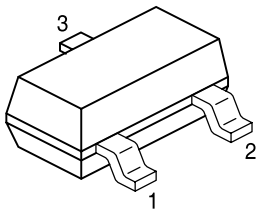
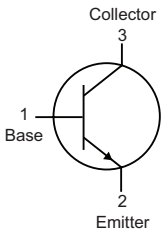
NPN Small Signal Transistor

multicomp PRO

RoHS Compliant





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

Pin Configuration:

1. Base
2. Emitter
3. Collector

Applications:

- General purpose transistor

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	45	V
Collector-emitter voltage	V_{CEO}	45	V
Emitter-base voltage	V_{EBO}	5	V
Collector current	Ic	0.2	A
Collector power dissipation	Pc	0.2	W
		0.35	W*
Junction temperature	Tj	150	°C
Storage temperature	Tstg	−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_{CEO}	45	-	-	V	I_C = 2mA
Emitter-base breakdown voltage	BV_{EBO}	5	-	-	V	I_C = 10μA
Collector-emitter cutoff current	I_{CES}	-	-	0.1	μA	V_{CE} = 45V
Emitter-base cutoff current	I_{EBO}	-	-	0.1	μA	V_{EB} = 4V
Collector-emitter saturation voltage	$V_{CE}(sat)_1$	-	-	0.55	V	I_C/I_B = 10mA/ 0.25mA
	$V_{CE}(sat)_2$	-	-	630	V	I_C/I_B = 50mA/ 1.25mA

Electrical Characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Type	Max.	Unit	Conditions
Base-emitter saturation voltage	$V_{BE(sat)1}$	-	-	-	V	I_C/I_B = 10mA/ 0.25mA
	$V_{BE(sat)2}$	-	-	-	V	I_C/I_B = 50mA/ 1.25mA
Base-emitter voltage	$V_{BE(on)}$	250	-	20	V	V_{CE} = 5V, I_C = 2mA
DC current transfer ratio	h_{FE1}	125	-	0.35	-	V_{CE} = 5V, I_C = 2mA
	h_{FE2}	-	-	1.05		V_{CE} = 5V, I_C = 50mA
Collector-base cutoff current	f_T	90	-	0.85	MHz	V_{CE} = 5V, I_E = 10mA, f =100MHz
Transition frequency	Cob	0.55	-	0.75	µA	V_{CB} = 10V, f = 1MHz, I_E = 0A
Collector output capacitance	NF	-	-	4.5	pF	V_{CE} = 5V, I_C = 200µA, f = 1kHz,Rg =2kΩ
Noise figure	I_{CBO}	-	-	6	dB	V_{CB} = 45V, Ta = 150°C

This parts are classified into the categories below and given h_{FE} item.

Part. No	BCX70J
h_{FE1}	250 to 460
h_{FE2}	90 or more

Electrical characteristics

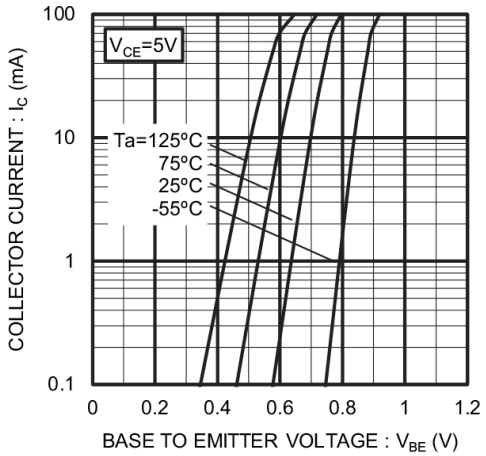


Fig1. Grounded Emitter Propagation Characteristics

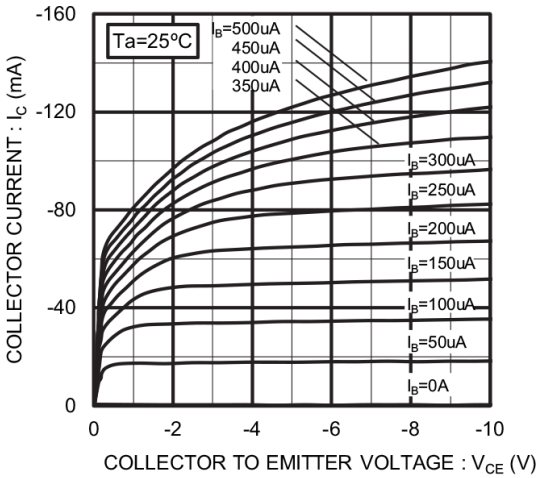


Fig2. Grounded Emitter Output Characteristics

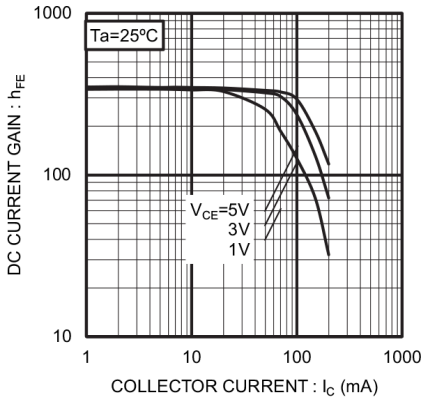


Fig3. DC Current Gain vs. Collector Current (I)

