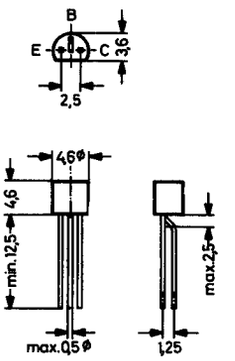
BC251 . . ., BC307 . . .

PNP Silicon Epitaxial Planar Transistors
for switching and amplifier applications

The transistors are subdivided into three groups A, B and C according to their current gain. BC256 is available in groups A and B only. BC253 and BC309 are low noise types.



Plastic package ≈ JEDEC TO -92
TO-18 compatible
The case is impervious to light

Weight approximately 0.18 g
Dimensions in mm

Absolute Maximum Ratings

		Symbol	Value	Unit
Collector Emitter Voltage	**BC256**	$-V_{CES}$	64	V
	BC251, BC307	$-V_{CES}$	50	V
	BC252, BC253, BC308	$-V_{CES}$	30	V
	BC309			
Collector Emitter Voltage	**BC256**	$-V_{CEO}$	64	V
	BC251, BC307	$-V_{CEO}$	45	V
	BC252, BC253, BC308	$-V_{CEO}$	25	V
	BC309			
Emitter Base Voltage		$-V_{EBO}$	5	V
Collector Current		$-I_C$	100	mA
Peak Collector Current		$-I_{CM}$	200	mA
Base Current		$-I_B$	50	mA
Peak Base Current		$-I_{BM}$	100	mA
Power Dissipation at T_{amb} = 25 °C		P_{tot}	300[1)]	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_S	−55 . . . +150	°C

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

Characteristics at T_{amb} = 25 °C

		Symbol	Min.	Typ.	Max.	Unit
h-Parameters at $-V_{CE}$ = 5 V, $-I_C$ = 2 mA, f = 1 kHz						
Small Signal Current Gain	**Current Gain Group A**	h_{fe}	125	220	260	–
	B	h_{fe}	240	330	500	–
	C	h_{fe}	450	600	900	–
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}	–	35	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, $-I_C$ = 0.01 mA	**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}	–	170	–	–
	B	h_{FE}	–	290	–	–
	C	h_{FE}	–	500	–	–
at $-V_{CE}$ = 5 V, $-I_C$ = 100 mA	**Current Gain Group A**	h_{FE}	–	120[1)]	–	–
	B	h_{FE}	–	200[1)]	–	–
	C	h_{FE}	–	400[1)]	–	–
Collector Saturation Voltage						
at $-I_C$ = 10 mA, $-I_B$ = 0.5 mA		$-V_{CEsat}$	–	–	0.3	V
at $-I_C$ = 100 mA, $-I_B$ = 5 mA		$-V_{CEsat}$	–	0.5[1)]	–	V
Base Saturation Voltage						
at $-I_C$ = 10 mA, $-I_B$ = 0.5 mA		$-V_{BEsat}$	–	0.7	–	V
at $-I_C$ = 100 mA, $-I_B$ = 5 mA		$-V_{BEsat}$	–	0.85[1)]	–	V
Base Emitter Voltage						
at $-V_{CE}$ = 5 V, $-I_C$ = 0.1 mA		$-V_{BE}$	–	0.57	–	V
at $-V_{CE}$ = 5 V, $-I_C$ = 2 mA		$-V_{BE}$	0.55	0.62	0.7	V
at $-V_{CE}$ = 5 V, $-I_C$ = 100 mA		$-V_{BE}$	–	0.8	–	V
Collector Cutoff Current						
at $-V_{CE}$ = 25 V	**BC252, BC253, BC308 BC309**	$-I_{CES}$	–	2	15	nA
at $-V_{CE}$ = 45 V	**BC251, BC307**	$-I_{CES}$	–	2	15	nA
at $-V_{CE}$ = 64 V	**BC256**	$-I_{CES}$	–	2	15	nA
at $-V_{CE}$ = 25 V, T_j = 125 °C	**BC252, BC253, BC308 BC309**	$-I_{CES}$	–	–	4	μA
at $-V_{CE}$ = 45 V, T_j = 125 °C	**BC251, BC307**	$-I_{CES}$	–	–	4	μA
at $-V_{CE}$ = 64 V, T_j = 125 °C	**BC256**	$-I_{CES}$	–	–	4	μA
Collector Emitter Breakdown Voltage						
at $-I_{CES}$ = 10μA	**BC252, BC253, BC308 BC309**	$-V_{(BR)CES}$	30	–	–	V
	BC251, BC307	$-V_{(BR)CES}$	50	–	–	V
	BC256	$-V_{(BR)CES}$	64	–	–	V
at $-I_{CEO}$ = 2 mA	**BC252, BC253, BC308 BC309**	$-V_{(BR)CEO}$	25	–	–	V
	BC251, BC307	$-V_{(BR)CEO}$	45	–	–	V
	BC256	$-V_{(BR)CEO}$	64	–	–	V
Emitter Base Breakdown Voltage at $-I_{EBO}$ = 10 μA		$-V_{(BR)EBO}$	5	–	–	V

