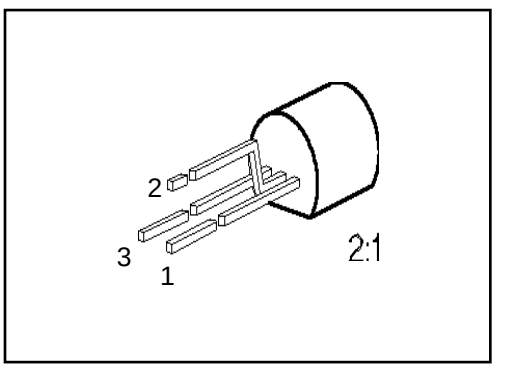
SIEMENS

NPN Silicon Darlington Transistors

BC 875
... BC 879

- High current gain
- Low collector-emitter saturation voltage
- Complementary types: BC 876, BC 878
  BC 880 (PNP)



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BC 875 BC 877 BC 879	–	C62702-C853 C62702-C854 C62702-C855	E	C	B	TO-92

Maximum Ratings

Parameter	Symbol	Values BC 875	BC 877	BC 879	Unit
Collector-emitter voltage	V_{CE0}	45	60	80	V
Collector-base voltage	V_{CB0}	60	80	100	
Emitter-base voltage	V_{EB0}	5			
Collector current	I_C	1			A
Peak collector current	I_{CM}	2			
Base current	I_B	100			mA
Peak base current	I_{BM}	200			
Total power dissipation, T_C = 90 °C[2]	P_{tot}	0.8 (1)			W
Junction temperature	T_j	150			°C
Storage temperature range	T_{stg}	– 65 … + 150			

Thermal Resistance

Junction - ambient[2]	$R_{th\ JA}$	≤ 156	K/W
Junction - case[3]	$R_{th\ JC}$	≤ 75	

1) For detailed information see chapter Package Outlines.

2) If transistors with max. 4 mm lead length are fixed on PCBs with a min. 10 mm × 10 mm large copper area for the collector terminal, R_{thJA} = 125 K/W and thus $P_{tot\ max}$ = 1 W at T_A = 25 °C.

3) Mounted on Al heat sink 15 mm × 25 mm × 0.5 mm.

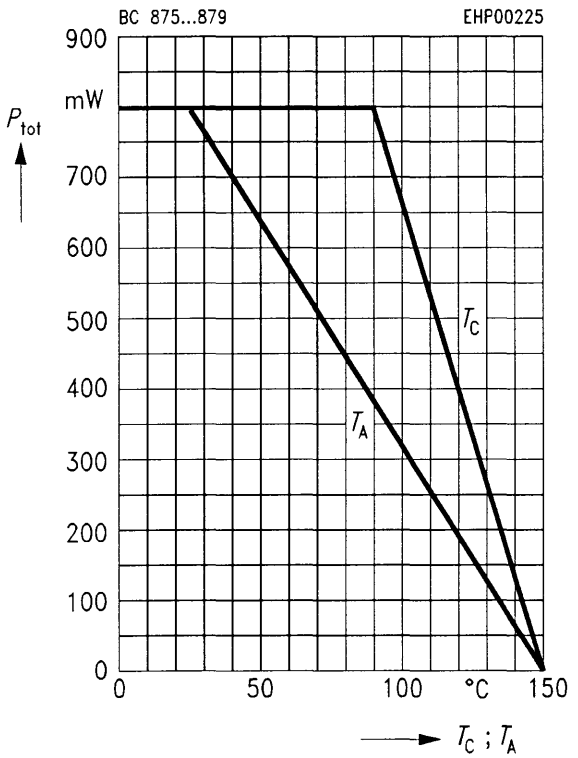
Electrical Characteristics

at T_A = 25 ˚C, unless otherwise specified.

