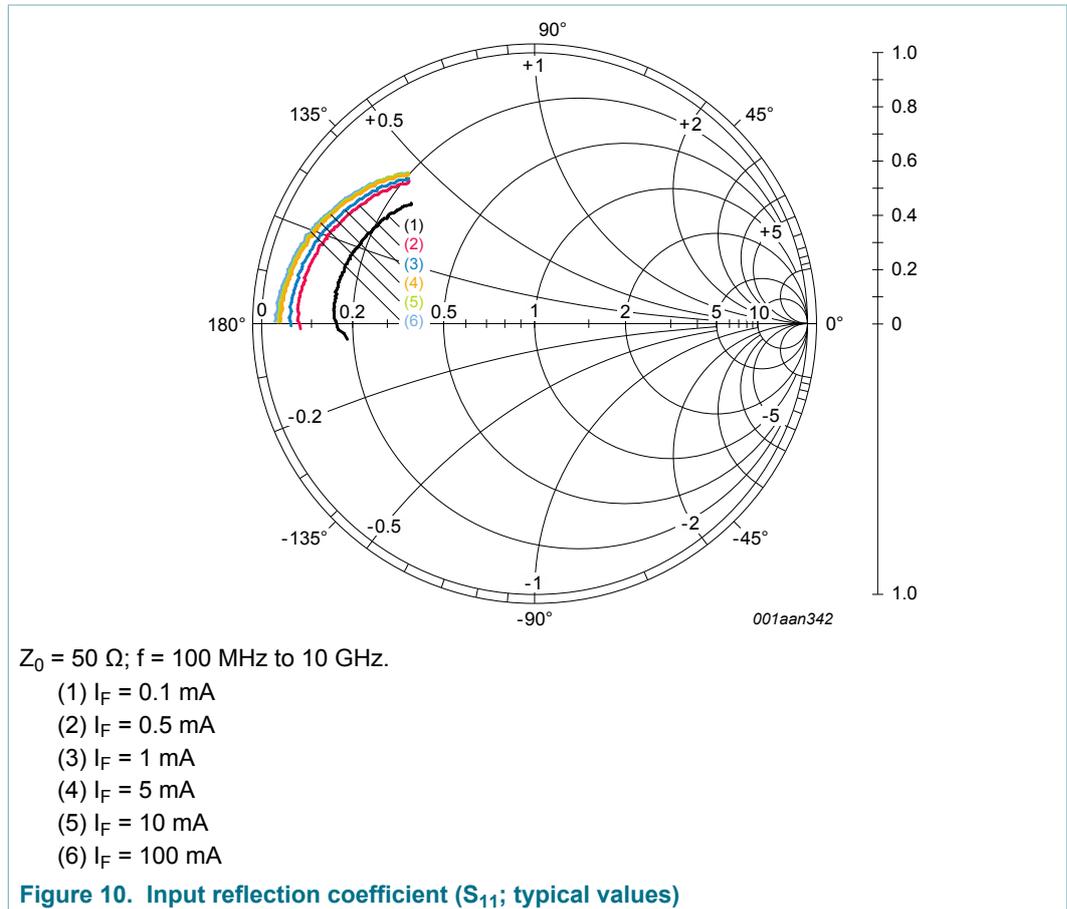
7.2.1 Diode in series configuration

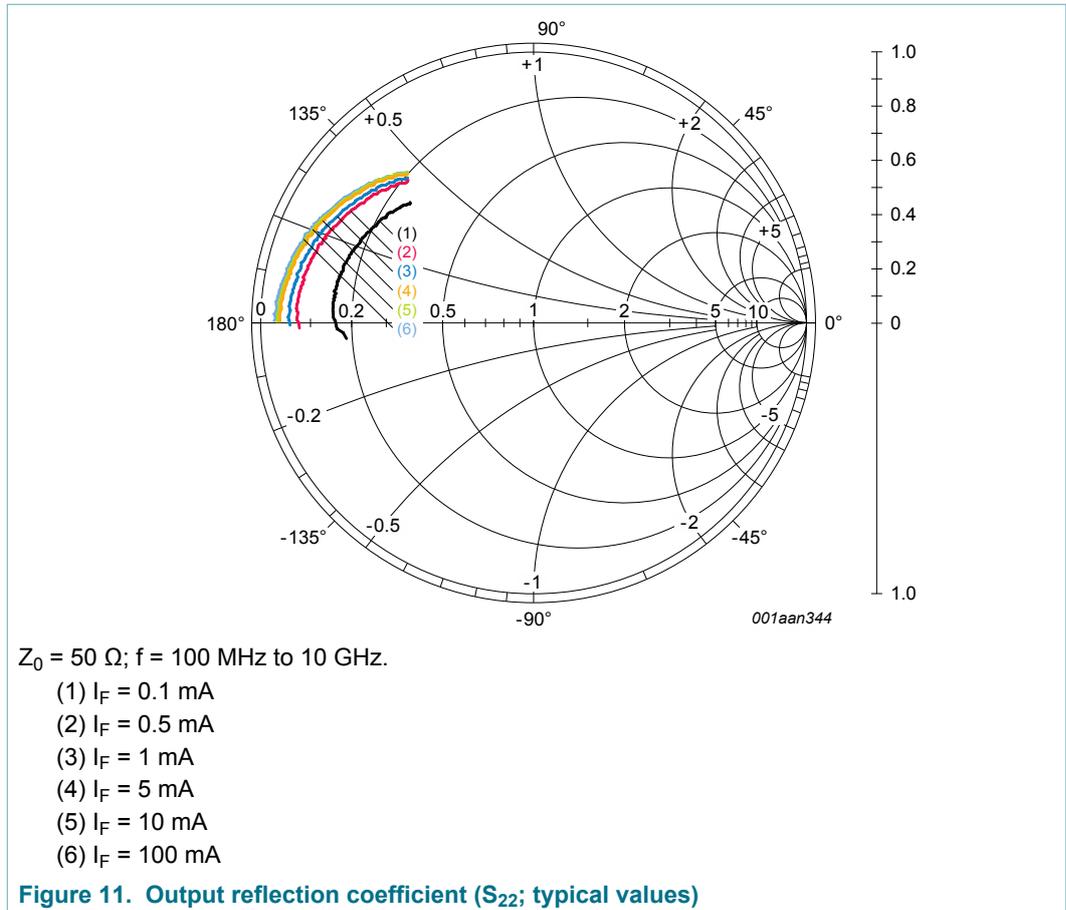


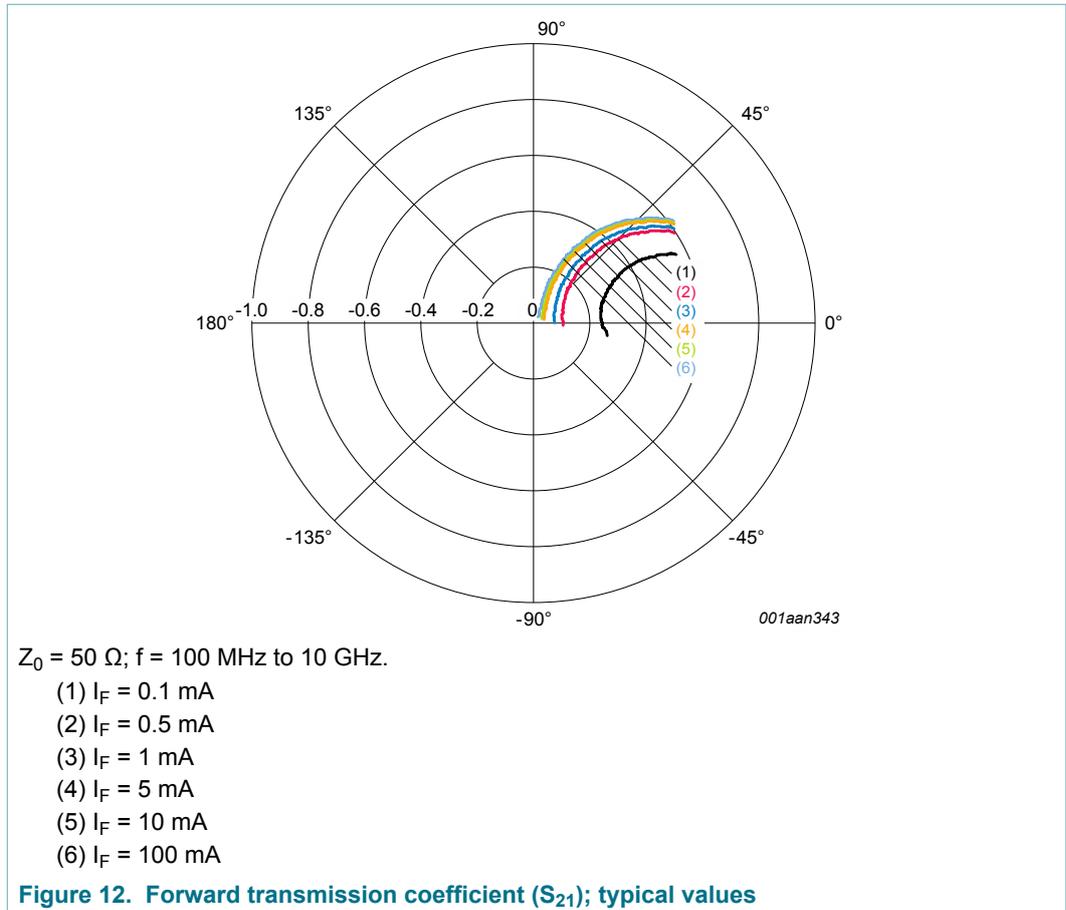




7.2.2 Diode in parallel configuration







8 Package outline

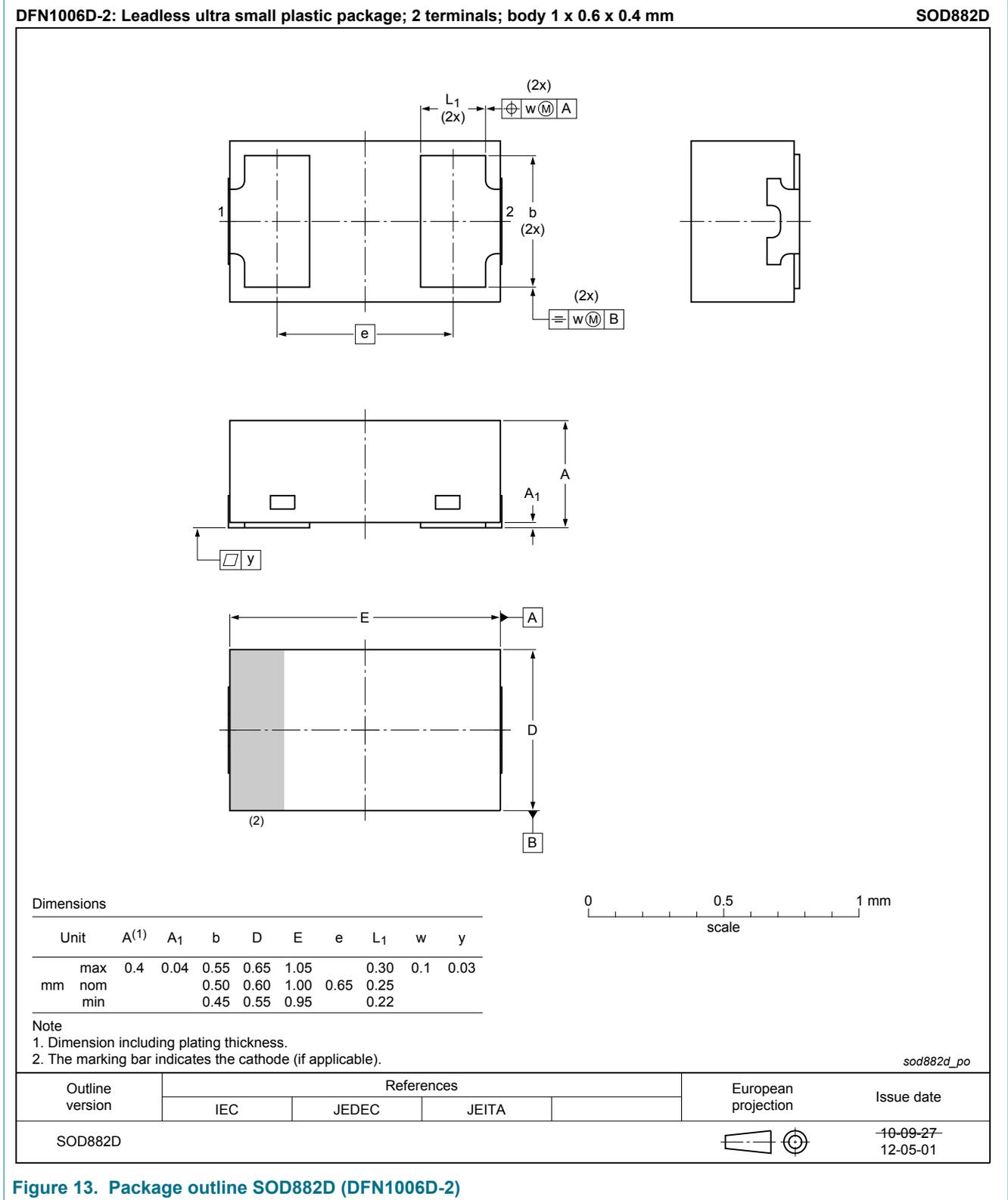


Figure 13. Package outline SOD882D (DFN1006D-2)

9 Abbreviations

Table 7. Abbreviations

Acronym	Description
PIN	P-type, intrinsic, N-type
SMD	surface-mounted device
RF	radio frequency

10 Revision history

Table 8. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAP55LX v.5	20190212	Product data sheet	-	BAP55LX v.4
Modifications:	<ul style="list-style-type: none">• Section 1.2 "Features and benefits" has been updated.• The "Legal information" pages have been updated.			
BAP55LX v.4	20130806	Product data sheet	-	BAP55LX v.3
BAP55LX v.3	20110113	Product data sheet	-	BAP55LX v.2
BAP55LX v.2	20101216	Product data sheet	-	BAP55LX v.1
BAP55LX v.1	20070730	Product data sheet	-	-

11 Legal information

11.1 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".

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