

# 1PS70SB15

Dual Schottky barrier diode

17 December 2012

Product data sheet

## 1. General description

Dual Planar Schottky barrier diode in common cathode 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
- Line termination

## 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

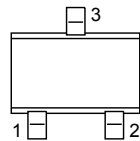
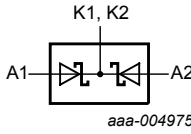


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## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 <p>SC-70 (SOT323)</p>	 <p>aaa-004975</p>
2	A2	anode (diode 2)		
3	K1, K2	common cathode		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
1PS70SB15	SC-70	plastic surface-mounted package; 3 leads	SOT323

## 7. Marking

Table 4. Marking codes

Type number	Marking code [1]
1PS70SB15	7%5

[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	$t_p \leq 1 \text{ s}$ ; $\delta \leq 0.5$	-	300	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p < 10 \text{ ms}$ ; $T_{j(\text{init})} = 25 \text{ }^\circ\text{C}$	-	600	mA
$P_{\text{tot}}$	total power dissipation	$T_{\text{amb}} < 25 \text{ }^\circ\text{C}$	-	200	mW
$T_j$	junction temperature		-	150	$^\circ\text{C}$
$T_{\text{amb}}$	ambient temperature		-55	150	$^\circ\text{C}$

Symbol	Parameter	Conditions	Min	Max	Unit
T <sub>stg</sub>	storage temperature		-65	150	°C

## 9. Thermal characteristics

Table 6. Thermal characteristics

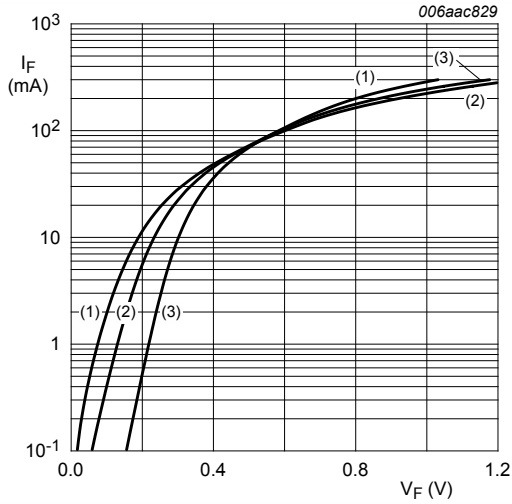
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per device</b>						
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air [1]	-	-	625	K/W

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

## 10. Characteristics

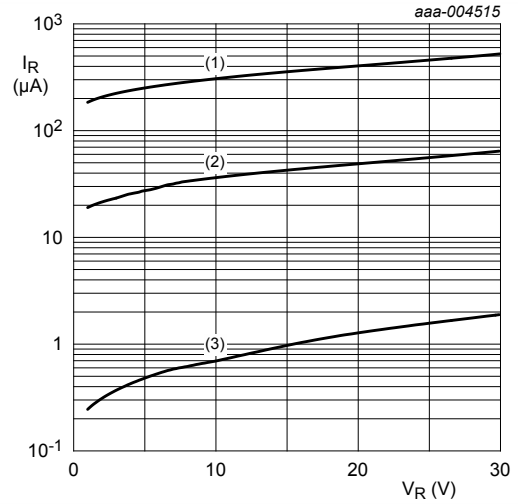
Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Per diode</b>						
V <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



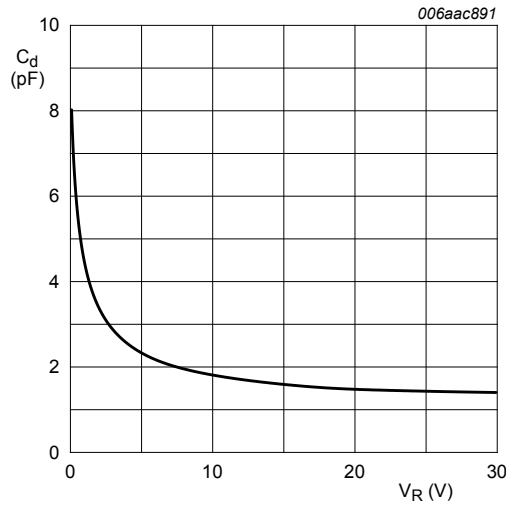
- (1)  $T_{amb} = 125^\circ\text{C}$
- (2)  $T_{amb} = 85^\circ\text{C}$
- (3)  $T_{amb} = 25^\circ\text{C}$

