



# 1PS70SB16

Dual Schottky barrier diode

17 December 2012

Product data sheet

## 1. General description

Dual Planar Schottky barrier diode in common anode configuration with an integrated guard ring for stress protection, encapsulated in a very small SOT323 (SC-70) Surface-Mounted Device (SMD) plastic package.

## 2. Features and benefits

- Low forward voltage
- Low capacitance
- AEC-Q101 qualified

## 3. Applications

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

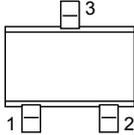
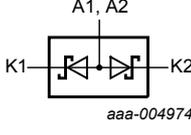
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$I_F$	forward current		-	-	200	mA
$V_R$	reverse voltage		-	-	30	V
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 10 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	400	mV

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	K1	cathode (diode 1)	 <p>SC-70 (SOT323)</p>	 <p>aaa-004974</p>
2	K2	cathode (diode 2)		
3	A1, A2	common anode		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
1PS70SB16	SC-70	plastic surface-mounted package; 3 leads	SOT323

## 7. Marking

Table 4. Marking codes

Type number	Marking code [1]
1PS70SB16	7%6

[1] % = placeholder for manufacturing site code

## 8. 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>					
$V_R$	reverse voltage		-	30	V
$I_F$	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; $T_{j(\text{init})} = 25$ °C	-	600	mA
$P_{\text{tot}}$	total power dissipation	$T_{\text{amb}} < 25$ °C	-	200	mW
$T_j$	junction temperature		-	150	°C
$T_{\text{amb}}$	ambient temperature		-55	150	°C

Symbol	Parameter	Conditions	Min	Max	Unit
$T_{\text{stg}}$	storage temperature		-65	150	°C

## 9. Thermal characteristics

Table 6. Thermal characteristics

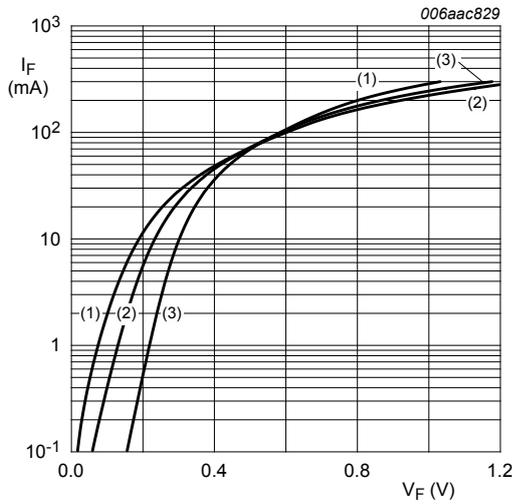
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per device</b>						
$R_{\text{th(j-a)}}$	thermal resistance from junction to ambient	in free air	[1]	-	625	K/W

[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

## 10. Characteristics

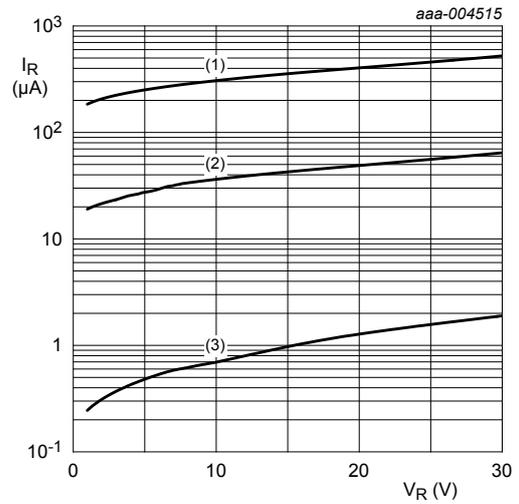
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
$V_F$	forward voltage	$I_F = 0.1 \text{ mA}; T_{\text{amb}} = 25 \text{ °C}$	-	-	240	mV
		$I_F = 1 \text{ mA}; T_{\text{amb}} = 25 \text{ °C}$	-	-	320	mV
		$I_F = 10 \text{ mA}; T_{\text{amb}} = 25 \text{ °C}$	-	-	400	mV
		$I_F = 30 \text{ mA}; T_{\text{amb}} = 25 \text{ °C}$	-	-	500	mV
		$I_F = 100 \text{ mA}; T_{\text{amb}} = 25 \text{ °C}$	-	-	800	mV
$I_R$	reverse current	$V_R = 25 \text{ V}; \text{pulsed}; t_p = 300 \text{ }\mu\text{s}; \delta = 0.02; T_{\text{amb}} = 25 \text{ °C}$	-	-	2	$\mu\text{A}$
$C_d$	diode capacitance	$V_R = 1 \text{ V}; f = 1 \text{ MHz}; T_{\text{amb}} = 25 \text{ °C}$	-	-	10	pF



