BGA751N7

SiGe Bipolar 3G/3.5G/4G Single-Band LNA

Data Sheet

Revision 3.1, 2013-01-31

RF & Protection Devices

Edition 2013-01-31

Published by
Infineon Technologies AG
81726 Munich, Germany

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Revision History: 2013-01-31, Revision 3.1

Previous Revision: 2012-10-31, Revision 3.0	
Page	**Subjects (major changes since last revision)**
37	Footprint recommendation drawing added
38	Marking pattern drawing updated

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SiGe Bipolar 3G/3.5G/4G Single-Band LNA **BGA751N7**

1 Features

Main features:

- Gain: 16 / -8 dB in high / low gain mode (f.e. at 850MHz)
- Noise figure: 1.05 dB in high gain mode (f.e. at 850MHz)
- Supply current: 3.3 / 0.5 mA in high / low gain mode
- Standby mode (< 2 µA typ.)
- Output internally matched to 50 Ω
- Inputs pre-matched to 50 Ω
- 2 kV HBM ESD protection
- Low external component count
- Small leadless TSNP-7-1 package (2.0 x 1.3 x 0.39 mm)
- Pb-free (RoHS compliant) package

RoHS

Description

The BGA751N7 is a low current single-band low noise amplifier MMIC for 3G, 3.5G and 4G. The LNA is based upon Infineon's proprietary and cost-effective SiGe:C technology and comes in a low profile TSNP-7-1 leadless green package. Because the matching is off chip, the RFpath can be easily converted into a 700MHz to 1150MHz path by optimizing the input and output matching network. This document specifies the electrical parameters, pinout, application circuit and packaging of the chip.

Product Name	Package	Chip	Marking
BGA751N7	TSNP-7-1	T1533	B5

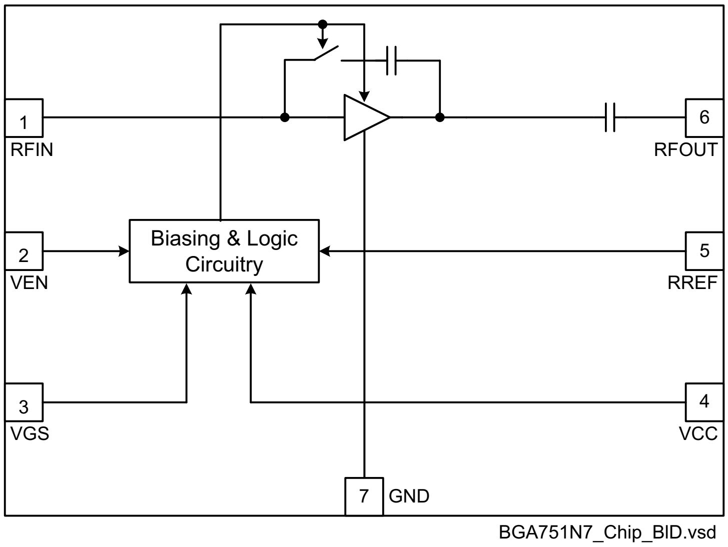


Figure 1 Block Diagram of Single-Band LNA

2 Electrical Characteristics

2.1 Absolute Maximum Ratings

Table 1 Absolute Maximum Ratings

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Supply voltage	V_{CC}	-0.3	–	3.6	V	–
Supply current	I_{CC}	–	–	10	mA	–
Pin voltage	V_{PIN}	-0.3	–	V_{CC}+0.3	V	All pins except RF input pins.
Pin voltage RF Input Pins	V_{RFIN}	-0.3	–	0.9	V	–
RF input power	P_{RFIN}	–	–	4	dBm	–
Junction temperature	T_j	–	–	150	°C	–
Ambient temperature range	T_A	-30	–	85	°C	–
Storage temperature range	T_{stg}	-65	–	150	°C	–

Attention: Stresses above the max. values listed here may cause permanent damage to the device. Exposure to absolute maximum rating conditions for extended periods may affect device reliability. Maximum ratings are absolute ratings; exceeding only one of these values may cause irreversible damage to the integrated circuit.

2.2 Thermal Resistance

Table 2 Thermal Resistance

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Thermal resistance junction to soldering point	R_{thJS}	–	150	–	K/W	–

2.3 ESD Integrity

Table 3 ESD Integrity

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
ESD hardness HBM[1]	$V_{ESD\text{-}HBM}$	–	2000	–	V	All pins

1) According to JESD22-A114

2.4 DC Characteristics

Table 4 DC Characteristics, T_A = 25 °C

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Supply voltage	V_{CC}	2.6	2.8	3.0	V	–
Supply current high gain mode	I_{CCHG}	–	3.3	–	mA	Typical value without reference resistor
Supply current low gain mode	I_{CCLG}	–	0.5	–	mA	
Supply current standby mode	I_{CCOFF}	–	0.1	2.0	µA	–
Logic level high	V_{HI}	1.4	2.8	–	V	All logic pins
Logic level low	V_{LO}	-0.2	0.0	0.5	V	
Logic currents	I_{LO}	–	–	0.1	µA	All logic pins
	I_{HI}	–	5.0	6.0	µA	

2.5 Gain Mode Select Truth Table

Table 5 Truth Table

Control Voltage		State	
		All Bands	
VEN	VGS	HG	LG
H	L	OFF	ON
H	H	ON	OFF
L	L	STANDBY[1]	
L	H		

1) In order to achieve minimum standby current it is encouraged to apply logic low-level at the VGS pin in standby mode although this is not mandatory. Details see section 2.4.

2.6 Switching Times

Table 6 Typical switching times; T_A = -30 ... 85 °C

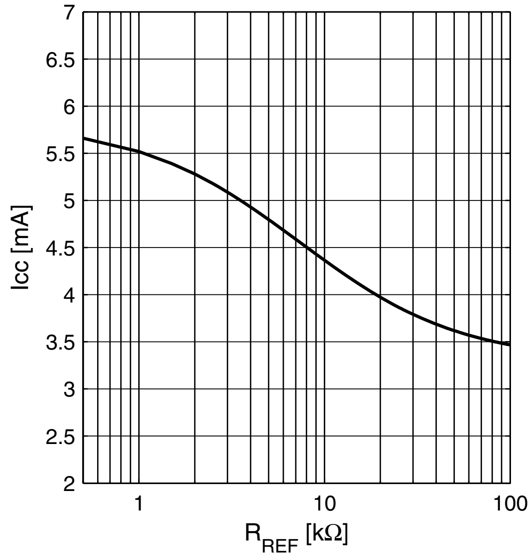
Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Settling time gainstep	t_{GS}	–	1	–	µs	Switching LG ↔ HG

2.7 Supply Current Characteristics

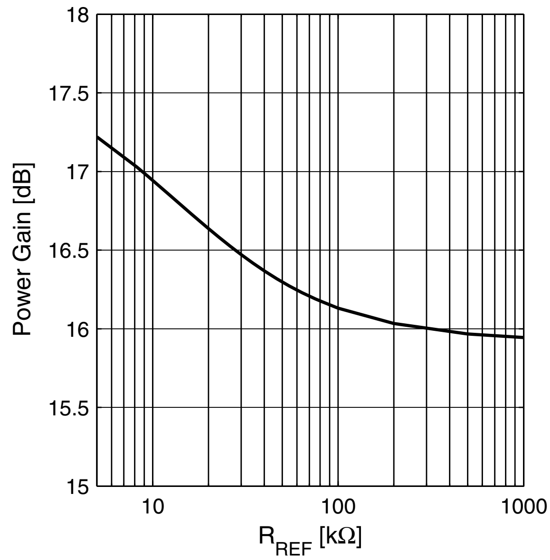
Supply current and Power gain high gain mode versus reference resistor R_{REF} (low gain mode supply current is independent of reference resistor).

Note: In order to achieve higher gain an external reference resistor can be soldered between RREF (Pin 5) and ground (see Figure 3.4 on Page 32).

Supply Current I_{CC} = f (R_{REF})
V_{CC} = 2.8 V, T_A = 25 °C



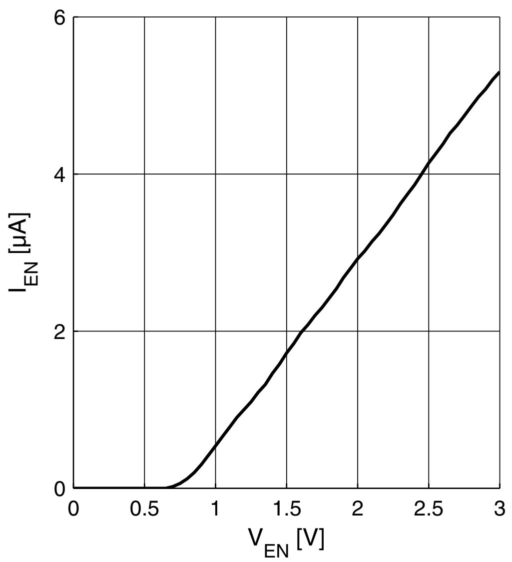
Power Gain $|S_{21}|$ = f (R_{REF})
V_{CC} = 2.8 V, T_A = 25 °C



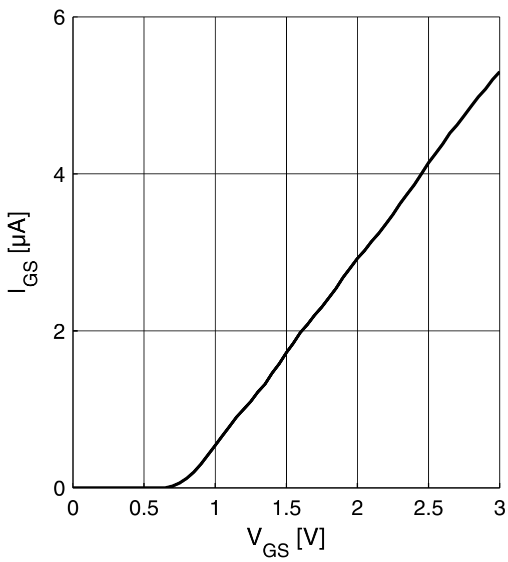
2.8 Logic Signal Characteristics

Current consumption of logic inputs VEN, VGS

Logic Current I_{EN} = f (V_{EN})
V_{CC} = 2.8 V, T_A = 25 °C



Logic Current I_{GS} = f (V_{GS})
V_{CC} = 2.8 V, T_A = 25 °C



2.9 Measured RF Characteristics 700 MHz Band

Table 7 Typical Characteristics 700 MHz Band, T_A = 25 °C, V_{CC} = 2.8 V, R_{REF} = 5.6 kΩ[1)2)]

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Pass band range		700		750	MHz	F.e. band 12 and 17
Current consumption	I_{CCHG}	–	4.8	–	mA	High gain mode
	I_{CCLG}	–	0.50	–	mA	Low gain mode
Gain	S_{21HG}	–	15.3	–	dB	High gain mode
	S_{21LG}	–	-9.9	–	dB	Low gain mode
Reverse isolation	S_{12HG}	–	-40	–	dB	High gain mode
	S_{12LG}	–	-9.9	–	dB	Low gain mode
Noise figure	NF_{HG}	–	1.1	–	dB	High gain mode
	NF_{LG}	–	9.9	–	dB	Low gain mode
Input return loss	S_{11HG}	–	-13	–	dB	50 Ω, high gain mode
	S_{11LG}	–	-14	–	dB	50 Ω, low gain mode
Output return loss	S_{22HG}	–	-27	–	dB	50 Ω, high gain mode
	S_{22LG}	–	-19	–	dB	50 Ω, low gain mode
Stability factor	k	–	>2.2	–		DC to 8 GHz; all gain modes
Input compression point	IP_{1dBHG}	–	-7	–	dBm	High gain mode
	IP_{1dBLG}	–	-12	–	dBm	Low gain mode
Inband IIP3 f_1 - f_2 = 1 MHz	$IIP3_{HG}$ $IIP3_{LG}$	–	-8 -2	–	dBm	High gain mode Low gain mode

