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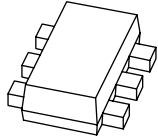
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Kind regards,

Team Nexperia



# BAT54VV

Schottky barrier triple diode in ultra small SOT666 package

Rev. 02 — 15 January 2010

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
- Ultra small SMD plastic package
- Low capacitance
- Flat leads: excellent coplanarity and improved thermal behavior

### 1.3 Applications

- Ultra high-speed switching
- Voltage clamping
- Line termination
- Inverse-polarity protection

### 1.4 Quick reference data

Table 1. Quick reference data

| Symbol | Parameter                  | Conditions | Min | Typ | Max | Unit |
|--------|----------------------------|------------|-----|-----|-----|------|
| $V_R$  | continuous reverse voltage |            | -   | -   | 30  | V    |
| $I_F$  | continuous forward current |            | -   | -   | 200 | mA   |

## 2. Pinning information

Table 2. Pinning

| Pin | Description       | Simplified outline | Symbol |
|-----|-------------------|--------------------|--------|
| 1   | anode (diode 1)   |                    |        |
| 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 |
| BAT54VV     | -       | plastic surface mounted package; 6 leads | SOT666  |

### 4. Marking

Table 4. Marking codes

| Type number | Marking code |
|-------------|--------------|
| BAT54VV     | C6           |

### 5. Limiting values

Table 5. Limiting values

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

| Symbol           | Parameter                           | Conditions                        | Min    | Max  | Unit |
|------------------|-------------------------------------|-----------------------------------|--------|------|------|
| <b>Per diode</b> |                                     |                                   |        |      |      |
| $V_R$            | continuous reverse voltage          |                                   | -      | 30   | V    |
| $I_F$            | continuous forward current          |                                   | -      | 200  | mA   |
| $I_{FRM}$        | repetitive peak forward current     | $t_p \leq 1$ s; $\delta \leq 0.5$ | -      | 300  | mA   |
| $I_{FSM}$        | non-repetitive peak forward current | $t_p < 10$ ms                     | -      | 600  | mA   |
| $P_{tot}$        | total power dissipation             | $T_{amb} \leq 25$ °C              | [1][2] | 170  | mW   |
| $T_j$            | junction temperature                |                                   | -      | 125  | °C   |
| $T_{amb}$        | ambient temperature                 |                                   | -65    | +125 | °C   |
| $T_{stg}$        | storage temperature                 |                                   | -65    | +150 | °C   |

[1] Device mounted on a FR4 printed-circuit board, single-sided copper, tin-plated and standard footprint.

[2] Single diode loaded.

### 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] | -   | 590 | K/W  |

[1] Refer to SOT666 standard mounting conditions.

