

BAV23 series

Dual high-voltage switching diodes

1. Product profile

1.1 General description

Dual high-voltage switching diodes, encapsulated in small Surface-Mounted Device (SMD) plastic packages.

Table 1. Product overview

Type number ^[1]	Package		Configuration
	NXP	JEDEC	
BAV23A/DG	SOT23	TO-236AB	dual common anode
BAV23C/DG	SOT23	TO-236AB	dual common cathode
BAV23S	SOT23	TO-236AB	dual series
BAV23S/DG			
BAV23	SOT143B	-	dual isolated
BAV23/DG			

[1] /DG: halogen free

1.2 Features

- 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

1.3 Applications

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

1.4 Quick reference data

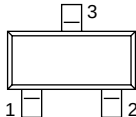
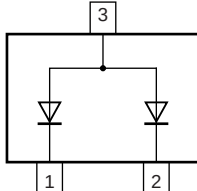
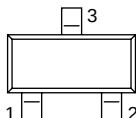
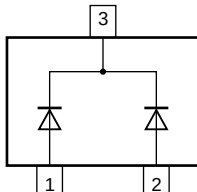
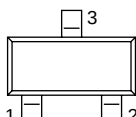
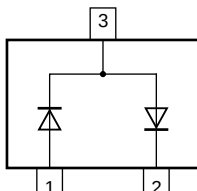
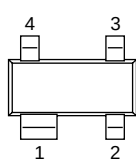
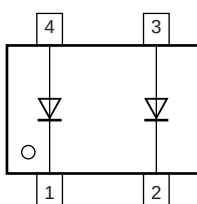
Table 2. Quick reference data

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		^[1] -	-	50	ns

[1] When switched from $I_F = 10$ mA to $I_R = 10$ mA; $R_L = 100$ Ω ; measured at $I_R = 1$ mA.

2. Pinning information

Table 3. Pinning

Pin	Description	Simplified outline	Graphic symbol
BAV23A/DG			
1	cathode (diode 1)		 006aab099
2	cathode (diode 2)		
3	common anode		
BAV23C/DG			
1	anode (diode 1)		 006aab034
2	anode (diode 2)		
3	common cathode		
BAV23S; BAV23S/DG			
1	anode (diode 1)		 006aaa763
2	cathode (diode 2)		
3	cathode (diode 1), anode (diode 2)		
BAV23; BAV23/DG			
1	cathode (diode 1)		 006aab100
2	cathode (diode 2)		
3	anode (diode 2)		
4	anode (diode 1)		

3. Ordering information

Table 4. Ordering information

Type number	Package		
	Name	Description	Version
BAV23A/DG	-	plastic surface-mounted package; 3 leads	SOT23
BAV23C/DG			
BAV23S			
BAV23S/DG			
BAV23	-	plastic surface-mounted package; 4 leads	SOT143B
BAV23/DG			

4. Marking

Table 5. Marking codes

Type number	Marking code ^[1]
BAV23A/DG	ZY*
BAV23C/DG	ZX*
BAV23S	*V5
BAV23S/DG	YD*
BAV23	L30
BAV23/DG	*N1

[1] * = -: made in Hong Kong

* = p: made in Hong Kong

* = t: made in Malaysia

* = W: made in China

5. Limiting values

Table 6. Limiting values

In accordance with the Absolute Maximum Rating System (IEC 60134).

Symbol	Parameter	Conditions	Min	Max	Unit
Per diode					
V_{RRM}	repetitive peak reverse voltage		-	250	V
V_R	reverse voltage		-	200	V
I_F	forward current	^[1]	-	225	mA
		^[2]	-	125	mA
I_{FRM}	repetitive peak forward current		-	625	mA
I_{FSM}	non-repetitive peak forward current	square wave	^[3]		
		$t_p = 1 \mu s$	-	9	A
		$t_p = 100 \mu s$	-	3	A
		$t_p = 10 ms$	-	1.7	A

Table 6. Limiting values ...continued*In accordance with the Absolute Maximum Rating System (IEC 60134).*

Symbol	Parameter	Conditions	Min	Max	Unit
Per device					
P_{tot}	total power dissipation	$T_{\text{amb}} \leq 25\text{ °C}$	[4] -	250	mW
T_{j}	junction temperature		-	150	°C
T_{amb}	ambient temperature		-65	+150	°C
T_{stg}	storage temperature		-65	+150	°C

[1] Single diode loaded.

