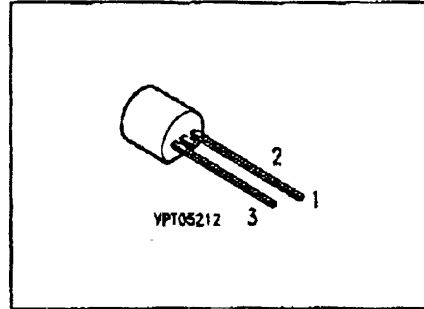


SIEMENS

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			Package ¹⁾
			1	2	3	
BF 450 BF 451	—	Q62702-F312 Q62702-F313	C	E	B	TO-92

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE0}	40	V
Collector-base voltage	V_{CB0}	40	
Emitter-base voltage	V_{EB0}	4	
Collector current	I_C	25	mA
Base current	I_B	5	
Total power dissipation, $T_A \leq 45^\circ\text{C}$	P_{tot}	250	mW
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{eq}	- 55 ... + 150	

Thermal Resistance

Junction - ambient	R_{thJA}	≤ 420	K/W
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¹⁾ For detailed information see chapter Package Outlines.

BF 450
BF 451

Electrical Characteristics

at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

DC Characteristics

Collector-emitter breakdown voltage $I_C = 2\text{ mA}$	$V_{(BR)\text{ } CE0}$	40	—	—	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}$	$V_{(BR)\text{ } CB0}$	40	—	—	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}$	$V_{(BR)\text{ } EB0}$	4	—	—	
Collector cutoff current $V_{CE} = 30\text{ V}$	I_{CB0}	—	—	50	nA
DC current gain $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$ BF 450 BF 451	h_{FE}	65 35	— —	220 125	—
Base-emitter voltage $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$	V_{BE}	—	0.72	—	V

BF 450
BF 451

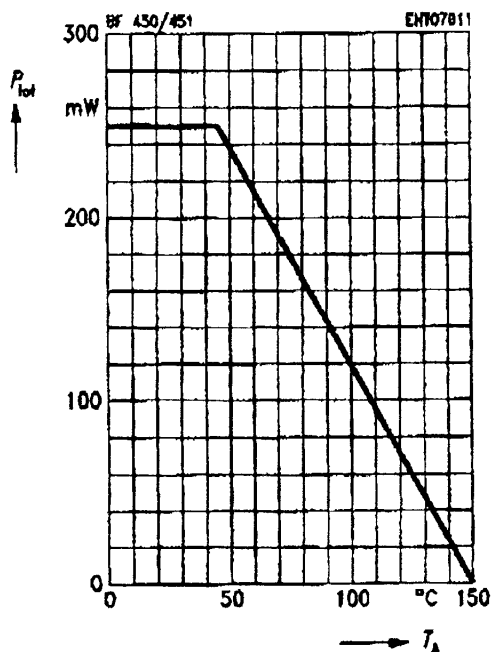
Electrical Characteristics (continued)
at $T_A = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

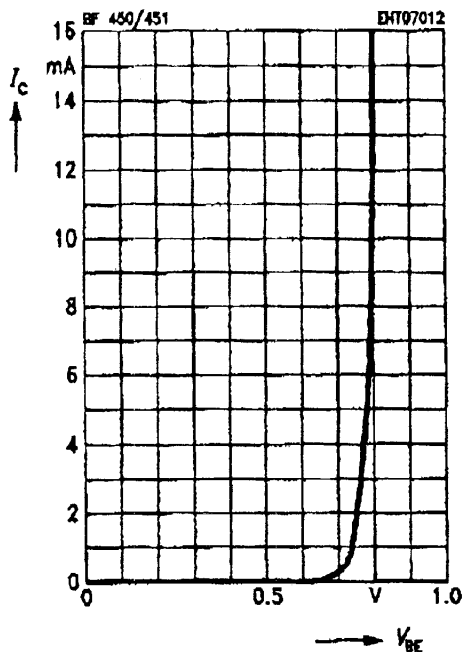
AC Characteristics

Transition frequency $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$, $f = 100\text{ MHz}$ BF 450 BF 451	f_T	— —	375 325	— —	MHz
Collector-base capacitance $V_{CE} = 10\text{ V}$, $V_{BE} = 0\text{ V}$, $f = 1\text{ MHz}$	C_{cb}	—	0.32	—	pF
Noise figure $V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}$, $f = 100\text{ kHz}$, $R_s = 300\ \Omega$ $I_C = 2\text{ mA}$, $f = 100\text{ MHz}$, $R_s = 60\ \Omega$	F	— —	2 3	— —	dB
Y parameters, common emitter $I_C = 1\text{ mA}$, $V_{CE} = 10\text{ V}$ $f = 0.45 \dots 10\text{ MHz}$ BF 450 BF 451	g_{11e}	— —	0.5 0.8	— —	mS mS
BF 450 BF 451	C_{11e}	— —	17 19	— —	pF pF
	$ y_{21e} $	—	35	—	mS
	C_{22e}	—	1.4	—	pF
	g_{22e}	—	—	8	μS
$f = 500\text{ kHz}$ $f = 10\text{ MHz}$		— —	— —	10	μS

