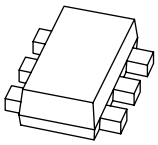


BAT54VV

Schottky barrier triple diode in ultra small SOT666 package

Rev. 01 — 14 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
- 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

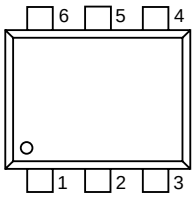
Table 1: Quick reference data

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

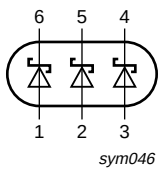
2. Pinning information

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)		



SOT666



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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
Per diode						
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.

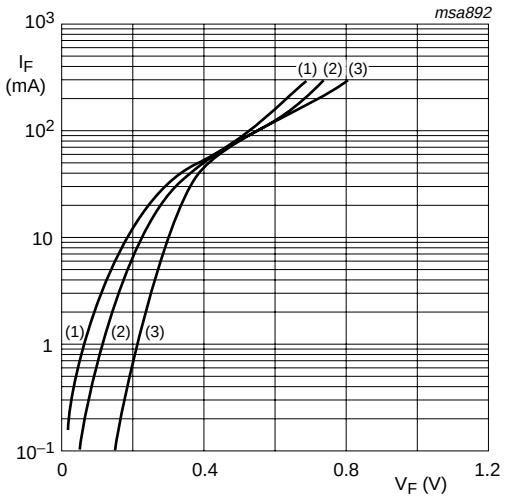
7. Characteristics

Table 7: Characteristics

T_{amb} = 25 °C unless otherwise specified.

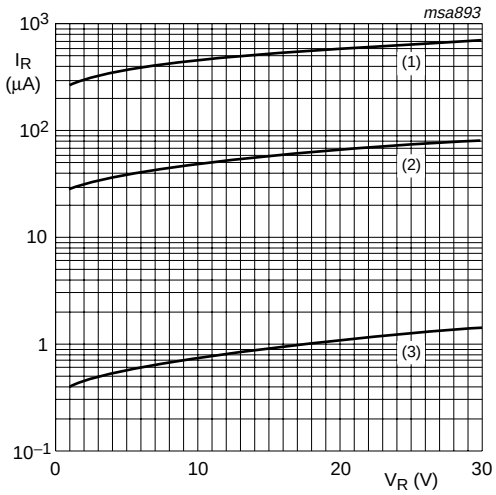
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V_F	forward voltage	see Figure 1;	[1]				
		I_F = 0.1 mA		-	-	240	mV
		I_F = 1 mA		-	-	320	mV
		I_F = 10 mA		-	-	400	mV
		I_F = 30 mA		-	-	500	mV
		I_F = 100 mA		-	-	800	mV
I_R	reverse current	V_R = 25 V; see Figure 2		-	-	2	µA
C_d	diode capacitance	V_R = 1 V; f = 1 MHz; see Figure 3		-	-	10	pF

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.



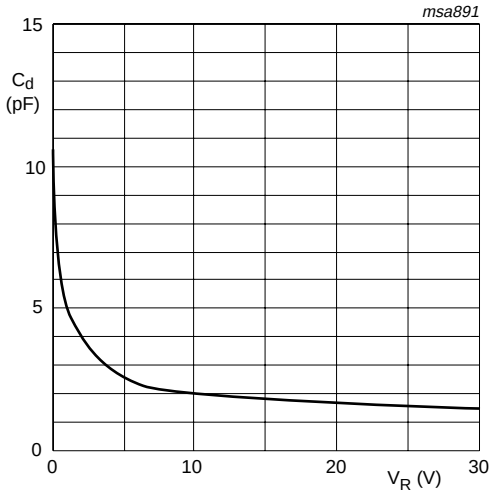
(1) T_{amb} = 125 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.

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



(1) T_{amb} = 125 °C.
(2) T_{amb} = 85 °C.
(3) T_{amb} = 25 °C.