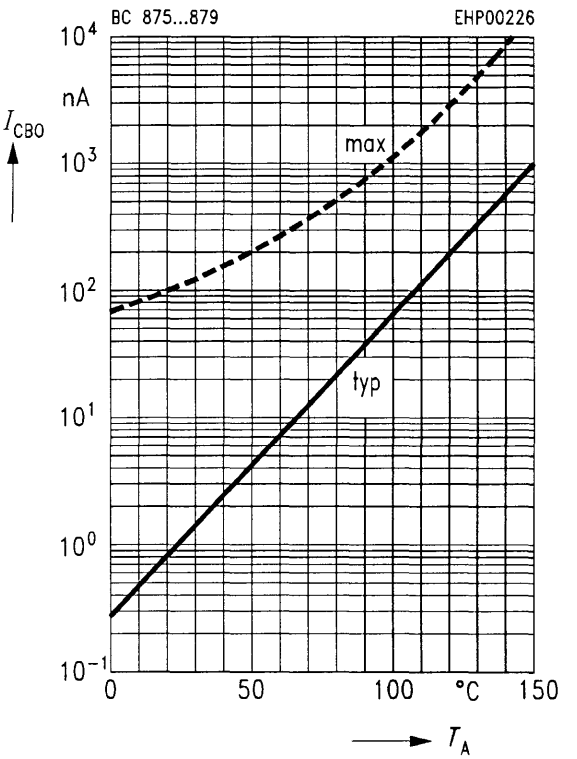
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC characteristics					
Collector-emitter breakdown voltage I_C = 50 mA	$V_{(BR)CE0}$				V
BC 875		45	–	–	
BC 877		60	–	–	
BC 879		80	–	–	
Collector-base breakdown voltage I_C = 100 µA	$V_{(BR)CB0}$				
BC 875		60	–	–	
BC 877		80	–	–	
BC 879		100	–	–	
Emitter-base breakdown voltage, I_E = 100 µA	$V_{(BR)EB0}$	5	–	–	
Collector cutoff current V_{CE} = 0.5 × V_{CEmax}	I_{CE0}	–	–	500	nA
Collector cutoff current	I_{CB0}				
V_{CB} = V_{CBmax}		–	–	100	nA
V_{CB} = V_{CBmax}, T_A = 150 ˚C		–	–	20	µA
Emitter cutoff current, V_{EB} = 4 V	I_{EB0}	–	–	100	nA
DC current gain	h_{FE}				–
I_C = 150 mA; V_{CE} = 10 V[1)]		1000	–	–	
I_C = 500 mA; V_{CE} = 10 V[1)]		2000	–	–	
Collector-emitter saturation voltage[1)]	V_{CEsat}				V
I_C = 500 mA, I_B = 0.5 mA		–	–	1.3	
I_C = 1 A, I_B = 1 mA		–	–	1.8	
Base-emitter saturation voltage[1)] I_C = 1 A; I_B = 1 mA	V_{BEsat}	–	–	2.2	
AC characteristics					
Transition frequency I_C = 200 mA, V_{CE} = 5 V, f = 20 MHz	f_T	–	150	–	MHz

[1)] Pulse test: $t \leq 300$ µs, $D \leq 2$ %.

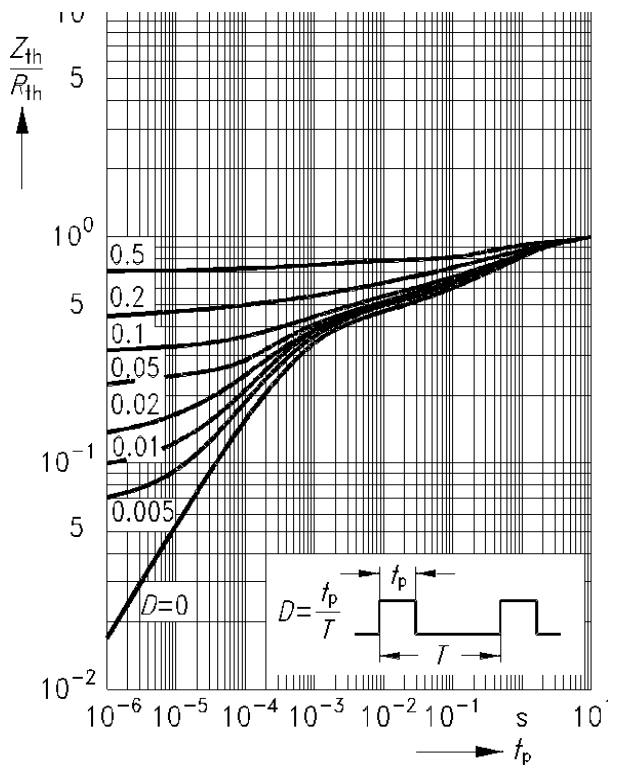
Total power dissipation $P_{tot} = f(T_A; T_C)$



