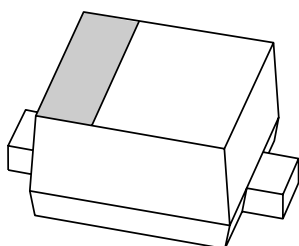


DATA SHEET



BB178

VHF variable capacitance diode

Product specification

1997 Nov 13

VHF variable capacitance diode

BB178

FEATURES

- Excellent linearity
- Excellent matching to 2% DMA
- Ultra small plastic SMD package
- C28: 2.6 pF; ratio: 15
- Very low series resistance.

DESCRIPTION

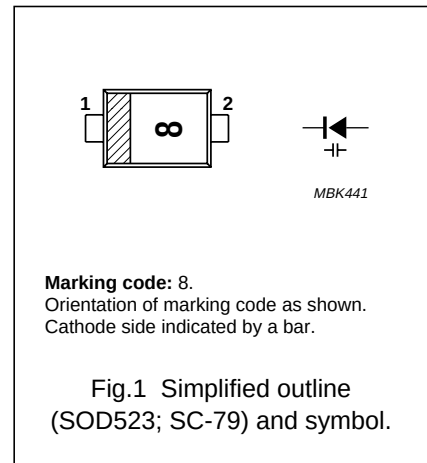
The BB178 is a planar technology variable capacitance diode, in a SOD523 (SC-79) package. The excellent matching performance is achieved by gliding matching and a direct matching assembly procedure.

APPLICATIONS

- Electronic tuning in VHF television tuners, band B up to 460 MHz
- Voltage controlled oscillators (VCO).

PINNING

PIN	DESCRIPTION
1	cathode
2	anode



LIMITING VALUES

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_R	continuous reverse voltage		—	32	V
V_{RM}	peak reverse voltage	in series with a 10 k Ω resistor	—	35	V
I_F	continuous forward current		—	20	mA
T_{stg}	storage temperature		–55	+150	°C
T_j	operating junction temperature		–55	+125	°C

