

1PS66SB82; 1PS88SB82

15 V, 30 mA low C_d Schottky barrier diodes

Rev. 04 — 13 January 2010

Product data sheet

1. Product profile

1.1 General description

Epitaxial low capacitance Schottky barrier diodes encapsulated in very small SMD plastic packages.

Table 1. Product overview

| Type number | Package | | Configuration |
|-------------|---------|-------|-----------------------|
| | NXP | JEITA | |
| 1PS66SB82 | SOT666 | - | triple isolated diode |
| 1PS88SB82 | SOT363 | SC-88 | triple isolated diode |

1.2 Features

- Low diode capacitance
- Low forward voltage
- Very small SMD plastic packages

1.3 Applications

- Digital applications:
 - ◆ Ultra high-speed switching
 - ◆ Clamping circuits
- RF applications:
 - ◆ Diode ring mixer
 - ◆ RF detector
 - ◆ RF voltage doubler

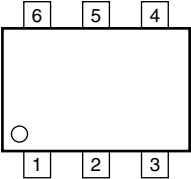
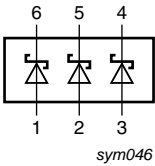
1.4 Quick reference data

Table 2. Quick reference data

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|--------|----------------------------|--|-----|-----|-----|------|
| I_F | continuous forward current | | - | - | 30 | mA |
| V_R | continuous reverse voltage | | - | - | 15 | V |
| C_d | diode capacitance | $V_R = 0$ V; $f = 1$ MHz; see Figure 4 | - | 1 | - | pF |

2. Pinning information

Table 3. Pinning

| Pin | Description | Simplified outline | Symbol |
|-----|-------------------|--|---|
| 1 | anode (diode 1) |  <p>001aab555</p> |  <p>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 4. Ordering information

| Type number | Package | | Version |
|-------------|---------|--|---------|
| | Name | Description | |
| 1PS66SB82 | - | plastic surface mounted package; 6 leads | SOT666 |
| 1PS88SB82 | SC-88 | plastic surface mounted package; 6 leads | SOT363 |

4. Marking

Table 5. Marking codes

| Type number | Marking code |
|-------------|--------------|
| 1PS66SB82 | N5 |
| 1PS88SB82 | E1* |

- [1] * = -: made in Hong Kong
 * = p: made in Hong Kong
 * = t: made in Malaysia
 * = W: made in China

5. Limiting values

Table 6. Limiting values

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

| Symbol | Parameter | Conditions | Min | Max | Unit |
|-----------|----------------------------|------------|-----|------|------|
| V_R | continuous reverse voltage | | - | 15 | V |
| I_F | continuous forward current | | - | 30 | mA |
| T_j | junction temperature | | - | 125 | °C |
| T_{amb} | ambient temperature | | -65 | +125 | °C |
| T_{stg} | storage temperature | | -65 | +150 | °C |

6. Thermal characteristics

Table 7. Thermal characteristics

| Symbol | Parameter | Conditions | Min | Typ | Max | Unit | |
|---------------|---|-------------|--------|-----|-----|------|-----|
| $R_{th(j-a)}$ | thermal resistance from junction to ambient | in free air | [1] | | | | |
| | SOT666 | | [2][3] | - | - | 700 | K/W |
| | SOT363 | | [3][4] | - | - | 416 | K/W |

[1] For Schottky barrier diodes thermal run-away has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses. Nomograms for determining the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.

[2] Refer to SOT666 standard mounting conditions.

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

[4] Refer to SOT363 (SC-88) standard mounting conditions.

