



# BCX71K-Q

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: BCX70K-Q

## 2. Features and benefits

- Low current (max. 100 mA)
- Low voltage (max. 45 V)
- Low noise
- Qualified according to AEC-Q101 and recommended for use in automotive applications

## 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
$V_{CE0}$	collector-emitter voltage	open base	-	-	-45	V
$I_C$	collector current		-	-	-100	mA
$h_{FE}$	DC current gain	$V_{CE} = -5\text{ V}$ ; $I_C = -2\text{ mA}$ ; $T_{amb} = 25\text{ °C}$	380	-	630	

## 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. Marking

Table 3. Marking codes

Type number	Marking code[1]
BCX71K-Q	BK%

[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 <sub>CBO</sub>	collector-base voltage	open emitter		-	-45	V
V <sub>CEO</sub>	collector-emitter voltage	open base		-	-45	V
V <sub>EBO</sub>	emitter-base voltage	open collector		-	-5	V
I <sub>C</sub>	collector current			-	-100	mA
I <sub>CM</sub>	peak collector current	single pulse; t <sub>p</sub> ≤ 1 ms		-	-200	mA
I <sub>BM</sub>	peak base current			-	-200	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 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 <sub>th(j-a)</sub>	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 <sub>CBO</sub>	collector-base cut-off current	V <sub>CB</sub> = -45 V; I <sub>E</sub> = 0 A; T <sub>amb</sub> = 25 °C		-	-	-20	nA
		V <sub>CB</sub> = -45 V; I <sub>E</sub> = 0 A; T <sub>amb</sub> = 150 °C		-	-	-20	μA
I <sub>EBO</sub>	emitter-base cut-off current	V <sub>EB</sub> = -4 V; I <sub>C</sub> = 0 μA; T <sub>amb</sub> = 25 °C		-	-	-20	nA
h <sub>FE</sub>	DC current gain	V <sub>CE</sub> = -5 V; I <sub>C</sub> = -10 μA; T <sub>amb</sub> = 25 °C		100	-	-	
		V <sub>CE</sub> = -5 V; I <sub>C</sub> = -2 mA; T <sub>amb</sub> = 25 °C		380	-	630	
		V <sub>CE</sub> = -1 V; I <sub>C</sub> = -50 mA; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		110	-	-	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = -10 mA; I <sub>B</sub> = -0.25 mA; T <sub>amb</sub> = 25 °C		-60	-	-250	mV
		I <sub>C</sub> = -50 mA; I <sub>B</sub> = -1.25 mA; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-120	-	-550	mV
V <sub>BEsat</sub>	base-emitter saturation voltage	I <sub>C</sub> = -10 mA; I <sub>B</sub> = -0.25 mA; T <sub>amb</sub> = 25 °C		-600	-	-850	mV
		I <sub>C</sub> = -50 mA; I <sub>B</sub> = -1.25 mA; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02; T <sub>amb</sub> = 25 °C		-680	-	-1050	mV
V <sub>BE</sub>	base-emitter voltage	V <sub>CE</sub> = -5 V; I <sub>C</sub> = -2 mA; T <sub>amb</sub> = 25 °C		-600	-650	-750	mV
		V <sub>CE</sub> = -5 V; I <sub>C</sub> = -10 μA; T <sub>amb</sub> = 25 °C	[1]	-	-550	-	mV
		V <sub>CE</sub> = -1 V; I <sub>C</sub> = -50 mA; pulsed; t <sub>p</sub> ≤ 300 μs; δ ≤ 0.02		-	-720	-	mV
C <sub>c</sub>	collector capacitance	V <sub>CB</sub> = -10 V; I <sub>E</sub> = 0 A; i <sub>e</sub> = 0 A; f = 1 MHz; T <sub>amb</sub> = 25 °C		-	4.5	-	pF
C <sub>e</sub>	emitter capacitance	V <sub>EB</sub> = -0.5 V; I <sub>C</sub> = 0 A; i <sub>c</sub> = 0 A; f = 1 MHz; T <sub>amb</sub> = 25 °C		-	11	-	pF
f <sub>T</sub>	transition frequency	V <sub>CE</sub> = -5 V; I <sub>C</sub> = -10 mA; f = 100 MHz; T <sub>amb</sub> = 25 °C		100	-	-	MHz
NF	noise figure	V <sub>CE</sub> = -5 V; I <sub>C</sub> = -200 μA; R <sub>S</sub> = 2 kΩ; f = 1 kHz; B = 200 Hz; T <sub>amb</sub> = 25 °C		-	2	6	dB

