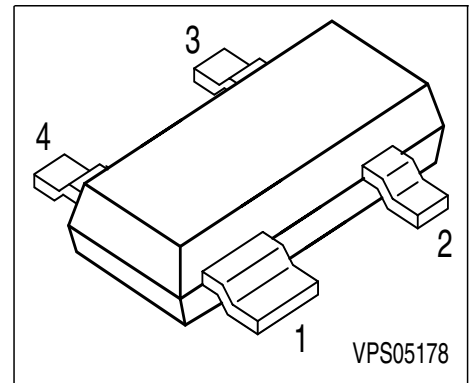
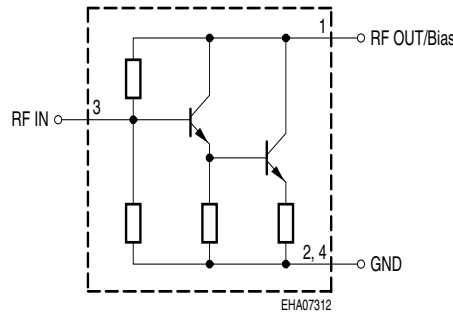


**Silicon Bipolar MMIC-Amplifier**

- 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



**Circuit Diagram**



Type	Marking	Pin Configuration				Package
BGA 312	BMs	1 RFout/bias	2 GND	3 RFinput	4 GND	SOT-143

**Maximum Ratings**

Parameter	Symbol	Value	Unit
Device current	$I_D$	60	mA
Total power dissipation, $T_S \leq 99\text{ °C}^1)$	$P_{tot}$	250	mW
RF input power	$P_{RFIn}$	10	dBm
Junction temperature	$T_j$	150	°C
Ambient temperature	$T_A$	-65 ... 150	
Storage temperature	$T_{stg}$	-65 ... 150	

**Thermal Resistance**

Junction - soldering point	$R_{thJS}$	≤ 205	K/W
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<sup>1</sup> $T_S$  is measured on the collector lead at the soldering point to the pcb

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

Parameter	Symbol	Values			Unit
		min.	typ.	max.	
<b>AC characteristics</b> ( $V_D = 4.7\text{ V}$ , $Z_0 = 50\ \Omega$ )					
Insertion power gain $f = 0.1\text{ GHz}$ $f = 1\text{ GHz}$ $f = 1.8\text{ GHz}$	$ S_{21} ^2$	-	12 11 10	-	dB
Insertion point gain flatness $f = 0.1\text{ GHz to } 0.6\text{ GHz}$	$\Delta  S_{21} ^2$	-	+0.6	-	dB
Noise figure $f = 0.1\text{ GHz}$ $f = 1\text{ GHz}$ $f = 2\text{ GHz}$	$NF$	-	5.5 6 7	-	dB
1dB compression point $f = 1\text{ GHz}$	$P_{-1dB}$	-	9	-	dBm
Return loss input $f = 0.1\text{ GHz to } 2\text{ GHz}$	$RL_{in}$	-	20	-	dB
Return loss output $f = 0.1\text{ GHz to } 3\text{ GHz}$	$RL_{out}$	-	14	-	

