



SMA3103 — Silicon MMIC Wideband Amplifier

Features

- High Gain : $G_p=26.5\text{dB typ. @1GHz}$
- Wideband response : $f_u=3.3\text{GHz}$
- Low current : $I_{CC}=19\text{mA typ}$
- High output power : $P_o(1\text{dB})=5\text{dBm}$
- Port impedance : input/output 50Ω

Specifications

Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

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	T_{opr}		-40 to +85	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

Recommended Operating Condition at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	V_{CC}		4.5	5	5.5	V
Operating Ambient Temperature	T_{opr}		-40	+25	+85	$^\circ\text{C}$

Marking : LC

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

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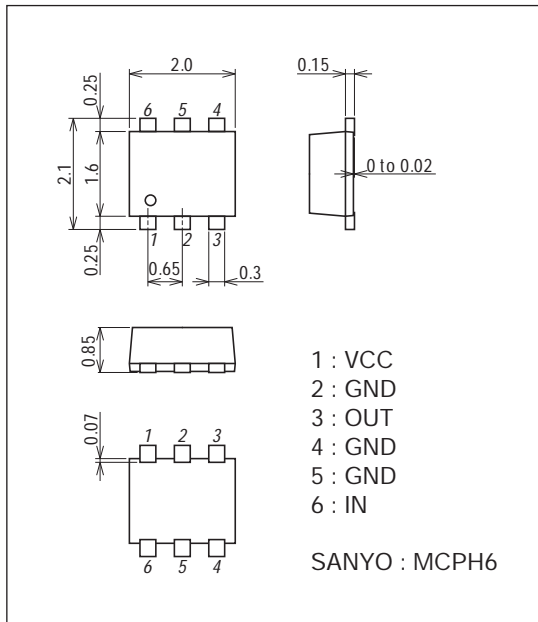
Electrical Characteristics at $T_a=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, $Z_s=Z_L=50\Omega$

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

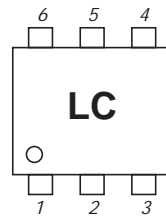
Package Dimensions

unit : mm (typ)

