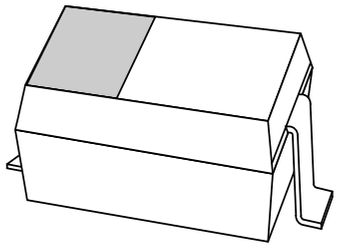
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# DATA SHEET



# BB135
## UHF variable capacitance diode

Product specification
Supersedes data of 1998 Sep 15

2004 Mar 01

Philips
Semiconductors

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# UHF variable capacitance diode BB135

## FEATURES

- Excellent linearity
- Very small plastic SMD package.
- C28: 1.9 pF; ratio: 10
- Low series resistance.

## APPLICATIONS

- Electronic tuning in UHF television tuners.
- Radio upconversion concepts
- VCO.

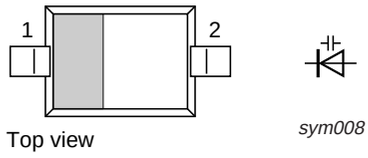
## DESCRIPTION

The BB135 is a variable capacitance diode, fabricated in planar technology, and encapsulated in the SOD323 very small plastic SMD package.

The matched type, BB134 has the same specification.

## PINNING

| PIN | DESCRIPTION |
|---|---|
| 1 | cathode |
| 2 | anode |




**Marking code:** P5.
Cathode side indicated by a bar.

Fig.1 Simplified outline (SOD323; SC-76) and symbol.

## ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|---|---|---|---|
| | NAME | DESCRIPTION | VERSION |
| BB135 | – | plastic surface mounted package; 2 leads | SOD323 |

## LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

| 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 |

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## ELECTRICAL CHARACTERISTICS

$T_j$ = 25 °C unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|---|---|---|---|---|---|
| $I_R$ | reverse current | $V_R$ = 30 V; see Fig.3 | – | 10 | nA |
| | | $V_R$ = 30 V; $T_j$ = 85 °C; see Fig.3 | – | 200 | nA |
| $r_s$ | diode series resistance | f = 470 MHz; note 1 | – | 0.75 | Ω |
| $C_d$ | diode capacitance | $V_R$ = 0.5 V; f = 1 MHz; see Figs 2 and 4 | 17.5 | 21 | pF |
| | | $V_R$ = 28 V; f = 1 MHz; see Figs 2 and 4 | 1.7 | 2.1 | pF |
| $\frac{C_{d(0.5V)}}{C_{d(28V)}}$ | capacitance ratio | f = 1 MHz | 8.9 | 12 | |

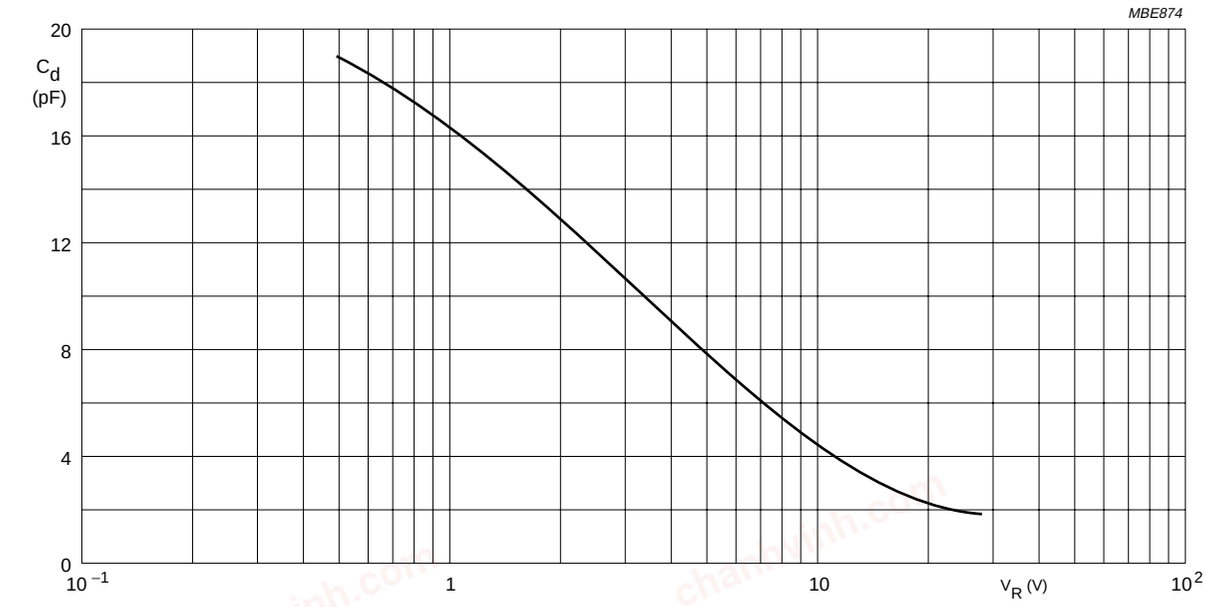
**Note**

1. $V_R$ is the value at which $C_d$ = 9 pF.

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## GRAPHICAL DATA




f = 1 MHz; $T_j$ = 25 °C.