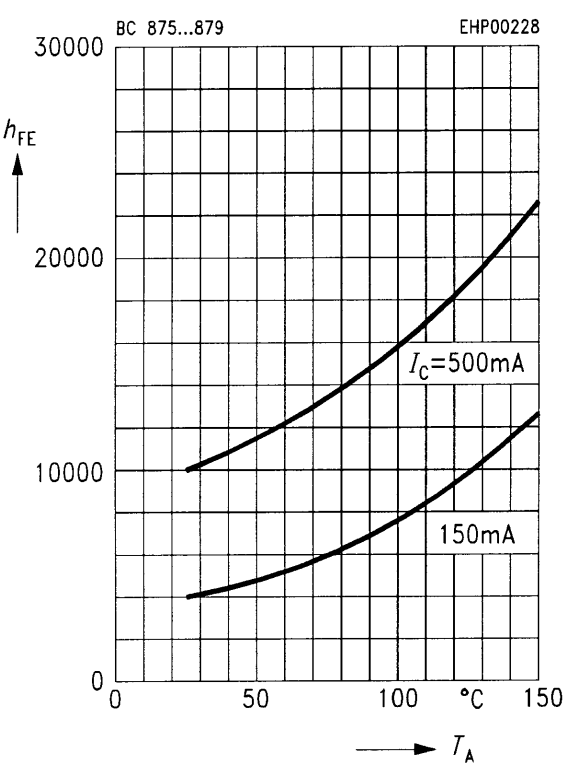
Collector cutoff current $I_{CB0} = f(T_A)$
V_{CB} = 100 V



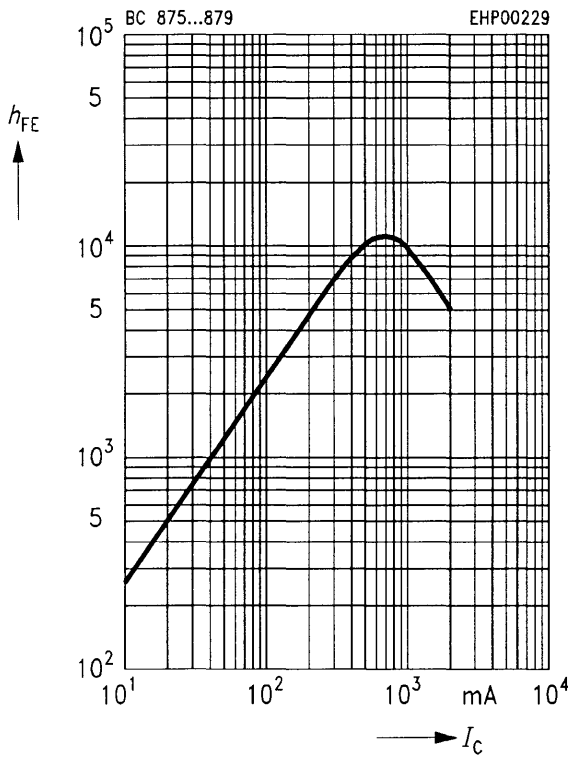
Permissible pulse load $r_{thJA} = f(t_p)$
normalized



