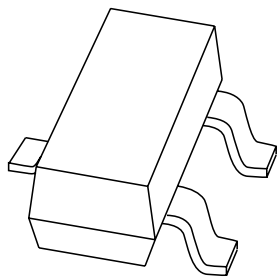


# DATA SHEET



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

Product specification  
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

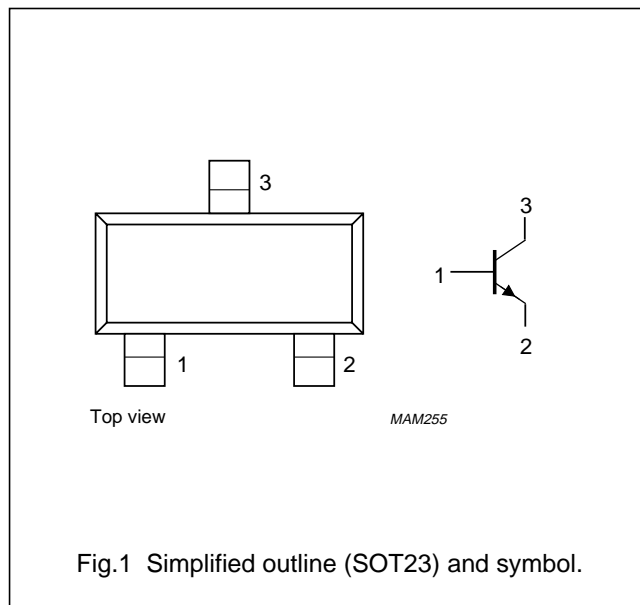
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
BCX70G	AG*
BCX70H	AH*
BCX70J	AJ*
BCX70K	AK*

### 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

$T_{amb} = 25\text{ °C}$  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
		$I_E = 0; V_{CB} = 45\text{ V}; T_{amb} = 150\text{ °C}$	–	–	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	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V}$	120	–	220	
			BCX70G	180	–	310
			BCX70H	250	–	460
			BCX70J	380	–	630
	BCX70K					
	DC current gain	$I_C = 50\text{ mA}; V_{CE} = 1\text{ V}$	50	–	–	
			BCX70G	70	–	–
BCX70H			90	–	–	
BCX70J			100	–	–	
BCX70K						
$V_{CEsat}$	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:  $t_p \leq 300\text{ }\mu\text{s}; \delta \leq 0.02$ .

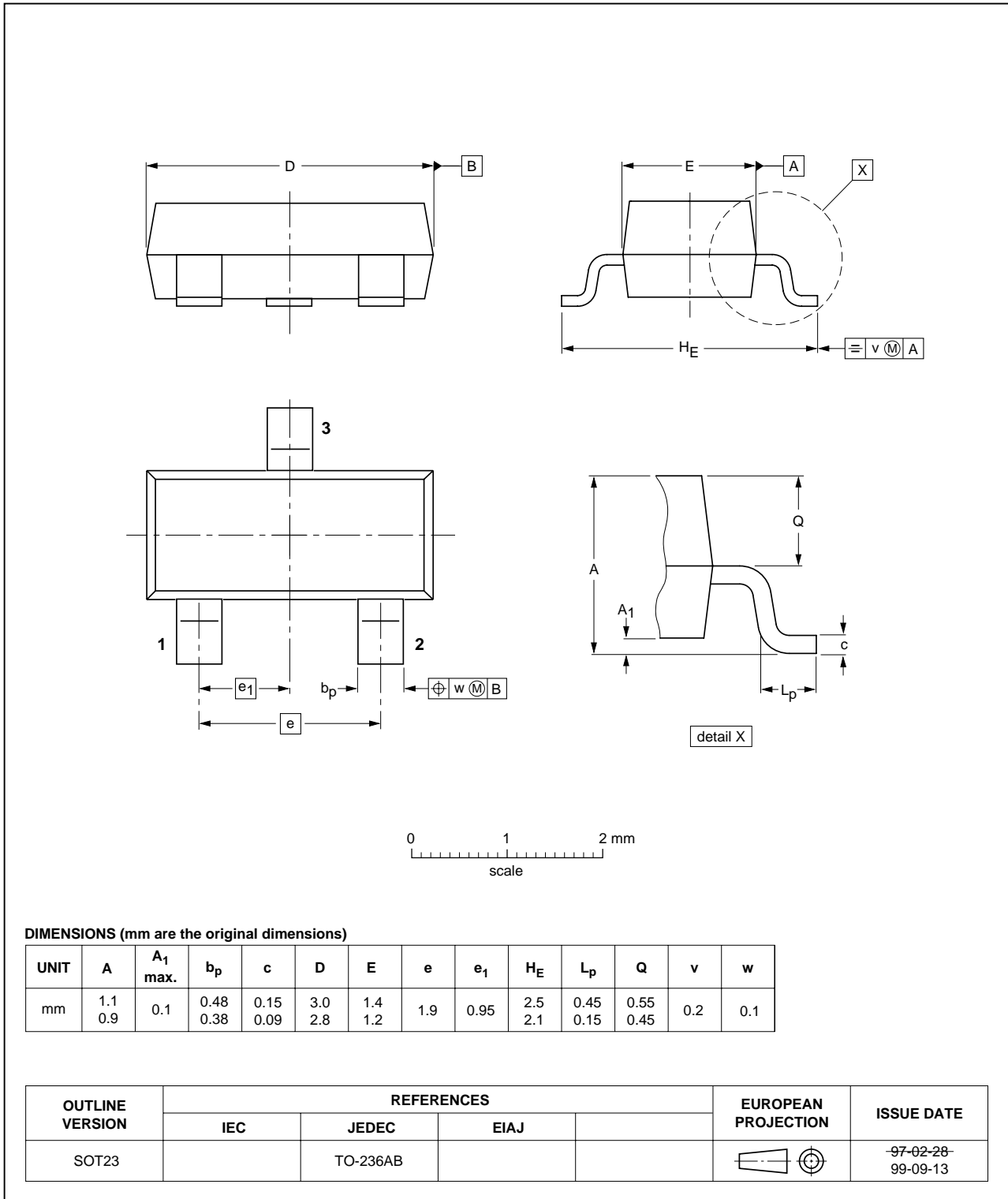
NPN general purpose transistors

BCX70 series

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



## NPN general purpose transistors

## BCX70 series

## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
I	Objective data	Development	This data sheet contains data from the objective specification for product development. Philips Semiconductors reserves the right to change the specification in any manner without notice.
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## **Contact information**

For additional information please visit <http://www.semiconductors.philips.com>. Fax: +31 40 27 24825

For sales offices addresses send e-mail to: [sales.addresses@www.semiconductors.philips.com](mailto:sales.addresses@www.semiconductors.philips.com).

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