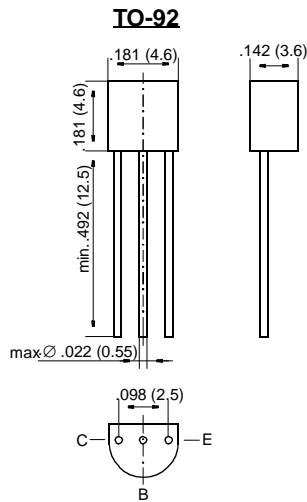


# BC556 THRU BC559

## Small Signal Transistors (PNP)



Dimensions in inches and (millimeters)

### 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. 0.18 g

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

		Symbol	Value	Unit
Collector-Base Voltage	BC556	$-V_{CB0}$	80	V
	BC557	$-V_{CB0}$	50	V
	BC558, BC559	$-V_{CB0}$	30	V
Collector-Emitter Voltage	BC556	$-V_{CES}$	80	V
	BC557	$-V_{CES}$	50	V
	BC558, BC559	$-V_{CES}$	30	V
Collector-Emitter Voltage	BC556	$-V_{CEO}$	65	V
	BC557	$-V_{CEO}$	45	V
	BC558, BC559	$-V_{CEO}$	30	V
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 $T_{amb} = 25\text{ °C}$		$P_{tot}$	500 <sup>1)</sup>	mW
Junction Temperature		$T_j$	150	°C
Storage Temperature Range		$T_S$	-65 to +150	°C

<sup>1)</sup> Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

# BC556 THRU BC559

## ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit	
<b>h-Parameters</b> at $-V_{CE} = 5\text{ V}$ , $-I_C = 2\text{ mA}$ , $f = 1\text{ kHz}$						
Current Gain	Current Gain Group A B C	$h_{fe}$	– 220 330 600	– – – –	– – – –	
Input Impedance	Current Gain Group A B C	$h_{ie}$	1.6 3.2 6	2.7 4.5 8.7	4.5 8.5 15	$k\Omega$ $k\Omega$ $k\Omega$
Output Admittance	Current Gain Group A B C	$h_{oe}$	– – –	18 30 60	30 60 110	$\mu S$ $\mu S$ $\mu S$
Reverse Voltage Transfer Ratio	Current Gain Group A B C	$h_{re}$	– – –	$1.5 \cdot 10^{-4}$ $2 \cdot 10^{-4}$ $3 \cdot 10^{-4}$	– – –	– – –
<b>DC Current Gain</b> at $-V_{CE} = 5\text{ V}$ , $-I_C = 10\text{ }\mu A$						
	Current Gain Group A B C	$h_{FE}$	– – –	90 150 270	– – –	– – –
at $-V_{CE} = 5\text{ V}$ , $-I_C = 2\text{ mA}$						
	Current Gain Group A B C	$h_{FE}$	110 200 420	180 290 500	220 450 800	– – –
at $-V_{CE} = 5\text{ V}$ , $-I_C = 100\text{ mA}$						
	Current Gain Group A B C	$h_{FE}$	– – –	120 200 400	– – –	– – –
Thermal Resistance Junction to Ambient Air	$R_{thJA}$	–	–	250 <sup>1)</sup>	K/W	
<b>Collector Saturation Voltage</b> at $-I_C = 10\text{ mA}$ , $-I_B = 0.5\text{ mA}$ at $-I_C = 100\text{ mA}$ , $-I_B = 5\text{ mA}$						
		$-V_{CEsat}$	– –	80 250	300 650	mV mV
<b>Base Saturation Voltage</b> at $-I_C = 10\text{ mA}$ , $-I_B = 0.5\text{ mA}$ at $-I_C = 100\text{ mA}$ , $-I_B = 5\text{ mA}$						
		$-V_{BEsat}$	– –	700 900	– –	mV mV
<b>Base-Emitter Voltage</b> at $-V_{CE} = 5\text{ V}$ , $-I_C = 2\text{ mA}$ at $-V_{CE} = 5\text{ V}$ , $-I_C = 10\text{ mA}$						
		$-V_{BE}$	600 –	660 –	750 800	mV mV
<b>Collector-Emitter Cutoff Current</b> at $-V_{CE} = 80\text{ V}$ at $-V_{CE} = 50\text{ V}$ at $-V_{CE} = 30\text{ V}$ at $-V_{CE} = 80\text{ V}$ , $T_j = 125\text{ }^\circ C$ at $-V_{CE} = 50\text{ V}$ , $T_j = 125\text{ }^\circ C$ at $-V_{CE} = 30\text{ V}$ , $T_j = 125\text{ }^\circ C$						
	BC556 BC557 BC558 BC556 BC557 BC558, BC559	$-I_{CES}$	– – – – – –	0.2 0.2 0.2 – – –	15 15 15 4 4 4	nA nA nA $\mu A$ $\mu A$ $\mu A$

