

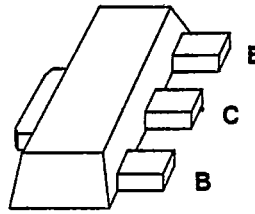
NPN Silicon RF Transistor

T-31-23

BFQ 19P

SIEMENS/ SPCL, SEMICONDS

- 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
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1) Package mounted on alumina 15 mm x 16.7 mm x 0.7 mm.

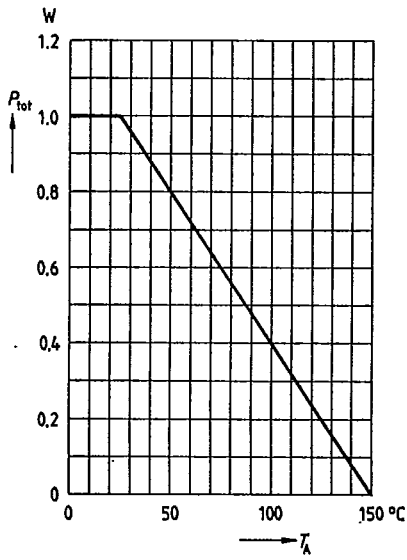
Electrical Characteristicsat $T_A = 25^\circ\text{C}$, unless otherwise specified.**DC characteristics**

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

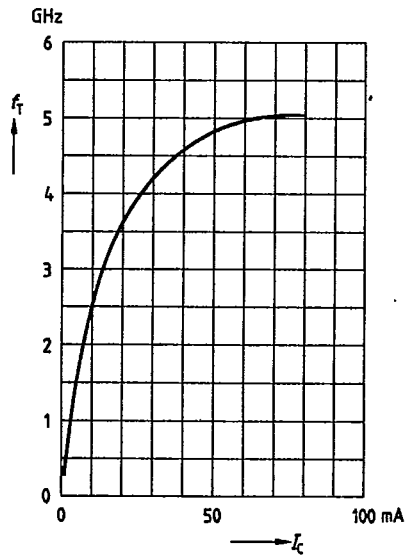
AC characteristics

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

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



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



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

