

Low Noise Down Conversion Mixer for PHS

Description

The CXG1061TN is a low noise down conversion mixer MMIC for PHS. This IC is designed using the Sony's GaAs J-FET process.

Features

- High gain Gc=22 dB (Typ.)
- Low distortion Input IP3=-13 dBm (Typ.)
- Low LO input power operation P_{LO}=-15 dBm
- High image suppression ratio IMR=27 dBc (Typ.)
- LO input matching circuit
- Single 3 V power supply operation
- 10-pin TSSOP package

Function

Frequency conversion

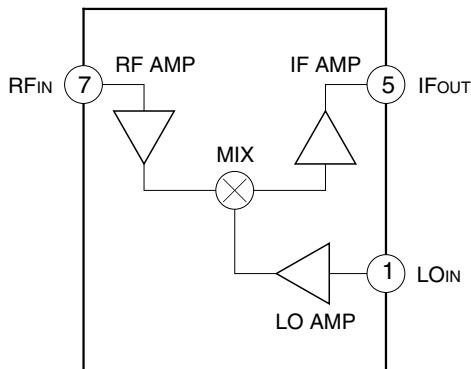
Applications

Japan digital cordless telephones (PHS)

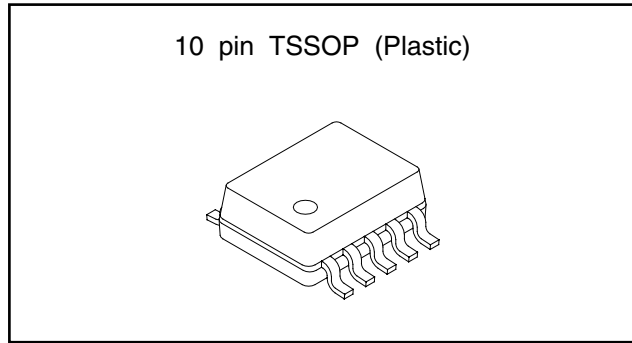
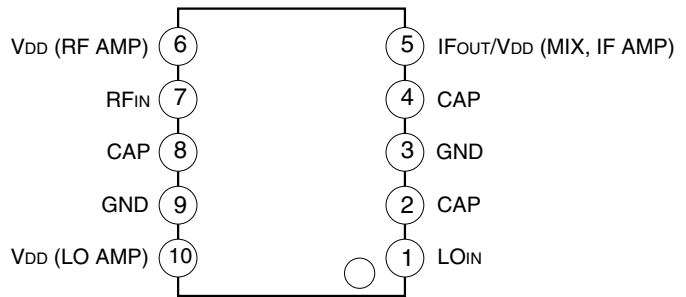
Structure

GaAs J-FET MMIC

Block Diagram



Pin Configuration



Absolute Maximum Ratings (Ta=25 °C)

- Supply voltage V_{DD} 4.5 V
- Input power P_{IN} +5 dBm
- Operating temperature T_{opr} -35 to +85 °C
- Storage temperature T_{stg} -65 to +150 °C

Recommended Operating condition

- Supply voltage V_{DD} 2.7 to 3.3 V

Sony reserves the right to change products and specifications without prior notice. This information does not convey any license by any implication or otherwise under any patents or other right. Application circuits shown, if any, are typical examples illustrating the operation of the devices. Sony cannot assume responsibility for any problems arising out of the use of these circuits.