[1] V<sub>BE</sub> 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

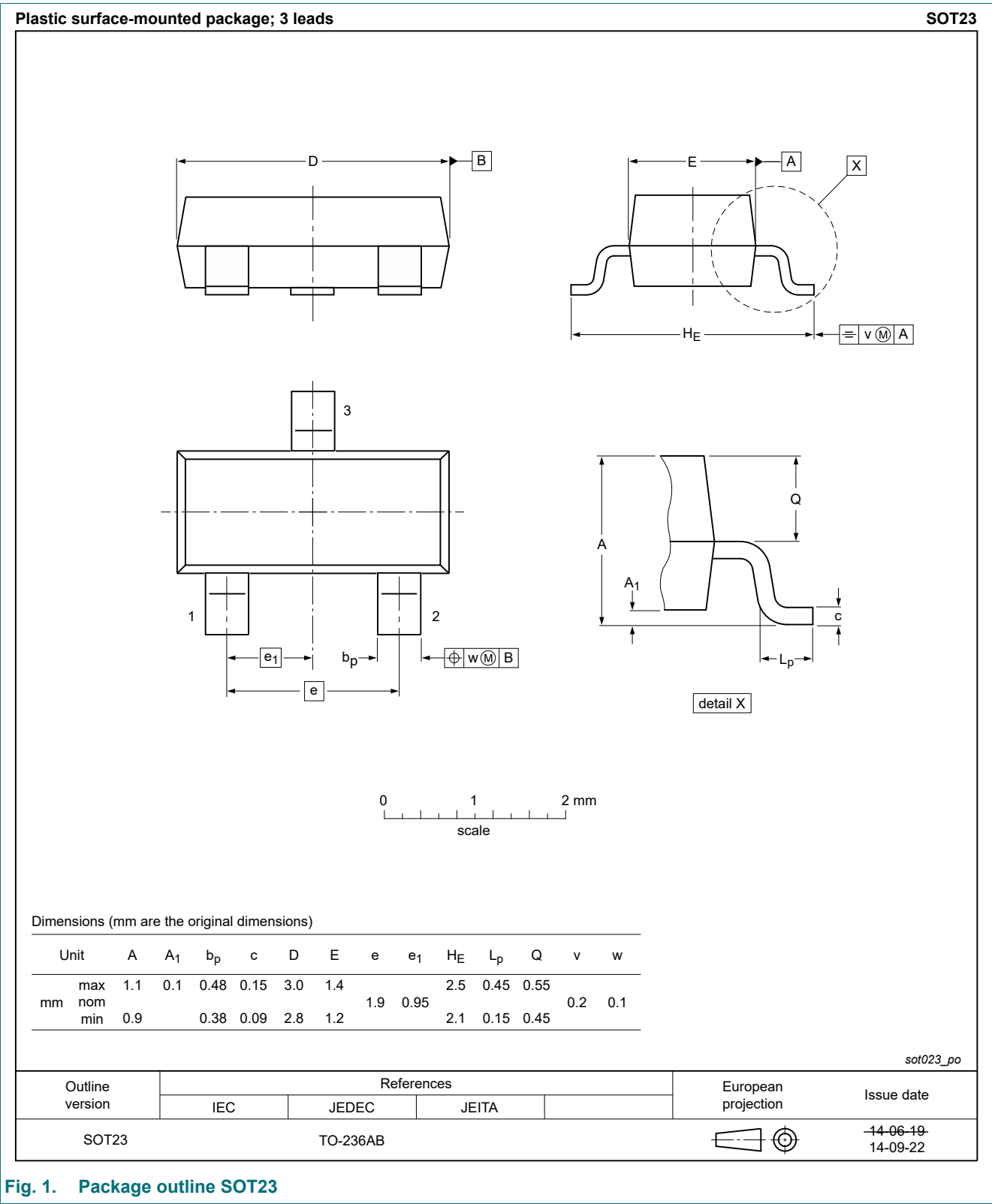
