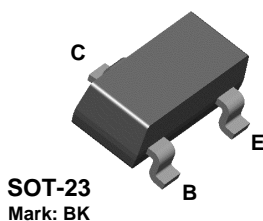


BCX71K



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	mW
		2.8	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)

BCX71K

Electrical Characteristics

TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 1.0 \text{ mA}, I_B = 0$	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \text{ } \mu\text{A}, I_C = 0$	5.0		V
I_{CES}	Collector-Cutoff Current	$V_{CB} = 45 \text{ V}, I_E = 0$ $V_{CB} = 45 \text{ V}, I_E = 0, T_A = 100^\circ\text{C}$		20 20	nA μA

ON CHARACTERISTICS

h_{FE}	DC Current Gain	$I_C = 10 \text{ } \mu\text{A}, V_{CE} = 5.0 \text{ V}$ $I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V}$ $I_C = 50 \text{ mA}, V_{CE} = 1.0 \text{ V}$	100 380 110	630	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 0.25 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 1.25 \text{ mA}$	0.06 0.12	0.25 0.55	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 0.25 \text{ mA}$ $I_C = 50 \text{ mA}, I_B = 1.25 \text{ mA}$	0.6 0.68	0.85 1.05	V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V}$	0.6	0.75	V

SMALL SIGNAL CHARACTERISTICS

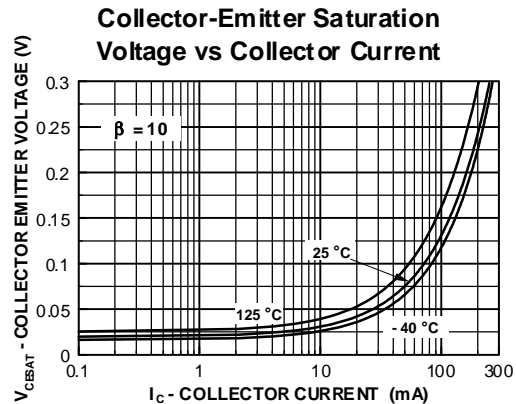
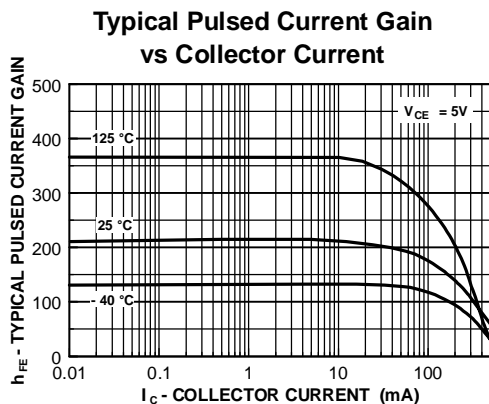
C_{obo}	Output Capacitance	$V_{CE} = 10 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$		6.0	pF
NF	Noise Figure	$I_C = 0.2 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $R_S = 2.0 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $BW = 200 \text{ Hz}$		6.0	dB

SWITCHING CHARACTERISTICS

$t_{(on)}$	Turn-On Time	$I_C = 10 \text{ mA}, I_{B1} = 1.0 \text{ mA}$		150	ns
$t_{(off)}$	Turn-Off Time	$I_{B2} = 1.0 \text{ mA}, V_{BB} = 3.6 \text{ V},$ $R1 = R2 = 5.0 \text{ k}\Omega, R_L = 990 \text{ } \Omega$		800	ns

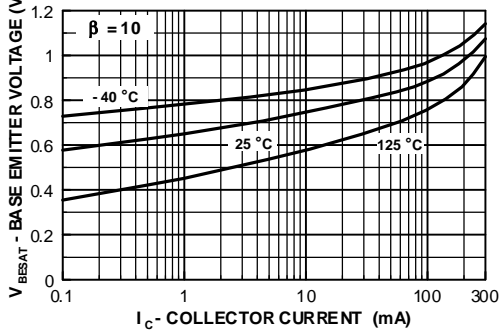
NOTE: All voltages (V) and currents (A) are negative polarity for PNP transistors.