1) Performance based on application circuit in Figure 3.1 on Page 29
2) Guaranteed by device design; not tested in production

2.10 Measured RF Characteristics 750 MHz Band

Table 8 Typical Characteristics 750 MHz Band, T_A = 25 °C, V_{CC} = 2.8 V, R_{REF} = 5.6 kΩ[1)2)]

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Pass band range		740		790	MHz	F.e. band 13 and 14
Current consumption	I_{CCHG}	–	4.8	–	mA	High gain mode
	I_{CCLG}	–	0.50	–	mA	Low gain mode
Gain	S_{21HG}	–	15.5	–	dB	High gain mode
	S_{21LG}	–	-9.8	–	dB	Low gain mode
Reverse isolation	S_{12HG}	–	-39	–	dB	High gain mode
	S_{12LG}	–	-9.8	–	dB	Low gain mode
Noise figure	NF_{HG}	–	1.1	–	dB	High gain mode
	NF_{LG}	–	9.8	–	dB	Low gain mode
Input return loss	S_{11HG}	–	-15	–	dB	50 Ω, high gain mode
	S_{11LG}	–	-12	–	dB	50 Ω, low gain mode
Output return loss	S_{22HG}	–	-15	–	dB	50 Ω, high gain mode
	S_{22LG}	–	-20	–	dB	50 Ω, low gain mode
Stability factor	k	–	>2.3	–		DC to 8 GHz; all gain modes
Input compression point	IP_{1dBHG}	–	-7	–	dBm	High gain mode
	IP_{1dBLG}	–	-11	–	dBm	Low gain mode
Inband IIP3 f_1 - f_2 = 1 MHz	$IIP3_{HG}$ $IIP3_{LG}$	–	-7 -2	–	dBm	High gain mode Low gain mode

1) Performance based on application circuit in Figure 3.2 on Page 30

2) Guaranteed by device design; not tested in production

2.11 Measured RF Characteristics 800 MHz Band

Table 9 Typical Characteristics 800 MHz Band, T_A = 25 °C, V_{CC} = 2.8 V, R_{REF} = 5.6 kΩ[1)2)]

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Pass band range		790		840	MHz	F.e. band 20
Current consumption	I_{CCHG}	–	4.8	–	mA	High gain mode
	I_{CCLG}	–	0.50	–	mA	Low gain mode
Gain	S_{21HG}	–	15.9	–	dB	High gain mode
	S_{21LG}	–	-8.4	–	dB	Low gain mode
Reverse isolation	S_{12HG}	–	-38	–	dB	High gain mode
	S_{12LG}	–	-8.4	–	dB	Low gain mode
Noise figure	NF_{HG}	–	1.0	–	dB	High gain mode
	NF_{LG}	–	8.4	–	dB	Low gain mode
Input return loss	S_{11HG}	–	-16	–	dB	50 Ω, high gain mode
	S_{11LG}	–	-11	–	dB	50 Ω, low gain mode
Output return loss	S_{22HG}	–	-13	–	dB	50 Ω, high gain mode
	S_{22LG}	–	-27	–	dB	50 Ω, low gain mode
Stability factor	k	–	>2.3	–		DC to 8 GHz; all gain modes
Input compression point	IP_{1dBHG}	–	-6	–	dBm	High gain mode
	IP_{1dBLG}	–	-10	–	dBm	Low gain mode
Inband IIP3 f_1 - f_2 = 1 MHz	$IIP3_{HG}$ $IIP3_{LG}$	–	-8 -1	–	dBm	High gain mode Low gain mode

1) Performance based on application circuit in Figure 3.3 on Page 31
2) Guaranteed by device design; not tested in production

2.12 Measured RF Characteristics 880 MHz Band

Table 10 Typical Characteristics 880 MHz Band, T_A = 25 °C, V_{CC} = 2.8 V[1)], R_{REF} = n/c

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Pass band range		840	–	900	MHz	F.e. band 5 and 6
Current consumption	I_{CCHG}	–	3.3	–	mA	High gain mode
	I_{CCLG}	–	0.5	–	mA	Low gain mode
Gain	S_{21HG}	–	15.8	–	dB	High gain mode
	S_{21LG}	–	-7.7	–	dB	Low gain mode
Reverse Isolation[2)]	S_{12HG}	–	-36	–	dB	High gain mode
	S_{12LG}	–	-8.0	–	dB	Low gain mode
Noise figure	NF_{HG}	–	1.05	–	dB	High gain mode
	NF_{LG}	–	7.9	–	dB	Low gain mode
Input return loss[2)]	S_{11HG}	–	-21	–	dB	50 Ω, high gain mode
	S_{11LG}	–	-13	–	dB	50 Ω, low gain mode
Output return loss[2)]	S_{22HG}	–	-21	–	dB	50 Ω, high gain mode
	S_{22LG}	–	-13	–	dB	50 Ω, low gain mode
Stability factor[3)]	k	–	>2.3	–		DC to 8 GHz; all gain modes
Input compression point[2)]	IP_{1dBHG}	–	-5	–	dBm	High gain mode
	IP_{1dBLG}	–	-8	–	dBm	Low gain mode
Inband IIP3[2)] $f_1 - f_2$ = 1 MHz	$IIP3_{HG}$ $IIP3_{LG}$	–	-7 1	–	dBm	High gain mode Low gain mode

1) Performance based on application circuit in Figure 3.4 on Page 32
2) Verification based on AQL; random production test.
3) Guaranteed by device design; not tested in production.

2.13 Measured RF Characteristics 900 MHz band

Table 11 Typical Characteristics 900 MHz Band, T_A = 25 °C, V_{CC} = 2.8 V[1)2)], R_{REF} = n/c

Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Pass band range		900	–	1040	MHz	F.e. band 8
Current consumption	I_{CCHG}	–	3.3	–	mA	High gain mode
	I_{CCLG}	–	0.5	–	mA	Low gain mode
Gain	S_{21HG}	–	15.5	–	dB	High gain mode
	S_{21LG}	–	-7.2	–	dB	Low gain mode
Reverse Isolation	S_{12HG}	–	-36	–	dB	High gain mode
	S_{12LG}	–	-7.0	–	dB	Low gain mode
Noise figure	NF_{HG}	–	1.15	–	dB	High gain mode
	NF_{LG}	–	7.7	–	dB	Low gain mode
Input return loss	S_{11HG}	–	-12	–	dB	50 Ω, high gain mode
	S_{11LG}	–	-15	–	dB	50 Ω, low gain mode
Output return loss	S_{22HG}	–	-12	–	dB	50 Ω, high gain mode
	S_{22LG}	–	-12	–	dB	50 Ω, low gain mode
Stability factor	k	–	>2.3	–		DC to 8 GHz; all gain modes
Input compression point	IP_{1dBHG}	–	-4	–	dBm	High gain mode
	IP_{1dBLG}	–	-5	–	dBm	Low gain mode
Inband IIP3 $f_1 - f_2$ = 1 MHz	$IIP3_{HG}$ $IIP3_{LG}$	–	-6 1	–	dBm	High gain mode Low gain mode

1) Performance based on application circuit in Figure 3.5 on Page 33
2) Guaranteed by device design; not tested in production.

2.14 Measured RF Characteristics 1100 MHz band

Table 12 Typical Characteristics 1100 MHz Band, T_A = 25 °C, V_{CC} = 2.8 V[1)2)], R_{REF} = 8.2 kΩ

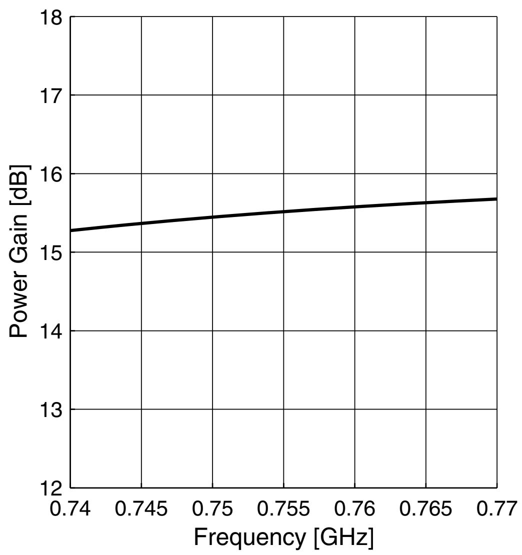
Parameter	Symbol	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
Pass band range		1040	–	1150	MHz	–
Current consumption	I_{CCHG}	–	4.3	–	mA	High gain mode
	I_{CCLG}	–	0.5	–	mA	Low gain mode
Gain	S_{21HG}	–	16.2	–	dB	High gain mode
	S_{21LG}	–	-7.0	–	dB	Low gain mode
Reverse Isolation	S_{12HG}	–	-36	–	dB	High gain mode
	S_{12LG}	–	-7.0	–	dB	Low gain mode
Noise figure	NF_{HG}	–	1.2	–	dB	High gain mode
	NF_{LG}	–	7.0	–	dB	Low gain mode
Input return loss	S_{11HG}	–	-15	–	dB	50 Ω, high gain mode
	S_{11LG}	–	-10	–	dB	50 Ω, low gain mode
Output return loss	S_{22HG}	–	-15	–	dB	50 Ω, high gain mode
	S_{22LG}	–	-11	–	dB	50 Ω, low gain mode
Stability factor	k	–	>2.3	–		DC to 8 GHz; all gain modes
Input compression point	IP_{1dBHG}	–	-5	–	dBm	High gain mode
	IP_{1dBLG}	–	-2	–	dBm	Low gain mode
Inband IIP3 $f_1 - f_2$ = 1 MHz	$IIP3_{HG}$ $IIP3_{LG}$	–	-3 3	–	dBm	High gain mode Low gain mode

1) Performance based on application circuit in Figure 3.6 on Page 34
2) Guaranteed by device design; not tested in production.

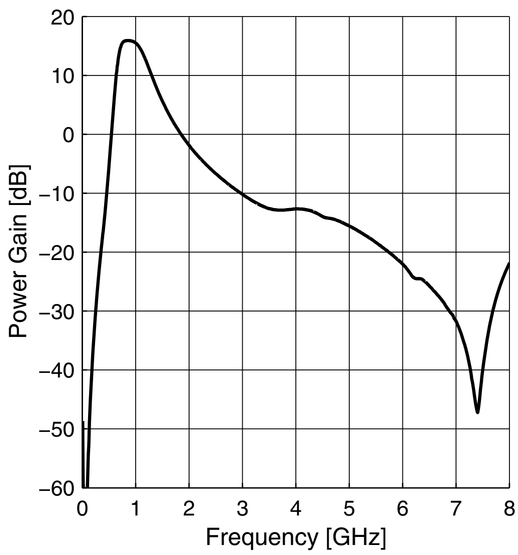
2.15 Measured Performance Band 13 Application High Gain Mode vs. Frequency

T_A = 25 °C, V_{CC} = 2.8 V, V_{GS} = 2.8 V, V_{EN} = 2.8 V, R_{REF} = 5.6 kΩ

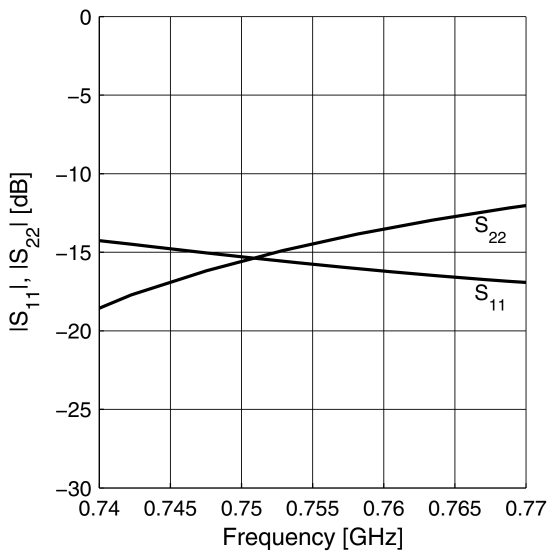
Power Gain $|S_{21}|$ = f (f)



