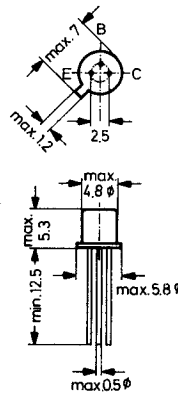


BC107, BC108, BC109

NPN 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. Type BC107 is available in groups A and B, type BC108 in groups A, B and C, and type BC109 in groups B and C.
Type BC109 is a low noise type.



Metal case JEDEC TO-18
18 A 3 according to DIN 41876
Collector connected to case

Weight approximately 0.35 g
Dimensions in mm

Absolute Maximum Ratings

		Symbol	Value	Unit
Collector Emitter Voltage	BC107	V_{CES}	50	V
	BC108, BC109	V_{CES}	30	V
Collector Emitter Voltage	BC107	V_{CEO}	45	V
	BC108, BC109	V_{CEO}	25	V
Emitter Base Voltage	BC107	V_{EBO}	6	V
	BC108, BC109	V_{EBO}	5	V
Collector Current		I_C	100	mA
Peak Collector Current		I_{CM}	200	mA
Base Current		I_B	50	mA
Power Dissipation at $T_{amb} = 25^\circ\text{C}$		P_{tot}	300	mW
Junction Temperature		T_j	175	$^\circ\text{C}$
Storage Temperature Range		T_S	-55 ... +175	$^\circ\text{C}$

