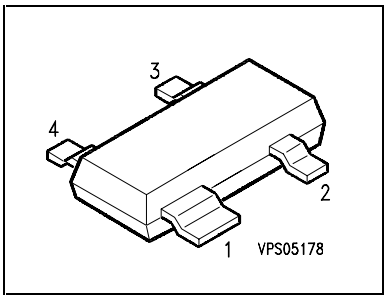
Silicon Bipolar MMIC-Amplifier

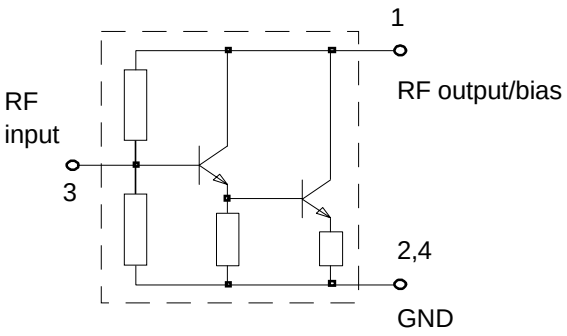
Preliminary Data



- Cascadable 50 Ω-Gain Block
- 16 dB typical Gain at 1.0 GHz
- 12 dBm typical P_{-1dB} at 1.0 GHz
- 3 dB-Bandwidth: DC to 1.2 GHz
- Plastic Package

Type	Marking	Ordering Code (8-mm taped)	Pin Configuration (circuit Diagram)	Package [1]
BGA318	**BNs**	Q62702-G0043	see below	SOT143

Circuit Diagram



Maximum Ratings

Parameter	Symbol		Unit
Device current	I_D	60	mA
Total power dissipation, $T_S \leq 99$ °C [2]	P_{tot}	250	mW
RF input power	P_{RFin}	5	dBm
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-soldering point [2]	$R_{th\ JS}$	≤ 205	K/W

1)For detailed information see page 4

2)T_S is measured on the RFoutput lead at the soldering point to the pcb.

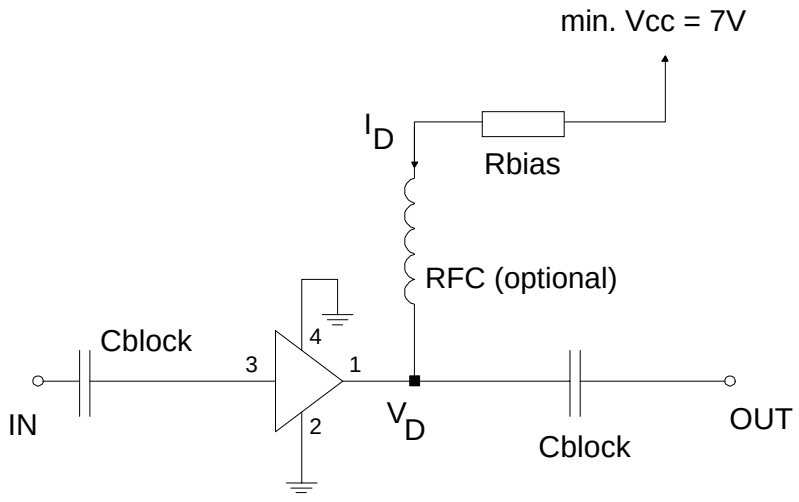
Electrical Characteristics

at T_A = 25°C, unless otherwise specified.

V_D= 4.7 V, Z_0 = 50 Ω

Parameter	Symbol	Value			Unit
		min.	typ.	max.	
Insertion power gain	$\|S_{21}\|^2$				dB
f = 0.1 GHz			18		
f = 1.0 GHz			16		
f = 1.8 GHz			12		
Insertion power gain flatness	$\Delta\|S_{21}\|^2$				dB
f = 0.1 GHz to 0.6 GHz			±0.7		
Noise figure	NF				dB
f = 0.1 GHz			3.5		
f = 1.0 GHz			4.0		
f = 2 GHz			5.0		
1dB Compression point output	P_{-1dB}				dBm
f = 1 GHz			12		
Return Loss					dB
f = 0.1 GHz to 2 GHz Input	RL_{in}		14		
f = 0.1 GHz to 3 GHz Output	RL_{out}		10		

