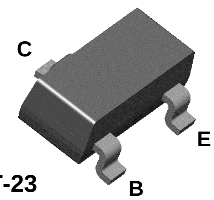
FAIRCHILD
SEMICONDUCTOR ™

BCX71K



SOT-23
Mark: BK

PNP General Purpose Amplifier

This device is designed for applications requiring extremely high current gain at collector currents to 300 mA. Sourced from Process 68.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	45	V
V_{CES}	Collector-Base Voltage	45	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	500	mA
T_J, T_{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

NOTES:
1) These ratings are based on a maximum junction temperature of 150 degrees C.
2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
3) All voltages (V) and currents (A) are negative polarity for PNP transistors.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		*BCX71K	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	mW mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	°C/W

*Device mounted on FR-4 PCB 40 mm X 40 mm X 1.5 mm.

PNP General Purpose Amplifier
(continued)

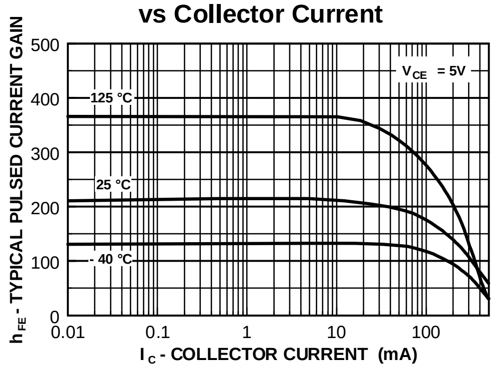
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	I_C = 1.0 mA, I_B = 0	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 μA, I_C = 0	5.0		V
I_{CES}	Collector-Cutoff Current	V_{CB} = 45 V, I_E = 0 V_{CB} = 45 V, I_E = 0, T_A = 100°C		20 20	nA μA
ON CHARACTERISTICS					
h_{FE}	DC Current Gain	I_C = 10 μA, V_{CE} = 5.0 V I_C = 2.0 mA, V_{CE} = 5.0 V I_C = 50 mA, V_{CE} = 1.0 V	100 380 110	 630 	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 10 mA, I_B = 0.25 mA I_C = 50 mA, I_B = 1.25 mA	0.06 0.12	0.25 0.55	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 10 mA, I_B = 0.25 mA I_C = 50 mA, I_B = 1.25 mA	0.6 0.68	0.85 1.05	V V
$V_{BE(on)}$	Base-Emitter On Voltage	I_C = 2.0 mA, V_{CE} = 5.0 V	0.6	0.75	V
SMALL SIGNAL CHARACTERISTICS					
C_{obo}	Output Capacitance	V_{CE} = 10 V, I_C = 0, f = 1.0 MHz		6.0	pF
NF	Noise Figure	I_C = 0.2 mA, V_{CE} = 5.0 V, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz		6.0	dB
SWITCHING CHARACTERISTICS					
$t_{(on)}$	Turn-On Time	I_C = 10 mA, I_{B1} = 1.0 mA		150	ns
$t_{(off)}$	Turn-Off Time	I_{B2} = 1.0 mA, V_{BB} = 3.6 V, R1 = R2 = 5.0 kΩ, R_L = 990 Ω		800	ns

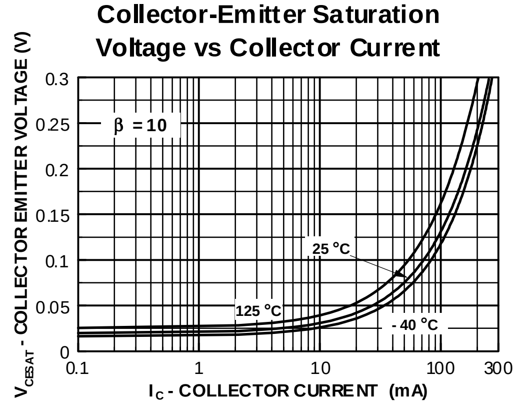
NOTE: All voltages (V) and currents (A) are negative polarity for PNP transistors.

Typical Characteristics

Typical Pulsed Current Gain vs Collector Current

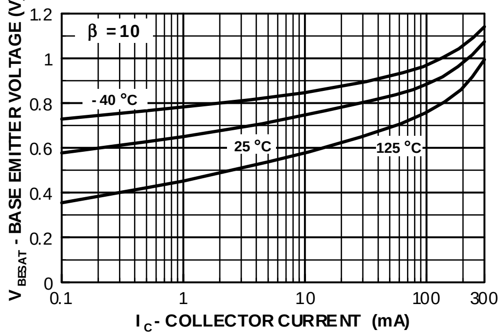


Collector-Emitter Saturation Voltage vs Collector Current

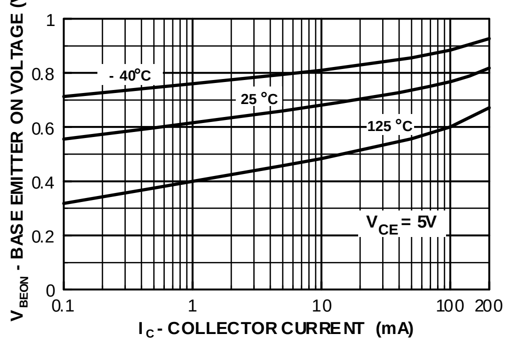


Typical Characteristics (continued)

