



SMA3101 — Silicon MMIC Wideband Amplifier

Features

- High Gain : $G_p=25\text{dB}$ typ. @1GHz
- Wideband response : $f_u=3.0\text{GHz}$
- Low current : $I_{CC}=10\text{mA}$ typ.
- 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}		25	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	$^\circ\text{C}$

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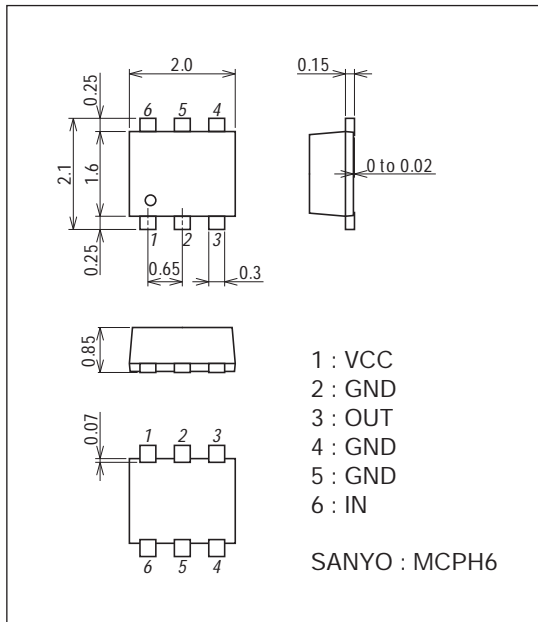
Electrical Characteristics at $T_a=25^{\circ}\text{C}$, $V_{CC}=5\text{V}$, $Z_s=Z_L=50\Omega$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	I_{CC}		7.1	10.0	12.6	mA
Power Gain	G_p	$f=1\text{GHz}$	21.5	25.0	28.5	dB
		$f=2.2\text{GHz}$	21.5	25.5	28.5	
Isolation	ISL	$f=1\text{GHz}$	33.0	38.0		dB
		$f=2.2\text{GHz}$	31.0	36.0		
Input Return Loss	RLin	$f=1\text{GHz}$	11.0	16.0		dB
		$f=2.2\text{GHz}$	12.0	21.0		
Output Return Loss	RLout	$f=1\text{GHz}$	10.0	18.5		dB
		$f=2.2\text{GHz}$	8.0	12.0		
Noise Figure	NF	$f=1\text{GHz}$		4.0	5.3	dB
		$f=2.2\text{GHz}$		4.0	5.3	
Gain 1dB Compression Output Power	$P_o(1\text{dB})$	$f=1\text{GHz}$	-5.0	-2.0		dBm
		$f=2.2\text{GHz}$	-7.0	-4.0		
Upper Limit Operating Frequency	f_u	3dB down below flat gain at $f=1\text{GHz}$		3.0		GHz

Package Dimensions

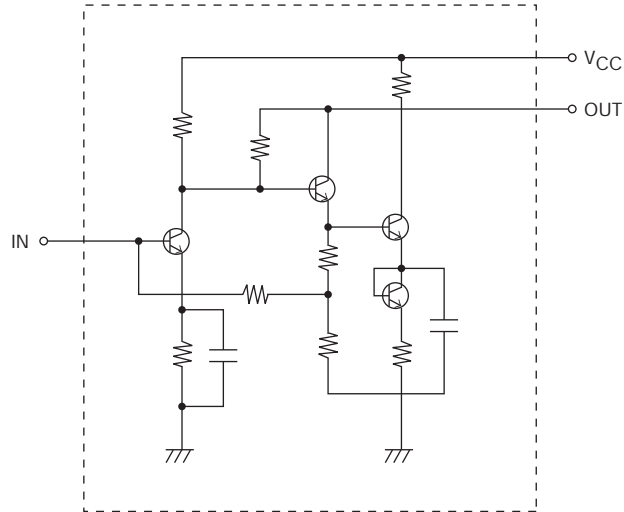
unit : mm (typ)

