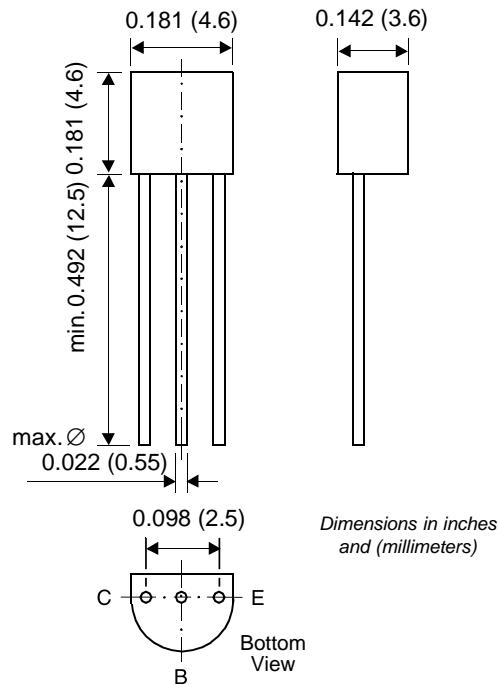

TO-226AA (TO-92)


Small Signal Transistors (PNP)

Features

- PNP Silicon Epitaxial Planar Transistors for switching and AF amplifier applications.
- These transistors are subdivided into three groups A, B, and C according to their current gain. The type BC556 is available in groups A and B, however, the types BC557 and BC558 can be supplied in all three groups. The BC559 is a low-noise type available in all three groups. As complementary types, the NPN transistors BC546...BC549 are recommended.
- On special request, these transistors are also manufactured in the pin configuration TO-18.

Mechanical Data

Case: TO-92 Plastic Package

Weight: approx. 0.18g

Packaging Codes/Options:

E6/Bulk – 5K per container, 20K/box

E7/4K per Ammo mag., 20K/box

Maximum Ratings & Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Collector-Base Voltage BC556 BC557 BC558, BC559	-V _{CBO}	80	V
		50	
		30	
Collector-Emitter Voltage BC556 BC557 BC558, BC559	-V _{CES}	80	V
		50	
		30	
Collector-Emitter Voltage BC556 BC557 BC558, BC559	-V _{CEO}	65	V
		45	
		30	
Emitter-Base Voltage	-V _{EBO}	5	V
Collector Current	-I _C	100	mA
Peak Collector Current	-I _{CM}	200	mA
Peak Base Current	-I _{BM}	200	mA
Peak Emitter Current	I _{EM}	200	mA
Power Dissipation at T _{amb} = 25°C	P _{tot}	500 ⁽¹⁾	mW
Thermal Resistance Junction to Ambient Air	R _{θJA}	250 ⁽¹⁾	°C/W
Junction Temperature	T _j	150	°C
Storage Temperature Range	T _s	-65 to +150	°C

Note: (1) Valid provided that leads are kept at ambient temperature at a distance of 2mm from case.

Small Signal Transistors (PNP)
Electrical Characteristics ($T_J = 25^\circ\text{C}$ unless otherwise noted)