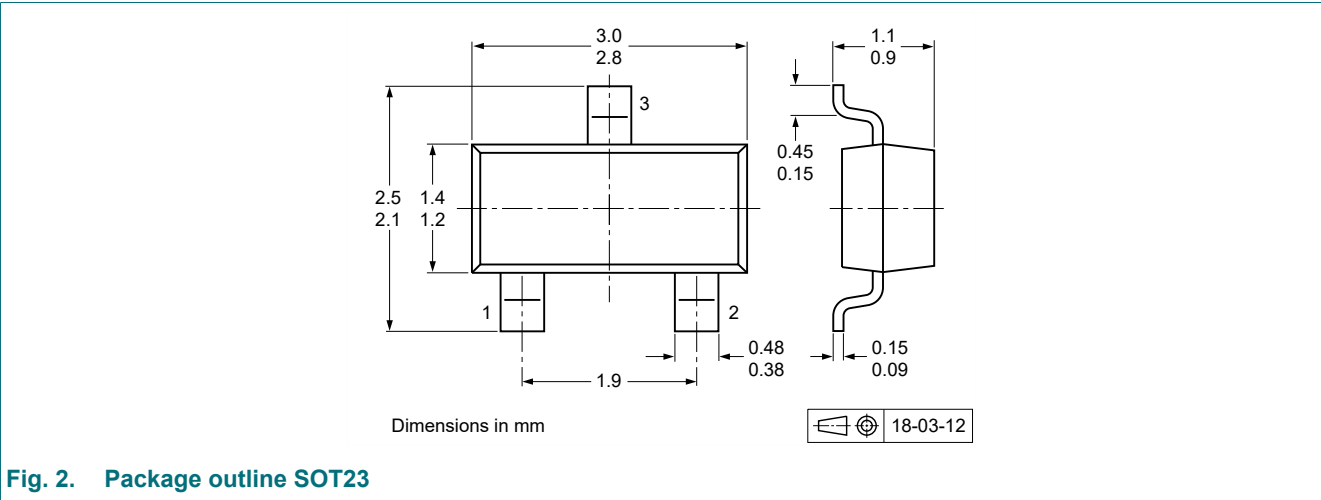
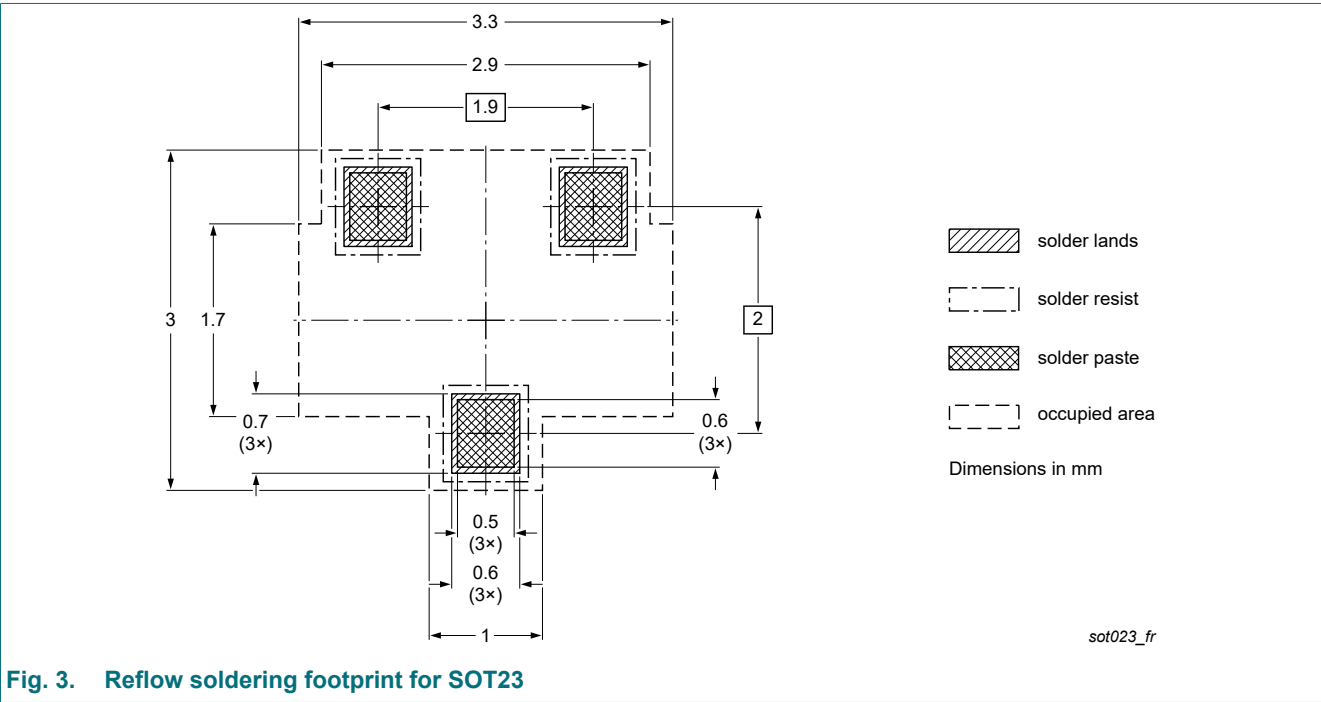


