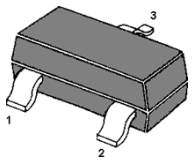
BCX70 Small Signal Transistor (NPN)

Features

- NPN Silicon Epitaxial Planar Transistors for switching and AF amplifier applications.
- Suited for low level, low noise, low frequency applications in hybrid circuits.
- Low current, low voltage.
- As complementary types, BCX71 Series PNP transistors are recommended.



1.Base 2.Emitter 3.Collector
SOT-23 Plastic Package

MARKING

TYPE NUMBER	MARKING CODE(1)
BCX70G	AG
BCX70H	AH
BCX70J	AJ
BCX70K	AK

Maximum Ratings @T_A=25°C unless otherwise specified

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	45	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current	I_C	200	mA
Peak Base Current	I_B	50	mA
Power Dissipation	P_{tot}	250	mW
Thermal Resistance Junction to Ambient Air	$R_{\Theta JA}$	500(1)	°C/W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_S	–65 to +150	°C

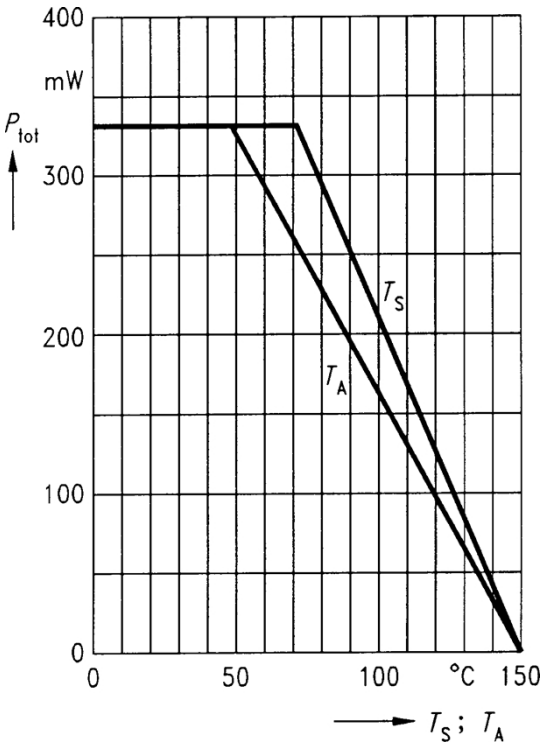
Note: (1) Mounted on FR-4 printed-circuit board.

Electrical Characteristics (TJ = 25°C unless otherwise noted)

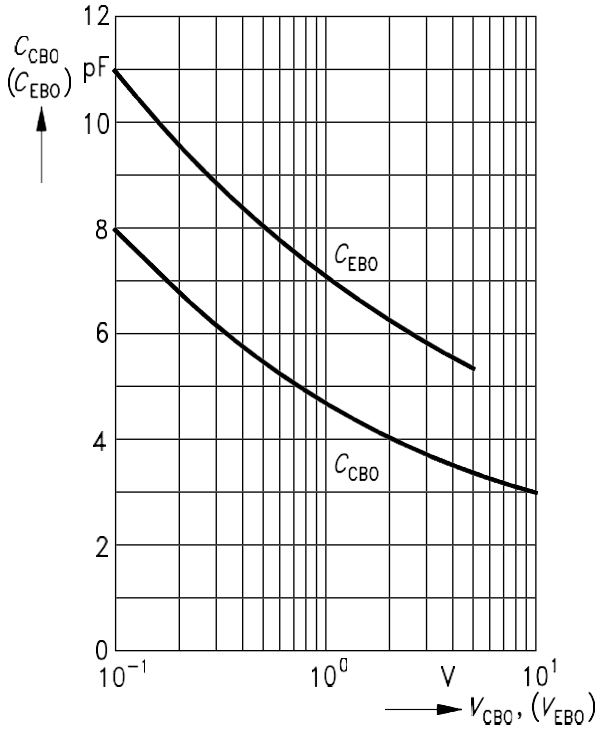
Parameter		Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain	BCX70G	hFE	VCE = 5 V, IC = 10 μA	—	—	—	—
BCX70G	BCX70H			30	—	—	
	BCX70J			40	—	—	
	BCX70K			100	—	—	
	BCX70G		VCE = 5 V, IC = 2 mA	120	—	220	
	BCX70H			180	—	310	
	BCX70J			250	—	460	
	BCX70K			380	—	630	
	BCX70G		VCE = 1 V, IC = 50 mA	50	—	—	
	BCX70H			70	—	—	
	BCX70J			90	—	—	
	BCX70K			100	—	—	
Collector-Emitter Saturation Voltage		VCEsat	IC = 10 mA, IB = 0.25 mA	50	—	350	mV
			IC = 50 mA, IB = 1.25 mA	100	—	550	
Base-Emitter Saturation Voltage		VBEsat	IC = 10 mA, IB = 0.25 mA	600	—	850	mV
			IC = 50 mA, IB = 1.25 mA	700	—	1050	
Base-Emitter Voltage		VBE	VCE = 5 V, IC = 2 mA	550	650	750	mV
			VCE = 5 V, IC = 10 μA	—	520	—	
			VCE = 1 V, IC = 50 mA	—	780	—	
Collector Cut-off Current		ICBO	VCB = 45 V, VBE = 0 V	—	—	20	nA
			VCB = 45 V, VBE = 0 V TA = 150°C	—	—	20	μA
Emitter Cut-off Current		IEBO	VEB = 4 V, IC = 0	—	—	20	nA
Gain-Bandwidth Product		fT	VCE = 5 V, IC = 10 Ma f = 100 MHz	100	250	—	MHz
Collector-Base Capacitance		CCBO	VCB = 10 V, f=1 MHz IE = 0	—	2.5	—	pF
Emitter-Base Capacitance		CEBO	VEB = 0.5 V, f = 1 MHz IC = 0	—	8	—	pF
Noise Figure		F	VCE =5 V, IC = 200 μA RS =2 kΩ, f = 1 kHz B = 200 Hz	—	2	6	dB
Small Signal Current Gain	BCX70G	hfe	VCE = 5 V, IC = 2 mA f = 1.0 kHZ	—	200		
	BCX70H			—	260		
	BCX70J			—	330		
	BCX70K			—	520		
Turn-on Time at RL = 990Ω(see fig. 1)		ton	VCC = 10 V, IC = 10 mA IB(on) = -IB(off) = 1 mA	—	85	150	ns
Turn-off Time at RL = 990Ω(see fig. 1)		toff	VCC = 10 V, IC = 10 mA IB(on) = -IB(off) = 1 mA	—	480	800	ns