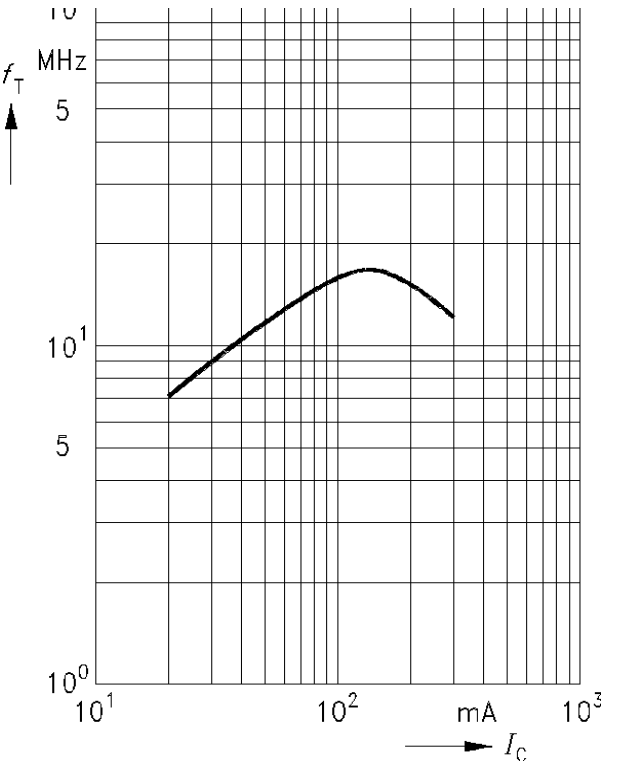
DC current gain $h_{FE} = f(T_A)$
V_{CE} = 10 V



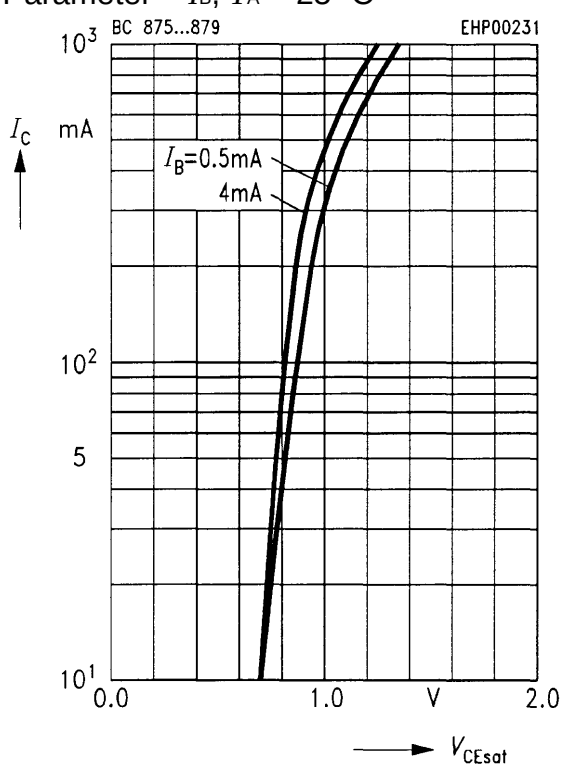
DC current gain $h_{FE} = f(I_C)$
V_{CE} = 10 V, T_A = 25 °C



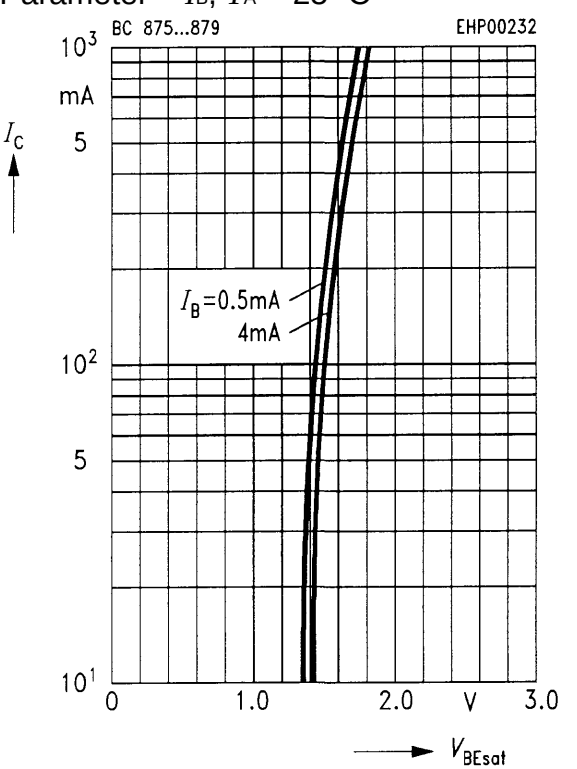
Transition frequency $f_T = f(I_C)$
V_{CE} = 5 V, f = 20 MHz



