1PS70SB14

Dual Schottky barrier diode

17 December 2012 Product data sheet

1. General description

Dual Planar Schottky barrier diode in series 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
Per diode							
I_F	forward current			-	-	200	mA
V_R	reverse voltage			-	-	30	V
Per diode							
V_F	forward voltage	I_F = 10 mA; T_{amb} = 25 °C		-	-	400	mV

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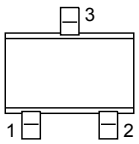
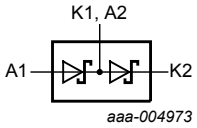
5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode1)	 SC-70 (SOT323)	
2	K2	cathode (diode2)		
3	K1, A2	cathode (diode1) and anode (diode2)		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
1PS70SB14	SC-70	plastic surface-mounted package; 3 leads	SOT323

7. Marking

Table 4. Marking codes

Type number	Marking code [1]
1PS70SB14	7%4

[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
Per diode						
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; $T_{j(init)} = 25$ °C		-	600	mA
P_{tot}	total power dissipation	$T_{amb} < 25$ °C		-	200	mW
T_j	junction temperature			-	150	°C
T_{amb}	ambient temperature			-55	150	°C

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

9. Thermal characteristics

Table 6. Thermal characteristics

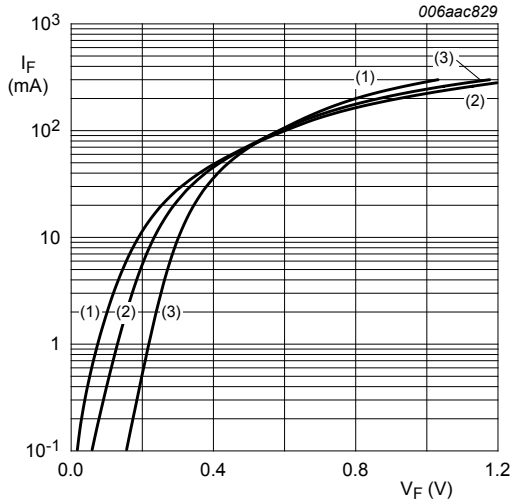
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air	[1]	-	-	625	K/W

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

10. Characteristics

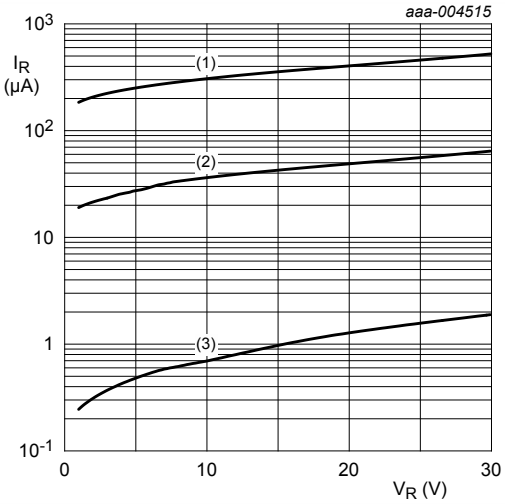
Table 7. Characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
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



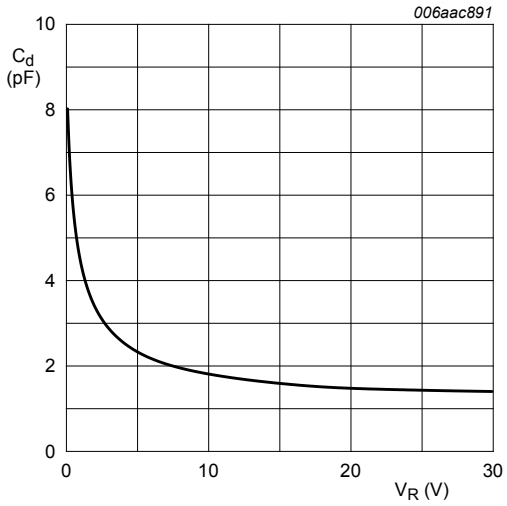
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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