BC107, BC108, BC109

Characteristics at $T_{amb} = 25\text{ }^{\circ}\text{C}$

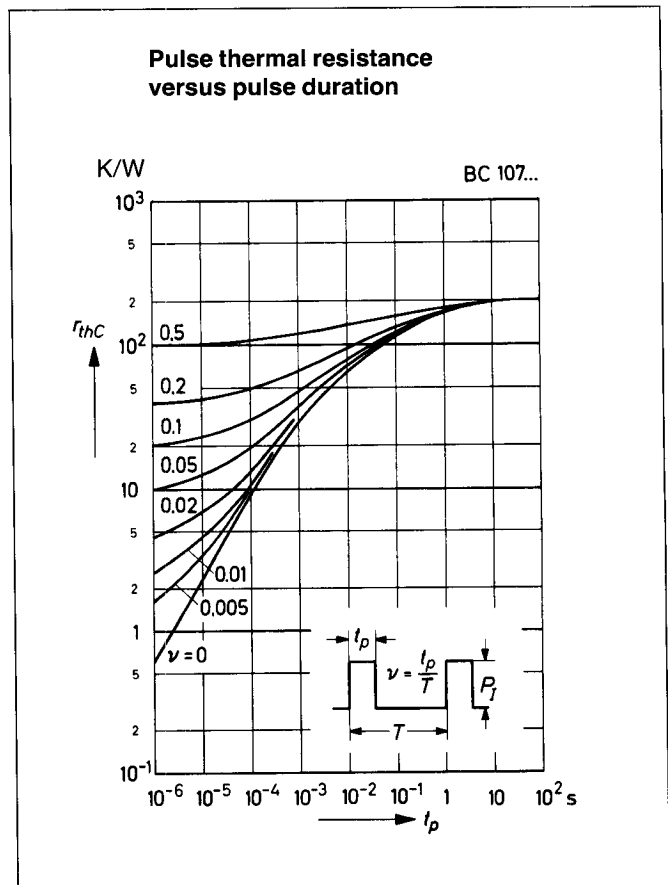
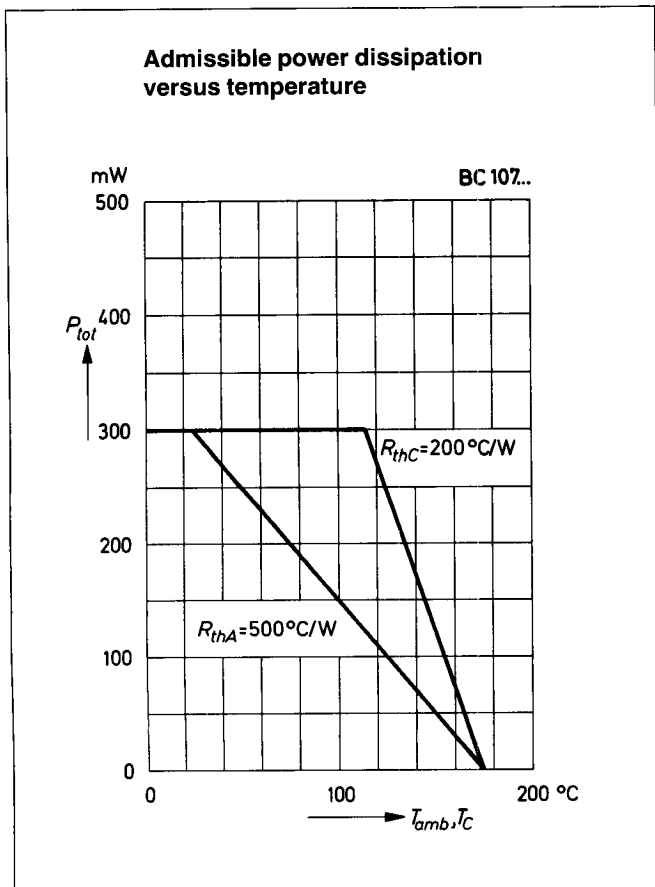
	Symbol	Min.	Typ.	Max.	Unit
h-Parameters at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$, $f = 1\text{ kHz}$					
Small Signal Current Gain	Current Gain Group A				
	B				
	C				
Input Impedance	Current Gain Group A				
	B				
	C				
Output Admittance	Current Gain Group A				
	B				
	C				
Reverse Voltage Transfer Ratio	Current Gain Group A				
	B				
	C				
DC Current Gain					
at $V_{CE} = 5\text{ V}$, $I_C = 0.01\text{ mA}$	Current Gain Group A				
	B				
	C				
at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$	Current Gain Group A				
	B				
	C				
at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ mA}$	Current Gain Group A				
	B				
	C				
Collector Saturation Voltage					
at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$	V_{CEsat}				
	V_{CEsat}				
at $I_C = 100\text{ mA}$, $I_B = 5\text{ mA}$	V_{CEsat}				
	V_{CEsat}				
Base Saturation Voltage					
at $I_C = 10\text{ mA}$, $I_B = 0.5\text{ mA}$	V_{BEsat}				
	V_{BEsat}				
at $I_C = 100\text{ mA}$, $I_B = 5\text{ mA}$	V_{BEsat}				
	V_{BEsat}				
Base Emitter Voltage					
at $V_{CE} = 5\text{ V}$, $I_C = 0.1\text{ mA}$	V_{BE}				
	V_{BE}				
	V_{BE}				
at $V_{CE} = 5\text{ V}$, $I_C = 2\text{ mA}$	V_{BE}				
	V_{BE}				
	V_{BE}				
at $V_{CE} = 5\text{ V}$, $I_C = 100\text{ mA}$	V_{BE}				
	V_{BE}				
	V_{BE}				
Collector Cutoff Current					
at $V_{CE} = 50\text{ V}$	BC107				
	BC108, BC109				
at $V_{CE} = 30\text{ V}$	BC107				
	BC108, BC109				
at $V_{CE} = 50\text{ V}$, $T_{amb} = 125\text{ }^{\circ}\text{C}$	BC107				
	BC108, BC109				
at $V_{CE} = 30\text{ V}$, $T_{amb} = 125\text{ }^{\circ}\text{C}$	BC107				
	BC108, BC109				
Collector Emitter Breakdown Voltage					
at $I_C = 2\text{ mA}$	BC107				
	BC108, BC109				
Emitter Base Breakdown Voltage					
at $I_E = 1\text{ }\mu\text{A}$	BC 107				
	BC108, BC109				
Gain Bandwidth Product					
at $V_{CE} = 3\text{ V}$, $I_C = 0.5\text{ mA}$, $f = 100\text{ MHz}$	f_T				
	f_T				
at $V_{CE} = 5\text{ V}$, $I_C = 10\text{ mA}$, $f = 100\text{ MHz}$	f_T				
	f_T				
Collector Base Capacitance at $V_{CBO} = 10\text{ V}$, $f = 1\text{ MHz}$					
Emitter Base Capacitance at $V_{EBO} = 0.5\text{ V}$, $f = 1\text{ MHz}$					

