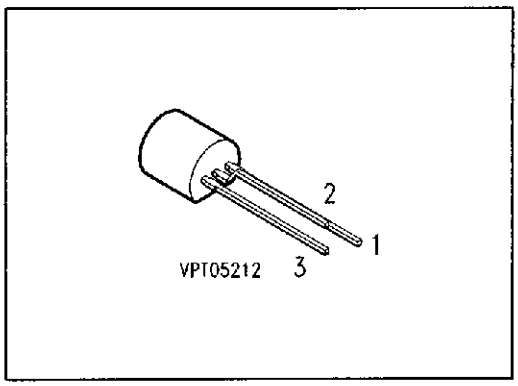
SIEMENS

PNP Silicon RF Transistors

BF 450
BF 451

- For common emitter AM and FM stages
- Low feedback capacitance due to shield diffusion



Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BF 450 BF 451	–	Q62702-F312 Q62702-F313	C	E	B	TO-92

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CEO}	40	V
Collector-base voltage	V_{CBO}	40	
Emitter-base voltage	V_{EBO}	4	
Collector current	I_C	25	mA
Base current	I_B	5	
Total power dissipation, $T_A \leq 45$ °C	P_{tot}	250	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	– 55 ... + 150	

Thermal Resistance

Junction - ambient	$R_{th\,JA}$	≤ 420	K/W

[1] For detailed information see chapter Package Outlines.

Electrical Characteristics

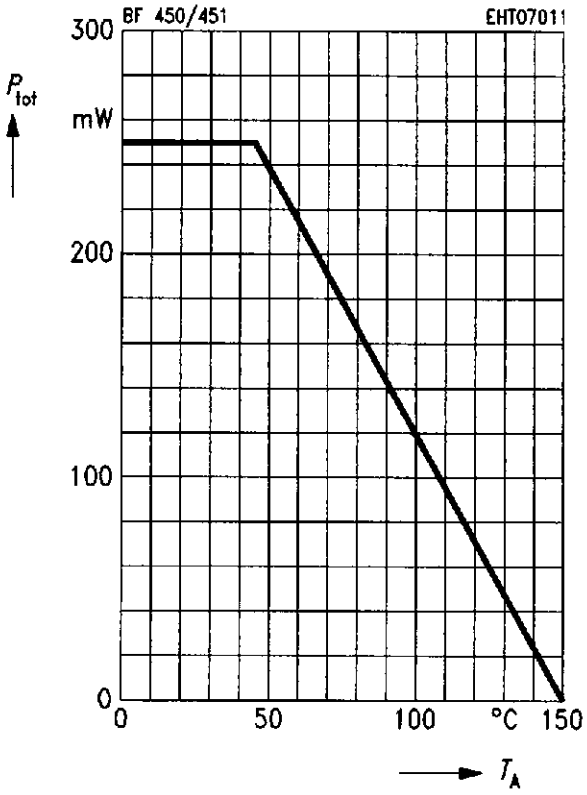
at T_A = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 2 mA	$V_{(BR)\,CE0}$	40	–	–	V
Collector-base breakdown voltage I_C = 10 µA	$V_{(BR)\,CB0}$	40	–	–	
Emitter-base breakdown voltage I_E = 10 µA	$V_{(BR)\,EB0}$	4	–	–	
Collector cutoff current V_{CB} = 30 V	I_{CB0}	–	–	50	nA
DC current gain I_C = 1 mA, V_{CE} = 10 V BF 450 BF 451	h_{FE}	 65 35	 – –	 220 125	–
Base-emitter voltage I_C = 1 mA, V_{CE} = 10 V	V_{BE}	–	0.72	–	V

Electrical Characteristics (continued)
at T_A = 25 °C, unless otherwise specified.

