

BAT54XY

Schottky barrier quadruple diode in very small SOT363 package

Rev. 01 — 17 January 2005

Product data sheet



1.1 General description

Schottky barrier quadruple diode with an integrated guard ring for stress protection. Two electrically isolated dual Schottky barrier diodes series, encapsulated in a SOT363 very small SMD plastic package.

1.2 Features

- Low forward voltage
- Ultra small SMD plastic package
- Low capacitance

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	Тур	Max	Unit
V_R	continuous reverse voltage		-	-	30	V
l _F	continuous forward current		-	-	200	mA
V _F	forward voltage	I _F = 10 mA; see <u>Figure 1</u>	<u>[1]</u> -	-	400	mV

[1] Pulse test: $t_p \le 30 ms$; $\delta \le 0.02$.



2. Pinning information

Table 2: Pinning

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Pin	Description	Simplified outline	Symbol
1	anode 1	П- П- П.	
2	cathode 2	654	6 5 4
3	anode 3 / cathode 4		
4	anode 4	0	
5	cathode 3	□1 □2 □3	
6	cathode 1 / anode 2		1 2 3 006aaa256

3. Ordering information

Table 3: Ordering information

Type number	Package		
	Name	Description	Version
BAT54XY	SC-88	plastic surface mounted package; 6 leads	SOT363

4. Marking

Table 4: Marking codes

Type number	Marking code [1]
BAT54XY	*C5

[1] * = -: made in Hong Kong

* = t: made in Malaysia

* = W: made in China

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	$t_p \le 1 \text{ s}; \ \delta \le 0.5$	-	300	mA
I _{FSM}	non-repetitive peak forward current	t _p < 10 ms	-	600	mA
T _j	junction temperature		-	125	°C
T _{amb}	ambient temperature		-65	+125	°C
T _{stg}	storage temperature		-65	+150	°C

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6. Thermal characteristics

Table 6: Thermal characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
$R_{th(j-s)}$	thermal resistance from junction to soldering point	in free air	<u>[1]</u> -	-	260	K/W

^[1] Soldering point at pins 2, 3, 5 and 6.

7. Characteristics

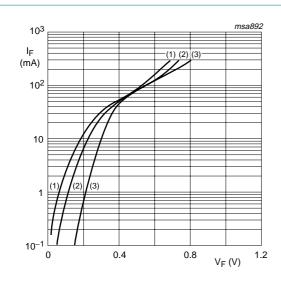
Table 7: Characteristics

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

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
Per diode						
V _F	forward voltage	see Figure 1;	<u>[1]</u>			
		$I_F = 0.1 \text{ mA}$	-	-	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	μΑ
C _d	diode capacitance	$V_R = 1 V$; $f = 1 MHz$; see Figure 3	-	-	10	pF

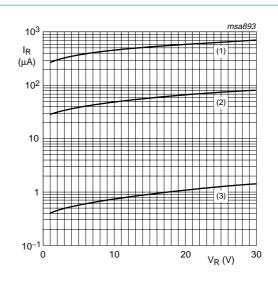
^[1] Pulse test: $t_p \le 300 \ \mu s; \ \delta \le 0.02$.





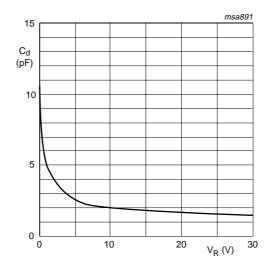
- (1) $T_{amb} = 125 \, ^{\circ}C$.
- (2) $T_{amb} = 85 \, ^{\circ}C$.
- (3) $T_{amb} = 25 \, ^{\circ}C$.

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



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

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

SOT363

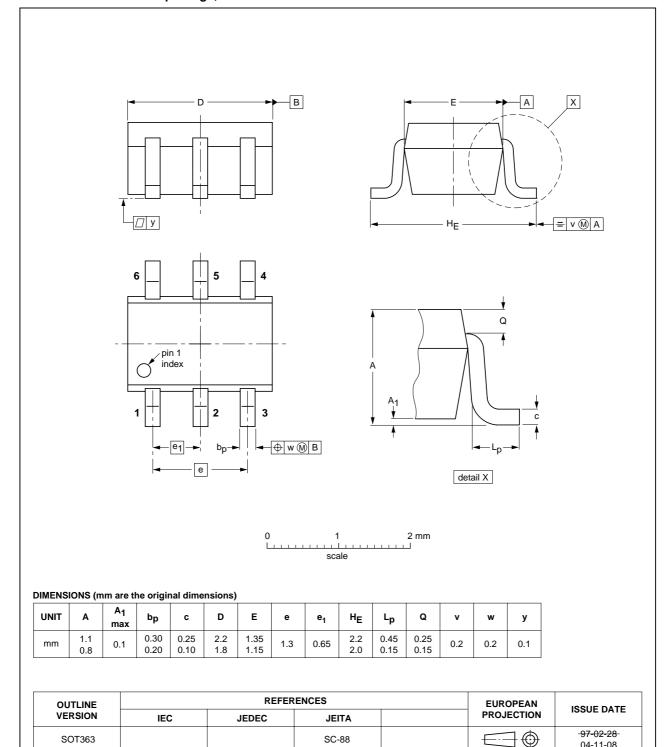


Fig 4. Package outline SOT363 (SC-88).

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 q	uantity
				3000	10000
BAT54XY	SOT363	4 mm pitch, 8 mm tape and reel; T1	[2]	-115	-135
		4 mm pitch, 8 mm tape and reel; T2	[3]	-125	-165

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

^[2] T1: normal taping

^[3] T2: reverse taping



10. Revision history

Table 9: Revision history

Document ID	Release date	Data sheet status	Change notice	Doc. number	Supersedes
BAT54XY_1	20050117	Product data sheet	-	9397 750 14141	-



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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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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