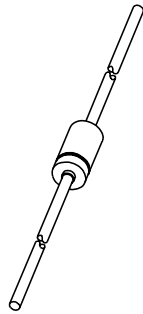


DATA SHEET



BAT86 Schottky barrier diode

Product specification
Supersedes data of 1996 Mar 20

2000 May 25

Schottky barrier diode

BAT86

FEATURES

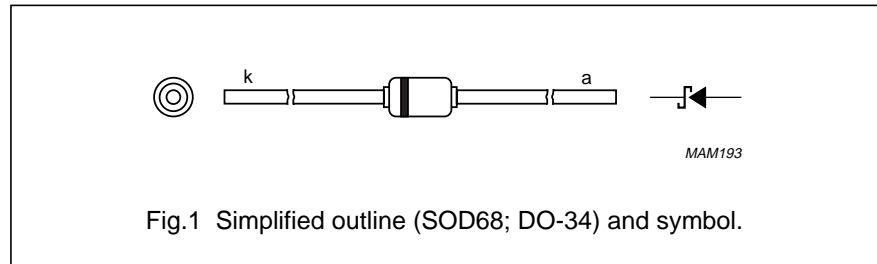
- Low forward voltage
- Guard ring protected
- Hermetically-sealed leaded glass package.

APPLICATIONS

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes.

DESCRIPTION

Planar Schottky barrier diode with an integrated protection ring against static discharges, encapsulated in a hermetically-sealed subminiature SOD68 (DO-34) package. The diode is suitable for mounting on a 2 E (5.08 mm) pitch.



LIMITING VALUES

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

| SYMBOL | PARAMETER | CONDITIONS | MIN. | MAX. | UNIT |
|-------------|-------------------------------------|--|------|------|------------------|
| V_R | continuous reverse voltage | | – | 50 | V |
| I_F | continuous forward current | | – | 200 | mA |
| $I_{F(AV)}$ | average forward current | PCB mounting, lead length = 4 mm; $V_{RWM} = 25\text{ V}$; $a = 1.57$; $\delta = 0.5$; $T_{amb} = 50\text{ }^\circ\text{C}$; see Fig.2 | – | 200 | mA |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1\text{ s}$; $\delta \leq 0.5$ | – | 500 | mA |
| I_{FSM} | non-repetitive peak forward current | $t_p \leq 10\text{ ms}$ | – | 5 | A |
| T_{stg} | storage temperature | | –65 | +150 | $^\circ\text{C}$ |
| T_j | junction temperature | | – | 125 | $^\circ\text{C}$ |
| T_{amb} | operating ambient temperature | | –65 | +125 | $^\circ\text{C}$ |

Schottky barrier diode

BAT86

ELECTRICAL CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$; unless otherwise specified.

| SYMBOL | PARAMETER | CONDITIONS | MAX. | UNIT |
|----------|-----------------------|---|------|---------------|
| V_F | forward voltage | see Fig.3 | | |
| | | $I_F = 0.1\text{ mA}$ | 300 | mV |
| | | $I_F = 1\text{ mA}$ | 380 | mV |
| | | $I_F = 10\text{ mA}$ | 450 | mV |
| | | $I_F = 30\text{ mA}$ | 600 | mV |
| | | $I_F = 100\text{ mA}$ | 900 | mV |
| I_R | reverse current | $V_R = 40\text{V}$; see Fig.4; note 1 | 5 | μA |
| t_{rr} | reverse recovery time | when switched from $I_F = 10\text{ mA}$ to $I_R = 10\text{ mA}$; $R_L = 100\ \Omega$; measured at $I_R = 1\text{ mA}$; see Fig.6 | 4 | ns |
| C_d | diode capacitance | $f = 1\text{ MHz}$; $V_R = 1\text{ V}$; see Fig.5 | 8 | pF |

Note

1. Pulsed test: $t_p = 300\ \mu\text{s}$; $\delta = 0.02$.

THERMAL CHARACTERISTICS

| SYMBOL | PARAMETER | CONDITIONS | VALUE | UNIT |
|---------------|---|------------|-------|------|
| $R_{th\ j-a}$ | thermal resistance from junction to ambient | note 1 | 320 | K/W |