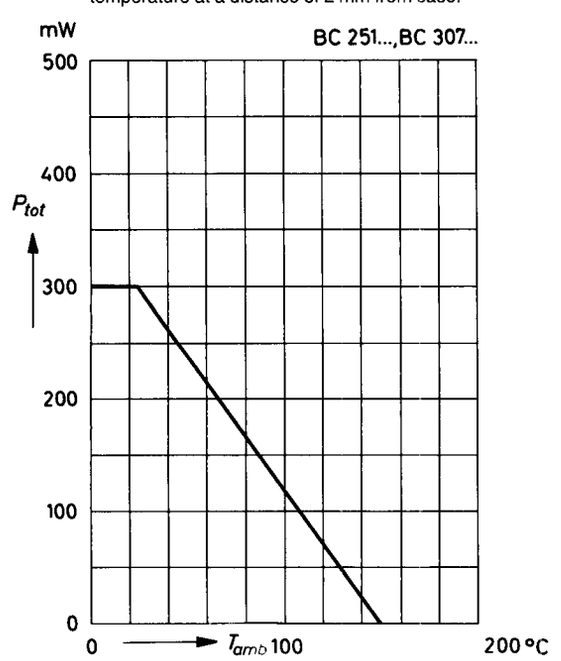
Characteristics, continuation

	Symbol	Min.	Typ.	Max.	Unit
Gain Bandwidth Product at $-V_{CE}$ = 5 V, $-I_C$ = 10 mA, f = 50 MHz	f_T	–	130	–	MHz
Collector Base Capacitance at $-V_{CBO}$= 10 V, f = 1 MHz	C_{CBO}	–	–	6	pF
Emitter Base Capacitance at $-V_{EBO}$ = 0.5 V, f = 1 MHz	C_{EBO}	–	12	–	pF
Noise Figure at $-V_{CE}$ = 5 V, $-I_C$ = 0.2 mA, R_G = 2 kΩ, f = 1 kHz **BC251, BC252, BC256** **BC307, BC308** **BC253, BC309**	F F	–	–	10 4	dB dB
Noise Figure at $-V_{CE}$ = 5 V, $-I_C$ = 0.2 mA, R_G = 2 kΩ, f = 30 Hz . . . 15 kHz **BC253, BC309**	F	–	2	4	dB
Thermal Resistance Junction to Ambient	R_{thA}	–	–	420[2]	K/W

[1] Not valid for BC253 and BC309.
[2] Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case.

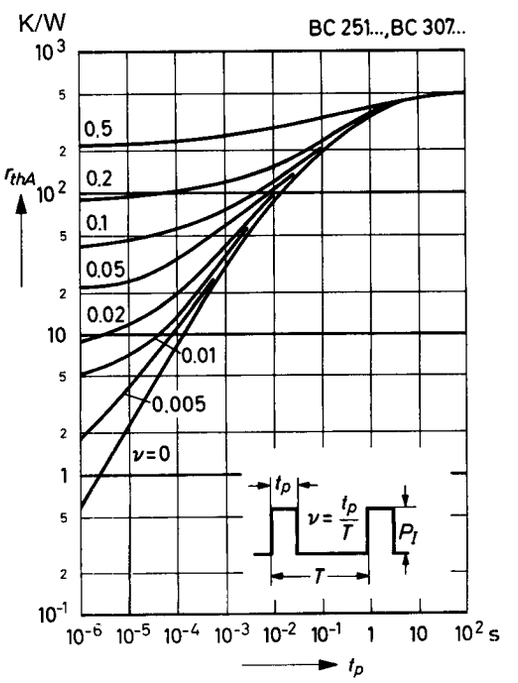
Admissible power dissipation versus ambient temperature

