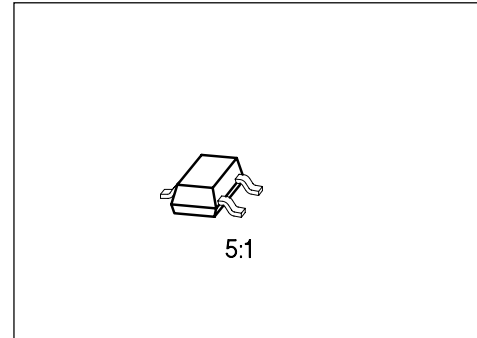


## PNP Silicon RF Transistor

**BF 550**

- For common emitter amplifier stages up to 300 MHz
- For mixer applications in AM/FM radios and VHF TV tuners
- Low feedback capacitance due to shield diffusion
- Controlled low output conductance



Type	Marking	Ordering Code (tape and reel)	Pin Configuration			Package <sup>1)</sup>
			1	2	3	
BF 550	LA	Q62702-F944	B	E	C	SOT-23

### 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, $T_A \leq 25\text{ °C}$	$P_{tot}$	280	mW
Junction temperature	$T_j$	150	°C
Storage temperature range	$T_{stg}$	- 65 ... + 150	

### Thermal Resistance

Junction - ambient <sup>2)</sup>	$R_{th JA}$	$\leq 450$	K/W
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<sup>1)</sup> For detailed information see chapter Package Outlines.

<sup>2)</sup> Package mounted on alumina 15 mm × 16.7 mm × 0.7 mm.

**Electrical Characteristics**

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	

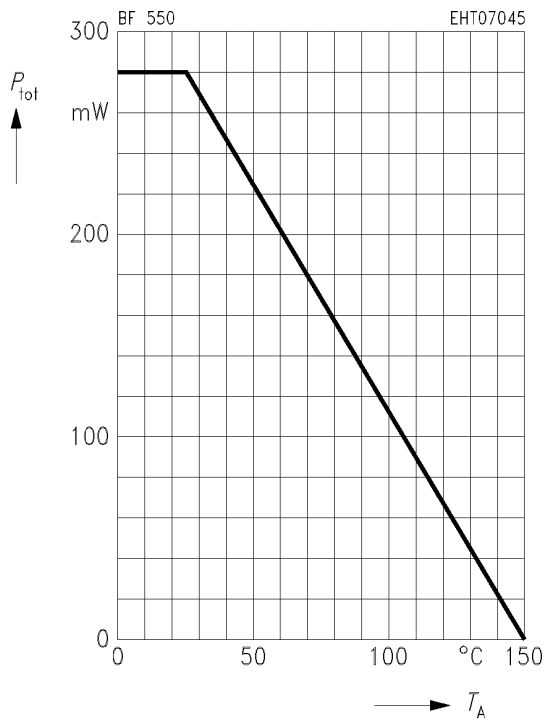
**DC Characteristics**

Collector-emitter breakdown voltage $I_C = 1\text{ mA}, I_B = 0$	$V_{(BR)CE0}$	40	–	–	V
Collector-base breakdown voltage $I_C = 10\text{ }\mu\text{A}, I_E = 0$	$V_{(BR)CB0}$	40	–	–	
Emitter-base breakdown voltage $I_E = 10\text{ }\mu\text{A}, I_C = 0$	$V_{(BR)EB0}$	4	–	–	
Collector cutoff current $V_{CB} = 30\text{ V}, I_E = 0$	$I_{CB0}$	–	–	100	nA
DC current gain $I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$	$h_{FE}$	50	–	250	–
Base-emitter voltage $I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$	$V_{BE}$	–	0.72	–	V