BC107, BC108, BC109

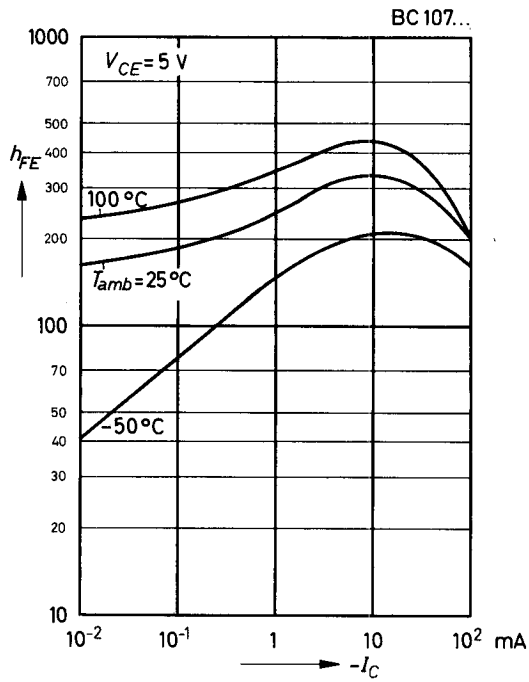
Characteristics, continuation

	Symbol	Min.	Typ.	Max.	Unit
Noise Figure at $V_{CE} = 5\text{ V}$, $I_C = 0.2\text{ mA}$, $R_G = 2\text{ k}\Omega$, $f = 1\text{ kHz}$ BC107, BC108	F	–	2	10	dB
	BC109	F	–	4	dB
	BC109	F	–	–	4
Thermal Resistance Junction to Case Junction to Ambient	R_{thC}	–	–	200	K/W
	R_{thA}	–	–	500	K/W