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

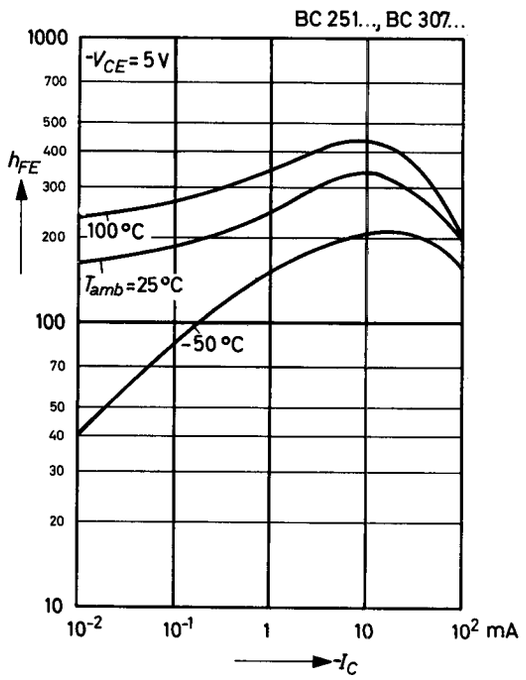


Pulse thermal resistance versus pulse duration

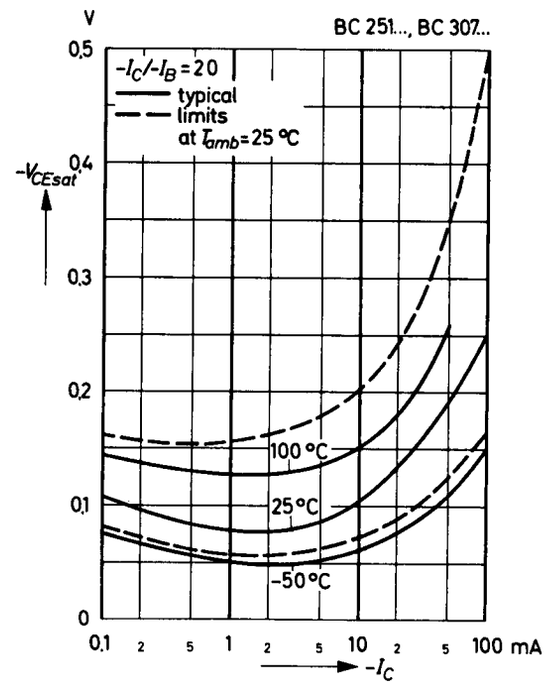
Valid provided that leads are kept at ambient temperature at a distance of 2 mm from case



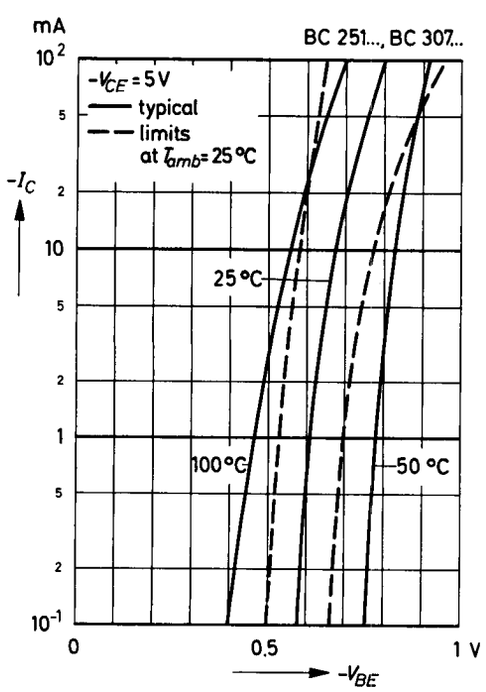
DC current gain versus collector current