Typical Characteristics

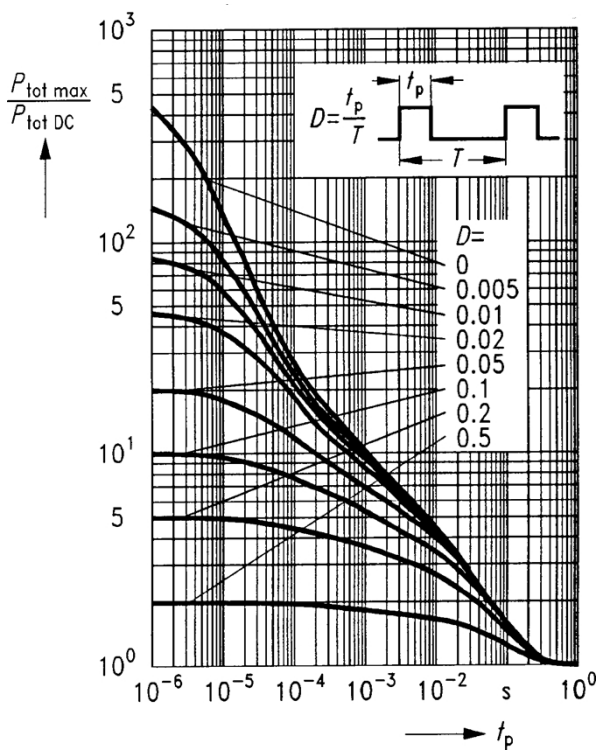
Total power dissipation $P_{tot} = f(T_A{}^*;\ T_S)$
* Package mounted on epoxy



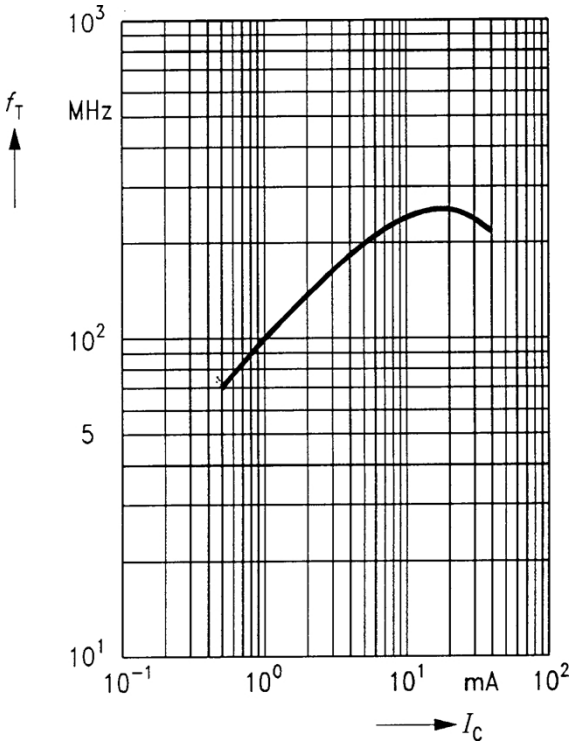
Collector-base capacitance $C_{CB0} = f(V_{CB0})$
Emitter-base capacitance $C_{EB0} = f(V_{EB0})$



