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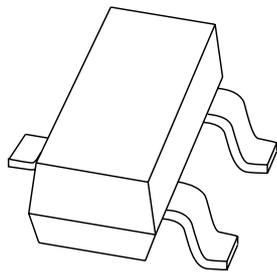
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If you have any questions related to the data sheet, please contact our nearest sales office via e-mail or telephone (details via [salesaddresses@nexperia.com](mailto:salesaddresses@nexperia.com)). Thank you for your cooperation and understanding,

Kind regards,

Team Nexperia

# DATA SHEET



## **BCX70 series** NPN general purpose transistors

Product data sheet  
Supersedes data of 1999 Apr 15

2004 Jan 16

# NPN general purpose transistors

# BCX70 series

### FEATURES

- Low current (max. 100 mA)
- Low voltage (max. 45 V).

### APPLICATIONS

- General purpose switching and amplification.

### DESCRIPTION

NPN transistor in a SOT23 plastic package.  
 PNP complements: BCX71 series.

### MARKING

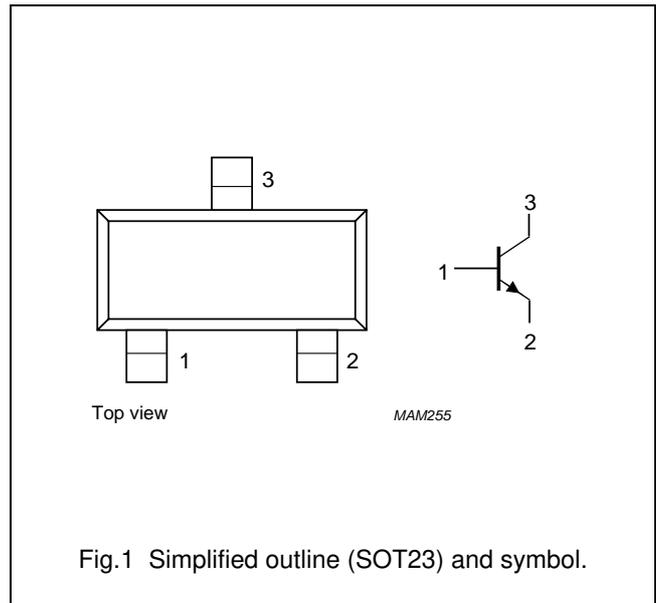
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
BCX70G	AG*
BCX70H	AH*
BCX70J	AJ*
BCX70K	AK*

### Note

- \* = p : Made in Hong Kong.  
 \* = t : Made in Malaysia.  
 \* = W : Made in China.

### PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector



### ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
BCX70G	-	plastic surface mounted package; 3 leads	SOT23
BCX70H			
BCX70J			
BCX70K			

## NPN general purpose transistors

## BCX70 series

**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 (DC)		–	100	mA
I <sub>CM</sub>	peak collector current		–	200	mA
I <sub>BM</sub>	peak base current		–	200	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤ 25 °C	–	250	mW
T <sub>stg</sub>	storage temperature		–65	+150	°C
T <sub>j</sub>	junction temperature		–	150	°C
T <sub>amb</sub>	operating ambient temperature		–65	+150	°C

**THERMAL CHARACTERISTICS**

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
R <sub>th(j-a)</sub>	thermal resistance from junction to ambient	note 1	500	K/W

**Note**

1. Transistor mounted on an FR4 printed-circuit board.

## NPN general purpose transistors

## BCX70 series

**CHARACTERISTICS**

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
$I_{CBO}$	collector cut-off current	$I_E = 0; V_{CB} = 45\text{ V}$	–	–	20	nA	
		$I_E = 0; V_{CB} = 45\text{ V}; T_{amb} = 150\text{ }^{\circ}\text{C}$	–	–	20	$\mu\text{A}$	
$I_{EBO}$	emitter cut-off current	$I_C = 0; V_{EB} = 4\text{ V}$	–	–	20	nA	
$h_{FE}$	DC current gain	$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	BCX70G	–	–	–	
			BCX70H	40	–	–	
			BCX70J	30	–	–	
			BCX70K	100	–	–	
	DC current gain	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	BCX70G	120	–	220	
			BCX70H	180	–	310	
			BCX70J	250	–	460	
			BCX70K	380	–	630	
	DC current gain	$I_C = 50\text{ mA}; V_{CE} = 1\text{ V}$	BCX70G	50	–	–	
			BCX70H	70	–	–	
			BCX70J	90	–	–	
			BCX70K	100	–	–	
$V_{CEsat}$	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.25\text{ mA}$	50	–	350	mV	
		$I_C = 50\text{ mA}; I_B = 1.25\text{ mA}$	100	–	550	mV	
$V_{BEsat}$	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.25\text{ mA}$	600	–	850	mV	
		$I_C = 50\text{ mA}; I_B = 1.25\text{ mA}$	700	–	1050	mV	
$V_{BE}$	base-emitter voltage	$I_C = 10\text{ }\mu\text{A}; V_{CE} = 5\text{ V}$	–	520	–	mV	
		$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	550	650	750	mV	
		$I_C = 50\text{ mA}; V_{CE} = 1\text{ V}$	–	780	–	mV	
$C_c$	collector capacitance	$I_E = i_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	1.7	–	pF	
$C_e$	emitter capacitance	$I_C = i_c = 0; V_{EB} = 0.5\text{ V}; f = 1\text{ MHz}$	–	11	–	pF	
$f_T$	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz};$ note 1	100	250	–	MHz	
F	noise figure	$I_C = 200\text{ }\mu\text{A}; V_{CE} = 5\text{ V}; R_S = 2\text{ k}\Omega;$ $f = 1\text{ kHz}; B = 200\text{ Hz}$	–	2	6	dB	

