



# BCX71J

45 V, 100 mA PNP general purpose transistor

10 July 2025

Product data sheet

## 1. General description

PNP general-purpose transistor in a small SOT23 Surface-Mounted Device (SMD) plastic package.  
NPN complement: BCX70J

## 2. Features and benefits

- Low current (max. 100 mA)
- Low voltage (max. 45 V)
- Low noise
- AEC-Q101 qualified

## 3. Applications

- Low level, low noise, low frequency applications in hybrid circuits
- General purpose switching and amplification

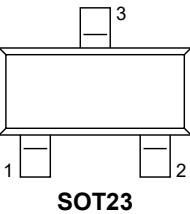
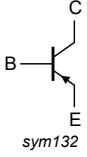
## 4. Quick reference data

Table 1. Quick reference data

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
$V_{CEO}$	collector-emitter voltage	open base	-	-	-45	V
$I_C$	collector current		-	-	-100	mA
$h_{FE}$	DC current gain	$V_{CE} = -5$ V; $I_C = -2$ mA; $T_{amb} = 25$ °C	250	-	460	

## 5. Pinning information

Table 2. Pinning information

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

## 6. Marking

**Table 3. Marking codes**

Type number	Marking code <sup>[1]</sup>
BCX71J	BJ%

[1] % = placeholder for manufacturing site code

## 7. Limiting values

**Table 4. 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		-	-45	V
$V_{CEO}$	collector-emitter voltage	open base		-	-45	V
$V_{EBO}$	emitter-base voltage	open collector		-	-5	V
$I_C$	collector current			-	-100	mA
$I_{CM}$	peak collector current	single pulse; $t_p \leq 1$ ms		-	-200	mA
$I_{BM}$	peak base current			-	-200	mA
$P_{tot}$	total power dissipation	$T_{amb} \leq 25$ °C	[1]	-	250	mW
$T_j$	junction temperature			-	150	°C
$T_{amb}$	ambient temperature			-65	150	°C
$T_{stg}$	storage temperature			-65	150	°C

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

## 8. Thermal characteristics

**Table 5. 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 PCB, single-sided copper, tin-plated and standard footprint.

## 9. Characteristics

Table 6. Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Unit	
$I_{CBO}$	collector-base cut-off current	$V_{CB} = -45 \text{ V}; I_E = 0 \text{ A}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	-20	nA	
		$V_{CB} = -45 \text{ V}; I_E = 0 \text{ A}; T_{amb} = 150 \text{ }^\circ\text{C}$	-	-	-20	μA	
$I_{EBO}$	emitter-base cut-off current	$V_{EB} = -4 \text{ V}; I_C = 0 \text{ } \mu\text{A}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	-	-20	nA	
$h_{FE}$	DC current gain	$V_{CE} = -5 \text{ V}; I_C = -10 \text{ } \mu\text{A}; T_{amb} = 25 \text{ }^\circ\text{C}$	40	-	-		
		$V_{CE} = -5 \text{ V}; I_C = -2 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	250	-	460		
		$V_{CE} = -1 \text{ V}; I_C = -50 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^\circ\text{C}$	100	-	-		
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = -10 \text{ mA}; I_B = -0.25 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-60	-	-250	mV	
		$I_C = -50 \text{ mA}; I_B = -1.25 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^\circ\text{C}$	-120	-	-550	mV	
$V_{BEsat}$	base-emitter saturation voltage	$I_C = -10 \text{ mA}; I_B = -0.25 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-600	-	-850	mV	
		$I_C = -50 \text{ mA}; I_B = -1.25 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02; T_{amb} = 25 \text{ }^\circ\text{C}$	-680	-	-1050	mV	
$V_{BE}$	base-emitter voltage	$V_{CE} = -5 \text{ V}; I_C = -2 \text{ mA}; T_{amb} = 25 \text{ }^\circ\text{C}$	-600	-650	-750	mV	
		$V_{CE} = -5 \text{ V}; I_C = -10 \text{ } \mu\text{A}; T_{amb} = 25 \text{ }^\circ\text{C}$	[1]	-	-550	-	mV
		$V_{CE} = -1 \text{ V}; I_C = -50 \text{ mA}; \text{pulsed}; t_p \leq 300 \text{ } \mu\text{s}; \delta \leq 0.02$	-	-720	-	mV	
$C_c$	collector capacitance	$V_{CB} = -10 \text{ V}; I_E = 0 \text{ A}; i_e = 0 \text{ A}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	4.5	-	pF	
$C_e$	emitter capacitance	$V_{EB} = -0.5 \text{ V}; I_C = 0 \text{ A}; i_c = 0 \text{ A}; f = 1 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	11	-	pF	
$f_T$	transition frequency	$V_{CE} = -5 \text{ V}; I_C = -10 \text{ mA}; f = 100 \text{ MHz}; T_{amb} = 25 \text{ }^\circ\text{C}$	100	-	-	MHz	
NF	noise figure	$V_{CE} = -5 \text{ V}; I_C = -200 \text{ } \mu\text{A}; R_S = 2 \text{ k}\Omega; f = 1 \text{ kHz}; B = 200 \text{ Hz}; T_{amb} = 25 \text{ }^\circ\text{C}$	-	2	6	dB	