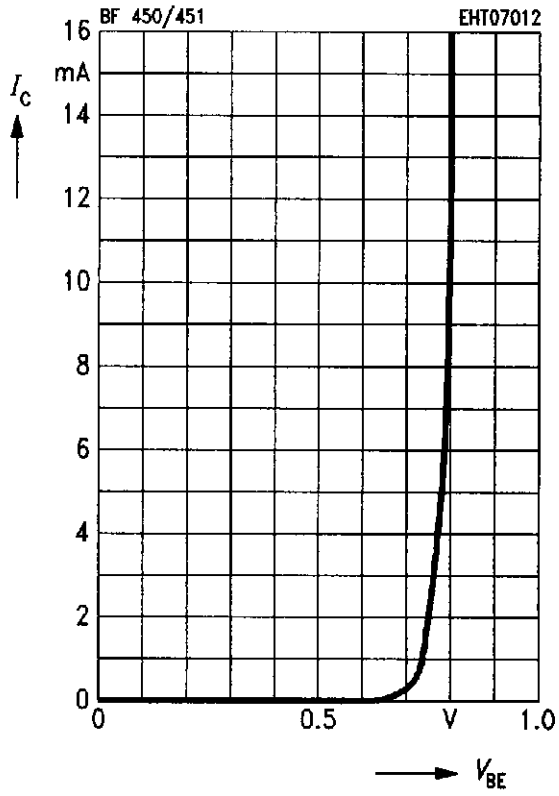
Parameter	Symbol	Values			Unit
		min.	typ.	max.	
AC Characteristics					
Transition frequency I_C =1 mA, V_{CE} =10 V, f =100 MHz BF 450 BF 451	f_T	 – –	 375 325	 – –	MHz
Collector-base capacitance V_{CE} =10 V, V_{BE} = 0 V, f =1 MHz	C_{cb}	–	0.32	–	pF
Noise figure V_{CE} = 10 V I_C = 1 mA, f = 100 kHz, R_S = 300 Ω I_C = 2 mA, f = 100 MHz, R_S = 60 Ω	F	 – –	 2 3	 – –	dB
Y parameters, common emitter I_C = 1 mA, V_{CE} = 10 V f = 0.45 ... 10 MHz BF 450 BF 451	g_{11e}	 – –	 0.5 0.8	 – –	 mS mS
BF 450 BF 451	C_{11e}	– –	17 19	– –	pF pF
	$\lvert y_{21e} \rvert$	–	35	–	mS
	C_{22e}	–	1.4	–	pF
f = 500 kHz f = 10 MHz	g_{22e}	– –	– –	8 10	µS µS