Fig. 1. Package outline SOT23

12. Package outline



13. Soldering



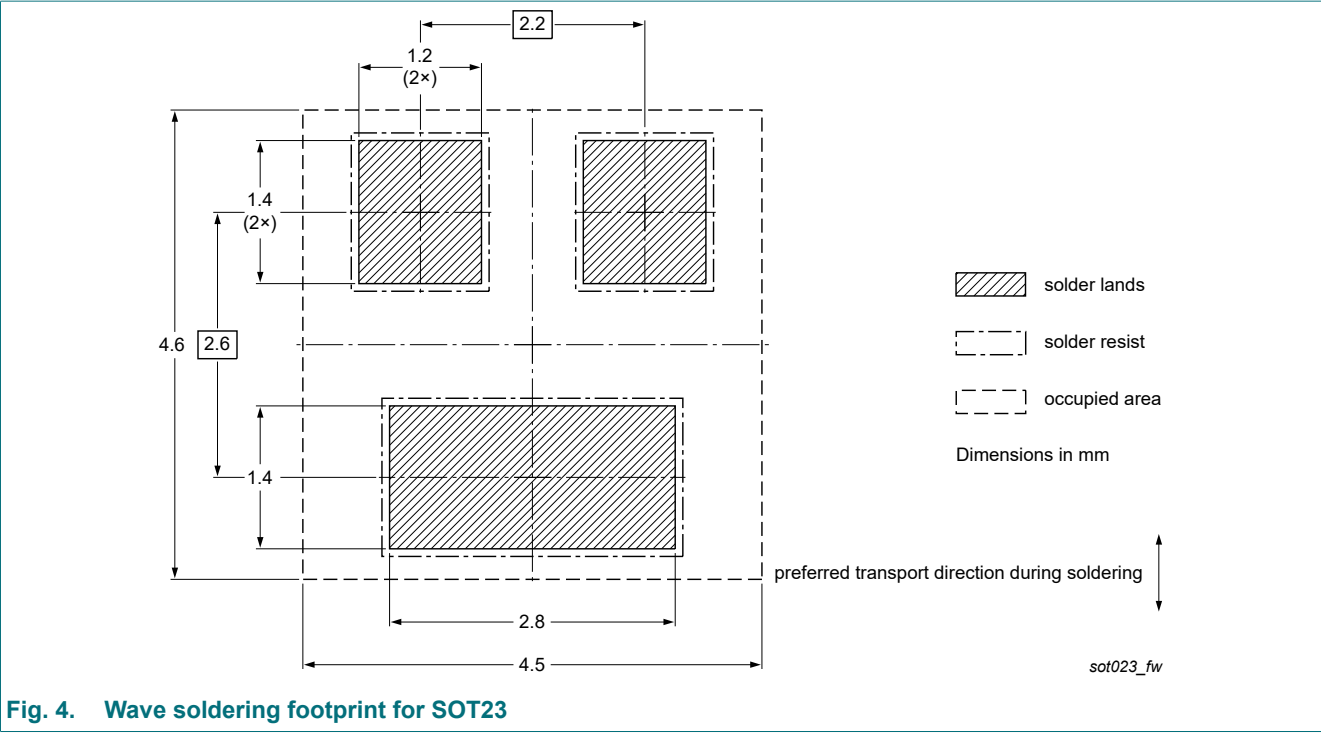


Fig. 4. Wave soldering footprint for SOT23

## 14. Revision history

Table 7. Revision history

Data sheet ID	Release date	Data sheet status	Change notice	Supersedes
BCX71K-Q v.1	20250710	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.

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