

# BAT54CV

Two Schottky barrier double diodes in ultra small SOT666 package

Rev. 01 — 22 September 2004

Objective data sheet

## 1. Product profile

### 1.1 General description

Two planar Schottky barrier double diodes with common cathodes and an integrated guard ring for stress protection encapsulated in a SOT666 ultra small SMD plastic package.

### 1.2 Features

- Low forward 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.

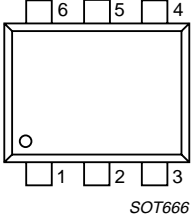
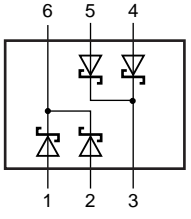
### 1.4 Quick reference data

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)	 <p style="text-align: center;">SOT666</p>	 <p style="text-align: center;">sym057</p>
2	anode (diode 2)		
3	common cathode (diode 3, 4)		
4	anode (diode 3)		
5	anode (diode 4)		
6	common cathode (diode 1, 2)		

## 3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
BAT54CV	-	plastic surface mounted package; 6 leads	SOT666

## 4. Marking

Table 4: Marking codes

Type number	Marking code
BAT54CV	C5

## 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	$t_p \leq 10$ ms; $\delta \leq 0.5$	-	0.85	A
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8.3$ ms	-	2	A
$T_j$	junction temperature		-	125	°C
$T_{amb}$	ambient temperature		-65	+125	°C
$T_{stg}$	storage temperature		-65	+150	°C

**Table 5: Limiting values ...continued***In accordance with the Absolute Maximum Rating System (IEC 60134).*

Symbol	Parameter	Conditions	Min	Max	Unit
<b>Per device</b>					
$P_{\text{tot}}$	total power dissipation	$T_{\text{amb}} \leq 25 \text{ }^\circ\text{C}$	[1] -	440	mW

[1] Refer to SOT666 standard mounting conditions.

## 6. Thermal characteristics

**Table 6: Thermal characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th(j-a)}}$	thermal resistance from junction to ambient	in free air	[1] [2] -	-	225	K/W

[1] Refer to SOT666 standard mounting conditions.

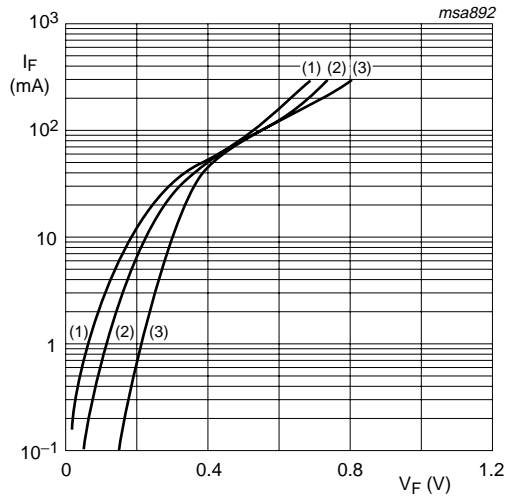
[2] Reflow soldering is the only recommended soldering method.

## 7. Characteristics

**Table 7: Characteristics** *$T_{\text{amb}} = 25 \text{ }^\circ\text{C}$  unless otherwise specified.*

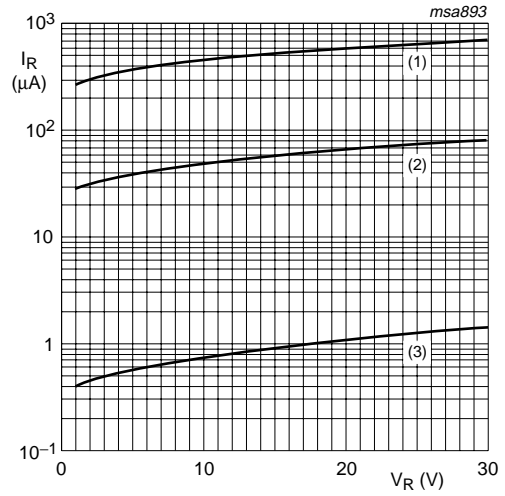
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_{\text{F}}$	forward voltage	see <a href="#">Figure 1</a> ;	[1]			
		$I_{\text{F}} = 0.1 \text{ mA}$	-	-	240	mV
		$I_{\text{F}} = 1 \text{ mA}$	-	-	320	mV
		$I_{\text{F}} = 10 \text{ mA}$	-	-	400	mV
		$I_{\text{F}} = 30 \text{ mA}$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

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



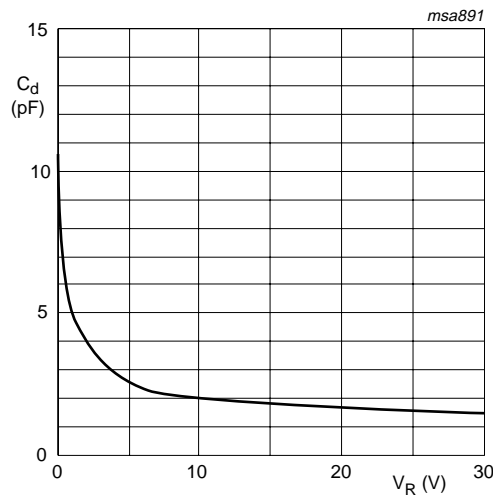
- (1)  $T_{amb} = 125\text{ }^{\circ}\text{C}$ .
- (2)  $T_{amb} = 85\text{ }^{\circ}\text{C}$ .
- (3)  $T_{amb} = 25\text{ }^{\circ}\text{C}$ .