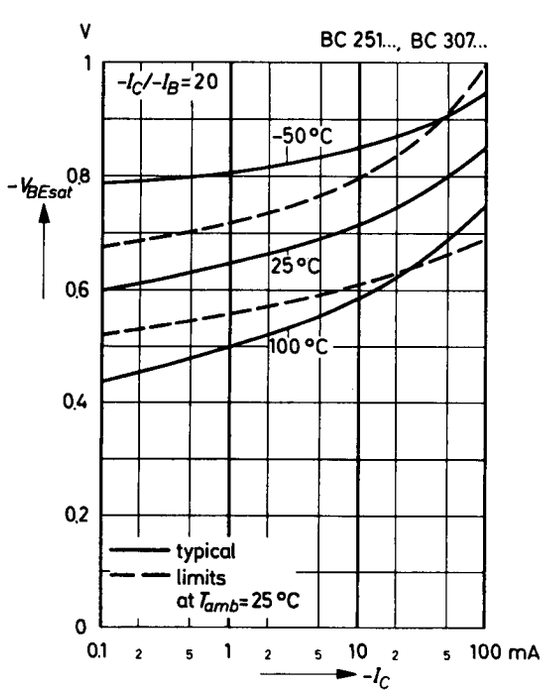
Collector saturation voltage versus collector current



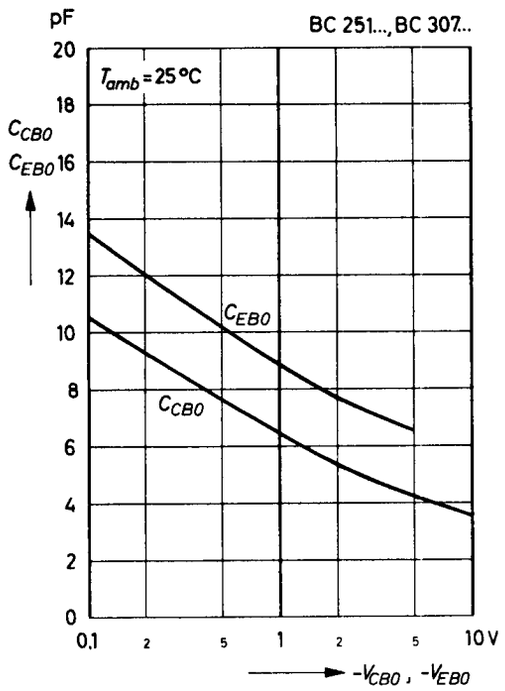
Collector current versus base emitter voltage



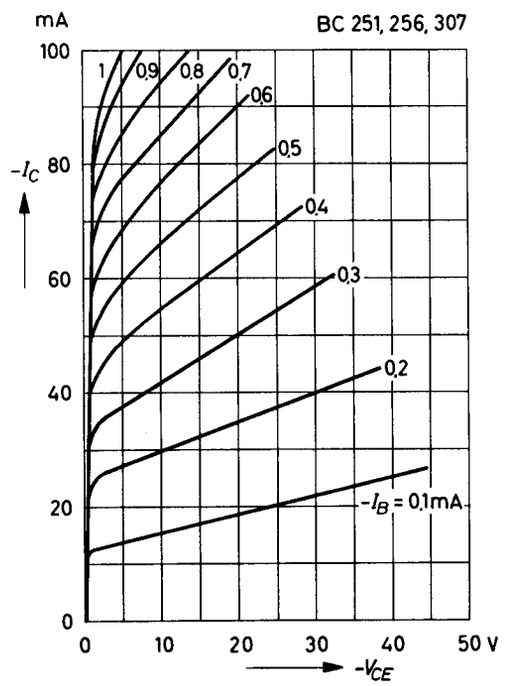
Base saturation voltage versus collector current



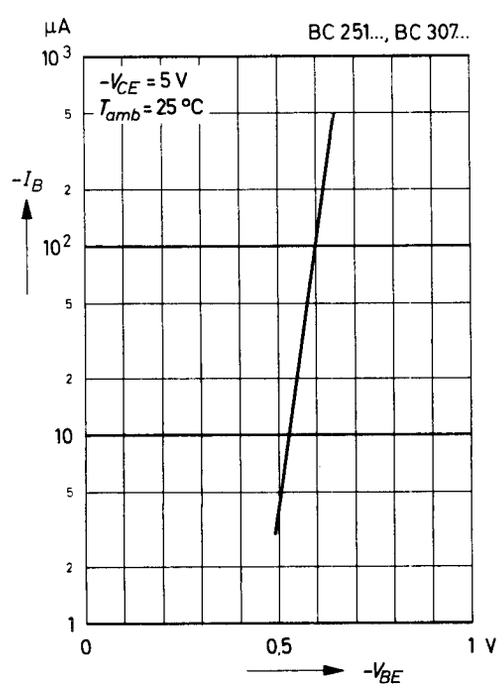
Collector base capacitance, Emitter base capacitance versus reverse bias voltage