**Note**

1. Pulse test:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

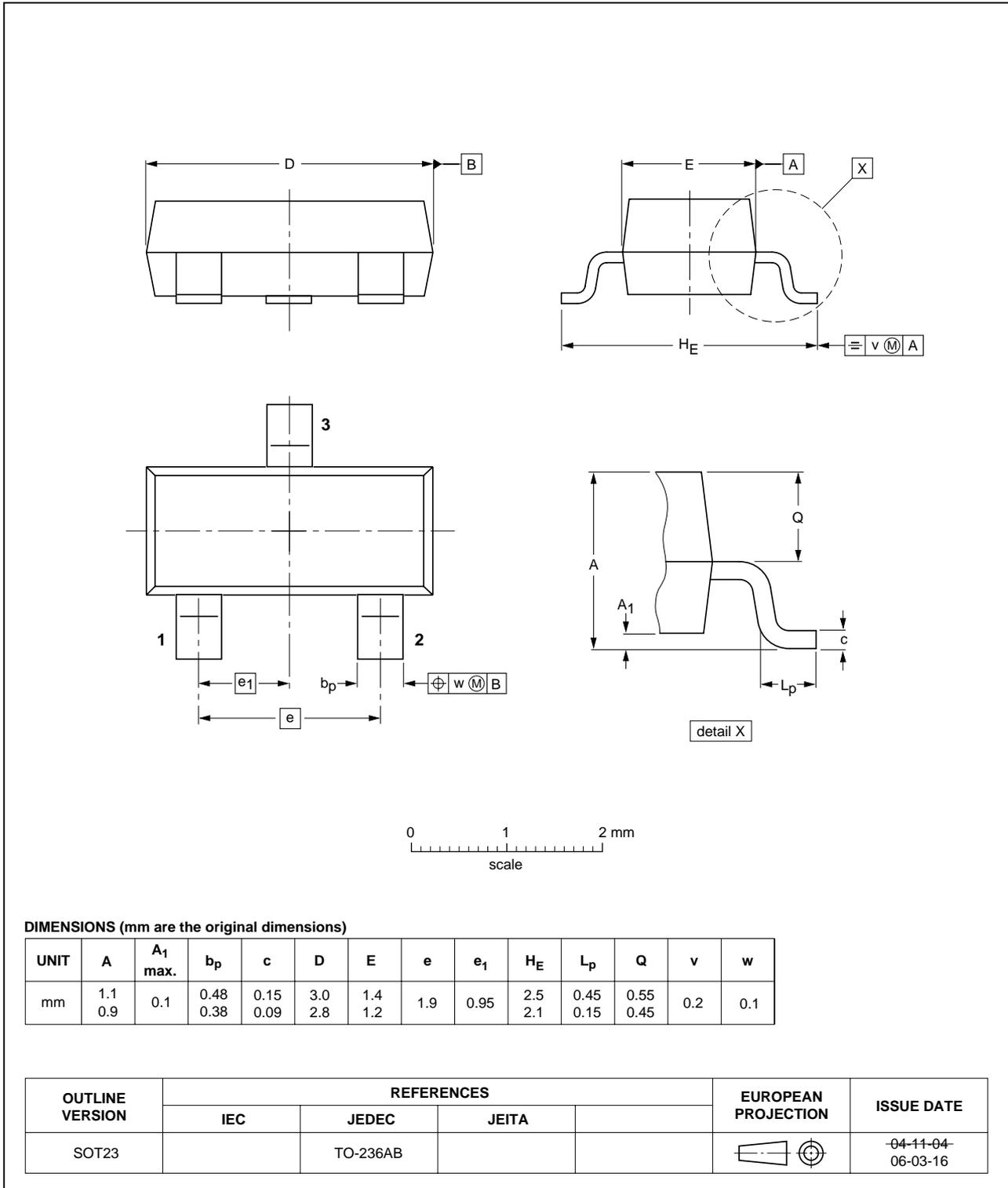
NPN general purpose transistors

BCX70 series

PACKAGE OUTLINE

Plastic surface-mounted package; 3 leads

SOT23



## NPN general purpose transistors

## BCX70 series

## DATA SHEET STATUS

DOCUMENT STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)</sup>	DEFINITION
Objective data sheet	Development	This document contains data from the objective specification for product development.
Preliminary data sheet	Qualification	This document contains data from the preliminary specification.
Product data sheet	Production	This document contains the product specification.

## Notes

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# ***NXP Semiconductors***

## **Customer notification**

This data sheet was changed to reflect the new company name NXP Semiconductors, including new legal definitions and disclaimers. No changes were made to the technical content, except for package outline drawings which were updated to the latest version.

## **Contact information**

For additional information please visit: <http://www.nxp.com>

For sales offices addresses send e-mail to: [salesaddresses@nxp.com](mailto:salesaddresses@nxp.com)

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