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

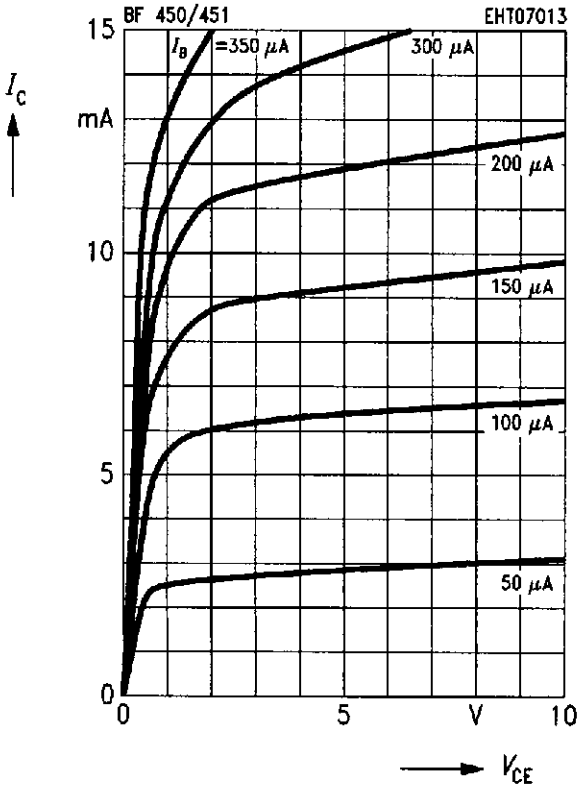


Input characteristics $I_C = f(V_{BE})$

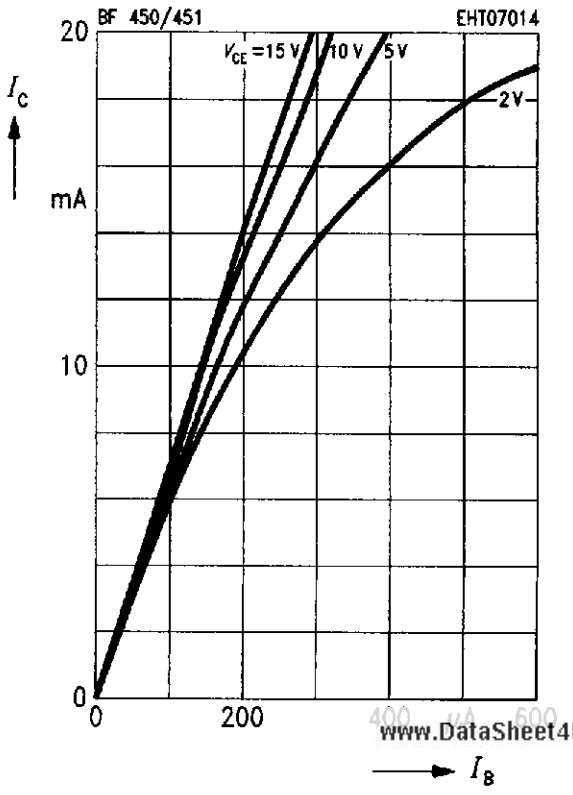
V_{CE} = 10 V



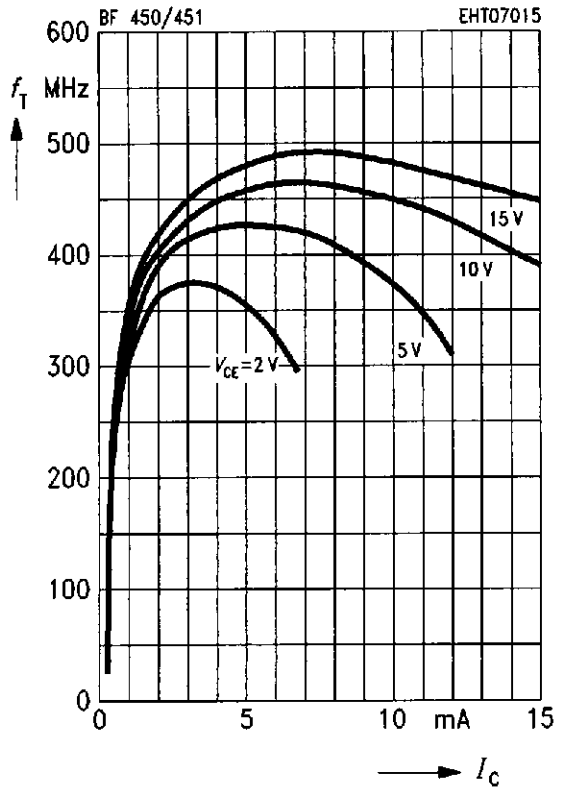
Output characteristics $I_C = f(V_{CE})$



