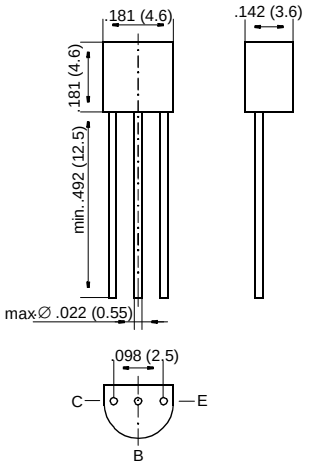
BC556 THRU BC559

Small Signal Transistors (PNP)

TO-92



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**	$-V_{CBO}$	80	V
	BC557	$-V_{CBO}$	50	V
	BC558, BC559	$-V_{CBO}$	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 °C		P_{tot}	500[1)]	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_S	–65 to +150	°C

[1)] Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

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BC556 THRU BC559

ELECTRICAL CHARACTERISTICS

Ratings at 25 °C ambient temperature unless otherwise specified

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

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

BC556 THRU BC559

ELECTRICAL CHARACTERISTICS

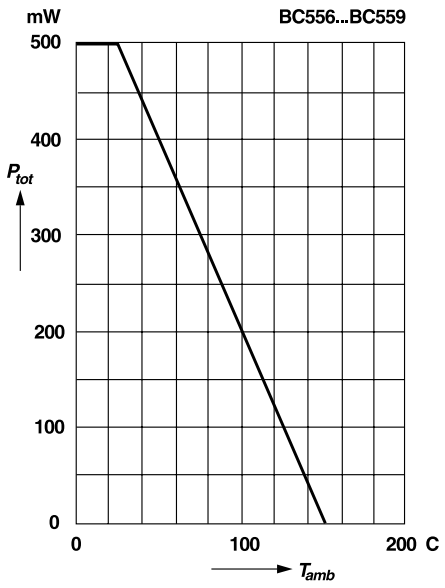
Ratings at 25 °C ambient temperature unless otherwise specified

	Symbol	Min.	Typ.	Max.	Unit
Gain-Bandwidth Product at $-V_{CE}$ = 5 V, $-I_C$ = 10 mA, f = 100 MHz	f_T	–	150	–	MHz
Collector-Base Capacitance at $-V_{CB}$ = 10V, f = 1 MHz	C_{CBO}	–	–	6	pF
Noise Figure at $-V_{CE}$ = 5 V, $-I_C$ = 200 µA, R_G = 2 kΩ, f = 1 kHz, Δf = 200 Hz **BC556, BC557, BC558** **BC559**	F F	– –	2 1	10 4	dB dB
Noise Figure at $-V_{CE}$ = 5 V, $-I_C$ = 200 µA, R_G = 2 kΩ, f = 30…15000 Hz **BC559**	F	–	1.2	4	dB

RATINGS AND CHARACTERISTIC CURVES BC556 THRU BC559

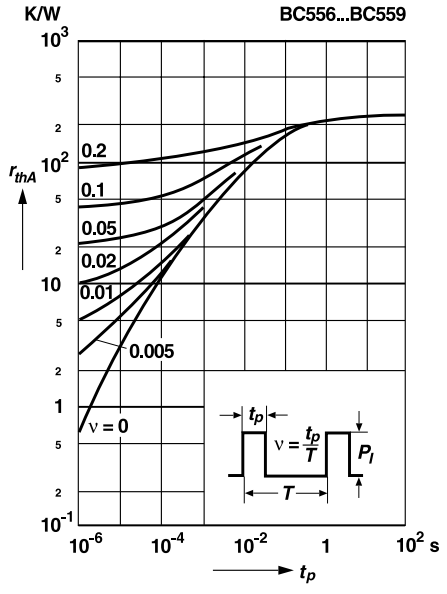
Admissible power dissipation versus temperature