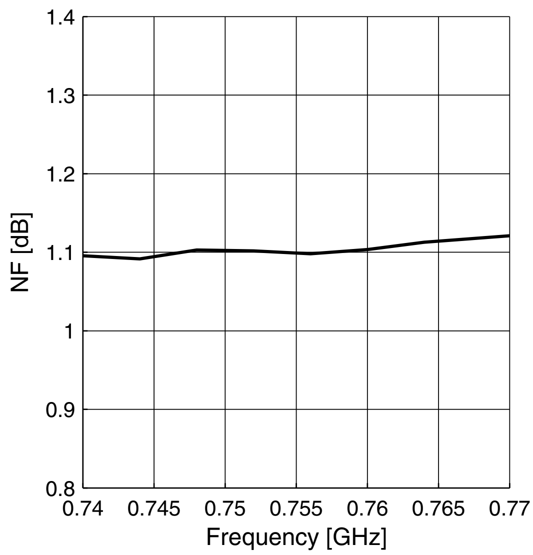
Power Gain wideband $|S_{21}|$ = f (f)



Matching $|S_{11}|$ = f (f), $|S_{22}|$ = f (f)



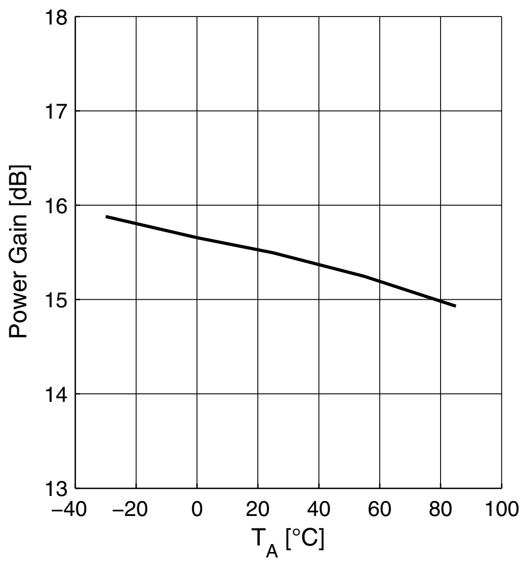
Noise Figure NF = f (f)



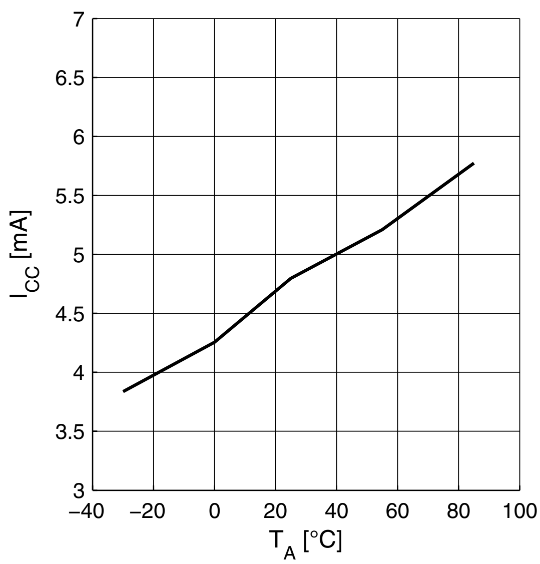
2.16 Measured Performance Band 13 Application High Gain Mode vs. Temperature

V_{CC} = 2.8 V, V_{GS} = 2.8 V, V_{EN} = 2.8 V, f = 750 MHz, R_{REF} = 5.6 kΩ

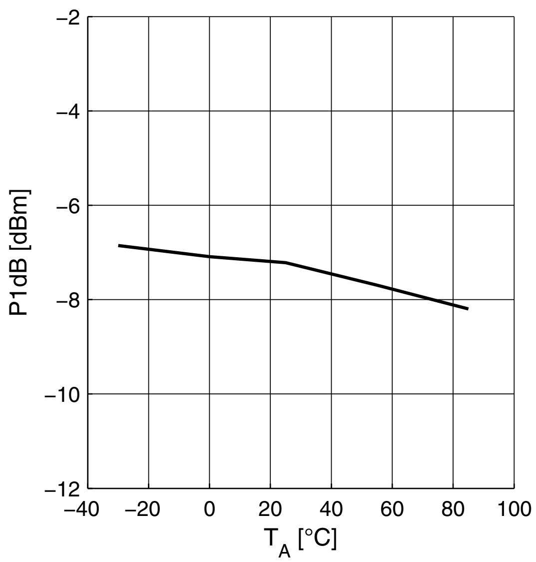
Power Gain $|S_{21}|$ = f (T_A)



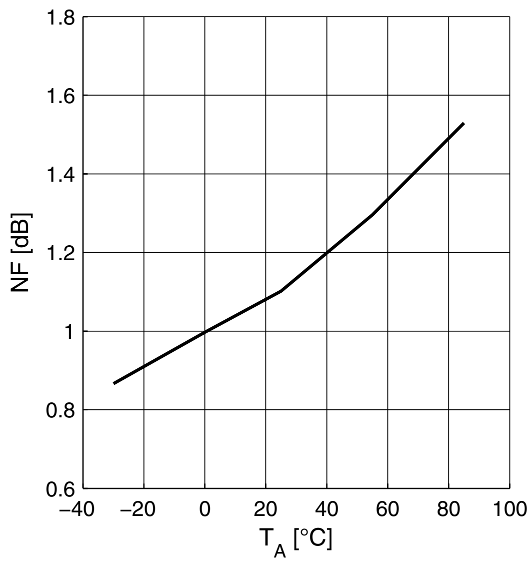
Supply Current I_{CC} = f (T_A)



Input Compression $P1dB$ = f (T_A)



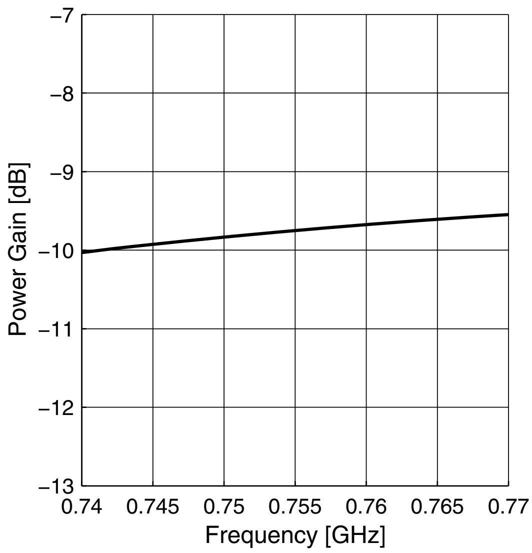
Noise Figure NF = f (T_A)



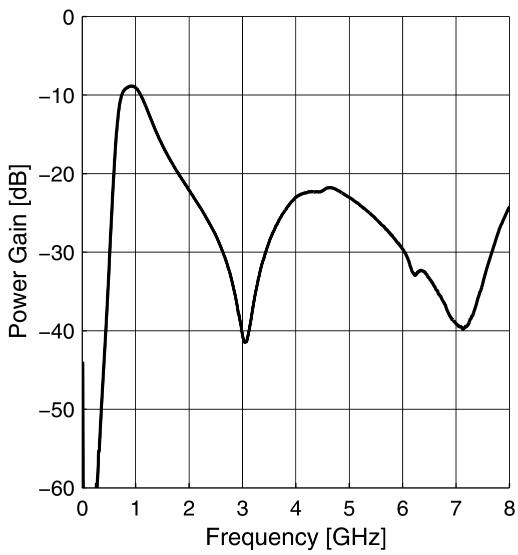
2.17 Measured Performance Band 13 Application Low Gain Mode vs. Frequency

T_A = 25 °C, V_{CC} = 2.8 V, V_{GS} = 0 V, V_{EN} = 2.8 V, R_{REF} = 5.6 kΩ

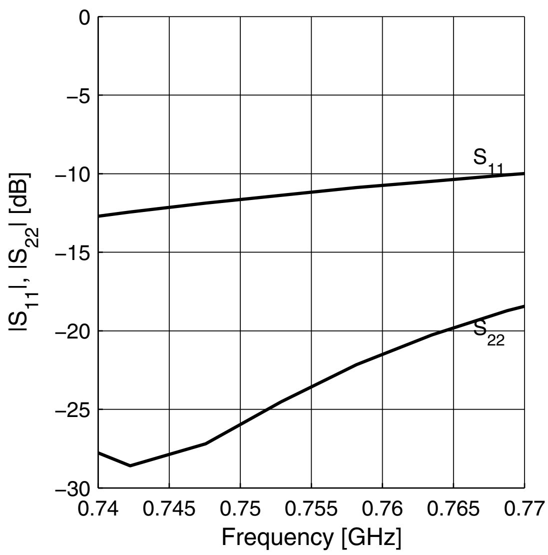
Power Gain $|S_{21}| = f(f)$



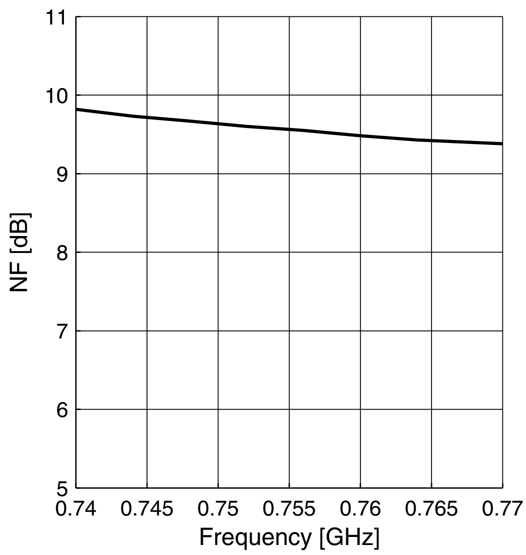
Power Gain wideband $|S_{21}| = f(f)$



Matching $|S_{11}| = f(f)$, $|S_{22}| = f(f)$



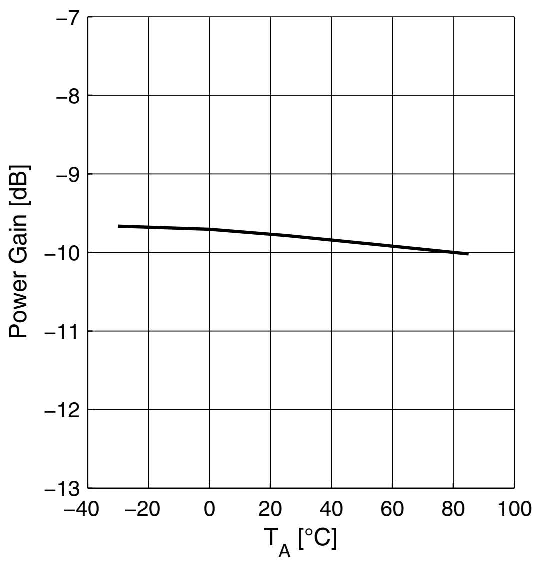
Noise Figure $NF = f(f)$



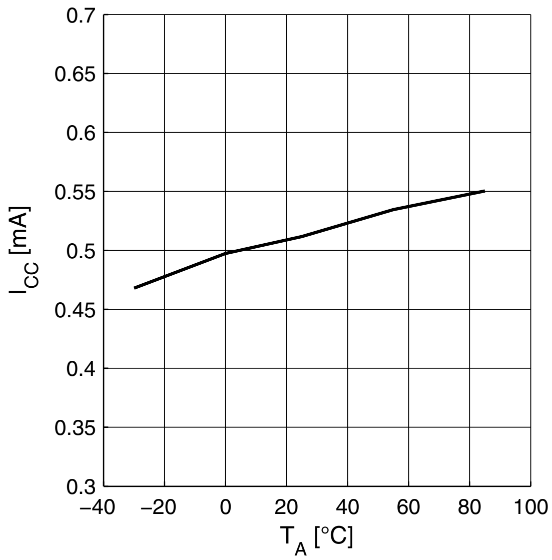
2.18 Measured Performance Band 13 Application Low Gain Mode vs. Temperature

