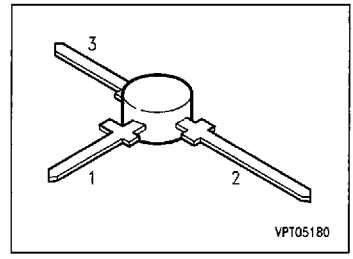
SIEMENS

NPN Silicon RF Transistor

BFQ 69

- For low-noise broadband amplifiers in antenna and telecommunications systems at collector currents from 1 mA to 25 mA.



ESD: Electrostatic discharge sensitive device, observe handling precautions!

Type	Marking	Ordering Code	Pin Configuration 1	2	3	Package[1]
BFQ 69	BFQ 69	Q62702-F780	E	C	B	T-plast

Maximum Ratings

Parameter	Symbol	Values	Unit
Collector-emitter voltage	V_{CE0}	15	V
Collector-base voltage	V_{CB0}	25	
Emitter-base voltage	V_{EB0}	2	
Collector current	I_C	30	mA
Base current	I_B	4	
Total power dissipation, $T_S \leq 102$ °C[3]	P_{tot}	300	mW
Junction temperature	T_j	150	°C
Ambient temperature range	T_A	– 65 ... + 150	
Storage temperature range	T_{stg}	– 65 ... + 150	

Thermal Resistance

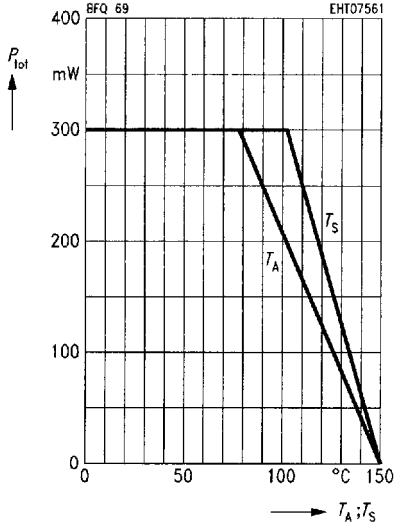
Junction - ambient[2]	$R_{th\,JA}$	≤ 240	K/W
Junction - soldering point[3]	$R_{th\,JS}$	≤ 160	

1) For detailed dimensions see chapter Package Outlines.
2) Package mounted on alumina 15 mm × 16.7 mm × 0.7 mm.
3) T_S is measured on the collector lead at the soldering point to the pcb.

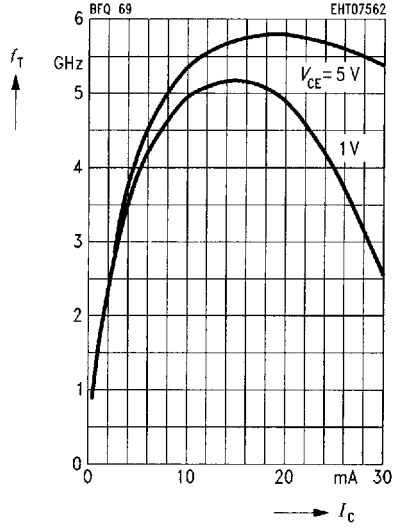
Electrical Characteristics
at T_A = 25 °C, unless otherwise specified.

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
DC Characteristics					
Collector-emitter breakdown voltage I_C = 1 mA, I_B = 0	$V_{(BR)CE0}$	15	–	–	V
Collector-emitter cutoff current V_{CE} = 25 V, V_{BE} = 0	I_{CES}	–	–	100	µA
Collector-base cutoff current V_{CB} = 10 V, I_E = 0	I_{CB0}	–	–	50	nA
Emitter-base cutoff current V_{EB} = 2 V, I_C = 0	I_{EB0}	–	–	100	µA
DC current gain I_C = 15 mA, V_{CE} = 10 V	h_{FE}	50	120	250	–
AC Characteristics					
Transition frequency I_C = 15 mA, V_{CE} = 10 V, f = 200 MHz	f_T	–	5.8	–	GHz
Collector-base capacitance V_{CB} = 10 V, V_{BE} = v_{be} = 0, f = 1 MHz	C_{cb}	–	0.35	0.5	pF
Collector-emitter capacitance V_{CE} = 10 V, V_{BE} = v_{be} = 0, f = 1 MHz	C_{ce}	–	0.29	–	
Output capacitance V_{CE} = 10 V, V_{BE} = v_{be} = 0, f = 1 MHz	C_{obs}	–	0.65	–	
Noise figure I_C = 3 mA, V_{CE} = 10 V, f = 10 MHz, Z_S = 75 Ω I_C = 5 mA, V_{CE} = 10 V, f = 800 MHz, Z_S = 50 Ω	F	– –	0.9 1.4	1.3 –	dB
Power gain I_C = 10 mA, V_{CE} = 10 V, f = 800 MHz, Z_S = 50 Ω, Z_L = Z_{Lopt}	G_{pe}	–	16.5	–	
Linear output voltage two-tone intermodulation test I_C = 25 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}	–	170	–	mV
Third order intercept point I_C = 25 mA, V_{CE} = 10 V, f = 800 MHz	IP_3	–	27.5	–	dBm

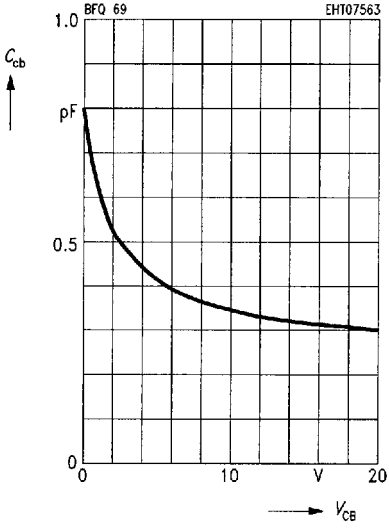
Total power dissipation $P_{tot} = f(T_A^*; T_S)$
*Package mounted on alumina



Transition frequency $f_T = f(I_C)$
f = 200 MHz



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



Noise figure $F = f(I_C)$
V_{CE} = 10 V, f = 10 MHz