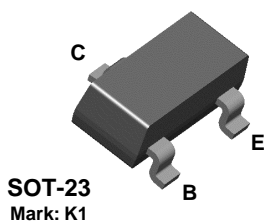


## BCW71



### NPN General Purpose Amplifier

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 10.

#### 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	50	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
		*BCW71	
$P_D$	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.

# NPN General Purpose Amplifier

(continued)

BCW71

## Electrical Characteristics TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 1.0 \text{ mA}, I_B = 0$	45			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \text{ } \mu\text{A}, I_E = 0$	50			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \text{ } \mu\text{A}, I_C = 0$	5.0			V
$I_{CBO}$	Collector-Cutoff Current	$V_{CB} = 20 \text{ V}, I_E = 0$ $V_{CB} = 20 \text{ V}, I_E = 0, T_A = 100^\circ\text{C}$			100 10	$\mu\text{A}$

## ON CHARACTERISTICS

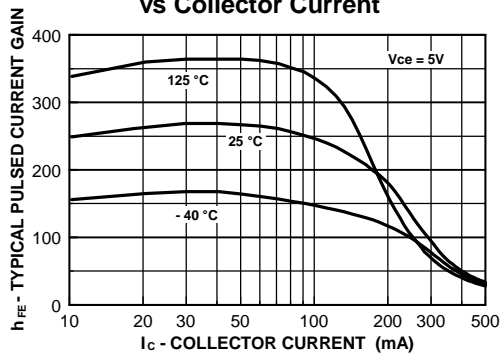
$h_{FE}$	DC Current Gain	$I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V}$	110		220	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$			0.25	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 50 \text{ mA}, I_B = 2.5 \text{ mA}$		0.85		V
$V_{BE(on)}$	Base-Emitter On Voltage	$I_C = 2.0 \text{ mA}, V_{CE} = 5.0 \text{ V}$	0.6		0.75	V

## SMALL SIGNAL CHARACTERISTICS

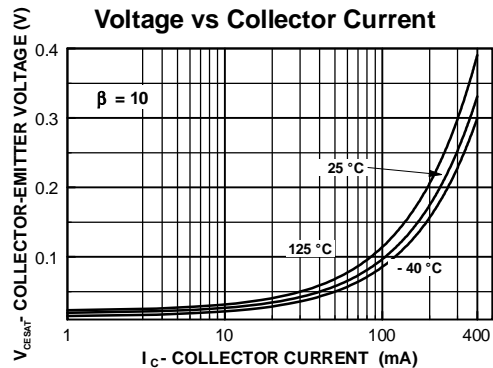
$f_T$	Current Gain - Bandwidth Product	$I_C = 10 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 35 \text{ MHz}$		330		MHz
$C_{obo}$	Output Capacitance	$V_{CE} = 10 \text{ V}, I_E = 0, f = 1.0 \text{ MHz}$			4.0	pF
$C_{ibo}$	Input Capacitance	$V_{EB} = 0.5 \text{ V}, I_C = 0, f = 1.0 \text{ MHz}$		9.0		pF
NF	Noise Figure	$I_C = 0.2 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $R_S = 2.0 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $BW = 200 \text{ Hz}$			10	dB

## Typical Characteristics

**Typical Pulsed Current Gain vs Collector Current**

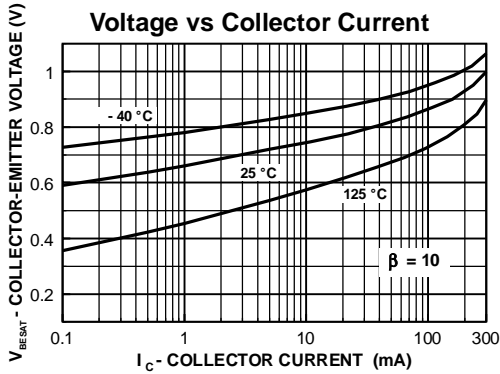


**Collector-Emitter Saturation Voltage vs Collector Current**

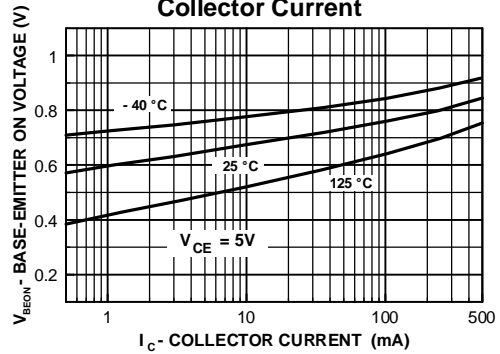


Typical Characteristics (continued)

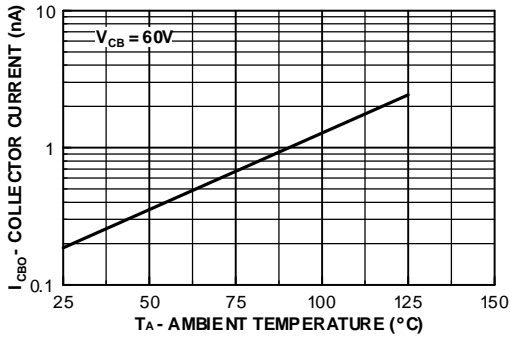
Base-Emitter Saturation Voltage vs Collector Current



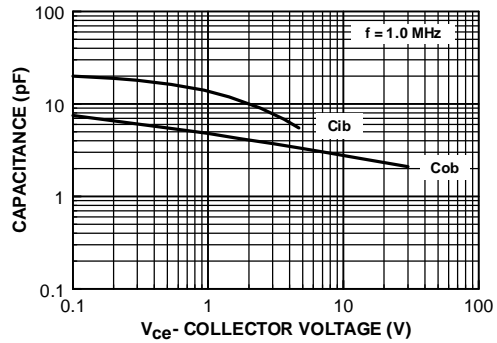
Base-Emitter ON Voltage vs Collector Current



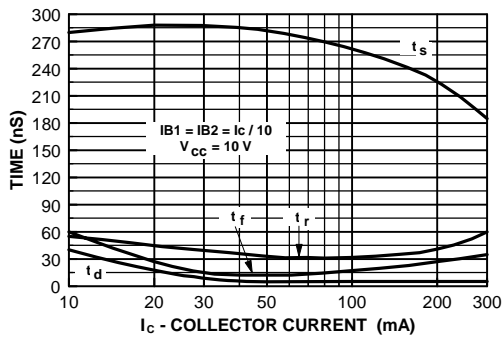
Collector-Cutoff Current vs Ambient Temperature



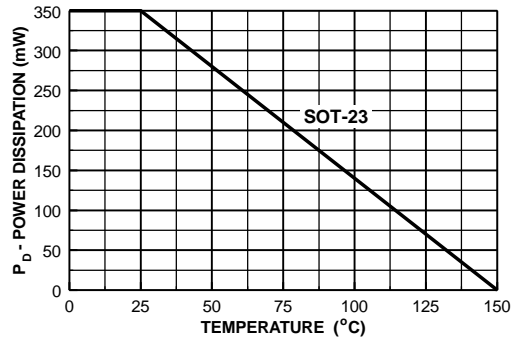
Input and Output Capacitance vs Reverse Voltage



Switching Times vs Collector Current



Power Dissipation vs Ambient Temperature



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