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

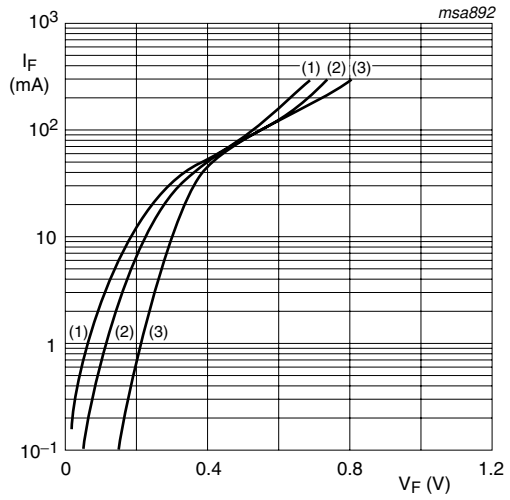
## 7. Characteristics

**Table 7. Characteristics**

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

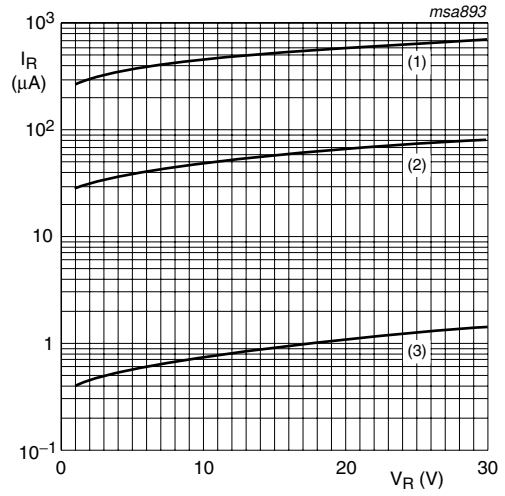
| Symbol           | Parameter         | Conditions                                                                | Min | Typ | Max | Unit          |
|------------------|-------------------|---------------------------------------------------------------------------|-----|-----|-----|---------------|
| <b>Per diode</b> |                   |                                                                           |     |     |     |               |
| $V_F$            | forward voltage   | see <a href="#">Figure 1</a> ;                                            | [1] |     |     |               |
|                  |                   | $I_F = 0.1\text{ mA}$                                                     | -   | -   | 240 | mV            |
|                  |                   | $I_F = 1\text{ mA}$                                                       | -   | -   | 320 | mV            |
|                  |                   | $I_F = 10\text{ mA}$                                                      | -   | -   | 400 | mV            |
|                  |                   | $I_F = 30\text{ mA}$                                                      | -   | -   | 500 | mV            |
|                  |                   | $I_F = 100\text{ mA}$                                                     | -   | -   | 800 | mV            |
| $I_R$            | reverse current   | $V_R = 25\text{ V}$ ; see <a href="#">Figure 2</a>                        | -   | -   | 2   | $\mu\text{A}$ |
| $C_d$            | diode capacitance | $V_R = 1\text{ V}$ ; $f = 1\text{ MHz}$ ;<br>see <a href="#">Figure 3</a> | -   | -   | 10  | pF            |

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



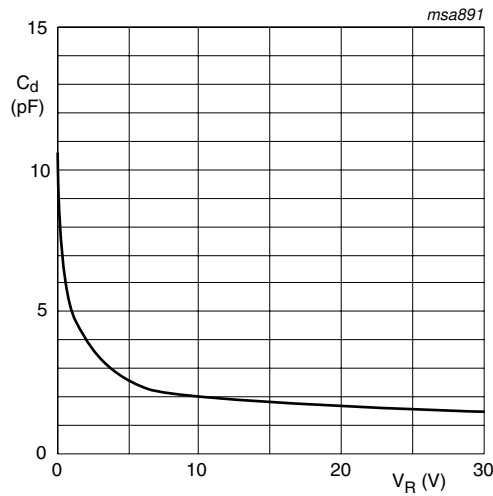
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$

