Ordering number : ENA1825

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

SMA3102 — Silicon MMIC Low Noise Amplifier

Features

- High Gain : Gp=24.5dB typ. @1.575GHz
- Low Noise : NF=1.5dB typ. @1.575GHz
- Low Voltage : V_{CC}=2.0V typ.
- Low Current : I_{CC}=10mA typ.
- Halogen free compliance

Specifications

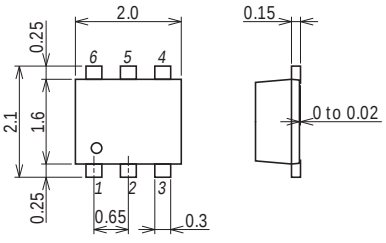
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{CC}		3.5	V
Circuit Current	I_{CC}		40	mA
Allowable Power Dissipation	P_D		280	mW
Operating Temperature	Topr		−40 to +85	°C
Storage Temperature	Tstg		−55 to +150	°C

Package Dimensions

unit : mm (typ)

7022A-018



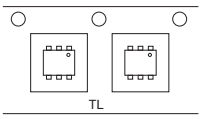
1 : VCC
2 : GND
3 : OUT
4 : GND
5 : GND
6 : IN

SANYO : MCPH6

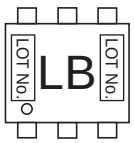
Product & Package Information

- Package : MCPH6
- JEITA, JEDEC : SC82, SC82A, SC88
- Minimum Packing Quantity : 3,000pcs/reel

Type of Taping: TL



Marking



Recommended Operating Conditions at Ta=25°C

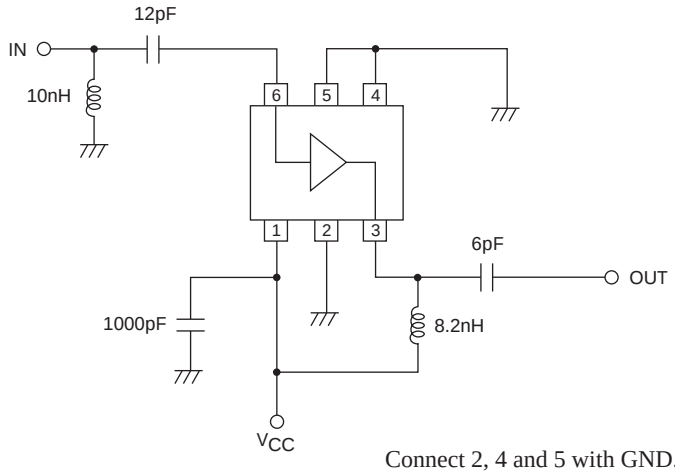
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	V_{CC}		1.8	2	2.3	V
Operating Ambient Temperature	Topr		−40	+25	+85	°C

Electrical Characteristics at Ta=25°C, V_{CC}=2.0V

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	I_{CC}		7.0	10.0	14.0	mA
Power Gain	Gp	f=1.575GHz	21.5	24.5	27.5	dB
Isolation	ISL	f=1.575GHz	33.0	38.0		dB
Input Return Loss	RLin	f=1.575GHz	8.0	10.0		dB
Output Return Loss	RLout	f=1.575GHz	12.0	16.0		dB
Noise Figure	NF	f=1.575GHz		1.5	1.7	dB
Gain 1dB Compression Input Power	Pin(1dB)	f=1.575GHz	−25.0	−22.0		dBm
Input 3rd Order Intercept Point	IIP3	f1=1.574GHz, f2=1.575GHz		−10.0		dBm

Note) Pay attention to handling since it is liable to be affected by static electricity due to the high frequency process adopted.

