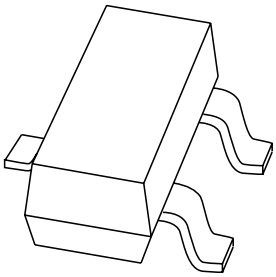
DATA SHEET



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

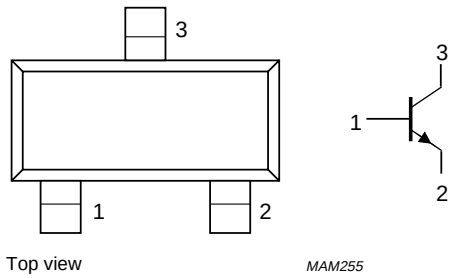


Fig.1 Simplified outline (SOT23) and symbol.

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.

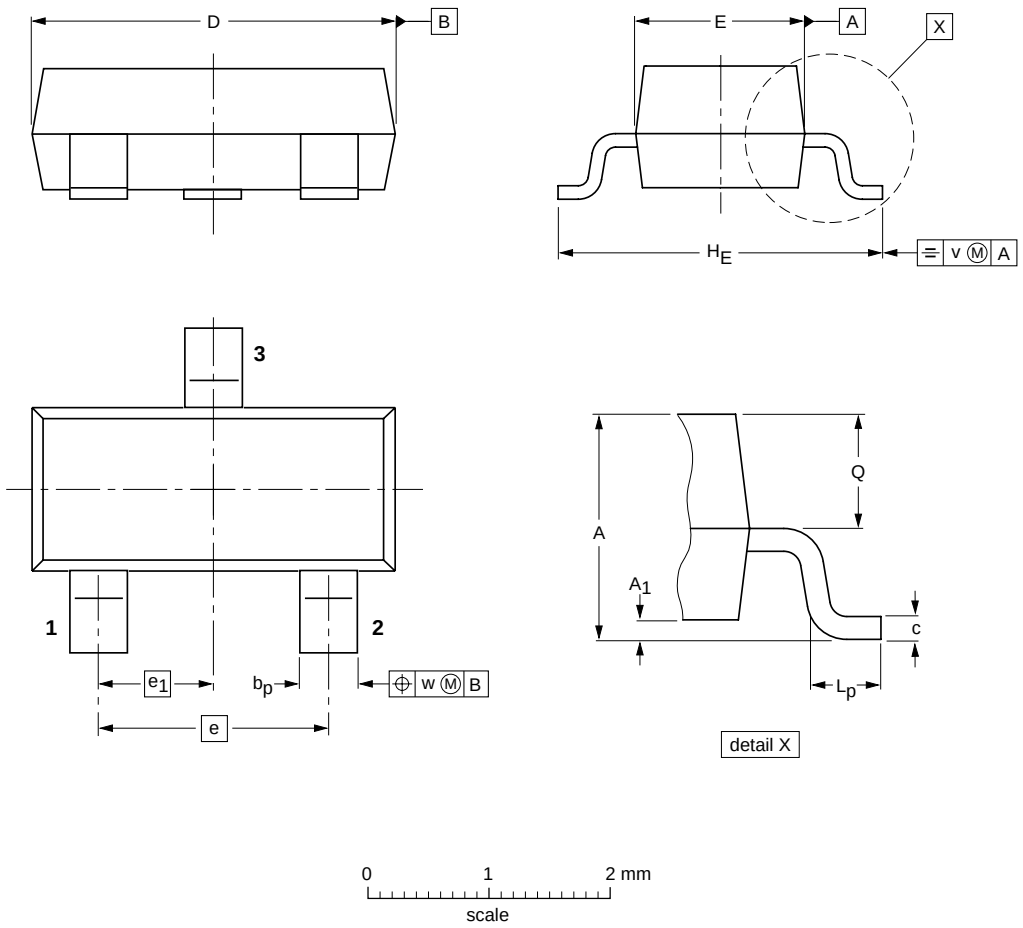
SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector cut-off current	I_E = 0; V_{CB} = 45 V	–	–	20	nA
		I_E = 0; V_{CB} = 45 V; T_{amb} = 150 °C	–	–	20	µA
I_{EBO}	emitter cut-off current	I_C = 0; V_{EB} = 4 V	–	–	20	nA
h_{FE}	DC current gain	I_C = 10 µA; V_{CE} = 5 V				
	BCX70G		–	–	–	
	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.

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