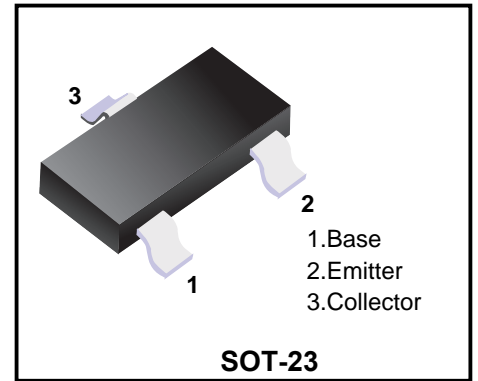


NPN Small Signal Transistor

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.



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 _{CB0}	45	V
Collector-Emitter Voltage	V _{CEO}	45	V
Emitter-Base Voltage	V _{EB0}	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 _{θJA}	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.

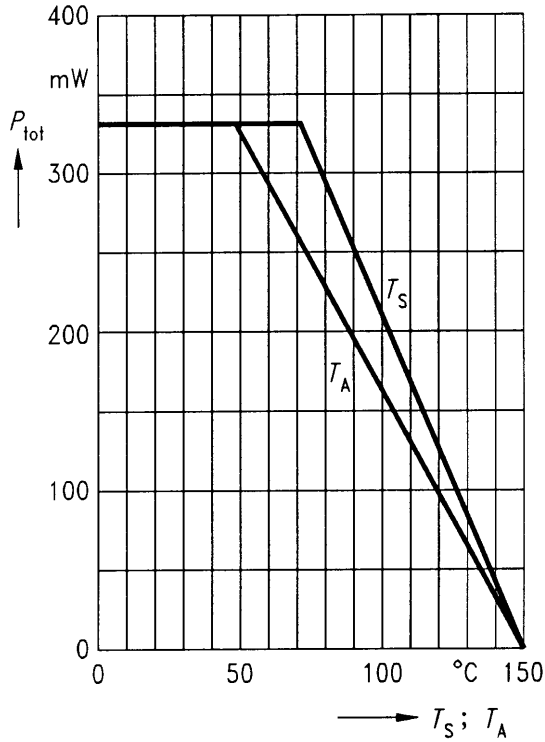
Electrical Characteristics (T_J= 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
DC Current Gain BCX70G	BCX70G BCX70H BCX70J BCX70K BCX70G BCX70H BCX70J BCX70K BCX70G BCX70H BCX70J BCX70K	V _{CE} = 5 V, I _C = 10 μA	—	—	—	—
			30	—	—	
			40	—	—	
			100	—	—	
		V _{CE} = 5 V, I _C = 2 mA	120	—	220	
			180	—	310	
			250	—	460	
			380	—	630	
		V _{CE} = 1 V, I _C = 50 mA	50	—	—	
			70	—	—	
			90	—	—	
			100	—	—	
Collector-Emitter Saturation Voltage	V _{CEsat}	I _C = 10 mA, I _B = 0.25 mA I _C = 50 mA, I _B = 1.25 mA	50 100	— —	350 550	mV
Base-Emitter Saturation Voltage	V _{BEsat}	I _C = 10 mA, I _B = 0.25 mA I _C = 50 mA, I _B = 1.25 mA	600 700	— —	850 1050	mV
Base-Emitter Voltage	V _{BE}	V _{CE} = 5 V, I _C = 2 mA	550	650	750	mV
		V _{CE} = 5 V, I _C = 10 μA	—	520	—	
		V _{CE} = 1 V, I _C = 50 mA	—	780	—	
Collector Cut-off Current	I _{CBO}	V _{CB} = 45 V, V _{BE} = 0 V	—	—	20	nA
		V _{CB} = 45 V, V _{BE} = 0 V T _A = 150°C	—	—	20	μA
Emitter Cut-off Current	I _{EBO}	V _{EB} = 4 V, I _C = 0	—	—	20	nA
Gain-Bandwidth Product	f _T	V _{CE} = 5 V, I _C = 10 Ma f = 100 MHz	100	250	—	MHz
Collector-Base Capacitance	C _{CB0}	V _{CB} = 10 V, f=1 MHz I _E = 0	—	2.5	—	pF
Emitter-Base Capacitance	C _{EB0}	V _{EB} = 0.5 V, f = 1 MHz I _C = 0	—	8	—	pF
Noise Figure	F	V _{CE} = 5 V, I _C = 200 μA R _S = 2 kΩ, f = 1 kHz B = 200 Hz	—	2	6	dB
Small Signal Current Gain	BCX70G BCX70H BCX70J BCX70K	h _{fe}	V _{CE} = 5 V, I _C = 2 mA f = 1.0 KHZ	—	200	
				—	260	
				—	330	
				—	520	
Turn-on Time at R _L = 990Ω(see fig. 1)	t _{on}	V _{CC} = 10 V, I _C = 10 mA I _{B(on)} = -I _{B(off)} = 1 mA	—	85	150	ns
Turn-off Time at R _L = 990Ω(see fig. 1)	t _{off}	V _{CC} = 10 V, I _C = 10 mA I _{B(on)} = -I _{B(off)} = 1 mA	—	480	800	ns