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



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

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



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

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

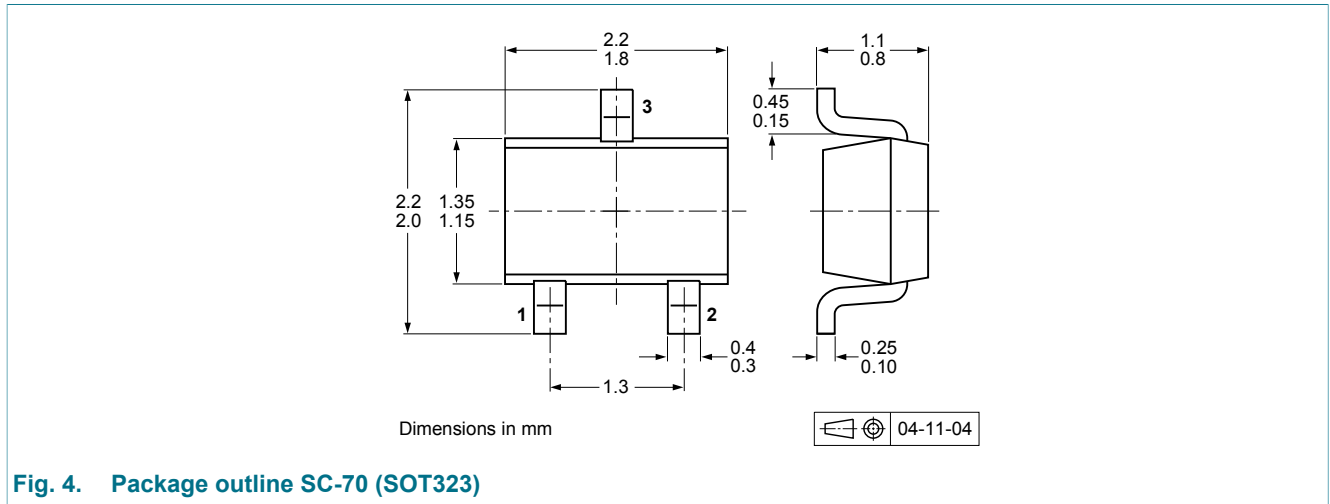


Fig. 4. Package outline SC-70 (SOT323)

## 13. Soldering

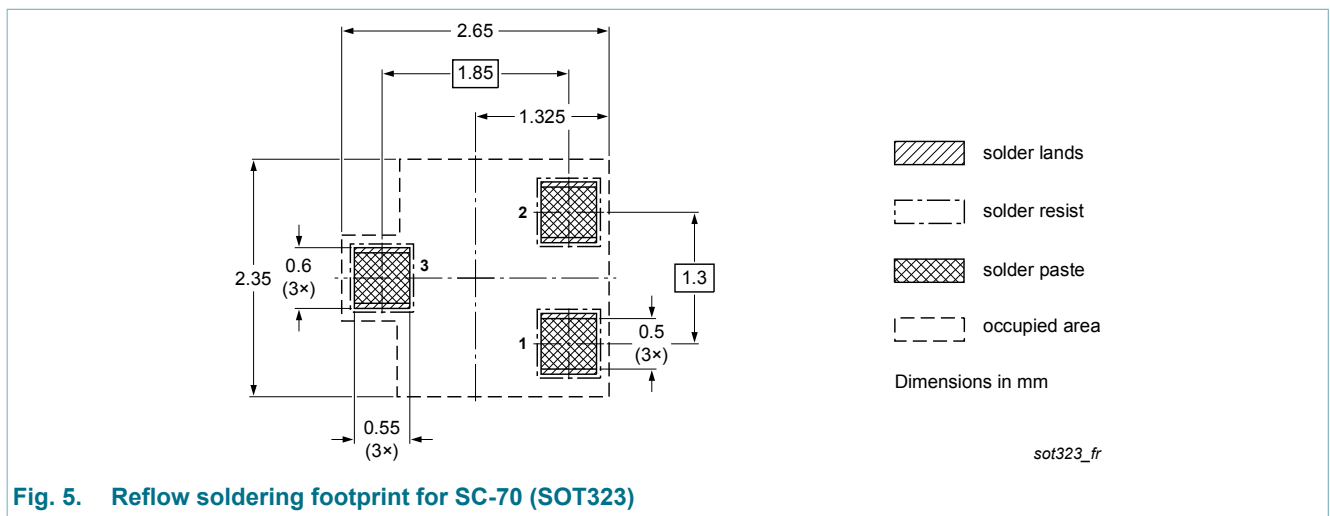


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

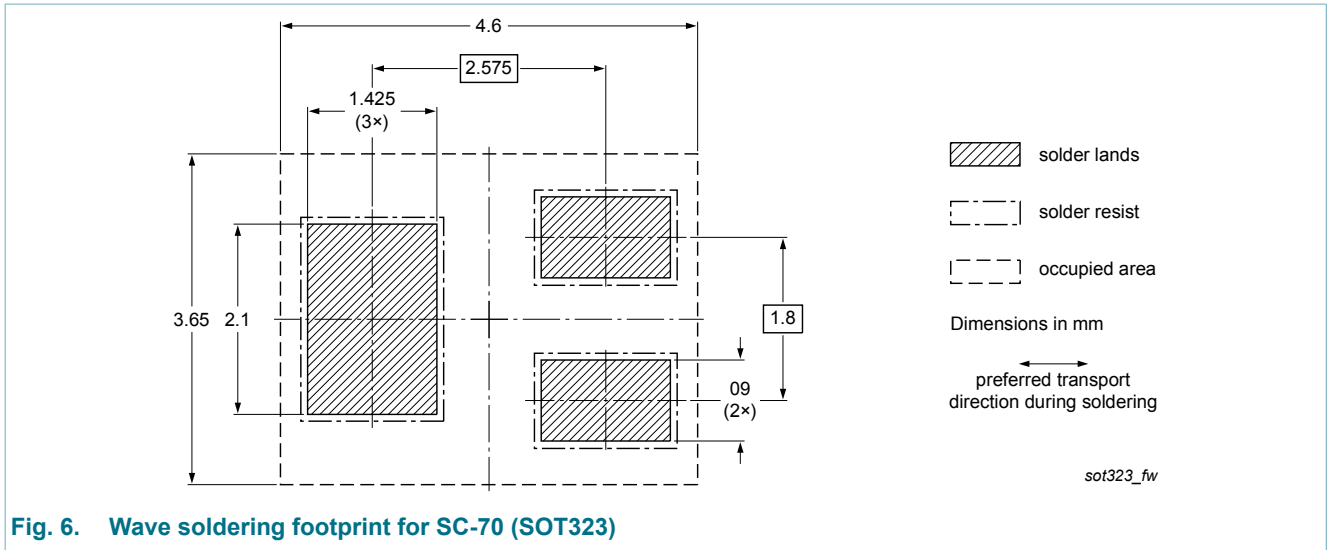


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

## 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
1PS70SB15 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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