**AC Characteristics**

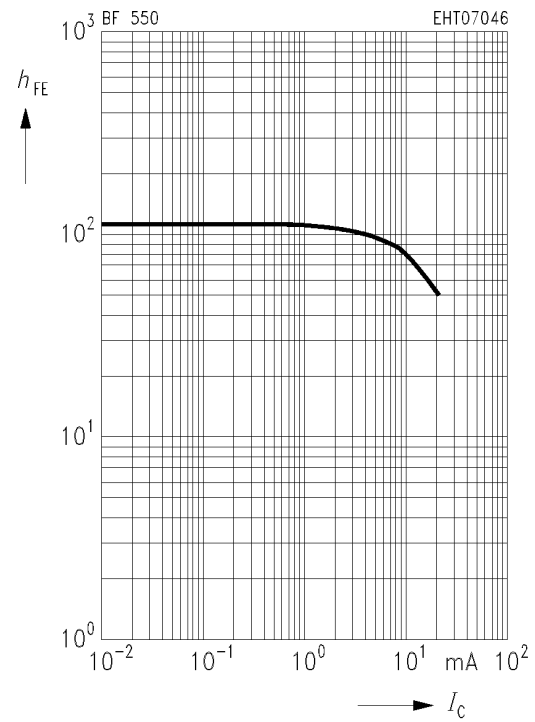
Transition frequency $I_C = 1\text{ mA}, V_{CE} = 10\text{ V}, f = 100\text{ MHz}$	$f_T$	–	350	–	MHz
Collector-base capacitance $V_{CB} = 10\text{ V}, V_{BE} = 0\text{ V}, f = 1\text{ MHz}$	$C_{cb}$	–	0.33	–	pF
Collector-emitter capacitance $V_{CE} = 10\text{ V}, V_{BE} = 0\text{ V}, f = 1\text{ MHz}$	$C_{ce}$	–	0.67	–	
Noise figure $V_{CE} = 10\text{ V}$ $I_C = 1\text{ mA}, f = 100\text{ kHz}, R_S = 300\text{ }\Omega$ $I_C = 2\text{ mA}, f = 100\text{ MHz}, R_S = 60\text{ }\Omega$	$F$	–	2 3.4	–	dB
<b>Y parameters</b> , common emitter $I_C = 1\text{ mA}, V_{CE} = 10\text{ V}$ $f = 0.45 \dots 10\text{ MHz}$	$g_{11e}$	–	550	–	$\mu\text{S}$
	$C_{11e}$	–	17	–	pF
	$ y_{21e} $	–	35	–	mS
	$C_{22e}$	–	1.3	–	pF
$f = 500\text{ kHz}$	$g_{22e}$	–	5	8	$\mu\text{S}$
$f = 10\text{ MHz}$	$g_{22e}$	–	5	10	$\mu\text{S}$