[1]  $V_{BE}$  decreases by about 2 mV/K with increasing temperature.

## 10. 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.

## 11. Package outline

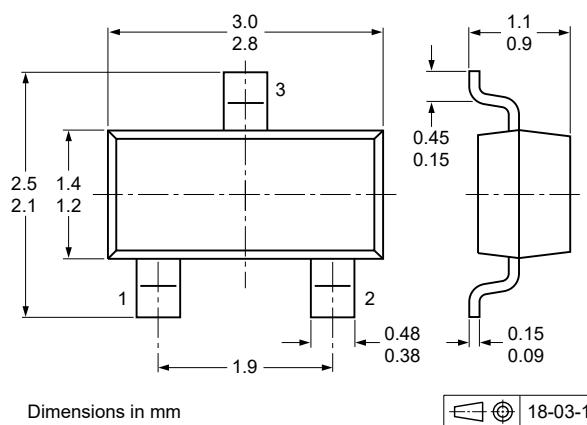


Fig. 1. Package outline SOT23

## 12. Soldering

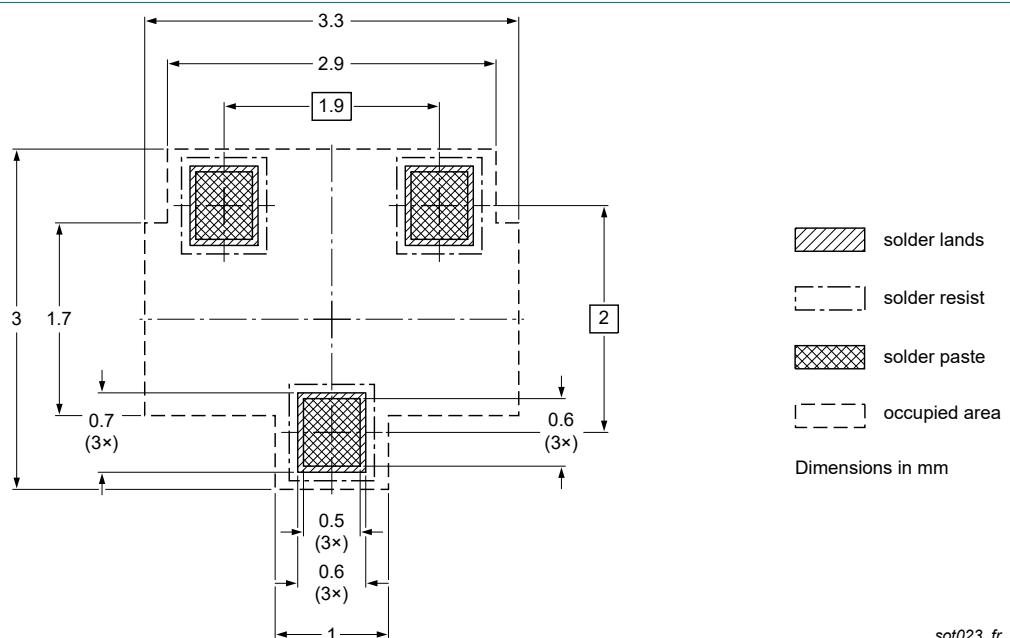


Fig. 2. Reflow soldering footprint for SOT23

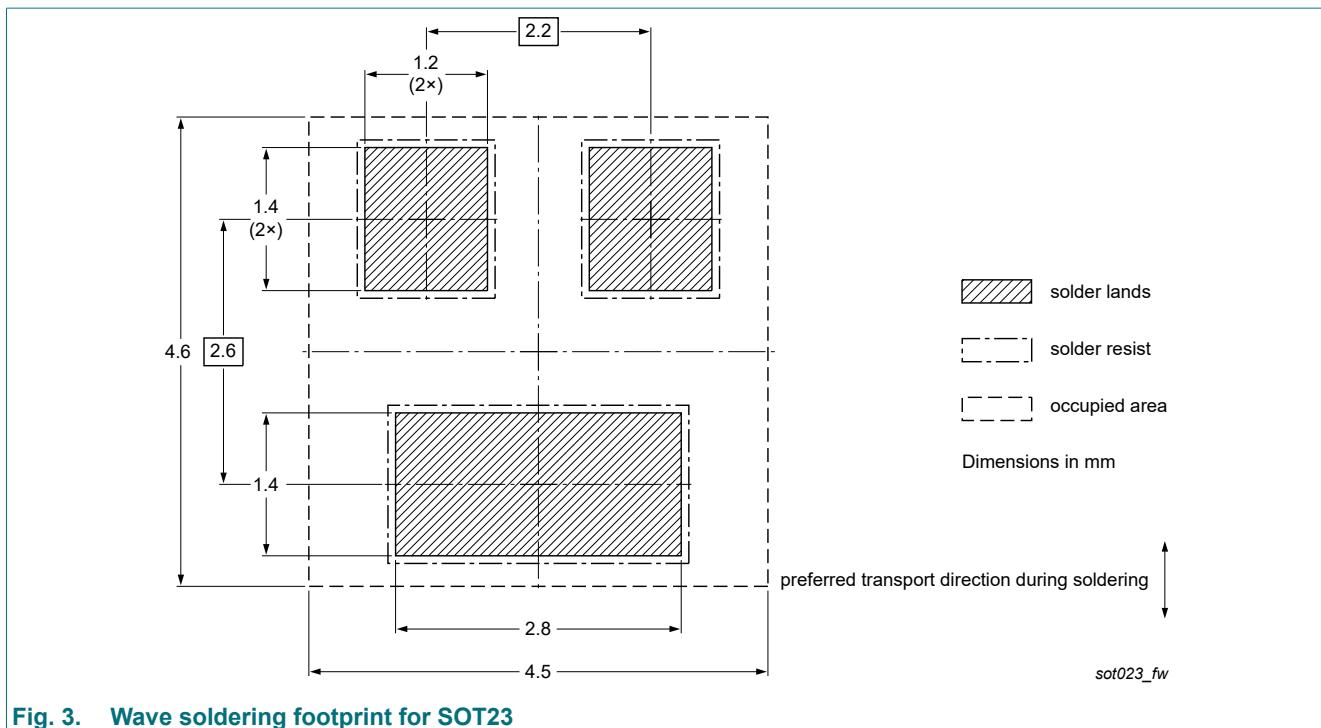


Fig. 3. Wave soldering footprint for SOT23

## 13. Revision history

**Table 7. Revision history**

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BCX71J v.3	20250710	Product data sheet	-	BCX71 v.2
Modifications:	<ul style="list-style-type: none"><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>• Family data sheet split to single type data sheets.</li></ul>			
BCX71 v.2	20040216	Product data sheet	-	BCX71 v.1
BCX71 v.1	19990420	Product data sheet	-	-

## 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.

- [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".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the internet at <https://www.nexperia.com>.

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