Typical Characteristics

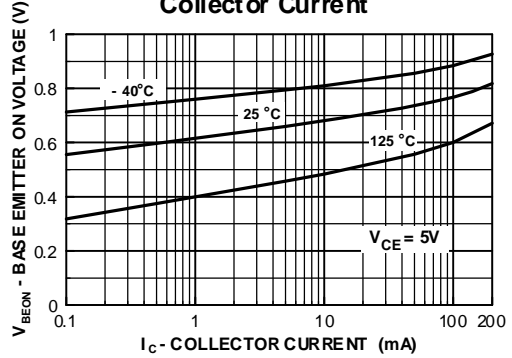


Typical Characteristics (continued)

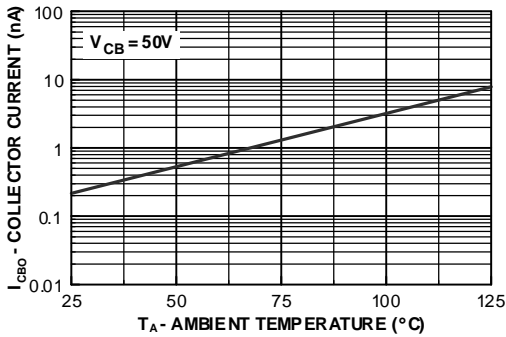
Base-Emitter Saturation Voltage vs Collector Current



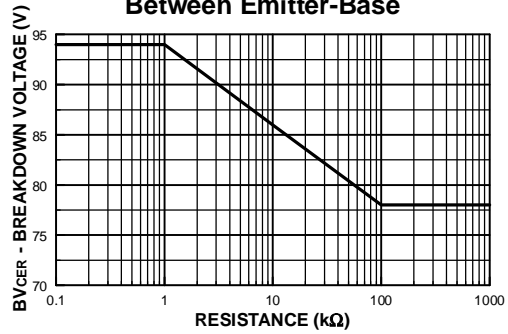
Base Emitter ON Voltage vs Collector Current



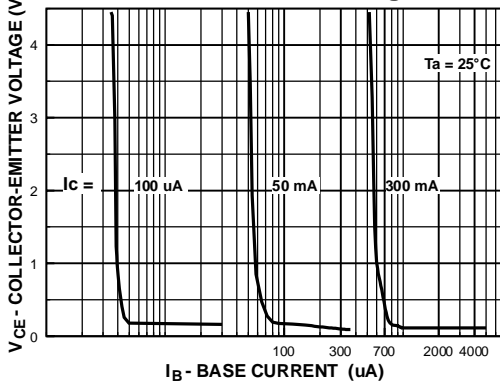
Collector-Cutoff Current vs Ambient Temperature



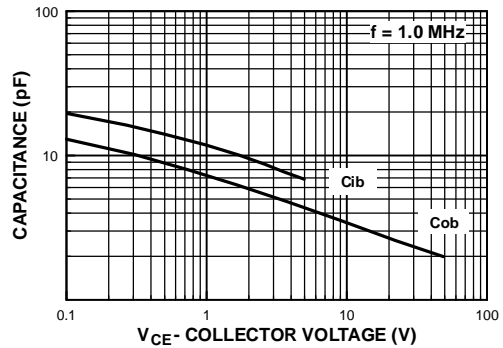
Collector-Emitter Breakdown Voltage with Resistance Between Emitter-Base



Collector Saturation Region

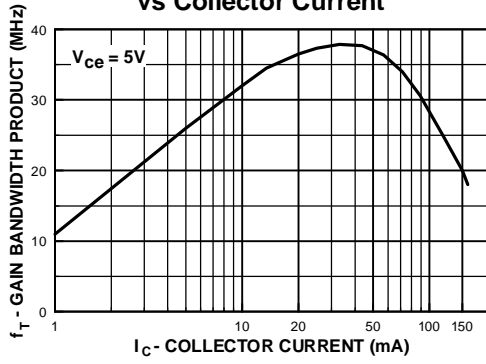


Input and Output Capacitance vs Reverse Voltage

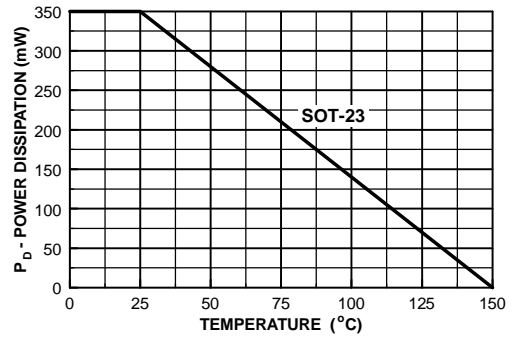


Typical Characteristics (continued)

Gain Bandwidth Product
vs Collector Current



Power Dissipation vs
Ambient Temperature



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EnSigna™	OPTOLOGIC™	SMART START™	
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