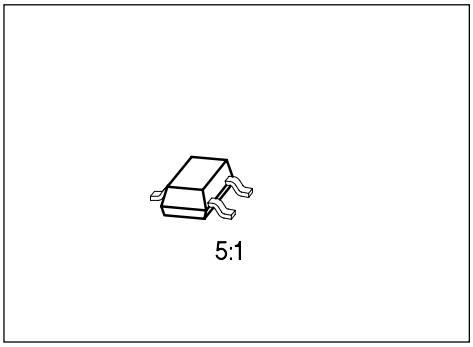
SIEMENS

NPN Silicon RF Transistor — BF 599

- Common emitter IF/RF amplifier
- Low feedback capacitance due to shield diffusion



Type	Marking	Ordering Code (tape and reel)	Pin Configuration 1	2	3	Package[1]
BF 599	NB	Q62702-F979	B	E	C	SOT-23

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE0}	25	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, $T_A \leq 25$ °C	P_{tot}	280	mW
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	– 65 … + 150	

Thermal Resistance

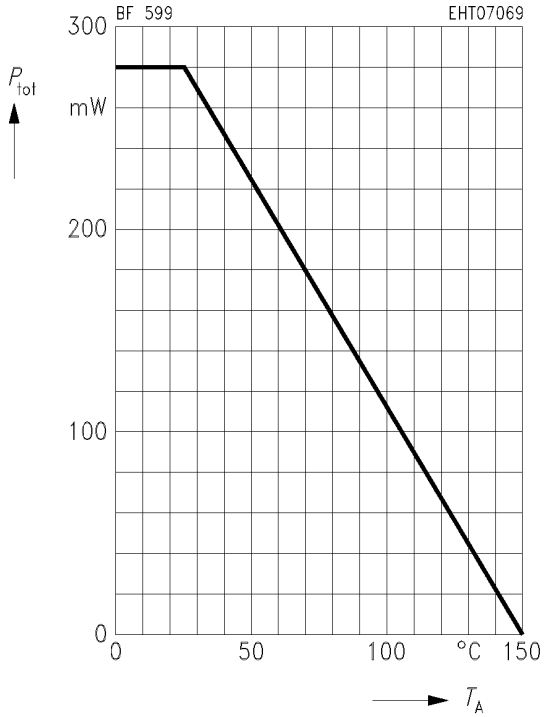
Junction - ambient[2]	$R_{th\ JA}$	≤ 450	K/W

1) For detailed information see chapter Package Outlines.
2) Package mounted on alumina 15 mm × 16.7 mm × 0.7 mm.

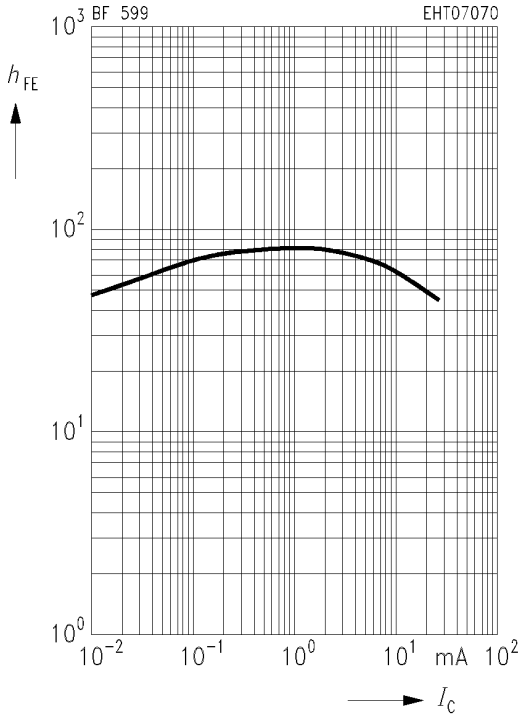
Electrical Characteristics
at T_A = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)\ CE0}$	25	–	–	V
Collector cutoff current V_{CB} = 20 V, I_E = 0	I_{CB0}	–	–	100	nA
DC current gain I_C = 7 mA, V_{CE} = 10 V	h_{FE}	38	70	–	–
Collector-emitter saturation voltage I_C = 10 mA, I_B = 1 mA	$V_{CE\ sat}$	–	0.15	–	V
Base-emitter voltage I_C = 7 mA, V_{CE} = 10 V	V_{BE}	–	0.78	–	
AC Characteristics					
Transition frequency I_C = 5 mA, V_{CE} = 10 V, f = 100 MHz	f_T	–	550	–	MHz
Collector-base capacitance V_{CB} = 10 V, V_{BE} = 0 V, f = 1 MHz	C_{cb}	–	0.35	–	pF
Collector-emitter capacitance V_{CE} = 10 V, V_{BE} = 0 V, f = 1 MHz	C_{ce}	–	0.68	–	
Optimum power gain I_C = 7 mA, V_{CE} = 10 V, f = 35 MHz	$G_{pe\ opt}$	–	43	–	dB
Forward transfer admittance I_C = 7 mA, V_{CE} = 10 V, f = 35 MHz	$\lvert y_{21e} \rvert$	–	175	–	mS

