

BAS70VV

70 V, 70 mA Schottky barrier triple isolated diode in SOT666

Rev. 01 — 10 September 2004

Product data sheet

1. Product profile

1.1 General description

Planar Schottky barrier triple diode with an integrated guard ring for stress protection. Three electrically isolated Schottky barrier diodes, encapsulated in a SOT666 ultra small SMD plastic package.

1.2 Features

- Low forward voltage
- High reverse voltage
- Low capacitance
- Ultra small SMD plastic package
- Flat leads: excellent coplanarity and improved thermal behavior.

1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Line termination
- Inverse-polarity protection
- RF applications (e.g. mixing and demodulation).

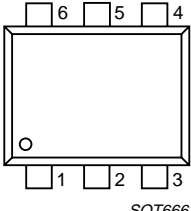
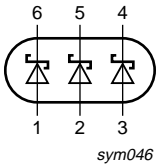
1.4 Quick reference data

Table 1: Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|-----------------|------------|-----|-----|-----|------|
| V_R | reverse voltage | | - | - | 70 | V |
| I_F | forward current | | - | - | 70 | mA |

2. Pinning information

Table 2: Discrete pinning

| Pin | Description | Simplified outline | Symbol |
|-----|-------------------|---|---|
| 1 | anode (diode 1) |  <p style="text-align: center;">SOT666</p> |  <p style="text-align: center;">sym046</p> |
| 2 | anode (diode 2) | | |
| 3 | anode (diode 3) | | |
| 4 | cathode (diode 3) | | |
| 5 | cathode (diode 2) | | |
| 6 | cathode (diode 1) | | |

3. Ordering information

Table 3: Ordering information

| Type number | Package | | |
|-------------|---------|--|---------|
| | Name | Description | Version |
| BAS70VV | - | plastic surface mounted package; 6 leads | SOT666 |

4. Marking

Table 4: Marking

| Type number | Marking code |
|-------------|--------------|
| BAS70VV | N1 |

5. Limiting values

Table 5: Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|------------------|-------------------------------------|---|-----|------|------|
| Per diode | | | | | |
| V_R | reverse voltage | | - | 70 | V |
| I_F | forward current | | - | 70 | mA |
| I_{FRM} | repetitive peak forward current | $t_p \leq 1 \text{ s}; \delta \leq 0.5$ | - | 70 | mA |
| I_{FSM} | non-repetitive peak forward current | $t_p < 10 \text{ ms}$ | - | 100 | mA |
| T_j | junction temperature | | - | 150 | °C |
| T_{amb} | ambient temperature | | -65 | +150 | °C |
| T_{stg} | storage temperature | | -65 | +150 | °C |

6. Thermal characteristics

Table 6: Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|---------------|---|-------------|---------|-----|-----|------|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] [2] | - | 700 | K/W |

[1] Refer to SOT666 standard mounting conditions.

[2] Reflow soldering is the only recommended soldering method.