**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**



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

**Fig 3. Diode capacitance as a function of reverse voltage; typical values**

## 8. Package outline

Plastic surface-mounted package; 6 leads

SOT666

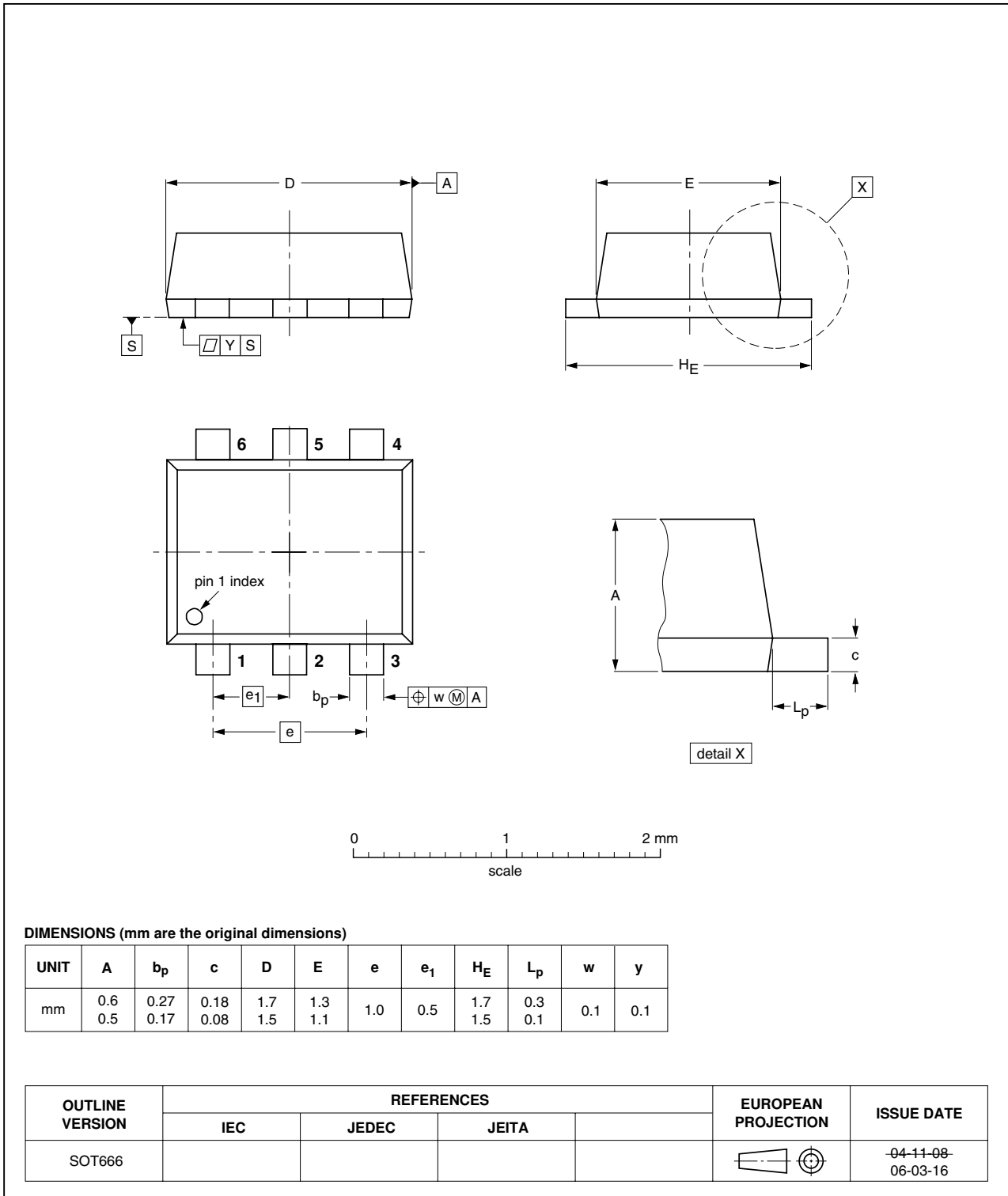


Fig 4. Package outline SOT666.

## 9. Packing information

**Table 8. Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code.<sup>[1]</sup>

| Type number | Package | Description                    | Packing quantity |
|-------------|---------|--------------------------------|------------------|
|             |         |                                | 4000             |
| BAT54VV     | SOT666  | 4 mm pitch, 8 mm tape and reel | -115             |

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



## 10. Revision history

Table 9. Revision history

| Document ID    | Release date | Data sheet status                                                                                                                                                                                                                                                                                                                                      | Change notice | Supersedes |
|----------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------|
| BAT54VV_2      | 20100115     | Product data sheet                                                                                                                                                                                                                                                                                                                                     | -             | BAT54VV_1  |
| Modifications: |              | <ul style="list-style-type: none"><li>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.</li><li><a href="#">Table 2 "Pinning"</a>: updated</li><li><a href="#">Figure 4 "Package outline SOT666."</a>: updated</li></ul> |               |            |
| BAT54VV_1      | 20040914     | Product data sheet                                                                                                                                                                                                                                                                                                                                     | -             | -          |

## 11. Legal information

### 11.1 Data sheet status

| Document status <sup>[1][2]</sup> | Product status <sup>[3]</sup> | 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".

[3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.nxp.com>.

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