BAT720

Schottky barrier diode

Rev. 4 — 14 November 2012 Product data sheet

1. Product profile

1.1 General description

Planar Schottky barrier diode with an integrated guard ring for stress protection, encapsulated in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

1.2 Features and benefits

- Low forward voltage
- Low capacitance
- AEC-Q101 qualified

1.3 Applications

- Ultra high-speed switching
- Line termination
- Voltage clamping
- Reverse polarity protection

1.4 Quick reference data

Table 1. Quick reference data

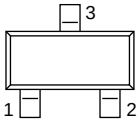
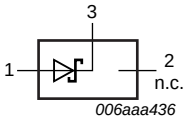
T_{amb} = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_R	reverse voltage			-	-	40	V
V_F	forward voltage	I_F = 500 mA	[1]	-	-	550	mV
I_R	reverse current	V_R = 35 V	[1]	-	-	100	µA

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

2. Pinning information

Table 2. Pinning

Pin	Description	Simplified outline	Graphic symbol
1	anode		
2	not connected		
3	cathode		

3. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT720	-	plastic surface-mounted package; 3 leads	SOT23

4. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAT720	L6*

[1] * = placeholder for manufacturing site code.

5. 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	square wave; $t_p < 10$ ms	[1]	-	2	A
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	[2]	-	200	mW
T_j	junction temperature			-	125	°C
T_{amb}	ambient temperature			−55	+125	°C
T_{stg}	storage temperature			−65	+150	°C

[1] $T_j = 25$ °C before surge.

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

6. Thermal characteristics

Table 6. Thermal characteristics

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

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

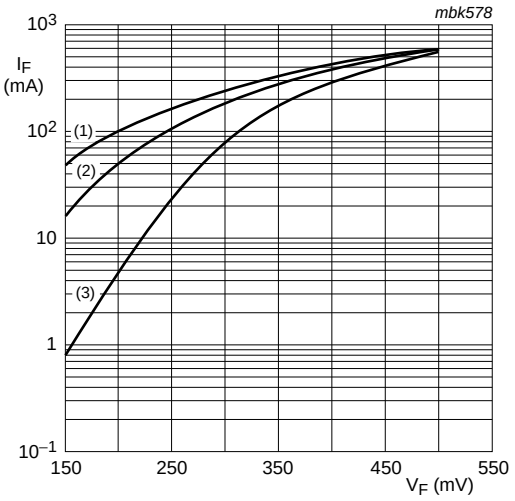
7. Characteristics

Table 7. Characteristics

T_j = 25 °C unless otherwise specified.

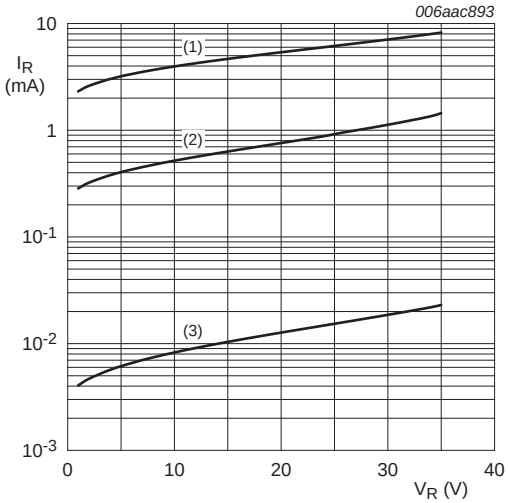
Symbol	Parameter	Conditions		Min	Typ	Max	Unit
V_F	forward voltage	I_F = 500 mA	[1]	-	-	550	mV
I_R	reverse current	V_R = 35 V	[1]	-	-	100	µA
		V_R = 35 V; T_j = 100 °C	[1]	-	-	10	mA
C_d	diode capacitance	f = 1 MHz; V_R = 0 V		60	-	90	pF

[1] Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.



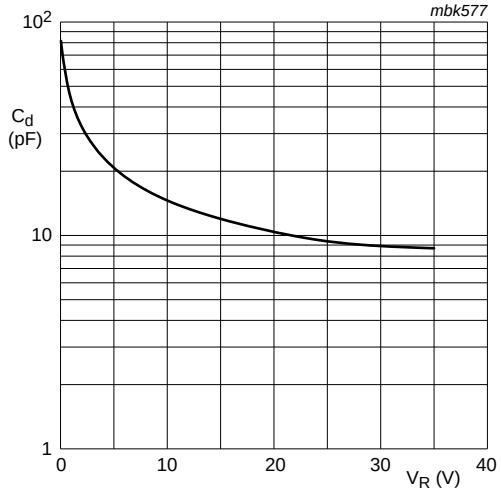
(1) T_{amb} = 125 °C
(2) T_{amb} = 85 °C
(3) T_{amb} = 25 °C

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



f = 1 MHz; T_{amb} = 25 °C

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

8. Test information

8.1 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.

9. Package outline

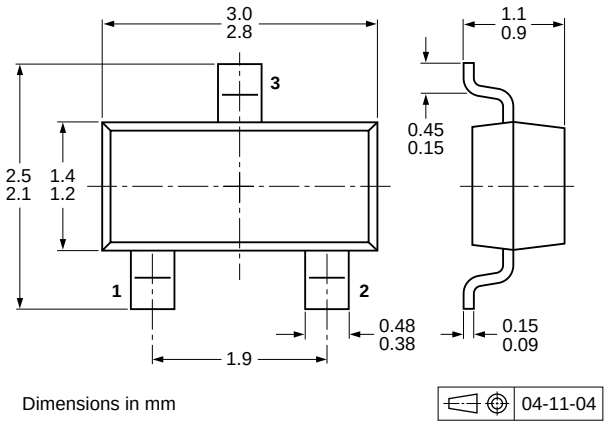


Fig 4. Package outline SOT23 (TO-236AB)

10. Packing information

Please refer to packing information on www.nexperia.com.