Permissible pulse load $P_{tot\,max}/P_{tot\,DC} = f(t_p)$



Transition frequency $f_T = f(I_C)$
V_{CE} = 5 V

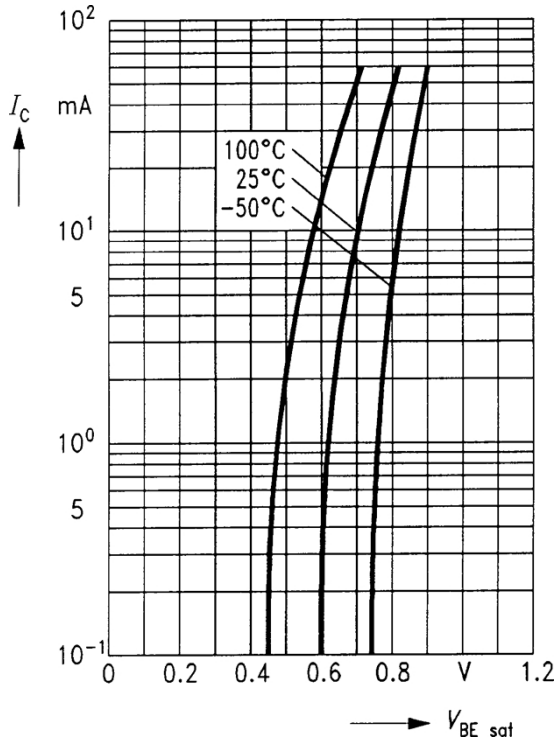


Typical Characteristics

Base-emitter saturation voltage

$I_C = f(V_{BEsat})$

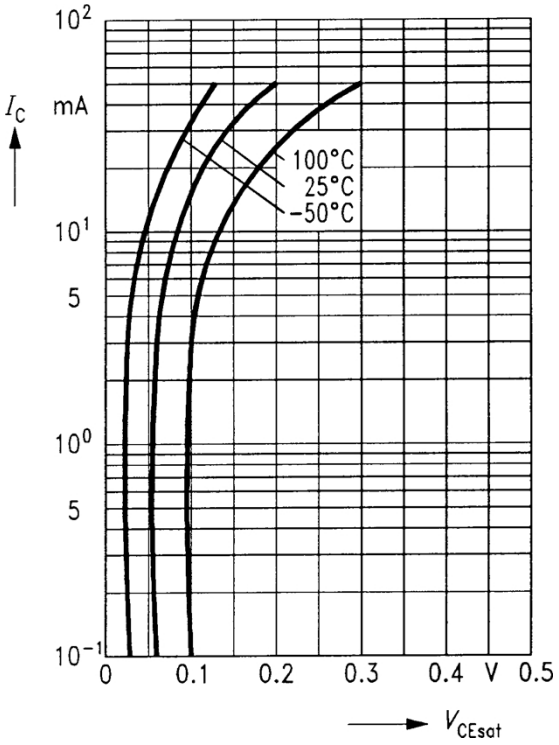
h_{FE} = 40



Collector-emitter saturation voltage

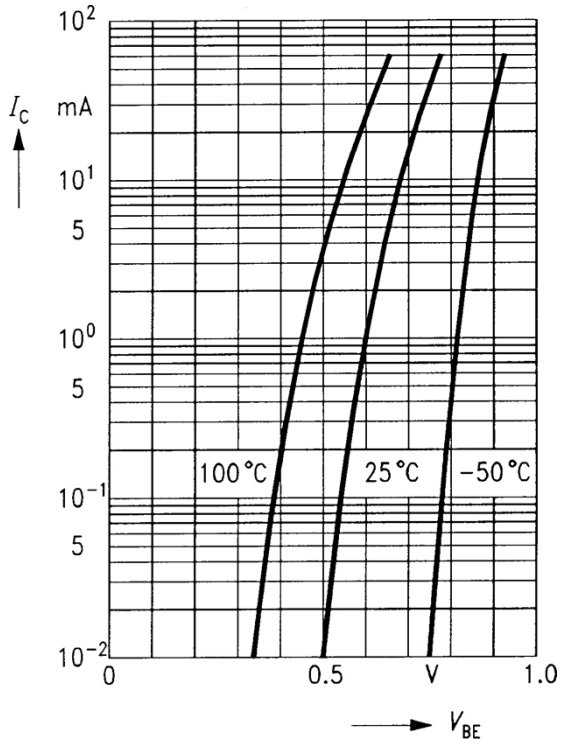
