

BCX70G,H,J,K

CASE 318-02/03, STYLE 6
SOT-23 (TO-236AA/AB)

GENERAL PURPOSE TRANSISTOR

NPN SILICON

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CE0}	45	Vdc
Collector-Base Voltage	V_{CBO}	45	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current — Continuous	I_C	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
*Total Device Dissipation, $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	350 2.8	mW mW/ $^\circ\text{C}$
Storage Temperature	T_{stg}	150	$^\circ\text{C}$
*Thermal Resistance Junction to Ambient	$R_{\theta JA}$	357	$^\circ\text{C/W}$

*Package mounted on 99.5% alumina $10 \times 8 \times 0.6$ mm.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage ($I_C = 2.0$ mAdc, $I_E = 0$)	$V_{(BR)CEO}$	45	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 1.0$ μ Adc, $I_C = 0$)	$V_{(BR)EBO}$	5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 32$ Vdc) ($V_{CE} = 32$ Vdc, $T_A = 150^\circ\text{C}$)	I_{CES}	— —	20 20	nAdc μ Adc
Emitter Cutoff Current ($V_{EB} = 4.0$ Vdc, $I_C = 0$)	I_{EBO}	—	20	nAdc

ON CHARACTERISTICS

DC Current Gain ($I_C = 10$ μ Adc, $V_{CE} = 5.0$ Vdc)	BCX70G BCX70H BCX70J BCX70K	h_{FE}	— 20 40 100	— — — —	—
($I_C = 2.0$ mAdc, $V_{CE} = 5.0$ Vdc)	BCX70G BCX70H BCX70J BCX70K		120 180 250 380	220 310 460 630	
($I_C = 50$ mAdc, $V_{CE} = 1.0$ Vdc)	BCX70G BCX70H BCX70J BCX70K		60 70 90 100	— — — —	
Collector-Emitter Saturation Voltage ($I_C = 50$ mAdc, $I_B = 1.25$ mAdc) ($I_C = 10$ mAdc, $I_B = 0.25$ mAdc)		$V_{CE(sat)}$	— —	0.55 0.35	Vdc
Base-Emitter Saturation Voltage ($I_C = 50$ mAdc, $I_B = 1.25$ mAdc) ($I_C = 50$ mAdc, $I_B = 0.25$ mAdc)		$V_{BE(sat)}$	0.7 0.6	1.05 0.85	Vdc
Base-Emitter On Voltage ($I_C = 2.0$ mAdc, $V_{CE} = 5.0$ Vdc)		$V_{BE(on)}$	0.55	0.75	Vdc

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ELECTRICAL CHARACTERISTICS (continued) (T_A = 25°C unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
SMALL-SIGNAL CHARACTERISTICS				
Current-Gain — Bandwidth Product (I _C = 10 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 100 MHz)	f _T	125	—	MHz
Output Capacitance (V _{CE} = 10 V _{dc} , I _C = 0, f = 1.0 MHz)	C _{obo}	—	4.5	pF
Small-Signal Current Gain (I _C = 2.0 mA _{dc} , V _{CE} = 5.0 V _{dc} , f = 1.0 kHz)	h _{fe}	125	250	—
BCX70G		175	350	
BCX70H		250	500	
BCX70J		350	700	
BCX70K				
Noise Figure (I _C = 0.2 mA _{dc} , V _{CE} = 5.0 V _{dc} , R _S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz)	NF	—	6.0	dB
SWITCHING CHARACTERISTICS				
Turn-On Time (I _C = 10 mA _{dc} , I _{B1} = 1.0 mA _{dc})	t _{on}	—	150	ns
Turn-Off Time (I _{B2} = 1.0 mA _{dc} , V _{BB} = 3.6 V _{dc} , R1 = R2 = 5.0 kΩ, R _L = 990 Ω)	t _{off}	—	800	ns