

# 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

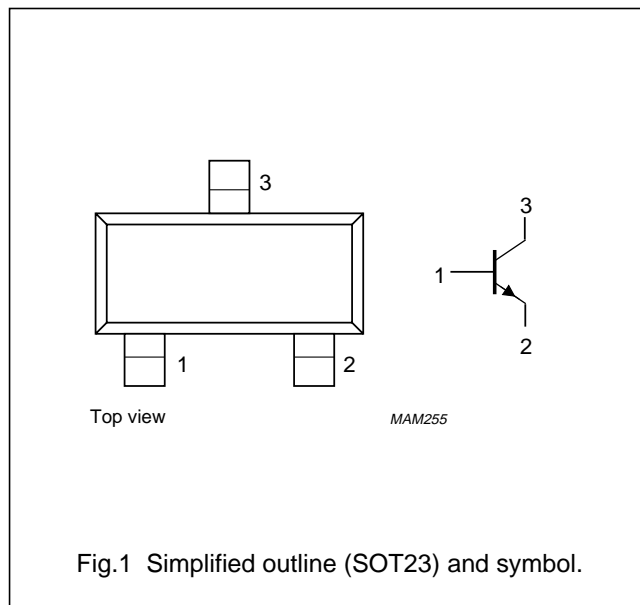
TYPE NUMBER	MARKING CODE <sup>(1)</sup>
BCX70G	AG*
BCX70H	AH*
BCX70J	AJ*
BCX70K	AK*

### 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			

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**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.

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**CHARACTERISTICS**T<sub>amb</sub> = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT	
I <sub>CBO</sub>	collector cut-off current	I <sub>E</sub> = 0; V <sub>CB</sub> = 45 V	–	–	20	nA	
		I <sub>E</sub> = 0; V <sub>CB</sub> = 45 V; T <sub>amb</sub> = 150 °C	–	–	20	μA	
I <sub>EBO</sub>	emitter cut-off current	I <sub>C</sub> = 0; V <sub>EB</sub> = 4 V	–	–	20	nA	
h <sub>FE</sub>	DC current gain	I <sub>C</sub> = 10 μA; V <sub>CE</sub> = 5 V	BCX70G	–	–	–	
			BCX70H	40	–	–	
			BCX70J	30	–	–	
			BCX70K	100	–	–	
	DC current gain	I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 5 V	BCX70G	120	–	220	
			BCX70H	180	–	310	
			BCX70J	250	–	460	
			BCX70K	380	–	630	
	DC current gain	I <sub>C</sub> = 50 mA; V <sub>CE</sub> = 1 V	BCX70G	50	–	–	
			BCX70H	70	–	–	
			BCX70J	90	–	–	
			BCX70K	100	–	–	
V <sub>CEsat</sub>	collector-emitter saturation voltage	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.25 mA	50	–	350	mV	
		I <sub>C</sub> = 50 mA; I <sub>B</sub> = 1.25 mA	100	–	550	mV	
V <sub>BEsat</sub>	base-emitter saturation voltage	I <sub>C</sub> = 10 mA; I <sub>B</sub> = 0.25 mA	600	–	850	mV	
		I <sub>C</sub> = 50 mA; I <sub>B</sub> = 1.25 mA	700	–	1050	mV	
V <sub>BE</sub>	base-emitter voltage	I <sub>C</sub> = 10 μA; V <sub>CE</sub> = 5 V	–	520	–	mV	
		I <sub>C</sub> = 2 mA; V <sub>CE</sub> = 5 V	550	650	750	mV	
		I <sub>C</sub> = 50 mA; V <sub>CE</sub> = 1 V	–	780	–	mV	
C <sub>c</sub>	collector capacitance	I <sub>E</sub> = i <sub>e</sub> = 0; V <sub>CB</sub> = 10 V; f = 1 MHz	–	1.7	–	pF	
C <sub>e</sub>	emitter capacitance	I <sub>C</sub> = i <sub>c</sub> = 0; V <sub>EB</sub> = 0.5 V; f = 1 MHz	–	11	–	pF	
f <sub>T</sub>	transition frequency	I <sub>C</sub> = 10 mA; V <sub>CE</sub> = 5 V; f = 100 MHz; note 1	100	250	–	MHz	
F	noise figure	I <sub>C</sub> = 200 μA; V <sub>CE</sub> = 5 V; R <sub>S</sub> = 2 kΩ; f = 1 kHz; B = 200 Hz	–	2	6	dB	