V_{CC} = 2.8 V, V_{GS} = 0 V, V_{EN} = 2.8 V, f = 750 MHz, R_{REF} = 5.6 kΩ

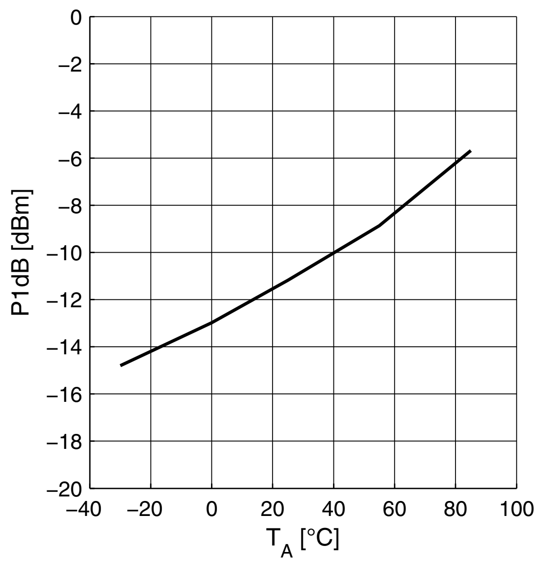
Power Gain $|S_{21}| = f(T_A)$



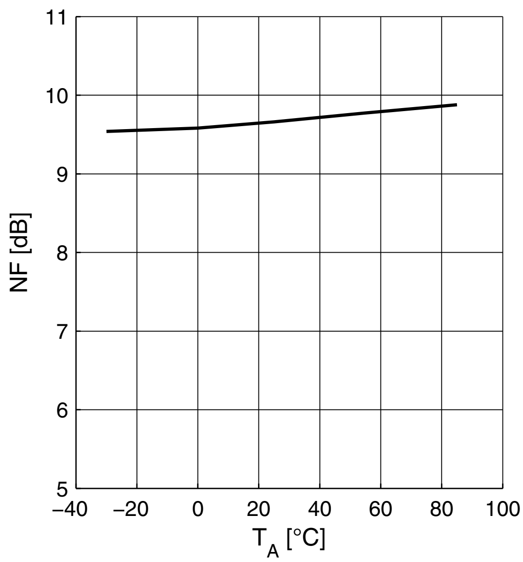
Supply Current $I_{CC} = f(T_A)$



Input Compression $P1dB = f(T_A)$



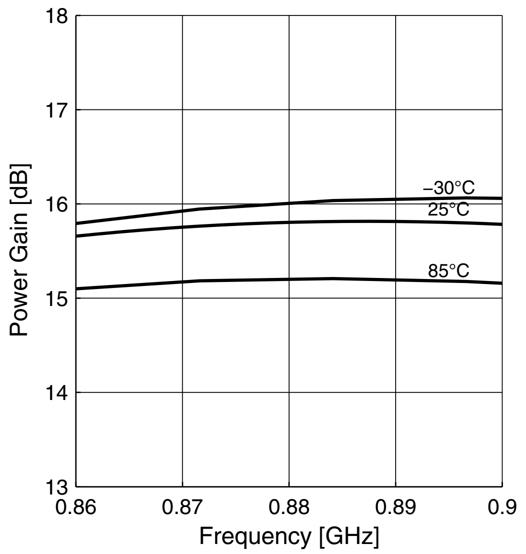
Noise Figure $NF = f(T_A)$



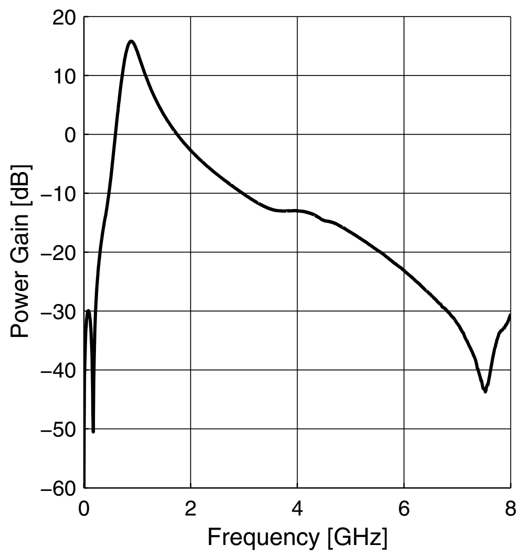
2.19 Measured Performance Band 5 Application High Gain Mode vs. Frequency

T_A = 25 °C, V_{CC} = 2.8 V, V_{GS} = 2.8 V, V_{EN} = 2.8 V, R_{REF} = n/c

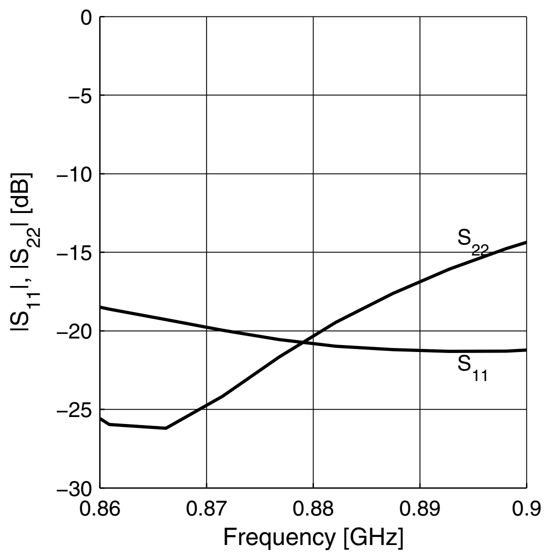
Power Gain $|S_{21}| = f(f)$



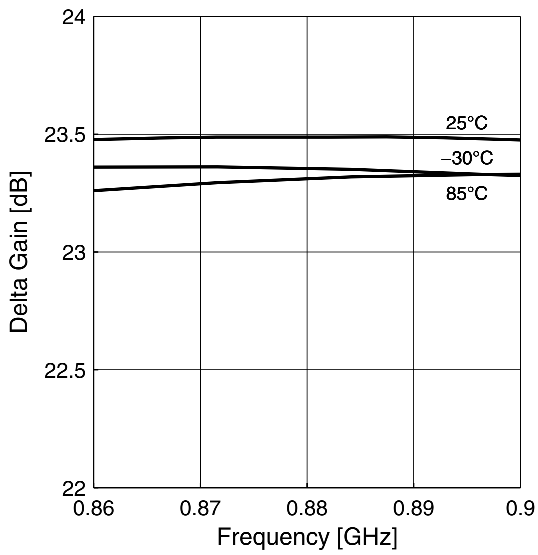
Power Gain wideband $|S_{21}| = f(f)$



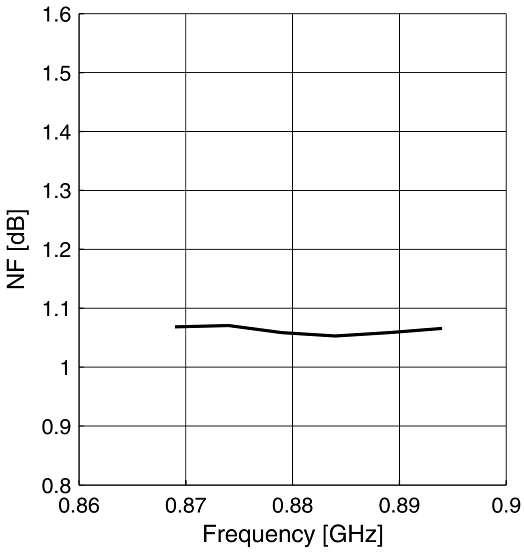
Matching $|S_{11}| = f(f)$, $|S_{22}| = f(f)$



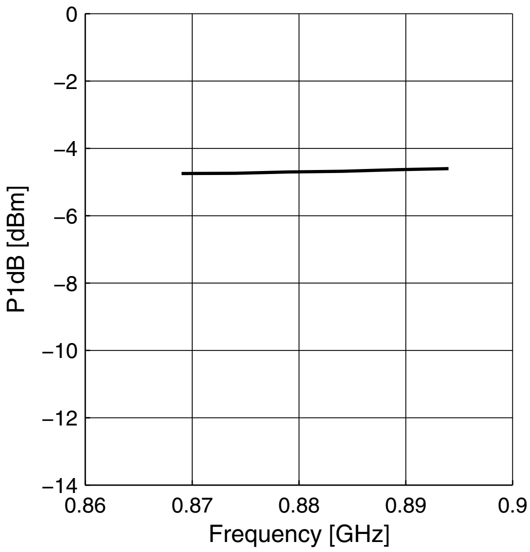
Gainstep HG-LG $|\Delta S_{21}| = f(f)$



Noise Figure NF = f (f)



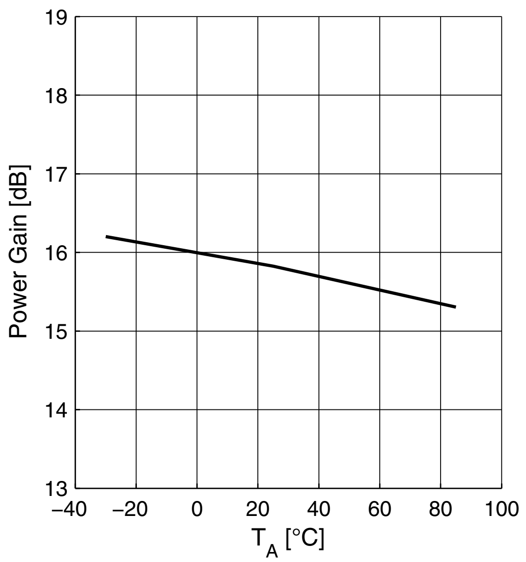
Input Compression $P1dB$ = f (f)



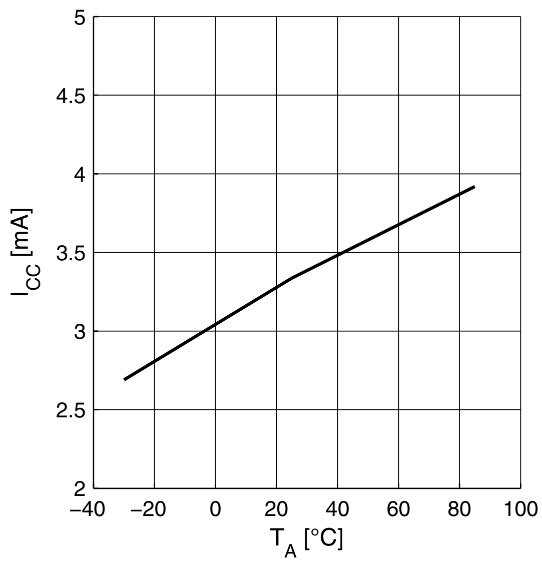
2.20 Measured Performance Band 5 Application High Gain Mode vs. Temperature

T_A = 25 °C, V_{CC} = 2.8 V, V_{GS} = 2.8 V, V_{EN} = 2.8 V, f = 800 MHz, R_{REF} = n/c

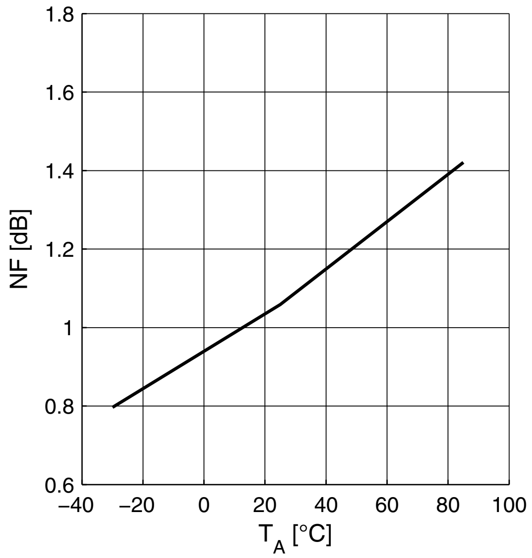
Power Gain $|S_{21}|$ = f (T_A)



