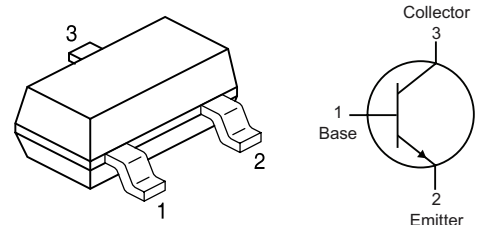


# NPN small signal transistor



**RoHS  
Compliant**



**Pin Configuration:**

- 1. Base
- 2. Emitter
- 3. Collector

**Features:**

- For AF input stages and driver applications
- High current gain
- Low collector-emitter saturation voltage
- Low noise between 30Hz and 15kHz
- Complementary types: BCX71

**Applications:**

- General purpose transistor

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Value	Unit
Collector-base voltage	V <sub>CB0</sub>	45	V
Collector-emitter voltage	V <sub>CEO</sub>	45	V
Emitter-base voltage	V <sub>EB0</sub>	5	V
Collector current	I <sub>C</sub>	0.2	A
Collector power dissipation	P <sub>C</sub>	0.2	W
		0.35	W*
Junction temperature	T <sub>J</sub>	150	°C
Storage temperature	T <sub>stg</sub>	-55 to 150	°C

\* Mounted on a 7 × 5 × 0.6mm Ceramic Substrate

**Electrical Characteristics (Ta = 25°C)**

Parameter	Symbol	Min.	Type	Max.	Unit	Conditions
Collector-emitter breakdown voltage	BV <sub>CEO</sub>	45	-	-	V	I <sub>C</sub> = 2mA
Emitter-base breakdown voltage	BV <sub>EB0</sub>	5	-	-	V	I <sub>C</sub> = 10μA
Collector-emitter cutoff current	I <sub>CES</sub>	-	-	0.1	μA	V <sub>CE</sub> = 45V
Emitter-base cutoff current	I <sub>EBO</sub>	-	-	0.1	μA	V <sub>EB</sub> = 4V
Collector-emitter saturation voltage	V <sub>CE(sat)1</sub>	-	-	0.55	V	I <sub>C</sub> /I <sub>B</sub> = 10mA/ 0.25mA
	V <sub>CE(sat)2</sub>	-	-	630	V	I <sub>C</sub> /I <sub>B</sub> = 50mA/ 1.25mA

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## Electrical Characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Type	Max.	Unit	Conditions
Base-emitter saturation voltage	V <sub>BE(sat)1</sub>	-	-	-	V	I <sub>c</sub> /I <sub>b</sub> = 10mA/ 0.25mA
	V <sub>BE(sat)2</sub>	-	-	-	V	I <sub>c</sub> /I <sub>b</sub> = 50mA/ 1.25mA
Base-emitter voltage	V <sub>BE(on)</sub>	250	-	20	V	V <sub>CE</sub> = 5V, I <sub>c</sub> = 2mA
DC current transfer ratio	h <sub>FE1</sub>	125	-	0.35	-	V <sub>CE</sub> = 5V, I <sub>c</sub> = 2mA
	h <sub>FE2</sub>	-	-	1.05		V <sub>CE</sub> = 5V, I <sub>c</sub> = 50mA
Collector-base cutoff current	f <sub>T</sub>	90	-	0.85	MHz	V <sub>CE</sub> = 5V, I <sub>E</sub> = 10mA, f = 100MHz
Transition frequency	C <sub>ob</sub>	0.55	-	0.75	μA	V <sub>CB</sub> = 10V, f = 1MHz, I <sub>E</sub> = 0A
Collector output capacitance	NF	-	-	4.5	pF	V <sub>CE</sub> = 5V, I <sub>c</sub> = 200μA, f = 1kHz, R <sub>g</sub> = 2kΩ
Noise figure	ICBO	-	-	6	dB	V <sub>CB</sub> = 45V, Ta = 150°C

This parts are classified into the categories below and given hFE item.

