



# BAV23C

## Dual high-voltage switching diodes

1 April 2023

Product data sheet

### 1. General description

Dual high-voltage switching diodes, encapsulated in a small SOT23 (TO-236AB) Surface-Mounted Device (SMD) plastic package.

### 2. Features and benefits

- High switching speed:  $t_{rr} \leq 50$  ns
- Low leakage current
- Repetitive peak reverse voltage:  $V_{RRM} \leq 250$  V
- Low capacitance:  $C_d \leq 2$  pF
- Small SMD plastic package

### 3. Applications

- High-speed switching at high voltage
- High-voltage general-purpose switching

### 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
$I_R$	reverse current	$V_R = 200$ V	-	-	100	nA
$V_R$	reverse voltage		-	-	200	V
$t_{rr}$	reverse recovery time	$I_F = 10$ mA; $I_R = 10$ mA; $I_{R(meas)} = 1$ mA; $R_L = 100$ $\Omega$ ; $T_{amb} = 25$ °C	-	-	50	ns

### 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	A1	anode (diode 1)	 SOT23	 aaa-027672
2	A2	anode (diode 2)		
3	K1, K2	common cathode		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BAV23C	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]
BAV23C	%V9

[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 <sub>R</sub>	reverse voltage			-	200	V
V <sub>RRM</sub>	repetitive peak reverse voltage			-	250	V
I <sub>F</sub>	forward current	Single diode loaded	[1]	-	225	mA
			[2]	-	125	mA
I <sub>FRM</sub>	repetitive peak forward current			-	625	mA
I <sub>FSM</sub>	non-repetitive peak forward current	t <sub>p</sub> = 1 μs; square wave	[3]	-	9	A
		t <sub>p</sub> = 100 μs; square wave	[3]	-	3	A
		t <sub>p</sub> = 10 ms; square wave	[3]	-	1.7	A
Per device						
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[4]	-	250	mW
T <sub>j</sub>	junction temperature			-	150	°C
T <sub>amb</sub>	ambient temperature			-65	150	°C
T <sub>stg</sub>	storage temperature			-65	150	°C

- [1] Single diode loaded.
- [2] Double diode loaded.
- [3] T<sub>j</sub> = 25 °C prior to surge.
- [4] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per device							
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	in free air	[1]	-	-	500	K/W
R <sub>th(j-sp)</sub>	thermal resistance from junction to solder point			-	-	360	K/W

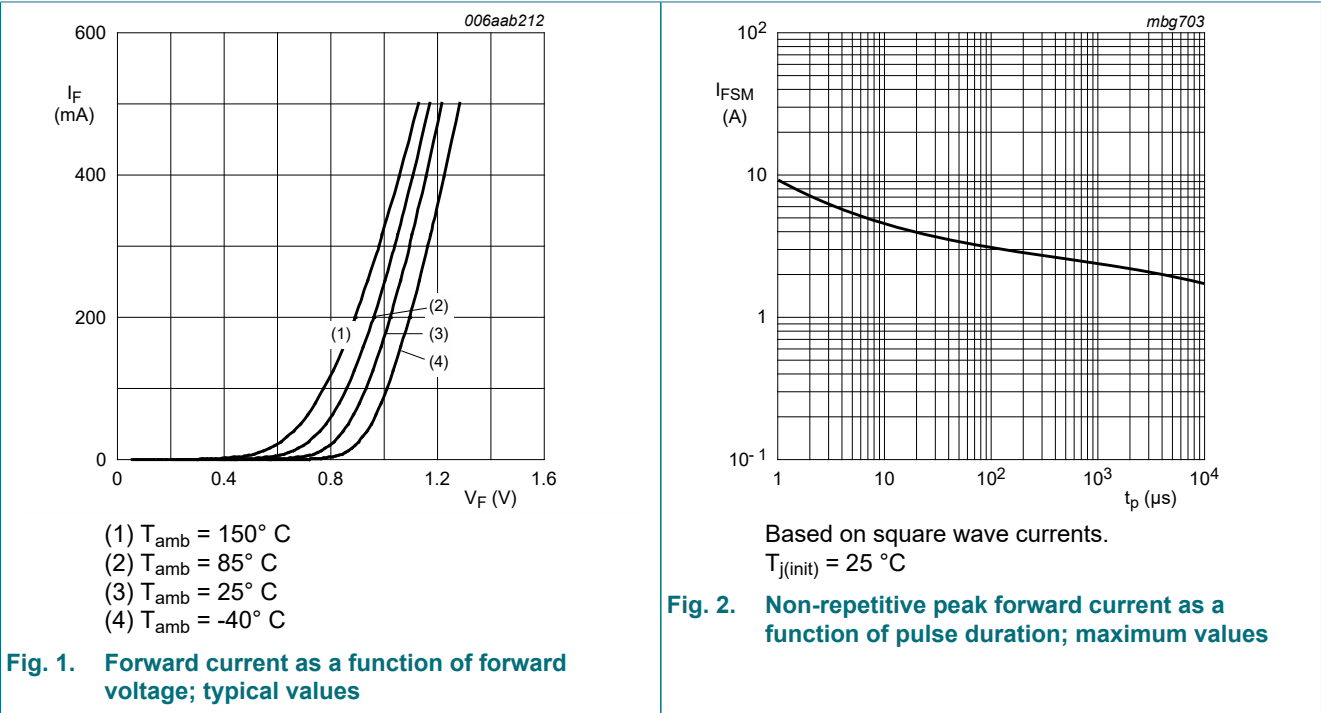
[1] Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