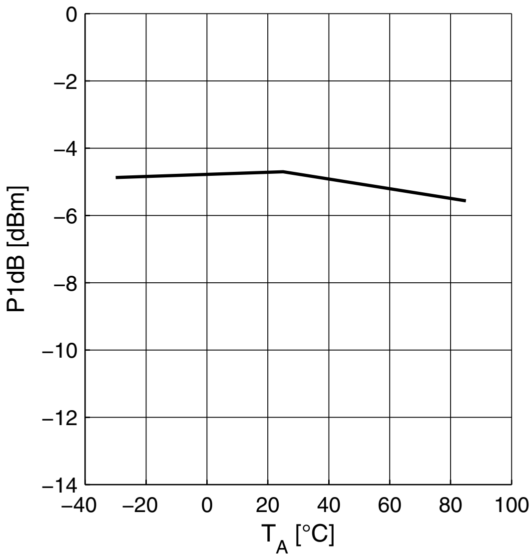
Supply Current I_{CC} = f (T_A)



Noise Figure NF = f (T_A)



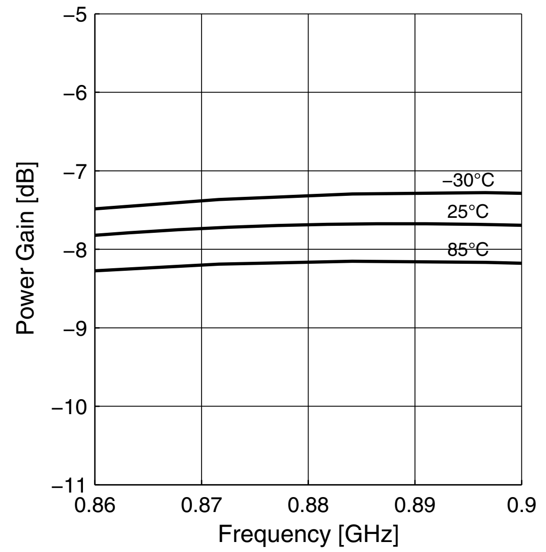
Input Compression $P1dB$ = f (T_A)



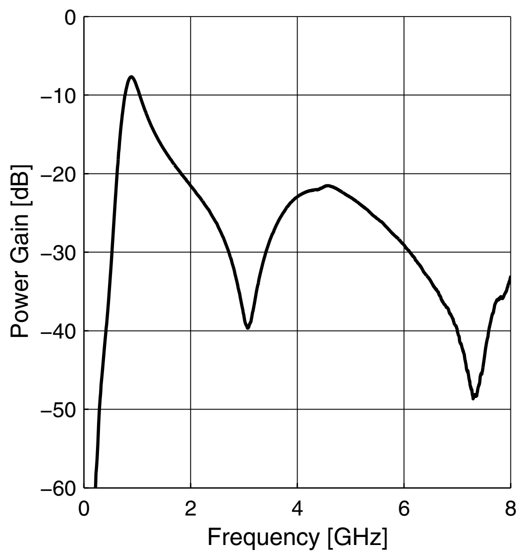
2.21 Measured Performance Band 5 Application Low Gain Mode vs. Frequency

T_A = 25 °C, V_{CC} = 2.8 V, V_{GS} = 0 V, V_{EN} = 2.8 V, R_{REF} = n/c

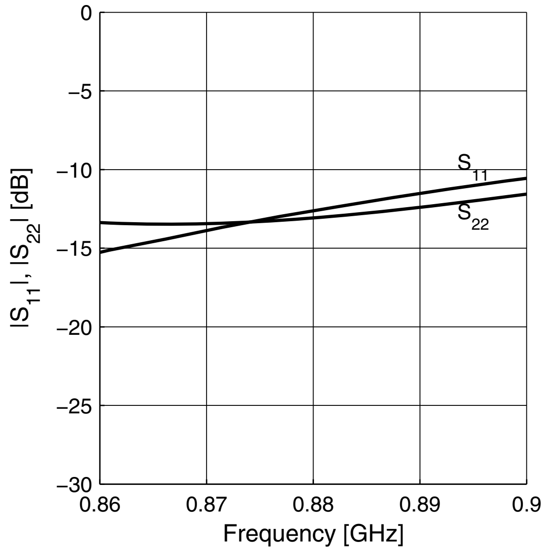
Power Gain $|S_{21}| = f(f)$



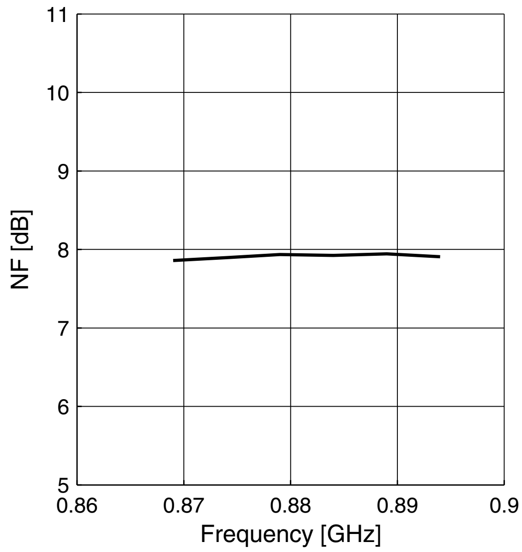
Power Gain wideband $|S_{21}| = f(f)$



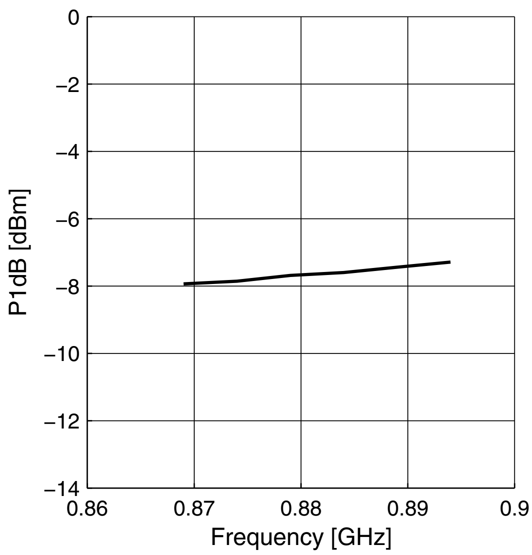
Matching $|S_{11}| = f(f)$, $|S_{22}| = f(f)$



Noise Figure NF = f (f)



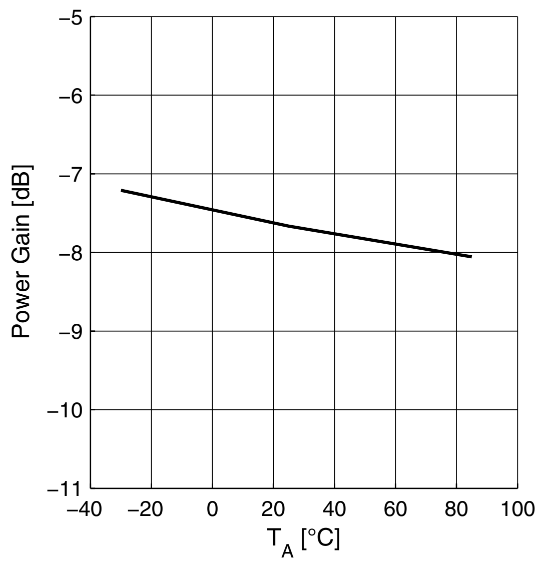
Input Compression $P1dB$ = f (f)



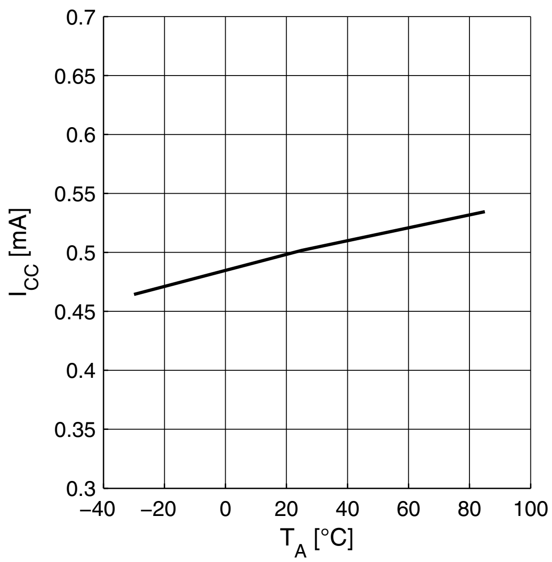
2.22 Measured Performance Band 5 Application Low Gain Mode vs. Temperature

T_A = 25 °C, V_{CC} = 2.8 V, V_{GS} = 0 V, V_{EN} = 2.8 V, f = 800 MHz, R_{REF} = n/c

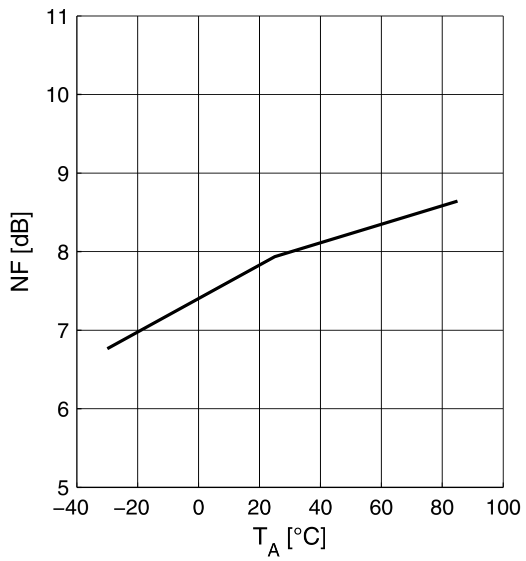
Power Gain $|S_{21}|$ = f (T_A)



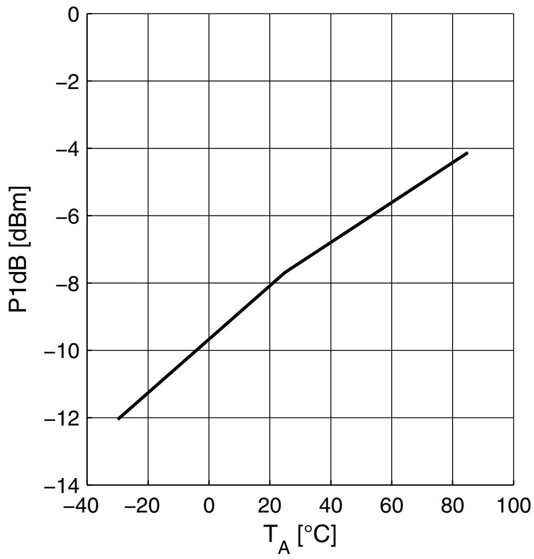
Supply Current I_{CC} = f (T_A)



Noise Figure NF = f (T_A)



Input Compression $P1dB$ = f (T_A)



