Ordering number : ENA1580

SANYO Semiconductors

DATA SHEET

SMA3103 — Silicon MMIC Wideband Amplifier

Features

- High Gain : Gp=26.5dB typ. @1GHz
- Wideband response : fu=3.3GHz
- Low current : I_{CC}=19mA typ
- High output power : Po(1dB)=5dBm
- Port impedance : input/output 50Ω

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{CC}		6	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

Recommended Operating Condition at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	V_{CC}		4.5	5	5.5	V
Operating Ambient Temperature	Topr		−40	+25	+85	°C

Marking : LC

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

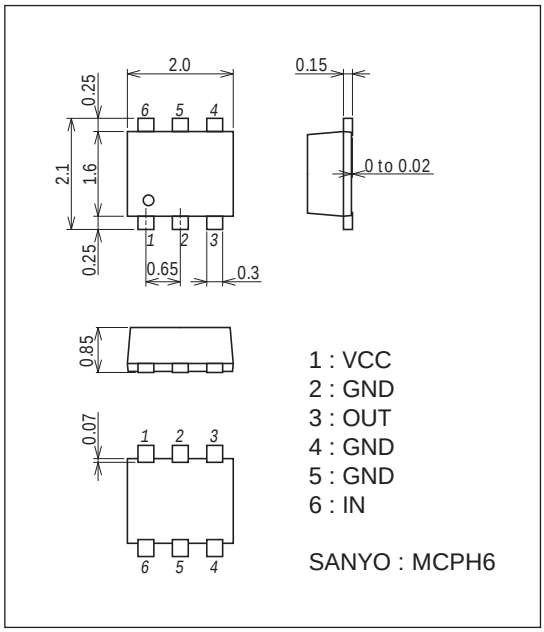
Electrical Characteristics at Ta=25°C, V_{CC}=5V, Zs=Z_L=50Ω

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	ICC		14.0	19.0	25.0	mA
Power Gain	Gp	f=1GHz	24.0	26.5	29.0	dB
		f=2.2GHz	24.0	27.0	30.0	
Isolation	ISL	f=1GHz	31.0	33.0		dB
		f=2.2GHz	31.0	33.0		
Input Return Loss	RLin	f=1GHz	12.0	20.0		dB
		f=2.2GHz	10.0	14.0		
Output Return Loss	RLout	f=1GHz	12.0	20.0		dB
		f=2.2GHz	10.0	16.0		
Noise Figure	NF	f=1GHz		4.7	5.3	dB
		f=2.2GHz		4.7	5.3	
Gain 1dB Compression Output Power	Po(1dB)	f=1GHz	6.0	8.2		dBm
		f=2.2GHz	4.0	5.7		
Upper Limit Operating Frequency	fu	3dB down below flat gain at f =1GHz		3.3		GHz

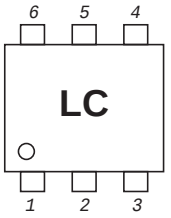
Package Dimensions

unit : mm (typ)

