

**1.5 GHz Low Noise Amplifier/Down Conversion Mixer****Description**

The CXG1014N is a low noise amplifier/down conversion mixer MMIC, designed using the Sony's GaAs J-FET process.

**Features**

- Low noise  
 $NF=1.85$  dB (Typ.) at 1.49 GHz  
 (low noise amplifier)
- Low distortion  
 $Input\ IP3=+2$  dBm (Typ.) at 1.49 GHz  
 (mixer)
- Low LO input power operation -15 dBm
- Single 3.0 V power supply operation
- 16-pin SSOP package

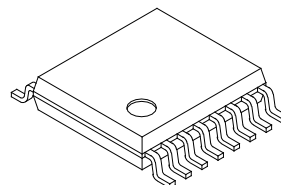
**Applications**

1.5 GHz Japan digital cellular telephones

**Structure**

GaAs J-FET MMIC

16 pin SSOP (Plastic)

**Absolute Maximum Ratings** ( $T_a=25$  °C)

• Supply voltage	$V_{DD}$	6	V
• Operating temperature	$T_{opr}$	-35 to +85	°C
• Storage temperature	$T_{stg}$	-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**

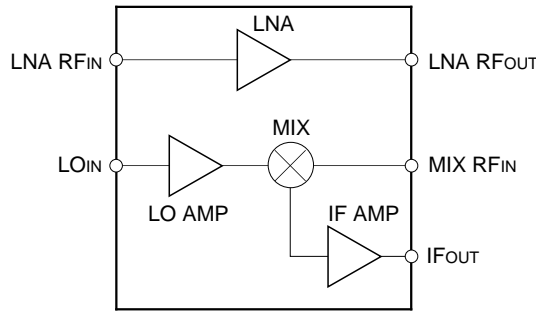
Supply voltage		3.0	V
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**Electrical Characteristics**

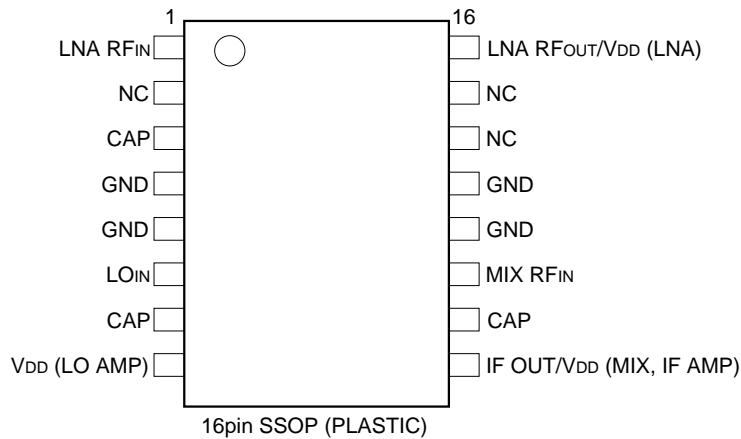
$V_{DD}=3.0\text{ V}$ ,  $f_{RF}=1.49\text{ GHz}$ ,  $f_{LO}=1.62\text{ GHz}$ ,  $P_{LO}=-15\text{ dBm}$ , when  $50\ \Omega$  I/O matching; unless otherwise specified  
( $T_a=25\text{ }^\circ\text{C}$ )

Item		Symbol	Min.	Typ.	Max.	Unit	Measurement condition
Low noise amplifier	Current consumption	$I_{DD}$	—	2.2	3.0	mA	When no signal
	Power gain	$G_P$	14	16	18	dB	
	Noise figure	NF	—	1.85	2.6	dB	
	Input IP3	IIP3	-7.5	-3.5	—	dBm	
	Isolation	ISO	30	35	—	dB	
Mixer	Current consumption	$I_{DD}$	—	3.8	5.5	mA	When no signal
	Conversion gain	$G_c$	6	8	10	dB	
	Noise figure	NF	—	8.5	10.5	dB	
	Input IP3	IIP3	-2	2	—	dBm	
	LO to RF leak level	PLK	—	-17	-12	dBm	

