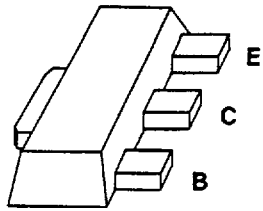
NPN Silicon RF Transistor

BFQ 19P

SIEMENS AKTIENGESELLSCHAF

- For low-distortion broadband amplifiers in antenna and telecommunications systems at collector currents from 10 to 70 mA.



For new design refer to BFQ 19S

Type	Marking	Ordering code (tape and reel)	Package
BFQ 19P	FE	Q 62702 – F1060	SOT-89

Maximum Ratings

Parameter	Symbol	Value	Unit
Collector-emitter voltage	V_{CEO}	15	V
Collector-base voltage	V_{CBO}	20	V
Emitter-base voltage	V_{EBO}	3	V
Collector current	I_C	75	mA
Peak collector current, $f \geq 1$ MHz	I_{CM}	150	mA
Total power dissipation, $T_A \leq 25$ °C[2])	P_{tot}	1	W
Junction temperature	T_j	150	°C
Ambient temperature range	T_A	–65 ... +150	°C
Storage temperature range	T_{stg}	–65 ... +150	°C

Thermal Resistance

Junction – ambient[1])	R_{thJA}	≤125	K/W

1) Package mounted on alumina 15 mm × 16.7 mm × 0.7 mm.

T-33-05

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

DC characteristics

Parameter	Symbol	Values			Unit
		min	typ	max	
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CEO}$	15	–	–	V
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CBO}	–	–	100	nA
Emitter-base cutoff current V_{EB} = 2 V, I_C = 0	I_{EBO}	–	–	10	µA
DC current gain I_C = 50 mA, V_{CE} = 10 V	h_{FE}	25	70	–	–
Collector-emitter saturation voltage I_C = 75 mA, I_B = 7.5 mA	V_{CEsat}	–	0.2	0.5	V

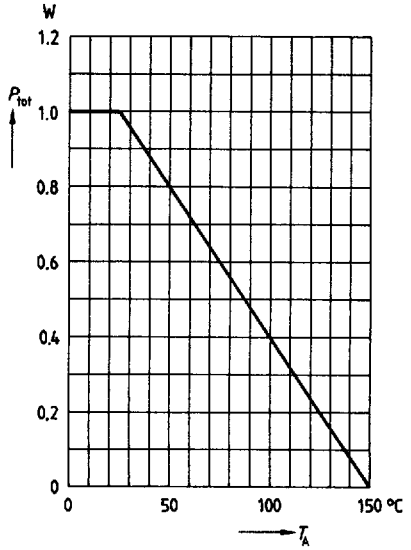
T-33-05

AC characteristics

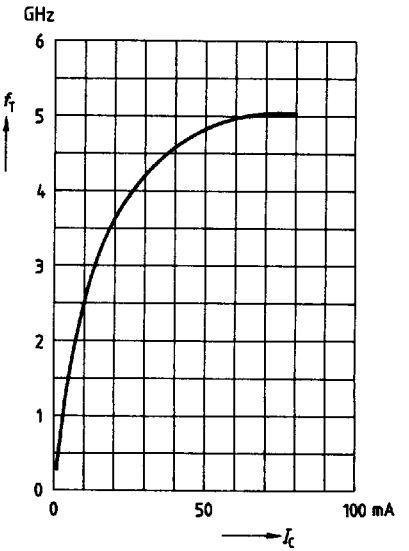
Parameter	Symbol	Values min	typ	max	Unit
Transition frequency I_C = 50 mA, V_{CE} = 10 V, f = 200 MHz I_C = 75 mA, V_{CE} = 10 V, f = 200 MHz	f_T	 4 4.4	 4.8 5.1	 – –	GHz
Collector-base capacitance V_{CB} = 10 V, V_{BE} = v_{be} = 0, f = 1 MHz	C_{cb}	–	1.1	1.5	pF
Collector-emitter capacitance V_{CE} = 10 V, V_{BE} = v_{be} = 0, f = 1 MHz	C_{ce}	–	0.4	–	pF
Output capacitance V_{CE} = 10 V, V_{BE} = v_{be} = 0, f = 1 MHz	C_{obs}	–	1.5	–	pF
Noise figure I_C = 50 mA, V_{CE} = 10 V, f = 800 MHz, Z_S = Z_{Sopt}	F	–	3.8	–	dB
Power gain I_C = 70 mA, V_{CE} = 10 V, f = 800 MHz, Z_S = Z_{Sopt}, Z_L = Z_{Lopt}	G_{pe}	–	11.5	–	dB
Linear output voltage two-tone intermodulation test I_C = 70 mA, V_{CE} = 10 V, d_{IM} = 60 dB f_1 = 806 MHz, f_2 = 810 MHz, Z_S = Z_L = 50 Ω	V_{o1} = V_{o2}	–	500	–	mV
Third order intercept point I_C = 70 mA, V_{CE} = 10 V, f = 800 MHz	IP_3	–	37	–	dBm

T-33-05

Total power dissipation $P_{tot} = f(T_A)$
Package mounted on alumina



Transition frequency $f_T = f(I_C)$
$V_{CE} = 10$ V, $f = 200$ MHz



Collector-base capacitance $C_{cb} = f(V_{CB})$
$V_{BE} = v_{be} = 0$, $f = 1$ MHz