Collector-emitter saturation voltage
$I_C = f(V_{CEsat})$
Parameter = I_B, T_A = 25 °C



Base-emitter saturation voltage
$I_C = f(V_{BEsat})$
Parameter = I_B, T_A = 25 °C



SIEMENS

PNP Silicon Darlington Transistors

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- High collector current
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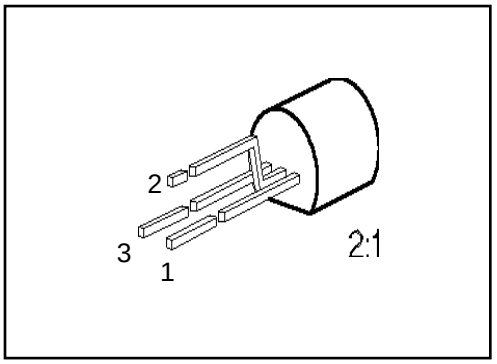

Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BC 876 BC 878 BC 880	–	C62702-C943 C62702-C942 C62702-C941	E	C	B	TO-92

Maximum Ratings

Parameter	Symbol	Values BC 876	BC 878	BC 880	Unit
Collector-emitter voltage	V_{CE0}	45	60	80	V
Collector-base voltage	V_{CB0}	60	80	100	
Emitter-base voltage	V_{EB0}	5			
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Electrical Characteristics

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Parameter	Symbol	Values			Unit
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DC characteristics					
Collector-emitter breakdown voltage I_C = 50 mA	$V_{(BR)CE0}$				V
BC 876		45	–	–	
BC 878		60	–	–	
BC 880		80	–	–	
Collector-base breakdown voltage I_C = 100 µA	$V_{(BR)CB0}$				
BC 876		60	–	–	
BC 878		80	–	–	
BC 880		100	–	–	
Emitter-base breakdown voltage, I_E = 100 µA	$V_{(BR)EB0}$	5	–	–	
Collector cutoff current V_{CE} = 0.5 × V_{CEmax}	I_{CE0}	–	–	500	
Collector cutoff current	I_{CB0}				
V_{CB} = V_{CBmax}		–	–	100	nA
V_{CB} = V_{CBmax}, T_A = 150 ˚C		–	–	20	µA
Emitter cutoff current, V_{EB} = 4 V	I_{EB0}	–	–	100	nA
DC current gain	h_{FE}				–
I_C = 150 mA; V_{CE} = 10 V[1)]		1000	–	–	
I_C = 500 mA; V_{CE} = 10 V[1)]		2000	–	–	
Collector-emitter saturation voltage[1)]	V_{CEsat}				V
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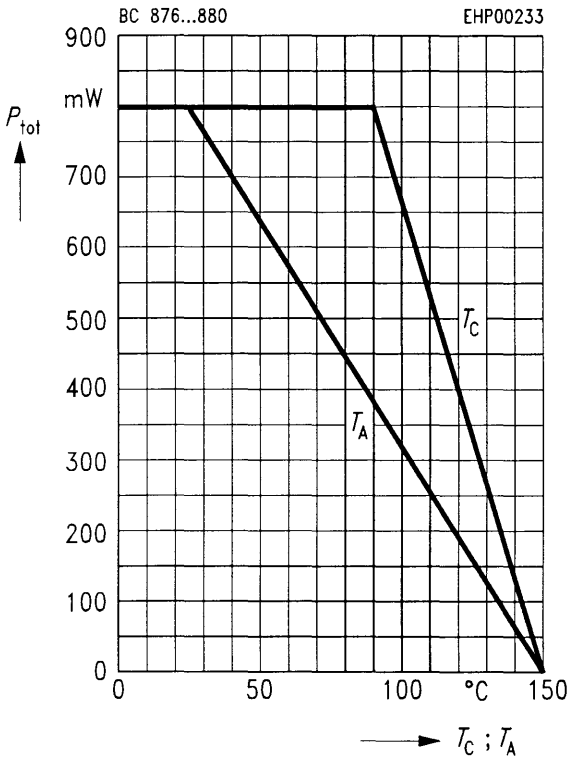
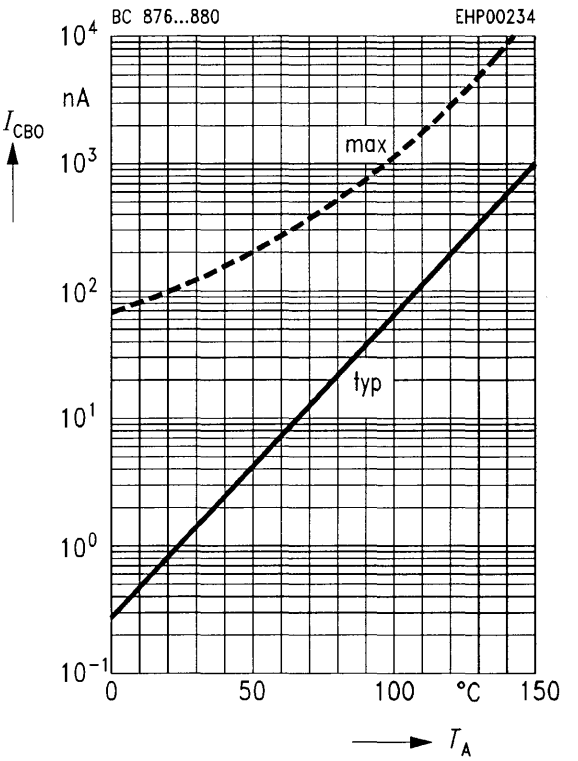
I_C = 1000 mA, I_B = 1 mA		–	–	1.8	
Base-emitter saturation voltage[1)] I_C = 1000 mA; I_B = 1 mA	V_{BEsat}	–	–	2.2	
AC characteristics					
Transition frequency I_C = 200 mA, V_{CE} = 5 V, f = 20 MHz	f_T	–	150	–	MHz

