

Product data sheet

Product profile

1.1 General description

The BB178LX is a planar technology variable capacitance diode in a SOD882T ultra small leadless plastic SMD package. The excellent matching performance is achieved by gliding matching and a Direct Matching Assembly (DMA) procedure.

1.2 Features

- Excellent linearity
- Excellent matching to 2 % DMA
- Ultra small leadless SMD package
- $C_{d(28V)}$: 2.6 pF; $C_{d(1V)}$ to $C_{d(28V)}$ ratio typical 15
- Low series resistance

1.3 Applications

- Voltage Controlled Oscillators (VCO)
- Electronic tuning in VHF television tuners, Band B up to 460 MHz

Pinning information 2.

Table 1. **Pinning**

Pin	Description	Simplified outline	Graphic symbol
1	cathode	[1]	ш
2	anode	1 2	sym008
		Transparent top view	

^[1] The marking bar indicates the cathode.

Ordering information 3.

Table 2. **Ordering information**

Type number	Package		
	Name	Description	Version
BB178LX	-	leadless ultra small plastic package; 2 terminals; body 1 \times 0.6 \times 0.4 mm	SOD882T



4. Marking

Table 3. Marking codes

Type number	Marking code
BB178LX	L3

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		-	32	V
I _F	forward current		-	20	mA
T _{stg}	storage temperature		-55	+150	°C
Tj	junction temperature		-55	+125	°C

6. Characteristics

Table 5. Characteristics

 $T_i = 25 \,^{\circ}C$ unless otherwise specified.

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
I_R	reverse current	see Figure 3				
		V _R = 30 V	-	-	10	nA
		$V_R = 30 \text{ V}; T_j = 85 ^{\circ}\text{C}$	-	-	200	nΑ
r _s	diode series resistance	$f = 100 \text{ MHz}$ at $C_d = 30 \text{ pF}$; see Figure 2	-	0.7	-	Ω
C_{d}	diode capacitance	f = 1 MHz; see <u>Figure 1</u> and <u>Figure 4</u>				
		V _R = 1 V	34.65	-	42.35	pF
		V _R = 28 V	2.36	2.6	2.75	pF
$C_{d(1V)}/C_{d(2V)}$	diode capacitance ratio (1 V to 2 V)	f = 1 MHz	-	1.3	-	
$C_{d(1V)}/C_{d(28V)}$	diode capacitance ratio (1 V to 28 V)	f = 1 MHz	13.5	15	-	
C _{d(25V)} /C _{d(28V)}	diode capacitance ratio (25 V to 28 V)	f = 1 MHz	-	1.08	-	
$\Delta C_d/C_d$	diode capacitance matching	V _R = 1 V to 28 V; in sequence of 5 diodes (gliding)	-	-	2	%

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BB178LX

VHF variable capacitance diode

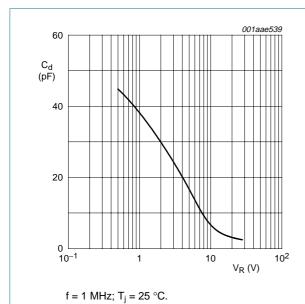


Fig 1. Diode capacitance as a function of reverse voltage; typical values

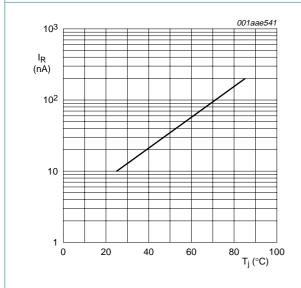
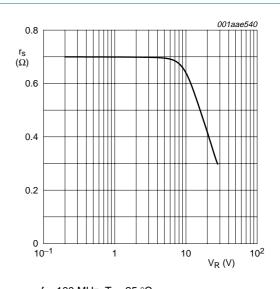
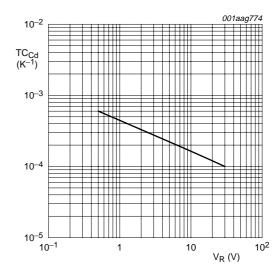


Fig 3. Reverse current as a function of junction temperature; maximum values



f = 100 MHz; T_j = 25 $^{\circ}C.$

Fig 2. Diode series resistance as a function of reverse voltage; typical values



 $T_i = 0$ °C to 85 °C.

Fig 4. Temperature coefficient of diode capacitance as a function of reverse voltage; typical values

7. Package outline

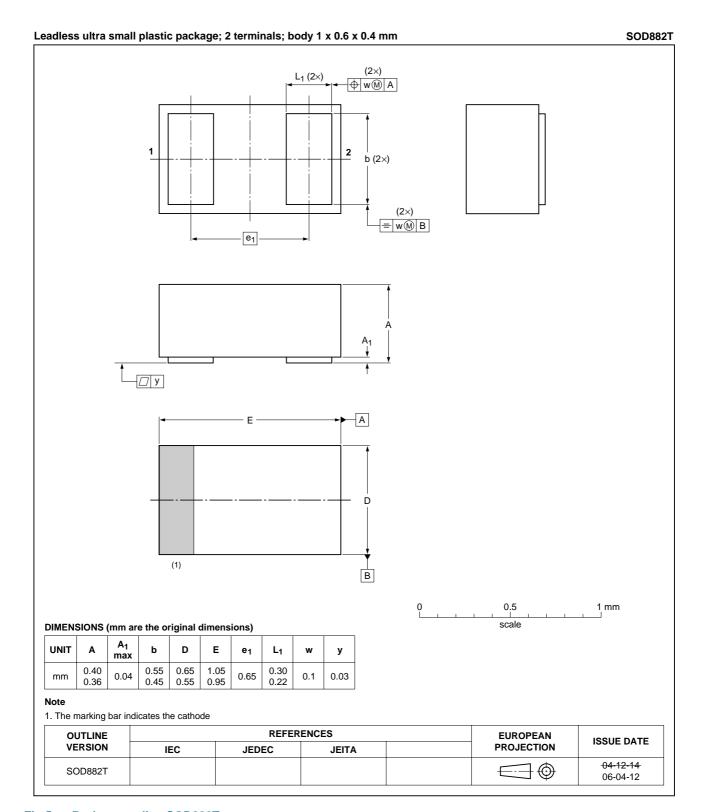


Fig 5. Package outline SOD882T



VHF variable capacitance diode

8. Abbreviations

Table 6. Abbreviations

Acronym	Description
SMD	Surface Mounted Device
VHF	Very High Frequency

9. Revision history

Table 7. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BB178LX_2	20090212	Product data sheet	-	BB178LX_1
Modifications:		of this data sheet has beer of NXP Semiconductors.	redesigned to comply v	vith the new identity
	 Legal texts 	have been adapted to the r	new company name whe	ere appropriate.
	 Descriptive 	title: 'UHF diode' changed	to 'VHF diode'	
	 Table 5 "Ch 	naracteristics": r _s Condition	f = 470 MHz' changed to	o 'f = 100 MHz'
BB178LX_1	20060414	Preliminary data sheet	-	-

VHF variable capacitance diode

10. Legal information

10.1 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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