7022A-018



Marking

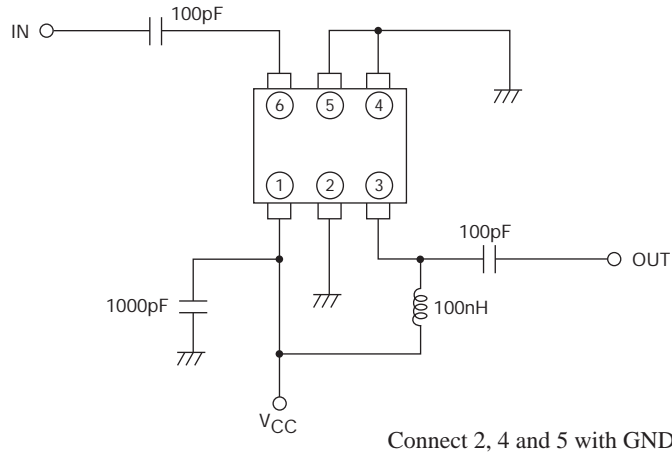


- 1 : VCC
- 2 : GND
- 3 : OUT
- 4 : GND
- 5 : GND
- 6 : IN

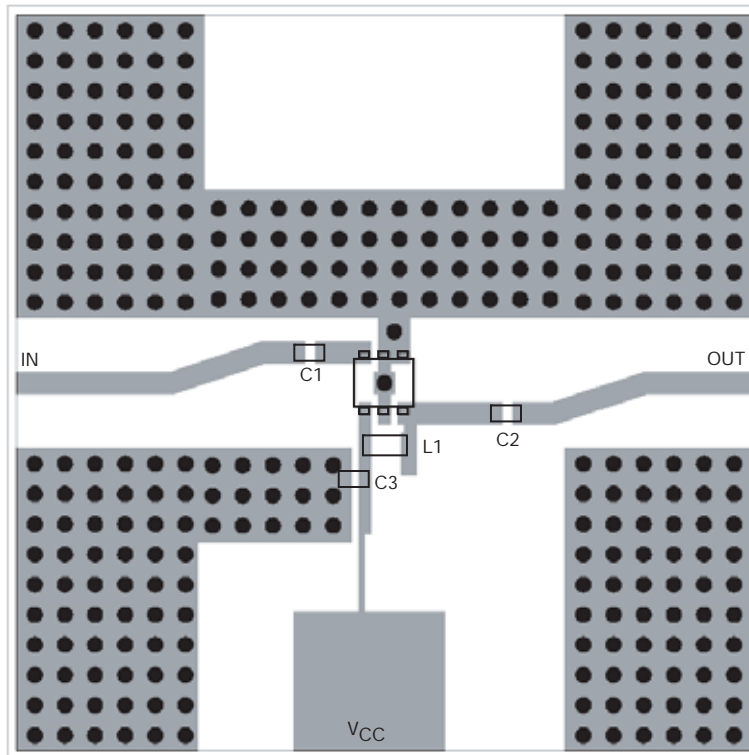
Top view

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Test Circuit

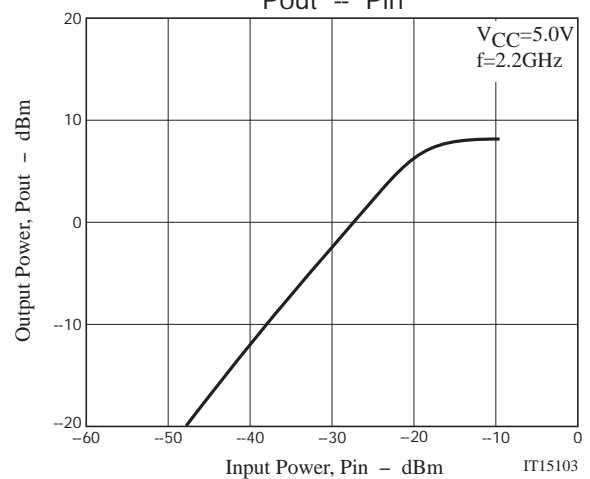
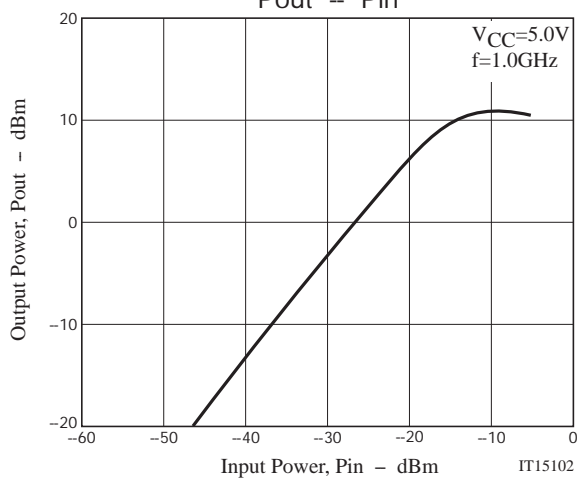
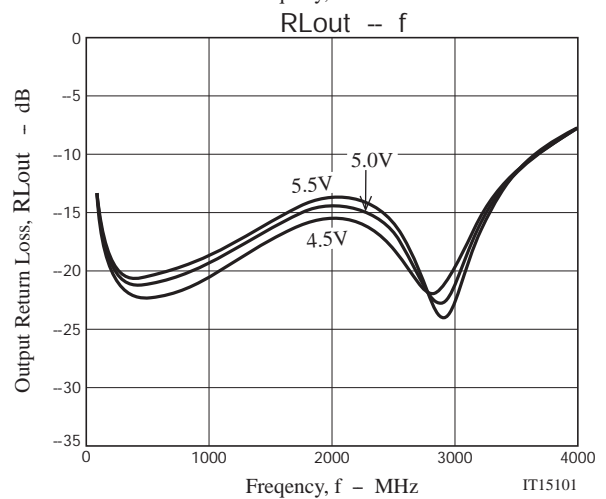
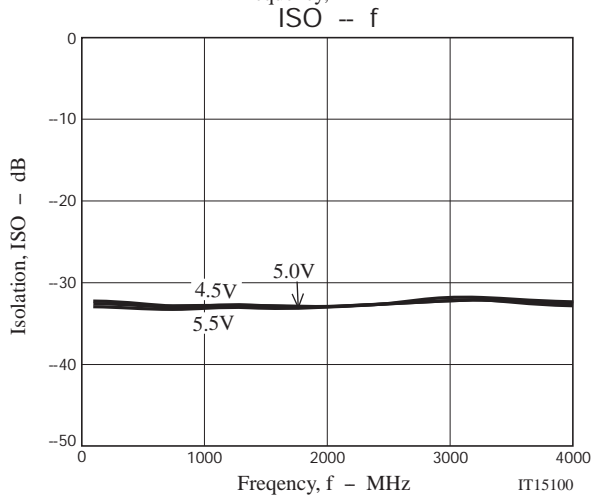
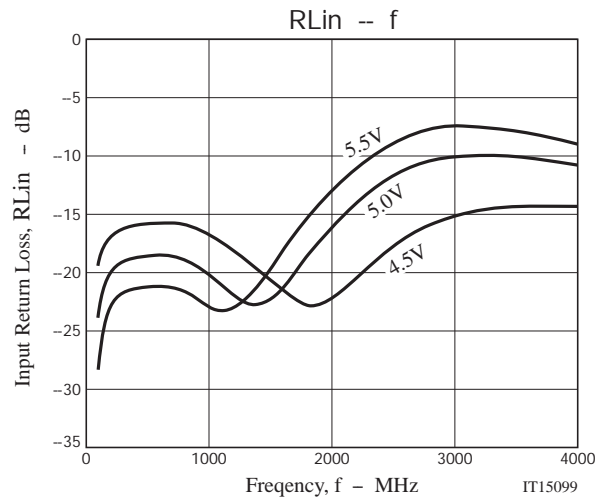
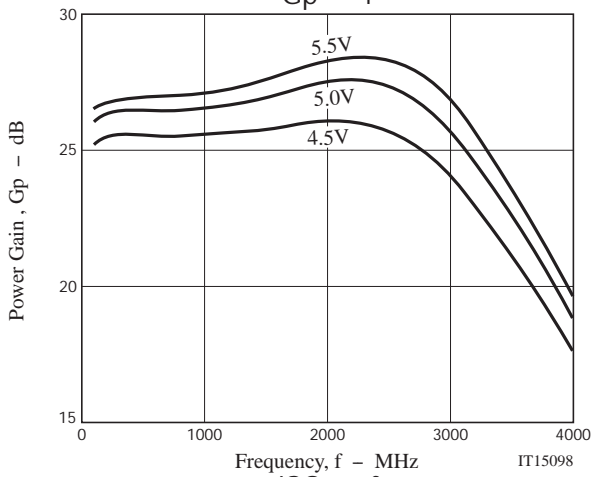
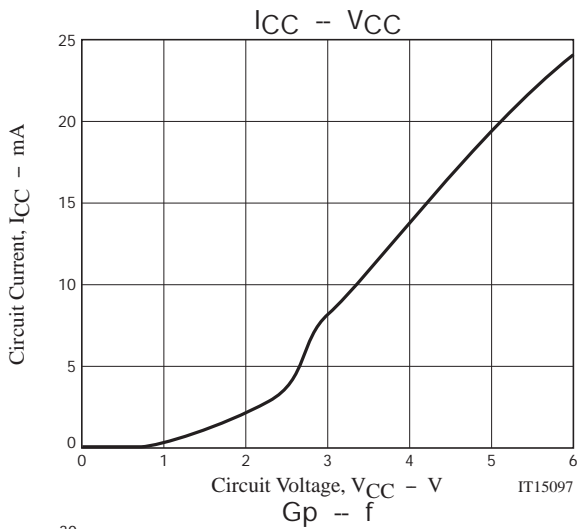


