

➤ FEATURES

- Frequency Range: 55-65GHz
- Typical small signal gain: 20dB
- Typical output P1dB: -6dBm
- Typical noise figure: 4dB
- Process types: 65nm CMOS
- Power supply: 1V
- Power consumption: 15mW
- Die size: 1×1.2mm²

➤ ABSOLUTE MAXIMUM RATINGS

Table 1. Absolute maximum ratings (T_A=25°C)

Symbol	Parameter	Numerical value	Remarks
V _{DD}	Power supply	1.2	V
I _D	Drain current	50	mA
V _G	Bias voltage	1	V
I _G	Gate current	0.1	uA
P _D	DC power consumption	60	mW
P _{in}	Input signal power	0	dBm
T _a	Operating temperature	-45~85	°C
T _j	Maximum junction temperature	125	°C
T _{mg}	Storage temperature	-55~165	°C

➤ GENETAL DESCRIPTION

The chip is a three-stage V-band Monolithic Low Noise Amplifier (MMIC) with good electrical performance. It is manufactured by standard CMOS process. The power consumption is as low as 15mW to obtain 20dB small signal gain and -8dBm output -1dB compression point.

➤ APPLICATION

- Test instrumentation
- Microwave radios
- Telecommunications infrastructure
- Fiber optics

➤ CHARACTERISTIC PARAMETERS

Table 2. Electrical characteristic parameters ($T_A=25^{\circ}\text{C}$)

Symbol	Parameter	Numerical value			Unit
		Min	Typ	Max	
V_{DD}	Power supply	0.95	1	1.2	V
V_G	Bias voltage		0.8		V
PDC	Power consumption		15		mW
G	Small signal gain	17	20	23	dB
NF	Noise figure	3.6	4	4.8	dB
VSWR _{in}	Input standing wave		1.8		
VSWR _{out}	Output standing wave		2.5		
P1dB	1dB compression point output power		-6		dBm
I_d	Working current		45		mA

