



BSR14

NPN switching transistors

22 December 2025

Product data sheet

1. General description

NPN switching transistor in a small SOT23 Surface-Mounted Device (SMD) plastic package.

PNP complements: BSR16

2. Features and benefits

- High current (max. 800 mA)
- Low voltage (max. 40 V)
- AEC-Q101 qualified

3. Applications

- Switching and linear applications

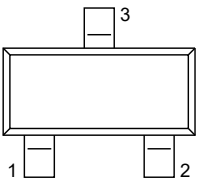
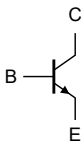
4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CE0}	collector-emitter voltage	open base	-	-	40	V
I_C	collector current		-	-	800	mA
h_{FE}	DC current gain	$V_{CE} = 10\text{ V}$; $I_C = 150\text{ mA}$; pulsed; $t_p \leq 300\text{ }\mu\text{s}$; $\delta \leq 0.02$; $T_{amb} = 25\text{ }^\circ\text{C}$	100	-	300	

5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SOT23	 sym021
2	E	emitter		
3	C	collector		

6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
BSR14	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]
BSR14	U8%

[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_{CBO}	collector-base voltage	open emitter		-	75	V
V_{CEO}	collector-emitter voltage	open base		-	40	V
V_{EBO}	emitter-base voltage	open collector		-	6	V
I_C	collector current			-	800	mA
I_{CM}	peak collector current			-	800	mA
I_{BM}	peak base current			-	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$		-	250	mW
T_j	junction temperature			-	150	°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	Typ	Max	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient		[1]	-	-	500	K/W

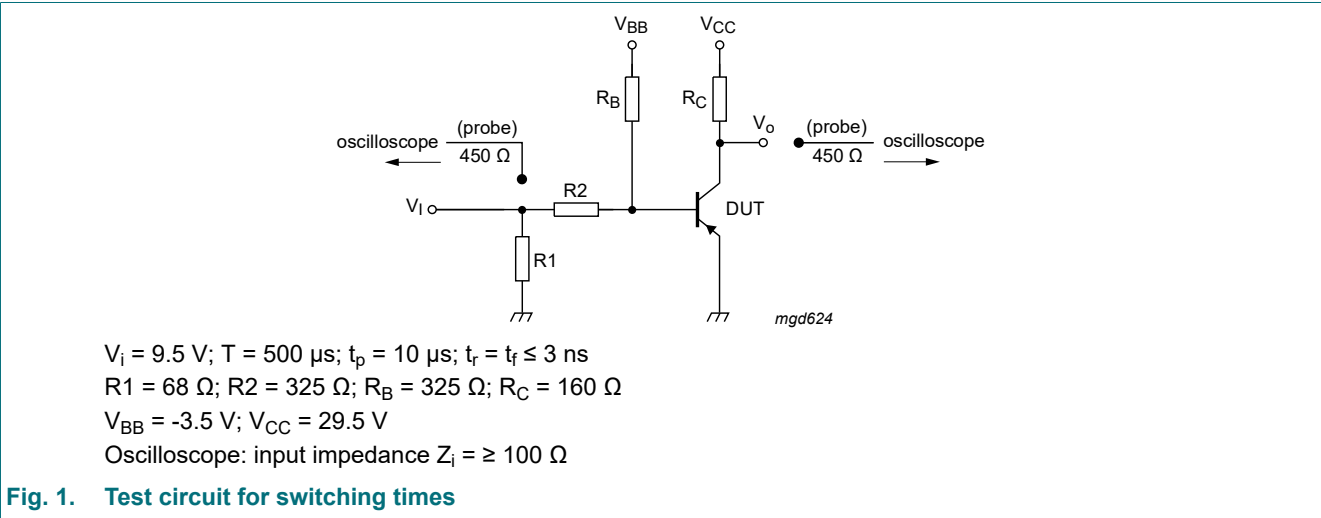
[1] Device mounted on an FR4 Printed-Circuit Board (PCB), single-sided copper, tin-plated and standard footprint.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I _{CBO}	collector-base cut-off current	V _{CB} = 60 V; I _E = 0 A; T _{amb} = 25 °C	-	-	10	nA
		V _{CB} = 60 V; I _E = 0 A; T _j = 150 °C	-	-	10	μA
I _{EBO}	emitter-base cut-off current	V _{EB} = 5 V; I _C = 0 A; T _{amb} = 25 °C	-	-	10	nA
h _{FE}	DC current gain	V _{CE} = 10 V; I _C = 0.1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	35	-	-	
		V _{CE} = 10 V; I _C = 1 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	50	-	-	
		V _{CE} = 10 V; I _C = 10 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	75	-	-	
		V _{CE} = 10 V; I _C = 150 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	100	-	300	
		V _{CE} = 1 V; I _C = 150 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	50	-	-	
		V _{CE} = 10 V; I _C = 500 mA; pulsed; t _p ≤ 300 μs; δ ≤ 0.02; T _{amb} = 25 °C	40	-	-	
V _{CEsat}	collector-emitter saturation voltage	I _C = 150 mA; I _B = 15 mA; T _{amb} = 25 °C	-	-	300	mV
		I _C = 500 mA; I _B = 50 mA; T _{amb} = 25 °C	-	-	1	V
V _{BEsat}	base-emitter saturation voltage	I _C = 150 mA; I _B = 15 mA; T _{amb} = 25 °C	0.6	-	1.2	V
		I _C = 500 mA; I _B = 50 mA; T _{amb} = 25 °C	-	-	2	V
C _c	collector capacitance	V _{CB} = 10 V; I _E = 0 A; i _e = 0 A; f = 1 MHz; T _{amb} = 25 °C	-	-	8	pF
f _T	transition frequency	V _{CE} = 20 V; I _C = 20 mA; f = 100 MHz; T _{amb} = 25 °C	300	-	-	MHz
Switching times (between 10% and 90% levels); See section "Test information" for resistor calculation and test conditions						
t _d	delay time	I _C = 150 mA; I _{Bon} = 15 mA; I _{Boff} = -15 mA; T _{amb} = 25 °C	-	-	15	ns
t _r	rise time		-	-	20	ns
t _{on}	turn-on time		-	-	35	ns
t _s	storage time		-	-	200	ns
t _f	fall time		-	-	60	ns
t _{off}	turn-off time		-	-	250	ns