Design of the Evaluation Board



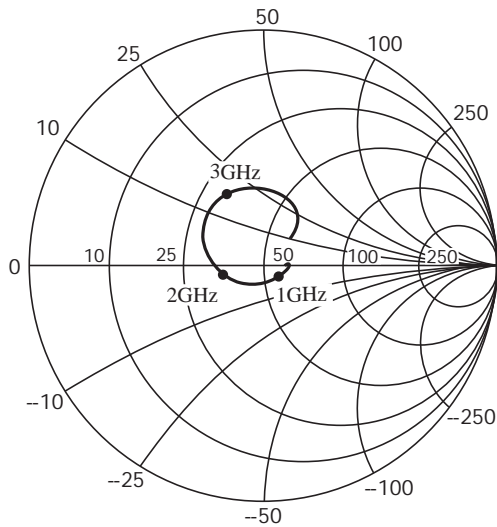
Symbol	Value
C1, C2	100pF
C3	1000pF
L1	100nH

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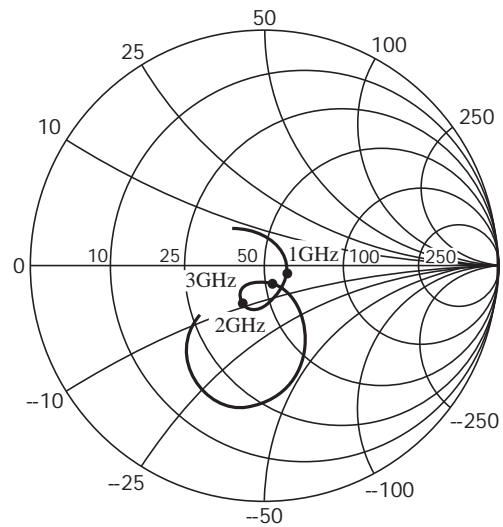


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