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



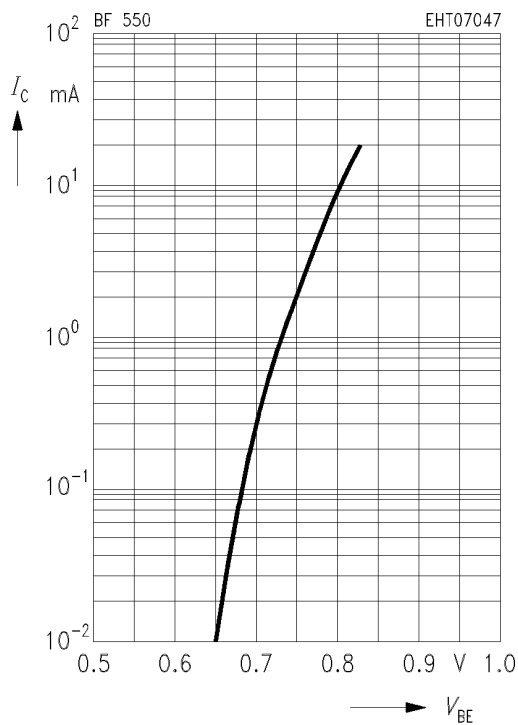
**DC current gain  $h_{FE} = f(I_C)$**

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



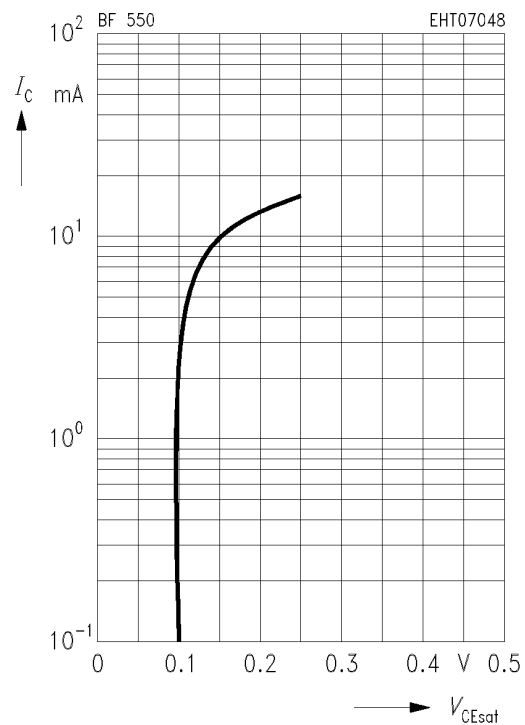
**Collector current  $I_C = f(V_{BE})$**

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



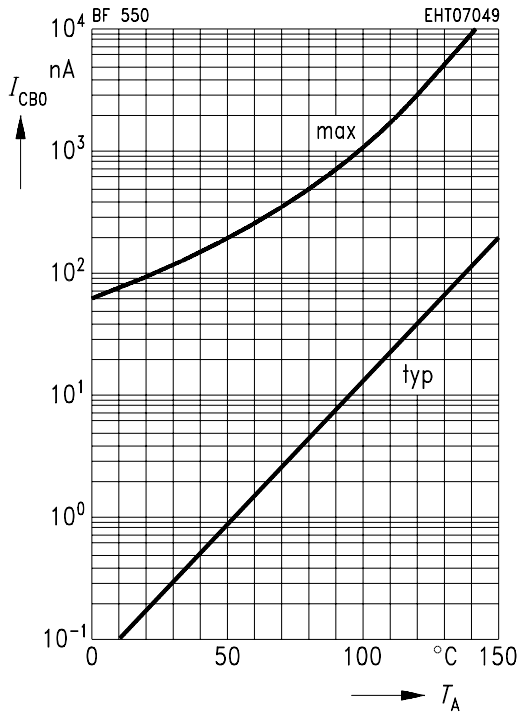
**Collector-emitter saturation voltage  $V_{CEsat} = f(I_C)$**

$h_{FE} = 10$



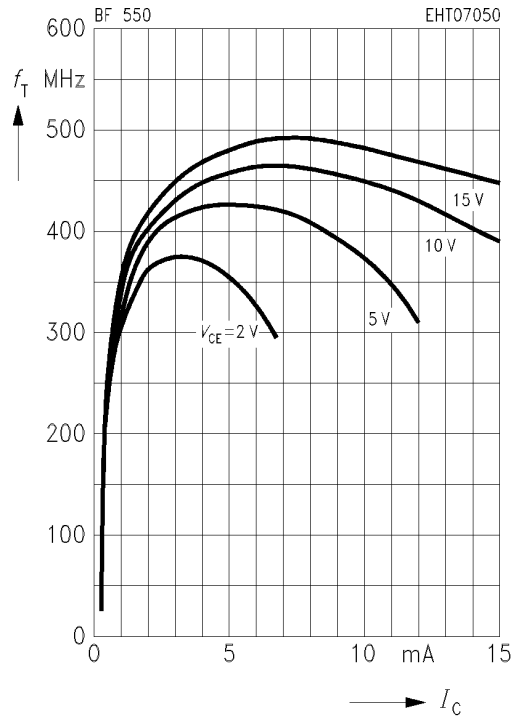
**Collector cutoff current  $I_{CB0} = f(T_A)$**

