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Kind regards,

Team Nexperia

# 1PS70SB20

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 (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

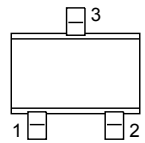
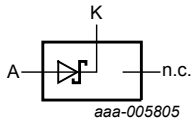
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_F$	forward current		-	-	500	mA
$V_R$	reverse voltage		-	-	40	V
$V_F$	forward voltage	$I_F = 500 \text{ mA}; T_{\text{amb}} = 25 \text{ }^\circ\text{C}$	-	-	550	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
1PS70SB20	SC-70	plastic surface-mounted package; 3 leads	SOT323

## 7. Marking

Table 4. Marking codes

Type number	Marking code [1]
1PS70SB20	7%2

[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		-	40	V
$I_F$	forward current		-	500	mA
$I_{FSM}$	non-repetitive peak forward current	$t_p = 8.3$ ms; $T_{J(\text{init})} = 25$ °C; half sine wave	-	2	A
$T_j$	junction temperature		-	125	°C
$T_{\text{amb}}$	ambient temperature		-55	125	°C
$T_{\text{stg}}$	storage temperature		-65	150	°C

## 9. Thermal characteristics

Table 6. Thermal characteristics

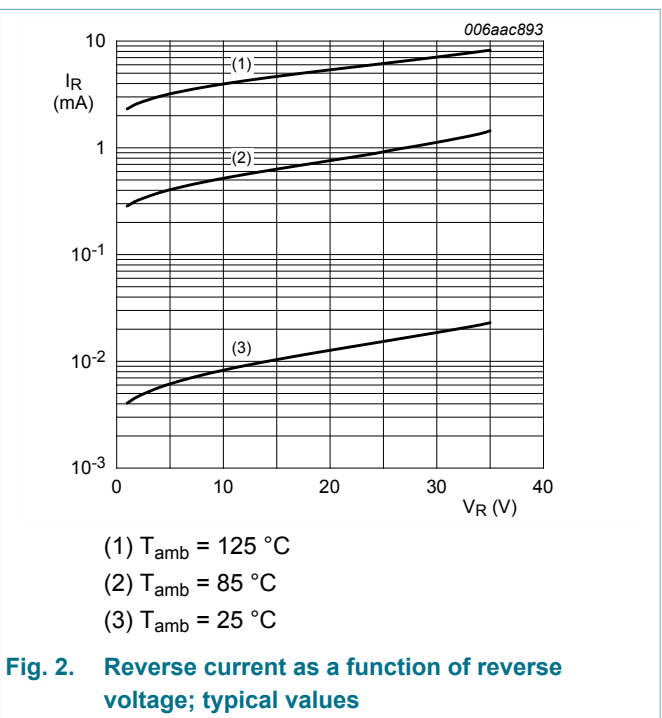
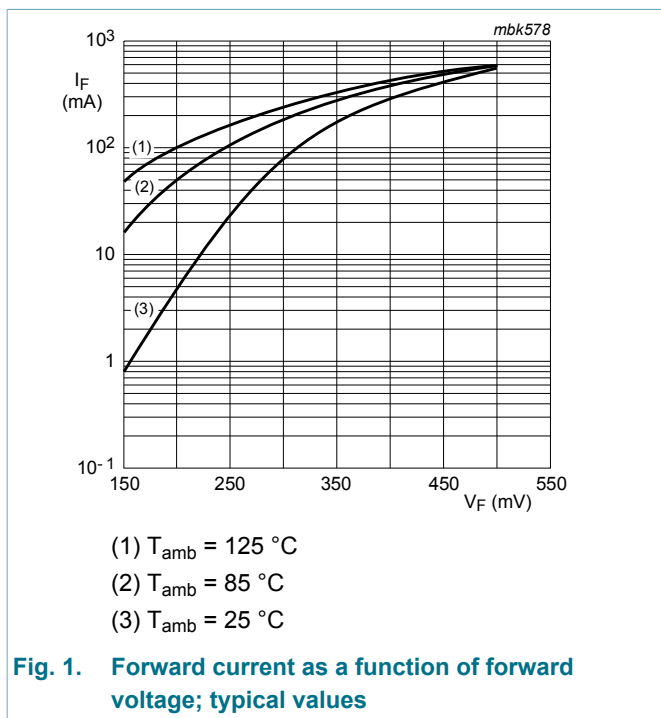
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$R_{\text{th}(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	500	K/W

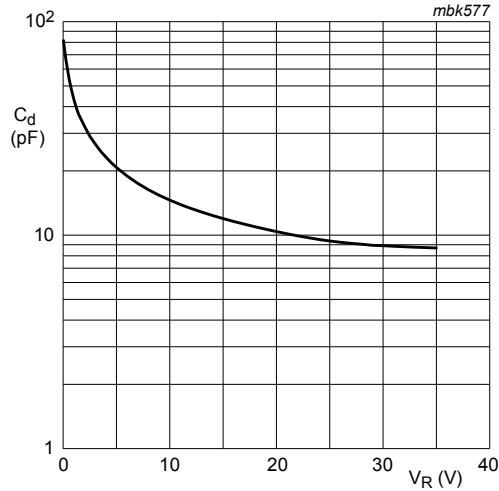
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

### 10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_F$	forward voltage	$I_F = 500 \text{ mA}$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	550	mV
$I_R$	reverse current	$V_R = 35 \text{ V}$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	100	$\mu\text{A}$
		$V_R = 35 \text{ V}$ ; pulsed; $t_p = 300 \text{ }\mu\text{s}$ ; $\delta = 0.02$ ; $T_j = 100 \text{ }^\circ\text{C}$	-	-	10	mA
$C_d$	diode capacitance	$V_R = 0 \text{ V}$ ; $f = 1 \text{ MHz}$ ; $T_{amb} = 25 \text{ }^\circ\text{C}$	60	-	90	pF





