

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

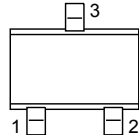
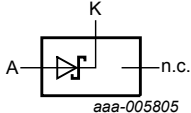
4. Quick reference data

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	 SC-70 (SOT323)	 aaa-005805
2	n.c.	not connected		
3	K	cathode		



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6. Ordering information

Table 3. Ordering information

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

7. Marking

Table 4. Marking codes

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

[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_{tot}	total power dissipation	$T_{\text{amb}} < 25$ °C	-	200	mW
T_j	junction temperature		-	150	°C
T_{amb}	ambient temperature		-55	150	°C
T_{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 _F	forward voltage	I _F = 0.1 mA; T _{amb} = 25 °C	-	-	240	mV
		I _F = 1 mA; T _{amb} = 25 °C	-	-	320	mV
		I _F = 10 mA; T _{amb} = 25 °C	-	-	400	mV
		I _F = 30 mA; T _{amb} = 25 °C	-	-	500	mV
		I _F = 100 mA; T _{amb} = 25 °C	-	-	800	mV
I _R	reverse current	V _R = 25 V; pulsed; t _p = 300 μs; δ = 0.02; T _{amb} = 25 °C	-	-	2	μA
C _d	diode capacitance	V _R = 1 V; f = 1 MHz; T _{amb} = 25 °C	-	-	10	pF

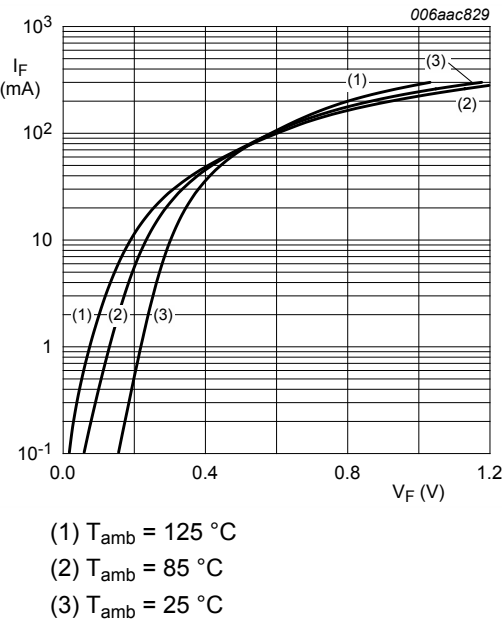


Fig. 1. Forward current as a function of forward voltage; typical values

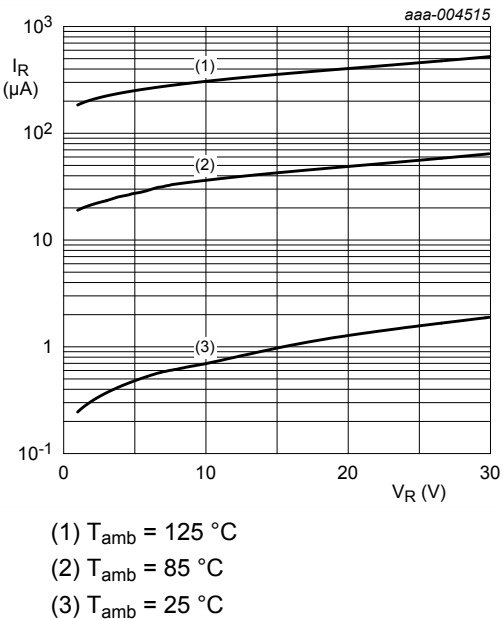
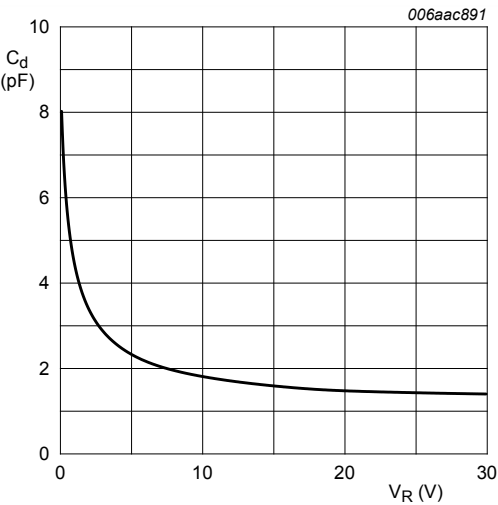