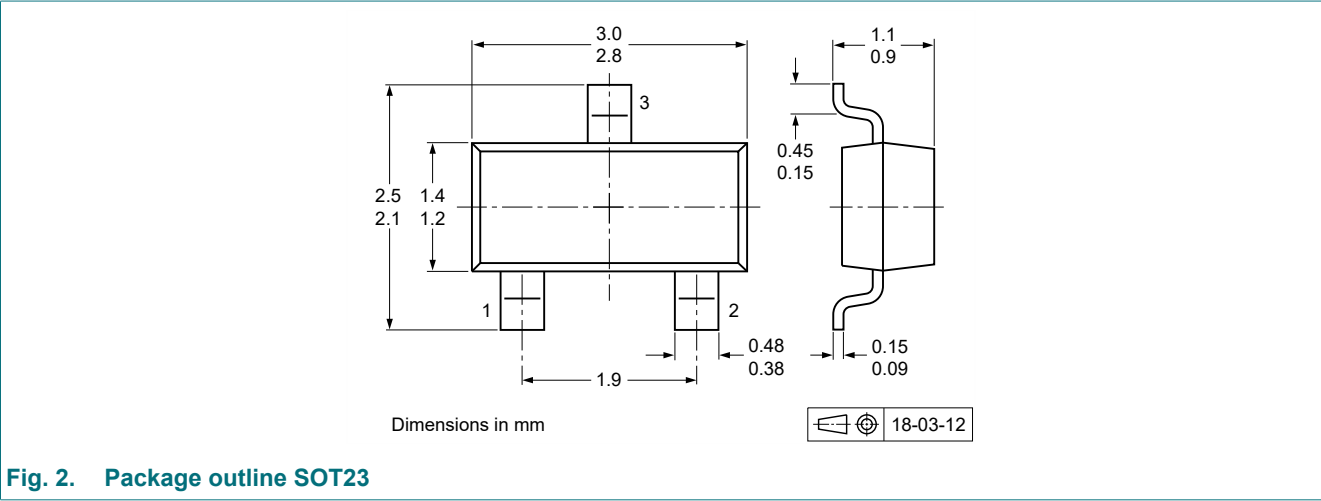
11. Test information



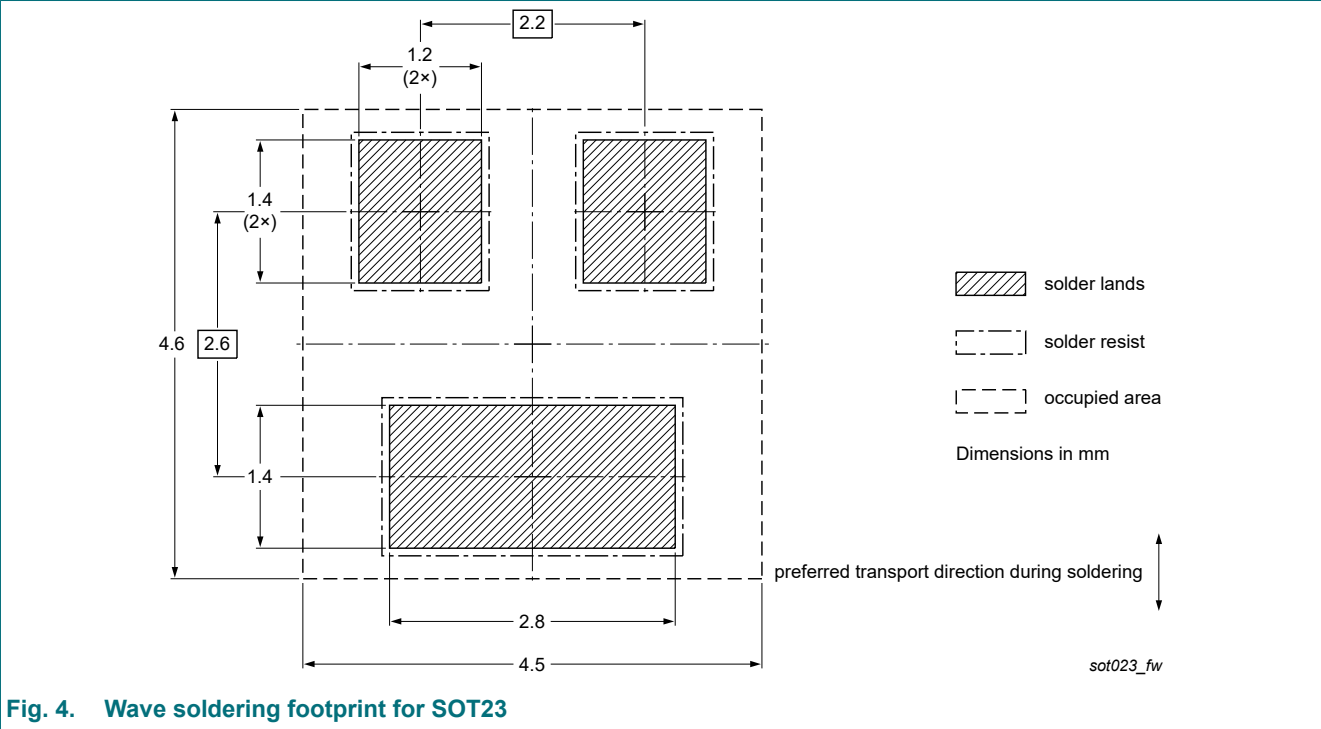
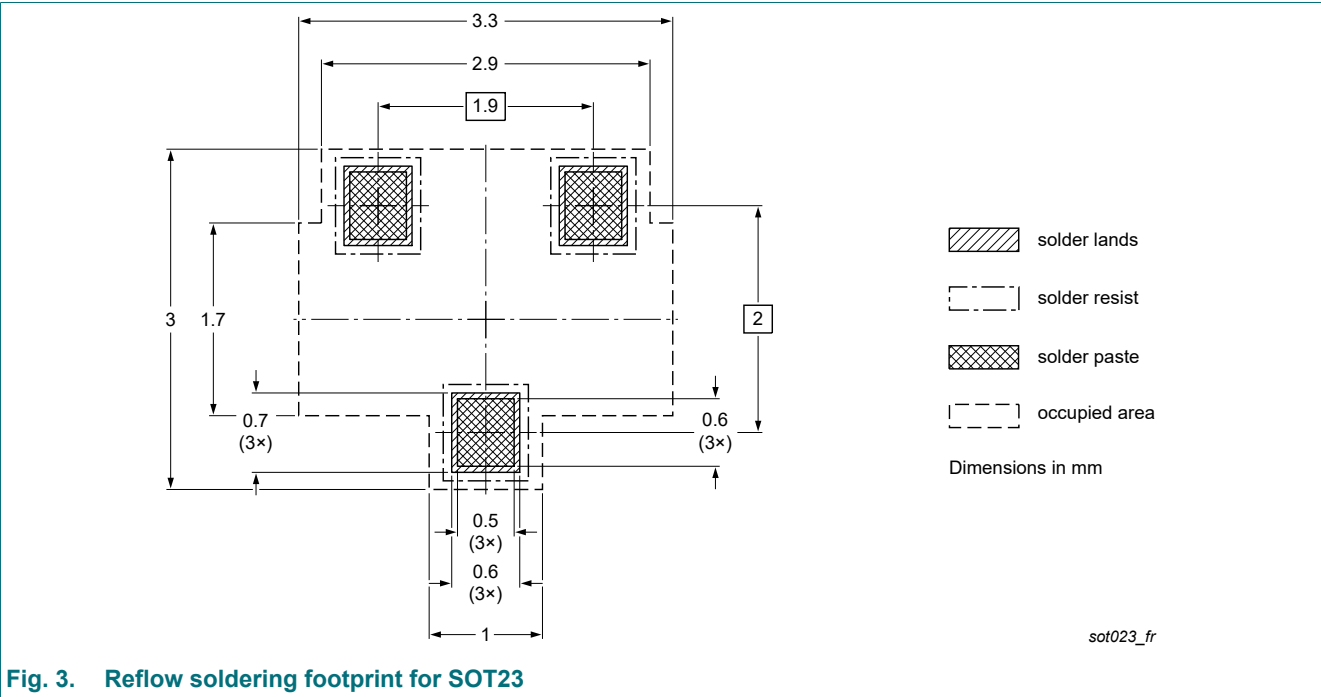
Quality information

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



14. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BSR14 v.4	20251222	Product data sheet	-	BSR13; BSR14 v.3
Modification:	- Family data sheet splitted to single type data sheets. - The format of this data sheet has been redesigned to comply with the identity guidelines of Nexperia. - Legal texts have been adapted to the new company name where appropriate. - Packing information removed.			
BSR13; BSR14 v.2	20040113	Product data sheet	-	BSR13; BSR14 v.1
BSR13; BSR14 v.1	19990415	Product data sheet	-	-

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.

- [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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