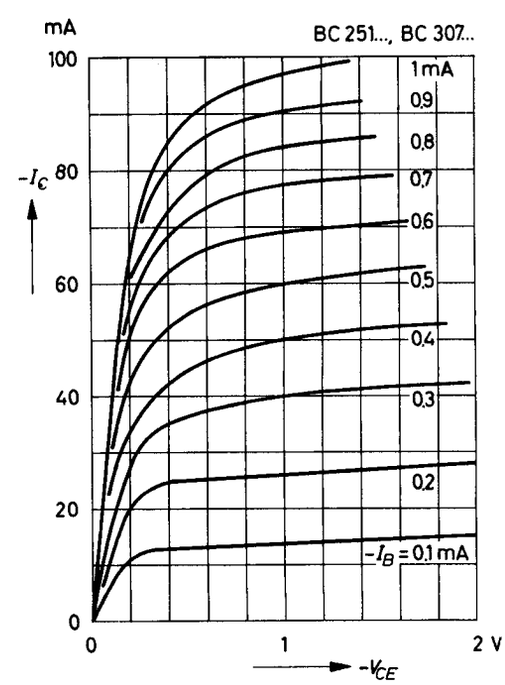
Common emitter collector characteristics



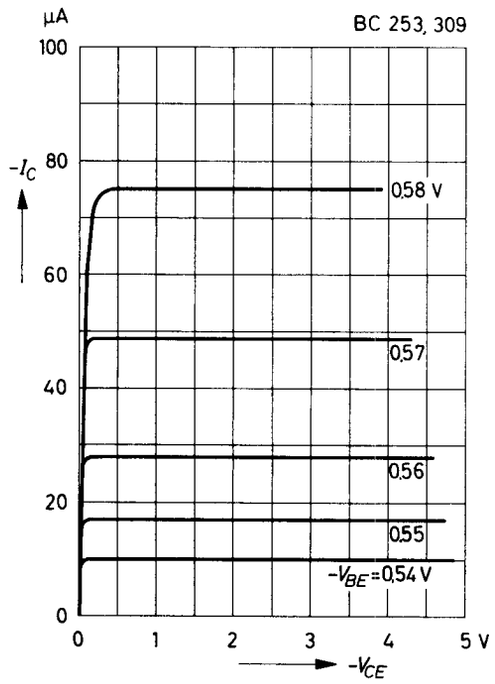
Common emitter input characteristic



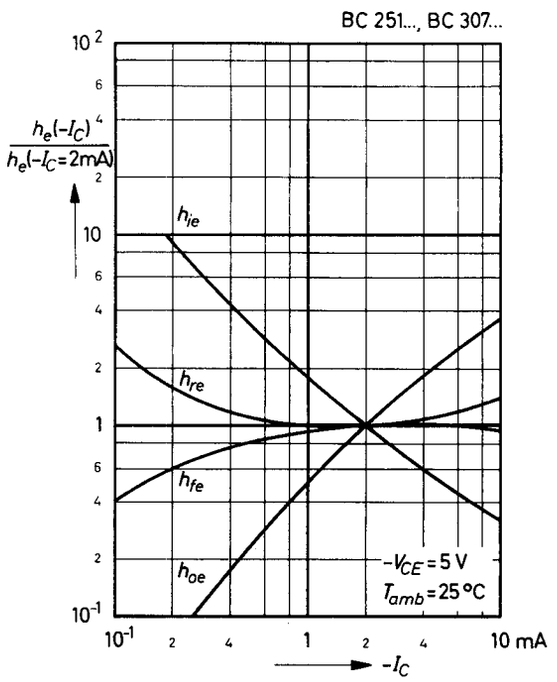
Common emitter collector characteristics



