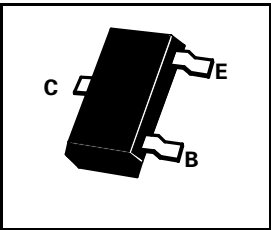


SOT23 NPN SILICON PLANAR
SMALL SIGNAL TRANSISTOR

BCX70

ISSUE 2 – FEBRUARY 95

PARTMARKING DETAIL –	BCX70G	– AG
	BCX70H	– AH
	BCX70J	– AJ
	BCX70K	– AK
	BCX70GR	– AW
	BCX70HR	– 9P
	BCX70JR	– AX
	BCX70KR	– P9



COMPLEMENTARY TYPE – BCX71

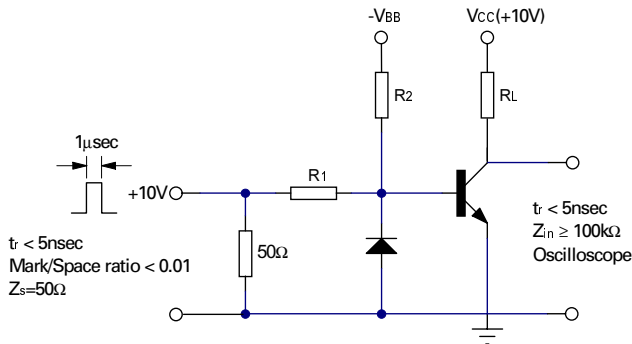
ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Emitter Voltage	V_{CES}	45	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	200	mA
Base Current	I_B	50	mA
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{TOT}	330	mW
Operating and Storage Temperature Range	tj:tstg	-55 to +150	$^{\circ}C$

FOUR TERMINAL NETWORK DATA ($I_C=2mA$, $V_{CE}=5V$, $f=1kHz$)

	h_{FE} Group G			h_{FE} Group H			h_{FE} Group J			h_{FE} Group K			
	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
h_{11e}	1.6	2.7	4.5	2.5	3.6	6.0	3.2	4.5	8.5	4.5	7.5	12	$k\Omega$
h_{12e}		1.5			2			2			3		10^{-4}
h_{21e}		200			260			330			520		
h_{22e}		18	30		24	50		30	60		50	100	μS

SWITCHING CIRCUIT



BCX70

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER		SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	45			V	$I_C = 2\text{mA}$
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	5			V	$I_{EBO} = 1\mu\text{A}$
Collector-Emitter Cut-off Current		I_{CES}			20 20	nA μA	$V_{CES} = 45\text{V}$ $V_{CES} = 45\text{V}$, $T_{amb} = 150^{\circ}\text{C}$
Emitter-Base Cut-Off Current		I_{EBO}			20	nA	$V_{EBO} = 4\text{V}$
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$		0.12 0.20	0.35 0.55	V V	$I_C = 10\text{mA}$, $I_B = 0.25\text{mA}$ $I_C = 50\text{mA}$, $I_B = 1.25\text{mA}$
Base-Emitter Saturation Voltage		$V_{BE(SAT)}$	0.60 0.70	0.70 0.83	0.85 1.05	V V	$I_C = 10\text{mA}$, $I_B = 0.25\text{mA}$ $I_C = 50\text{mA}$, $I_B = 1.25\text{mA}$
Base - Emitter Voltage		V_{BE}	0.55	0.52 0.65 0.78	0.75	V V V	$I_C = 10\mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 50\text{mA}$, $V_{CE} = 1\text{V}$
Static Forward Current Transfer Ratio	BCX70G	h_{FE}	120 50	78 170	220		$I_C = 10\mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 50\text{mA}$, $V_{CE} = 1\text{V}$
	BCX70H	h_{FE}	20 180 70	145 250	310		$I_C = 10\mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 50\text{mA}$, $V_{CE} = 1\text{V}$
	BCX70J	h_{FE}	40 250 90	220 350	460		$I_C = 10\mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 50\text{mA}$, $V_{CE} = 1\text{V}$
	BCX70K	h_{FE}	100 380 100	300 500	630		$I_C = 10\mu\text{A}$, $V_{CE} = 5\text{V}$ $I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $I_C = 50\text{mA}$, $V_{CE} = 1\text{V}$
Transition Frequency		f_T	125	250		MHz	$I_C = 10\text{mA}$, $V_{CE} = 5\text{V}$ $f = 100\text{MHz}$
Emitter-Base Capacitance		C_{ebo}		8		pF	$V_{EBO} = 0.5\text{V}$, $f = 1\text{MHz}$
Collector-Base Capacitance		C_{cbo}			4.5	pF	$V_{CBO} = 10\text{V}$, $f = 1\text{MHz}$
Noise Figure		N		2	6	dB	$I_C = 0.2\text{mA}$, $V_{CE} = 5\text{V}$ $R_G = 2\text{K}\Omega$, $f = 1\text{KHz}$ $\Delta f = 200\text{Hz}$
Switching times:							
Delay Time		t_d		35		ns	$I_C: I_{B1}:- I_{B2} = 10:1:1\text{mA}$ $R_1 = 5\text{K}\Omega$, $R_2 = 5\text{K}\Omega$ $V_{BB} = 3.6\text{V}$, $R_L = 990\Omega$
Rise Time		t_r		50		ns	
Turn-on Time		t_{on}		85	150	ns	
Storage Time		t_s		400		ns	
Fall Time		t_f		80		ns	
Turn-Off Time		t_{off}		480	800	ns	

*Measured under pulsed conditions. Pulse width=300 μs . Duty cycle
Spice parameter data is available upon request for this device