## DATA SHEET



## BB809 <br> VHF variable capacitance diode

Product specification
Supersedes data of April 1992
File under Discrete Semiconductors, SC01

## VHF variable capacitance diode

## FEATURES

- High linearity
- Matched to 3\%
- Hermetically sealed leaded glass SOD68 (DO-34) package
- C28: 4.7 pF ; ratio: 9
- Low series resistance.


## APPLICATIONS

- Electronic tuning in VHF television tuners, band A up to 160 MHz
- VCO.


## DESCRIPTION

The BB809 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the hermetically sealed leaded glass SOD68 (DO-34) package.


## LIMITING VALUES

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

| SYMBOL | PARAMETER | MIN. | MAX. | UNIT |
| :--- | :--- | :--- | :--- | :--- |
| $\mathrm{V}_{\mathrm{R}}$ | continuous reverse voltage | - | 30 | V |
| $\mathrm{I}_{\mathrm{F}}$ | continuous forward current | - | 20 | mA |
| $\mathrm{~T}_{\text {stg }}$ | storage temperature | -55 | +150 | ${ }^{\circ} \mathrm{C}$ |
| $\mathrm{T}_{\mathrm{j}}$ | operating junction temperature | -55 | +100 | ${ }^{\circ} \mathrm{C}$ |

## ELECTRICAL CHARACTERISTICS

$\mathrm{T}_{\mathrm{j}}=25^{\circ} \mathrm{C}$; unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | TYP. | MAX. | UNIT |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathrm{I}_{\mathrm{R}}$ | reverse current | $\mathrm{V}_{\mathrm{R}}=28 \mathrm{~V} ;$ see Fig.3 | - | - | 10 | nA |
|  |  | $\mathrm{V}_{\mathrm{R}}=28 \mathrm{~V} ; \mathrm{T}_{\mathrm{j}}=85^{\circ} \mathrm{C} ;$ see Fig.3 | - | - | 200 | nA |
| $\mathrm{r}_{\mathrm{s}}$ | diode series resistance | $\mathrm{f}=200 \mathrm{MHz} ;$ note 1 | - | - | 0.6 | $\Omega$ |
| $\mathrm{C}_{\mathrm{d}}$ | diode capacitance | $\mathrm{V}_{\mathrm{R}}=1 \mathrm{~V} ; \mathrm{f}=1 \mathrm{MHz} ;$ see Figs 2 and 4 | 39 | - | 46 | pF |
|  |  | $\mathrm{V}_{\mathrm{R}}=28 \mathrm{~V} ; \mathrm{f}=1 \mathrm{MHz} ;$ see Figs 2 and 4 | 4 | - | 5 | pF |
| $\frac{\mathrm{C}_{\mathrm{d}(1 \mathrm{~V})}}{\mathrm{C}_{\mathrm{d}(28)}}$ | capacitance ratio | $\mathrm{f}=1 \mathrm{MHz}$ | 8 | - | 10 |  |
| $\frac{\Delta \mathrm{C}_{\mathrm{d}}}{\mathrm{C}_{\mathrm{d}}}$ | capacitance matching | $\mathrm{V}_{\mathrm{R}}=0.5$ to 28 V |  |  |  |  |

## Note

1. $\mathrm{V}_{\mathrm{R}}$ is the value at which $\mathrm{C}_{\mathrm{d}}=25 \mathrm{pF}$.

## GRAPHICAL DATA


$\mathrm{f}=1 \mathrm{MHz} ; \mathrm{T}_{\mathrm{j}}=25^{\circ} \mathrm{C}$.
Fig. 2 Diode capacitance as a function of reverse voltage; typical values.


## PACKAGE OUTLINE

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## 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 <br> more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation <br> of the device at these or at any other conditions above those given in the Characteristics sections of the specification <br> 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

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