



**Discrete POWER & Signal
Technologies**

BCX79



PNP General Purpose Amplifier

This device is designed for use as general purpose amplifiers and switches requiring collector currents to 300 mA. Sourced from Process 68. See PN200A for characteristics.

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.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	Max	Units
		BCX79	
P _D	Total Device Dissipation Derate above 25°C	625 5.0	mW mW/°C
R _{θJC}	Thermal Resistance, Junction to Case	83.3	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	200	°C/W

PNP General Purpose Amplifier

(continued)

Electrical Characteristics

TA = 25 °C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
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OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{ mA}, I_B = 0$	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1.0 \text{ } \mu\text{A}, I_C = 0$	5.0		V
I_{CEX}	Collector Cutoff Current	$V_{CE} = 45 \text{ V}, V_{BE} = 0.2 \text{ V}, T_A = +100 \text{ } ^\circ\text{C}$		20	μA
I_{CES}	Collector Cutoff Current	$V_{CE} = 45 \text{ V}, I_E = 0,$ $V_{CE} = 45 \text{ V}, I_E = 0, T_A = +125 \text{ } ^\circ\text{C}$		10 2.5	nA μA
I_{EBO}	Emitter Cutoff Current	$V_{EB} = 4.0 \text{ V}, I_C = 0$		20	nA

ON CHARACTERISTICS

h_{FE}	DC Current Gain	$V_{CE} = 5.0 \text{ V}, I_C = 2.0 \text{ mA}$ $V_{CE} = 1.0 \text{ V}, I_C = 10 \text{ mA}$ $V_{CE} = 1.0 \text{ V}, I_C = 100 \text{ mA}$	120 80 40	630 1,000	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 100 \text{ mA}, I_B = 2.5 \text{ mA}$		0.6	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 100 \text{ mA}, I_B = 2.5 \text{ mA}$		1.0	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 5.0 \text{ V}, I_C = 2.0 \text{ mA}$ $V_{CE} = 1.0 \text{ V}, I_C = 100 \text{ mA}$	0.6	0.7 0.9	V V

SMALL SIGNAL CHARACTERISTICS

C_{cb}	Collector-Base Capacitance	$V_{CB} = 10 \text{ V}, f = 1.0 \text{ MHz}$		4.5	pF
C_{eb}	Emitter-Base Capacitance	$V_{EB} = 0.5 \text{ V}, f = 1.0 \text{ MHz}$		15	pF
h_{ie}	Input Impedance	$I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 1.0 \text{ kHz}$	1.6	8.5	k Ω
h_{oe}	Output Admittance	$I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 1.0 \text{ kHz}$		100	μmhos
NF	Noise Figure	$V_{CE} = 5.0 \text{ V}, I_C = 0.2 \text{ mA},$ $R_S = 2.0 \text{ k}\Omega, f = 1.0 \text{ kHz}$		6.0	dB

SWITCHING CHARACTERISTICS

t_{on}	Turn-on Time	$V_{CC} = 10 \text{ V}, I_C = 10 \text{ mA},$ $V_{BB} = 3.6 \text{ V}, I_{B1} = I_{B2} = 1.0 \text{ mA}$		150	ns
t_{on}	Turn-on Time	$V_{CC} = 10 \text{ V}, I_C = 100 \text{ mA},$ $V_{BB} = 5.0 \text{ V}, I_{B1} = I_{B2} = 10 \text{ mA}$		150	ns
t_{off}	Turn-off Time	$V_{CC} = 10 \text{ V}, I_C = 10 \text{ mA},$ $V_{BB} = 3.6 \text{ V}, I_{B1} = I_{B2} = 1.0 \text{ mA}$		800	ns
t_{off}	Turn-off Time	$V_{CC} = 10 \text{ V}, I_C = 100 \text{ mA},$ $V_{BB} = 5.0 \text{ V}, I_{B1} = I_{B2} = 10 \text{ mA}$		800	ns