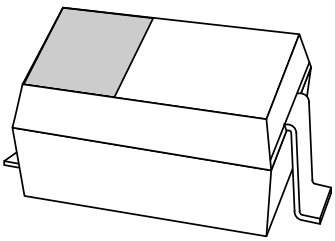
DATA SHEET



BB151
Low-voltage variable capacitance diode

Preliminary specification

1999 May 12

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

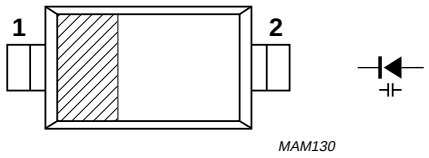
- Voltage controlled oscillators (VCO).

DESCRIPTION

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

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



Marking code: PA.
Cathode side indicated by a bar.

Fig.1 Simplified outline (SOD323) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

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

ELECTRICAL 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; V_R is the value at which 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

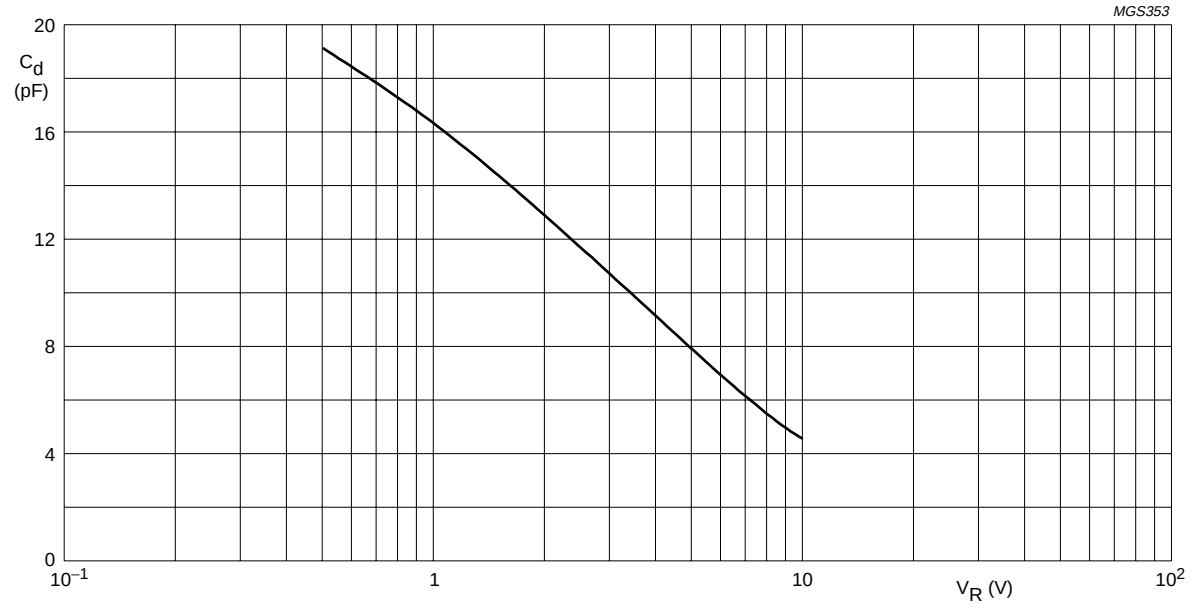


Fig.2 Diode capacitance as a function of reverse voltage; typical values.

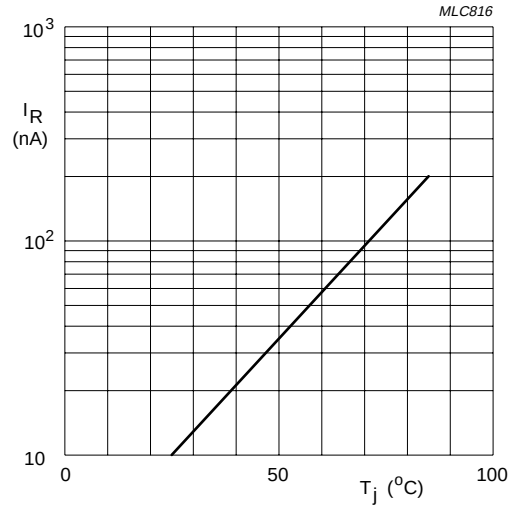


Fig.3 Reverse current as a function of junction temperature; maximum values.

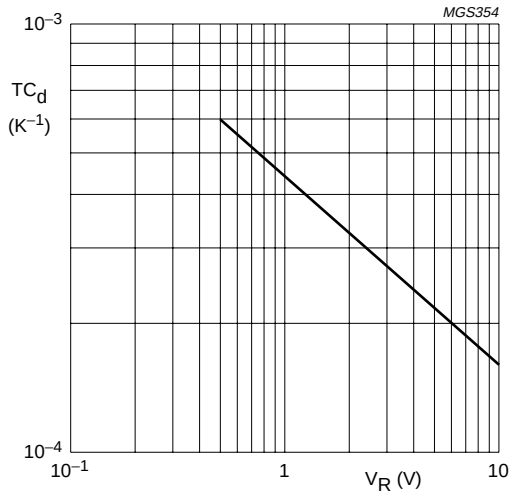
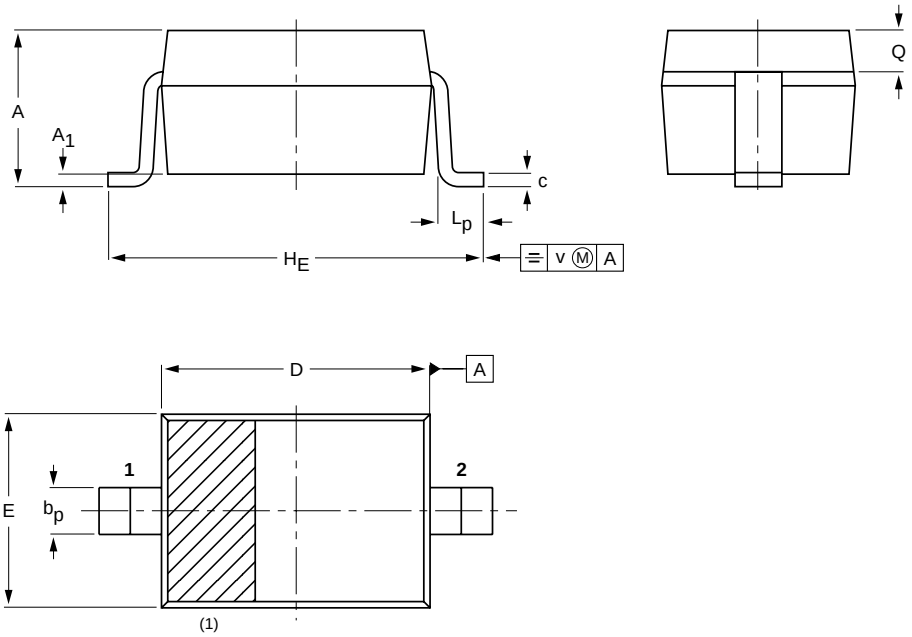
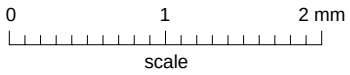


Fig.4 Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

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_E	L_p	Q	v
mm	1.1 0.8	+ 0.05 – 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	EIAJ			
SOD323						98-09-14

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). 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.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.

NOTES

NOTES

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