7022A-018



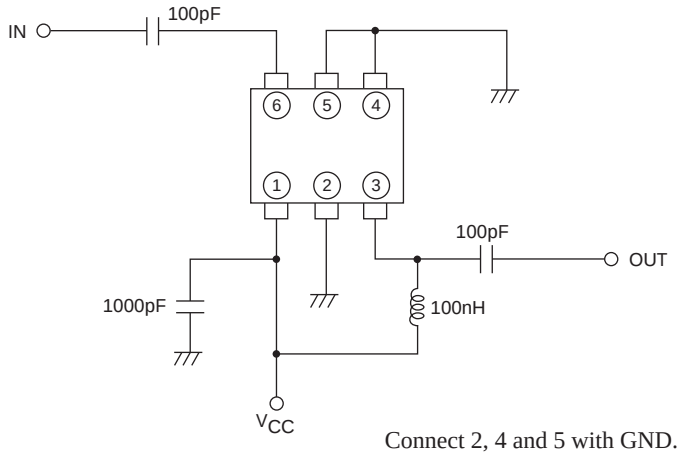
Marking



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

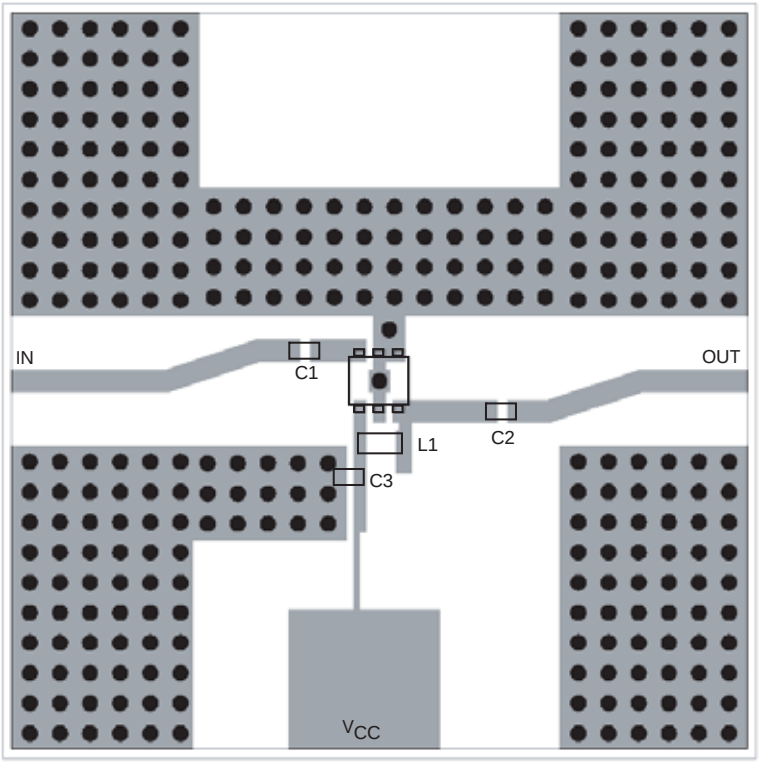
Top view

Test Circuit

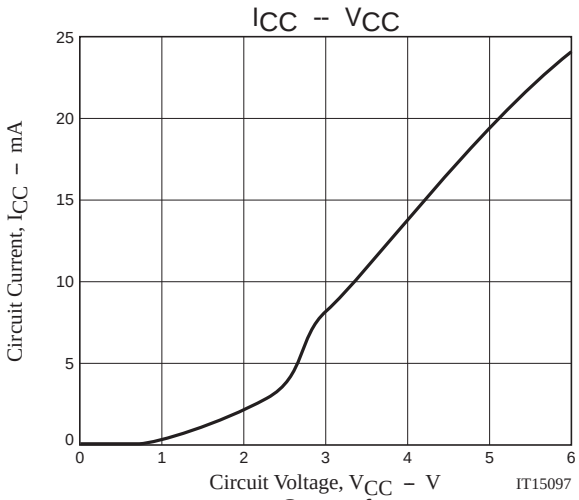


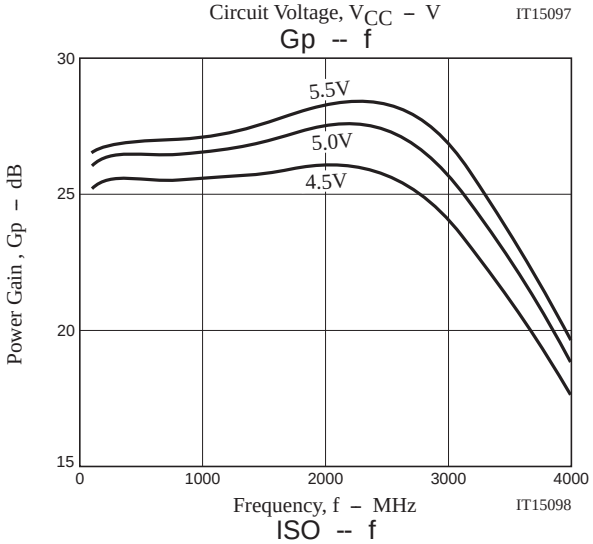
Connect 2, 4 and 5 with GND.