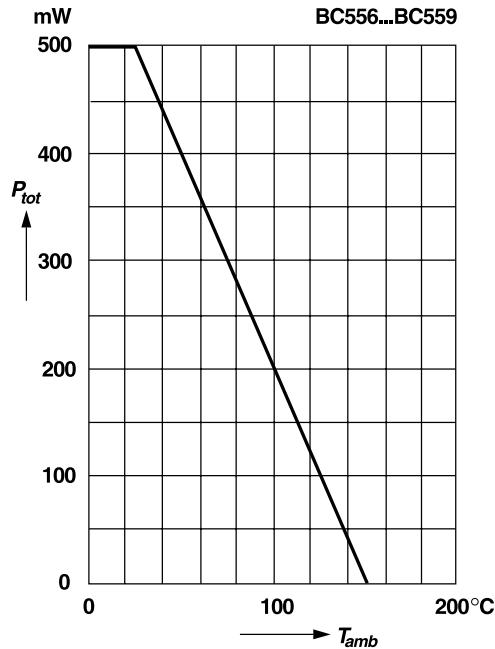
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Small Signal Current Gain	h_{fe}	$-V_{CE} = 5\text{V}, -I_C = 2\text{mA}, f = 1\text{kHz}$	—	220	—	—
			—	330	—	—
			—	600	—	—
Input Impedance	h_{ie}	$-V_{CE} = 5\text{V}, -I_C = 2\text{mA}, f = 1\text{kHz}$	1.6	2.7	4.5	—
			3.2	4.5	8.5	$\text{k}\Omega$
			6	8.7	15	—
Output Admittance	h_{oe}	$-V_{CE} = 5\text{V}, -I_C = 2\text{mA}, f = 1\text{kHz}$	—	18	30	—
			—	30	60	μS
			—	60	110	—
Reverse Voltage Transfer Ratio	h_{re}	$-V_{CE} = 5\text{V}, -I_C = 2\text{mA}, f = 1\text{kHz}$	—	$1.5 \cdot 10^{-4}$	—	—
			—	$2 \cdot 10^{-4}$	—	—
			—	$3 \cdot 10^{-4}$	—	—
DC Current Gain	h_{FE}	$-V_{CE} = 5\text{V}, -I_C = 10\mu\text{A}$	—	90	—	—
			—	150	—	—
			—	270	—	—
		$-V_{CE} = 5\text{V}, -I_C = 2\text{mA}$	110	180	220	—
			200	290	450	—
			420	500	800	—
		$-V_{CE} = 5\text{V}, -I_C = 100\text{mA}$	—	120	—	—
			—	200	—	—
			—	400	—	—
Collector Saturation Voltage	$-V_{CEsat}$	$-I_C = 10\text{mA}, -I_B = 0.5\text{mA}$ $-I_C = 100\text{mA}, -I_B = 5\text{mA}$	—	80	300	mV
Base Saturation Voltage	$-V_{BEsat}$	$-I_C = 10\text{mA}, -I_B = 0.5\text{mA}$ $-I_C = 100\text{mA}, -I_B = 5\text{mA}$	—	700	—	mV
Base-Emitter Voltage	$-V_{BE}$	$-V_{CE} = 5\text{V}, -I_C = 2\text{mA}$ $-V_{CE} = 5\text{V}, -I_C = 10\text{mA}$	600	660	750	mV
Collector-Emitter Cutoff Current	$-I_{CES}$	$-V_{CE} = 80\text{V}$	—	0.2	15	nA
		$-V_{CE} = 50\text{V}$	—	0.2	15	nA
		$-V_{CE} = 30\text{V}$	—	0.2	15	nA
		$-V_{CE} = 80\text{V}, T_J = 125^\circ\text{C}$	—	—	4	μA
		$-V_{CE} = 50\text{V}, T_J = 125^\circ\text{C}$	—	—	4	μA
		$-V_{CE} = 30\text{V}, T_J = 125^\circ\text{C}$	—	—	4	μA
Gain-Bandwidth Product	f_T	$-V_{CE} = 5\text{V}, -I_C = 10\text{mA}, f = 100\text{MHz}$	—	150	—	MHz
Collector-Base Capacitance	C_{CBO}	$-V_{CB} = 10\text{V}, f = 1\text{MHz}$	—	—	6	pF
Noise Figure	F	$-V_{CE} = 5\text{V}, -I_C = 200\mu\text{A}, R_G = 2\text{k}\Omega, f = 1\text{kHz}, \Delta f = 200\text{Hz}$	—	2	10	—
		$-V_{CE} = 5\text{V}, -I_C = 200\mu\text{A}, R_G = 2\text{k}\Omega, f = 30...15000\text{Hz}$	—	1	4	dB
		$-V_{CE} = 5\text{V}, -I_C = 200\mu\text{A}, R_G = 2\text{k}\Omega, f = 30...15000\text{Hz}$	—	1.2	4	—