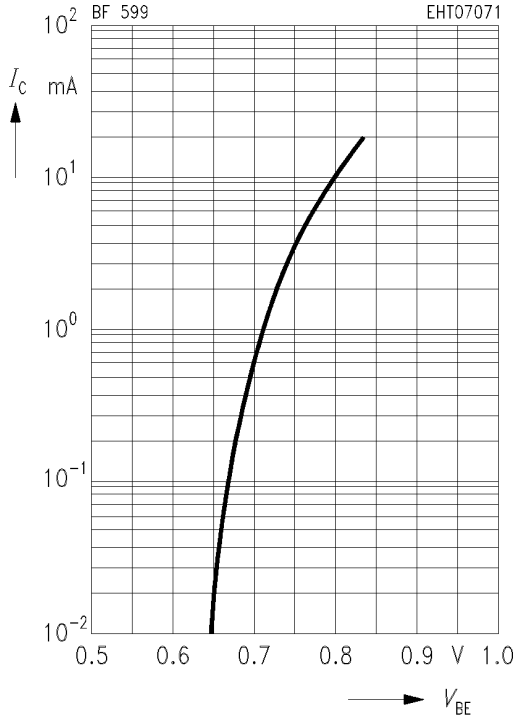
Total power dissipation $P_{tot} = f(T_A)$



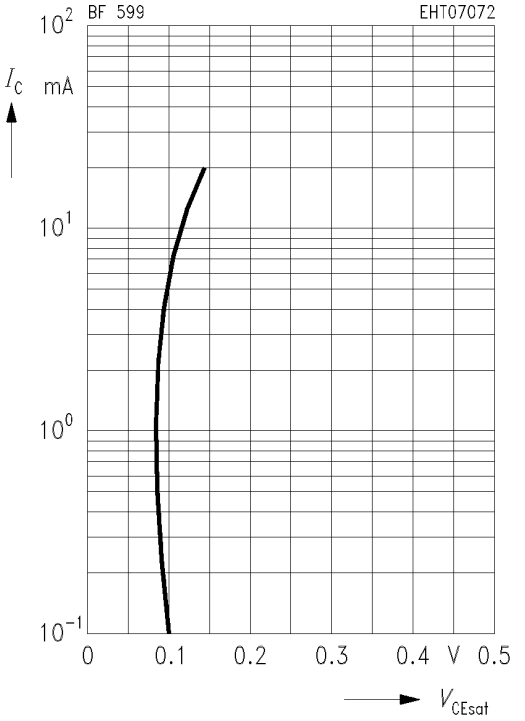
DC current gain $h_{FE} = f(I_C)$
V_{CE} = 10 V