<sup>1)</sup> Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

# BC556 THRU BC559

## ELECTRICAL CHARACTERISTICS

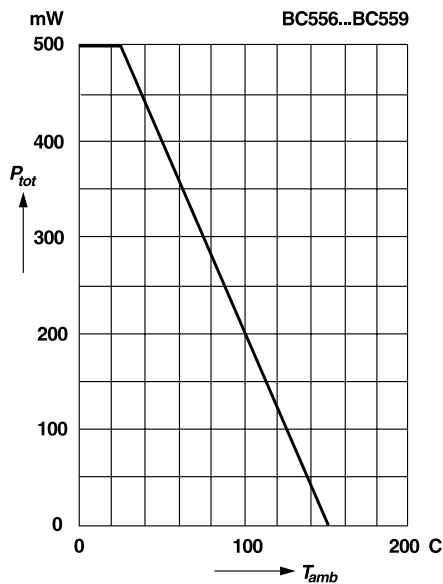
Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit
Gain-Bandwidth Product at $-V_{CE} = 5\text{ V}$ , $-I_C = 10\text{ mA}$ , $f = 100\text{ MHz}$	$f_T$	–	150	–	MHz
Collector-Base Capacitance at $-V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{CBO}$	–	–	6	pF
Noise Figure at $-V_{CE} = 5\text{ V}$ , $-I_C = 200\text{ }\mu\text{A}$ , $R_G = 2\text{ k}\Omega$ , $f = 1\text{ kHz}$ , $\Delta f = 200\text{ Hz}$ <b>BC556, BC557, BC558</b>	F	–	2	10	dB
	F	–	1	4	dB
Noise Figure at $-V_{CE} = 5\text{ V}$ , $-I_C = 200\text{ }\mu\text{A}$ , $R_G = 2\text{ k}\Omega$ , $f = 30\dots 15000\text{ Hz}$ <b>BC559</b>	F	–	1.2	4	dB

## RATINGS AND CHARACTERISTIC CURVES BC556 THRU BC559

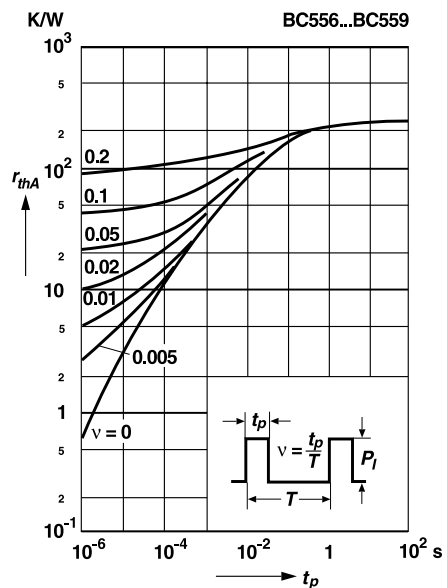
### Admissible power dissipation versus temperature

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



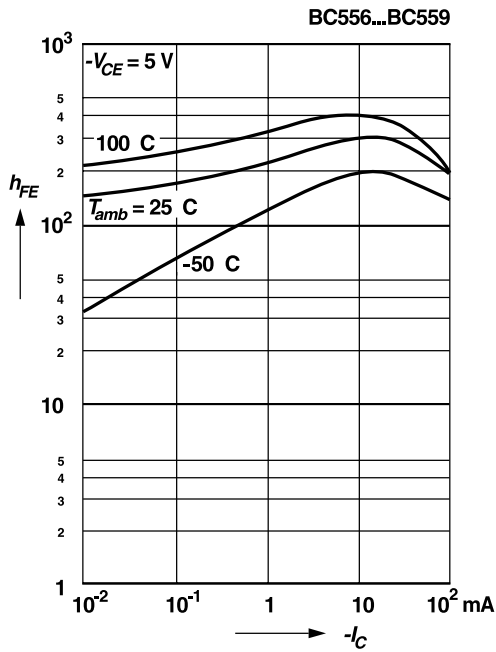
### Pulse thermal resistance versus pulse duration