Small Signal Transistors (PNP)

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

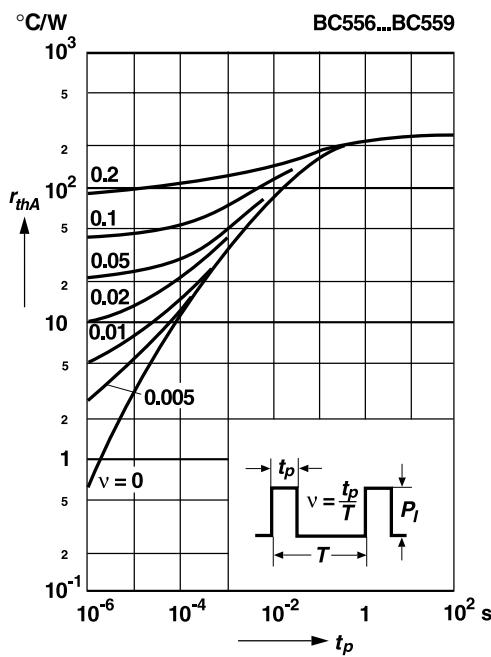
Admissible power dissipation versus temperature

Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case

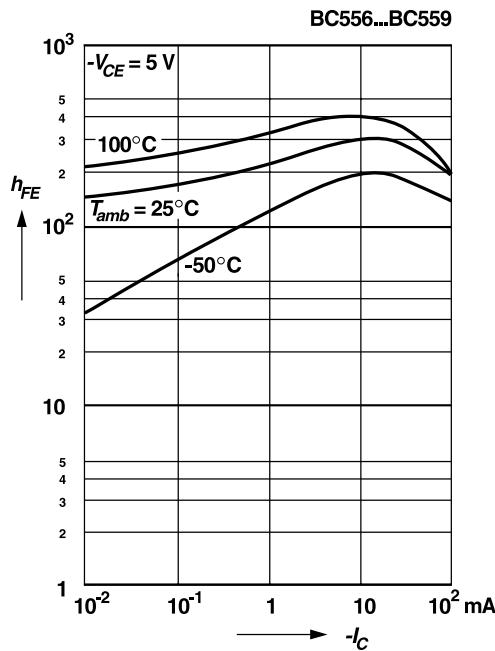


Pulse thermal resistance versus pulse duration

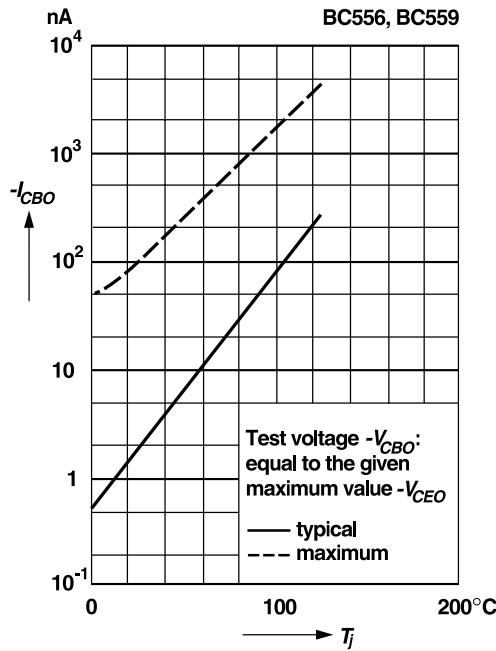
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