Part. No	BCX70J
hFE1	250 to 460
hFE2	90 or more

## Electrical characteristics

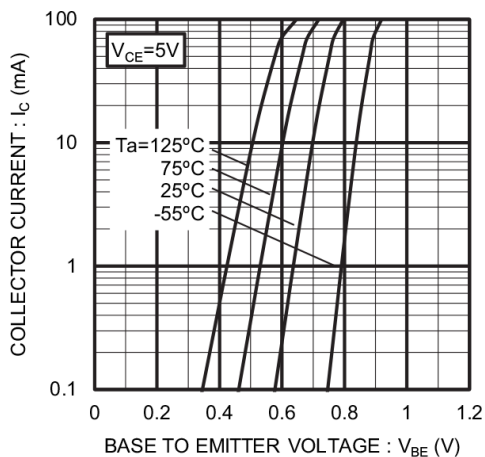


Fig1. Grounded Emitter Propagation Characteristics

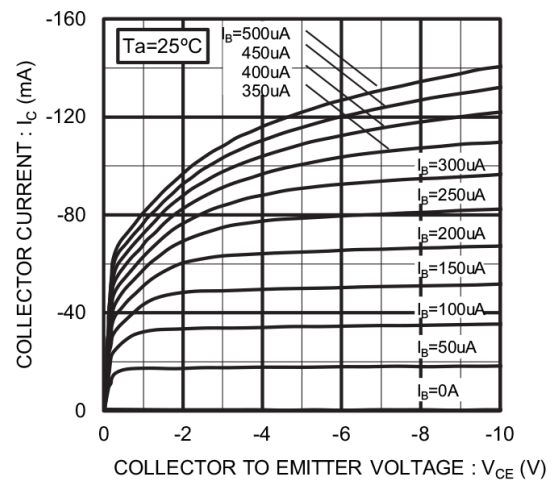


Fig2. Grounded Emitter Output Characteristics

# NPN small signal transistor

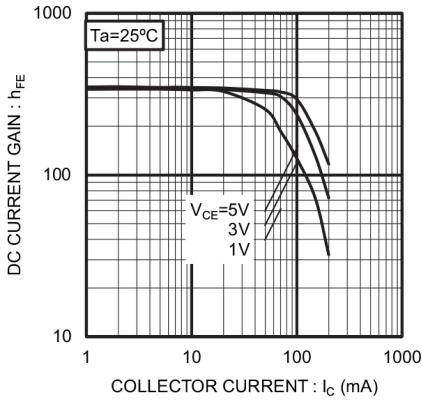


Fig3. DC Current Gain vs. Collector Current (I)

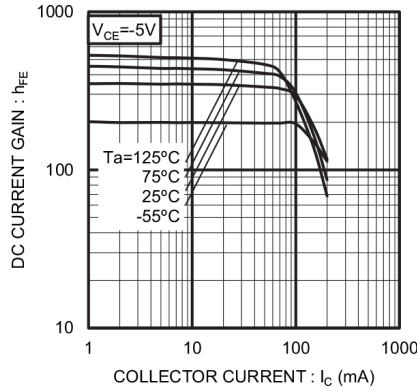


Fig4. DC Current Gain vs. Collector Current (II)

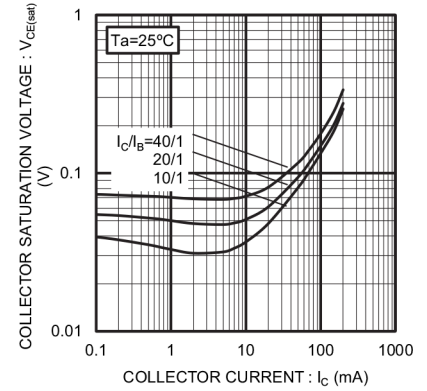


Fig5. Collector Saturation Voltage vs. Collector Current (I)

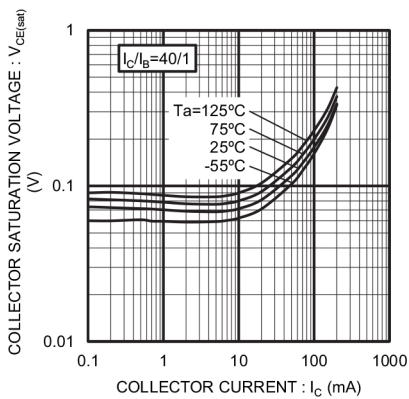


Fig6. Collector Saturation Voltage vs. Collector Current (II)

