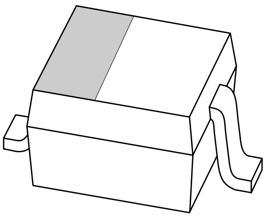
DISCRETE SEMICONDUCTORS

DATA SHEET



BB151
Low-voltage variable capacitance diode

Product specification
Supersedes data of 2000 Nov 07

2004 Feb 25

Philips
Semiconductors

PHILIPS

Low-voltage variable capacitance diode BB151

FEATURES

- Very low capacitance spread
- Excellent linearity
- Very small plastic SMD package
- C3: 10.6 pF; ratio: 1.53
- Very low series resistance.

APPLICATIONS

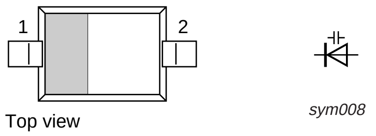
- Voltage controlled oscillators (VCO).

DESCRIPTION

The BB151 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD323 (SC-76) very small plastic SMD package.

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



Marking code: PA.
The marking bar indicates the cathode.

Fig.1 Simplified outline (SOD323; SC-76) and symbol.

ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BB151	–	plastic surface mounted package; 2 leads	SOD323

LIMITING VALUES

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
V_R	continuous reverse voltage	–	10	V
I_F	continuous forward current	–	20	mA
T_{stg}	storage temperature	–55	+150	°C
T_j	operating junction temperature	–55	+150	°C

CHARACTERISTICS

T_j = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_R	reverse current	V_R = 10 V; see Fig.3	–	–	10	nA
		V_R = 10 V; T_j = 85 °C; see Fig.3	–	–	200	nA
r_s	diode series resistance	f = 470 MHz; C_d = 9 pF	–	0.4	0.55	Ω
C_d	diode capacitance	f = 1 MHz; see Figs 2 and 4				
		V_R = 0.5 V	–	19.1	–	pF
		V_R = 1 V	15.4	16.2	17	pF
		V_R = 2 V	–	12.8	–	pF
		V_R = 3 V	9.9	10.6	11.3	pF
		V_R = 4 V	–	9	–	pF
$\frac{C_{d(1V)}}{C_{d(3V)}}$	capacitance ratio	f = 1 MHz	1.45	1.53	–	
$\frac{C_{d(1V)}}{C_{d(4V)}}$	capacitance ratio	f = 1 MHz	–	1.8	–	

GRAPHICAL DATA

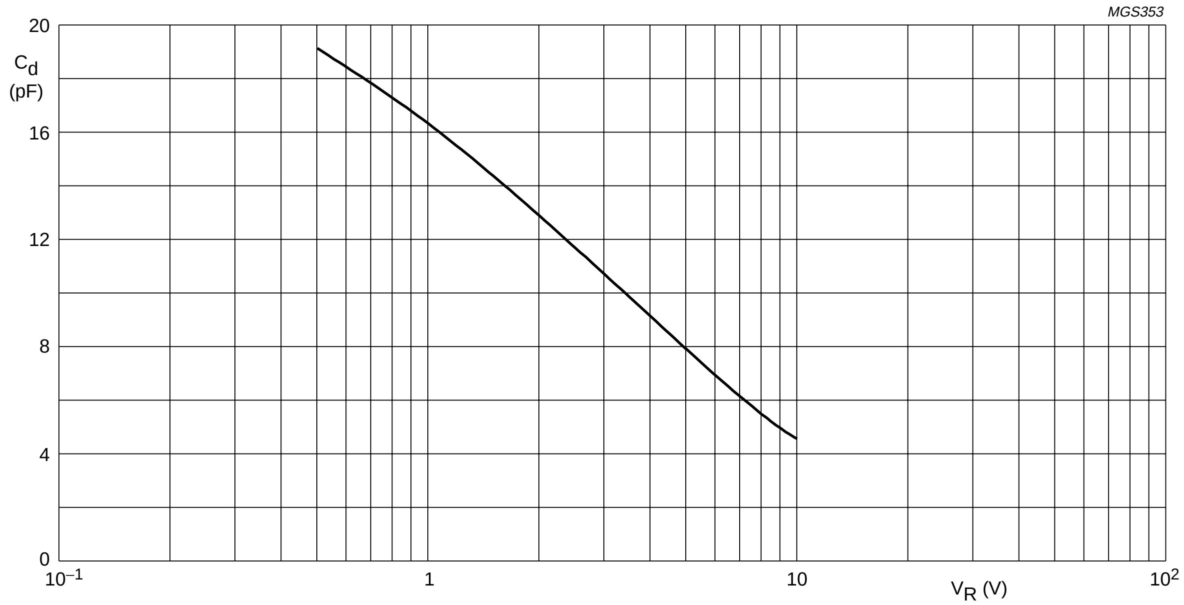


Fig.2 Diode capacitance as a function of reverse voltage; typical values.