11. Soldering

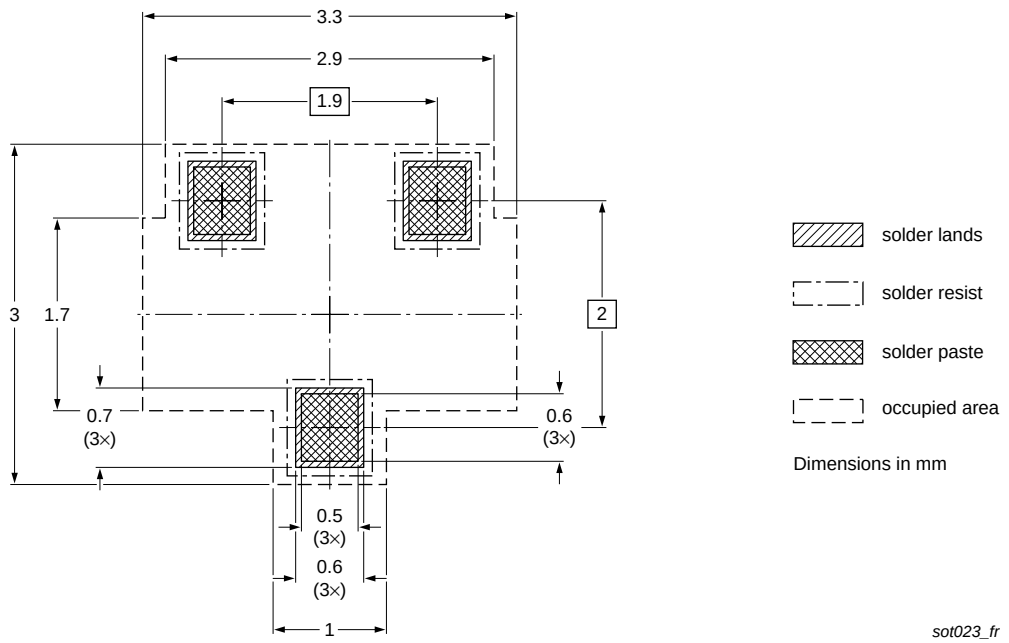


Fig 5. Reflow soldering footprint SOT23 (TO-236AB)

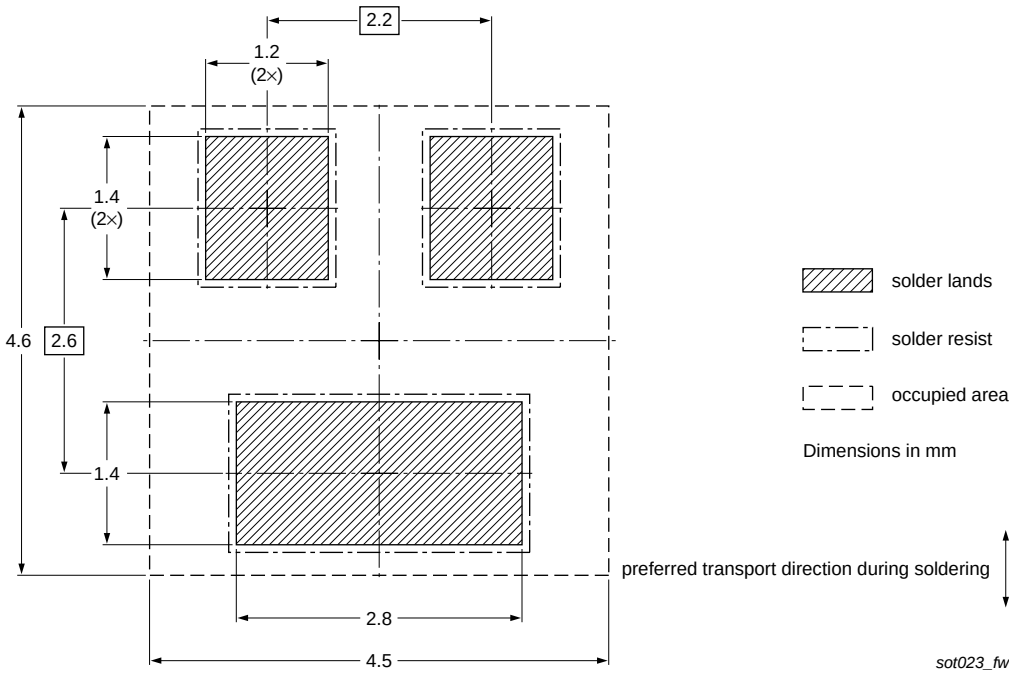


Fig 6. Wave soldering footprint SOT23 (TO-236AB)

12. Revision history

Table 9. Revision history

Document ID	Release date	Data sheet status	Change notice	Supersedes
BAT720 v.4	20121114	Product data sheet	-	BAT720 v.3
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. • Section 1: updated • Section 4: updated • Table 5: added ambient temperature T_{amb} and total power dissipation P_{tot} • Figure 2: updated • Section 8 “Test information”: added • Figure 4: replaced by minimized package outline drawing • Section 10 “Packing information”: added • Section 11 “Soldering”: added • Section 13 “Legal information”: updated			
BAT720 v.3	20030325	Product data sheet	-	BAT720 v.2
BAT720 v.2	19990526	Product specification	-	BAT720 v.1
BAT720 v.1	19980121	Product specification	-	-

13. Legal information

13.1 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".

[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.nexperia.com.

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14. Contents

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