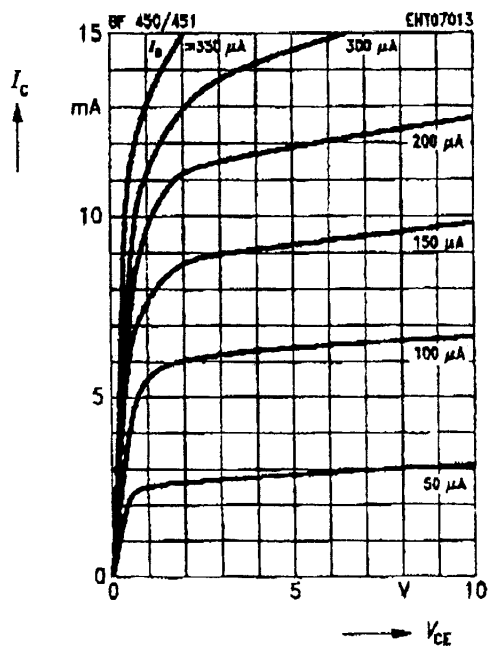
Total power dissipation $P_{tot} = f(T_A)$



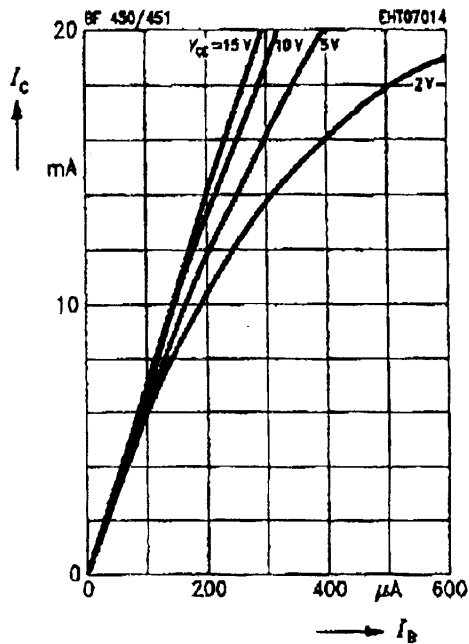
Input characteristics $I_C = f(V_{BE})$
 $V_{CE} = 10$ V



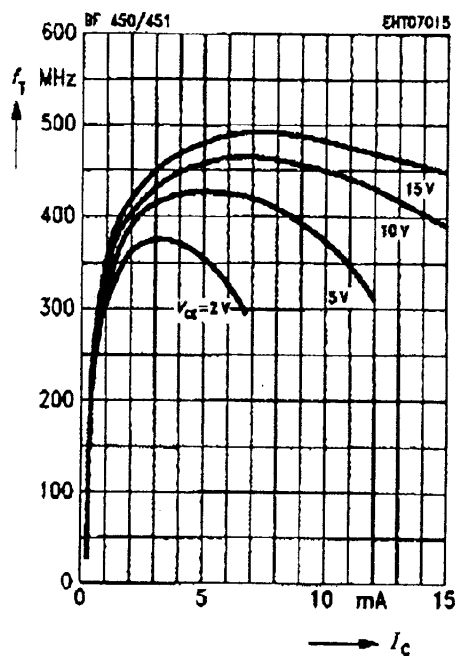
Output characteristics $I_C = f(V_{CE})$