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

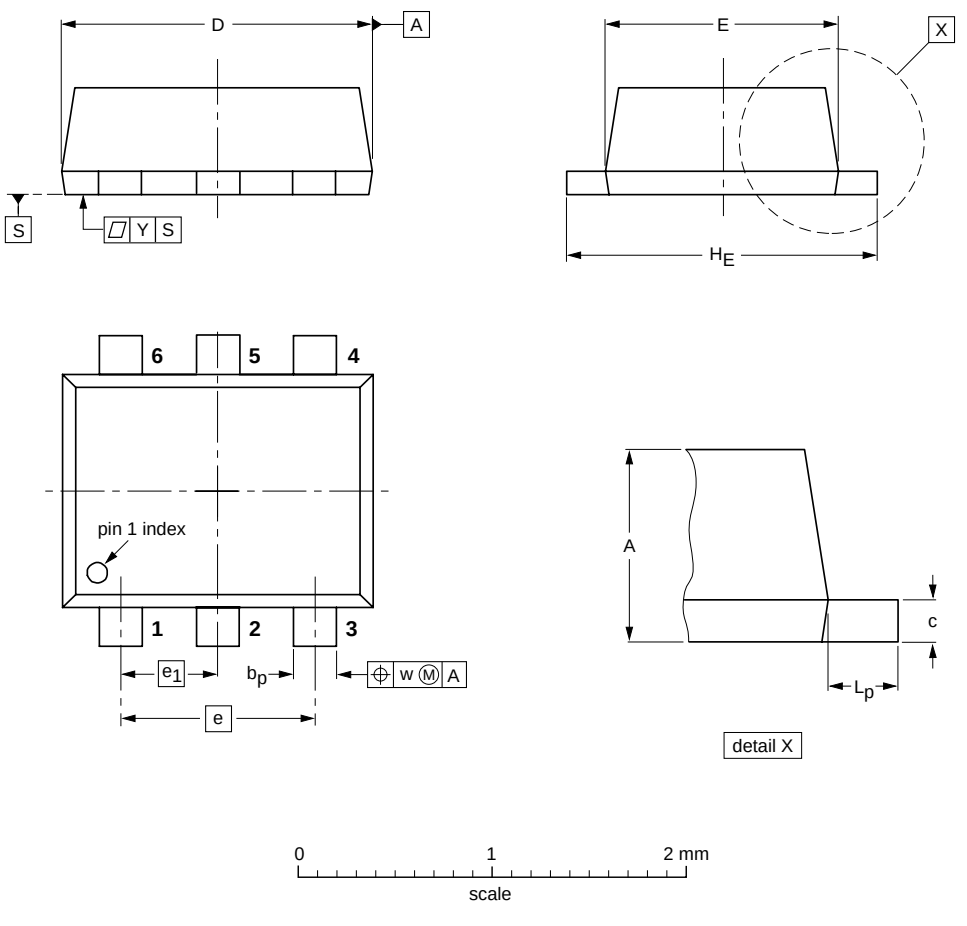


T_{amb} = 25 °C; f = 1 MHz.

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

8. Package outline

Plastic surface mounted package; 6 leads **SOT666**



DIMENSIONS (mm are the original dimensions)

UNIT	A	b_p	c	D	E	e	e_1	H_E	L_p	w	y
mm	0.6 0.5	0.27 0.17	0.18 0.08	1.7 1.5	1.3 1.1	1.0	0.5	1.7 1.5	0.3 0.1	0.1	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT666						~~01-01-04~~ 01-08-27

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
BAT54VV	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
BAT54VV_1	20040914	Product data sheet	-	9397 750 13524	-

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.
II	Preliminary data	Qualification	This data sheet contains data from the preliminary specification. Supplementary data will be published at a later date. Philips Semiconductors reserves the right to change the specification without notice, in order to improve the design and supply the best possible product.
III	Product data	Production	This data sheet contains data from the product specification. Philips Semiconductors reserves the right to make changes at any time in order to improve the design, manufacturing and supply. Relevant changes will be communicated via a Customer Product/Process Change Notification (CPCN).

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

[2] The product status of the device(s) described in this data sheet may have changed since this data sheet was published. The latest information is available on the Internet at URL http://www.semiconductors.philips.com.

[3] For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

12. Definitions

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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15. Contents

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