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



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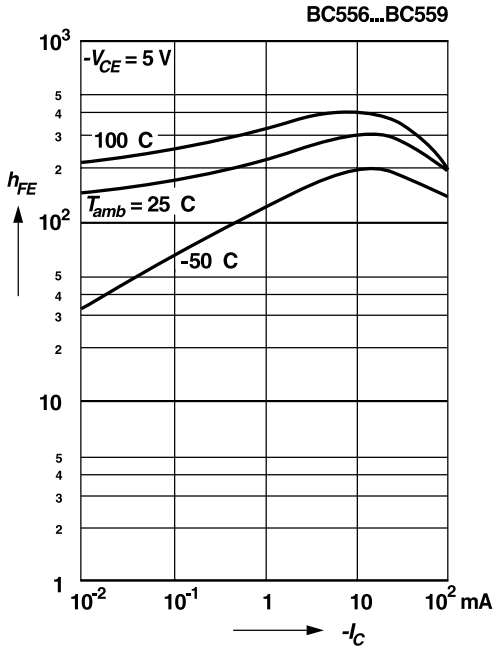
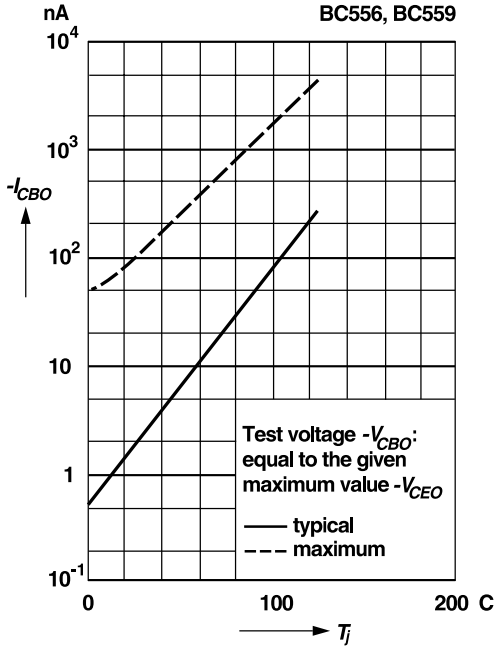
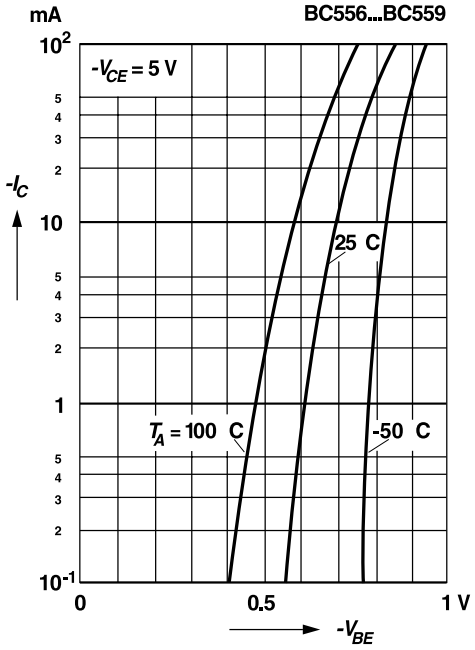
DC current gain versus collector current



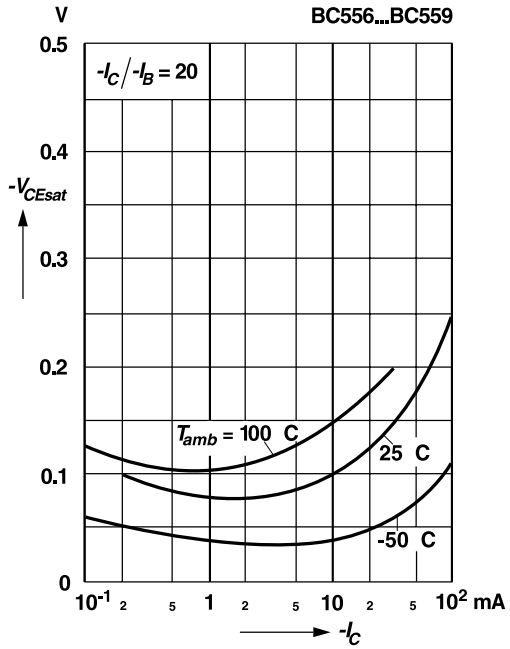
Collector-base cutoff current versus junction temperature