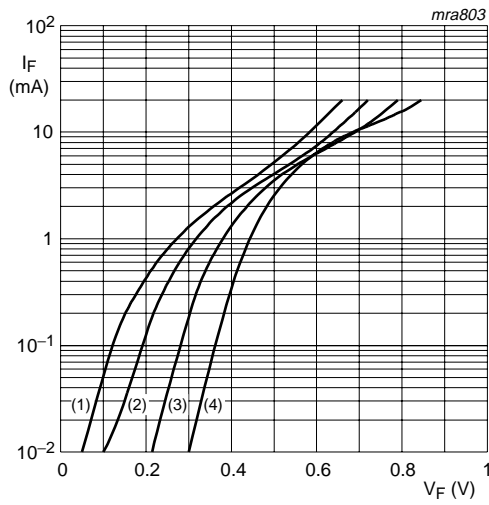
7. Characteristics

Table 7: Characteristics

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

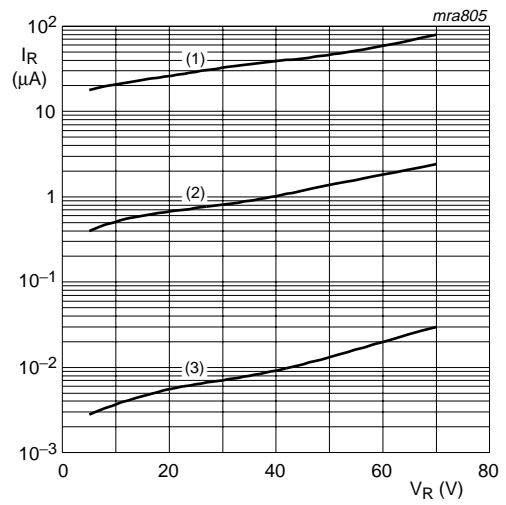
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|------------------|-------------------|---|-----|-----|-----|---------------|
| Per diode | | | | | | |
| V_F | forward voltage | see Figure 1 | [1] | | | |
| | | $I_F = 1\text{ mA}$ | - | - | 410 | mV |
| | | $I_F = 10\text{ mA}$ | - | - | 750 | mV |
| | | $I_F = 15\text{ mA}$ | - | - | 1 | V |
| I_R | reverse current | see Figure 2 | | | | |
| | | $V_R = 50\text{ V}$ | - | - | 100 | nA |
| | | $V_R = 70\text{ V}$ | - | - | 10 | μA |
| C_d | diode capacitance | $V_R = 0\text{ V}$; $f = 1\text{ MHz}$; see Figure 4 | - | - | 2 | pF |

[1] Pulse test: $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$.



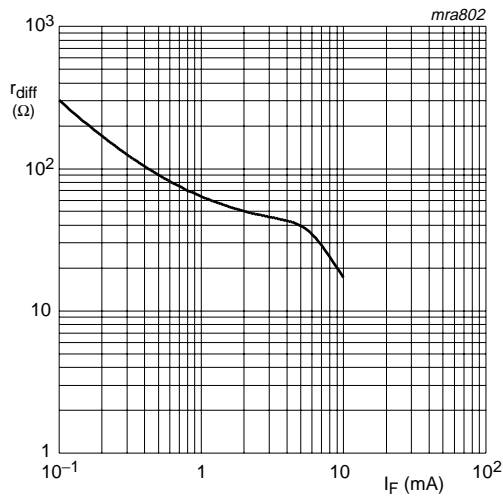
- (1) $T_{amb} = 125\text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 85\text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 25\text{ }^{\circ}\text{C}$.
- (4) $T_{amb} = -40\text{ }^{\circ}\text{C}$.

Fig 1. Forward current as a function of forward voltage; typical values.



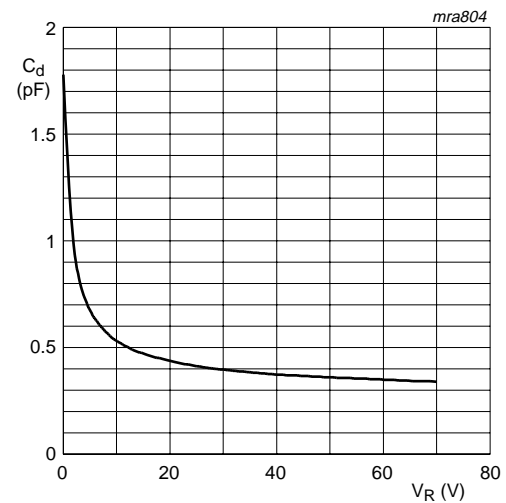
- (1) $T_{amb} = 125\text{ }^{\circ}\text{C}$.
- (2) $T_{amb} = 85\text{ }^{\circ}\text{C}$.
- (3) $T_{amb} = 25\text{ }^{\circ}\text{C}$.

Fig 2. Reverse current as a function of reverse voltage; typical values.



$f = 10\text{ kHz}$.

Fig 3. Differential forward resistance as a function of forward current; typical values.



$f = 1\text{ MHz}$.

Fig 4. Diode capacitance as a function of reverse voltage; typical values.