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

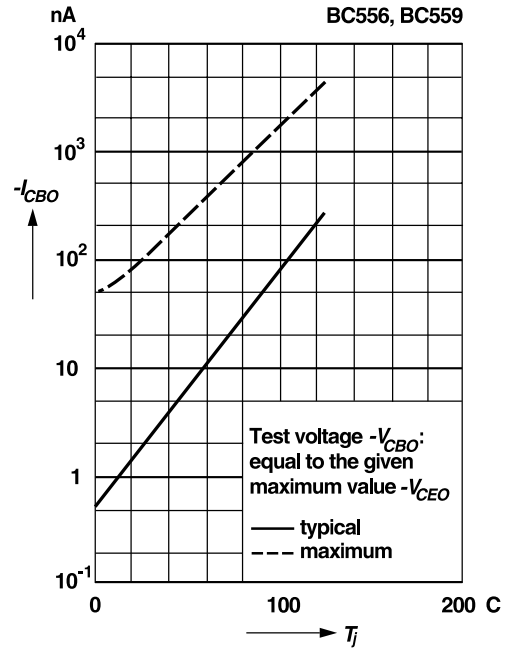


# RATINGS AND CHARACTERISTIC CURVES BC556 THRU BC559

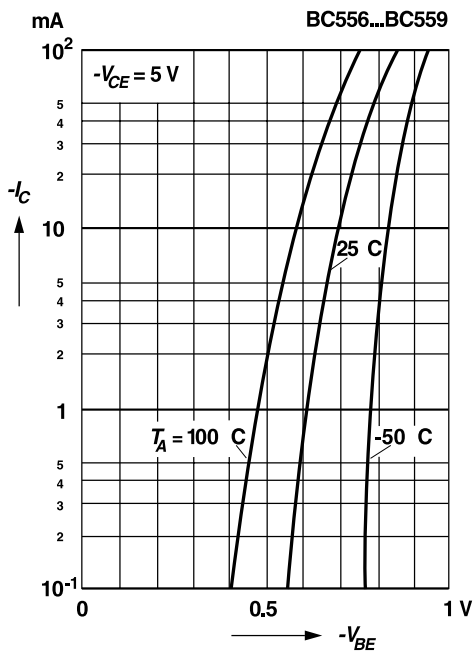
DC current gain  
versus collector current



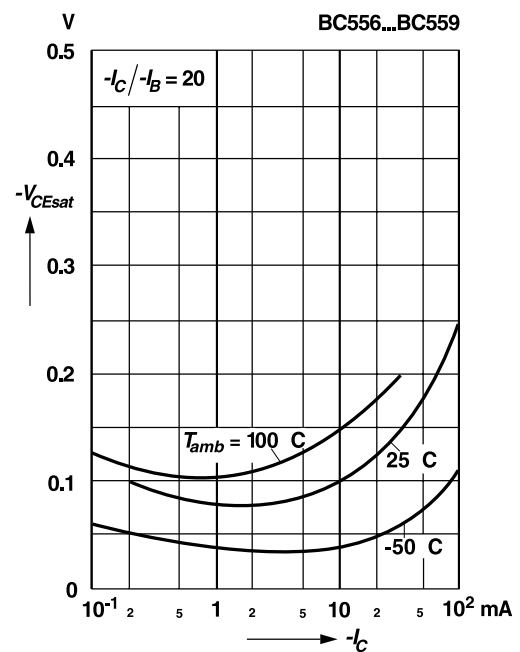
Collector-base cutoff current  
versus junction temperature



