SONY

CXG1013N

1.7 to 2.0 GHz Low Noise Amplifier/Down Conversion Mixer

Description

The CXG1013N is a low noise amplifier/down conversion mixer MMIC,designed using the Sony's GaAs J-FET process.

Features

- Low noise
  NF=1.8 dB (Typ.) at 1.9 GHz
  (low noise amplifier)
- Low distortion
  Input IP3=–0.5 dBm (Typ.) at 1.9 GHz
  (mixer)
- Low LO input power operation –12 dBm
- Single 3.0V power supply operation
- 16-pin SSOP package

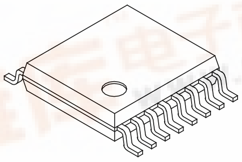
Applications

- Japan digital cordless phone(PHS)
- DECT
- PCN
- PCS

Structure

GaAs J-FET MMIC

SSOP-16P-L01 (Plastic)



Absolute Maximum Ratings (Ta=25 °C)

• Supply voltage	V_{DD}	6	V
• Operating temperature	Topr	–35 to +85	°C
• Storage temperature	Tstg	–65 to +150	°C
• Power dissipation	P_D	150	mW
• Current consumption			
I_{DD}(low noise amplifier)		20	mA
I_{DD}(LO amplifier)		10	mA
I_{DD}(mixer,IF amplifier)		20	mA
• Input power	P_{IN}	+5	dBm

Operating Condition

• Suppy voltage	3.0	V

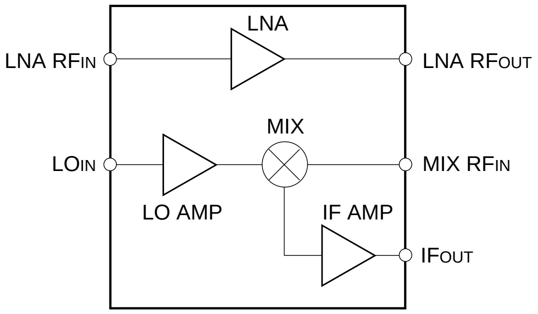
Electrical Characteristics

V_{DD}=3.0 V, f_{RF}=1.9 GHz, f_{LO}=1.66 GHz, P_{LO}=–12 dBm, when 50 kΩ I/O matching; unless otherwise specified

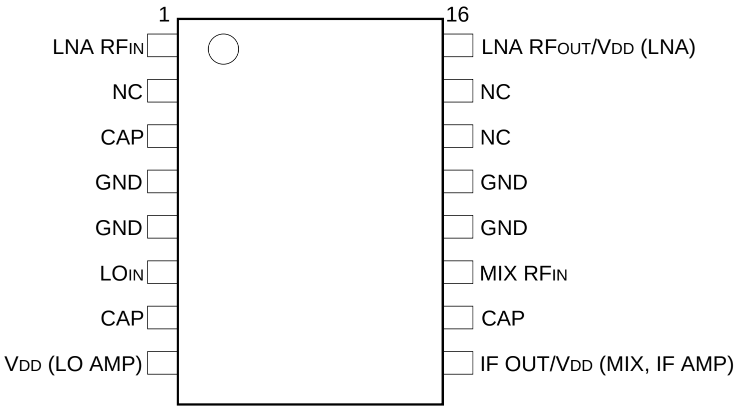
(Ta=25 °C)

Item		Symbol	Min.	Typ.	Max.	Unit	Measurement condition
Low noise amplifier	Current consumption	I_{DD}	—	2.5	3.5	mA	When no signal
	Power gain	G_P	12.5	14.5	16.5	dB	
	Noise figure	NF	—	1.8	2.6	dB	
	Input IP3	IIP3	–8	–5	—	dBm	
	Isolation	I_{SO}	25	30	—	dB	
Mixer	Current consumption	I_{DD}	—	5.5	8.0	mA	When no signal
	Conversion gain	G_C	7	9	11	dB	
	Noise figure	NF	—	7.2	9.2	dB	
	Input IP3	IIP3	–3	–0.5	—	dBm	
	LO to RF leak level	P_{LK}	—	–19	–14	dBm	
Total	Current consumption	I_{DD}	—	8.0	10.0	mA	When no signal