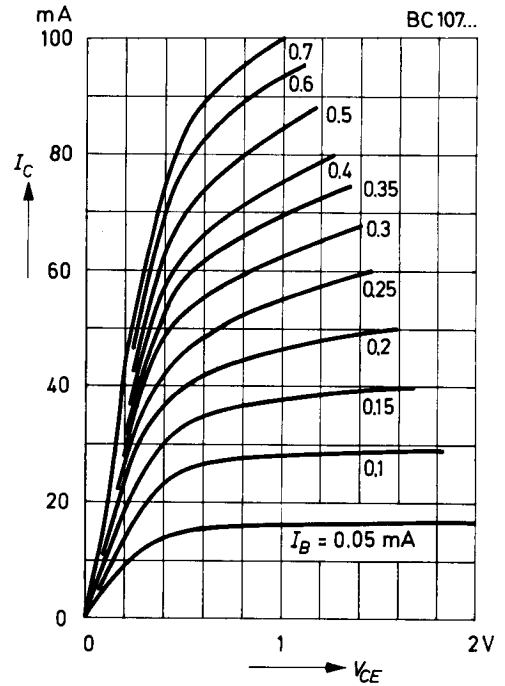
1) Not valid for BC109



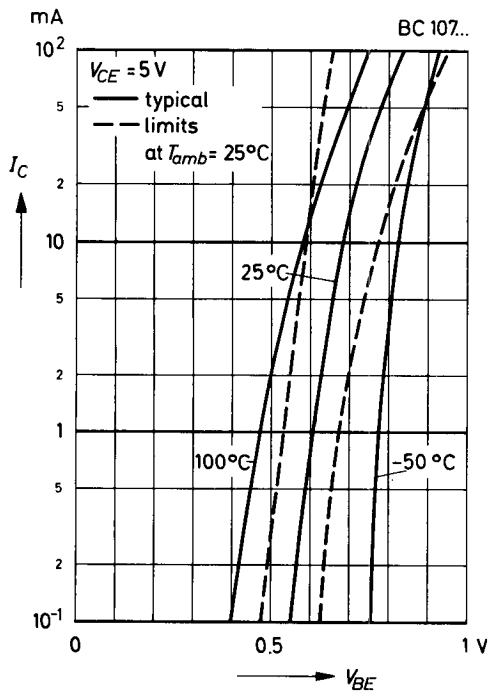
DC current gain versus collector current



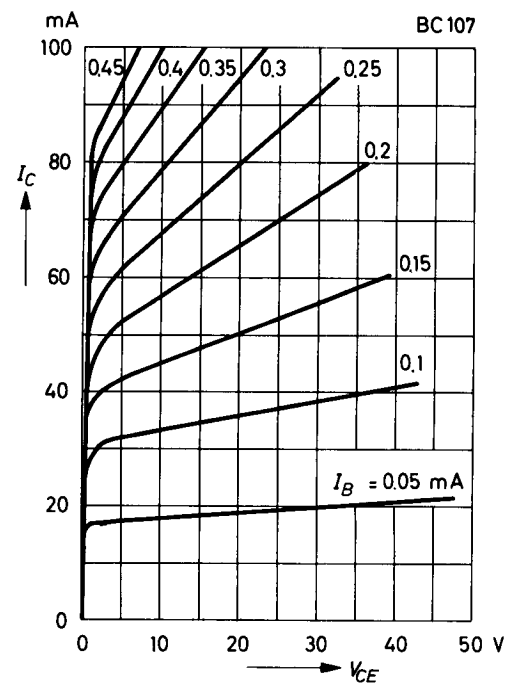
Common emitter collector characteristics