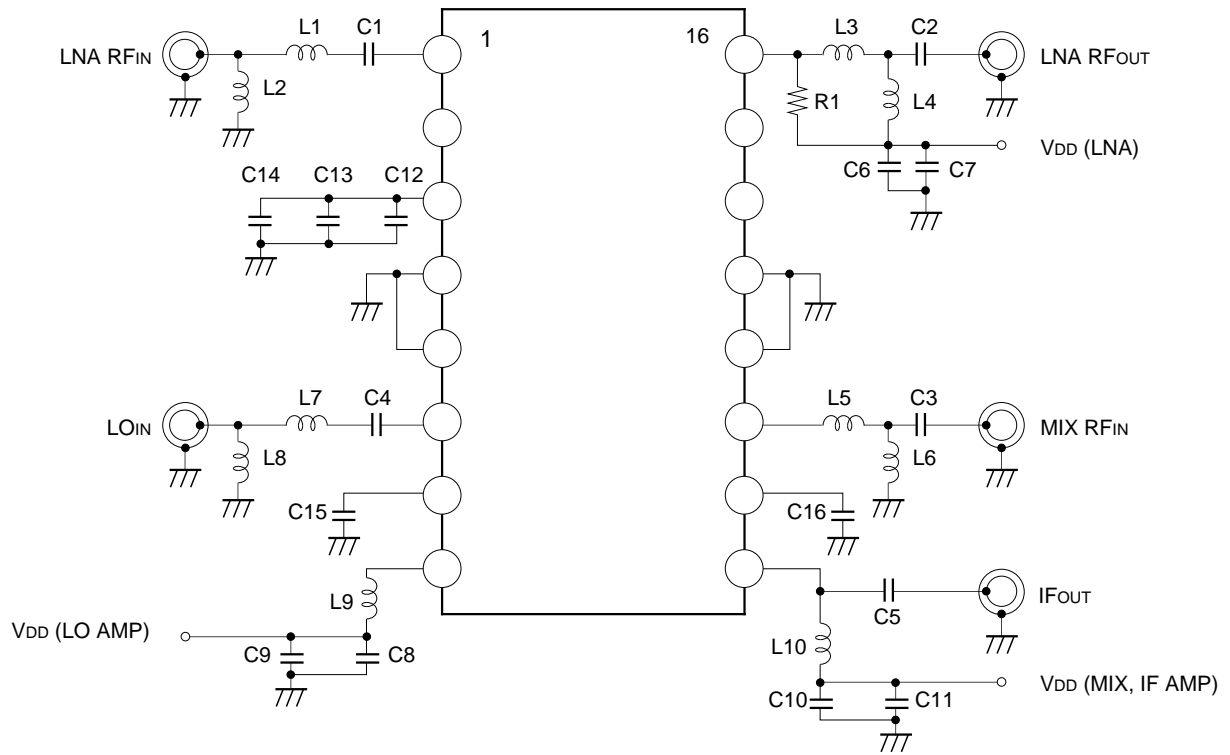
**Block Diagram**



**Pin Configuration**



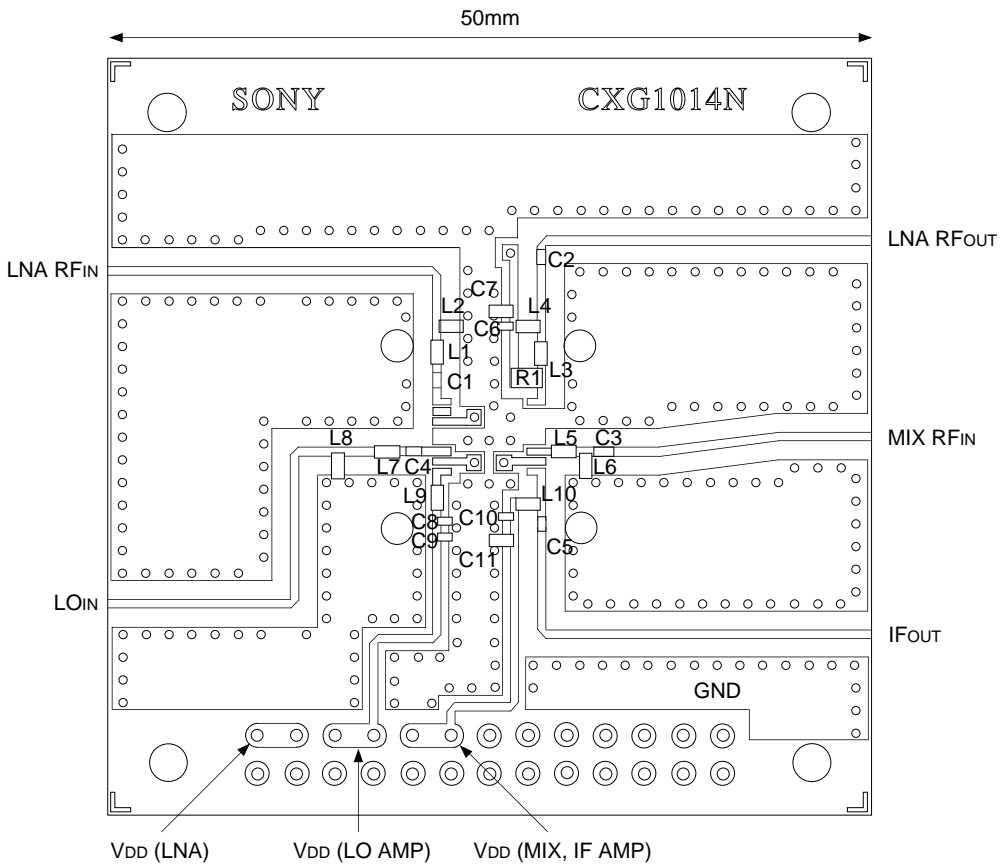
Recommended Circuit



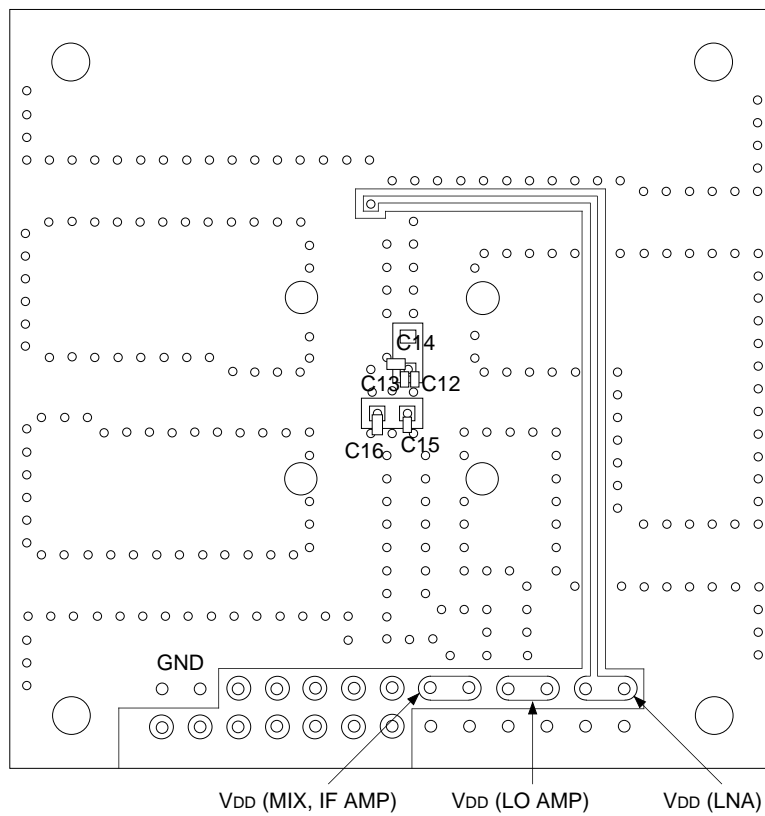
L1	6.8 nH	L10	150 nH	C9	10 nF
L2	4.7 nH	C1	100 pF	C10	1000 pF
L3	4.7 nH	C2	100 pF	C11	1 μF
L4	3.3 nH	C3	2 pF	C12	100 pF
L5	10 nH	C4	100 pF	C13	1000 pF
L6	4.7 nH	C5	10 pF	C14	1 μF
L7	5.6 nH	C6	1000 pF	C15	1000 pF
L8	3.3 nH	C7	1 μF	C16	1 μF
L9	10 nH	C8	1000 pF	R1	1 kΩ

