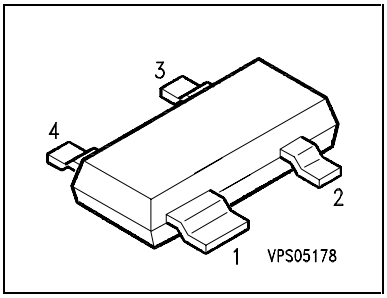
Silicon Bipolar MMIC-Amplifier

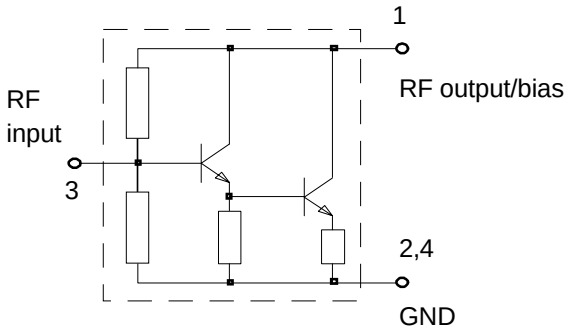
Preliminary Data



- Cascadable 50 Ω-Gain Block
- 11 dB typical Gain at 1.0 GHz
- 9 dBm typical P_{-1dB} at 1.0 GHz
- 3 dB-Bandwidth: DC to 2.0 GHz
- Plastic Package

Type	Marking	Ordering Code (8-mm taped)	Pin Configuration (circuit Diagram)	Package [1]
BGA312	**BMs**	Q62702-G0042	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}	10	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.

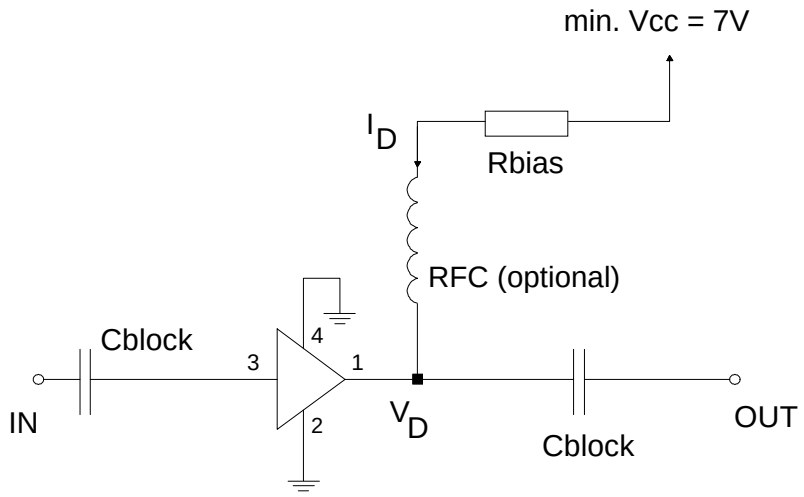
Electrical Characteristics

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			12		
f = 1.0 GHz			11		
f = 1.8 GHz			10		
Insertion power gain flatness	$\Delta\|S_{21}\|^2$				dB
f = 0.1 GHz to 0.6 GHz			±0.6		
Noise figure	NF				dB
f = 0.1 GHz			5.5		
f = 1.0 GHz			6.0		
f = 2 GHz			7.0		
1dB Compression point output	P_{-1dB}				dBm
f = 1 GHz			9		
Return Loss					dB
f = 0.1 GHz to 2 GHz Input	RL_{in}		20		
f = 0.1 GHz to 3 GHz Output	RL_{out}		14		

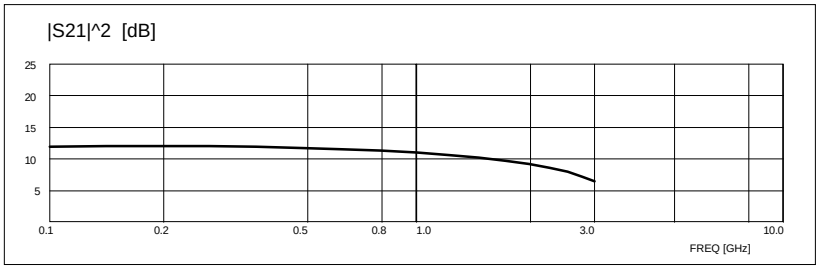
Typical Biasing Configuration



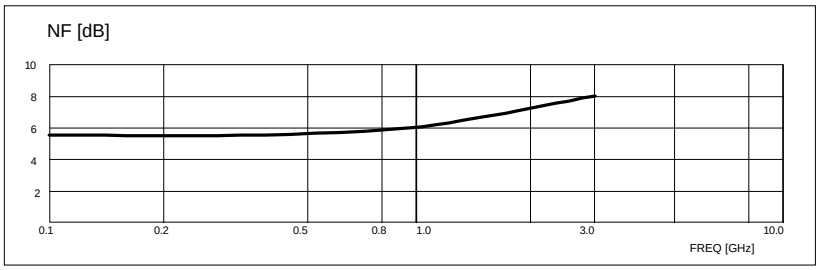
$$R_{bias} = \frac{V_{CC} - V_D}{I_D}$$

$$V_D = 4.7V$$

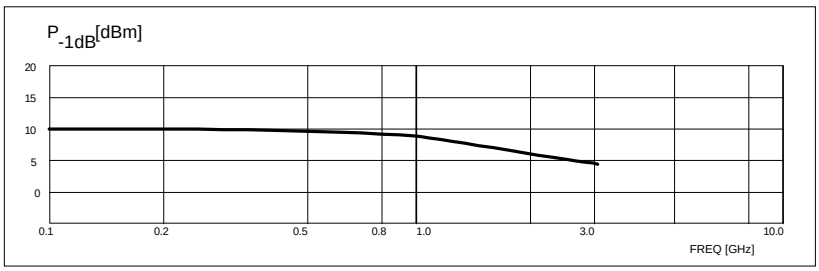
Insertion power gain
vs. frequency
V_D = 4.7 V, I_D = 42 mA



Noise figure
vs. frequency
V_D = 4.7 V, I_D = 42 mA



Output power
1-dB-Gain compression
vs. frequency
V_D = 4.7 V, I_D = 42 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	0.009	17.9	3.94	179.2	0.131	0.2	0.208	-0.5
0.100	0.012	43.5	3.95	174.4	0.131	1.7	0.207	-6.2
0.300	0.027	55.8	3.93	163.4	0.133	4.8	0.204	-19.1
0.500	0.039	52.5	3.89	152.2	0.136	7.8	0.201	-31.9
0.800	0.049	33.7	3.79	135.8	0.142	11.7	0.194	-51.3
1.000	0.046	22.2	3.69	124.9	0.149	13.8	0.191	-64.2
1.800	0.054	-135.4	3.13	84.1	0.181	16.6	0.183	-106.8
2.400	0.147	179.9	2.63	57.6	0.205	14.7	0.182	-124.9
3.000	0.240	152.1	2.19	35.7	0.225	11.6	0.184	-134.9