Block Diagram

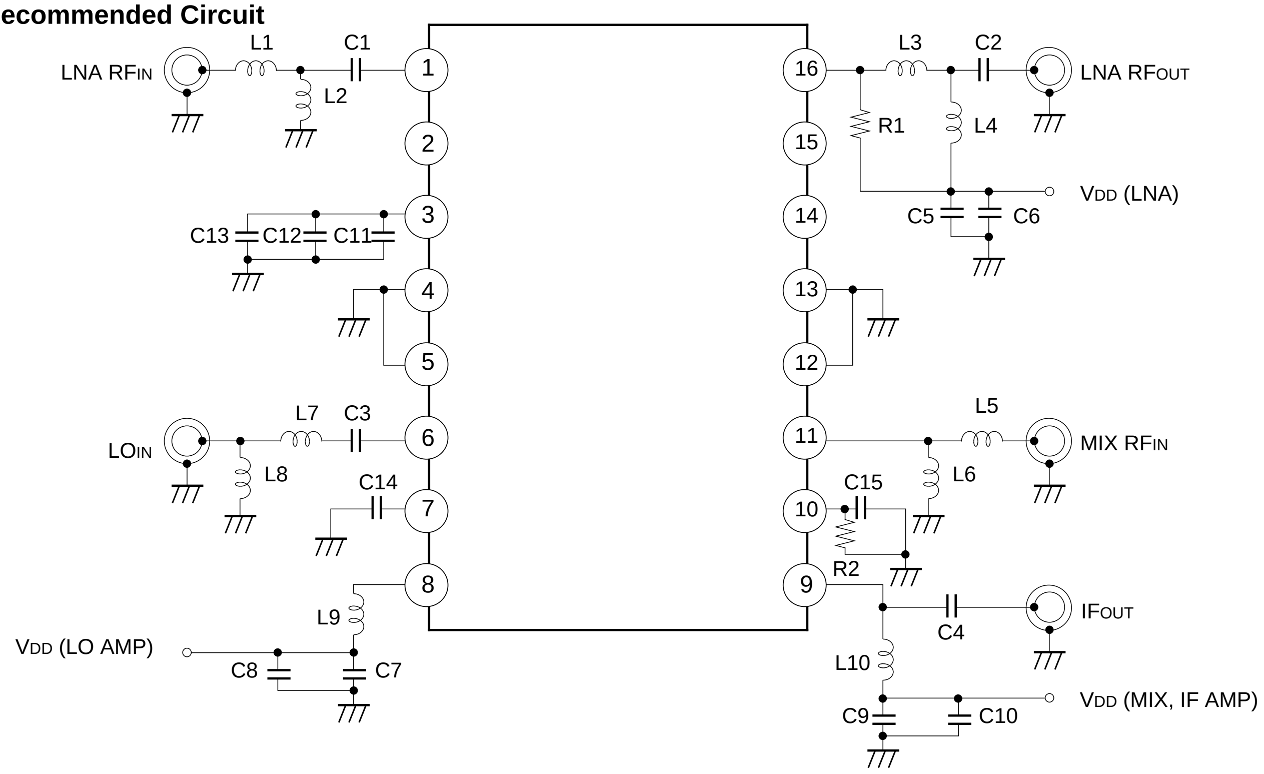


Pin Configuration



16pin SSOP (PLASTIC)