3 Application Circuit and Block Diagram

3.1 700 MHz Band Application Circuit Schematic

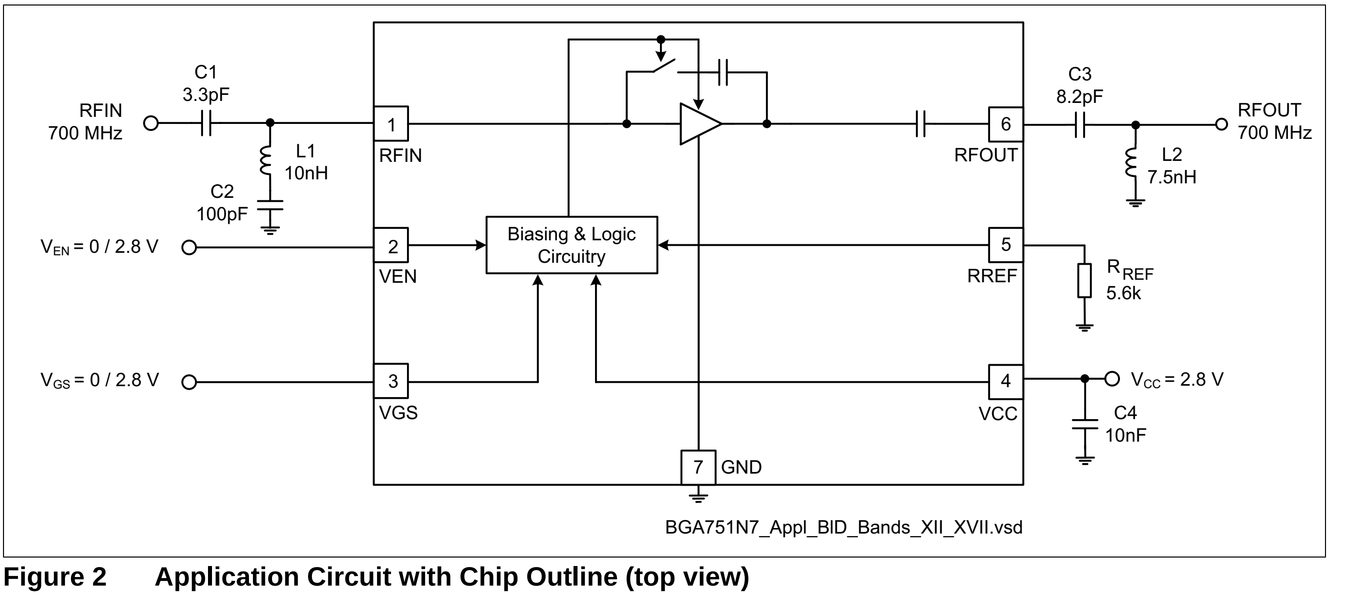


Figure 2 Application Circuit with Chip Outline (top view)

Note: Package paddle (Pin 7) has to be RF grounded.

Table 13 Parts List

Part Number	Part Type	Manufacturer	Size	Comment
L1 ... L2	Chip inductor	Various	0402	Wirewound, Q ≈ 50
C1 ... C4	Chip capacitor	Various	0402	
RREF	Chip resistor	Various	0402	

3.2 750 MHz Band Application Circuit Schematic

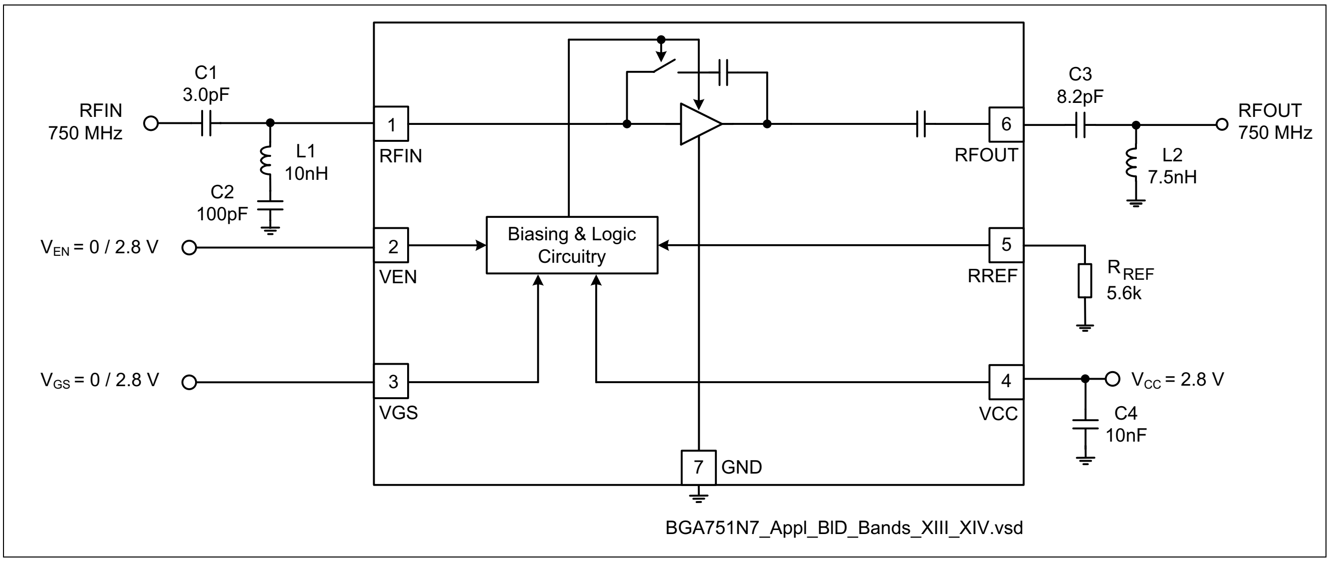


Figure 3 Application Circuit with Chip Outline (top view)

Note: Package paddle (Pin 7) has to be RF grounded.

Table 14 Parts List

Part Number	Part Type	Manufacturer	Size	Comment
L1 ... L2	Chip inductor	Various	0402	Wirewound, Q ≈ 50
C1 ... C4	Chip capacitor	Various	0402	
RREF	Chip resistor	Various	0402	

3.3 800 MHz Band Application Circuit Schematic

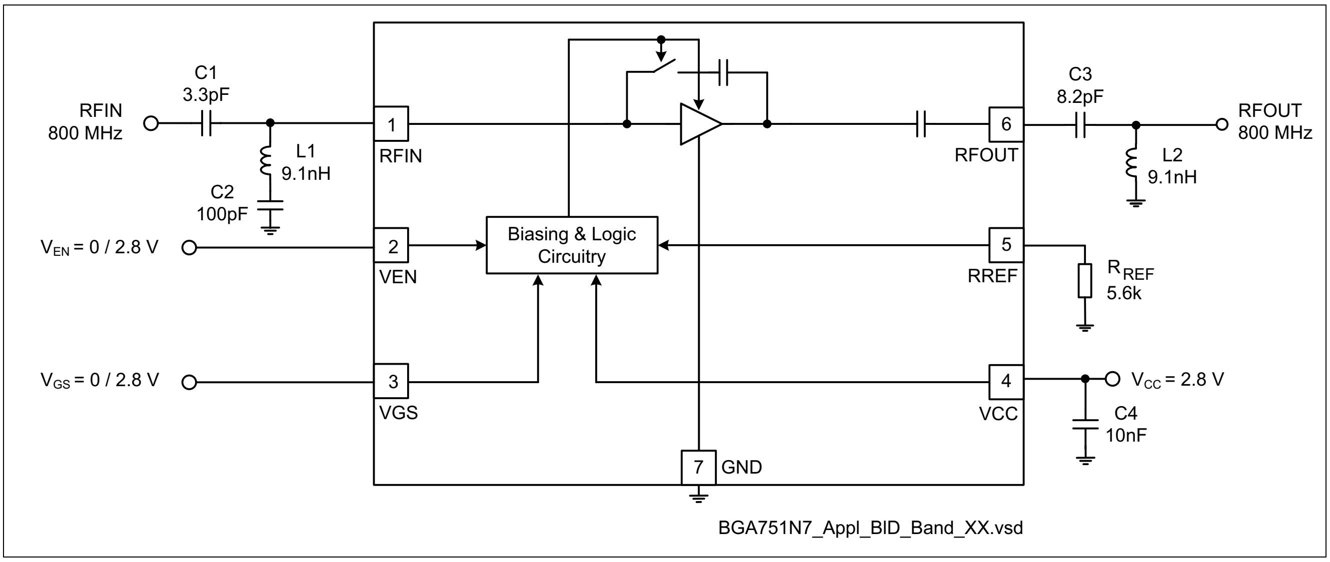


Figure 4 Application Circuit with Chip Outline (top view)

Note: Package paddle (Pin 7) has to be RF grounded.

Table 15 Parts List

Part Number	Part Type	Manufacturer	Size	Comment
L1 ... L2	Chip inductor	Various	0402	Wirewound, Q ≈ 50
C1 ... C4	Chip capacitor	Various	0402	
RREF	Chip resistor	Various	0402	

3.4 880 MHz Band Application Circuit Schematic

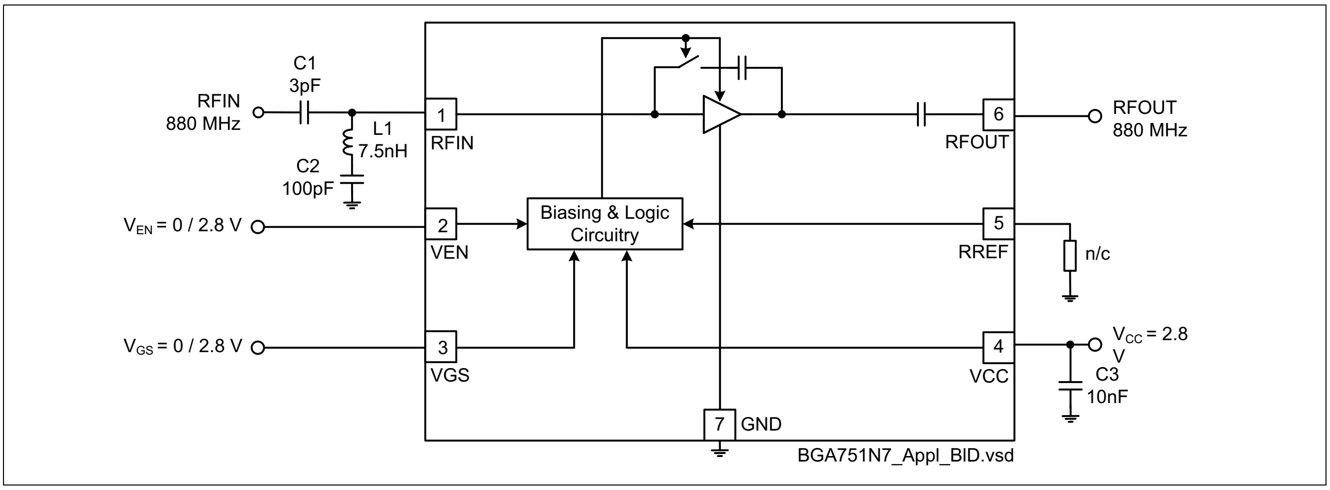


Figure 5 Application Circuit with Chip Outline (top view)

Note: Package paddle (Pin 7) has to be RF grounded.

