



# BF821

## PNP high voltage transistor

08 October 2024

Product data sheet

## 1. General description

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

NPN complements: BF820 and BF822

## 2. Features and benefits

- Low current (max. 50 mA)
- High voltage (max. 300 V)

## 3. Applications

- Telephony and professional communication equipment

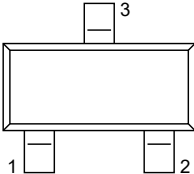
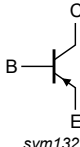
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CEO}$	collector-emitter voltage	open base	-	-	-300	V
$I_C$	collector current		-	-	-50	mA
$h_{FE}$	DC current gain	$V_{CE} = -20\text{ V}$ ; $I_C = -25\text{ mA}$ ; $T_{amb} = 25\text{ }^{\circ}\text{C}$	50	-	-	

## 5. Pinning information

Table 2. Pinning information

Pin	Symbol	Description	Simplified outline	Graphic symbol
1	B	base	 SOT23	 sym132
2	E	emitter		
3	C	collector		

## 6. Ordering information

Table 3. Ordering information

Type number	Package		
	Name	Description	Version
<a href="#">BF821</a>	SOT23	plastic, surface-mounted package; 3 terminals; 1.9 mm pitch; 2.9 mm x 1.3 mm x 1 mm body	<a href="#">SOT23</a>

7. Marking

Table 4. Marking codes

Type number	Marking code[1]
BF821	1W%

[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 <sub>CBO</sub>	collector-base voltage	open emitter		-	-300	V
V <sub>CEO</sub>	collector-emitter voltage	open base		-	-300	V
V <sub>EBO</sub>	emitter-base voltage	open collector		-	-5	V
I <sub>C</sub>	collector current			-	-50	mA
I <sub>CM</sub>	peak collector current			-	-100	mA
I <sub>BM</sub>	peak base current			-	-50	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	[1]	-	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] Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>.

9. Thermal characteristics

Table 6. Thermal characteristics

Symbol	Parameter	Conditions		Min	Typ	Max	Unit
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient		[1]	-	-	500	K/W

[1] Device mounted on a printed-circuit board, single-sided copper, tinplated, mounting pad for collector 1 cm<sup>2</sup>.

10. Characteristics

Table 7. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -200\text{ V}; I_E = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	-	-10	nA
		$V_{CB} = -200\text{ V}; I_E = 0\text{ A}; T_j = 150\text{ }^{\circ}\text{C}$	-	-	-10	$\mu\text{A}$
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -5\text{ V}; I_C = 0\text{ A}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	-	-50	nA
$h_{FE}$	DC current gain	$V_{CE} = -20\text{ V}; I_C = -25\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	50	-	-	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -30\text{ mA}; I_B = -5\text{ mA}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	-	-800	mV
$C_{re}$	feedback capacitance	$V_{CB} = -30\text{ V}; I_C = 0\text{ A}; i_c = 0\text{ A}; f = 1\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$	-	-	1.6	pF
$f_T$	transition frequency	$V_{CE} = -10\text{ V}; I_C = -10\text{ mA}; f = 100\text{ MHz}; T_{amb} = 25\text{ }^{\circ}\text{C}$	60	-	-	MHz