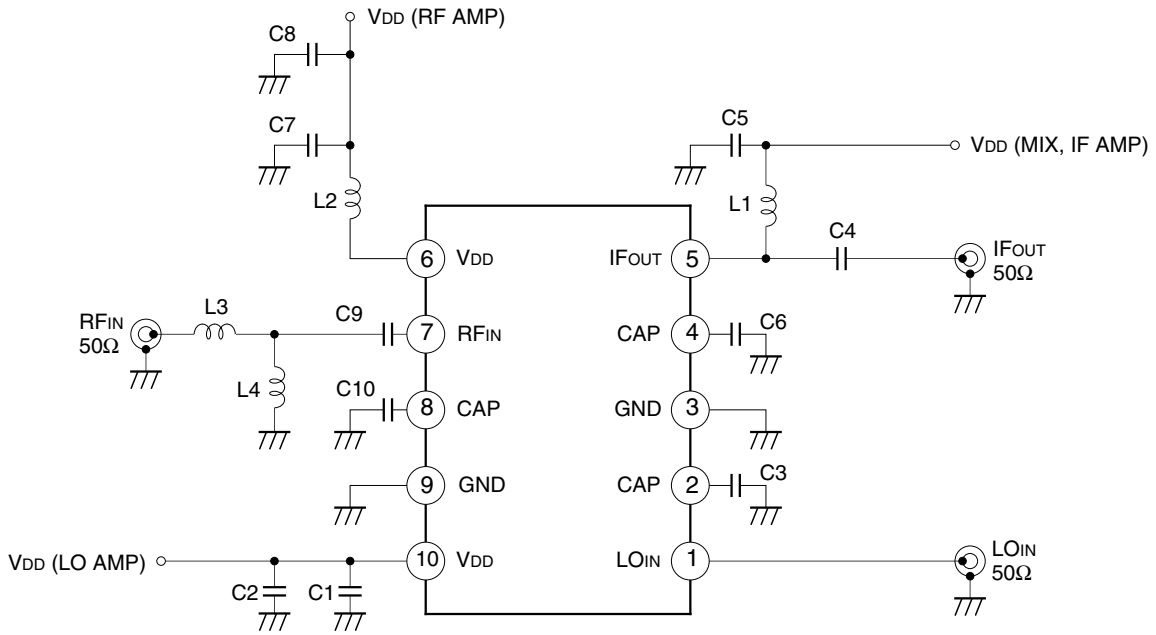
Electrical Characteristics

$V_{DD}=3.0\text{ V}$, $f_{RF}=1.9\text{ GHz}$, $f_{LO}=1.66\text{ GHz}$, $P_{LO}=-15\text{ dBm}$, RF input and IF output $50\ \Omega$ matching; unless otherwise specified
($T_a=25\text{ }^\circ\text{C}$)

Item	Symbol	Min.	Typ.	Max.	Unit	Measurement condition
Current consumption	I_{DD}	—	7	9	mA	When no signal
Conversion gain	G_c	19.5	22	24.5	dB	When a small signal
Noise figure	NF	—	3.3	4.5	dB	When a small signal
Input IP3	IIP3	-15.5	-13	—	dBm	$P_{RF}=-40\text{ dBm}$ offset=600 kHz Conversion by the IM3 suppression ratio for two-wave input
Image suppression ratio	IMR	22	27	—	dBc	When $P_{RF}=-40\text{ dBm}$ input
1/2 IF suppression ratio	1/2IFR	35	40	—	dBc	When $P_{RF}=-40\text{ dBm}$ input
LO to RF leak level	P_{LK}	—	-46	-41	dBm	
LO input VSWR	$VSWR_{LO}$	—	2	3.5	—	

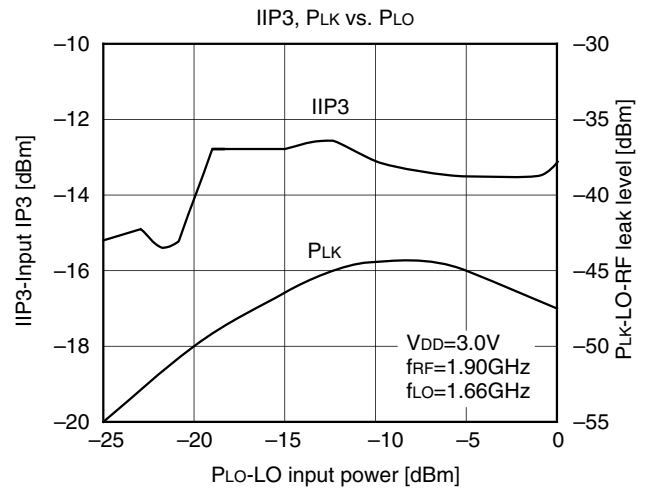
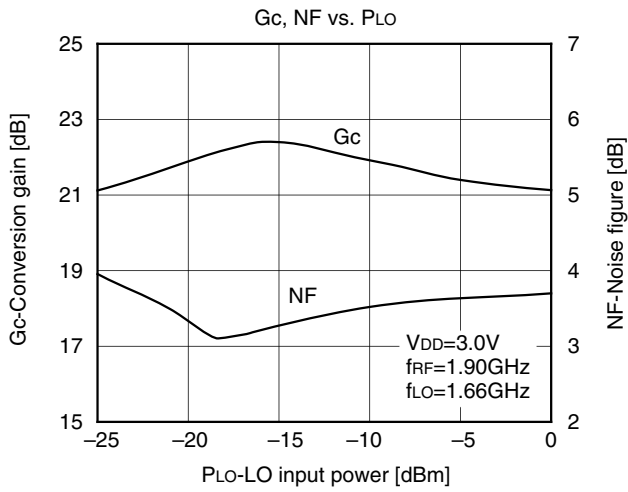
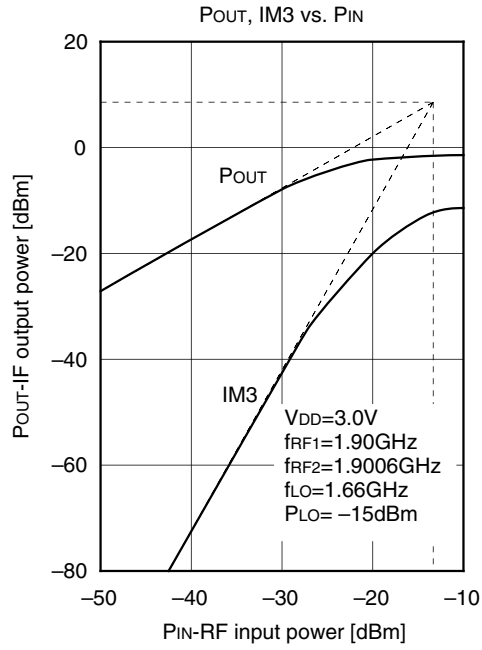
(Note) The values shown above are the specified values on the Sony’s recommended evaluation board.