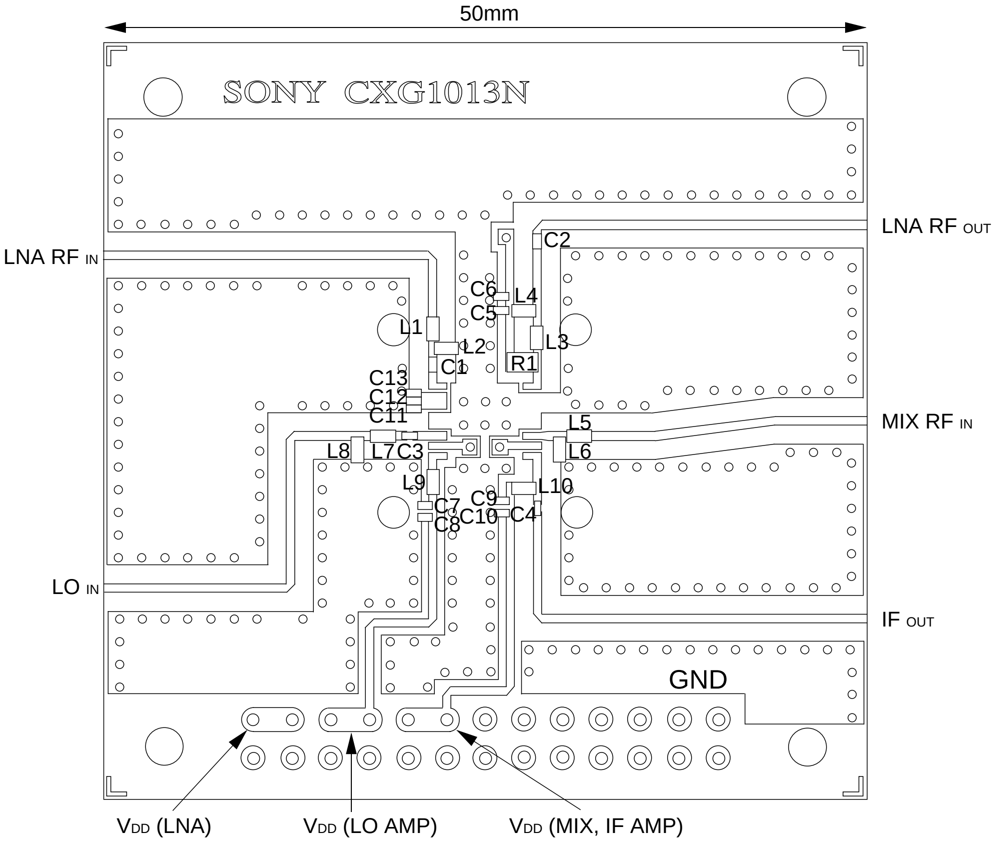
Recommended Circuit



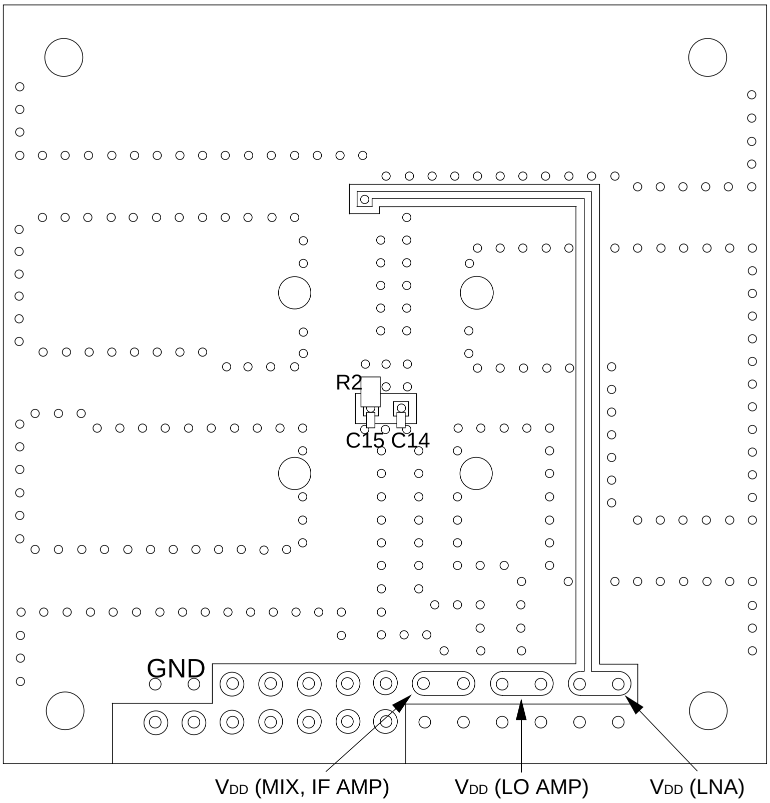
L1	8.2 nH	L10	68 nH	C9	1000 pF
L2	10 nH	C1	100 pF	C10	10 nF
L3	2.2 nH	C2	100 pF	C11	100 pF
L4	2.2 nH	C3	100 pF	C12	1000 pF
L5	8.2 nH	C4	7 pF	C13	10 nF
L6	22 nH	C5	1000 pF	C14	1000 pF
L7	6.8 nH	C6	10 nF	C15	0.1 µF
L8	3.3 nH	C7	1000 pF	R1	1 kΩ
L9	10 nH	C8	10 nF	R2	620 Ω