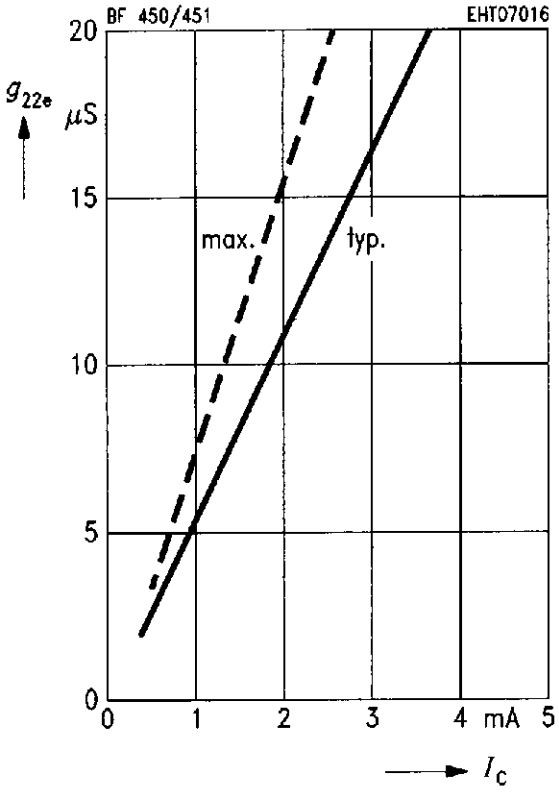
Collector current $I_C = f(I_B)$



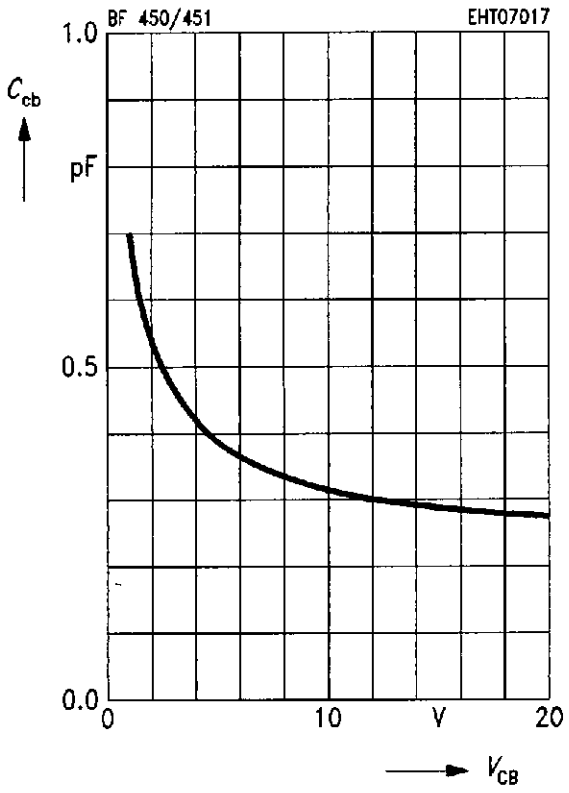
Transition frequency $f_T = f(I_C)$
f = 100 MHz



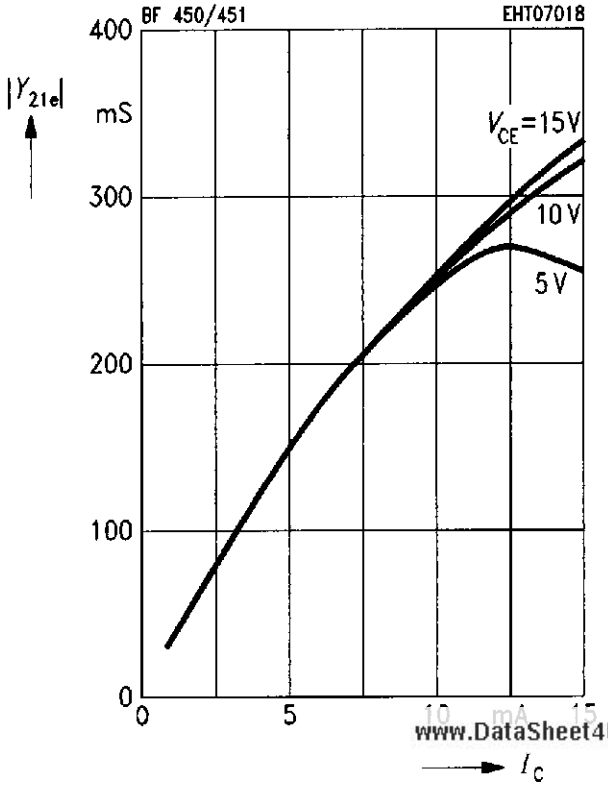
Output conductance $g_{22e} = f(I_C)$
V_{CE} = 10 V, f = 500 kHz