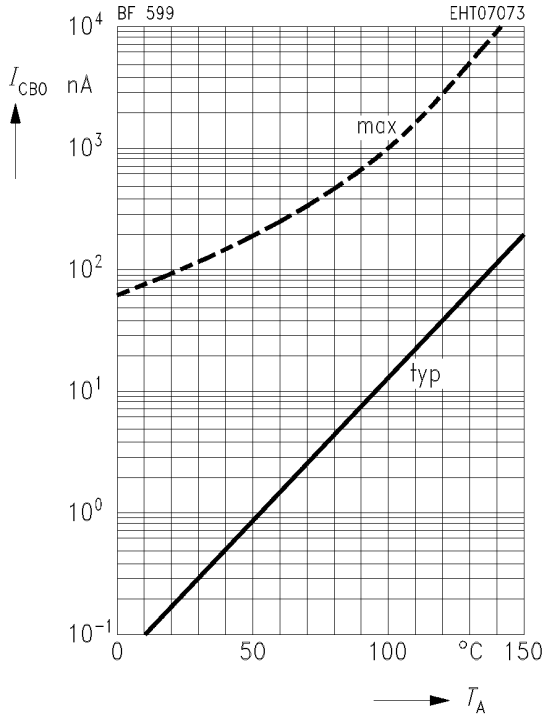
Collector current $I_C = f(V_{BE})$
V_{CE} = 10 V



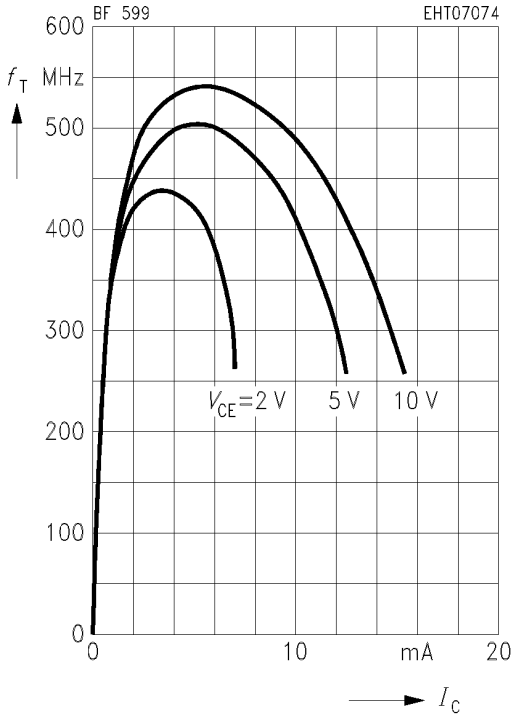
Collector-emitter saturation voltage $I_C = f(V_{CEsat})$
h_{FE} = 10



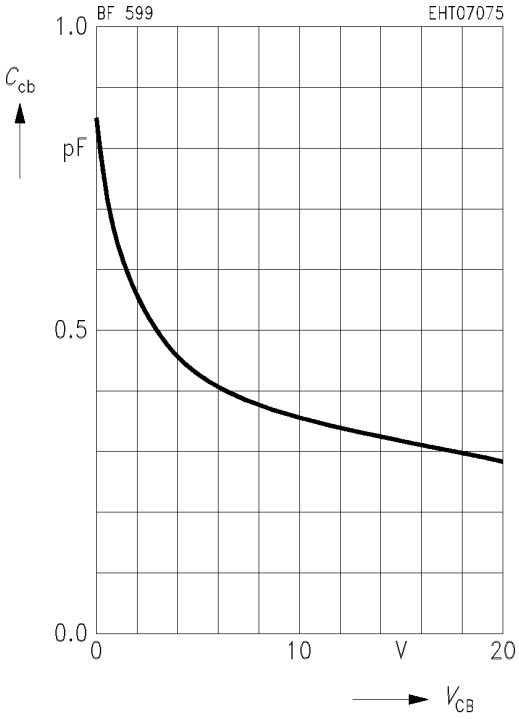
Collector cutoff current $I_{CB0} = f(T_A)$
V_{CB} = 20 V



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



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



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