T<sub>amb</sub> = 25 °C unless otherwise specified.

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
Per diode							
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 100 mA		-	-	1	V
		I <sub>F</sub> = 200 mA		-	-	1.25	V
I <sub>R</sub>	reverse current	V <sub>R</sub> = 200 V		-	-	100	nA
		V <sub>R</sub> = 200 V; T <sub>j</sub> = 150 °C		-	-	100	µA
C <sub>d</sub>	diode capacitance	V <sub>R</sub> = 0 V; f = 1 MHz		-	-	2	pF
t <sub>rr</sub>	reverse recovery time	I <sub>F</sub> = 10 mA; I <sub>R</sub> = 10 mA; I <sub>R(meas)</sub> = 1 mA; R <sub>L</sub> = 100 Ω; T <sub>amb</sub> = 25 °C		-	-	50	ns



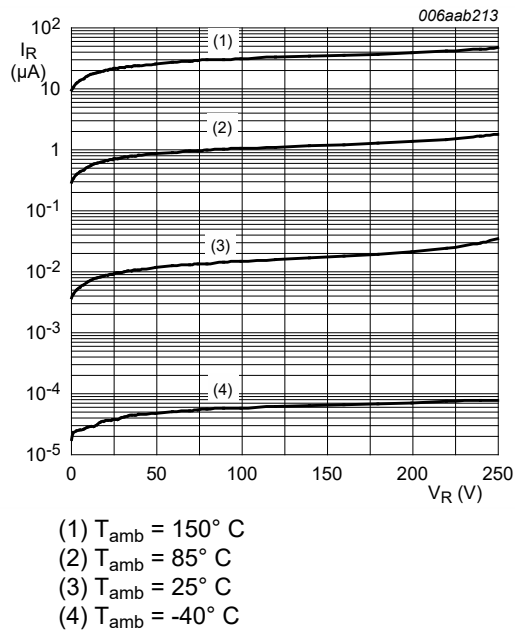


Fig. 3. Reverse current as a function of reverse voltage; typical values

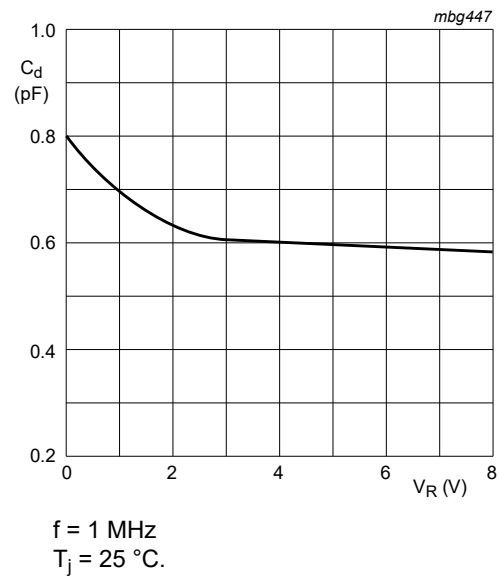
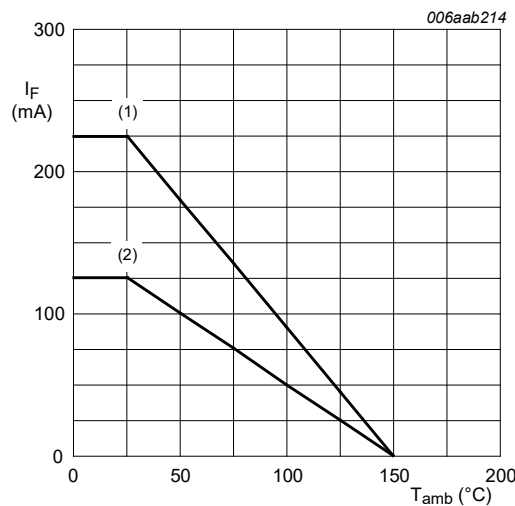


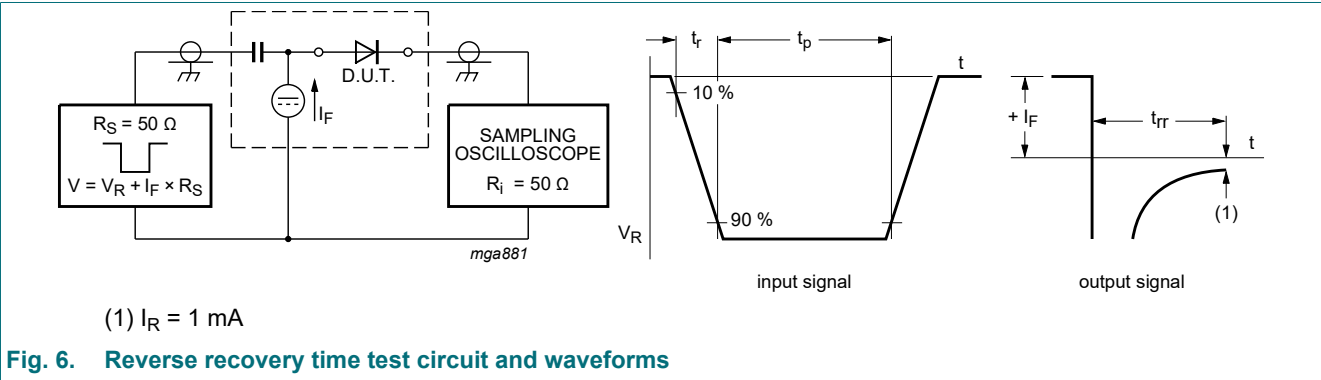
Fig. 4. Diode capacitance as a function of reverse voltage; typical values.