ELECTRICAL CHARACTERISTICS

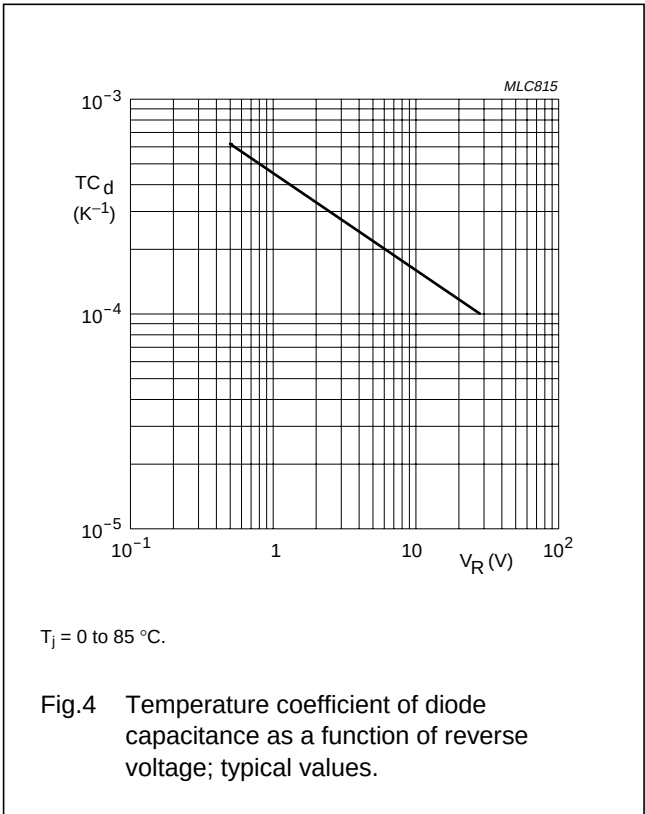
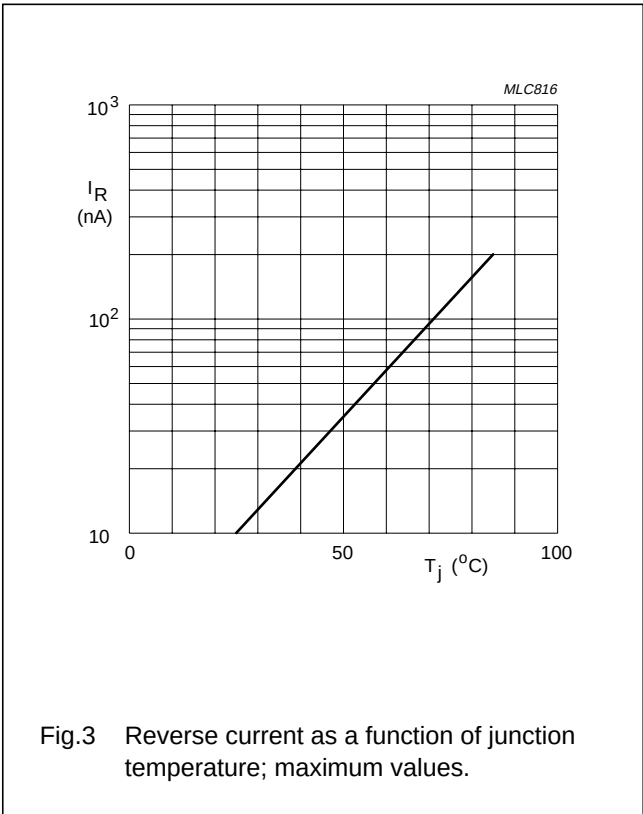
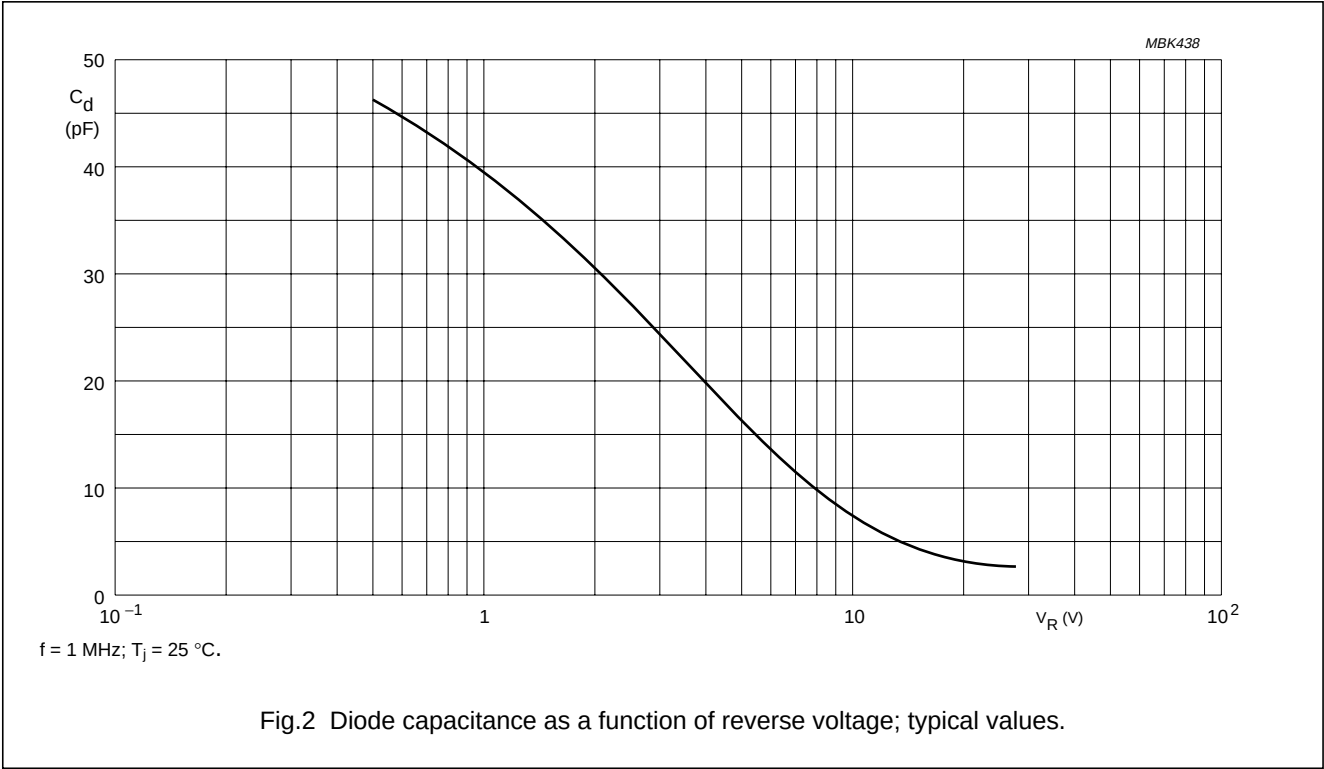
$T_j = 25\text{ °C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_R	reverse current	$V_R = 30\text{ V}$; see Fig.3	—	—	10	nA
		$V_R = 30\text{ V}$; $T_j = 85\text{ °C}$; see Fig.3	—	—	200	nA
r_s	diode series resistance	$f = 100\text{ MHz}$; V_R is the value at which $C_d = 30\text{ pF}$	—	0.65	0.8	Ω
C_d	diode capacitance	$V_R = 1\text{ V}$; $f = 1\text{ MHz}$; see Figs 2 and 4	34.65	—	42.35	pF
		$V_R = 28\text{ V}$; $f = 1\text{ MHz}$; see Figs 2 and 4	2.361	—	2.754	pF
$\frac{C_{d(1V)}}{C_{d(2V)}}$	capacitance ratio	$f = 1\text{ MHz}$	—	1.3	—	
$\frac{C_{d(1V)}}{C_{d(28V)}}$	capacitance ratio	$f = 1\text{ MHz}$	13.5	—	—	
$\frac{C_{d(25V)}}{C_{d(28V)}}$	capacitance ratio	$f = 1\text{ MHz}$	—	1.08	—	
$\frac{\Delta C_d}{C_d}$	capacitance matching	$V_R = 1\text{ to }28\text{ V}$; in a sequence of 15 diodes (gliding)	—	—	2	%