Collector current  
versus base-emitter voltage

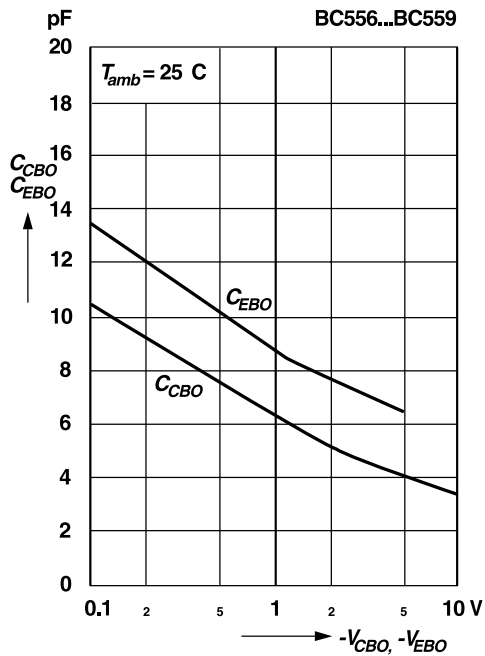


Collector saturation voltage  
versus collector current

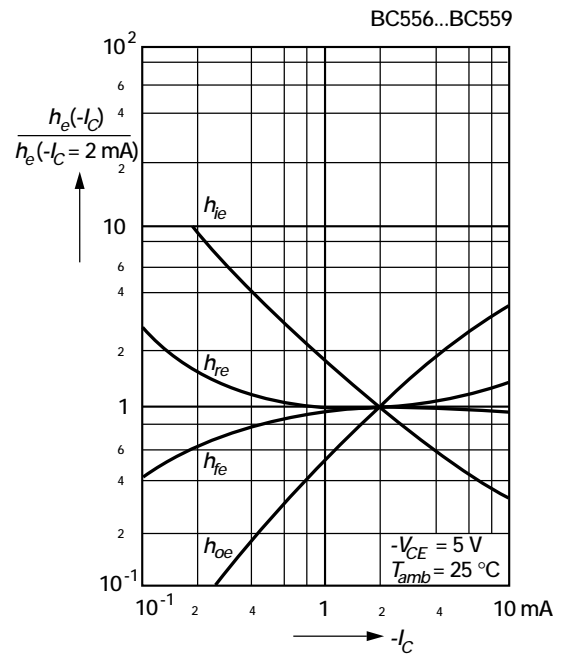


# RATINGS AND CHARACTERISTIC CURVES BC556 THRU BC559

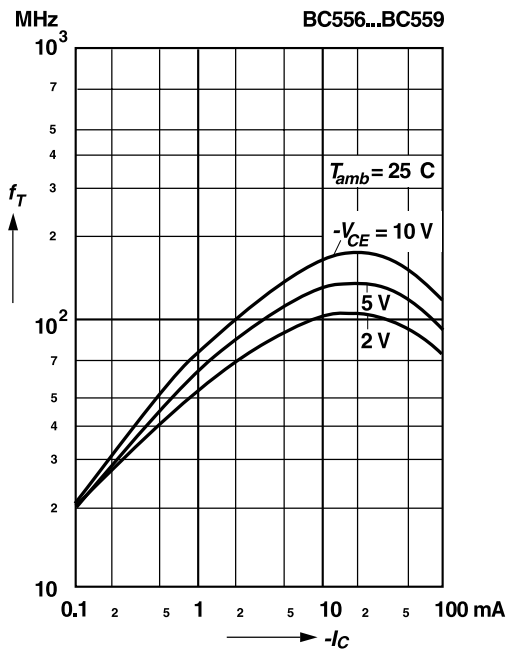
Collector-base capacitance,  
Emitter-base capacitance  
versus reverse bias voltage



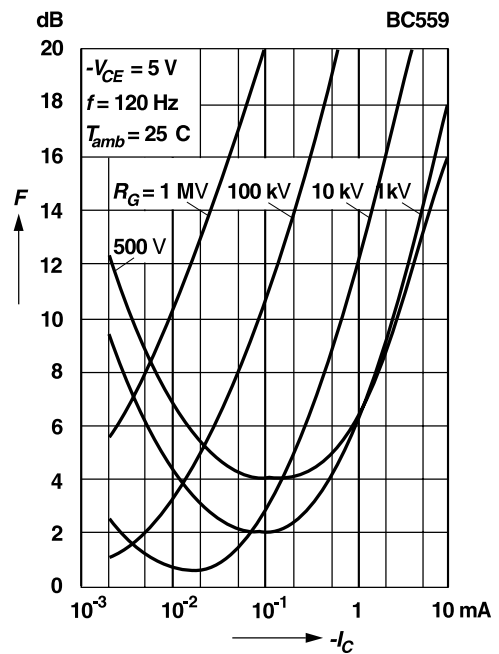
Relative h-parameters  
versus collector current



Gain-bandwidth product  
versus collector current

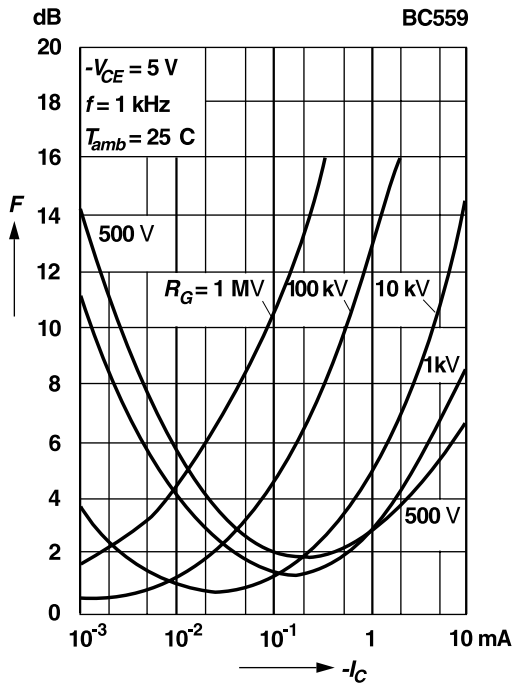


Noise figure  
versus collector current



# RATINGS AND CHARACTERISTIC CURVES BC556 THRU BC559

Noise figure  
versus collector current



Noise figure  
versus collector-emitter voltage