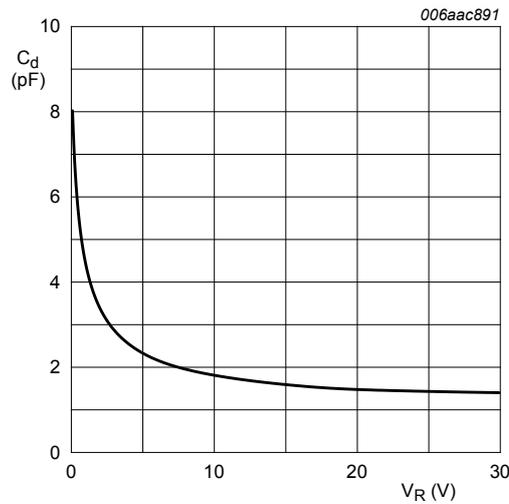
- (1)  $T_{amb} = 125\text{ °C}$
- (2)  $T_{amb} = 85\text{ °C}$
- (3)  $T_{amb} = 25\text{ °C}$

**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**



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

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

## 11. Test information

### 11.1 Quality information

This product has been qualified in accordance with the Automotive Electronics Council (AEC) standard Q101 - Stress test qualification for discrete semiconductors, and is suitable for use in automotive applications.

## 12. Package outline

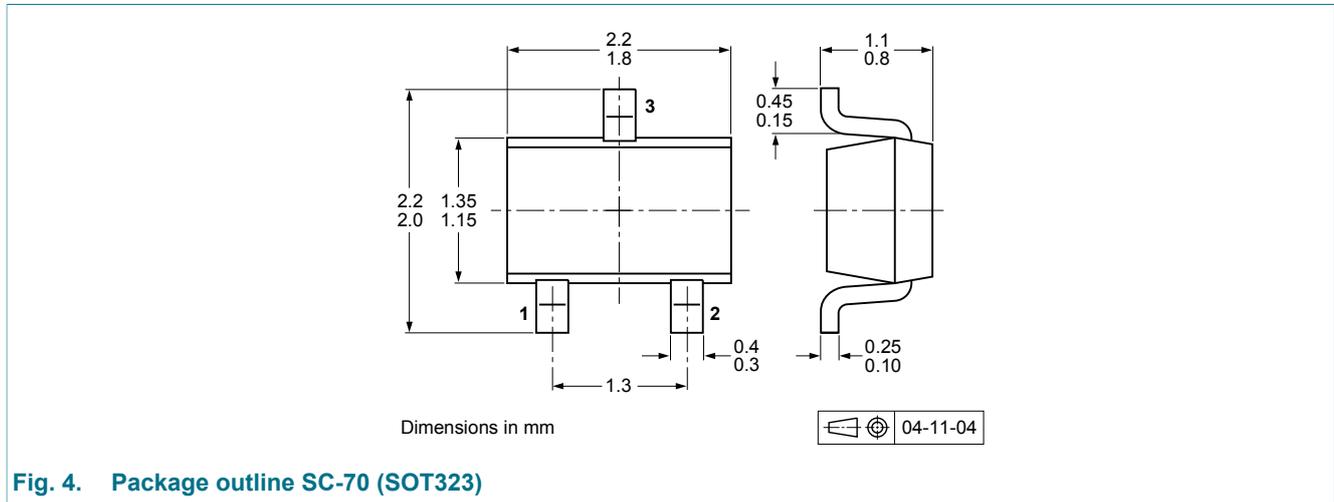


Fig. 4. Package outline SC-70 (SOT323)