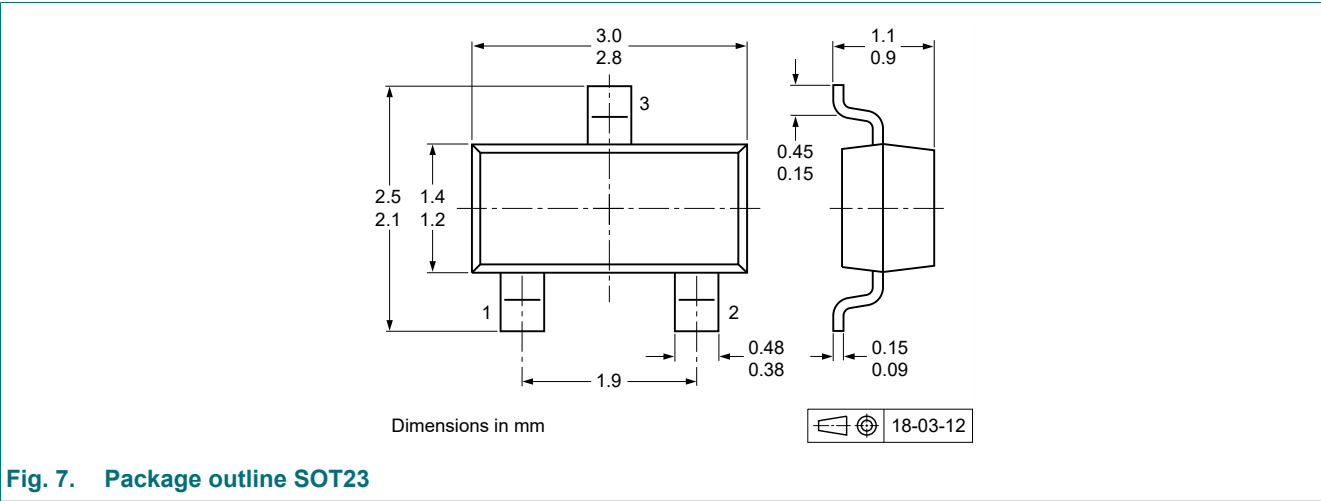
FR4 PCB, standard footprint  
(1) Single diode loaded  
(2) Double diode loaded