Table 16 Parts List

Part Number	Part Type	Manufacturer	Size	Comment
L1	Chip inductor	Various	0402	Wirewound, Q ≈ 50
C1 ... C3	Chip capacitor	Various	0402	

3.5 900 MHz Band Application Circuit Schematic

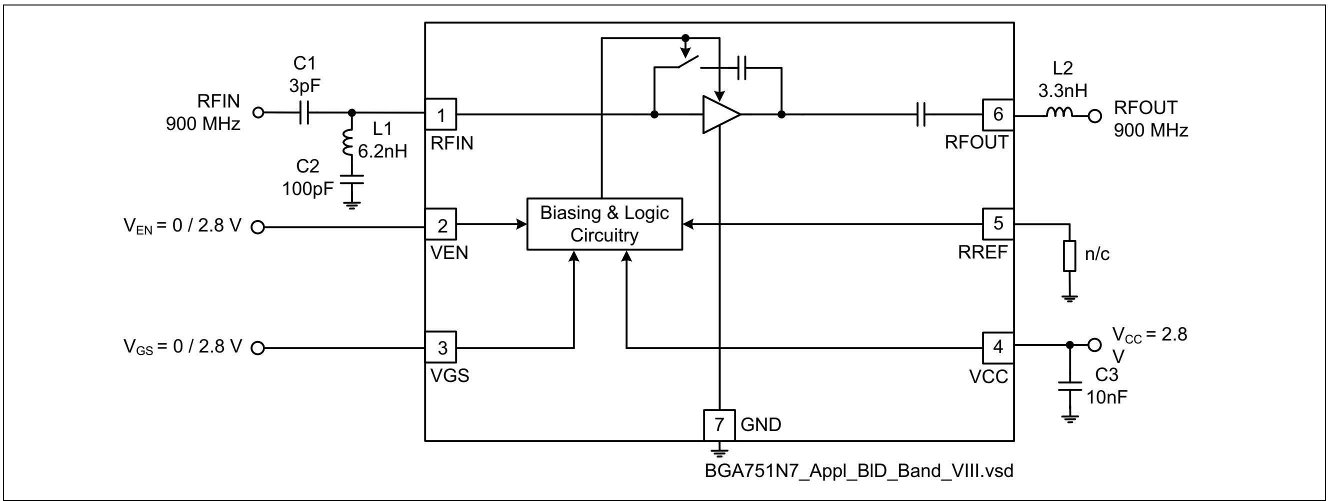


Figure 6 Application Circuit with Chip Outline (top view)

Note: Package paddle (Pin 7) has to be RF grounded.

Table 17 Parts List

Part Number	Part Type	Manufacturer	Size	Comment
L1, L2	Chip inductor	Various	0402	Wirewound, Q ≈ 50
C1 ... C3	Chip capacitor	Various	0402	

3.6 1100 MHz Band Application Circuit Schematic

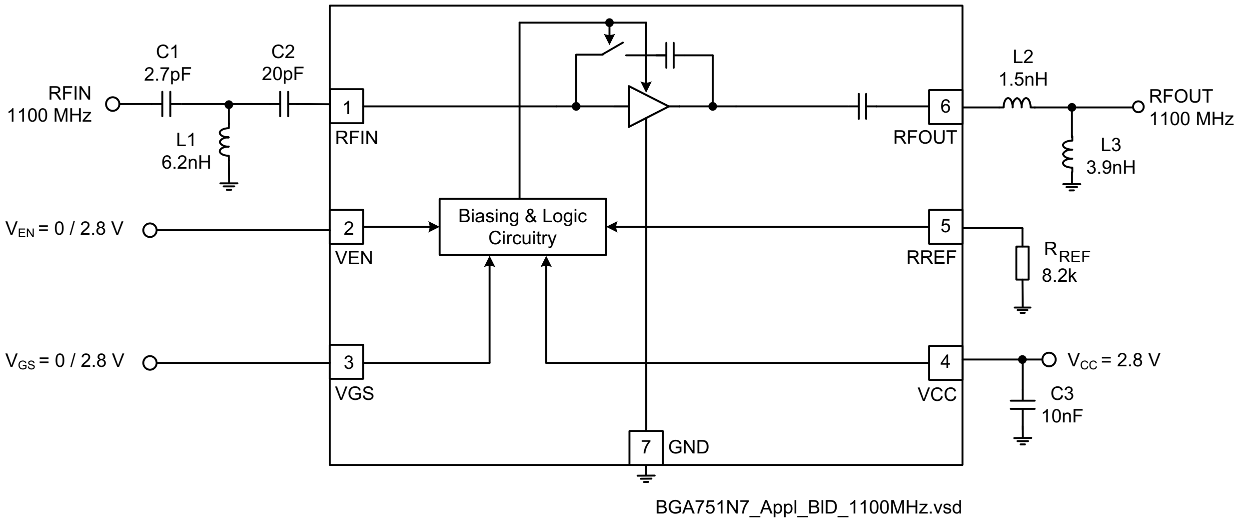


Figure 7 Application Circuit with Chip Outline (top view)

Note: Package paddle (Pin 7) has to be RF grounded.

Table 18 Parts List

Part Number	Part Type	Manufacturer	Size	Comment
L1 ... L3	Chip inductor	Various	0402	Wirewound, Q ≈ 50
C1 ... C3	Chip capacitor	Various	0402	
RREF	Chip resistor	Various	0402	

3.7 Pin Definition

Table 19 Pin Definition and Function

Pin Number	Symbol	Function
1	RFIN	LNA input
2	VEN	Band select control
3	VGS	Gain step control
4	VCC	Supply voltage
5	RREF	Bias current reference resistor (high gain mode)
6	RFOUT	LNA output
7	GND	Package paddle; ground connection for LNA and control circuitry

3.8 Application Board

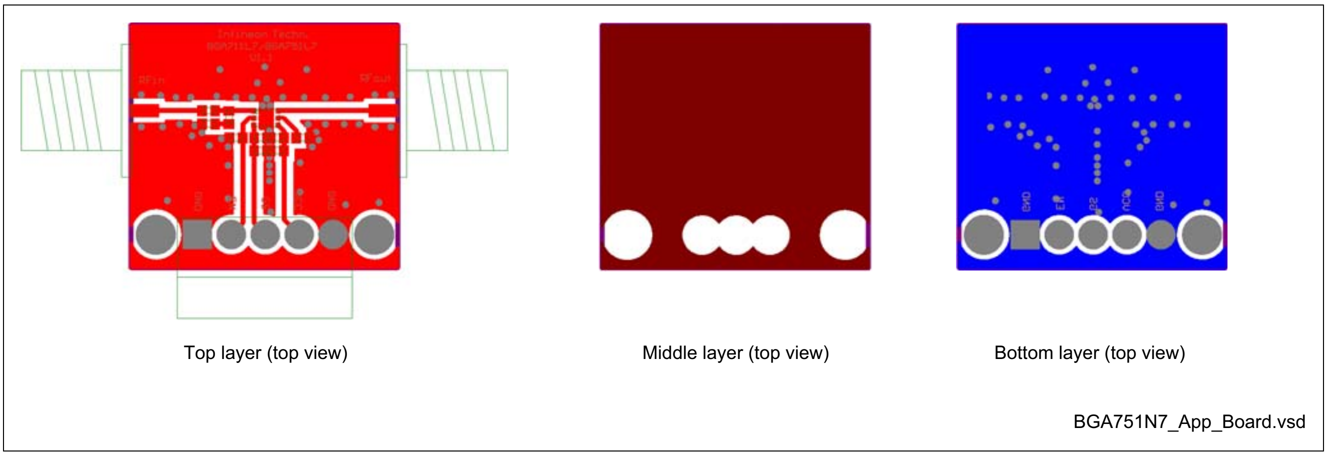


Figure 8 Application Board Layout on 3-layer FR4

Note: Top layer thickness: 0.2 mm, bottom layer thickness: 0.8 mm, 17 mm Cu metallization, gold plated. Board size: 21 x 19mm.

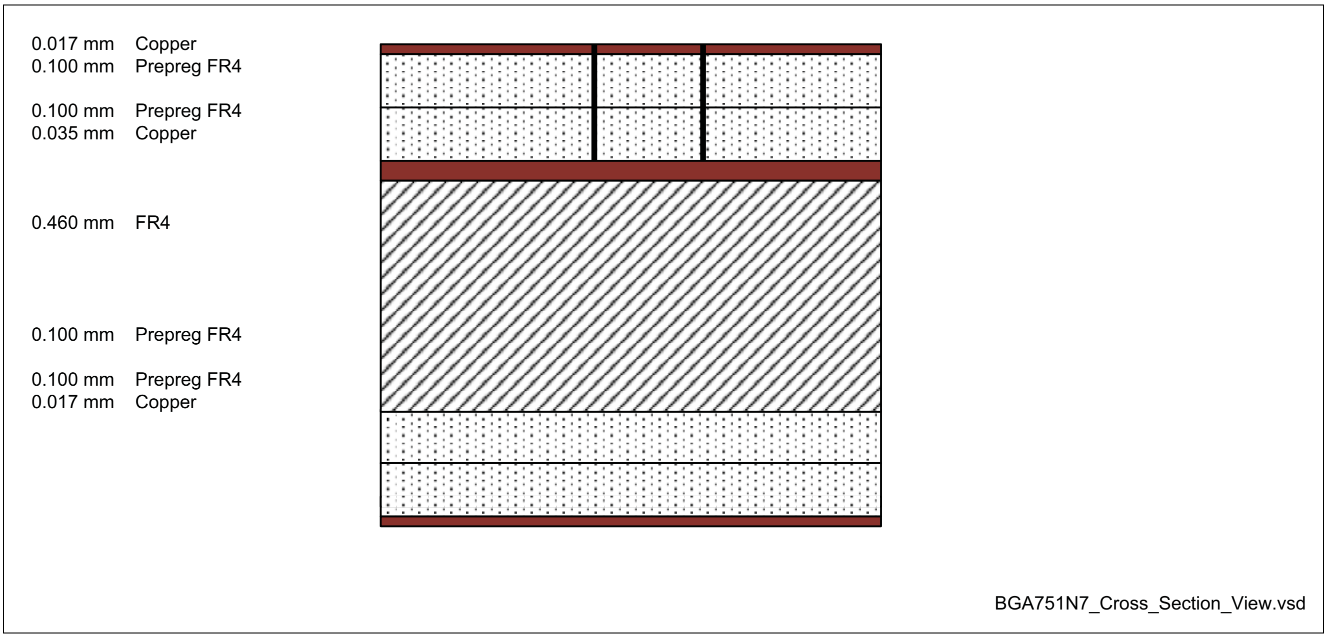


Figure 9 Cross-Section view of Application Board

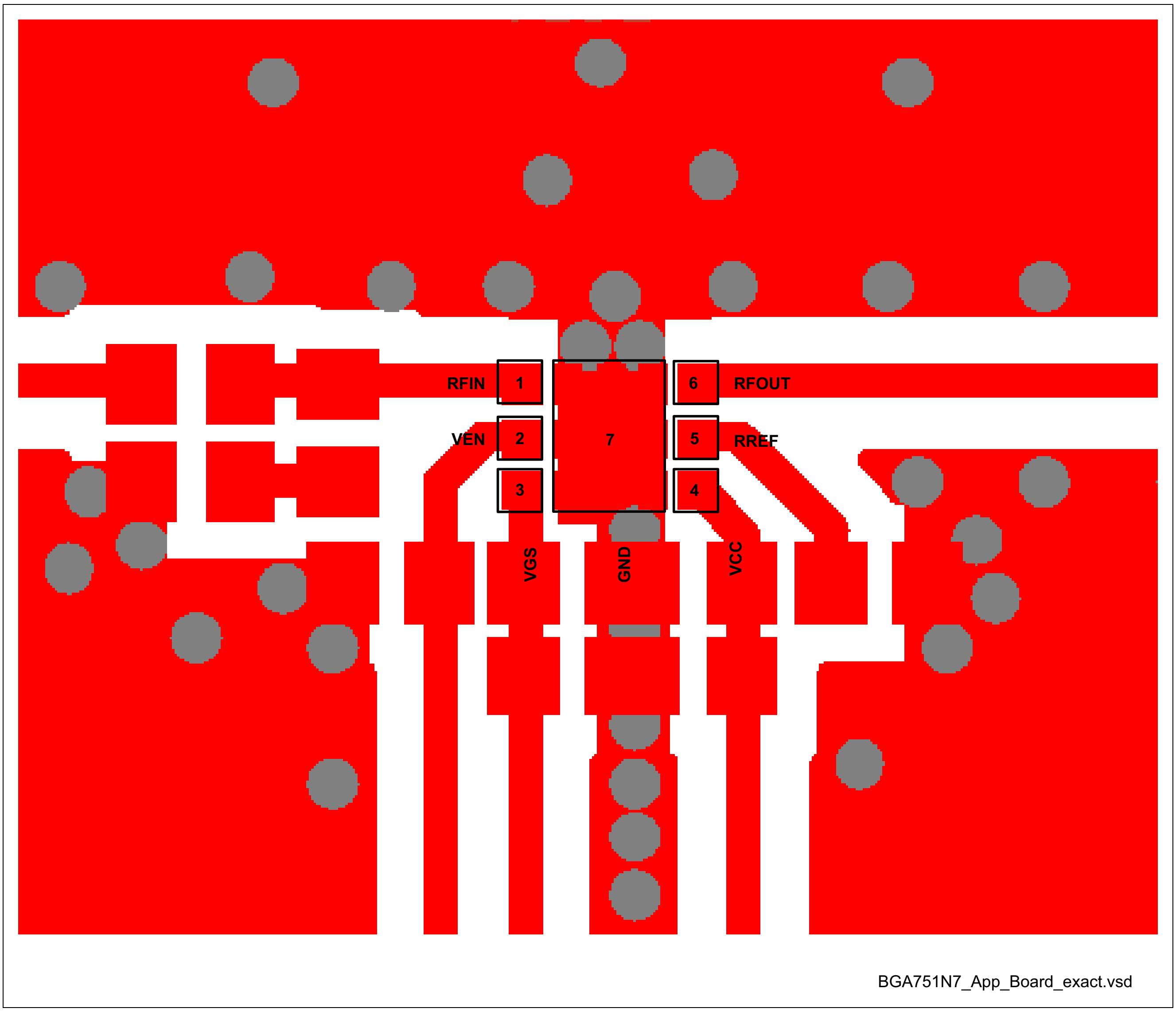


Figure 10 Detail of Application Board Layout

Note: In order to achieve the same performance as given in this datasheet please follow the suggested PCB-layout as closely as possible. The position of the GND vias is critical for RF performance.