Collector-base capacitance $C_{cb} = f(V_{CB})$
f = 1 MHz

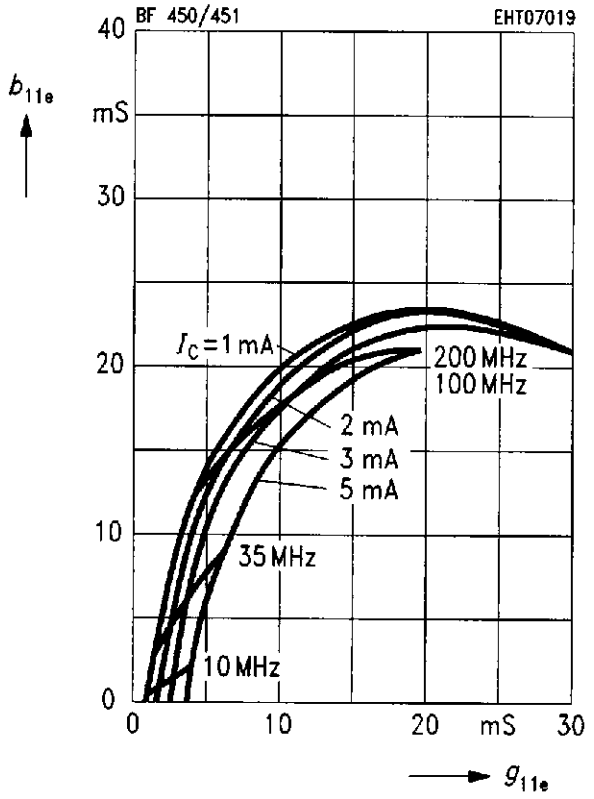


Forward transfer admittance
$|y_{21e}| = f(I_C)$, f = 10.7 MHz



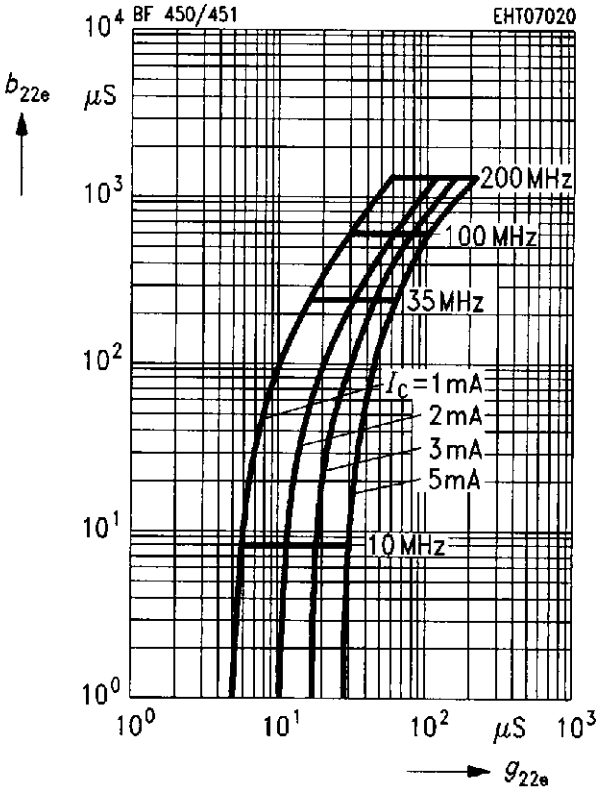
Input admittance y_{11e}

V_{CE} = 10 V



Output admittance y_{22e}

V_{CE} = 10 V



Forward transfer admittance y_{21e}

V_{CE} = 10 V