Fig. 5. Forward current as a function of ambient temperature; derating curves

11. Test information



12. Package outline



13. Soldering

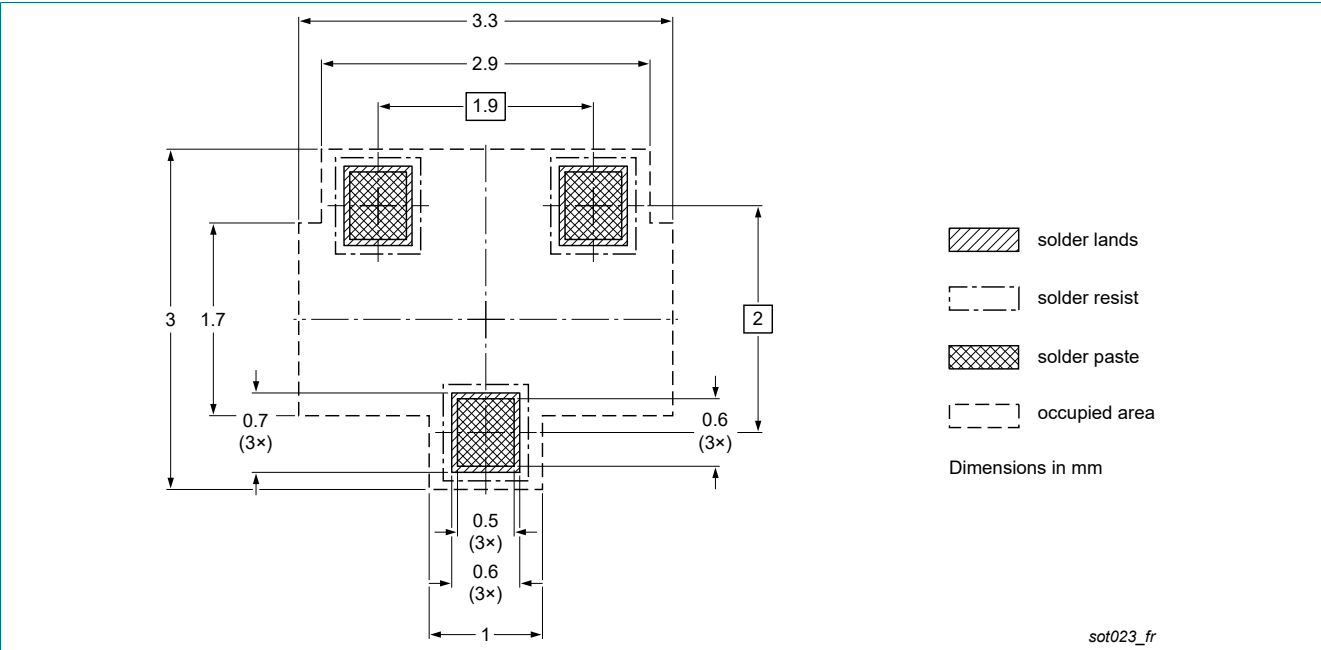


Fig. 8. Reflow soldering footprint for SOT23

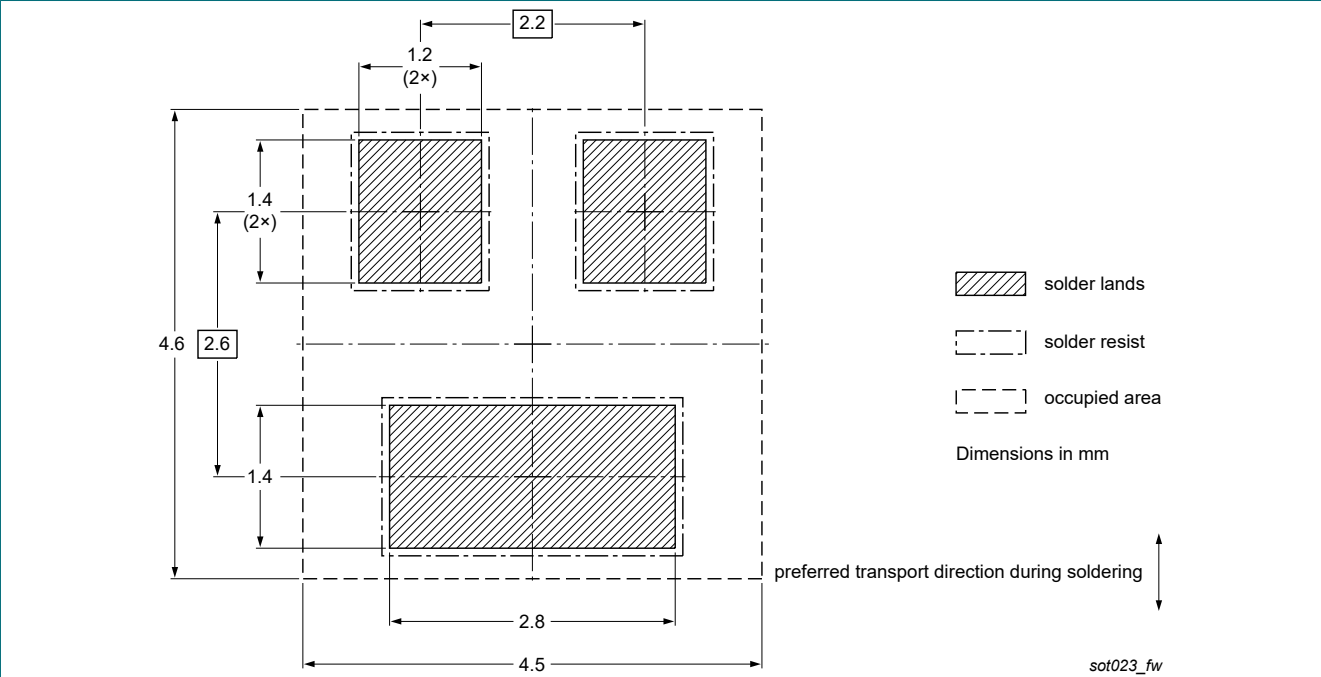


Fig. 9. Wave soldering footprint for SOT23

## 14. Revision history

**Table 8. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BAV23C v.8	20230401	Product data sheet	-	BAV23_SER_7
Modifications:	<ul style="list-style-type: none"><li>Family data sheet reduced to single type data sheet.</li><li>The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia.</li><li>Legal texts have been adapted to the new company name where appropriate.</li><li>Product changed to non-automotive qualification. Please refer to nexperia.com for automotive (-Q) product alternative(s).</li><li>Packing information removed.</li></ul>			
BAV23_SER_7	20100319	Product data sheet	-	BAV23_SER_6
BAV23_SER_6	20080303	Product data sheet	-	BAV23S_5 BAV23_2
BAV23S_5	20011012	Product specification	-	BAV23S_4
BAV23_2	19960917	Product specification	-	BAV23_1

# 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.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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