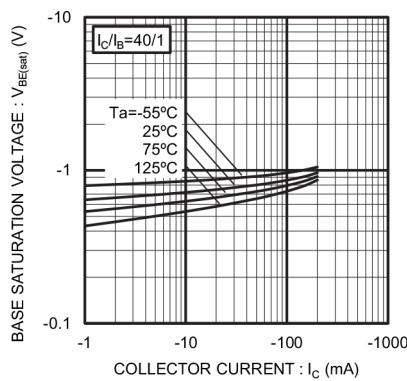


Fig7. Base Saturation Voltage vs. Collector Current

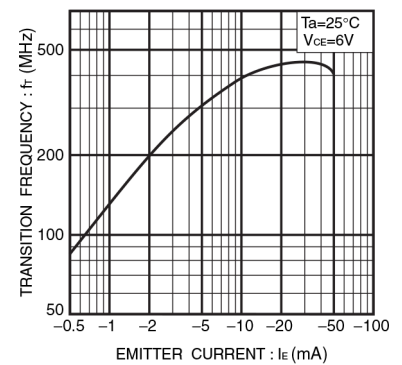


Fig8. Gain bandwidth product vs. emitter current

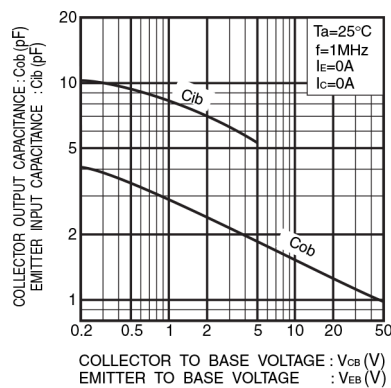


Fig.9 Collector output capacitance vs. collector-base voltage  
Emitter input capacitance vs. emitter-base voltage

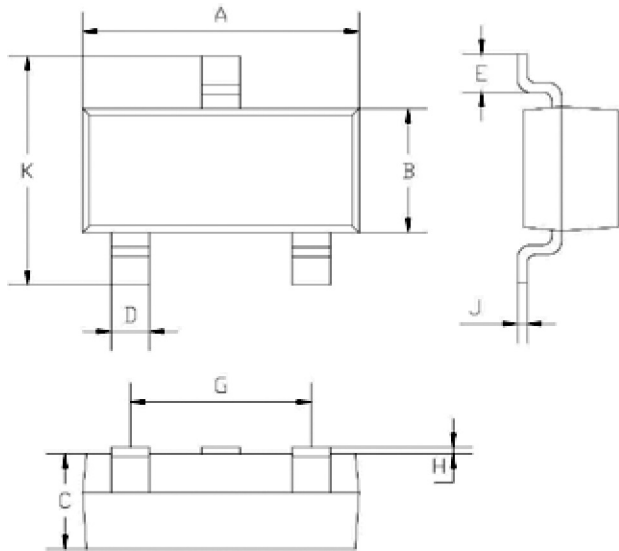


# NPN small signal transistor



## Package Outline

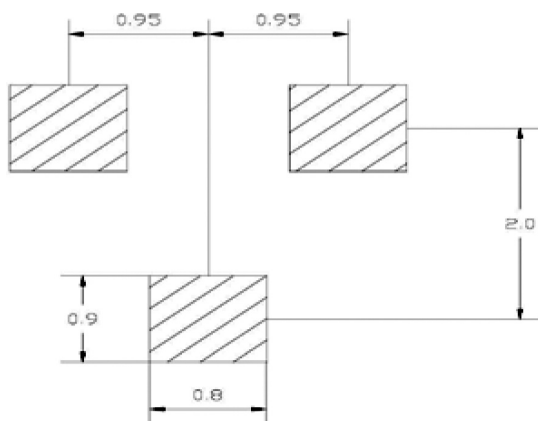
Plastic surface mounted package



Dimensions	Min.	Max.
A	2.85	2.95
B	1.25	1.35
C	1 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.85	1.95
H	0.02	0.1
J	0.1 Typical	
K	2.35	2.45

Dimensions : Millimetres

## Soldering Footprint



Dimensions : Millimetres

## Part Number Table

Description	Part Number
Transistor, NPN, 0.1A, 45V, SOT-23	BCX70J

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