**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

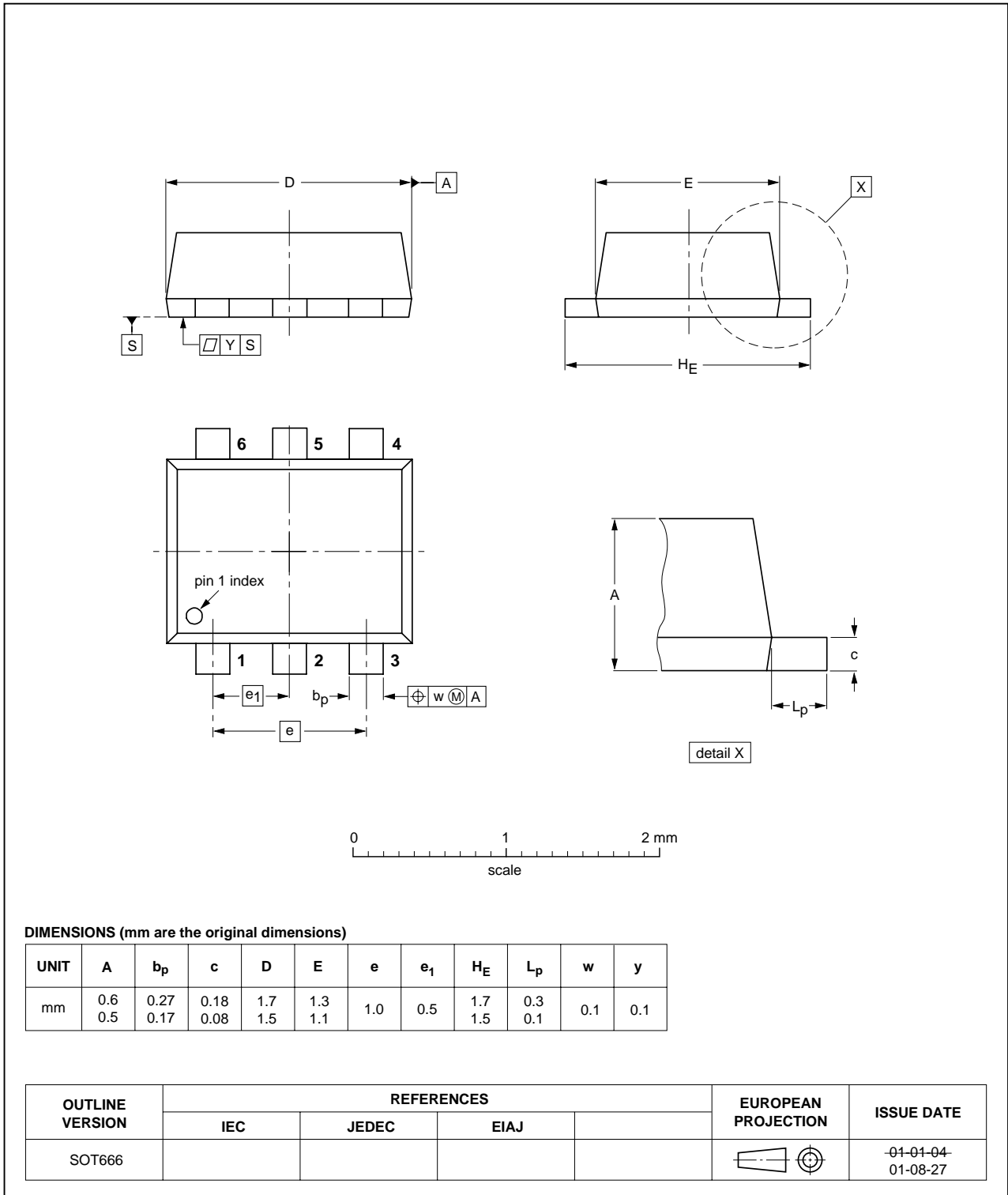


Fig 4. Package outline SOT666.

## 9. Packing information

**Table 8: Packing methods**

The indicated -xxx are the last three digits of the 12NC ordering code. [\[1\]](#)

Type number	Package	Description	Packing quantity
			4000
BAT54CV	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	Doc. number	Supersedes
BAT54CV_1	20040922	Objective data sheet	-	9397 750 13837	-

## 11. Data sheet status

Level	Data sheet status <sup>[1]</sup>	Product status <sup>[2]</sup> <sup>[3]</sup>	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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