Collector current versus base emitter voltage

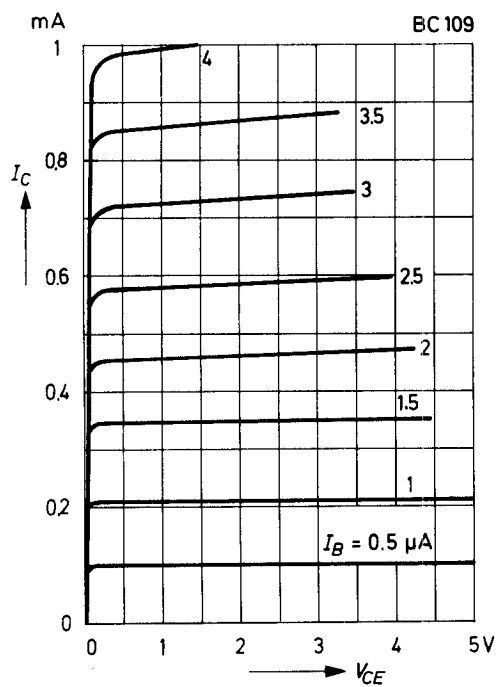


Common emitter collector characteristics

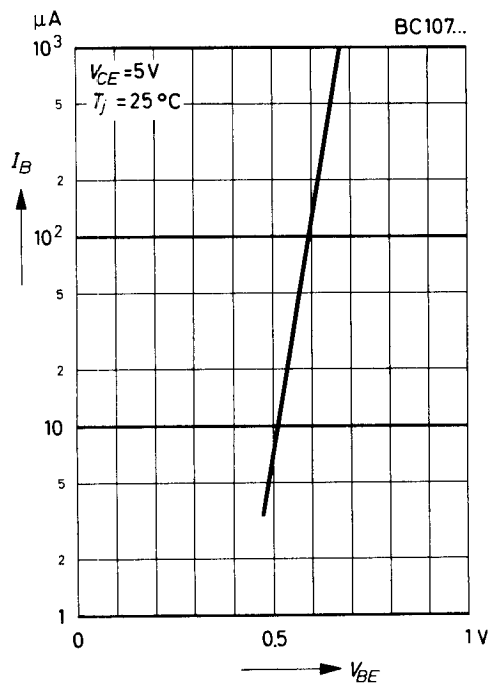


BC107, BC108, BC109

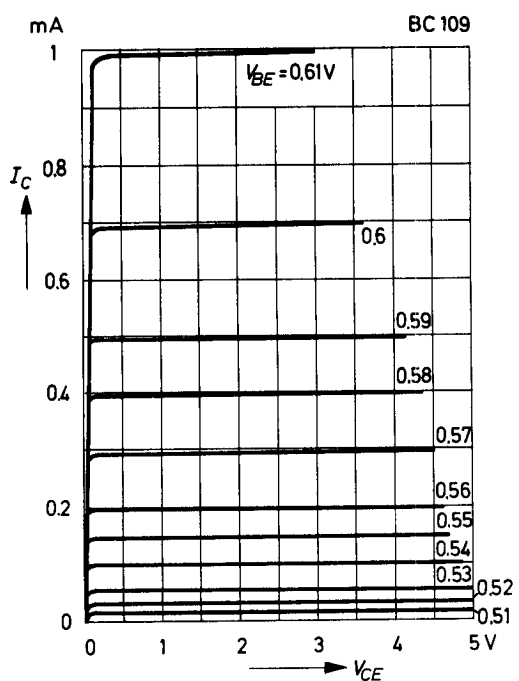
Common emitter collector characteristics



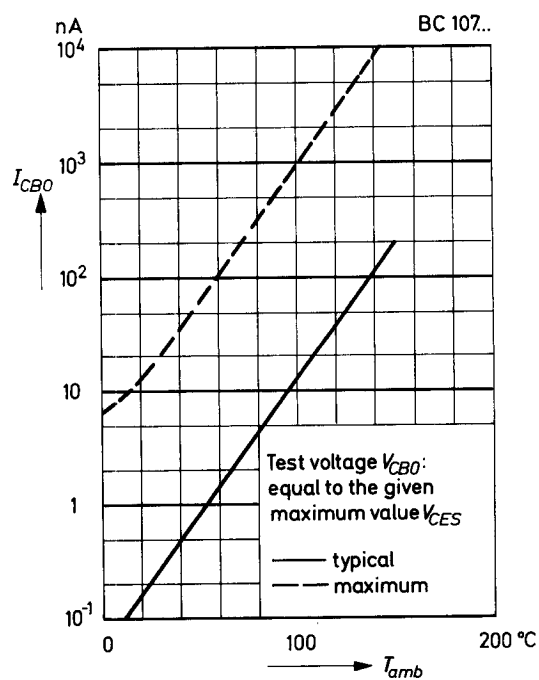
Common emitter input characteristic



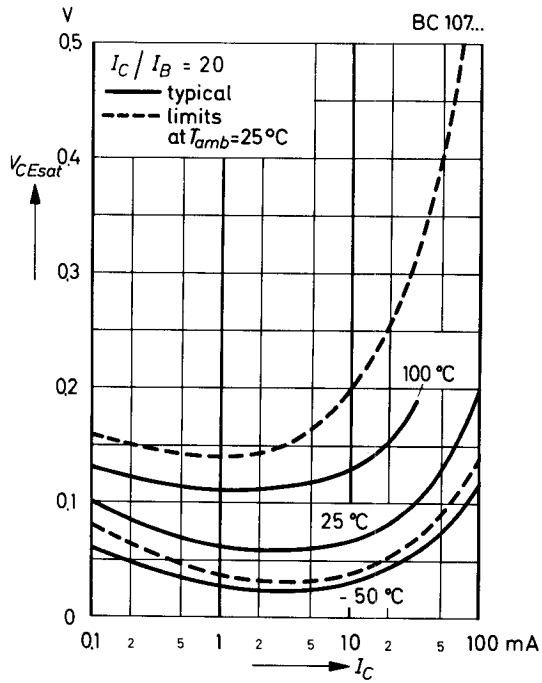
Common emitter collector characteristics