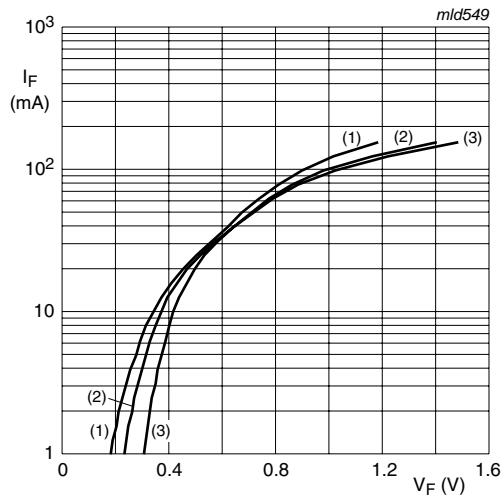
7. Characteristics

Table 8. Characteristics

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

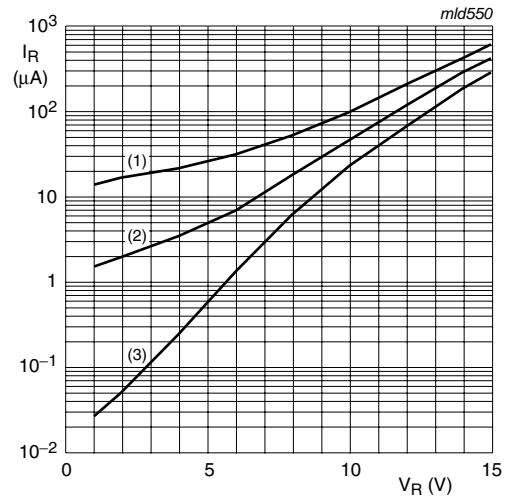
| Symbol | Parameter | Conditions | Min | Typ | Max | Unit |
|-----------|-------------------------|---|-----|-----|-----|---------------|
| V_F | forward voltage | see Figure 1 | [1] | | | |
| | | $I_F = 1\text{ mA}$ | - | - | 340 | mV |
| | | $I_F = 30\text{ mA}$ | - | - | 700 | mV |
| I_R | reverse current | $V_R = 1\text{ V}$; see Figure 2 | - | - | 0.2 | μA |
| r_{dif} | differential resistance | $I_F = 5\text{ mA}$; $f = 1\text{ kHz}$; see Figure 3 | - | 12 | - | Ω |
| C_d | diode capacitance | $V_R = 0\text{ V}$; $f = 1\text{ MHz}$; see Figure 4 | - | 1 | - | pF |

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



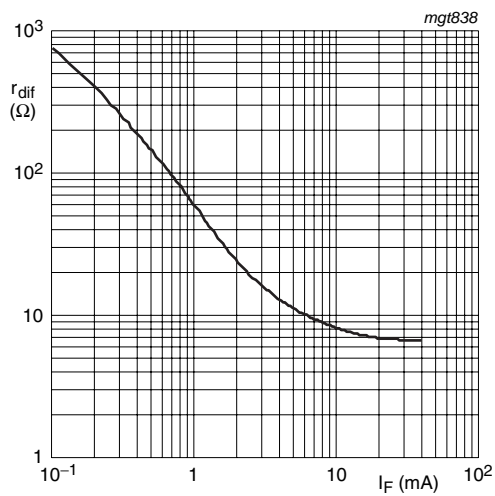
- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 85\text{ °C}$
- (3) $T_{amb} = 25\text{ °C}$

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



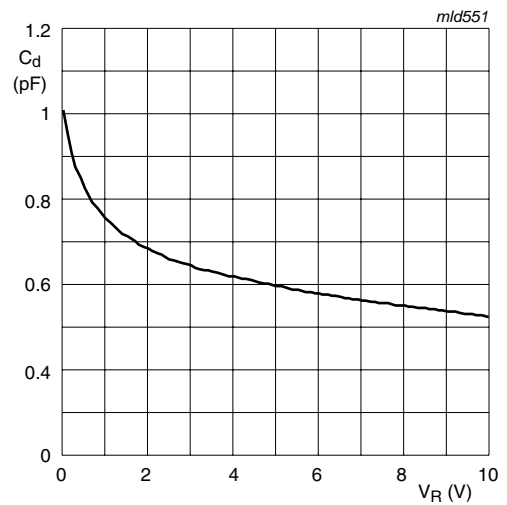
- (1) $T_{amb} = 125\text{ °C}$
- (2) $T_{amb} = 85\text{ °C}$
- (3) $T_{amb} = 25\text{ °C}$