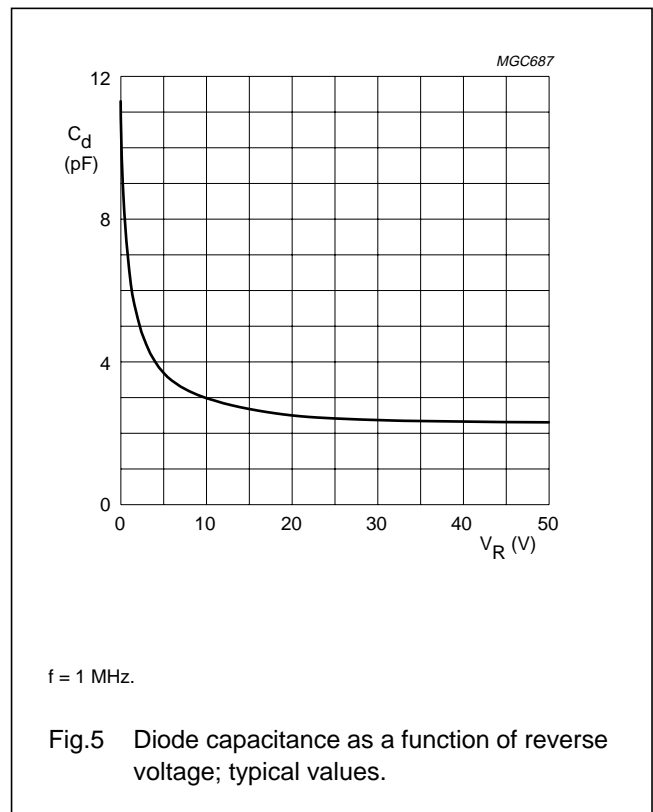
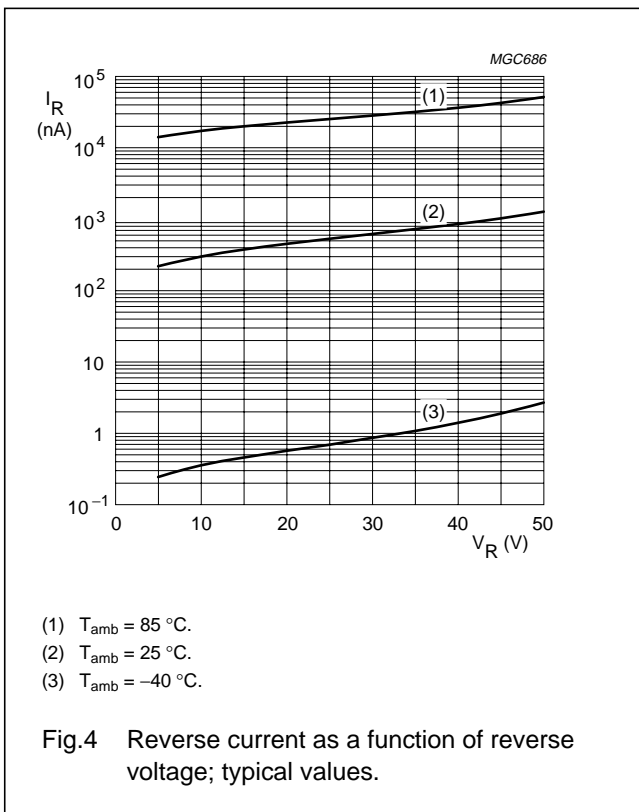
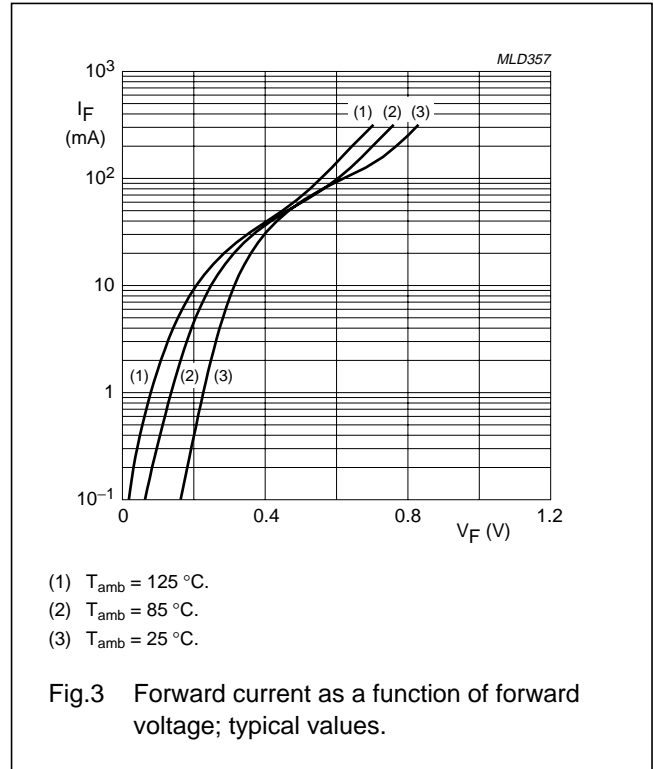
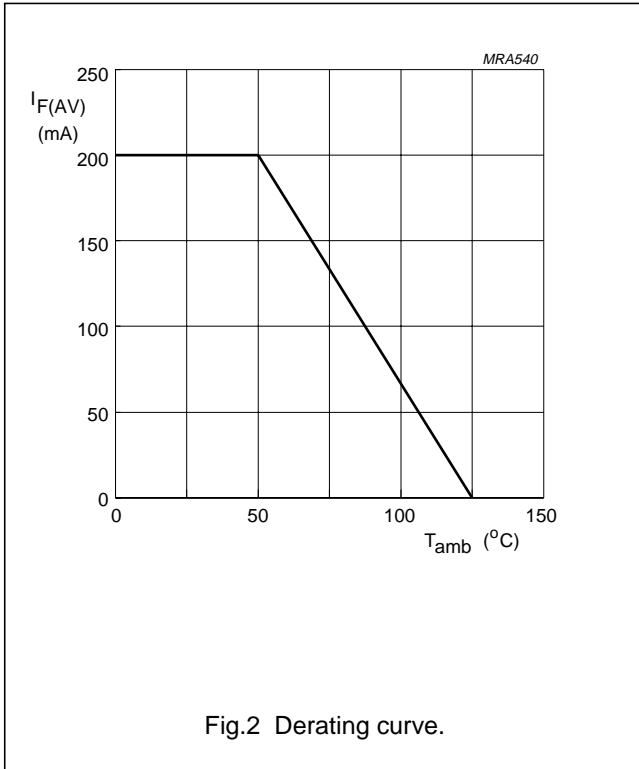
Note