➤ TYPICAL PERFORMANCE CHARACTERISTIC

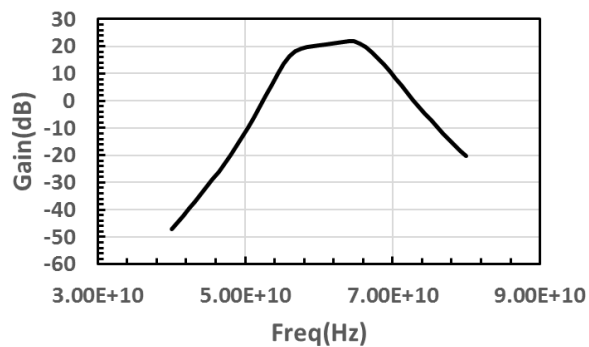


Figure 1. Small signal gain

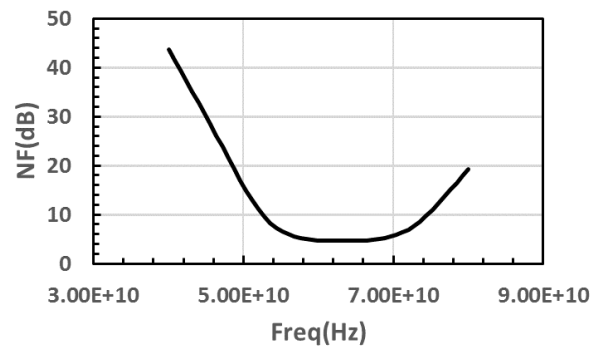


Figure 2. Noise figure

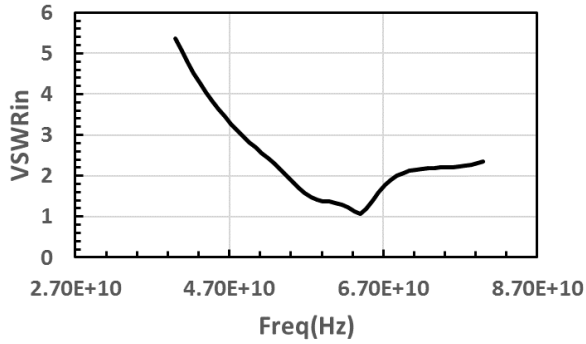


Figure 3. Input standing wave

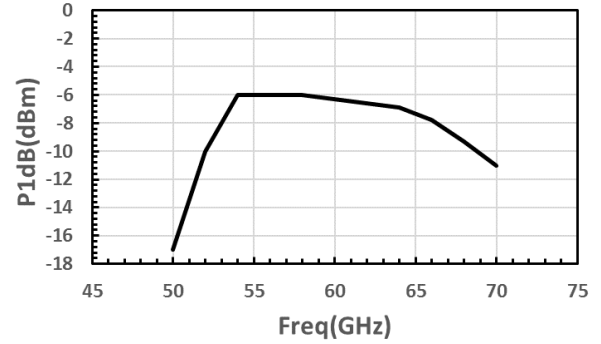


Figure 5. Output P1dB

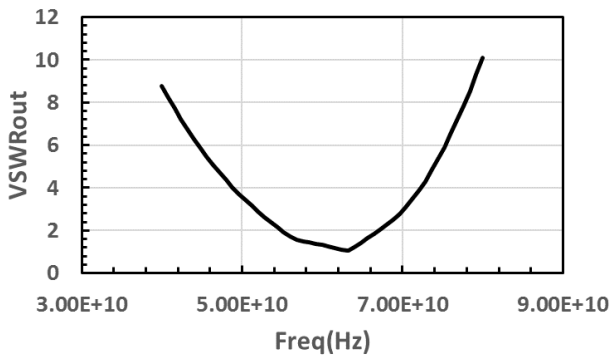


Figure 4. Output standing wave

➤ PIN FUNCTION DESCRIPTIONS AND CONFIGURATION

Table 3. Pin function descriptions

Pin No.	Mnemonic	Description
1,3,5,8,10,12,14,17	GND	Ground
6,7,13,15,16	V _{DD}	Power supply
4,9,18	V _G	Bias voltage
2	RF _{IN}	RF signal input
11	RF _{OUT}	RF signal output

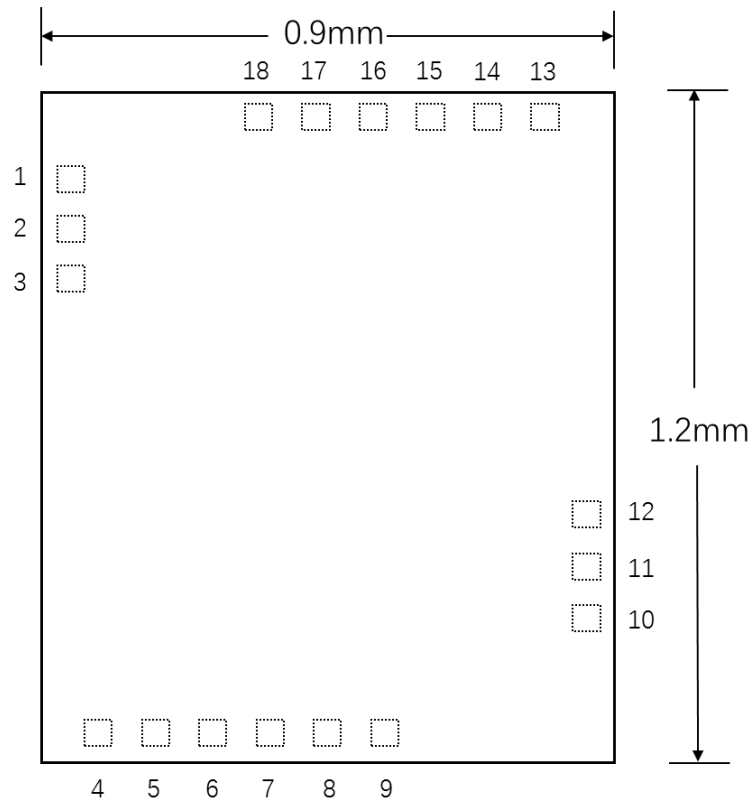


Figure 6. Pin configuration