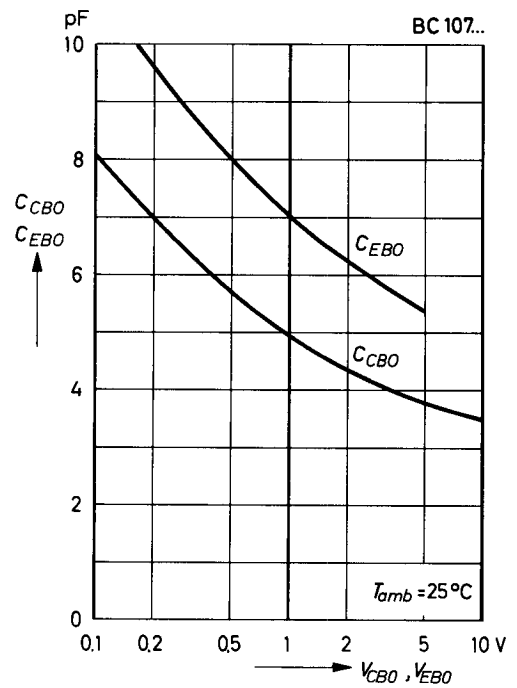
Collector cutoff current versus ambient temperature



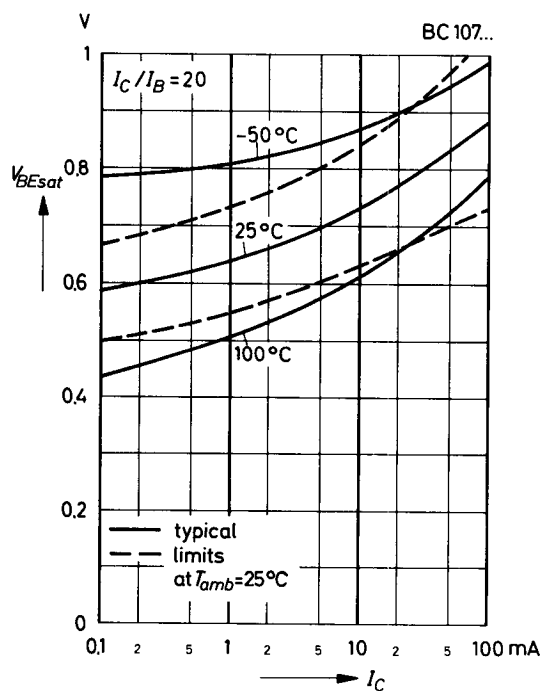
Collector saturation voltage versus collector current



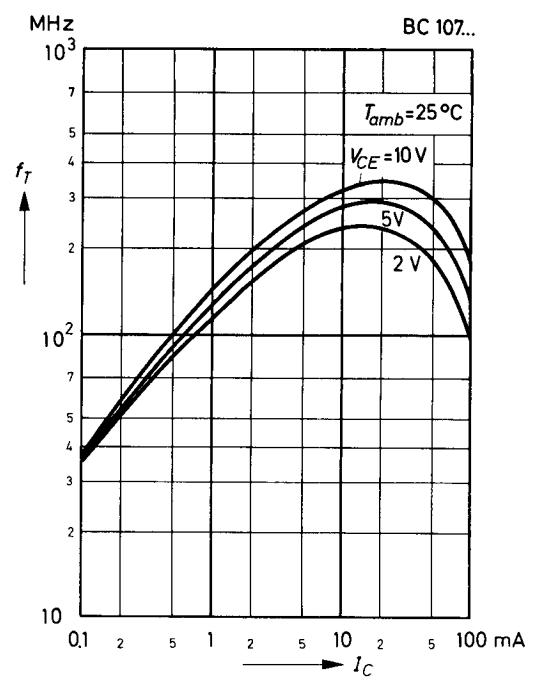
Collector base capacitance, Emitter base capacitance versus reverse bias voltage