Typical Characteristics

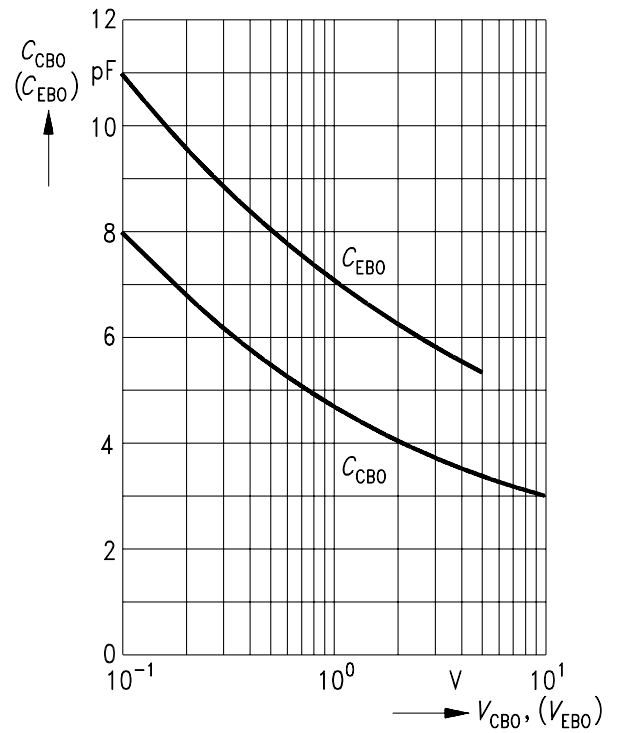
Total power dissipation $P_{tot} = f(T_A^*; T_S)$