VHF variable capacitance diode

BB178

GRAPHICAL DATA



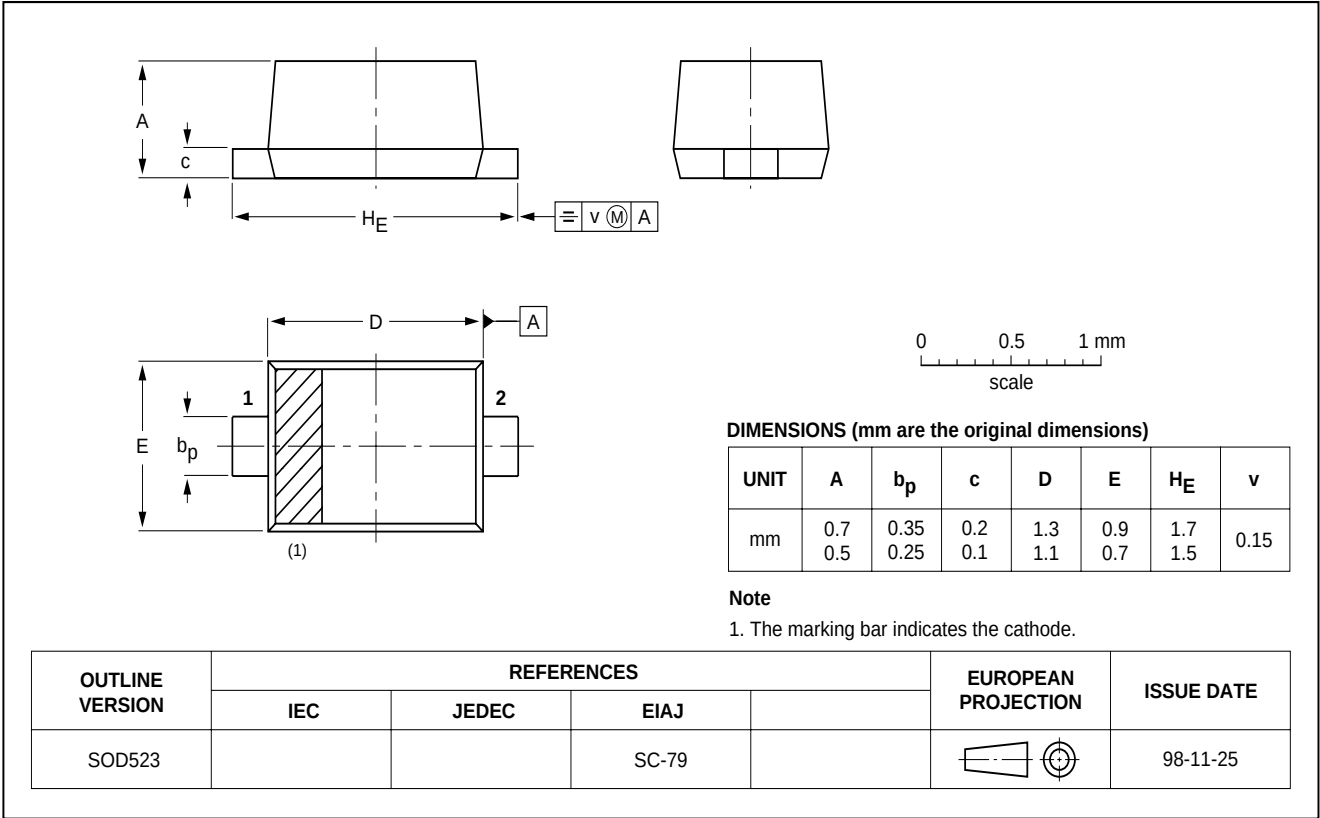
VHF variable capacitance diode

BB178

PACKAGE OUTLINE

Plastic surface mounted package; 2 leads

SOD523



VHF variable capacitance diode

BB178

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.

VHF variable capacitance diode

BB178

NOTES

VHF variable capacitance diode

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NOTES

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