Base saturation voltage versus collector current

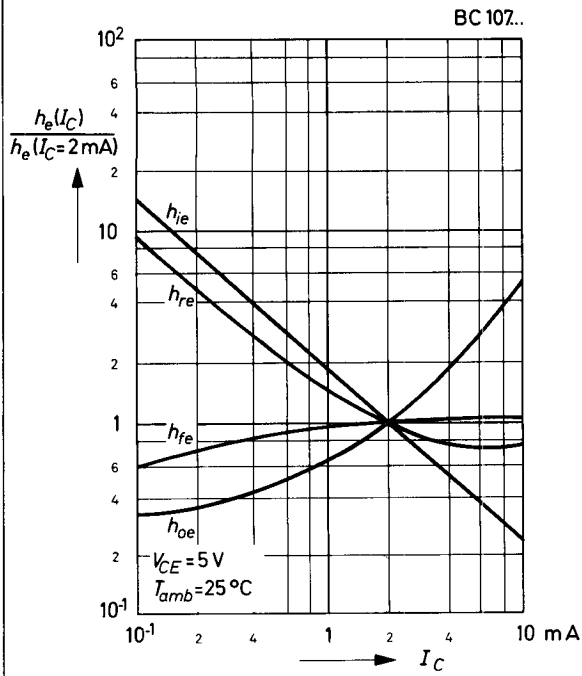


Gain bandwidth product versus collector current

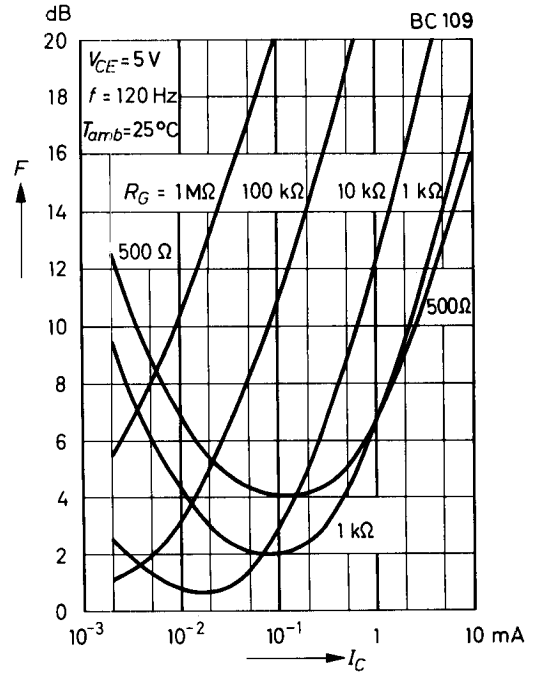


BC107, BC108, BC109

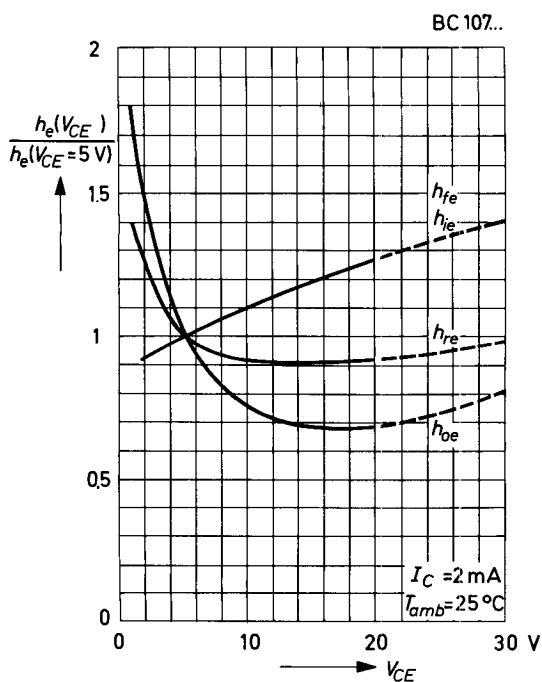
Relative h-parameters versus collector current



