

# VHF Variable Capacitance Diode

## FEATURES

- Excellent linearity
- Excellent matching to 0.7% DMA
- Very small plastic SMD package
- C28: 2.5 pF; ratio: 16.
- Low series resistance.

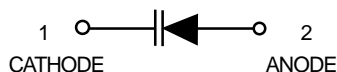
## APPLICATIONS

- Electronic tuning in VHF television tuners, band B up to 460 MHz
- VCO.

## DESCRIPTION

The BB133T1 is a variable capacitance diode fabricated in planar technology, and encapsulated in the SOD323 very small plastic SMD package.

The excellent matching performance is achieved by gliding matching and a direct matching assembly procedure. The unmatched type, BB150 has the same specification.



## BB133T1



SOD-323

## MARKING DIAGRAM



## LIMITING VALUES

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

SYMBOL	PARAMETER	MIN.	MAX.	UNIT
$V_R$	continuous reverse voltage	–	30	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.	MAX.	UNIT
$I_R$	reverse current	$V_R = 30\text{ V}$ ; see Fig.2	–	10	nA
		$V_R = 30\text{ V}$ ; $T_j = 85\text{ °C}$ ; see Fig.2	–	200	nA
$r_s$	diode series resistance	$f = 100\text{ MHz}$ ; note 1	–	0.9	$\Omega$
$C_d$	diode capacitance	$V_R = 0.5\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 1 and 3	38	46	pF
		$V_R = 28\text{ V}$ ; $f = 1\text{ MHz}$ ; see Figs 1 and 3	2.2	2.6	pF
$\frac{C_d(0.5V)}{C_d(28V)}$	capacitance ratio	$f = 1\text{ MHz}$	14	21	
$\frac{\Delta C_d}{C_d}$	capacitance matching	$V_R = 0.5\text{ to }28\text{ V}$ ; in a sequence of 4 diodes (gliding)	–	0.7	%
		$V_R = 0.5\text{ to }28\text{ V}$ ; in a sequence of 15 diodes (gliding)	–	2	%

## Note

1.  $V_R$  is the value at which  $C_d = 30\text{ pF}$ .

**BB133T1**

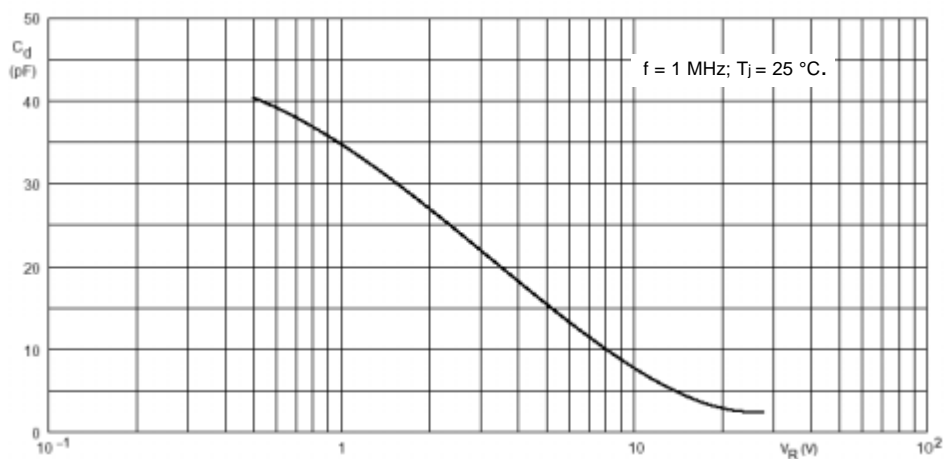


Fig.1 Diode capacitance as a function of reverse voltage; typical values.

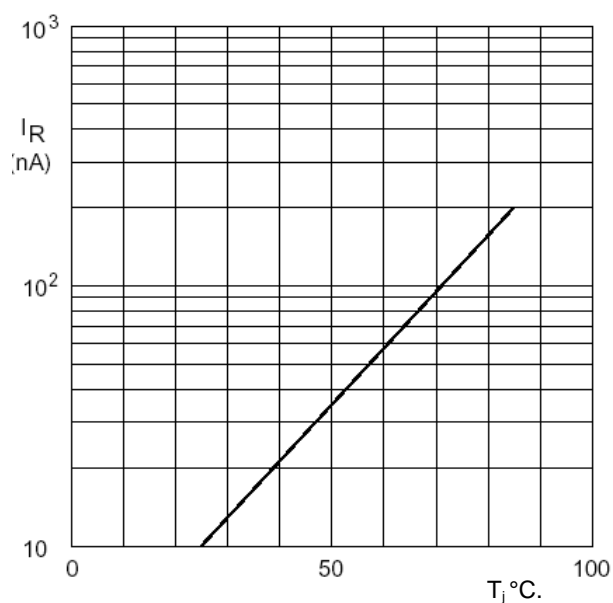


Fig.2 Reverse current as a function of junction temperature; maximum values.

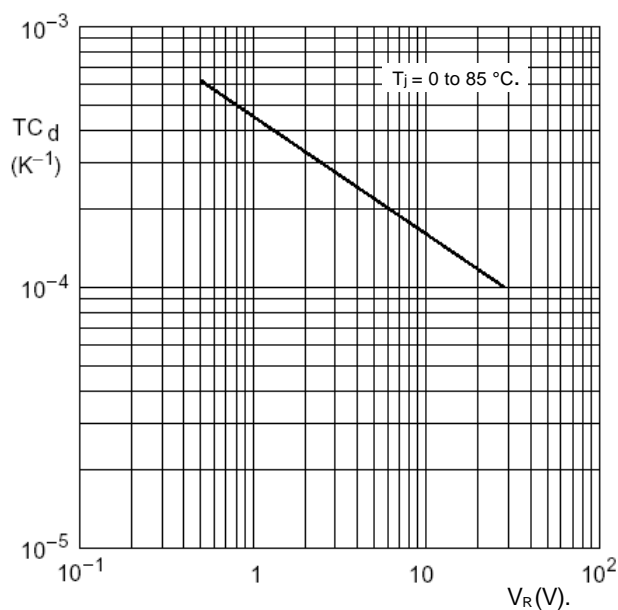


Fig.3 Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.