Recommended Evaluation Board

Front

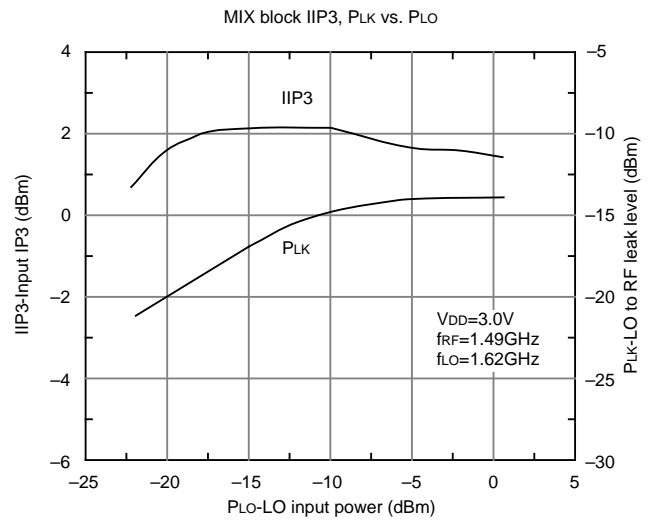
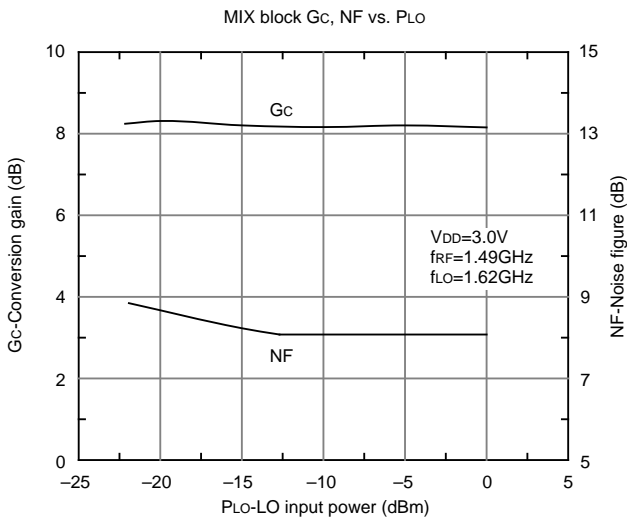
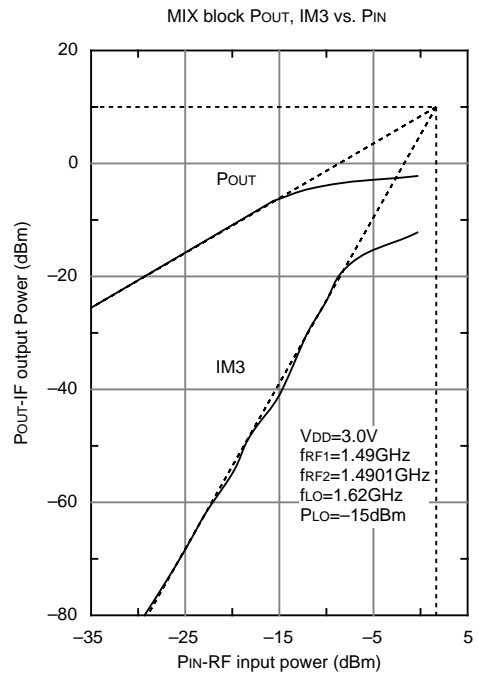
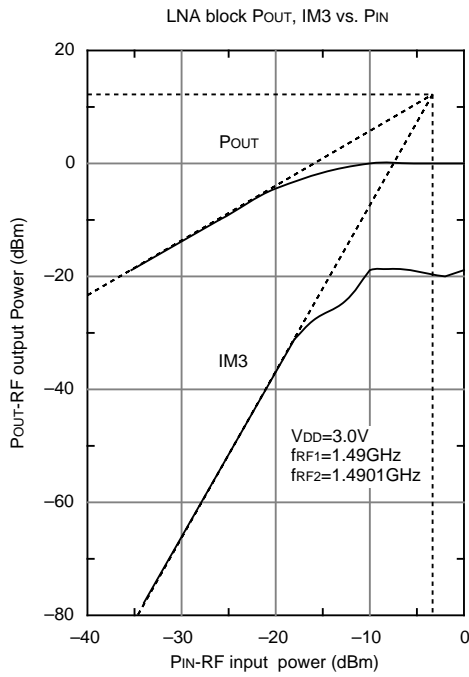