$V_{CB} = 30\text{ V}$



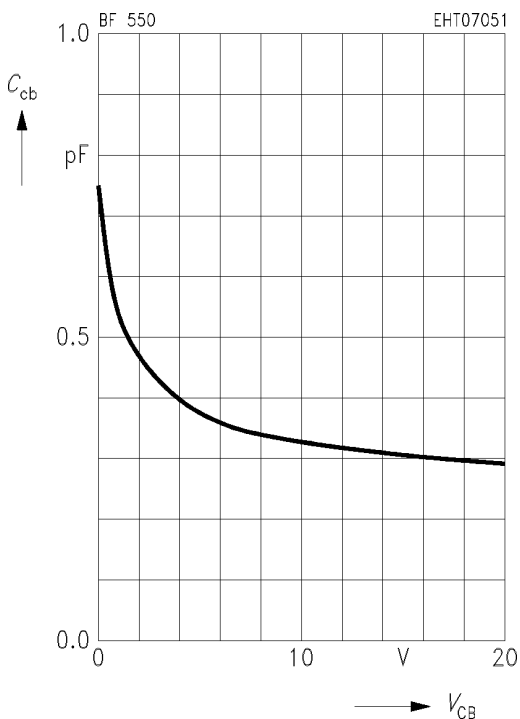
**Transition frequency  $f_T = f(I_C)$**

$f = 100\text{ MHz}$



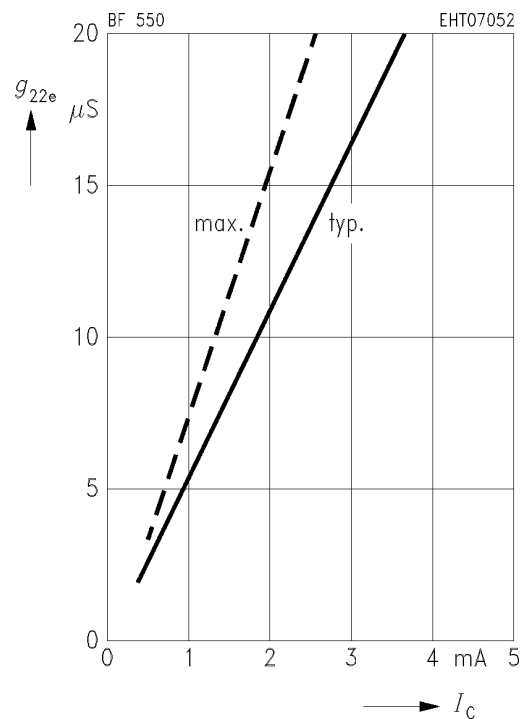
**Collector-base capacitance  $C_{cb} = f(V_{CB})$**

$f = 1\text{ MHz}$

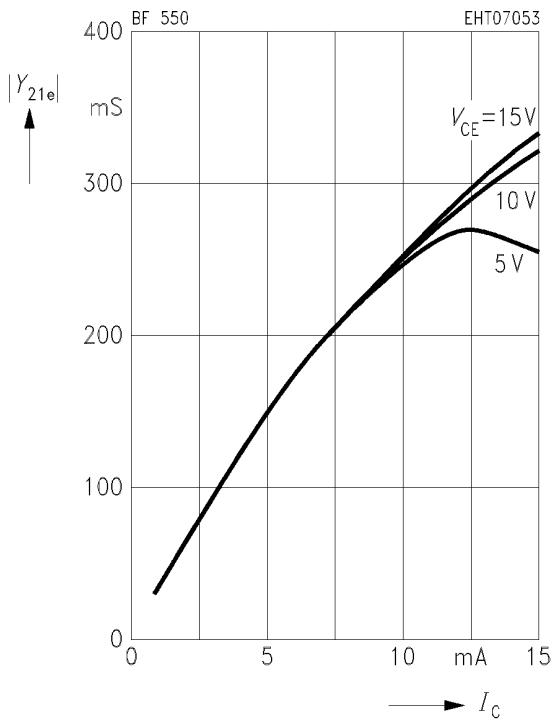


**Output conductance  $g_{22e} = f(I_C)$**

$V_{CE} = 10\text{ V}, f = 500\text{ kHz}$



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



**Forward transfer admittance  $y_{21e}$**   
 $V_{CE} = 10 \text{ V}$

