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# 1PS70SB10

## Schottky barrier single diode

17 December 2012

Product data sheet

### 1. General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a very small SOT323 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

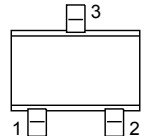
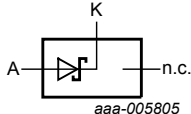
### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	200	mA
$V_R$	reverse voltage		-	-	30	V
$V_F$	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	A	anode	 <p>SC-70 (SOT323)</p>	 <p>aaa-005805</p>
2	n.c.	not connected		
3	K	cathode		



## 6. Ordering information

**Table 3. Ordering information**

Type number	Package		Version
	Name	Description	
1PS70SB10	SC-70	plastic surface-mounted package; 3 leads	SOT323

## 7. Marking

**Table 4. Marking codes**

Type number	Marking code
1PS70SB10	7%0 [1]

[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
$V_R$	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
$T_{\text{stg}}$	storage temperature		-65	150	°C

## 9. Thermal characteristics

**Table 6. Thermal characteristics**

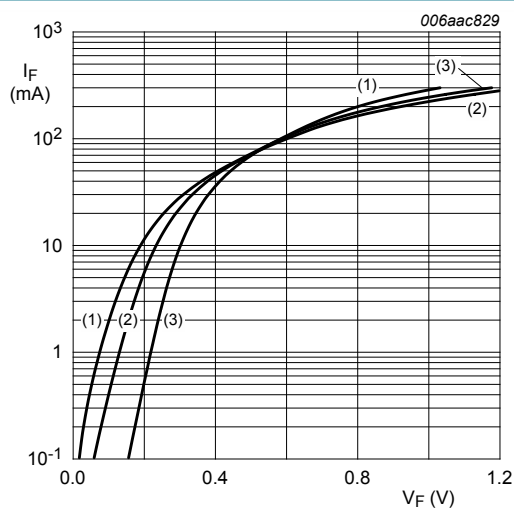
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air [1]	-	-	625	K/W

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

**10. Characteristics**

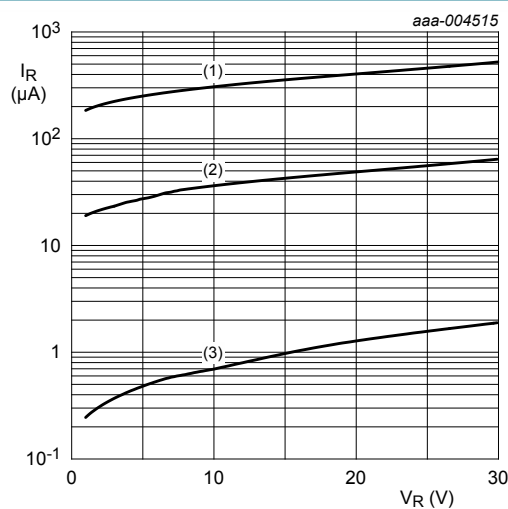
**Table 7. Characteristics**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 0.1 mA; T <sub>amb</sub> = 25 °C	-	-	240	mV
		I <sub>F</sub> = 1 mA; T <sub>amb</sub> = 25 °C	-	-	320	mV
		I <sub>F</sub> = 10 mA; T <sub>amb</sub> = 25 °C	-	-	400	mV
		I <sub>F</sub> = 30 mA; T <sub>amb</sub> = 25 °C	-	-	500	mV
		I <sub>F</sub> = 100 mA; T <sub>amb</sub> = 25 °C	-	-	800	mV
I <sub>R</sub>	reverse current	V <sub>R</sub> = 25 V; pulsed; t <sub>p</sub> = 300 μs; δ = 0.02; T <sub>amb</sub> = 25 °C	-	-	2	μA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 1 V; f = 1 MHz; T <sub>amb</sub> = 25 °C	-	-	10	pF



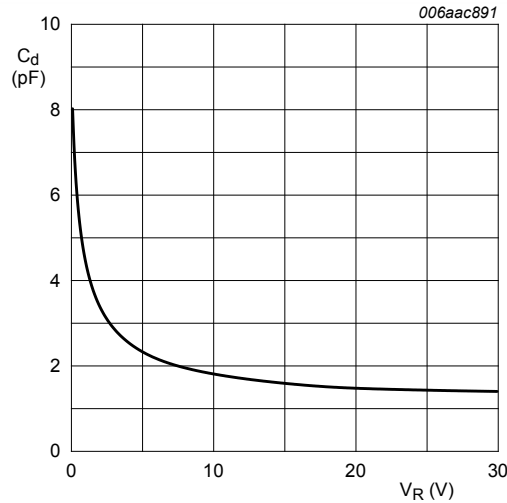
- (1) T<sub>amb</sub> = 125 °C
- (2) T<sub>amb</sub> = 85 °C
- (3) T<sub>amb</sub> = 25 °C

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



- (1) T<sub>amb</sub> = 125 °C
- (2) T<sub>amb</sub> = 85 °C
- (3) T<sub>amb</sub> = 25 °C