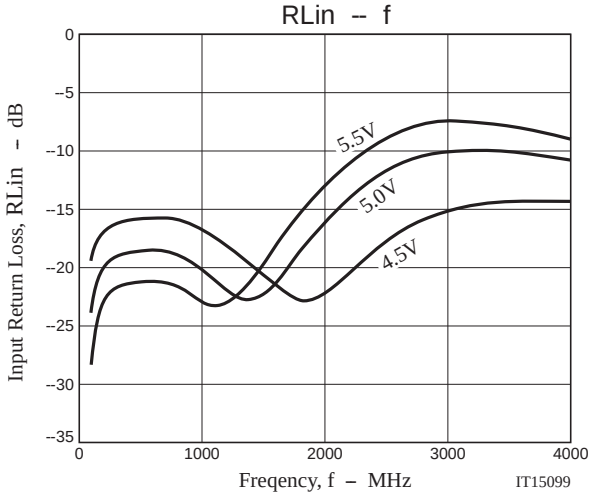
Design of the Evaluation Board

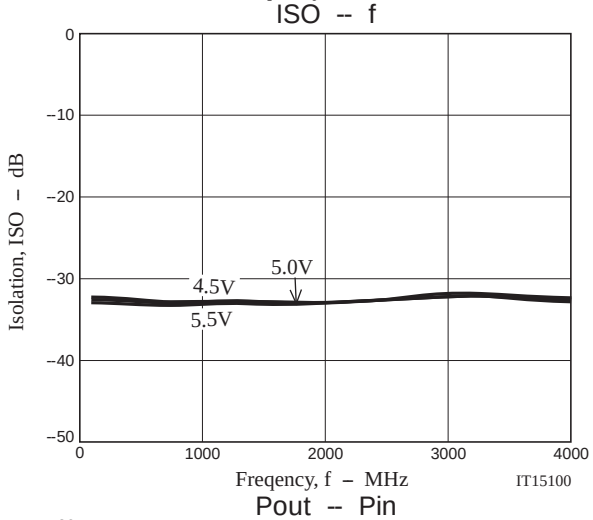


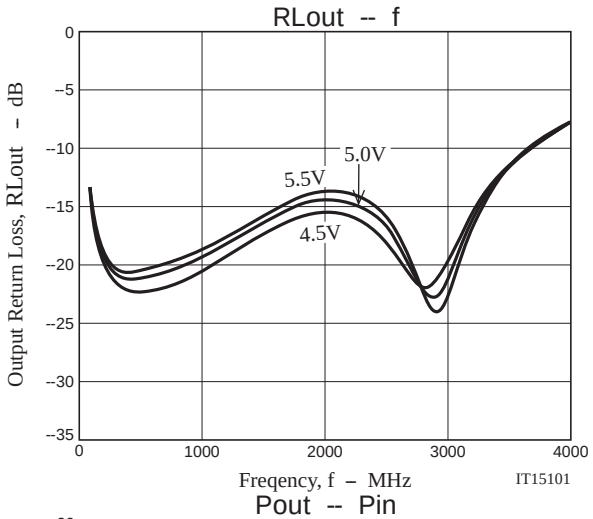
Symbol	Value
C1, C2	100pF
C3	1000pF
L1	100nH