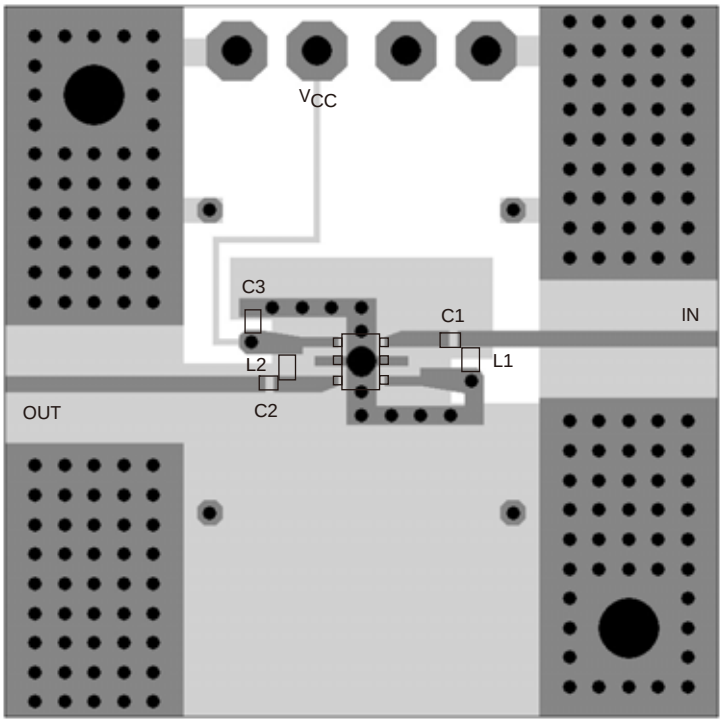
Test Circuit



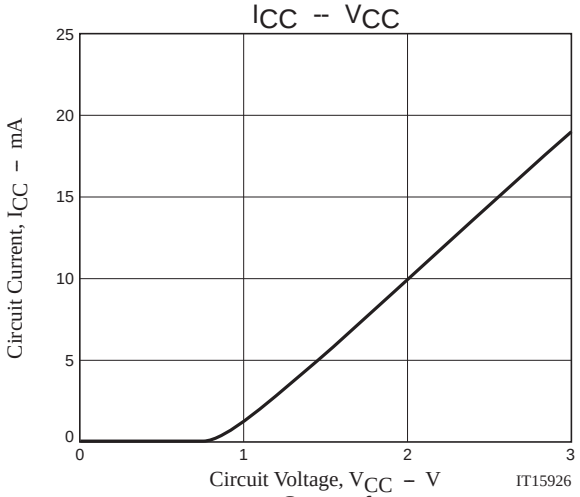
Connect 2, 4 and 5 with GND.