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



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

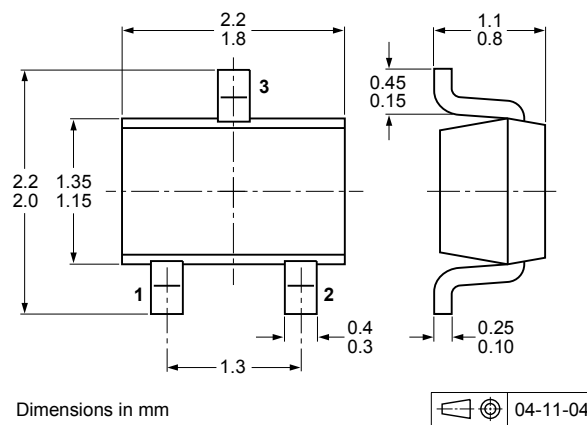
**Fig. 3. Diode capacitance as a function of reverse voltage; typical values**

## 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

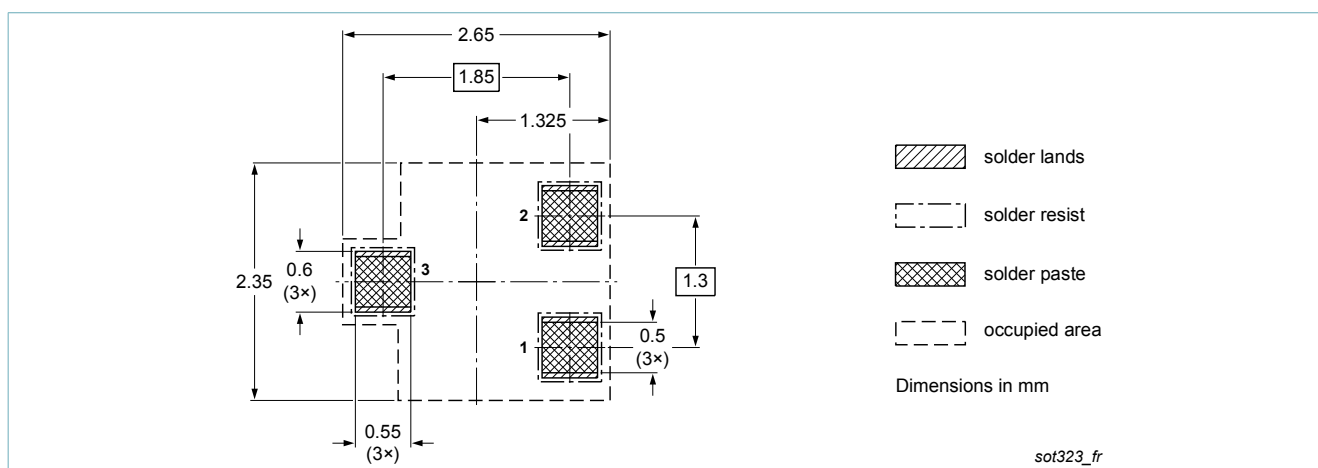


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

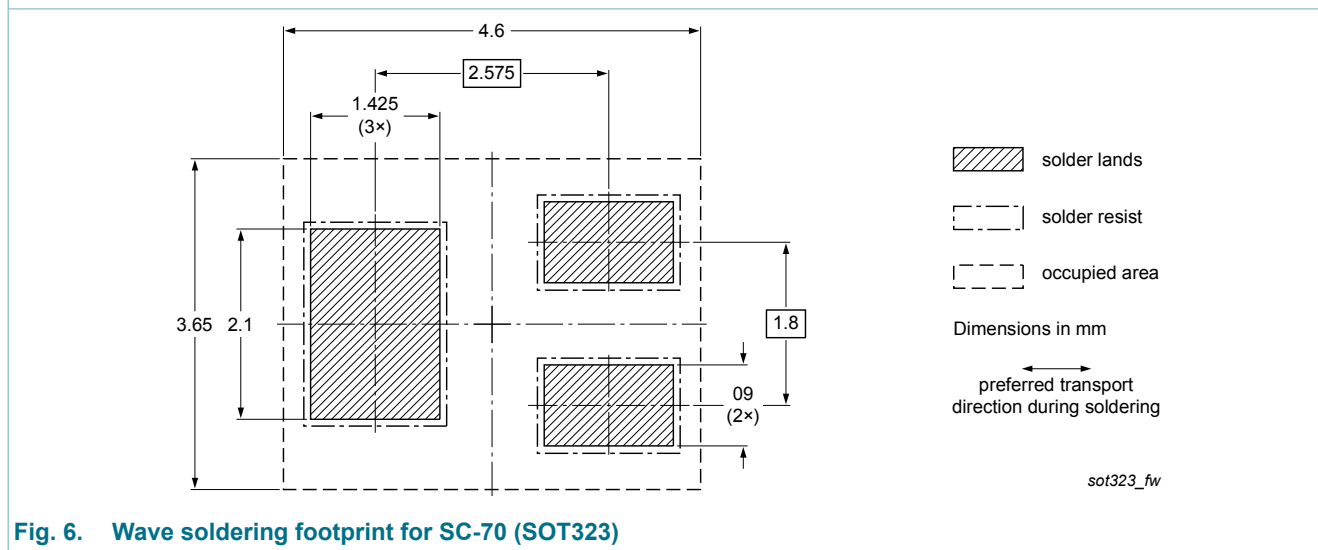


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

### 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
1PS70SB10 v.2	20121217	Product data sheet	-	1PS70SB10_14_15_16 v.1

**NXP Semiconductors**

**1PS70SB10**

Schottky barrier single diode

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
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> minimum value 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

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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.nxp.com>.

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Date of release: 17 December 2012