**Typical biasing configuration**

$$R_{Bias} = V_{CC} - V_D / I_D$$

$$V_D = 4.7V$$

**S-Parameters at  $T_A = 25\text{ }^\circ\text{C}$**

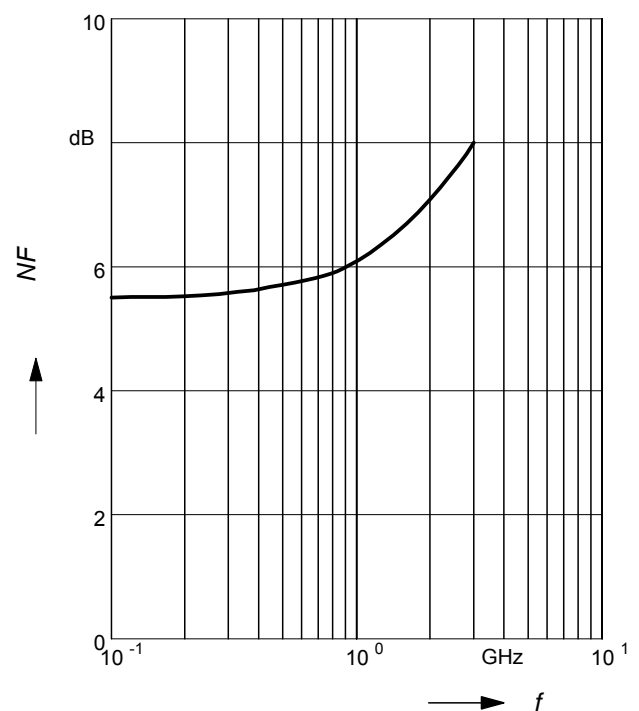
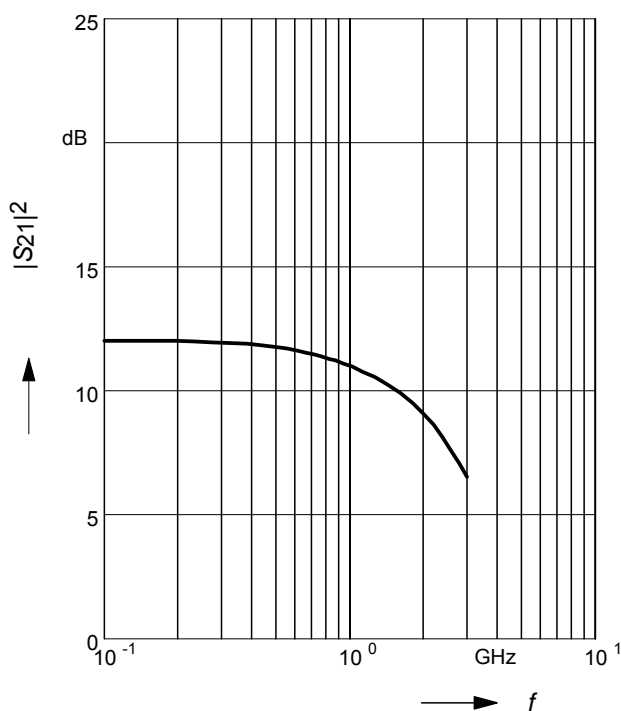
$f$ GHz	$S_{11}$		$S_{21}$		$S_{12}$		$S_{22}$	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
$V_D = 4.7\text{ V}, Z_0 = 50\text{ }\Omega$								
0.01	0.009	17.9	3.94	179.2	0.131	0.2	0.208	-0.5
0.1	0.012	43.5	3.95	174.4	0.131	1.7	0.207	-6.2
0.3	0.027	55.8	3.93	163.4	0.133	4.8	0.204	-19.1
0.5	0.039	52.5	3.89	152.2	0.136	7.8	0.201	-31.9
0.8	0.049	33.7	3.79	135.8	0.142	11.7	0.194	-51.3
1	0.046	22.2	3.69	124.9	0.149	13.8	0.191	-64.2
1.8	0.054	-135.4	3.13	84.1	0.181	16.6	0.183	-106.8
2.4	0.147	179.9	2.63	57.6	0.205	14.7	0.182	-124.9
3	0.24	152.1	2.19	35.7	0.225	11.6	0.184	-134.9

**Insertion power gain  $|S_{21}|^2 = f(f)$**

**Noise figure  $NF = f(f)$**

$V_D = 4.7\text{ V}, I_D = 42\text{ mA}$

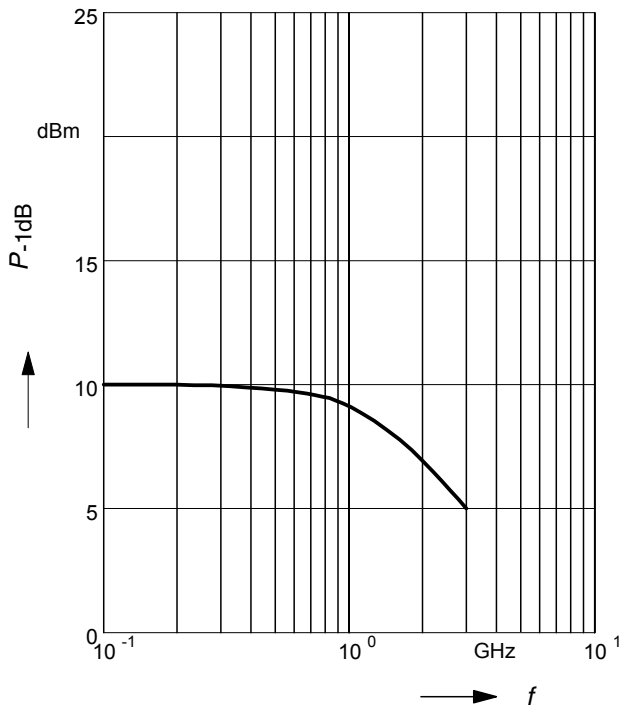
$V_D = 4.7\text{ V}, I_D = 42\text{ mA}$



**Output power 1-dB-gain compression**

$$P_{-1dB} = f(f)$$

$$V_D = 4.7 \text{ V}, I_D = 42 \text{ mA}$$





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