Back



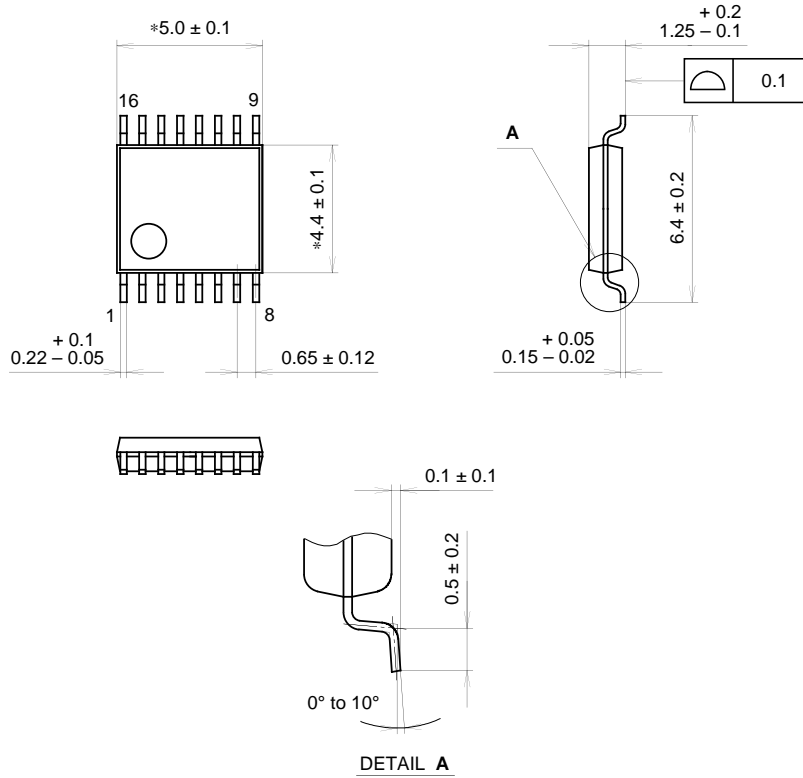
Glass fabric-base epoxy 4-layer board (2 × 0.3 mm thickness)  
 GND for the 2nd and 3rd layers.

Example of Representative Characteristics (Ta=25 °C)



Package Outline Unit : mm

16PIN SSOP (PLASTIC)



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

PACKAGE STRUCTURE

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

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER / PALLADIUM PLATING
LEAD MATERIAL	COPPER / 42 ALLOY
PACKAGE WEIGHT	0.1g

NOTE : PALLADIUM PLATING

This product uses S-PdPPF (Sony Spec.-Palladium Pre-Plated Lead Frame).