[2] Double diode loaded.

[3] $T_{\text{j}} = 25\text{ °C}$ prior to surge.

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

6. Thermal characteristics

Table 7. Thermal characteristics

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

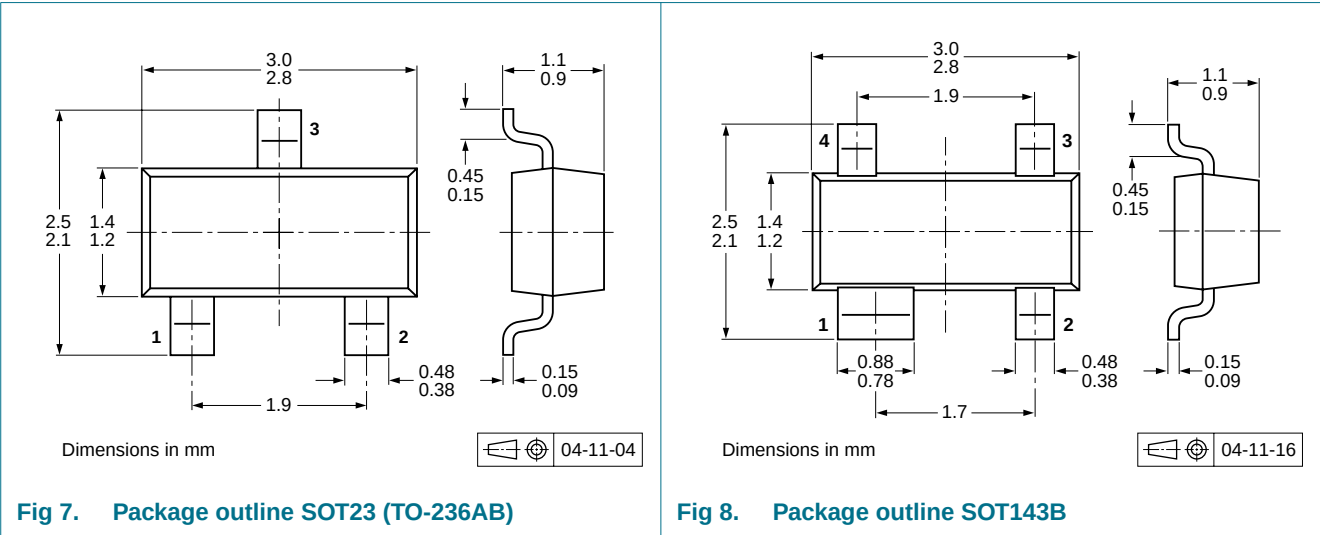
7. Characteristics

Table 8. Characteristics *$T_{\text{amb}} = 25\text{ °C}$ unless otherwise specified.*

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Per diode						
V_{F}	forward voltage	$I_{\text{F}} = 100\text{ mA}$	-	-	1.0	V
		$I_{\text{F}} = 200\text{ mA}$	-	-	1.25	V
I_{R}	reverse current	$V_{\text{R}} = 200\text{ V}$	-	-	100	nA
		$V_{\text{R}} = 200\text{ V}; T_{\text{j}} = 150\text{ °C}$	-	-	100	μA
C_{d}	diode capacitance	$f = 1\text{ MHz}; V_{\text{R}} = 0\text{ V}$	-	-	2	pF
t_{rr}	reverse recovery time		[1] -	-	50	ns

[1] When switched from $I_{\text{F}} = 10\text{ mA}$ to $I_{\text{R}} = 10\text{ mA}$; $R_{\text{L}} = 100\text{ Ω}$; measured at $I_{\text{R}} = 1\text{ mA}$.

9. Package outline



10. Packing information

Table 9. Packing methods
The indicated -xxx are the last three digits of the 12NC ordering code.^[1]

Type number	Package	Description	Packing quantity	
			3000	10000
BAV23A/DG	SOT23	4 mm pitch, 8 mm tape and reel	-215	-235
BAV23C/DG				
BAV23S				
BAV23S/DG				
BAV23	SOT143B	4 mm pitch, 8 mm tape and reel	-215	-235
BAV23/DG				

[1] For further information and the availability of packing methods, see [Section 14](#).