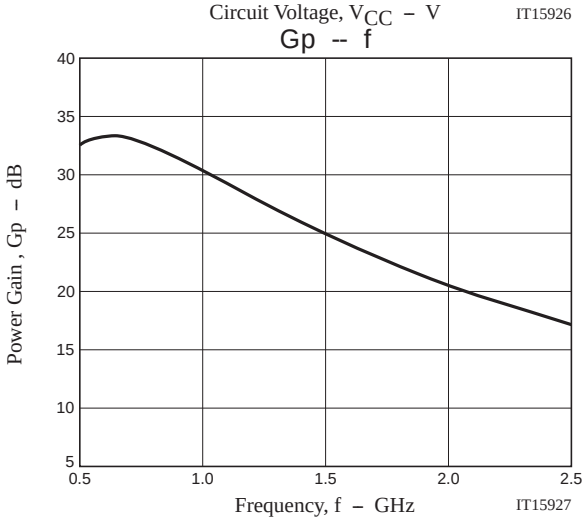
IT15925

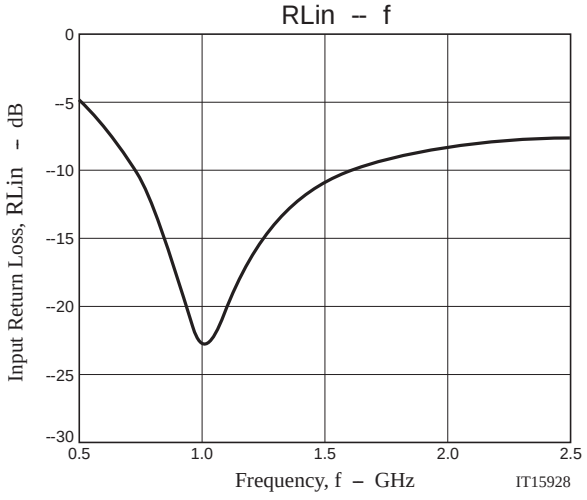
Design of the Evaluation Board

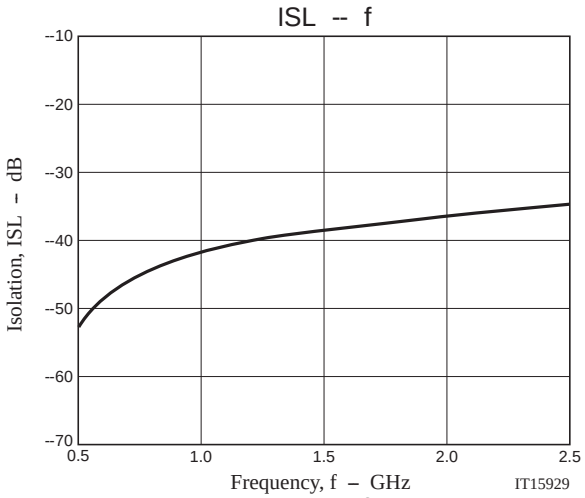


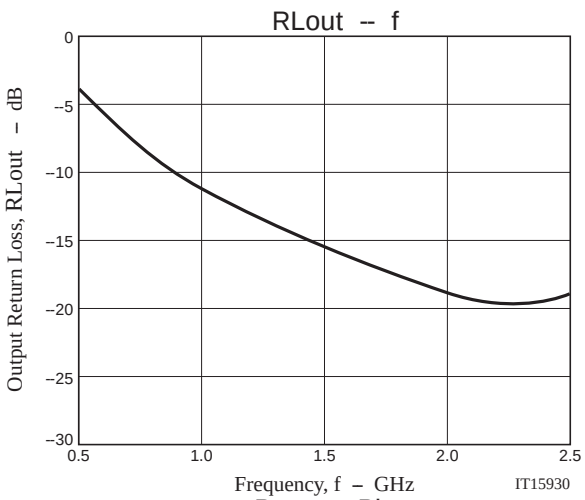
Symbol	Value
C1	12pF
C2	6pF
C3	1000pF
L1	10nH
L2	8.2nH

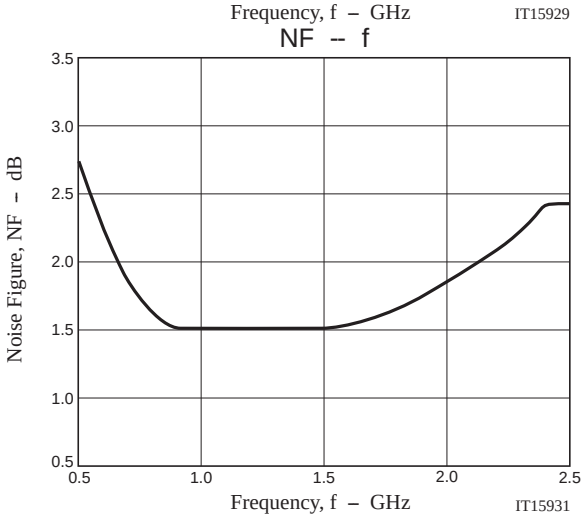


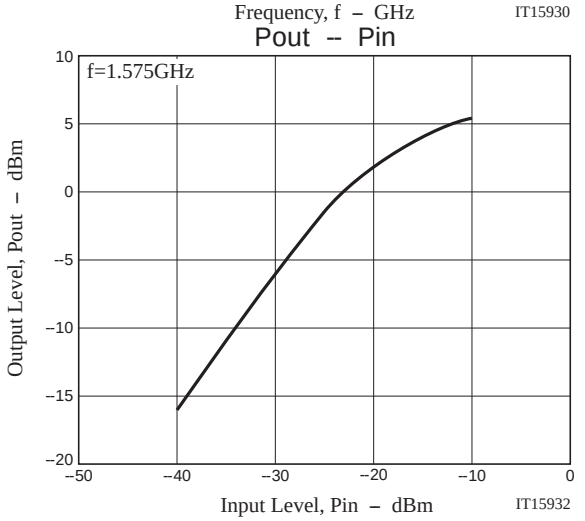





ISL -- f
Isolation, ISL – dB
–10
–20
–30
–40
–50
–60
–70
0.5
1.0
1.5
2.0
2.5
Frequency, f – GHz
IT15929


RLout -- f
Output Return Loss, RLout – dB
0
–5
–10
–15
–20
–25
–30
0.5
1.0
1.5
2.0
2.5
Frequency, f – GHz
IT15930


NF -- f
Noise Figure, NF – dB
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.5
1.0
1.5
2.0
2.5
Frequency, f – GHz
IT15931


Pout -- Pin
f=1.575GHz
Output Level, Pout – dBm
10
5
0
–5
–10
–15
–20
–50
–40
–30
–20
–10
0
Input Level, Pin – dBm
IT15932

This catalog provides information as of September, 2010. Specifications and information herein are subject to change without notice.

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