DC current gain versus collector current



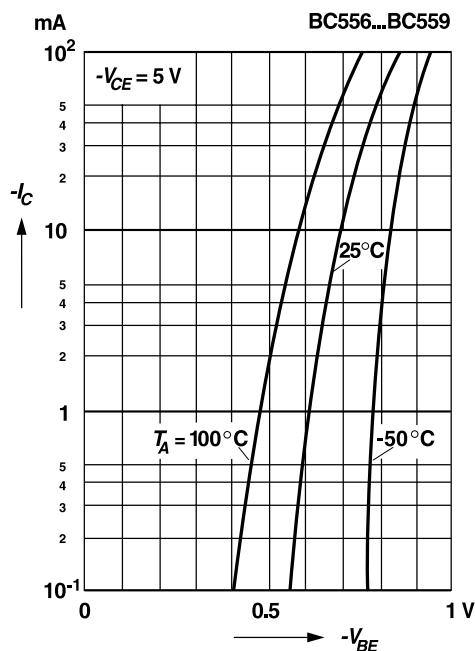
Collector-base cutoff current versus junction temperature



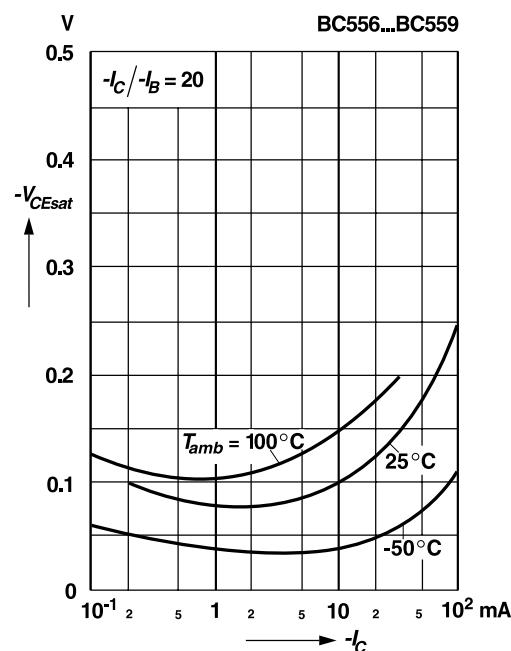
Small Signal Transistors (PNP)

Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

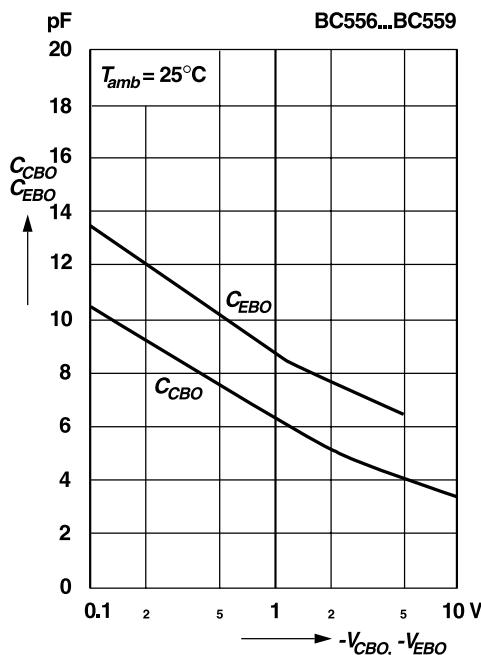
Collector current
versus base-emitter voltage



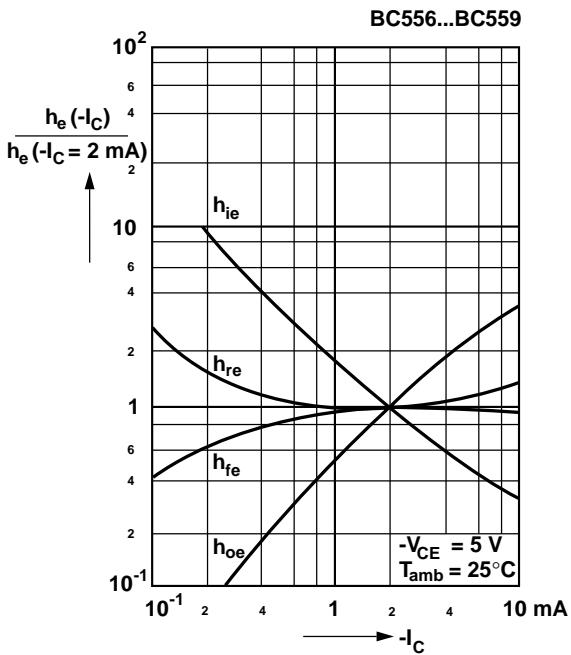
Collector saturation voltage
versus collector current