Recommended Evaluation Board

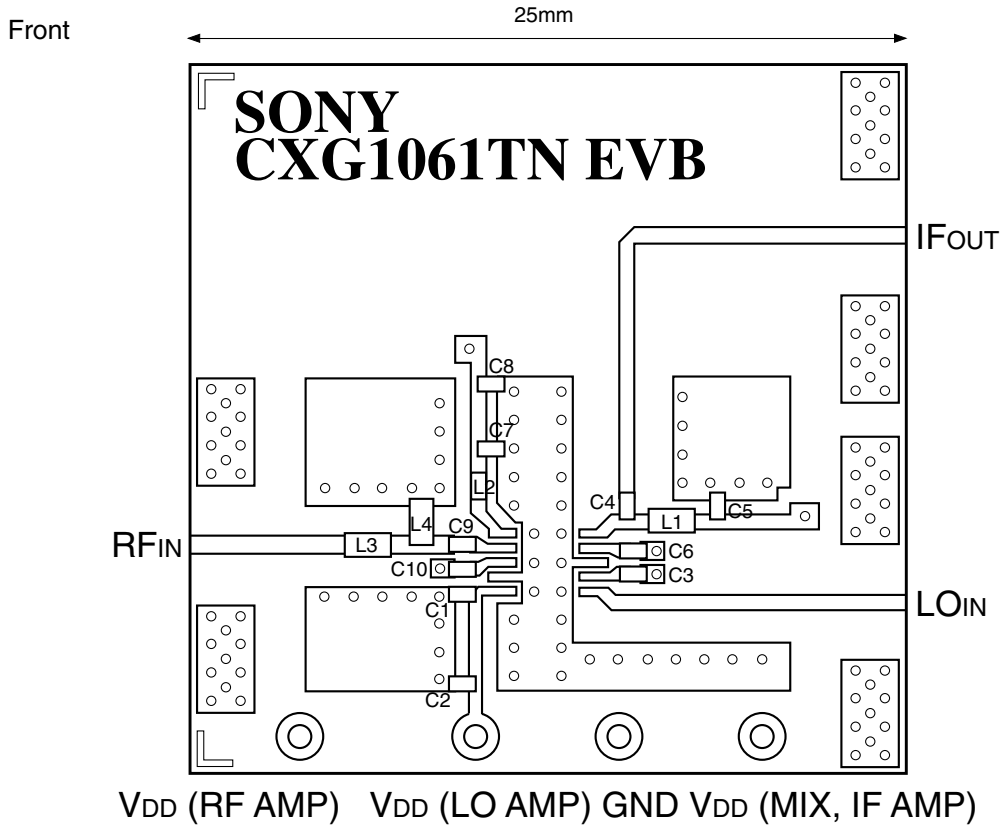


L1	82 nH	C4	5 pF
L2	3.9 nH	C5	1000 pF
L3	12 nH	C6	0.1 μF
L4	10 nH	C7	13 pF
C1	18 pF	C8	1000 pF
C2	1000 pF	C9	3 pF
C3	18 pF	C10	1000 pF