8. Package outline

Plastic surface mounted package; 6 leads

SOT666

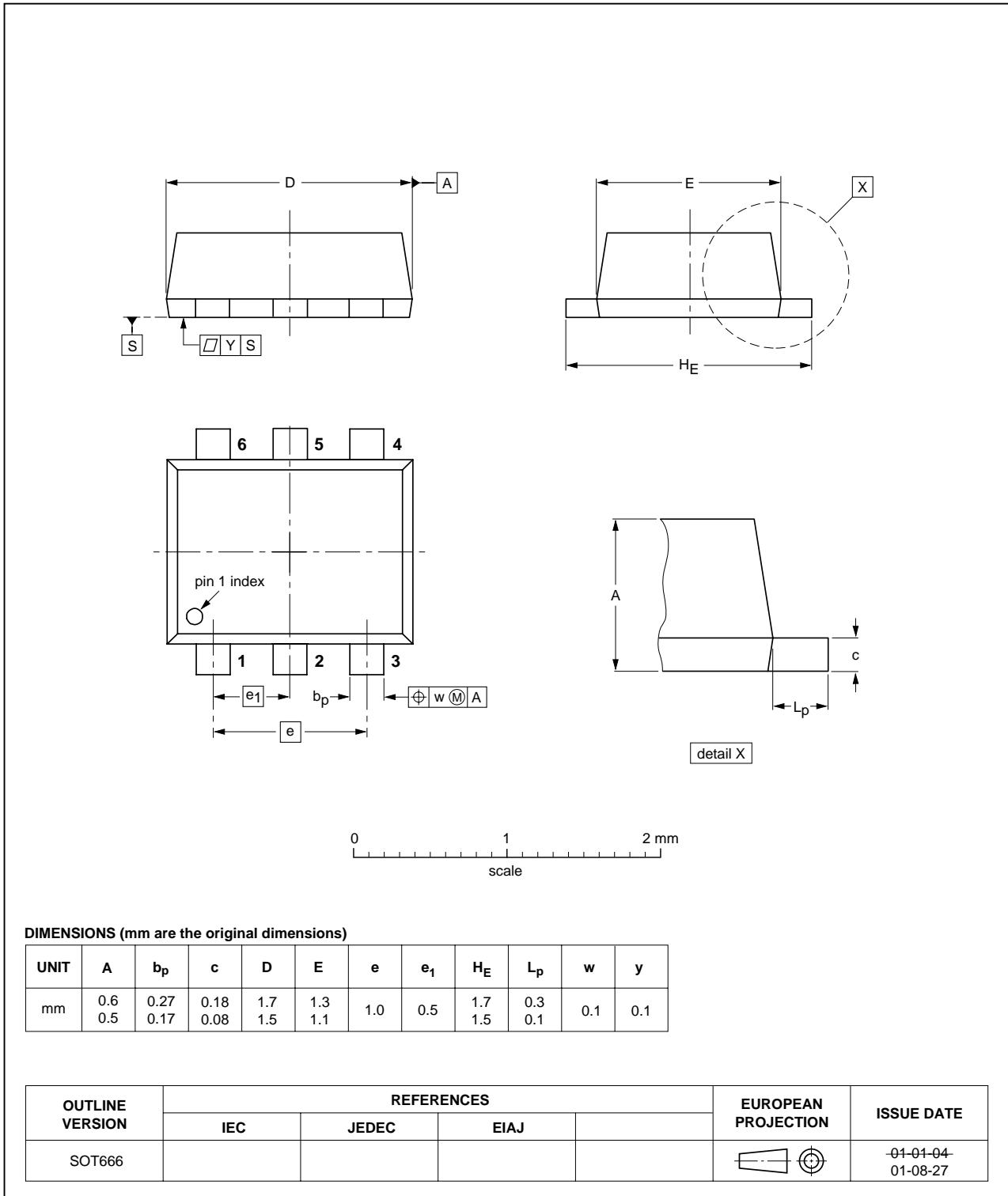


Fig 5. Package outline SOT666.

9. Packing information

Table 8: Packing methods

The indicated -xxx are the last three digits of the 12NC ordering code^[1]

| Type number | Package | Description | Packing quantity |
|-------------|---------|--------------------------------|------------------|
| | | | 4000 |
| BAS70VV | SOT666 | 4 mm pitch, 8 mm tape and reel | -115 |

[1] For further information and the availability of packing methods, see [Section 14](#).

10. Revision history

Table 9: Revision history

| Document ID | Release date | Data sheet status | Change notice | Order number | Supersedes |
|-------------|--------------|--------------------|---------------|----------------|------------|
| BAS70VV_1 | 20040910 | Product data sheet | - | 9397 750 13732 | - |

11. 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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[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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