4 Physical Characteristics

4.1 Package Footprint

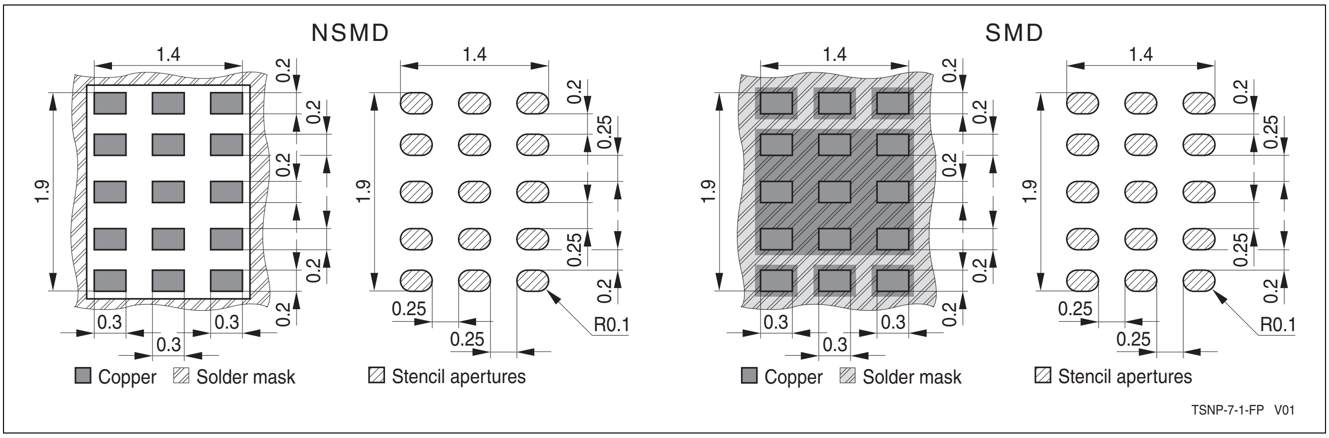


Figure 11 Footprint Recommendation 1 for the TSNP-7-1 Package

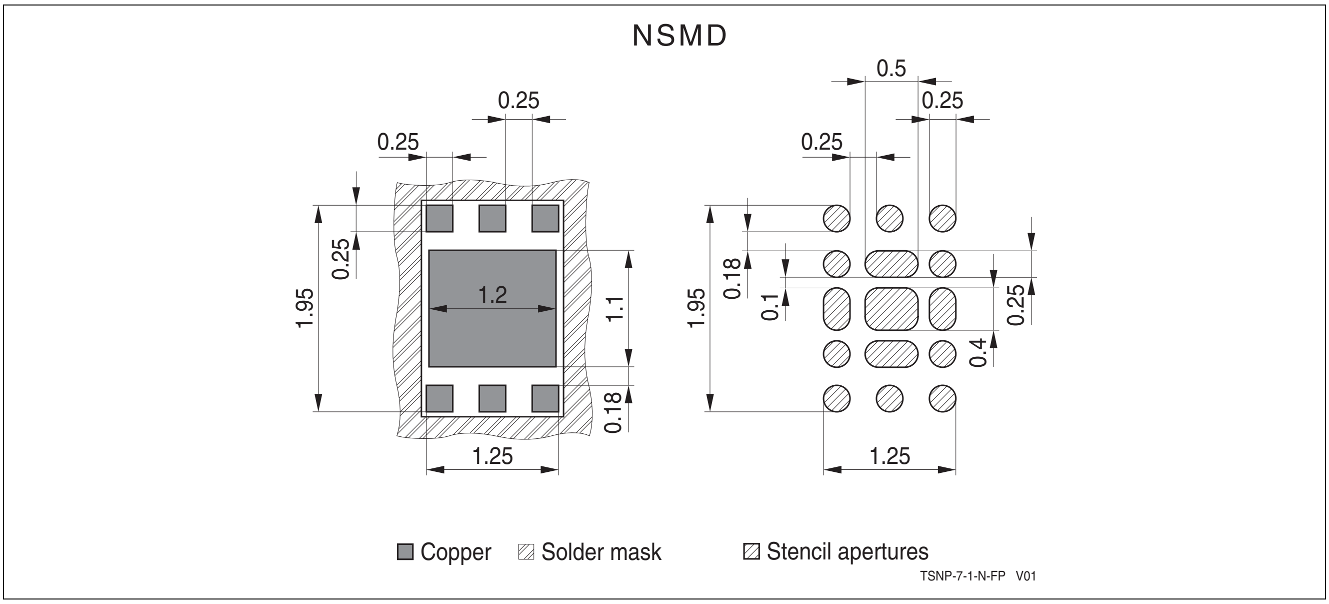


Figure 12 Footprint Recommendation 2 for the TSNP-7-1 Package

4.2 Package Dimensions

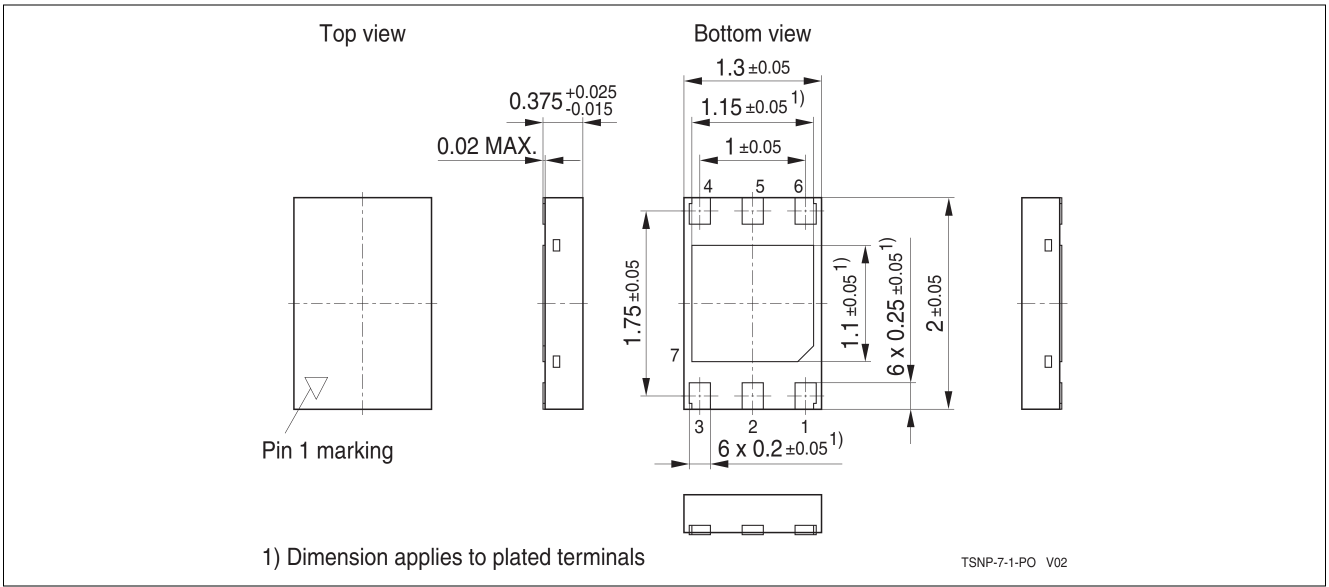


Figure 13 Package Outline (top, side and bottom view)

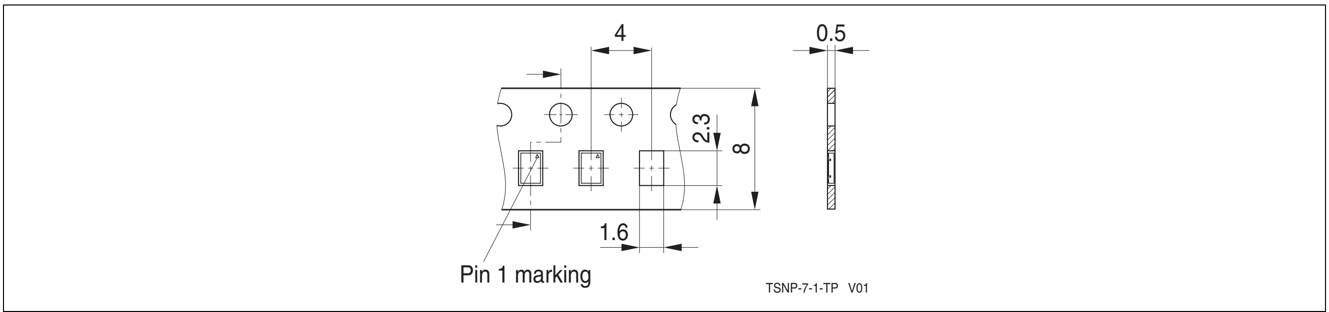


Figure 14 Tape & Reel Dimensions

4.3 Product Marking Pattern

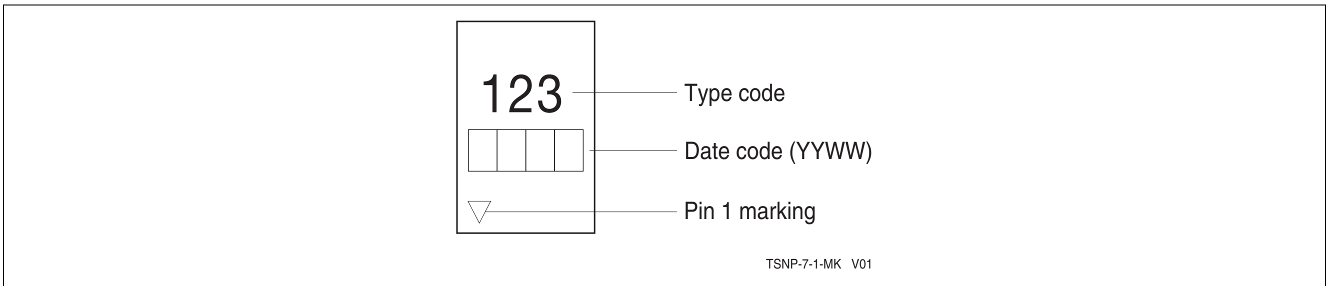


Figure 15 Marking Pattern (top view)

w w w . i n f i n e o n . c o m

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