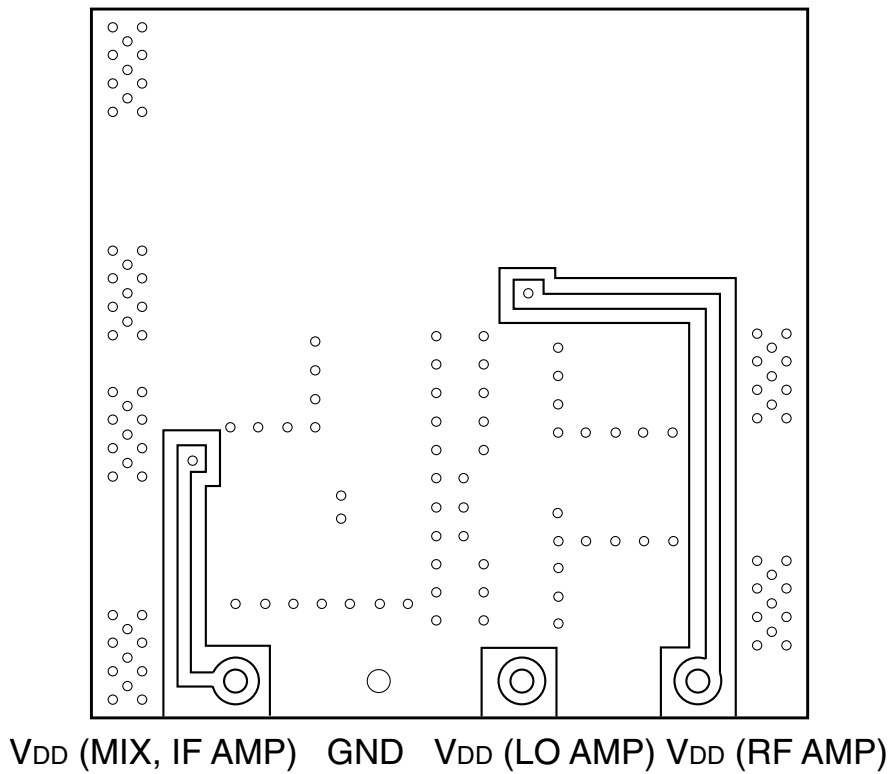
Example of Representative Characteristics (Ta=25 °C)



Recommended Evaluation Board



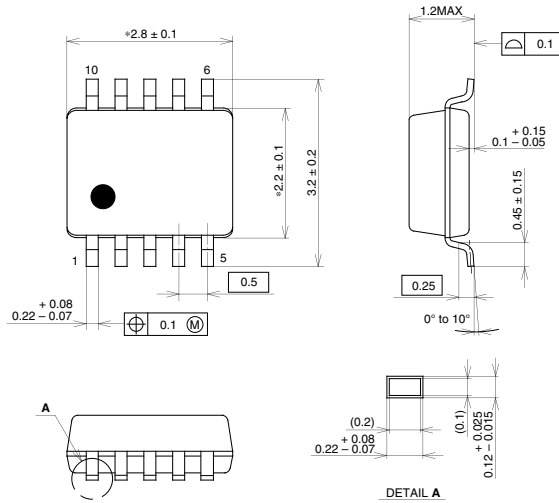
Back



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

Package Outline Unit : mm

10PIN TSSOP(PLASTIC)



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

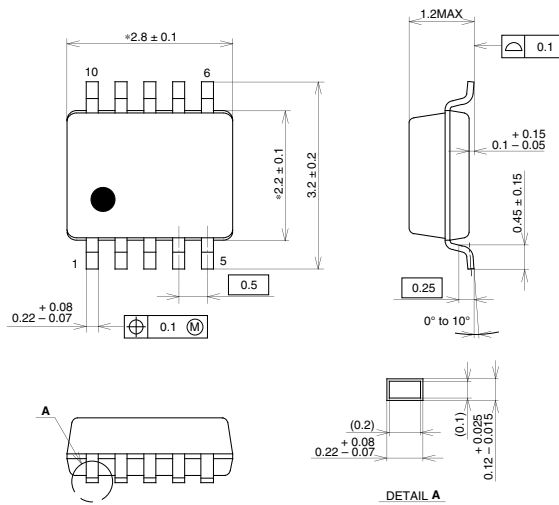
PACKAGE STRUCTURE

SONY CODE	TSSOP-10P-L01
EIAJ CODE	_____
JEDEC CODE	_____

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.02g

Kokubu Ass'y

10PIN TSSOP(PLASTIC)



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

PACKAGE STRUCTURE

SONY CODE	TSSOP-10P-L01
EIAJ CODE	_____
JEDEC CODE	_____

PACKAGE MATERIAL	EPOXY RESIN
LEAD TREATMENT	SOLDER PLATING
LEAD MATERIAL	COPPER ALLOY
PACKAGE MASS	0.02g

LEAD PLATING SPECIFICATIONS

ITEM	SPEC.
LEAD MATERIAL	COPPER ALLOY
SOLDER COMPOSITION	Sn-Bi Bi:1-4wt%
PLATING THICKNESS	5-18 μ m