Collector-base capacitance,
Emitter-base capacitance
versus reverse bias voltage



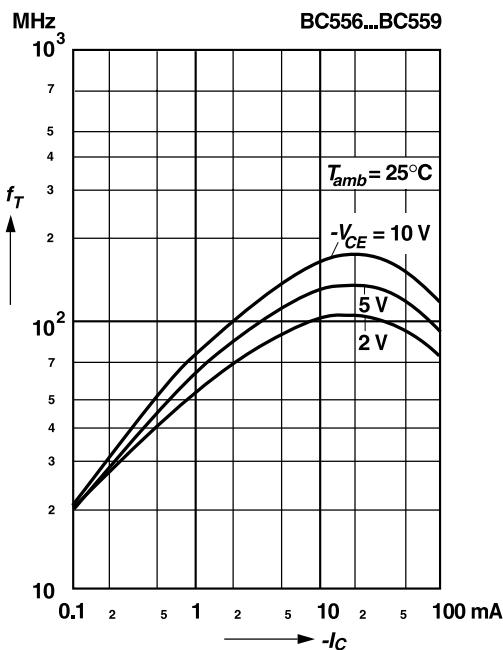
Relative h-parameters
versus collector current



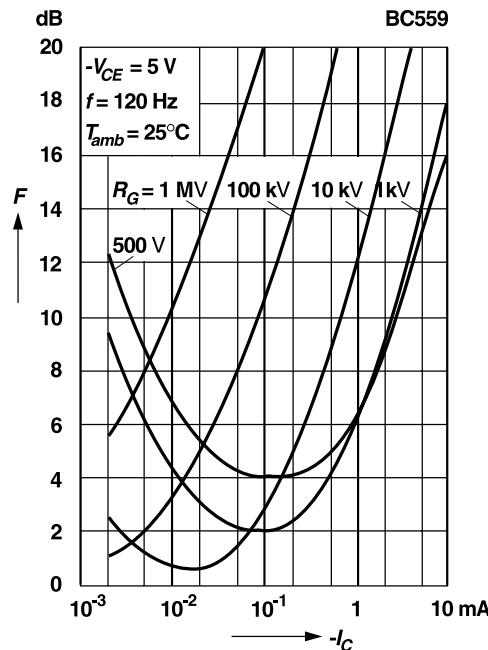
Small Signal Transistors (PNP)

Ratings and Characteristic Curves (TA = 25°C unless otherwise noted)

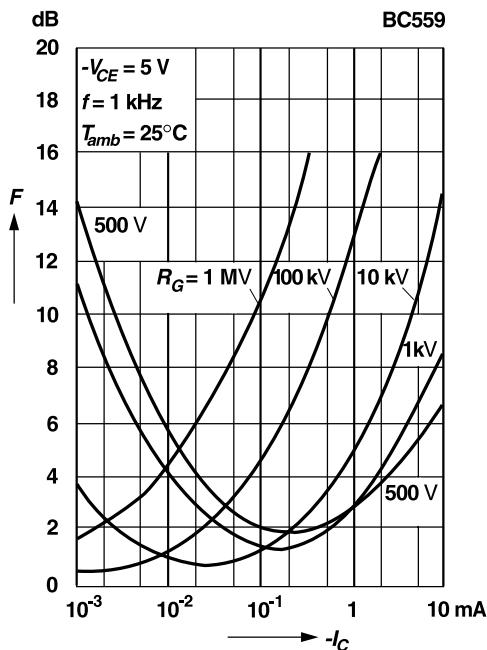
Gain-bandwidth product
versus collector current



Noise figure
versus collector current



Noise figure
versus collector current



Noise figure
versus collector-emitter voltage