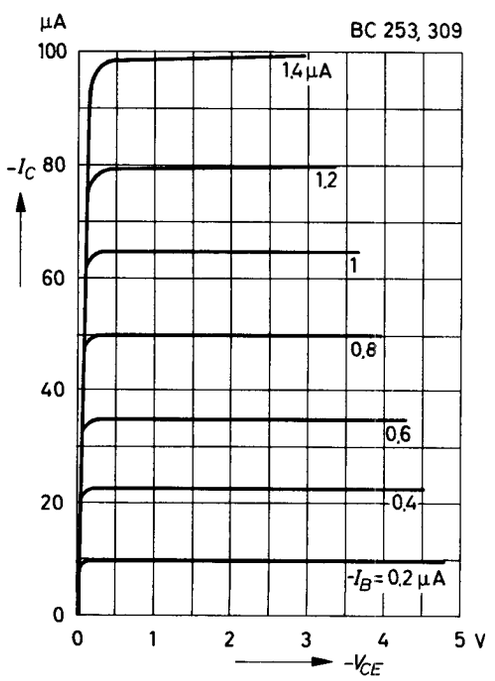
Common emitter collector characteristics



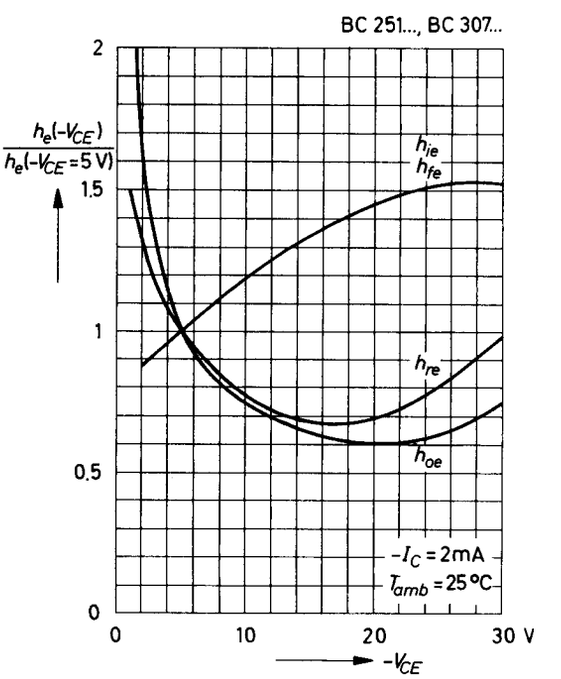
Relative h-parameters versus collector current



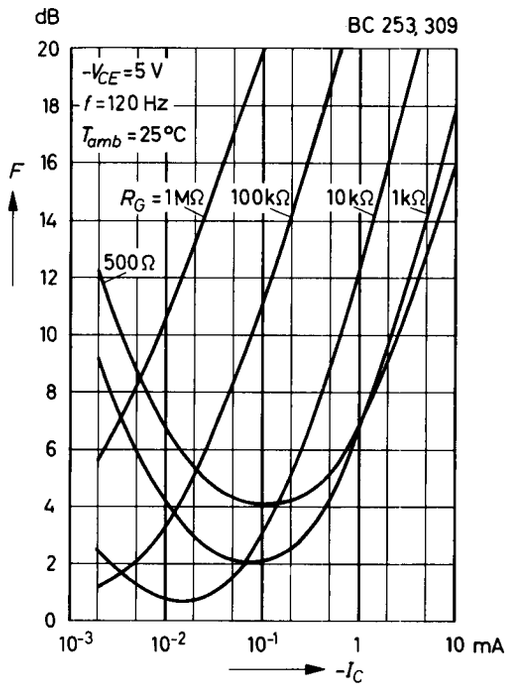
Common emitter collector characteristics



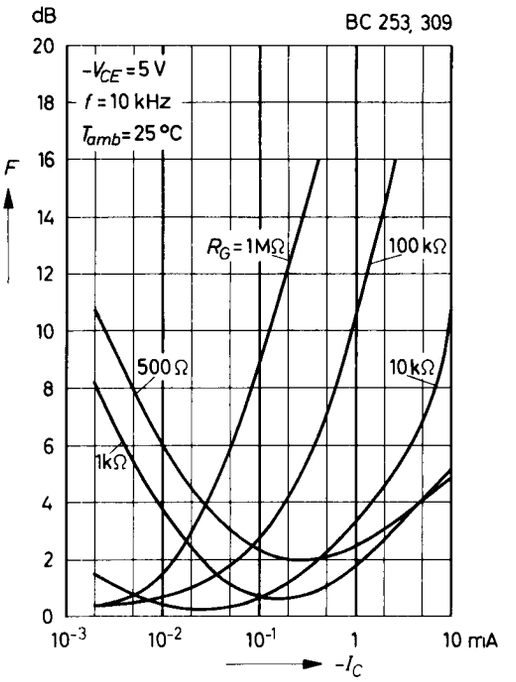
Relative h-parameters versus collector emitter voltage



