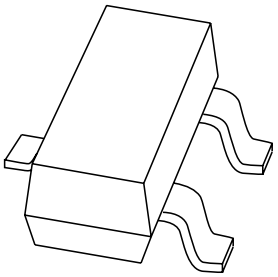
DATA SHEET



BCX70 series
NPN general purpose transistors

Product specification
Supersedes data of 1999 Apr 15

2004 Jan 16

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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(1)
BCX70G	AG*
BCX70H	AH*
BCX70J	AJ*
BCX70K	AK*

Note

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

PINNING

PIN	DESCRIPTION
1	base
2	emitter
3	collector

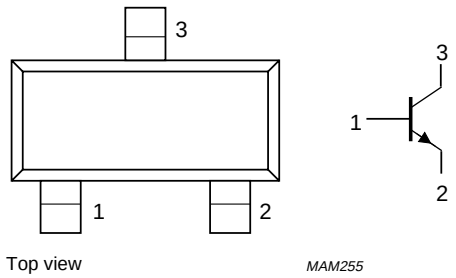


Fig.1 Simplified outline (SOT23) and symbol.

ORDERING INFORMATION

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

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 (DC)		–	100	mA
I_{CM}	peak collector current		–	200	mA
I_{BM}	peak base current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ °C	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th(j-a)}$	thermal resistance from junction to ambient	note 1	500	K/W

Note

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

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

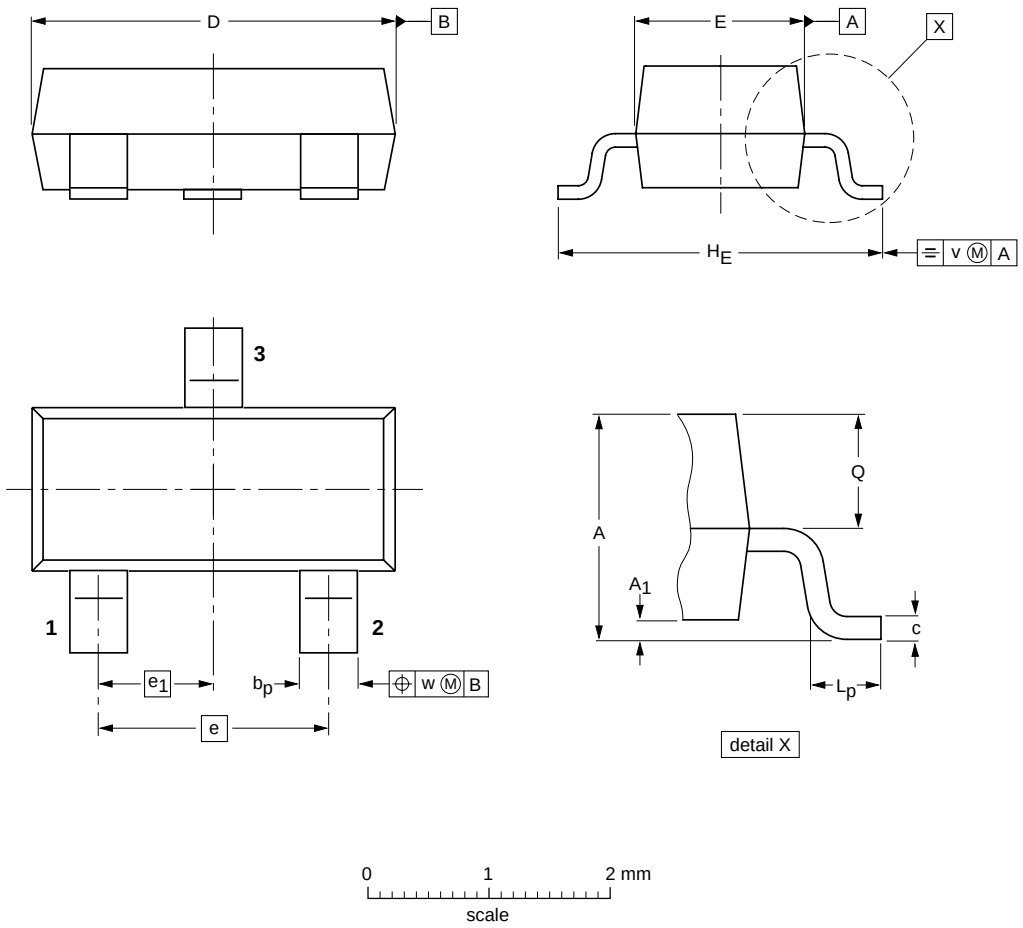
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = 45 V	–	–	20	nA
		I_E = 0; V_{CB} = 45 V; T_{amb} = 150 °C	–	–	20	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 4 V	–	–	20	nA
h_{FE}	DC current gain	I_C = 10 µA; V_{CE} = 5 V				
	BCX70G		–	–	–	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

Note

1. Pulse test: $t_p \leq 300$ µs; $\delta \leq 0.02$.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT23**



DIMENSIONS (mm are the original dimensions)

UNIT	A	A_1 max.	b_p	c	D	E	e	e_1	H_E	L_p	Q	v	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

OUTLINE VERSION	REFERENCES				EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				~~97-02-28~~ 99-09-13

DATA SHEET STATUS

LEVEL	DATA SHEET STATUS(1)	PRODUCT STATUS(2)(3)	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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3. For data sheets describing multiple type numbers, the highest-level product status determines the data sheet status.

DEFINITIONS

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Limiting values definition — Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 60134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.

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