Product data sheet

1. General description

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

2. Features and benefits

- Low forward voltage
- Low capacitance
- Qualified according to AEC-Q101 and recommended for use in automotive applications

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	Тур	Max	Unit
V _R	reverse voltage		-	-	40	V
I _F	forward current		-	-	200	mA
V _F	forward voltage	I_F = 200 mA; pulsed; $t_p \le 300$ μs; $\delta \le 0.02$; T_{amb} = 25 °C	-	-	550	mV

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	Α	anode	3	κ
2	n.c.	not connected		
3	К	cathode	SOT23	A n.c. aaa-024521



40 V, 200 mA Schottky barrier diode

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAT721-Q	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	SOT23

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BAT721-Q	L7%

[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		-	200	mA
I _{FSM}	non-repetitive peak forward current	half sine-wave pulse; $t_p \le 8.3$ ms; JEDEC method; $T_{j(init)} = 25$ °C	-	1	А
Tj	junction temperature		-	125	°C
T _{amb}	ambient temperature		-65	150	°C
T _{stg}	storage temperature		-65	150	°C

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Тур	Max	Unit
$R_{\text{th(j-a)}}$	thermal resistance from junction to ambient	in free air	[1] [2]	-	-	500	K/W

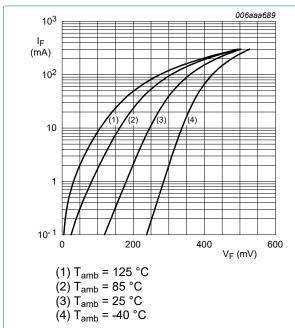
- [1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.
- [2] For Schottky barrier diodes thermal runaway has to be considered, as in some applications the reverse power losses P_R are a significant part of the total power losses.

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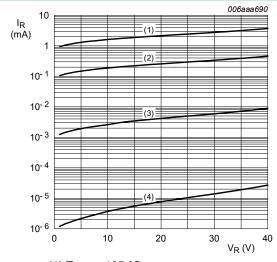
10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Тур	Max	Unit
V _F	forward voltage	I_F = 10 mA; pulsed; $t_p \le 300 \mu s$; δ ≤ 0.02; T_{amb} = 25 °C	-	-	300	mV
		I _F = 100 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	-	-	420	mV
		I _F = 200 mA; pulsed; $t_p \le 300 \mu s$; $\delta \le 0.02$; $T_{amb} = 25 °C$	-	-	550	mV
I _R	reverse current	V _R = 30 V; T _{amb} = 25 °C	-	-	15	μA
		V _R = 30 V; T _j = 100 °C	-	-	3	mA
C _d	diode capacitance	V _R = 0 V; f = 1 MHz; T _{amb} = 25 °C	-	40	50	pF

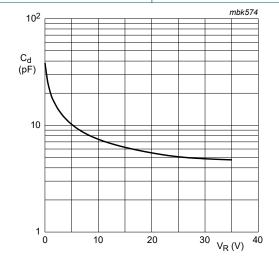


Forward current as a function of forward Fig. 1. voltage; typical values



- (1) T_{amb} = 125 °C
- (2) T_{amb} = 85 °C
- (3) T_{amb} = 25 °C (4) T_{amb} = -40 °C

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



 T_{amb} = 25 °C; f = 1 MHz

Diode capacitance as a function of reverse voltage; typical values

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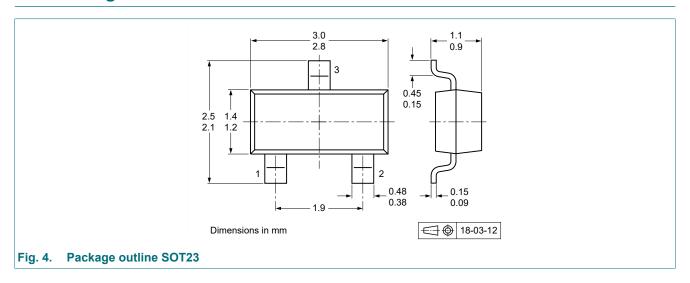
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11. Test information

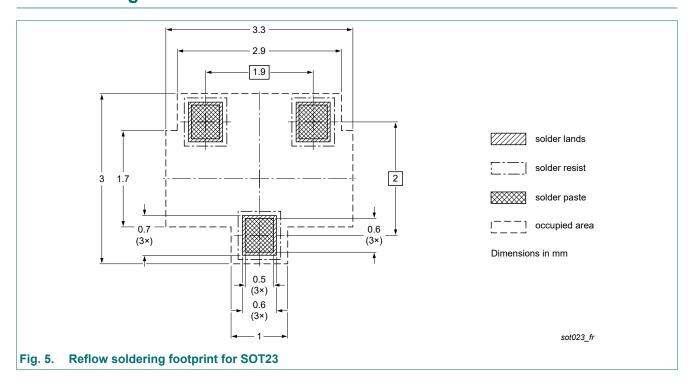
Quality information

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.

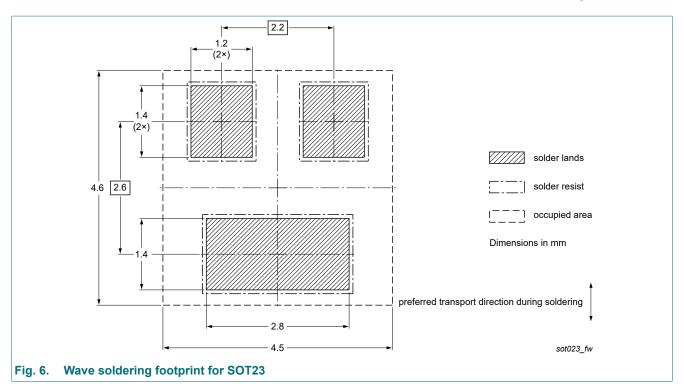
12. Package outline



13. Soldering



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14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAT721-Q v.1	20230503	Product data sheet	-	-

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15. Legal information

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.

- 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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