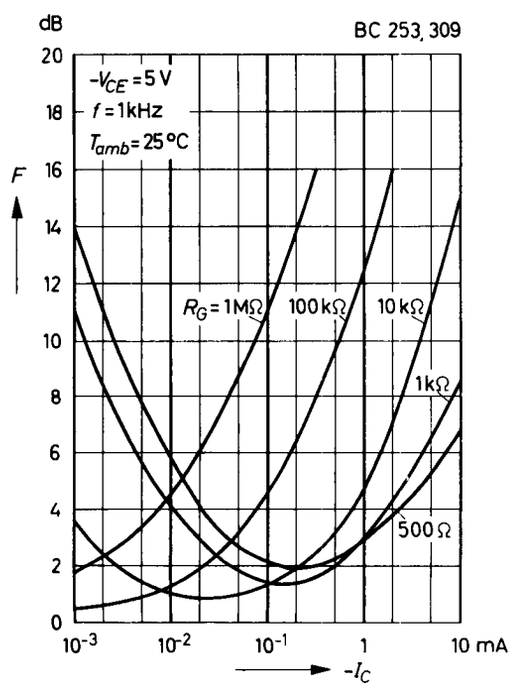
Noise figure versus collector current



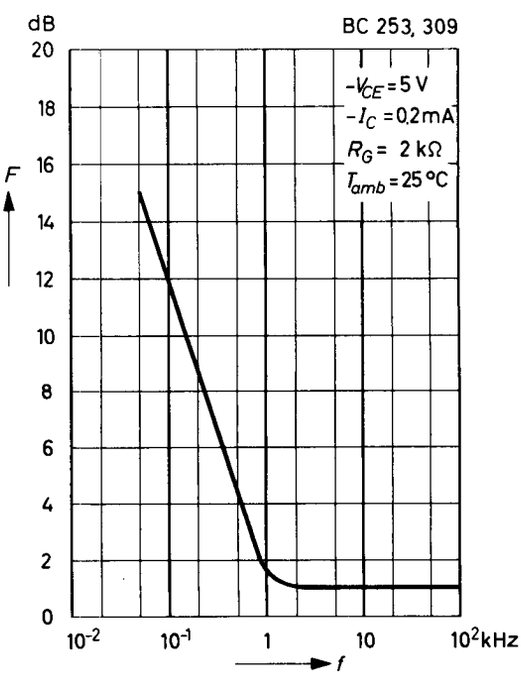
Noise figure versus collector current



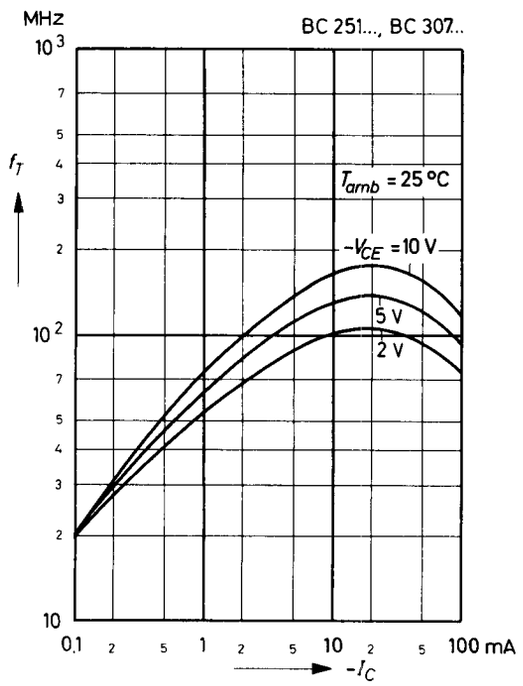
Noise figure versus collector current



Noise figure versus frequency



Gain bandwidth product versus collector emitter voltage



Collector cutoff current versus ambient temperature