1. Refer to SOD68 standard mounting conditions.

Schottky barrier diode

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GRAPHICAL DATA



Schottky barrier diode

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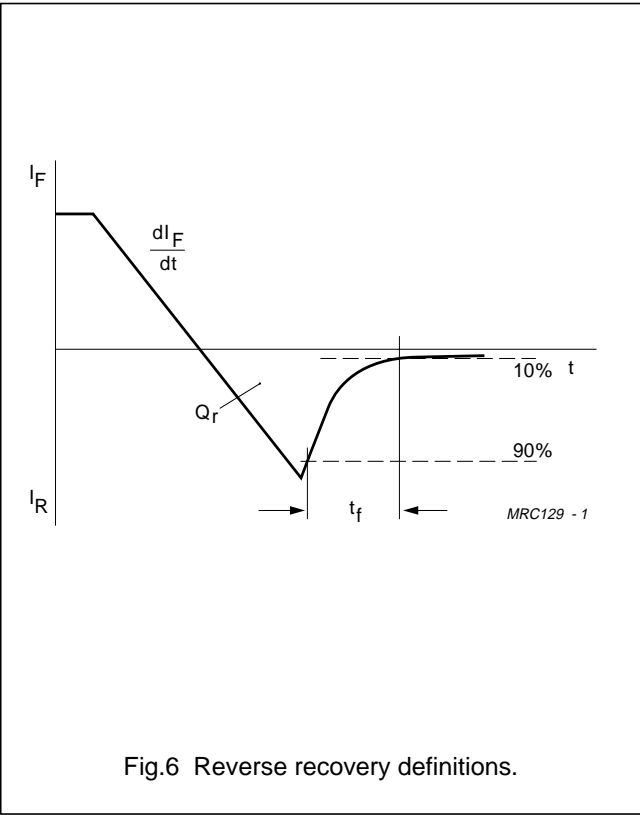


Fig.6 Reverse recovery definitions.

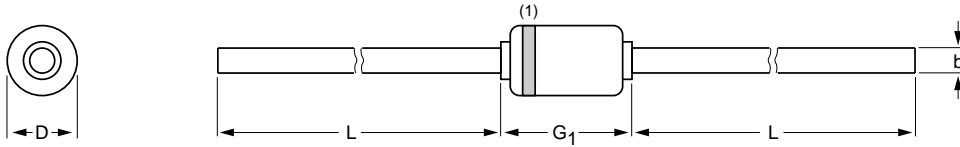
Schottky barrier diode

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PACKAGE OUTLINE

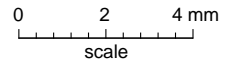
Hermetically sealed glass package; axial leaded; 2 leads

SOD68



DIMENSIONS (mm are the original dimensions)

| UNIT | b max. | D max. | G ₁ max. | L min. |
|------|--------|--------|---------------------|--------|
| mm | 0.55 | 1.6 | 3.04 | 25.4 |



Note

1. The marking band indicates the cathode.

| OUTLINE VERSION | REFERENCES | | | | EUROPEAN PROJECTION | ISSUE DATE |
|-----------------|------------|-------|------|--|---------------------|------------|
| | IEC | JEDEC | EIAJ | | | |
| SOD68 | | DO-34 | | | | 97-06-09 |

Schottky barrier diode

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DATA SHEET STATUS

| DATA SHEET STATUS | PRODUCT STATUS | DEFINITIONS ⁽¹⁾ |
|---------------------------|----------------|--|
| Objective specification | Development | This data sheet contains the design target or goal specifications for product development. Specification may change in any manner without notice. |
| Preliminary specification | Qualification | This data sheet contains preliminary data, and supplementary data will be published at a later date. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product. |
| Product specification | Production | This data sheet contains final specifications. Philips Semiconductors reserves the right to make changes at any time without notice in order to improve design and supply the best possible product. |

Note

1. Please consult the most recently issued data sheet before initiating or completing a design.

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Short-form specification — The data in a short-form specification is extracted from a full data sheet with the same type number and title. For detailed information see the relevant data sheet or data handbook.

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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