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



$f = 1\text{ kHz}; T_{amb} = 25\text{ °C}$

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



$f = 1\text{ MHz}; T_{amb} = 25\text{ °C}$

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

8. Package outline

Plastic surface-mounted package; 6 leads

SOT666

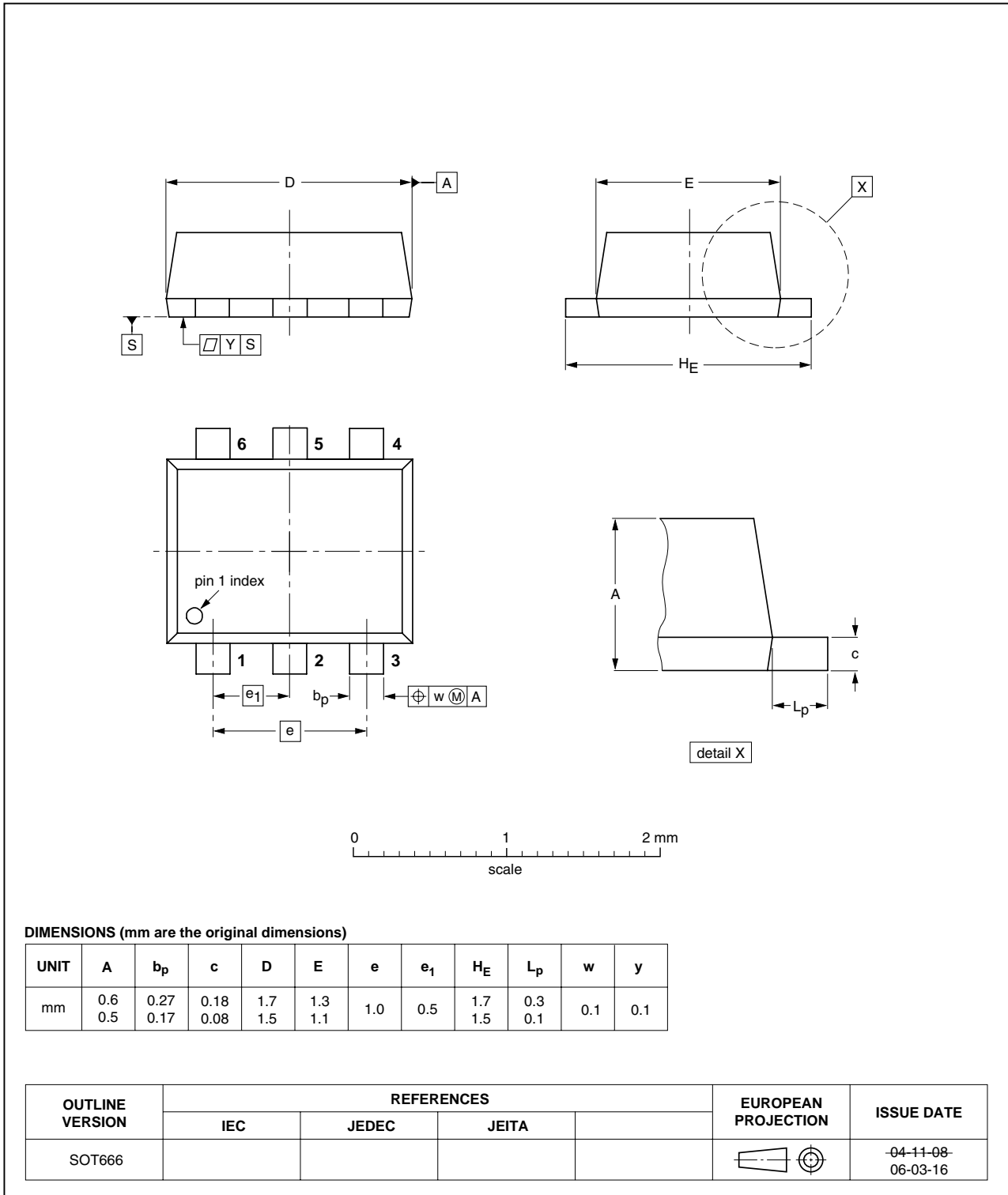


Fig 5. Package outline SOT666

Plastic surface-mounted package; 6 leads

SOT363

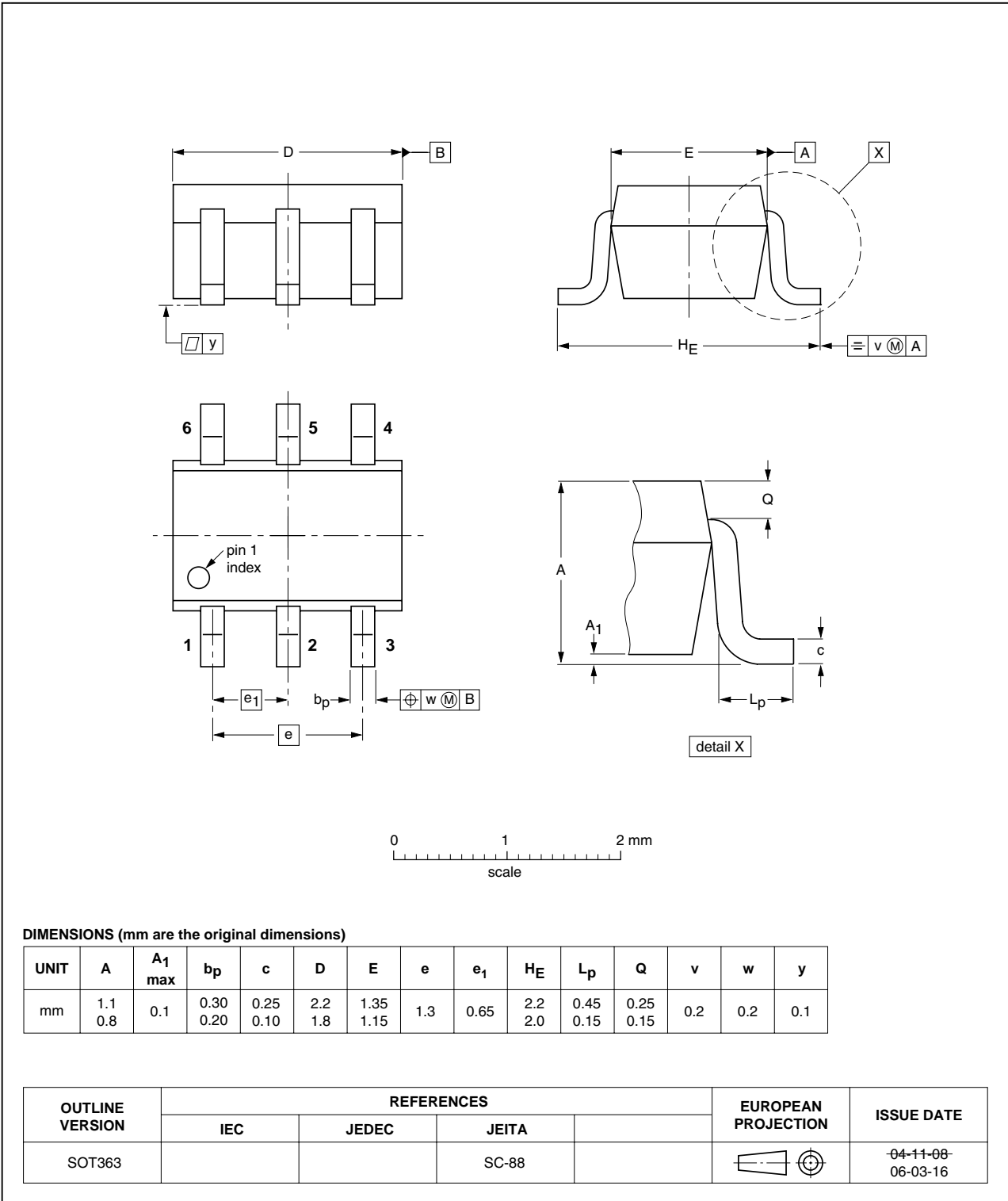


Fig 6. Package outline SOT363 (SC-88)

9. Packing information

Table 9. Packing methods

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

| Type number | Package | Description | Packing quantity | | |
|-------------|---------|--------------------------------|------------------|------|--------|
| | | | 3 000 | 4000 | 10 000 |
| 1PS66SB82 | SOT666 | 4 mm pitch, 8 mm tape and reel | - | -115 | - |
| 1PS88SB82 | SOT363 | 4 mm pitch, 8 mm tape and reel | -115 | - | -135 |

[1] For further information and the availability of packing methods see [Section 12](#).

10. Revision history

Table 10. Revision history

| Document ID | Release date | Data sheet status | Change notice | Supersedes |
|-----------------------|--------------|---|---------------|-----------------------|
| 1PS66SB82_1PS88SB82_4 | 20100113 | Product data sheet | - | 1PS66SB82_1PS88SB82_3 |
| Modifications: | | <ul style="list-style-type: none"> This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content. Table 3 "Pinning": updated Figure 5 "Package outline SOT666": updated Figure 6 "Package outline SOT363 (SC-88)": updated | | |
| 1PS66SB82_1PS88SB82_3 | 20050124 | Product data sheet | - | 1PS88SB82_2 |
| 1PS88SB82_2 | 20030411 | Product specification | - | 1PS88SB82_1 |
| 1PS88SB82_1 | 20010216 | Product specification | - | - |

11. Legal information

11.1 Data sheet status

| Document status ^{[1][2]} | Product status ^[3] | Definition |
|-----------------------------------|-------------------------------|---|
| Objective [short] data sheet | Development | This document contains data from the objective specification for product development. |
| Preliminary [short] data sheet | Qualification | This document contains data from the preliminary specification. |
| Product [short] data sheet | Production | This document contains the product specification. |

[1] Please consult the most recently issued document before initiating or completing a design.

[2] The term 'short data sheet' is explained in section "Definitions".

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