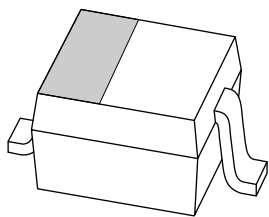


DATA SHEET



BA591 Band-switching diode

Product specification
Supersedes data of 1998 Aug 31

2004 Feb 17

Band-switching diode

BA591

FEATURES

- Very small plastic SMD package
- Low diode capacitance: max. 1.05 pF
- Low diode forward resistance: max. 0.7 Ω
- Small inductance.

APPLICATIONS

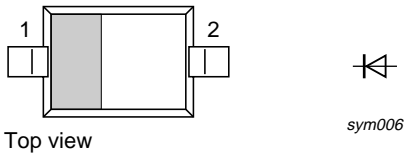
- Low loss band-switching in VHF television tuners
- Surface mount band-switching circuits.

DESCRIPTION

The BA591 is a planar, high performance band-switching diode in the very small SOD323 (SC-76) SMD plastic package.

PINNING

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



Top view

Marking code: A1.
The marking bar indicates the cathode.

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

ORDERING INFORMATION

| TYPE NUMBER | PACKAGE | | |
|-------------|---------|--|---------|
| | NAME | DESCRIPTION | VERSION |
| BA591 | – | plastic surface mounted package; 2 leads | SOD323 |

LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-----------|----------------------------|----------------------------------|------|------|------------------|
| V_R | continuous reverse voltage | | – | 35 | V |
| I_F | continuous forward current | | – | 100 | mA |
| P_{tot} | total power dissipation | $T_s = 90\text{ }^\circ\text{C}$ | – | 500 | mW |
| T_{stg} | storage temperature | | –65 | +150 | $^\circ\text{C}$ |
| T_j | junction temperature | | –65 | +150 | $^\circ\text{C}$ |

Band-switching diode

BA591

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

| SYMBOL | PARAMETER | CONDITIONS | TYP. | MAX. | UNIT |
|---------|--------------------------|---|--------------|-------------|----------------------|
| V_F | forward voltage | $I_F = 10\text{ mA}$ | – | 1 | V |
| I_R | reverse current | $V_R = 20\text{ V}$ | – | 20 | nA |
| C_d | diode capacitance | $f = 1\text{ MHz}$; note 1; see Fig.2 $V_R = 1\text{ V}$ $V_R = 3\text{ V}$ | 0.8 0.65 | 1.05 0.9 | pF pF |
| r_D | diode forward resistance | $f = 100\text{ MHz}$; note 1; see Fig.3 $I_F = 3\text{ mA}$ $I_F = 10\text{ mA}$ | 0.45 0.36 | 0.7 0.5 | Ω Ω |
| $1/g_p$ | reverse resistance | $V_R = 1\text{ V}$; $f = 100\text{ MHz}$; note 1 | 100 | – | k Ω |
| L_S | series inductance | | 2 | – | nH |

Note

1. Guaranteed on AQL basis; inspection level S4, AQL 1.0.

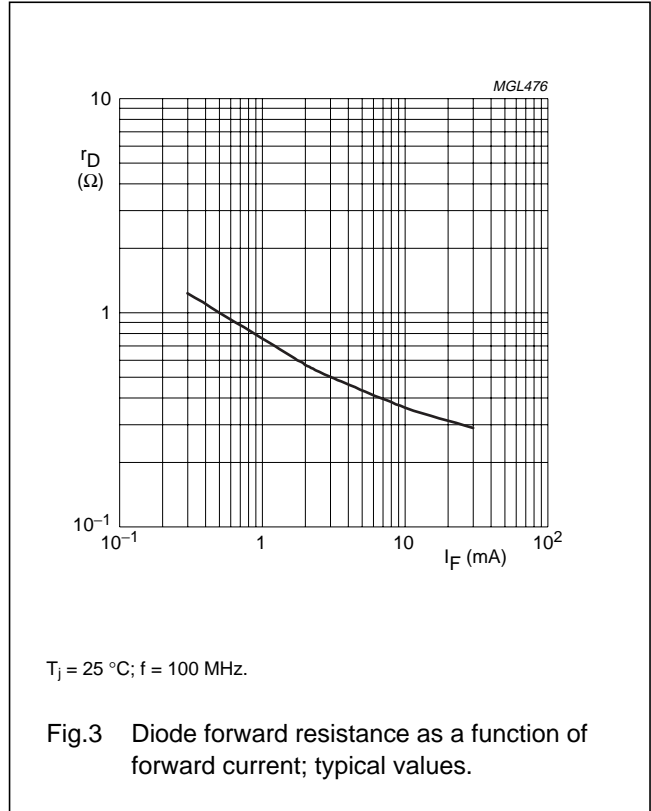
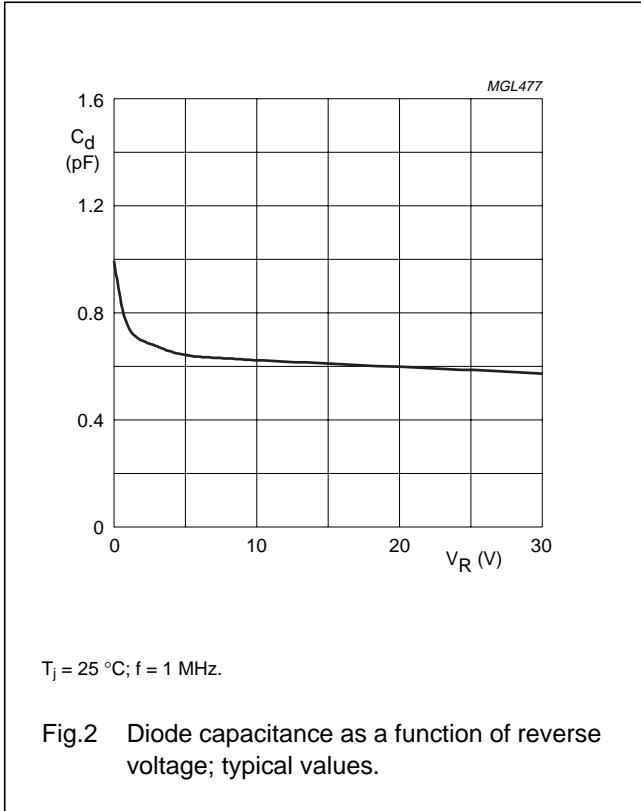
THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | VALUE | UNIT |
|---------------|---|-------|------|
| $R_{th(j-s)}$ | thermal resistance from junction to soldering point | 120 | K/W |