* Package mounted on epoxy

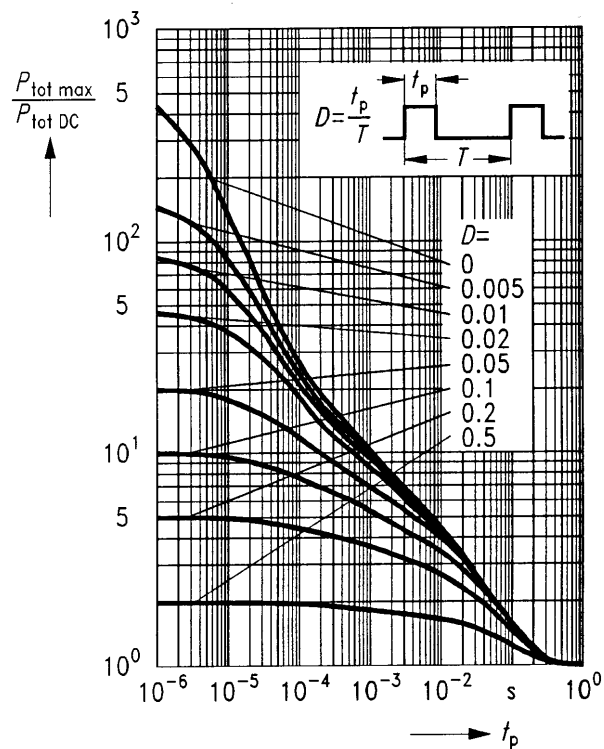


Collector-base capacitance $C_{CB0} = f(V_{CB0})$

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

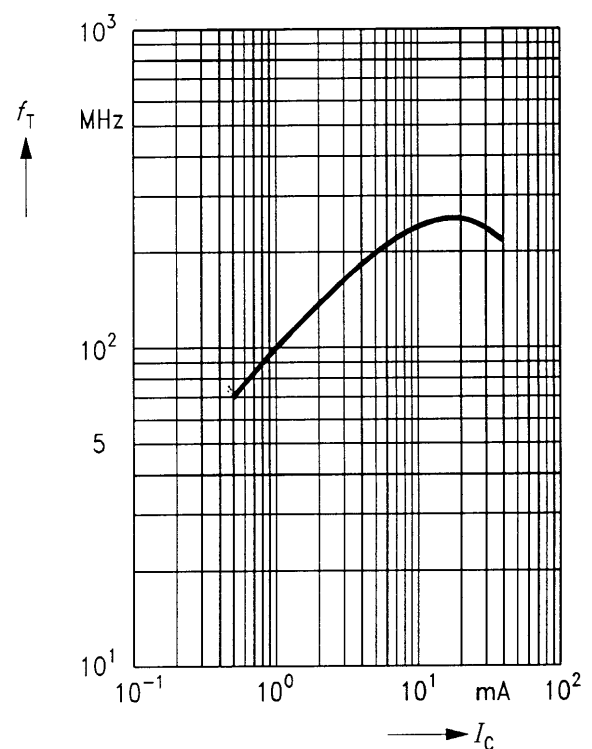


Permissible pulse load $P_{tot\ max}/P_{tot\ DC} = f(t_p)$



Transition frequency $f_T = f(I_C)$

$V_{CE} = 5\ V$

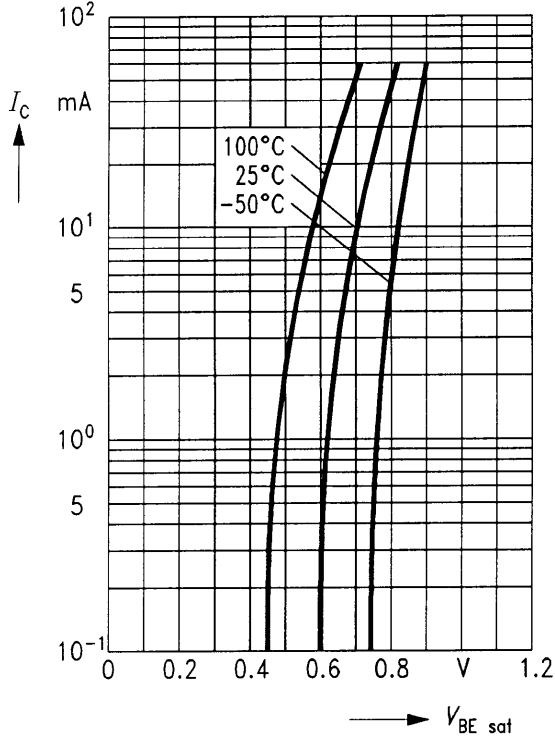


Typical Characteristics

Base-emitter saturation voltage

$I_C = f(V_{BEsat})$

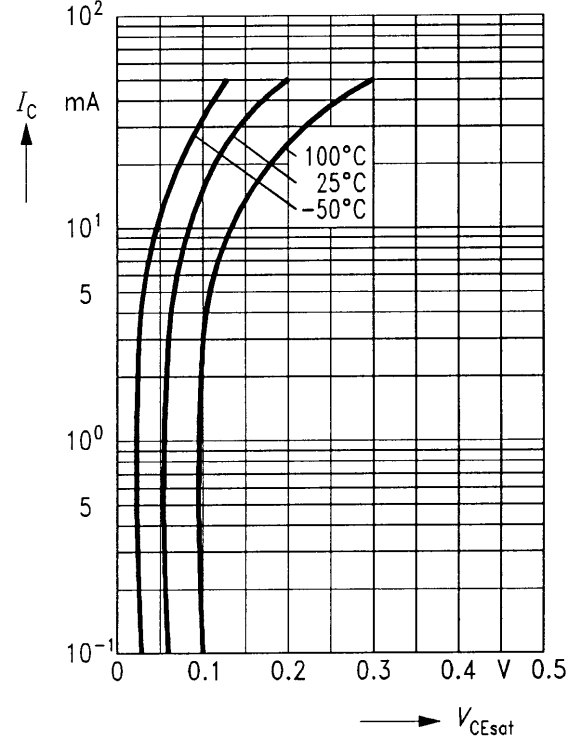
$h_{FE} = 40$



Collector-emitter saturation voltage