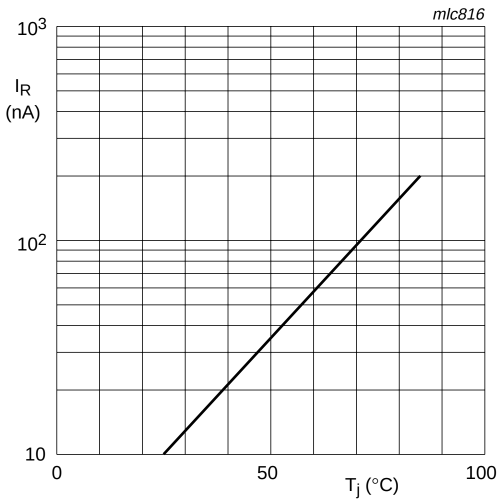


Fig.3 Reverse current as a function of junction temperature; maximum values.

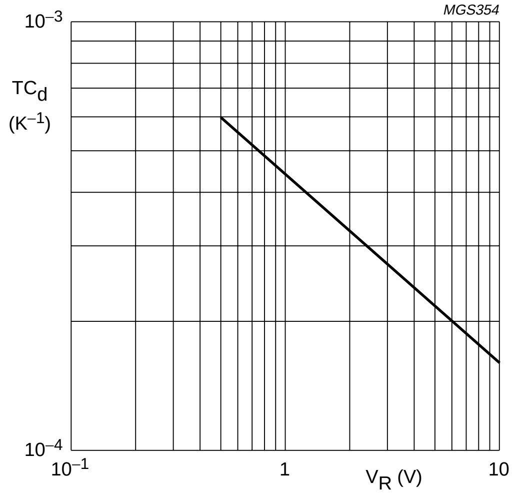
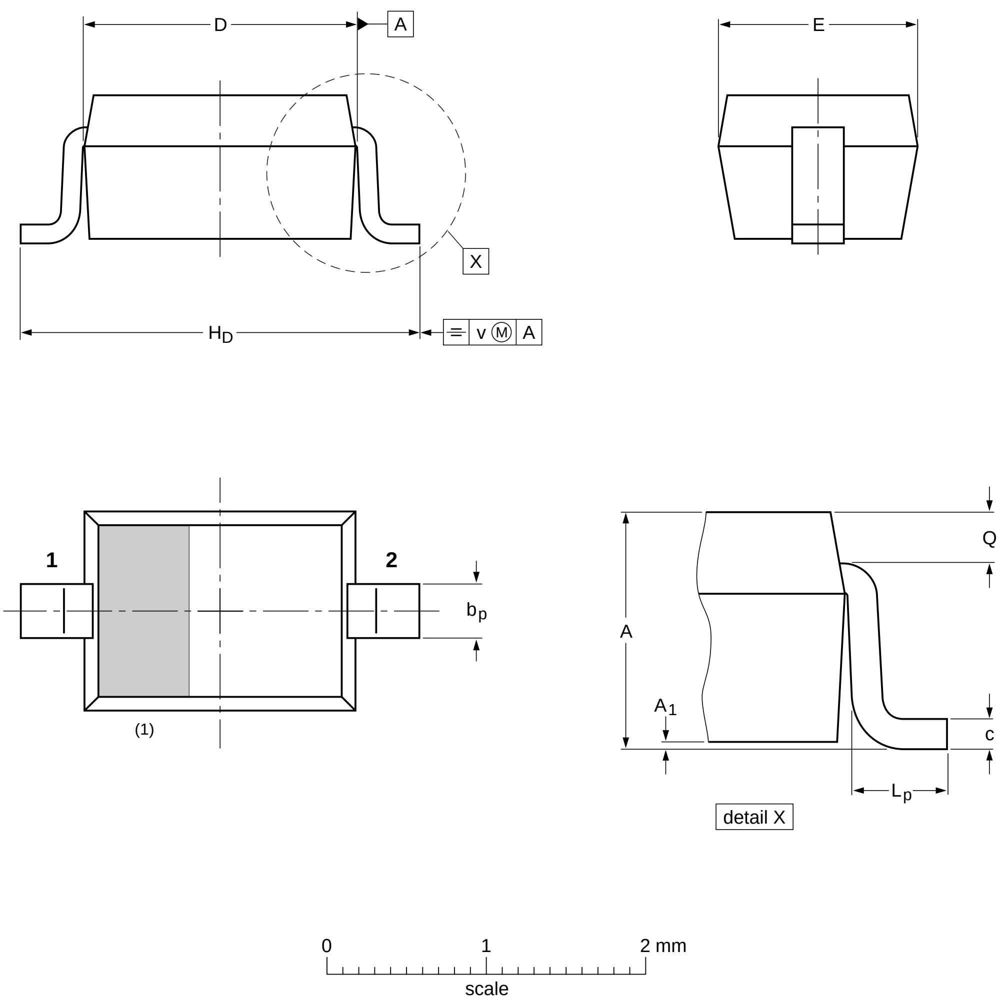


Fig.4 Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads **SOD323**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max	b_p	c	D	E	H_D	L_p	Q	v
mm	1.1 0.8	0.05	0.40 0.25	0.25 0.10	1.8 1.6	1.35 1.15	2.7 2.3	0.45 0.15	0.25 0.15	0.2

Note

1. The marking bar indicates the cathode

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA			
SOD323			SC-76			~~99-09-13~~ 03-12-17

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS[1]	PRODUCT STATUS[2][3]	DEFINITION
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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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