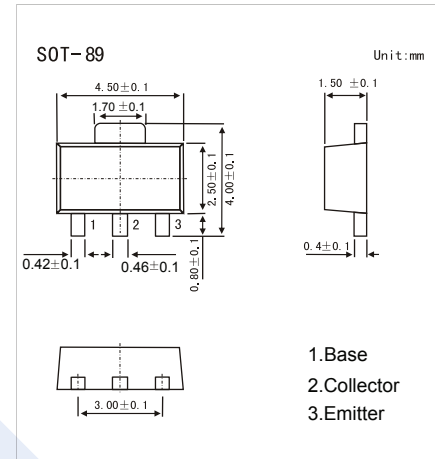


NPN Silicon RF Transistor

BFQ19S

■ Features

- For low noise, low distortion broadband amplifiers in antenna and telecommunications systems up to 1.5 GHz at collector currents from 10 mA to 70 mA



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Collector - Base Voltage	V_{CBO}	20	V
Collector - Emitter Voltage open base	V_{CEO}	15	
Collector - Emitter Voltage shorted base	V_{CES}	20	
Emitter - Base Voltage	V_{EBO}	3	
Collector Current - Continuous	I_C	75	mA
Base current	I_B	10	
Total power dissipation $T_s \leq 85^\circ\text{C}^{*1}$	P_{tot}	1	W
Junction - soldering point	R_{thJS}	65	$^\circ\text{C}/\text{W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-65 to 150	

*1: T_s is measured on the collector lead at the soldering point to the pcb.

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■ Electrical Characteristics $T_a = 25^\circ\text{C}$, unless otherwise specified.

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	V_{CEO}	$I_C = 1\text{ mA}$, $I_B = 0$	15			V
Collector-base cut-off current	I_{CBO}	$V_{CB} = 10\text{ V}$, $I_E = 0$			100	nA
Collector-emitter cut-off current	I_{CES}	$V_{CE} = 20\text{ V}$, $V_{BE} = 0$			100	μA
Emitter cut-off current	I_{EBO}	$V_{EB} = 2\text{ V}$, $I_C = 0$			10	
DC current gain	h_{FE}	$V_{CE} = 8\text{ V}$, $I_C = 70\text{ mA}$	40		220	
Collector-base capacitance	C_{cb}	$V_{CB} = 10\text{ V}$, $f = 1\text{ MHz}$		1	1.5	pF
Collector-emitter capacitance	C_{ce}	$V_{CE} = 10\text{ V}$, $f = 1\text{ MHz}$		0.4		
Emitter-base capacitance	C_{eb}	$V_{EB} = 0.5\text{ V}$, $f = 1\text{ MHz}$		4.4		
Noise figure	F	$I_C = 20\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$,				dB
		$f = 900\text{ MHz}$		2.5		
		$f = 1.8\text{ GHz}$		4		
Power gain, maximum available 1)	G _{ma}	$I_C = 70\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$,				
		$f = 900\text{ MHz}$		11.5		
		$f = 1.8\text{ GHz}$		7		
Transducer gain	$ S_{21e} ^2$	$I_C = 30\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_L = 50\Omega$,				
		$f = 900\text{ MHz}$		9.5		
		$f = 1.8\text{ GHz}$		4		
Third order intercept point	IP ₃	$I_C = 70\text{ mA}$, $V_{CE} = 8\text{ V}$, $Z_S = Z_{Sopt}$, $Z_L = Z_{Lopt}$,				dBm
		$f = 1.8\text{ GHz}$		35		
Transition frequency	f _T	$V_{CE} = 8\text{ V}$, $I_C = 70\text{ mA}$, $f = 500\text{ MHz}$	4	5.5		GHz

*1: $G_{ma} = |S_{21} / S_{12}| (k - (k^2 - 1)^{1/2})$

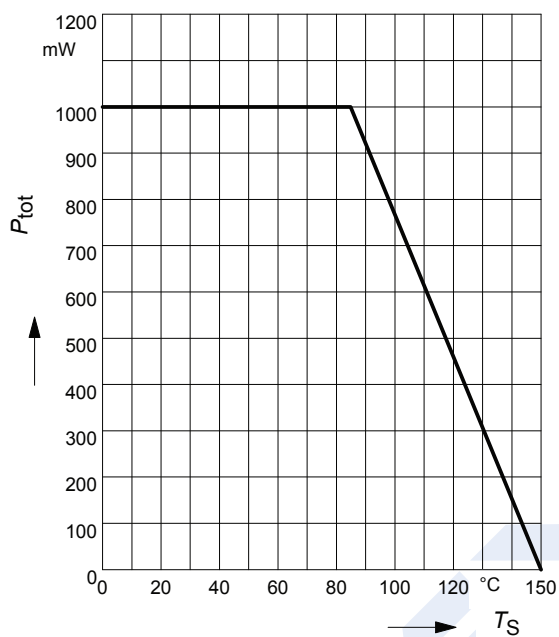
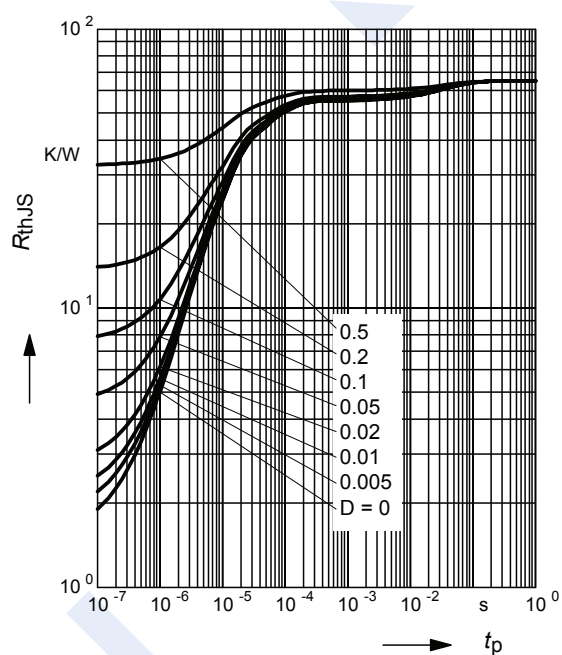
■ Marking

Marking	FG
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NPN Silicon RF Transistor

BFQ19S

■ Typical Characteristics

Total power dissipation $P_{\text{tot}} = f(T_S)$ Permissible Pulse Load $R_{\text{thJS}} = f(t_p)$ 

Permissible Pulse Load

 $P_{\text{totmax}}/P_{\text{totDC}} = f(t_p)$ 