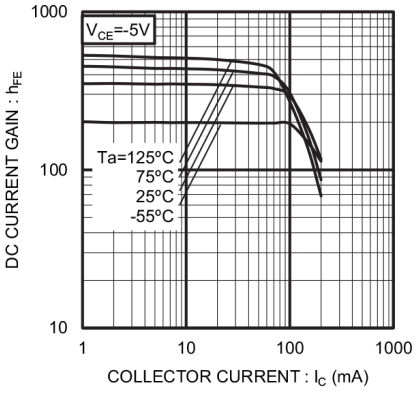


Fig4. DC Current Gain vs. Collector Current (II)

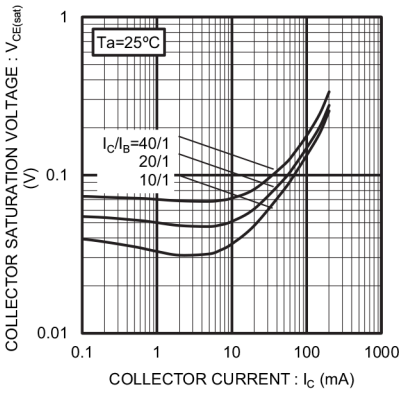


Fig5. Collector Saturation Voltage vs. Collector Current (I)

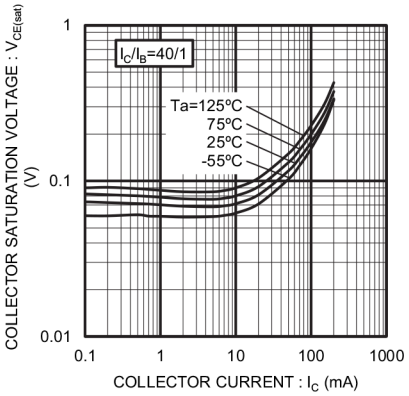


Fig6. Collector Saturation Voltage vs. Collector Current (II)

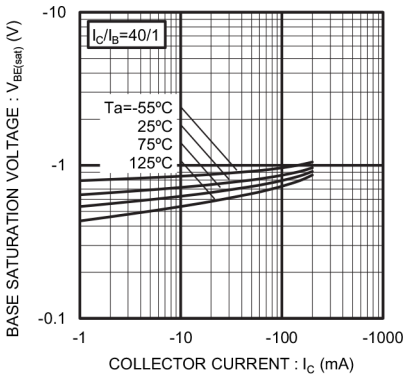


Fig7. Base Saturation Voltage vs. Collector Current

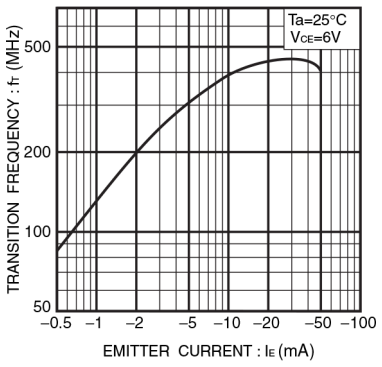


Fig.8 Gain bandwidth product vs. emitter current

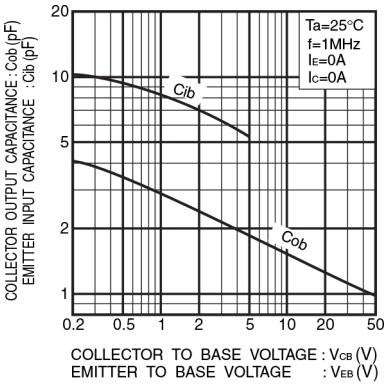
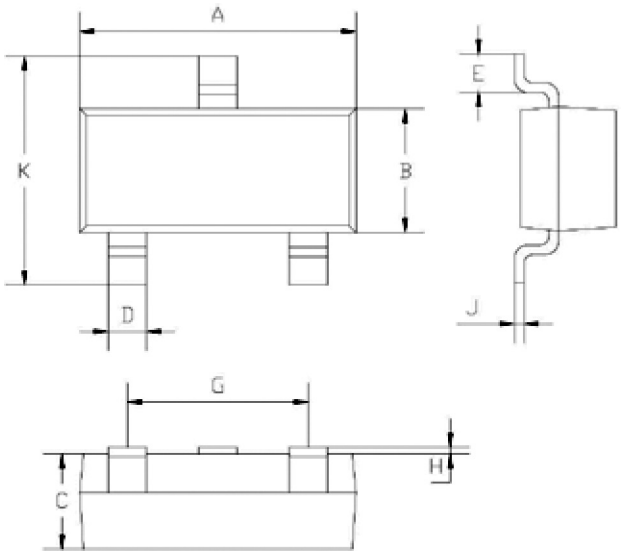


Fig.9 Collector output capacitance vs. collector-base voltage
Emitter input capacitance vs. emitter-base voltage

Package Outline

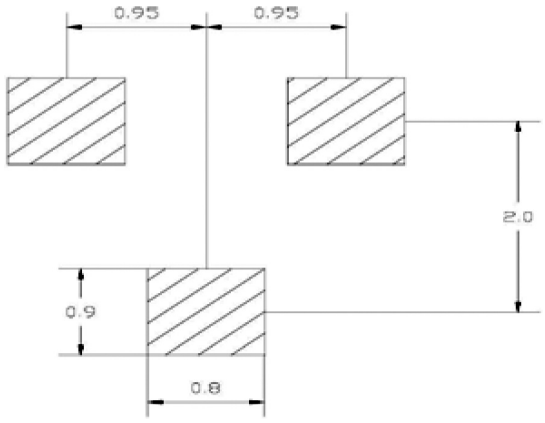
Plastic surface mounted package



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