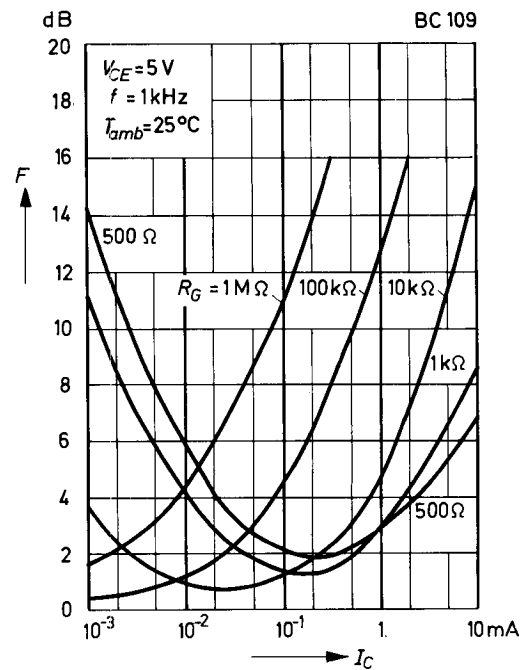
Noise figure versus collector current



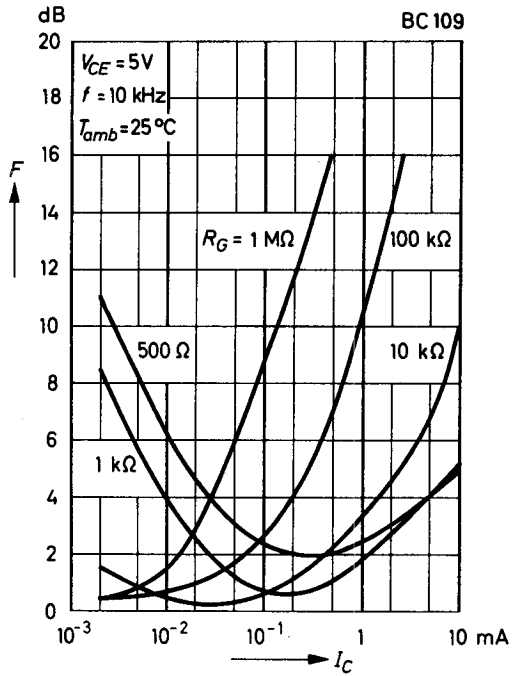
Relative h-parameters versus collector emitter voltage



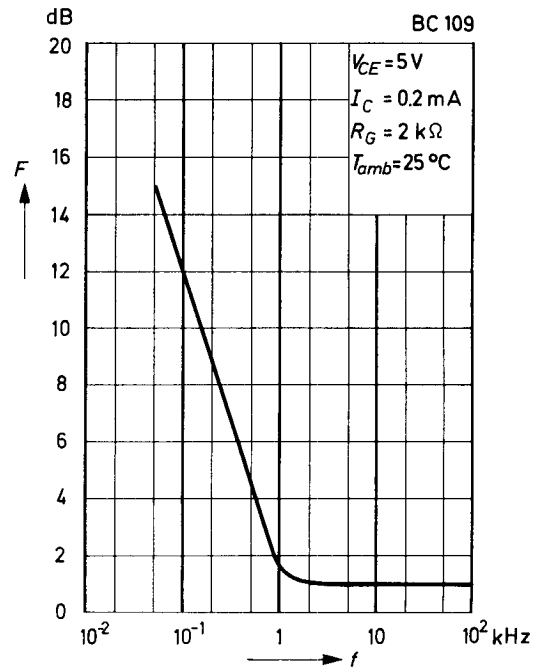
Noise figure versus collector current



Noise figure
versus collector current



Noise figure
versus frequency



Noise figure
versus collector emitter voltage