Band-switching diode

BA591

GRAPHICAL DATA



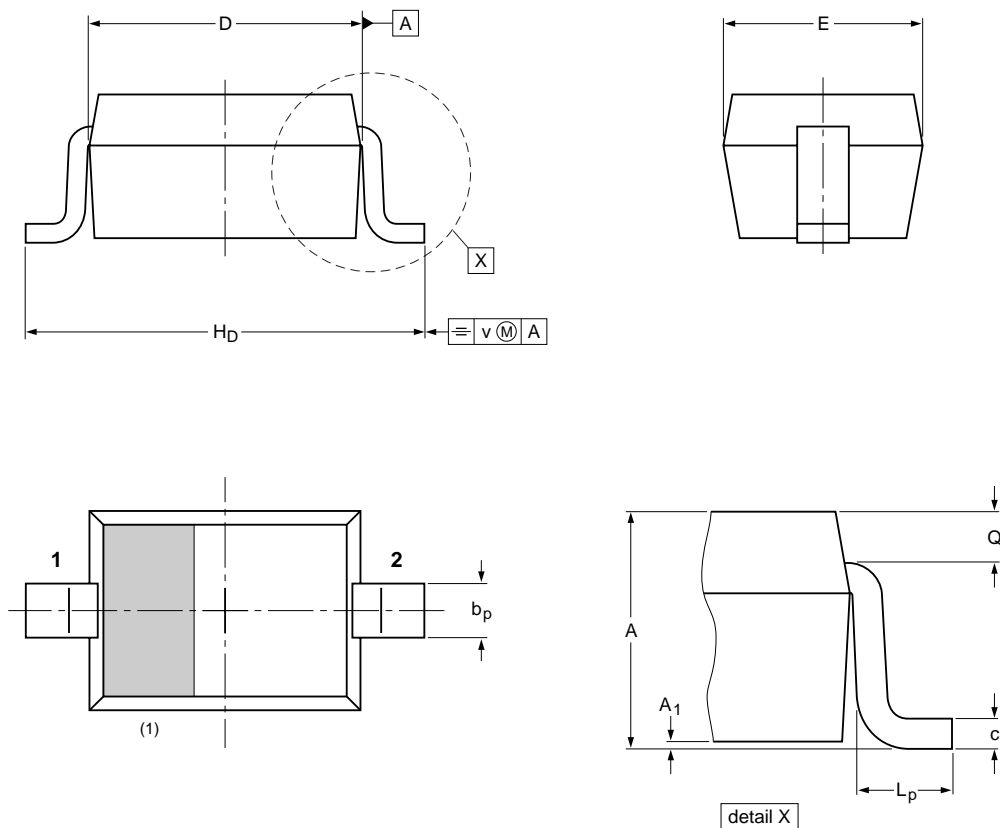
Band-switching diode

BA591

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 0.8 | 0.05 | 0.40 0.25 | 0.25 0.10 | 1.8 1.6 | 1.35 1.15 | 2.7 2.3 | 0.45 0.15 | 0.25 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- 03-12-17 |

Band-switching diode

BA591

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. |
| II | Preliminary data | Qualification | This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product. |
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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

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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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