Collector current versus base-emitter voltage

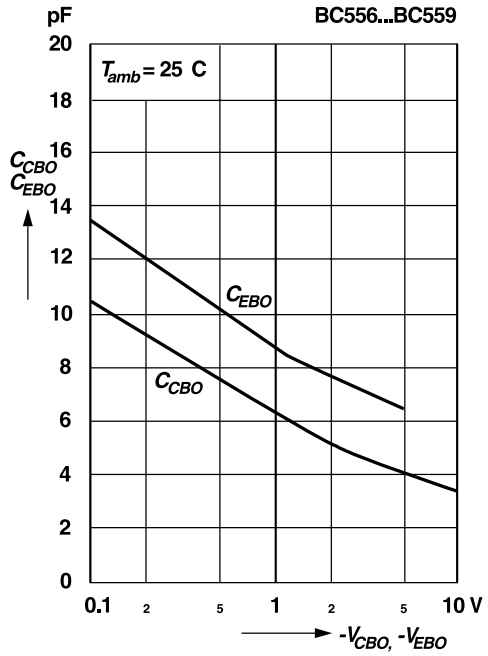


Collector saturation voltage versus collector current

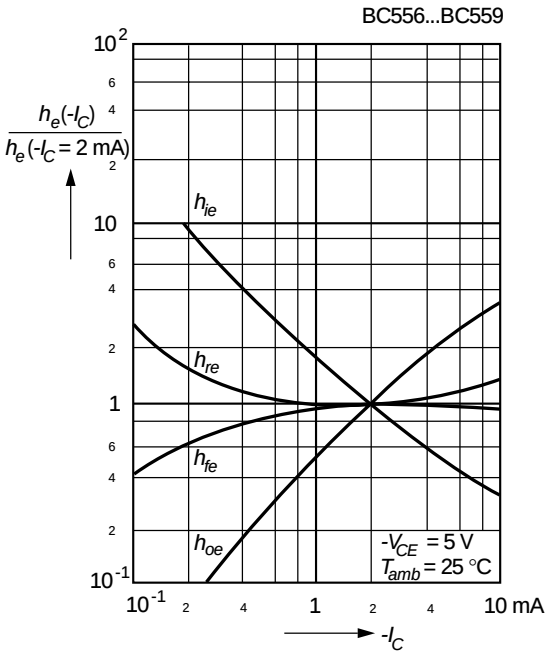


RATINGS AND CHARACTERISTIC CURVES BC556 THRU BC559

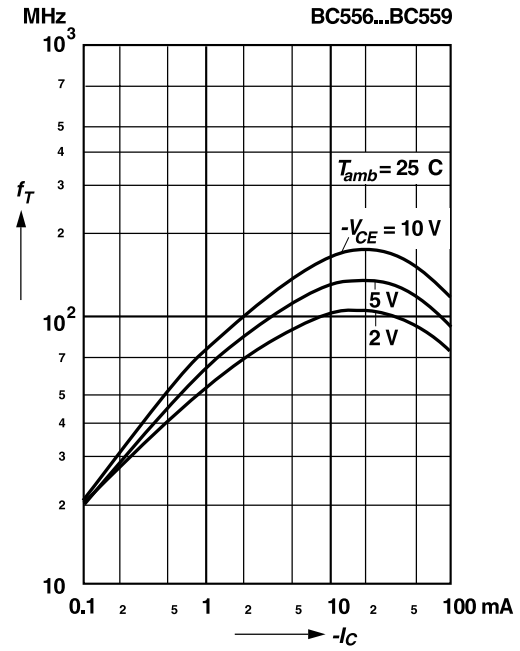
**Collector-base capacitance,
Emitter-base capacitance
versus reverse bias voltage**



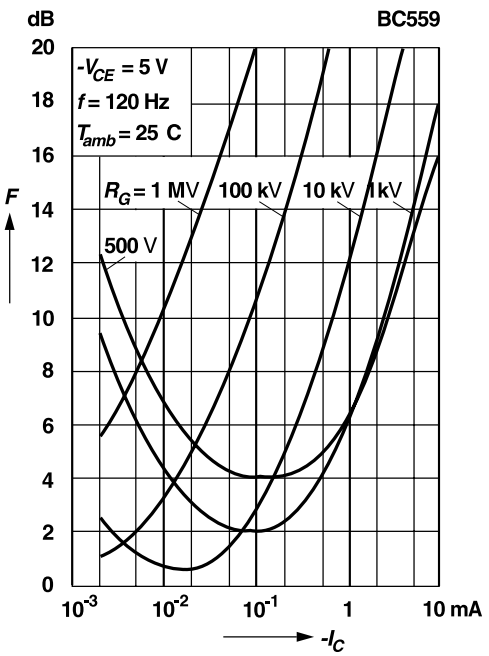
**Relative h-parameters
versus collector current**



**Gain-bandwidth product
versus collector current**



**Noise figure
versus collector current**



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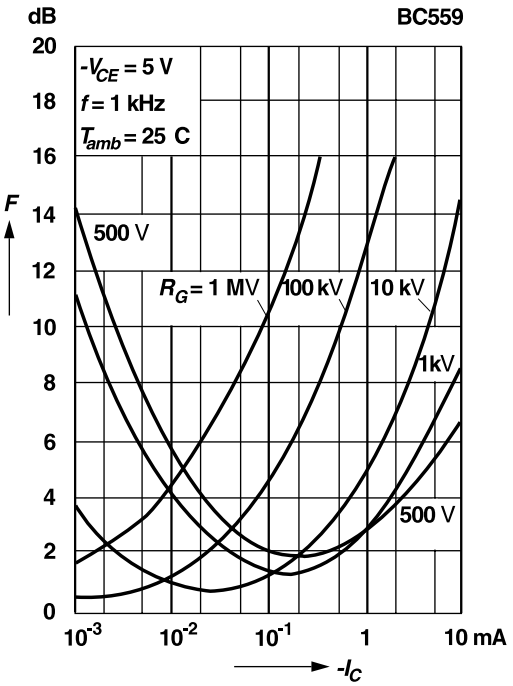
Noise figure
versus collector current



Noise figure
versus collector-emitter voltage