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

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

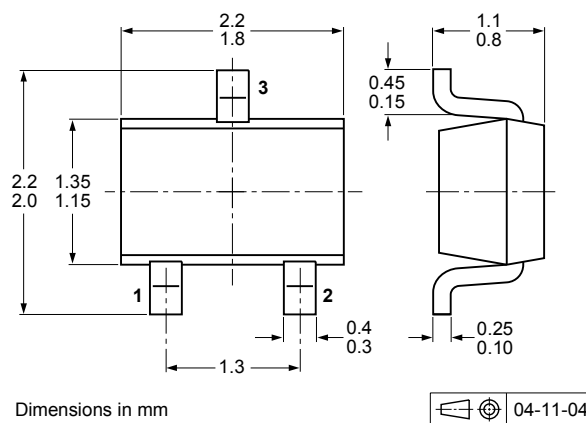


Fig. 4. Package outline SC-70 (SOT323)

### 13. Soldering

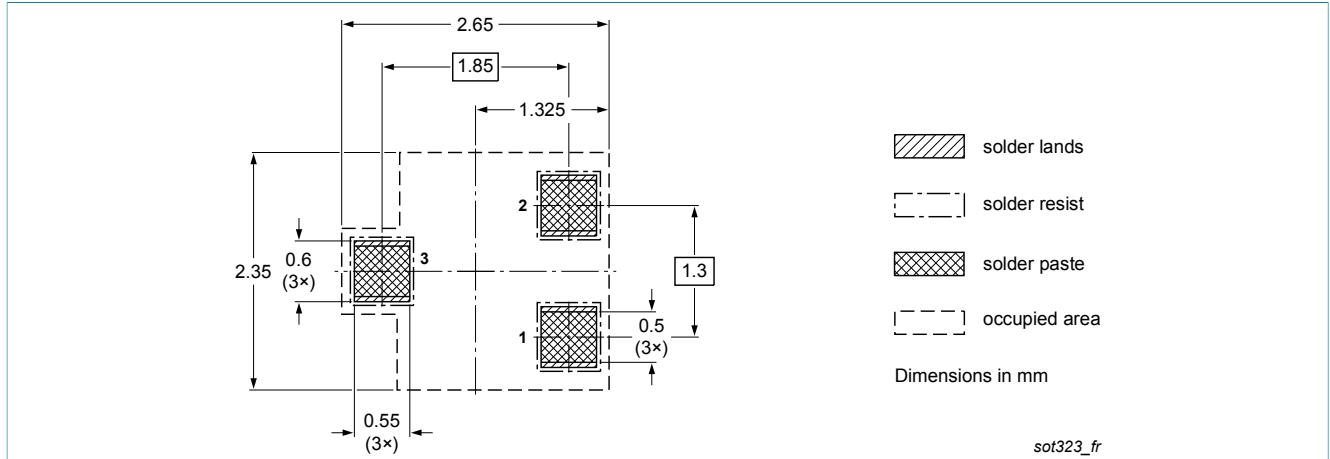


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

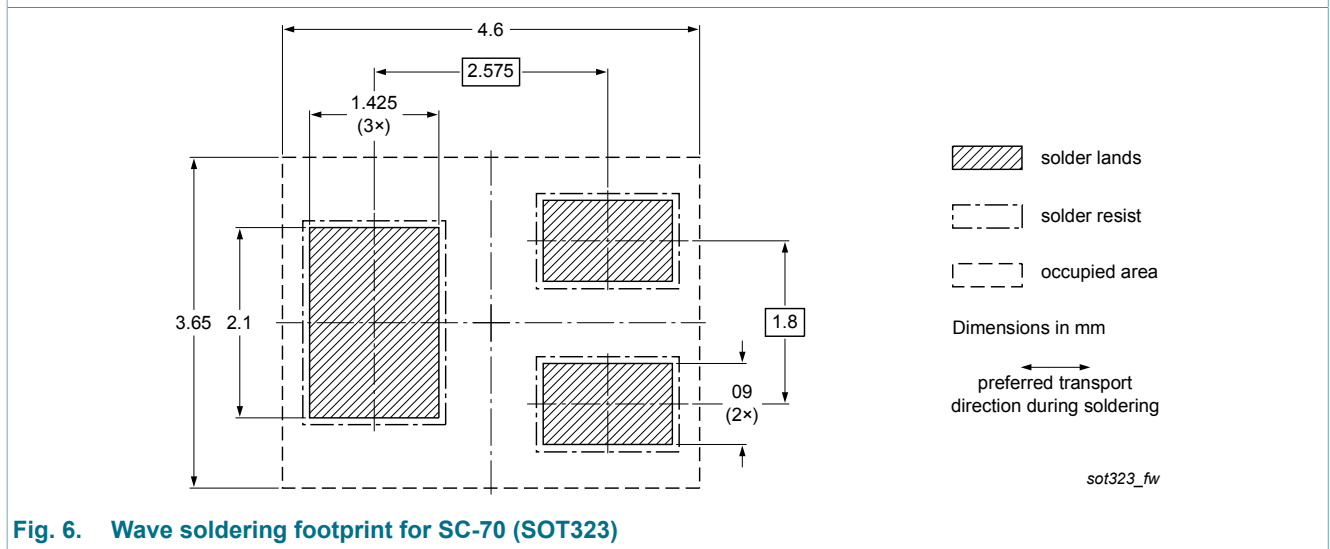


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

### 14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
1PS70SB20 v.2	20121217	Product data sheet	-	1PS70SB20 v.1

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> added</li><li>• Figure 2 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>			
1PS70SB20 v.1	20010316	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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Date of release: 17 December 2012

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