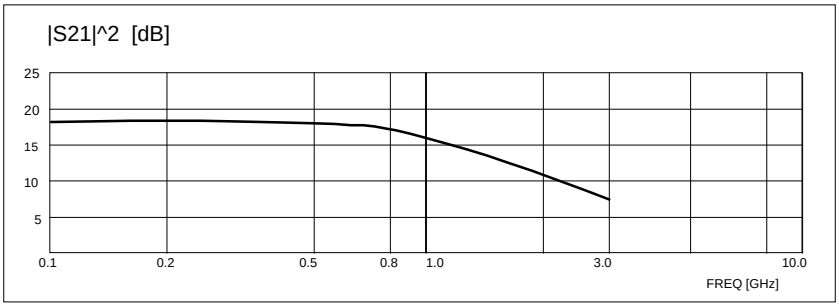
Typical Biasing Configuration



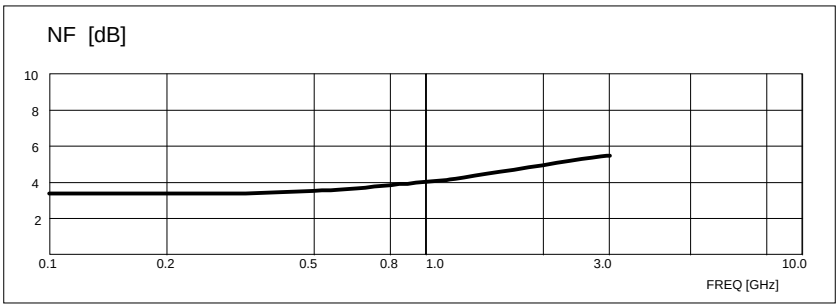
$$R_{bias} = \frac{V_{CC} - V_D}{I_D}$$

$$V_D = 4.7V$$

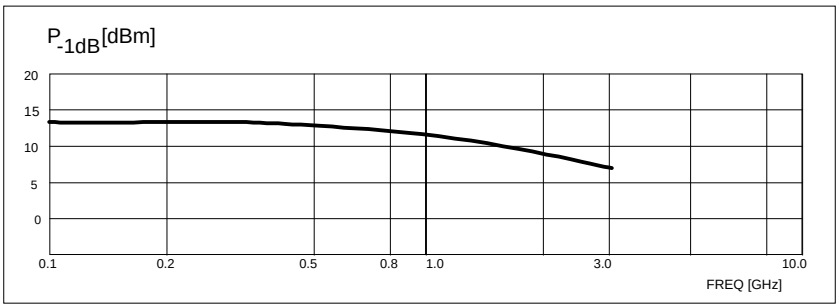
Insertion power gain
vs. frequency
V_D = 4.7 V, I_D = 35 mA



Noise figure
vs. frequency
V_D = 4.7 V, I_D = 35 mA



Output power
1-dB-Gain compression
vs. frequency
V_D = 4.7 V, I_D = 35 mA



Typical S-Parameters at
T_A = 25 °C

f	S_{11}		S_{21}		S_{12}		S_{22}	
GHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
V_D = 4.7 V, Z_0 = 50 Ω								
0.010	0.196	0.2	8.01	178.9	0.077	0.6	0.327	-0.5
0.100	0.193	-4.8	8.00	171.6	0.078	4.9	0.324	-8.6
0.300	0.194	-14.4	7.75	155.4	0.082	13.8	0.312	-25.0
0.500	0.191	-25.9	7.28	139.9	0.089	21.1	0.294	-41.2
0.800	0.184	-45.0	6.43	119.1	0.105	27.9	0.260	-62.9
1.000	0.175	-60.3	5.83	106.8	0.117	30.2	0.238	-76.2
1.800	0.185	-130.6	3.91	67.6	0.164	30.2	0.184	-113.0
2.400	0.241	-170.6	2.99	45.5	0.193	26.8	0.173	-124.4
3.000	0.298	159.6	2.38	27.6	0.218	22.8	0.178	-131.2