Recommended Evaluation Board

Front

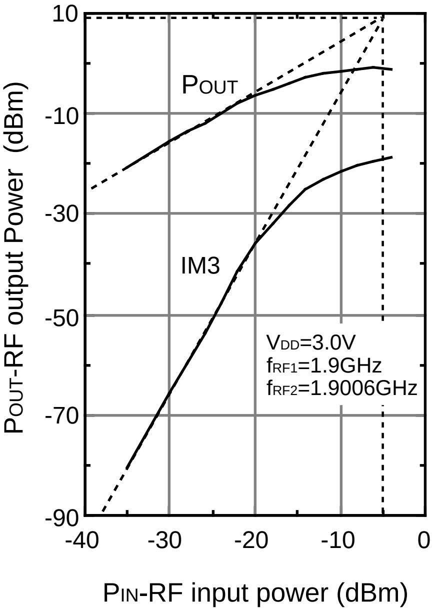


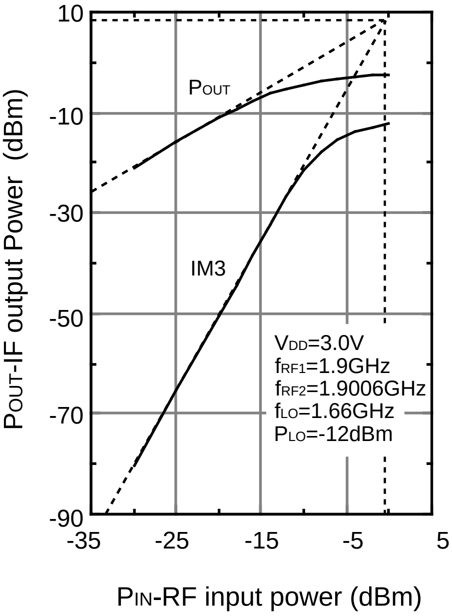
Back

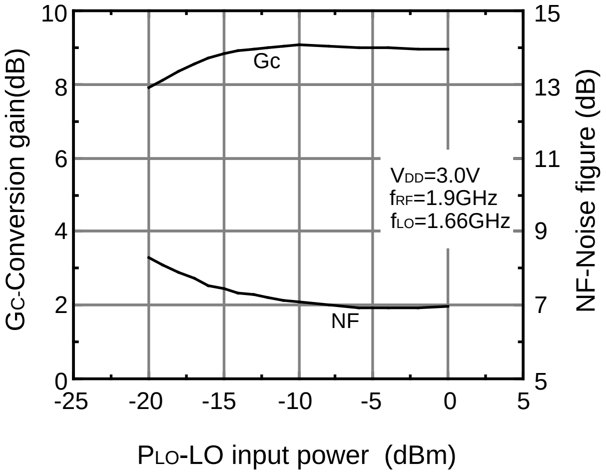


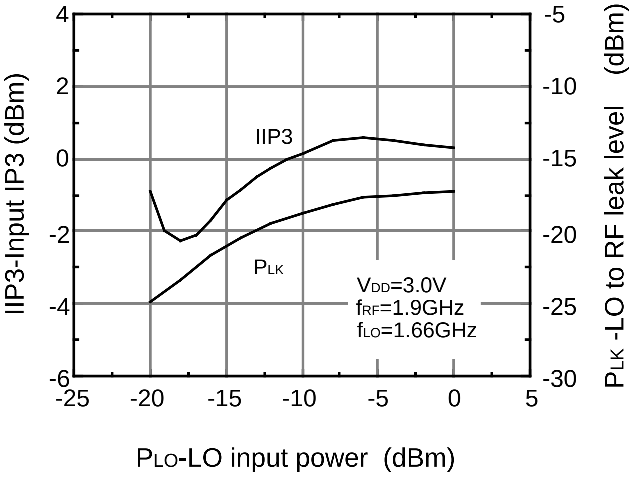
Glass fabric-base epoxy 4-layer board(2 × 0.3mm thickness)
GND for the 2nd and 3rd layers.

Example of Representative Characteristics (Ta=25 °C)


LNA block POUT,IM3 vs. PIN

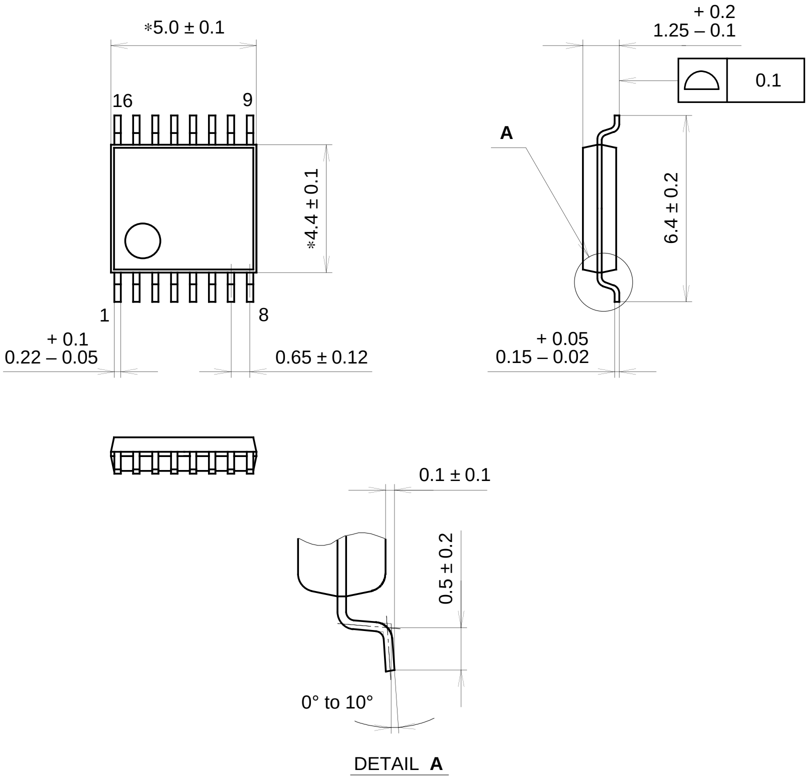

MIX block POUT,IM3 vs. PIN


MIX block GC,NF vs. PLO


MIX block IIP3,PLK vs. PLO

Package Outline Unit : mm

16PIN SSOP (PLASTIC)



NOTE: Dimension "*" does not include mold protrusion.

SONY CODE	SSOP-16P-L01
EIAJ CODE	SSOP016-P-0044
JEDEC CODE	——————

PACKAGE STRUCTURE

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	PALLADIUM PLATING
LEAD MATERIAL	COPPER
PACKAGE WEIGHT	0.1g