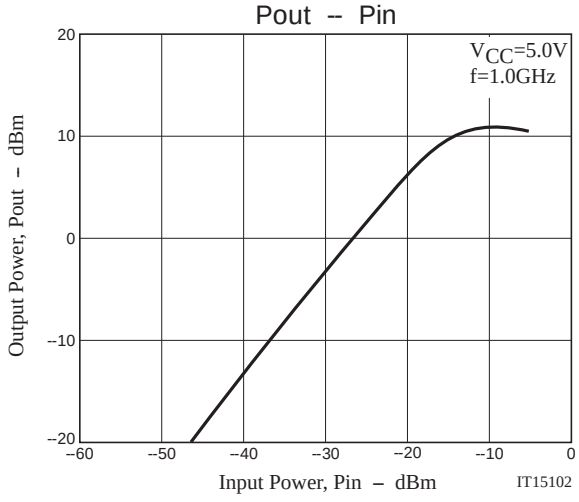

ICC -- VCC
Circuit Current, ICC – mA
Circuit Voltage, VCC – V
IT15097

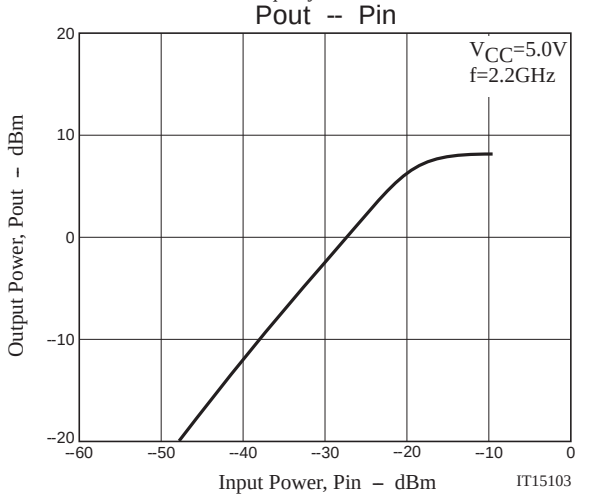

Gp -- f
5.5V
5.0V
4.5V
Power Gain , Gp – dB
Frequency, f – MHz
IT15098


RLin -- f
5.5V
5.0V
4.5V
Input Return Loss, RLin – dB
Freqency, f – MHz
IT15099


ISO -- f
5.0V
4.5V
5.5V
Isolation, ISO – dB
Freqency, f – MHz
IT15100

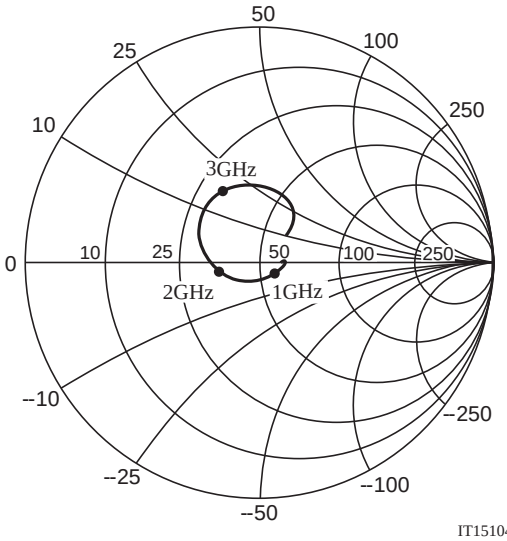

RLout -- f
5.0V
5.5V
4.5V
Output Return Loss, RLout – dB
Freqency, f – MHz
IT15101


Pout -- Pin
VCC=5.0V
f=1.0GHz
Output Power, Pout – dBm
Input Power, Pin – dBm
IT15102


Pout -- Pin
VCC=5.0V
f=2.2GHz
Output Power, Pout – dBm
Input Power, Pin – dBm
IT15103

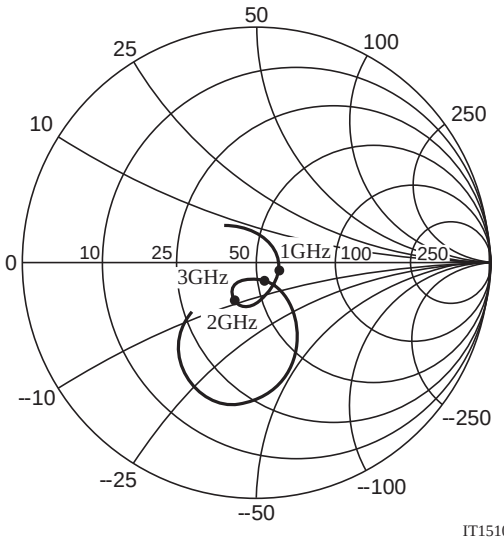
S Parameter

S11



IT15104

S22



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