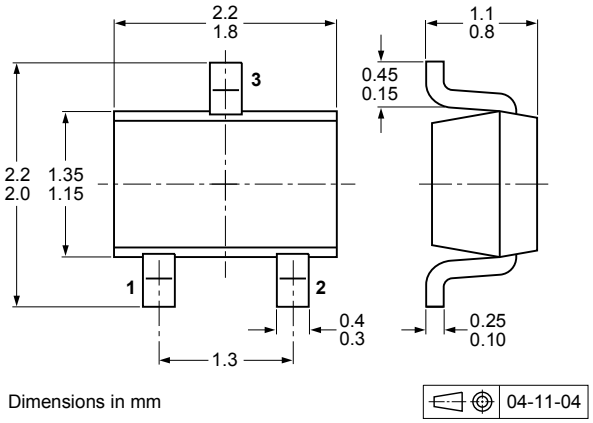


Fig. 4. Package outline SC-70 (SOT323)

13. Soldering

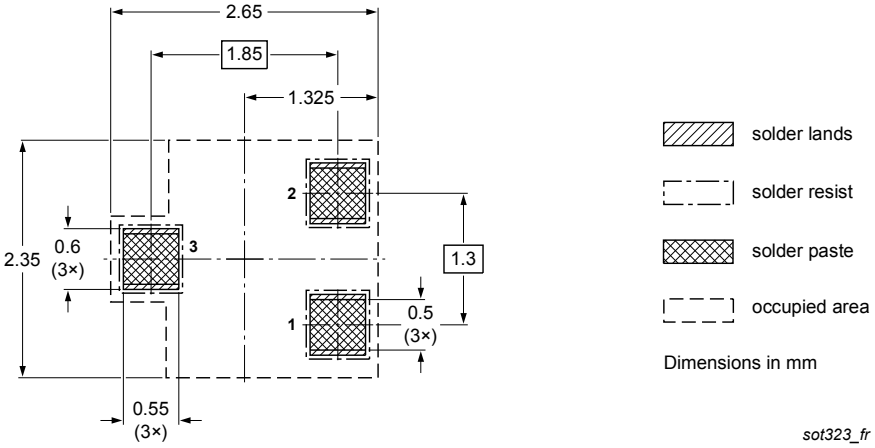


Fig. 5. Reflow soldering footprint for SC-70 (SOT323)

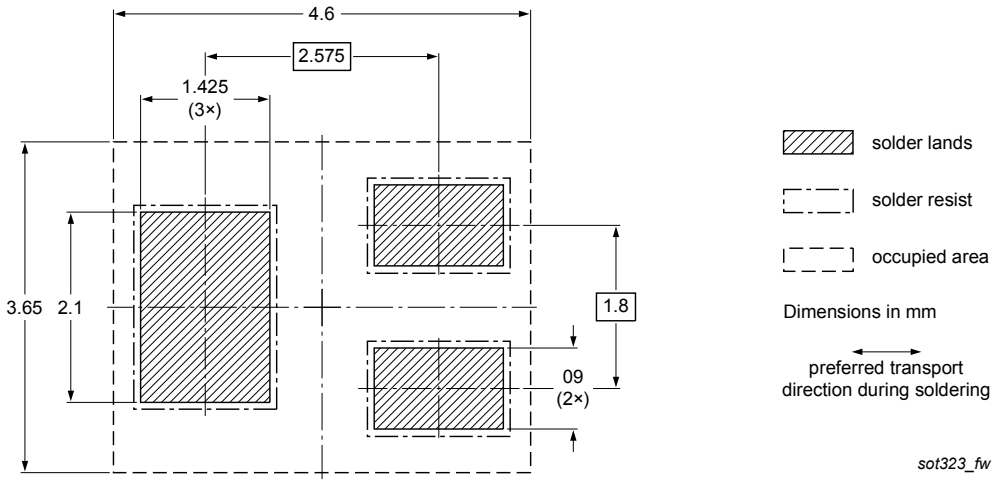


Fig. 6. Wave soldering footprint for SC-70 (SOT323)

14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
1PS70SB14 v.2	20121217	Product data sheet	-	1PS70SB10_14_15_16 v.1
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 updated • Figues 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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salesaddresses@nexperia.com **Date of release: 17 December 2012**

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