[1)] Pulse test: $t \leq 300$ µs, $D \leq 2$ %.

Total power dissipation $P_{tot} = f(T_A; T_C)$



Collector cutoff current $I_{CB0} = f(T_A)$
V_{CB} = 100 V



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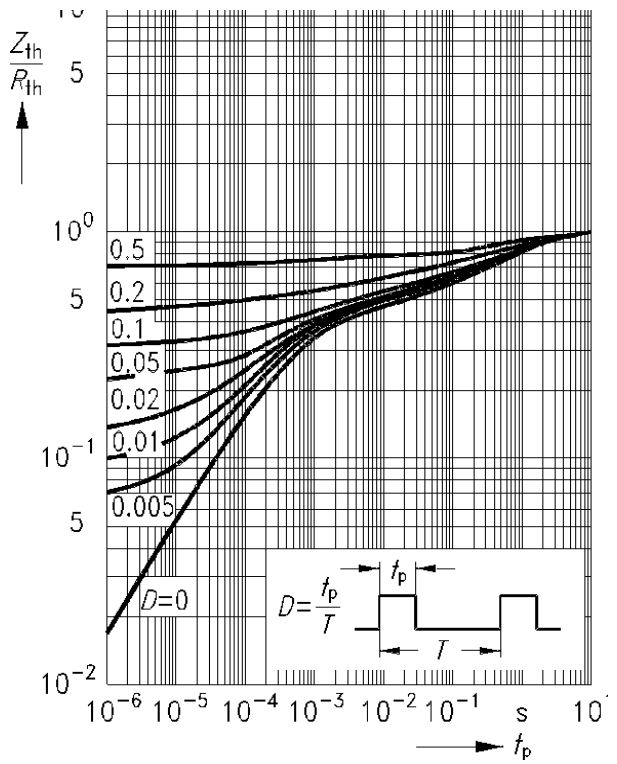
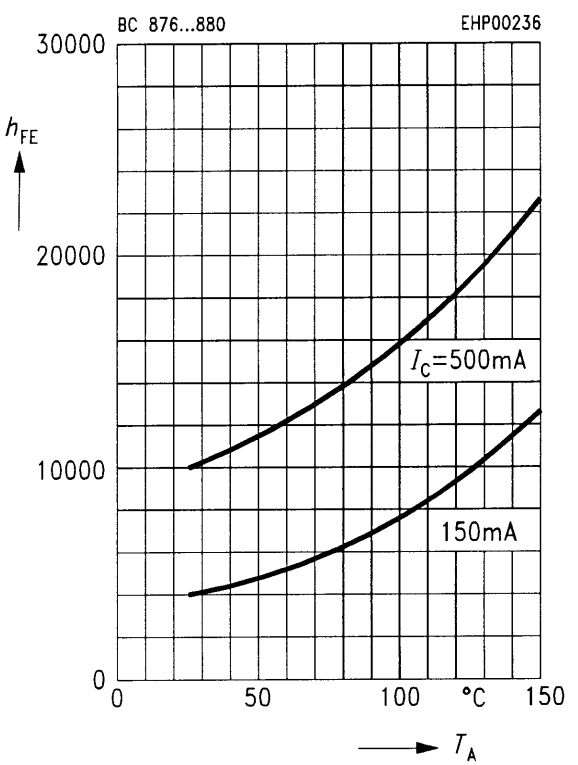
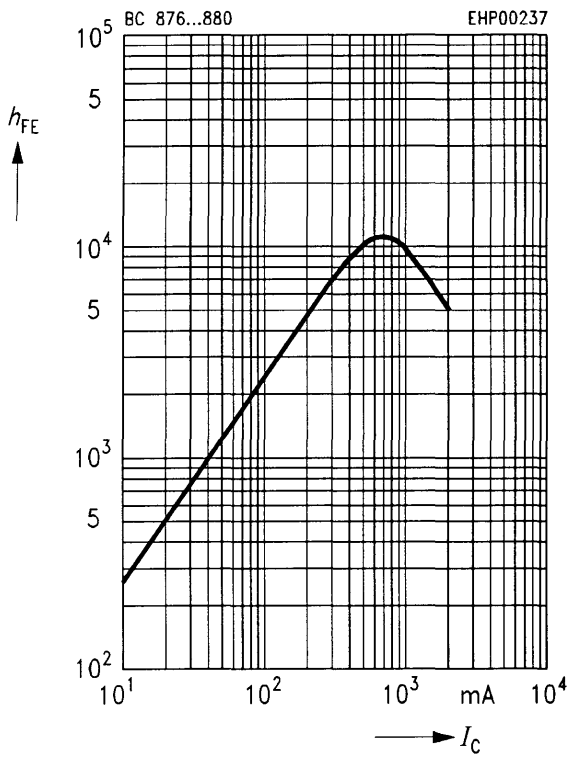


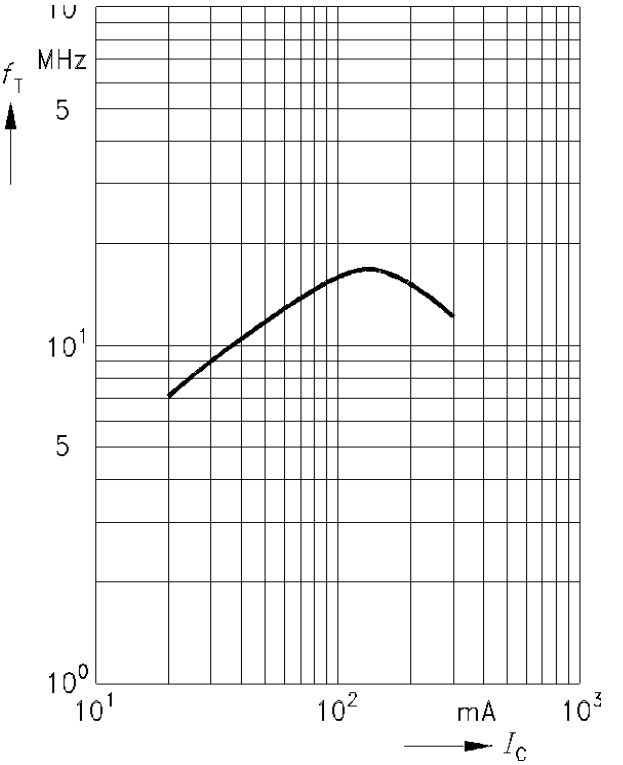
DC current gain $h_{FE} = f(T_A)$
V_{CE} = 10 V