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

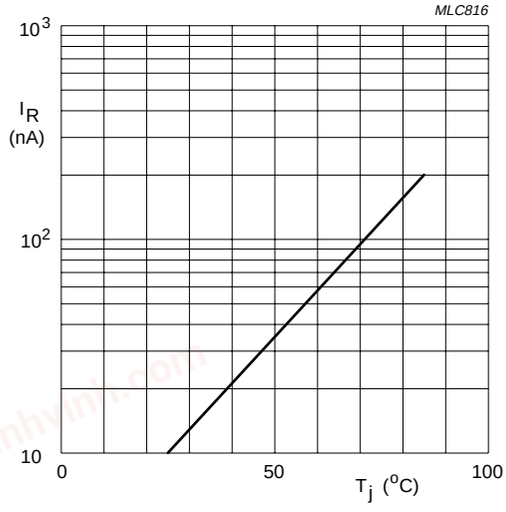
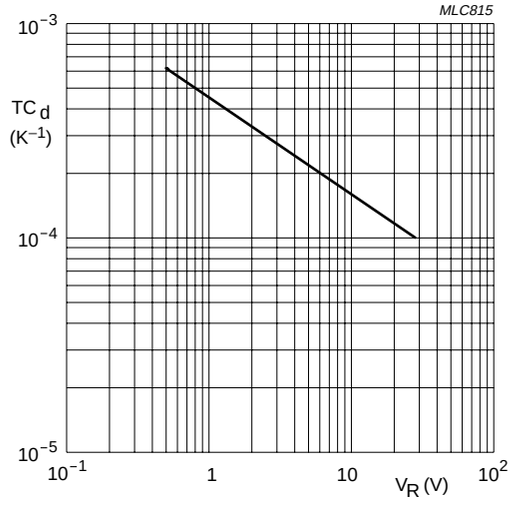



Fig.3 Reverse current as a function of junction temperature; maximum values.




$T_j$ = 0 to 85 °C.

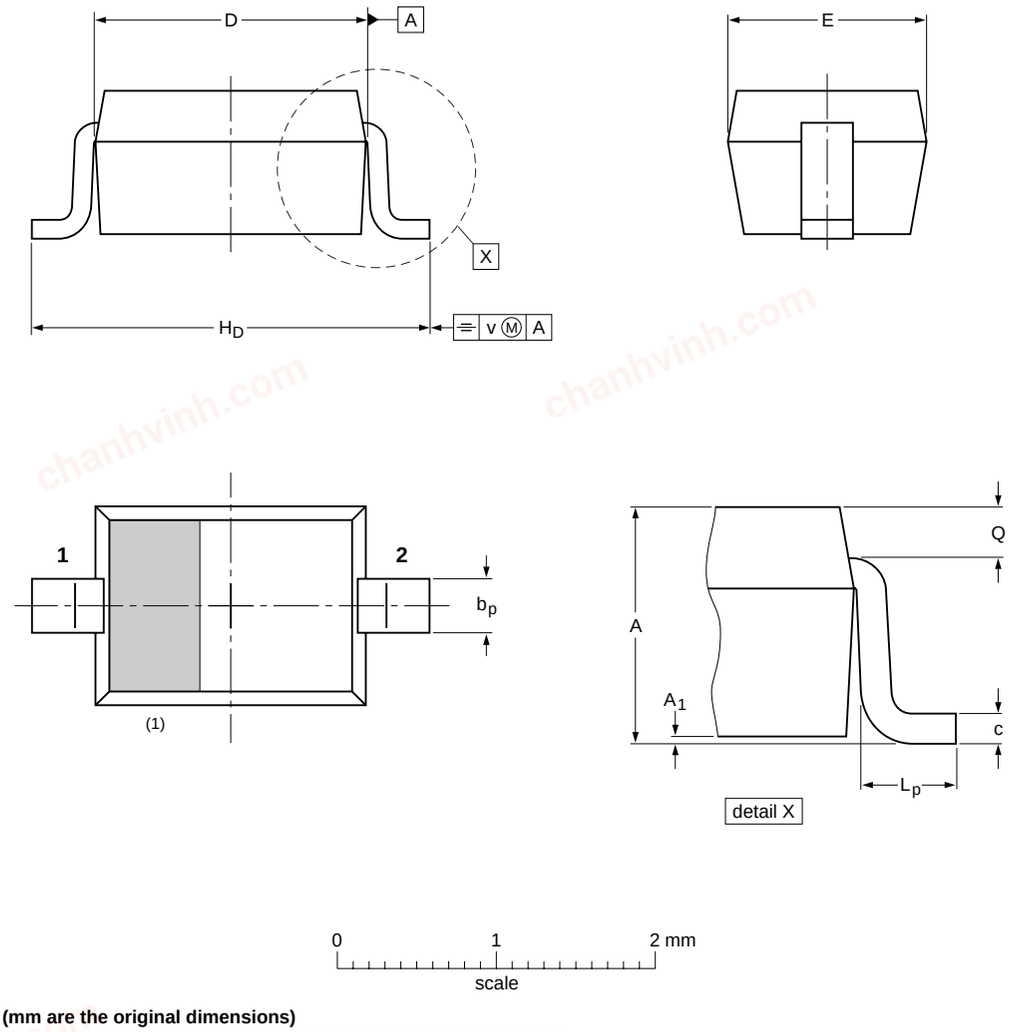
Fig.4 Temperature coefficient of diode capacitance as a function of reverse voltage; typical values.

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## 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 | $H_D$ | $L_p$ | Q | v |
|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.1<br>0.8 | 0.05 | 0.40<br>0.25 | 0.25<br>0.10 | 1.8<br>1.6 | 1.35<br>1.15 | 2.7<br>2.3 | 0.45<br>0.15 | 0.25<br>0.15 | 0.2 |

**Note**

1. The marking bar indicates the cathode

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|---|---|---|---|---|---|---|
| | IEC | JEDEC | JEITA | | | |
| SOD323 | | | SC-76 | | | ~~99-09-13~~<br>03-12-17 |

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## DATA SHEET STATUS

| LEVEL | DATA SHEET STATUS[1] | PRODUCT STATUS[2][3] | DEFINITION |
|---|---|---|---|
| I | Objective data | Development | This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice. |
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**Limiting values definition** — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). 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.

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