$I_C = f(V_{CEsat})$

h_{FE} = 40



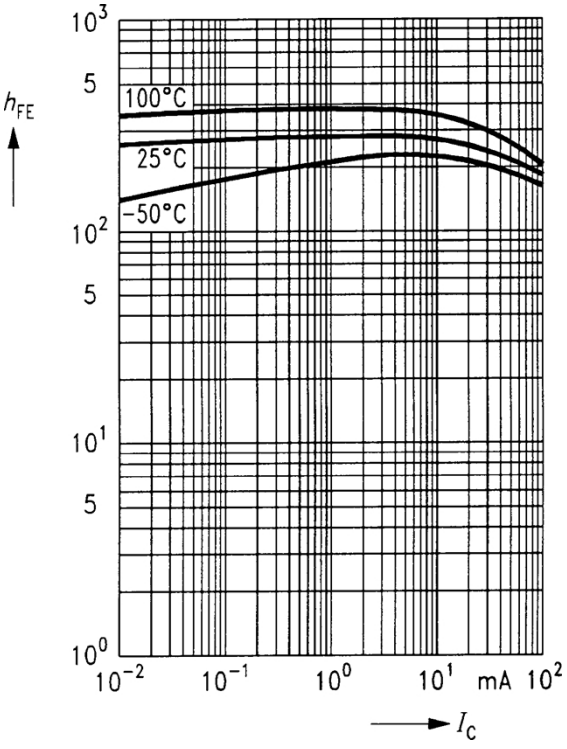
Collector current $I_C = f(V_{BE})$

V_{CE} = 5 V



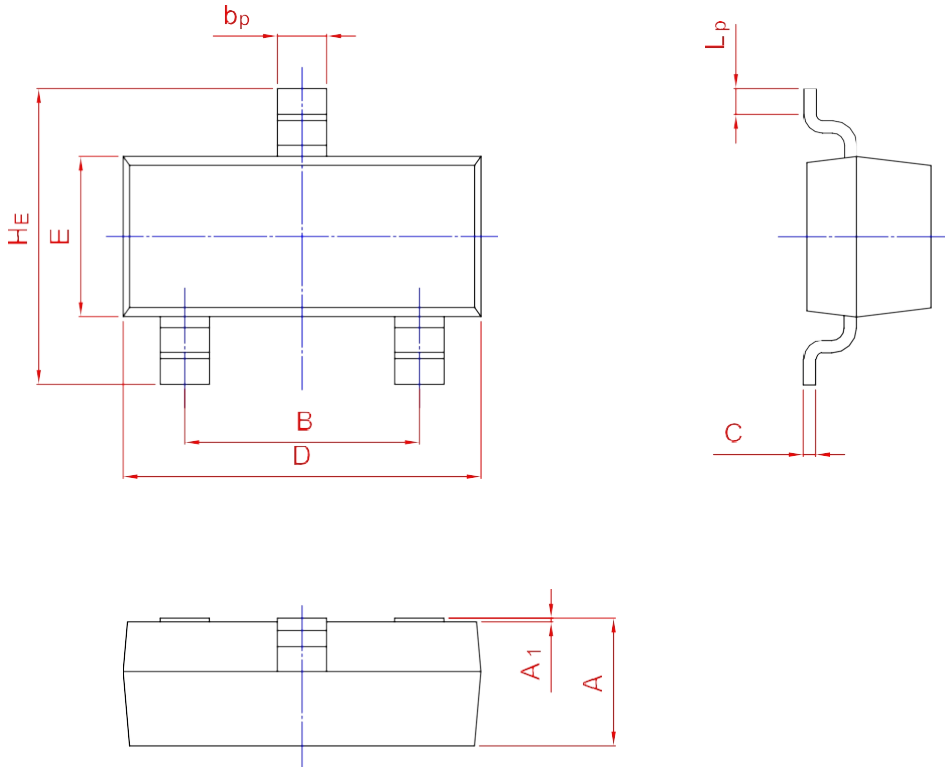
DC current gain $h_{FE} = f(I_C)$

V_{CE} = 5 V



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads **SOT-23**



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20