

# VHF variable capacitance diode

## FEATURES

- Excellent linearity
- Excellent matching to 2% DMA
- Ultra small plastic SMD package
- C 28: 2.6 pF; ratio: 15
- Very low series resistance.

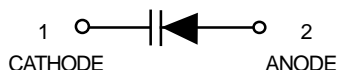
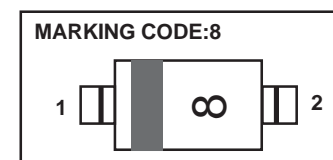
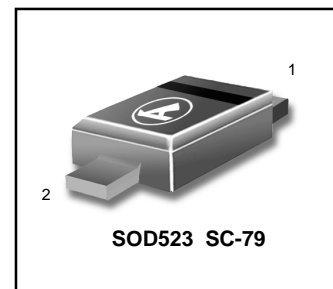
## APPLICATIONS

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

## 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.

## BB 178



**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 $\Omega$ resistor	–	35	V
$I_F$	continuous forward current		–	20	mA
$T_{stg}$	storage temperature		–55	+150	$^{\circ}$ C
$T_j$	operating junction temperature		–55	+125	$^{\circ}$ C

**ELECTRICAL CHARACTERISTICS**  $T_j=25^{\circ}$ C unless otherwise specified.

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

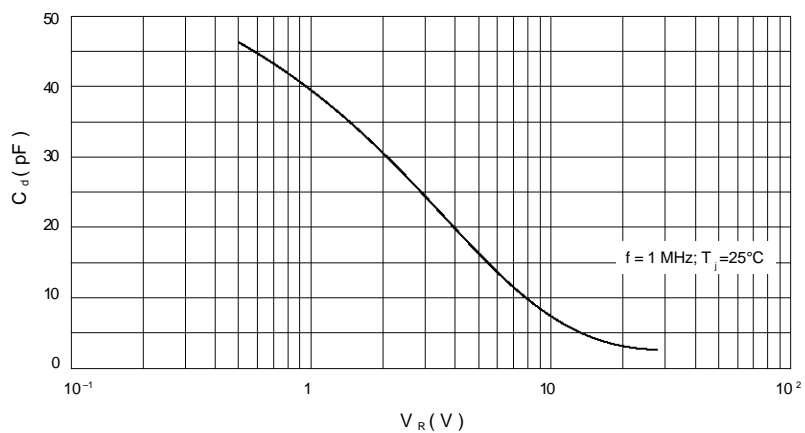
**BB 178**


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

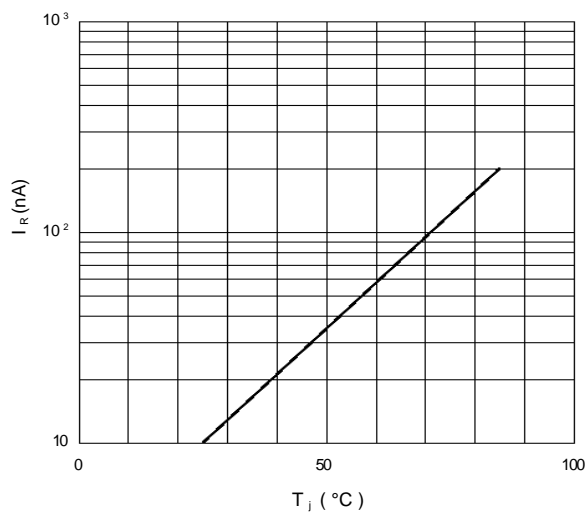


Fig.2 Reverse current as a function of junction temperature; maximum values.

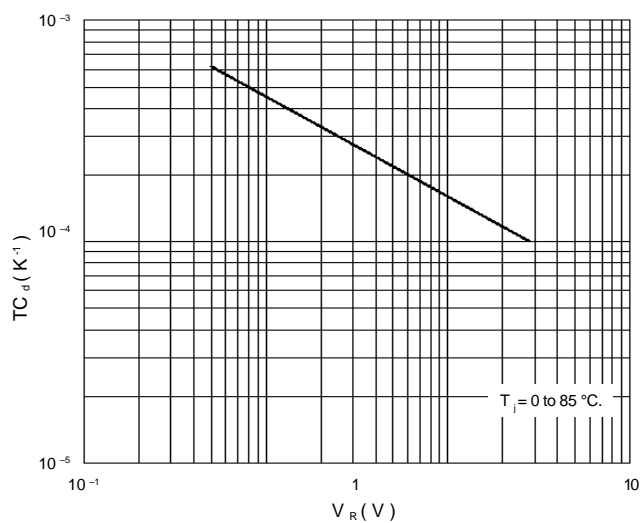


Fig.3 Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.