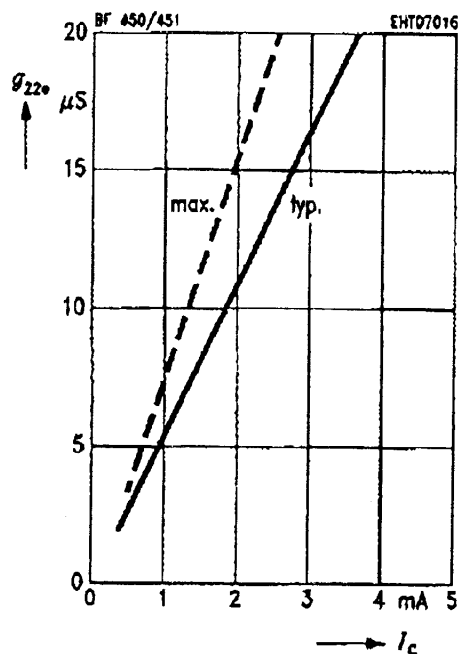
Collector current $I_C = f(I_B)$



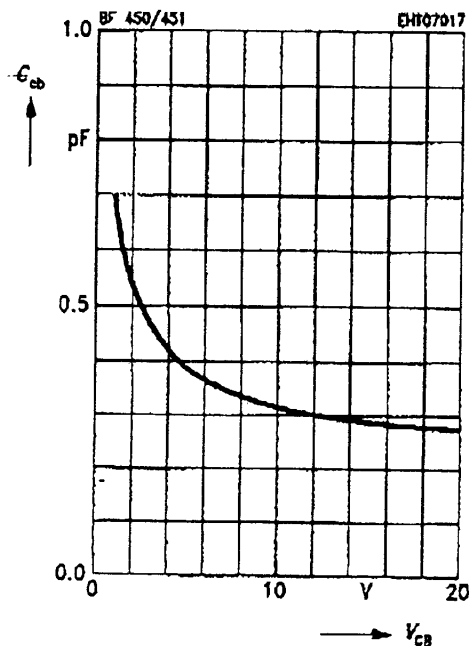
Transition frequency $f_T = f(I_C)$
 $f = 100 \text{ MHz}$



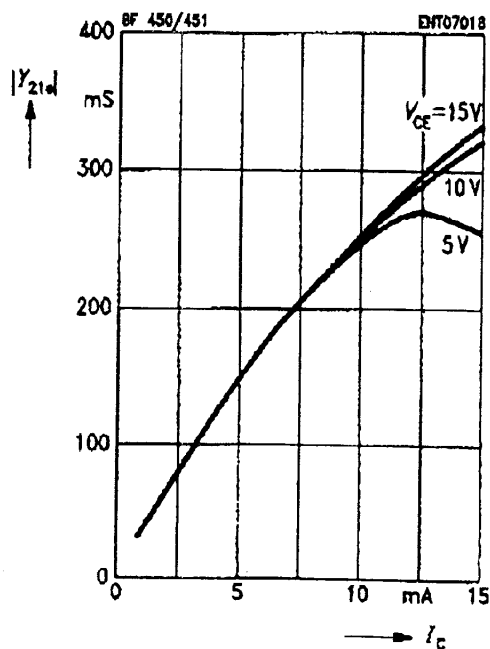
Output conductance $g_{22} = f(I_C)$
 $V_{CE} = 10 \text{ V}$, $f = 500 \text{ kHz}$



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

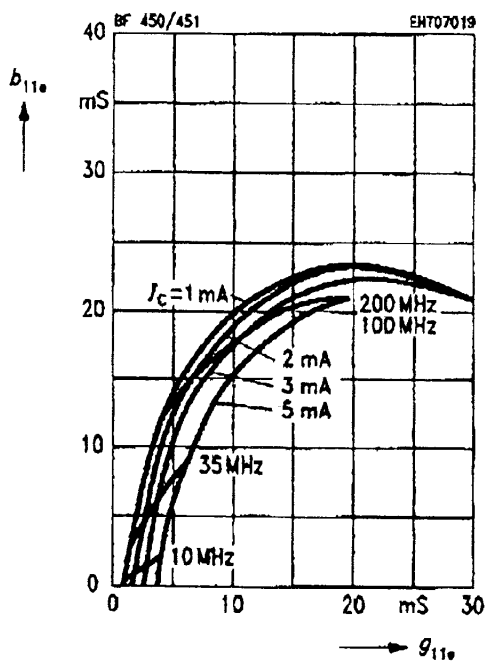


Forward transfer admittance $|y_{21}| = f(I_C)$, $f = 10.7 \text{ MHz}$



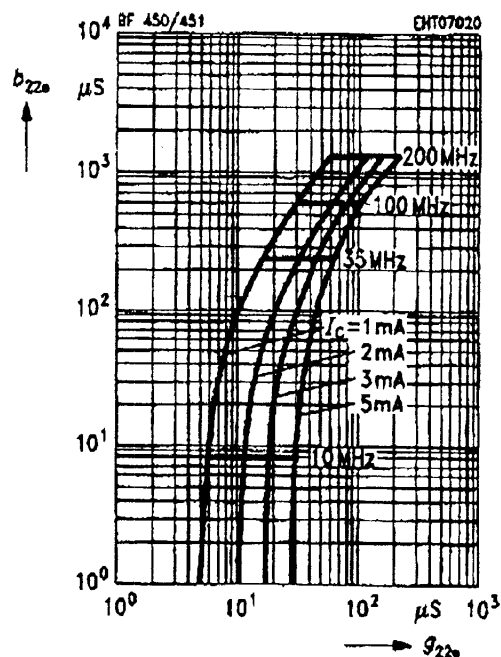
Input admittance y_{11e}

$V_{CE} = 10\text{ V}$



Output admittance y_{22e}

$V_{CE} = 10\text{ V}$



Forward transfer admittance y_{21e}

$V_{CE} = 10\text{ V}$