11. Package outline

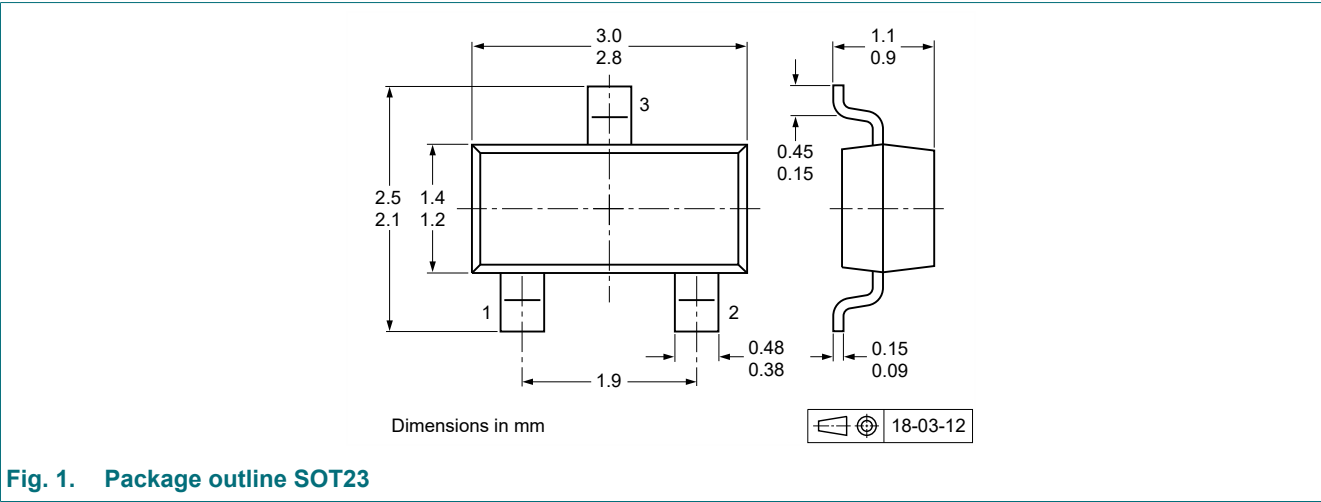
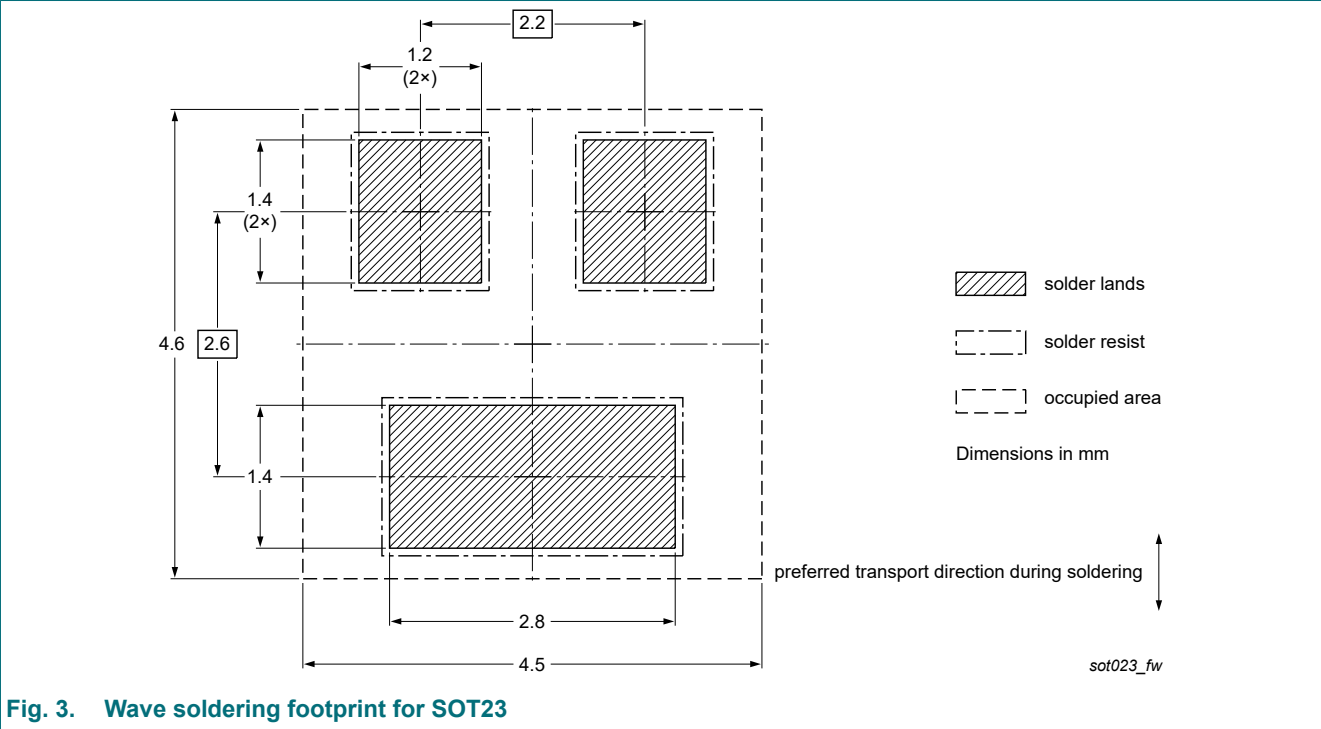
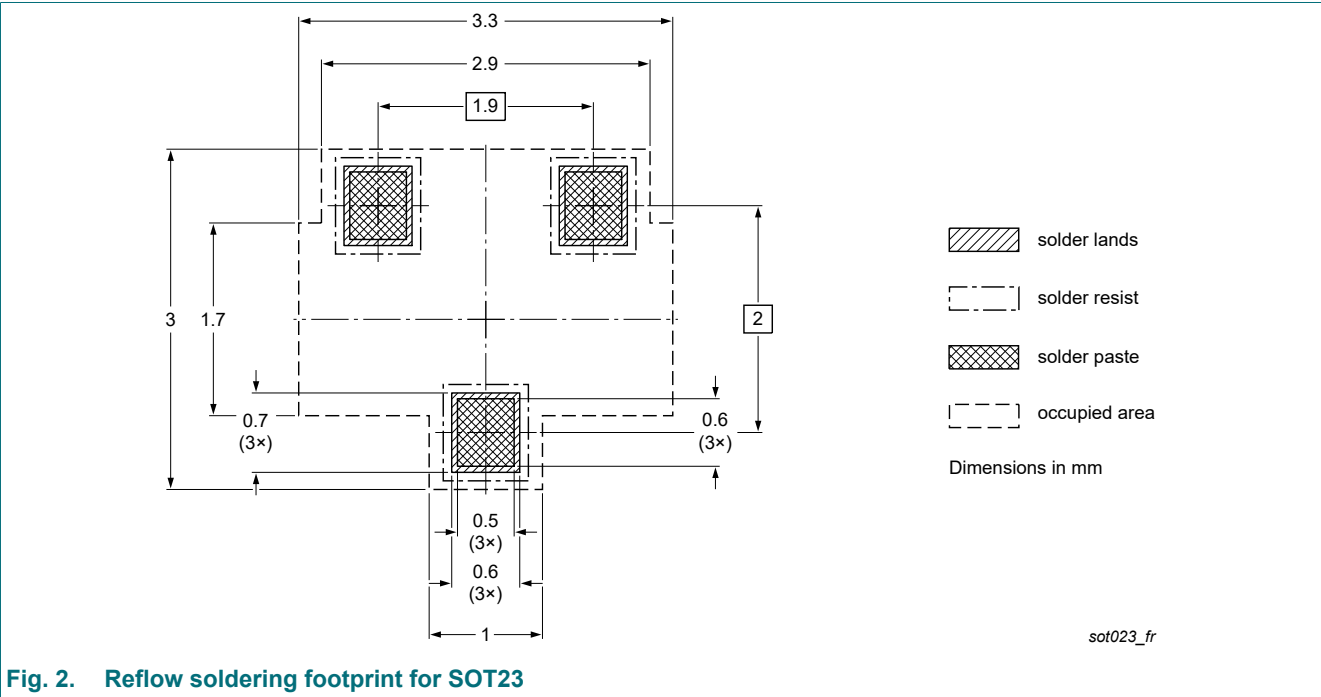


Fig. 1. Package outline SOT23

12. Soldering



13. Revision history

Table 8. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BF821 v.4	20241008	Product data sheet	-	BF821 v.3
Modifications:	• Product changed to non automotive. Please refer to the automotive product(s) with -Q.			
BF821 v.3	20230628	Product data sheet	-	BF821 v.2
BF821 v.2	20040116	Product data sheet	-	BF821 v.1
BF821 v.1	19990415	Product specification	-	-

# 14. 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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