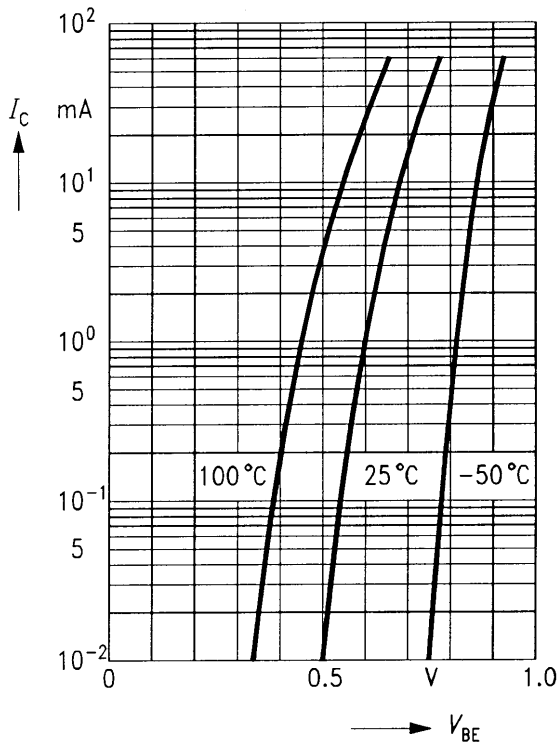
$I_C = f(V_{CEsat})$

$h_{FE} = 40$



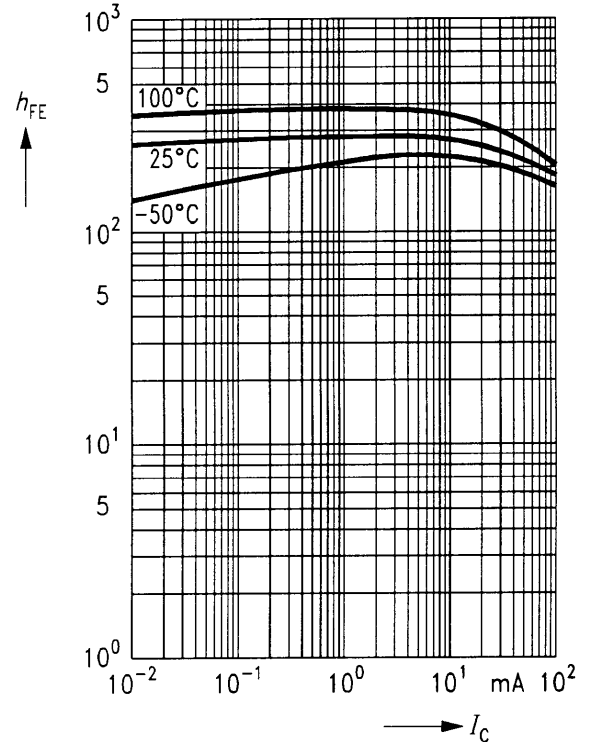
Collector current $I_C = f(V_{BE})$

$V_{CE} = 5\text{ V}$



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

$V_{CE} = 5\text{ V}$



Ordering information

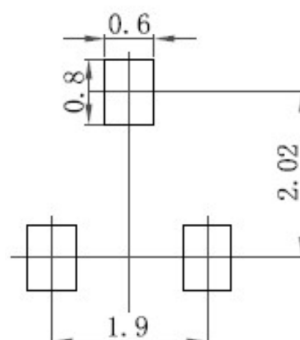
Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7"reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

Package Dimensions

SOT-23

Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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