**Note**1. Pulse test: t<sub>p</sub> ≤ 300 μs; δ ≤ 0.02.

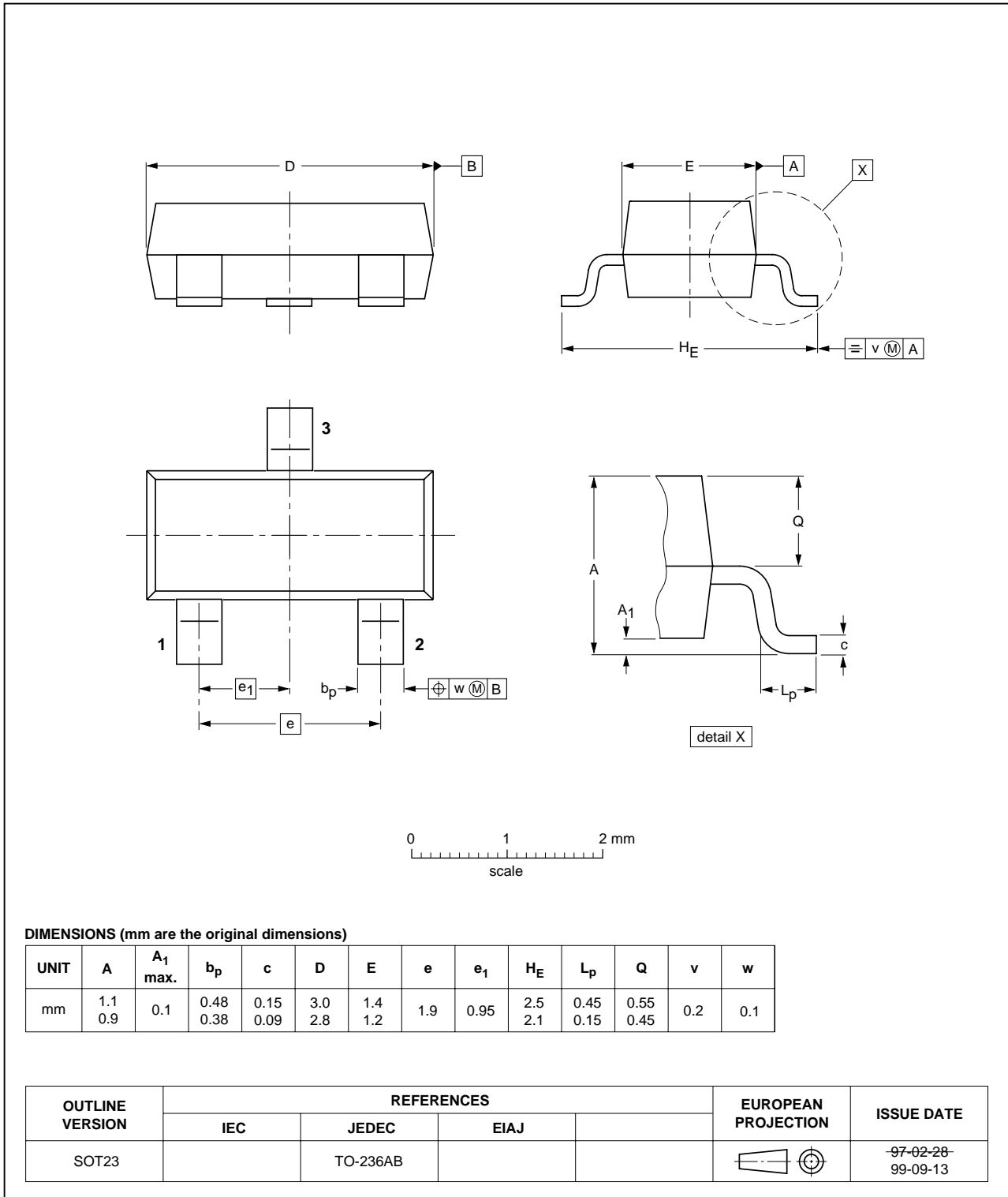
NPN general purpose transistors

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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT23



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## DATA SHEET STATUS

LEVEL	DATA SHEET STATUS <sup>(1)</sup>	PRODUCT STATUS <sup>(2)(3)</sup>	DEFINITION
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