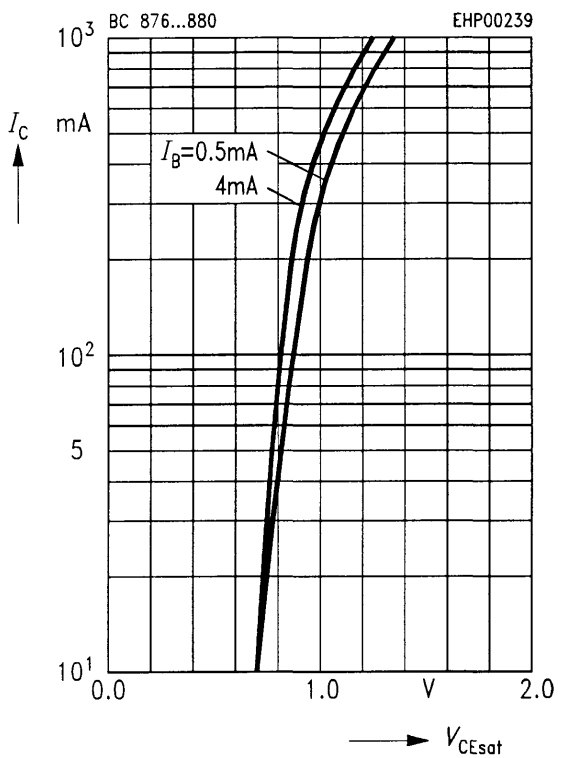
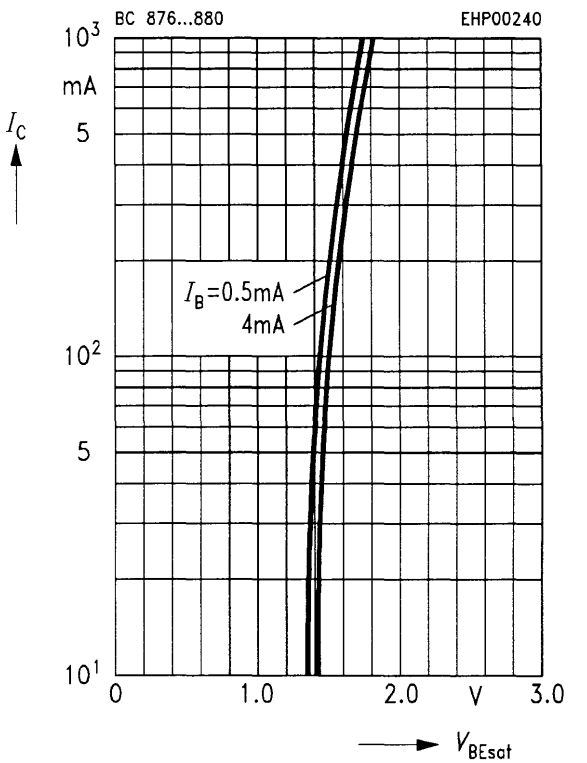
DC current gain $h_{FE} = f(I_C)$
V_{CE} = 10 V, T_A = 25 ˚C



Transition frequency $f_T = f(I_C)$
V_{CE} = 5 V, f = 20 MHz



Collector-emitter saturation voltage
$I_C = f(V_{CEsat})$
Parameter = I_B, T_A = 25 ˚C



Base-emitter saturation voltage
$I_C = f(V_{BEsat})$
Parameter = I_B, T_A = 25 ˚C