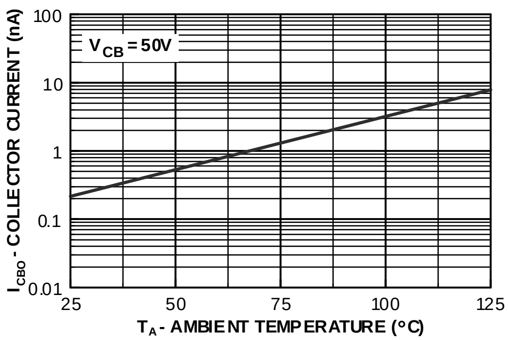
Base-Emitter Saturation Voltage vs Collector Current



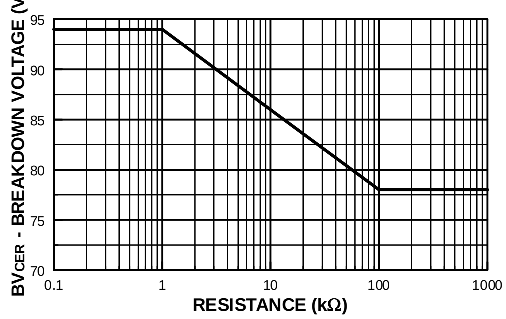
Base Emitter ON Voltage vs Collector Current



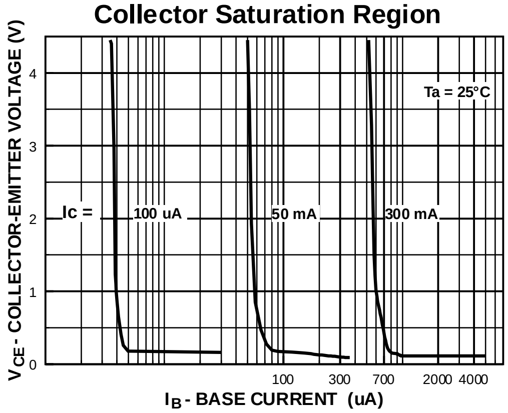
Collector-Cutoff Current vs Ambient Temperature



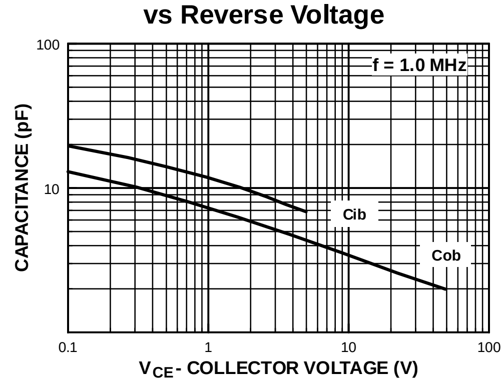
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Collector Saturation Region

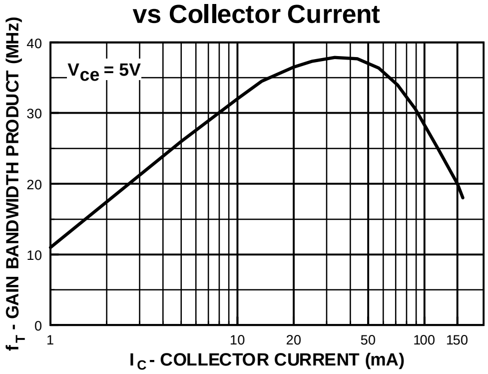


Input and Output Capacitance vs Reverse Voltage

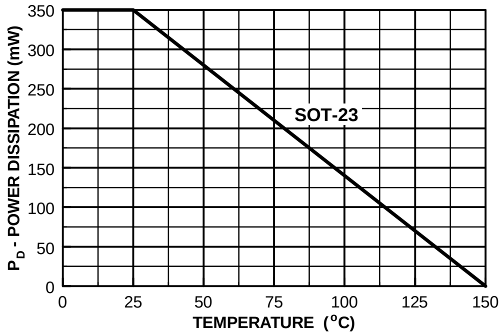


Typical Characteristics (continued)

Gain Bandwidth Product vs Collector Current



Power Dissipation vs Ambient Temperature



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