Fig. 2. Reverse current as a function of reverse voltage; typical values



T_{amb} = 25 °C; f = 1 MHz

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

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

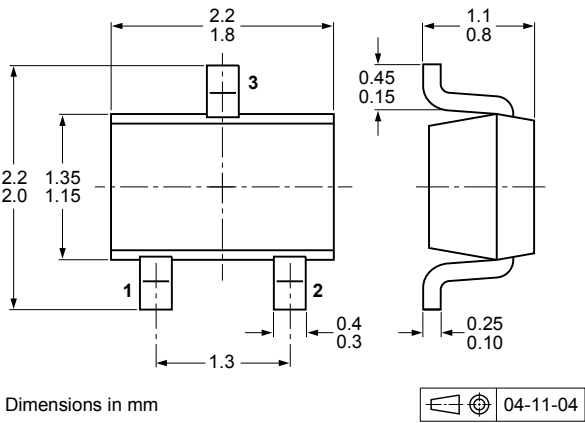
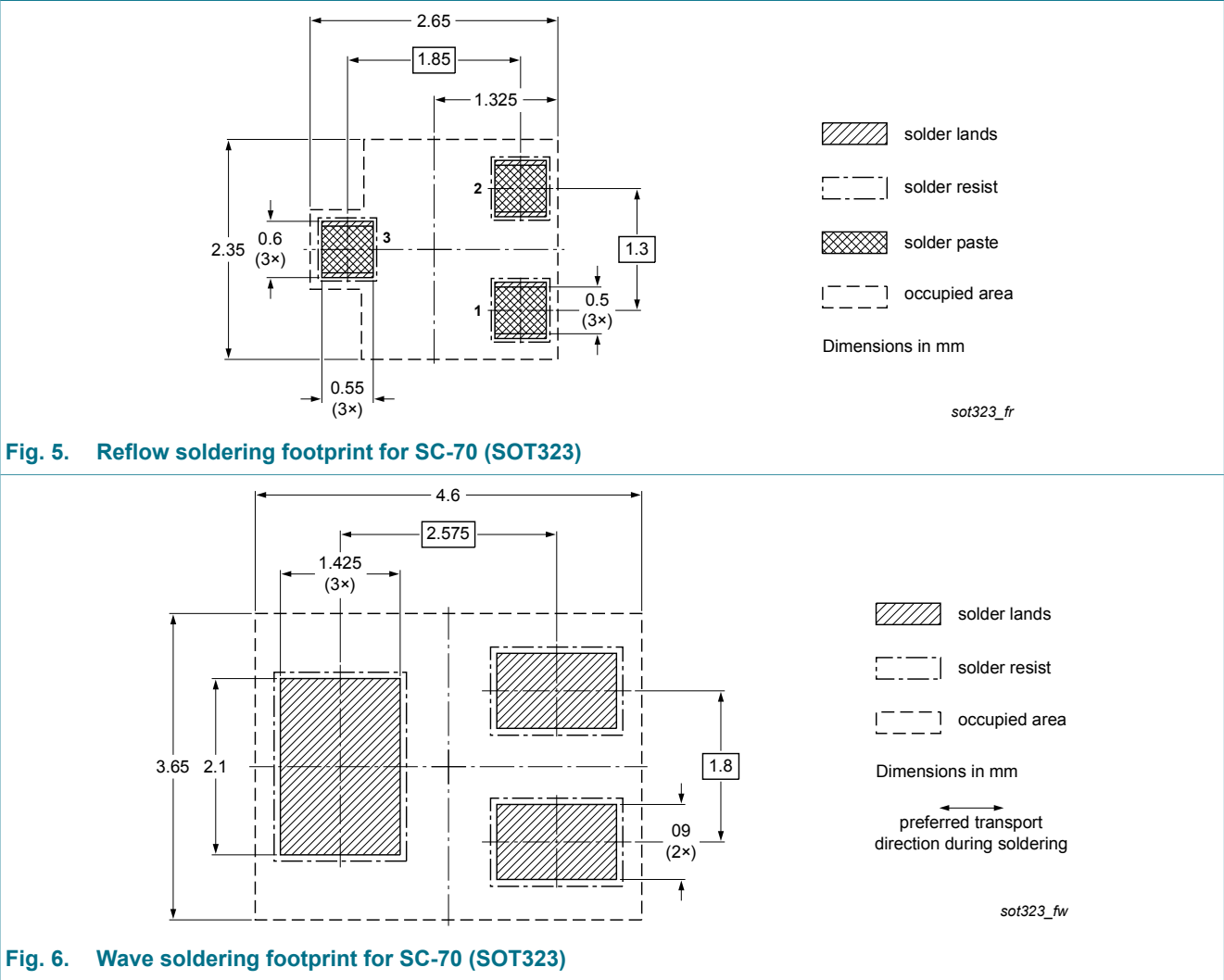


Fig. 4. Package outline SC-70 (SOT323)

13. Soldering



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

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
Modifications:	• The format of this document has been redesigned to comply with the new identity guidelines of NXP Semiconductors. • Legal texts have been adapted to the new company name where appropriate. • Sections 1 to 3 updated • Section 4 "Quick reference data" added • Section 6 "Ordering information" added • Section 7 "Marking" updated • Table 5 "Limiting values": ambient temperature T_{amb} and junction temperature T_j minimum value updated • Figures 1, 2 and 3 updated • Section 11 "Test information" added • Figure 4: superseded by minimized package outline drawing • Section 13 "Soldering" added • Section 14 "Legal information" updated			
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".
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