## 13. Soldering

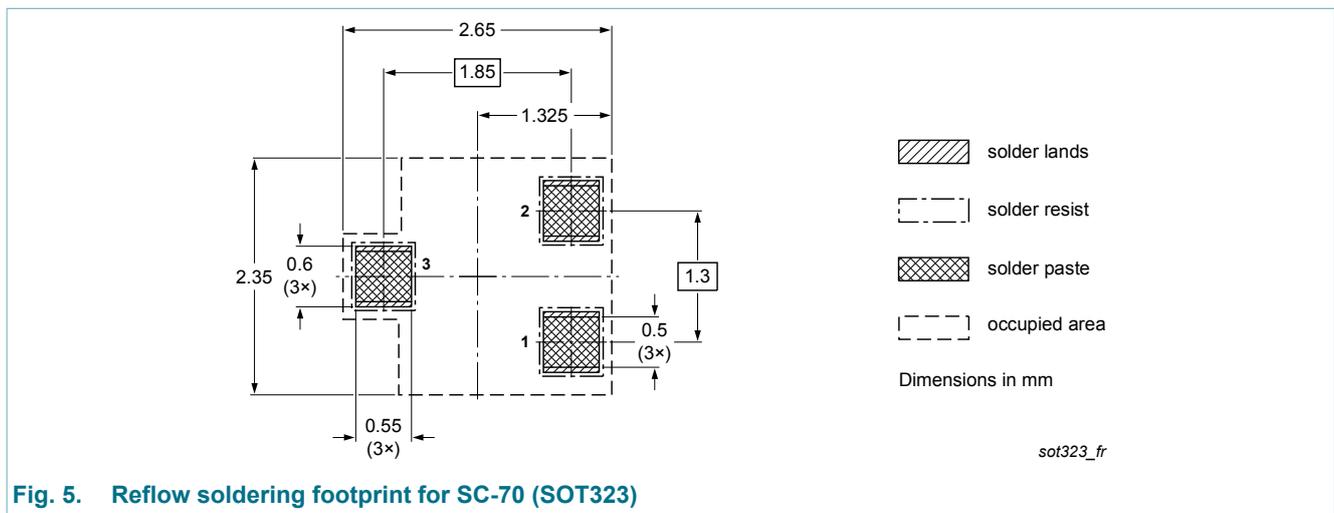
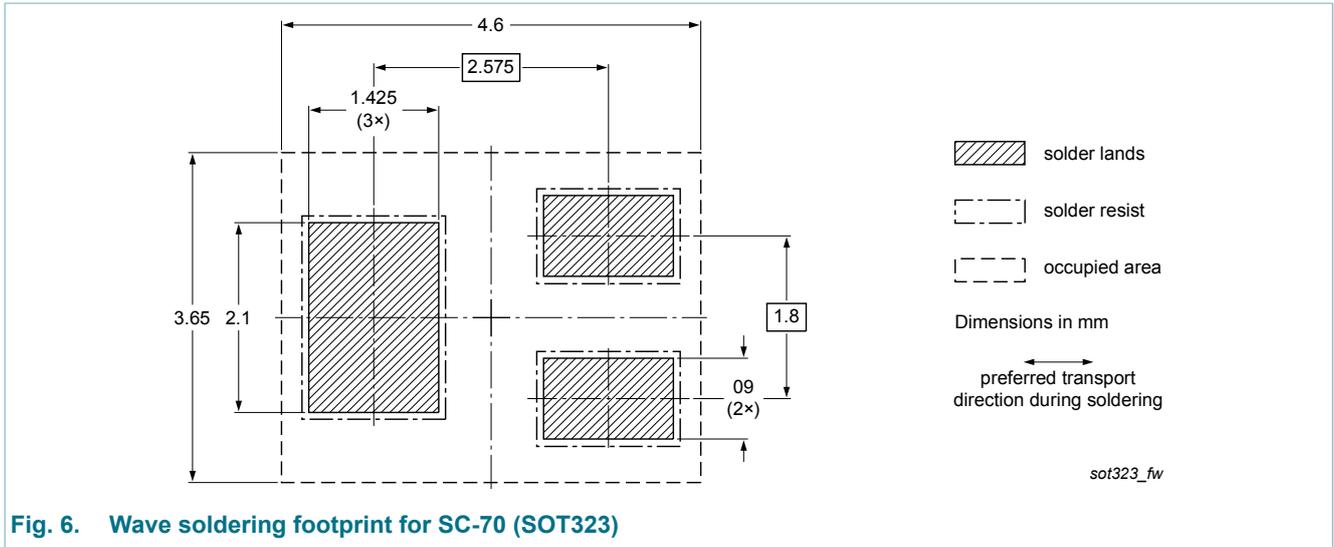


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)



## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
1PS70SB16 v.2	20121217	Product data sheet	-	1PS70SB10_14_15_16 v.1
Modifications:	<ul style="list-style-type: none"> <li>The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors.</li> <li>Legal texts have been adapted to the new company name where appropriate.</li> <li>Sections 1 to 3 updated</li> <li>Section 4 "Quick reference data" added</li> <li>Section 6 "Ordering information" added</li> <li>Section 7 "Marking" updated</li> <li>Table 5 "Limiting values": ambient temperature <math>T_{amb}</math> and junction temperature <math>T_j</math> updated</li> <li>Figures 1, 2 and 3 updated</li> <li>Section 11 "Test information" added</li> <li>Figure 4: superseded by minimized package outline drawing</li> <li>Section 13 "Soldering" added</li> <li>Section 14 "Legal information" updated</li> </ul>			
1PS70SB10_14_15_16 v.1	19990426	Product data sheet	-	-

## 15. Legal information

### 15.1 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".
- [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.nexperia.com>.

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## 16. Contents

1	General description .....	1
2	Features and benefits .....	1
3	Applications .....	1
4	Quick reference data .....	1
5	Pinning information .....	2
6	Ordering information .....	2
7	Marking .....	2
8	Limiting values .....	2
9	Thermal characteristics .....	3
10	Characteristics .....	3
11	Test information .....	4
11.1	Quality information .....	
12	Package outline .....	5
13	Soldering .....	5
14	Revision history .....	6
15	Legal information .....	7
15.1	Data sheet status .....	7
15.2	Definitions .....	7
15.3	Disclaimers .....	7
15.4	Trademarks .....	8

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