7022A-018



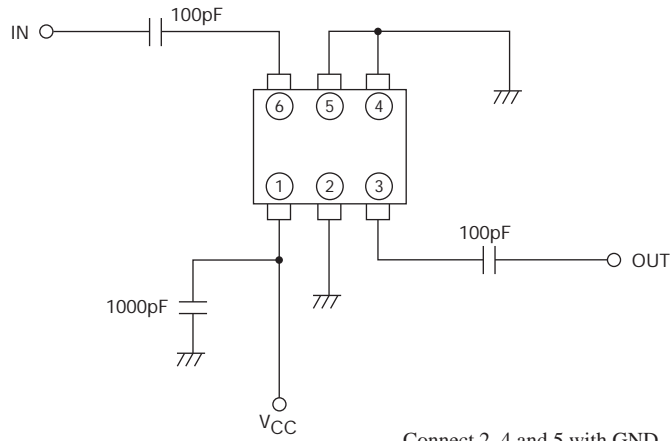
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Equivalent Circuit



IT14496

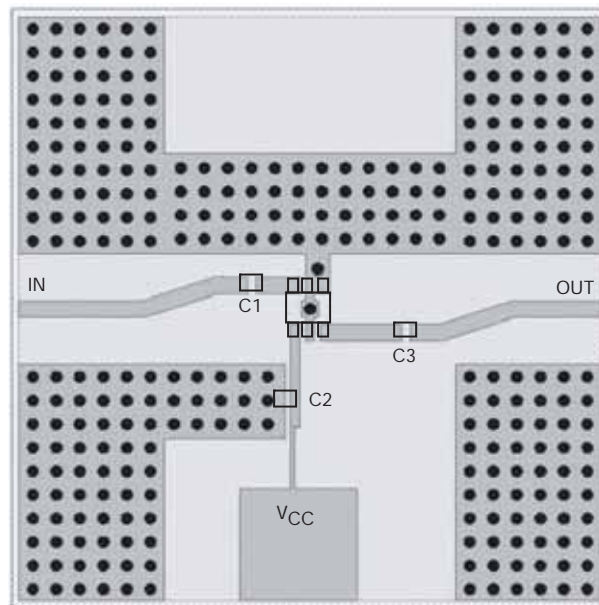
Test Circuit



Connect 2, 4 and 5 with GND.

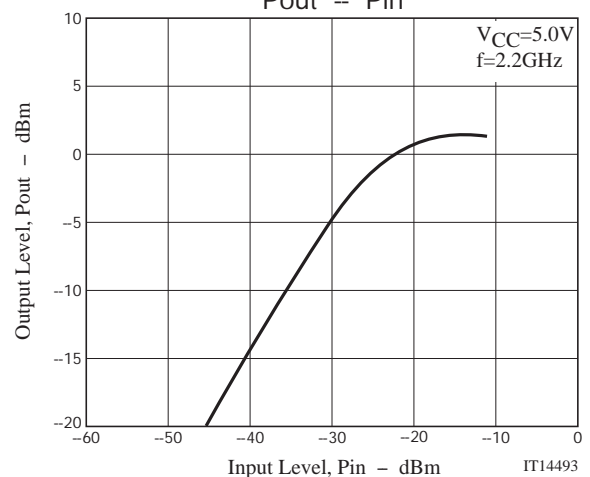
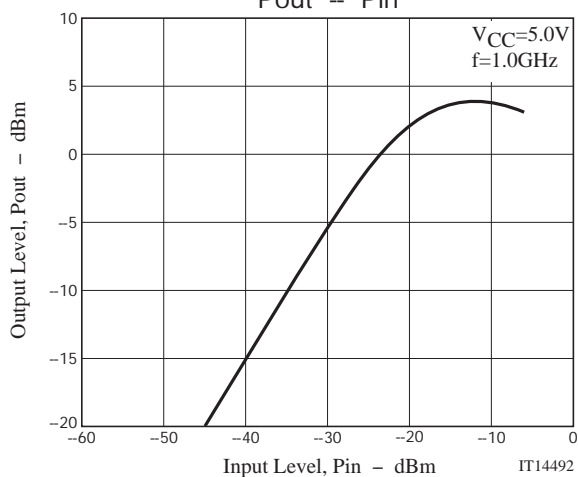
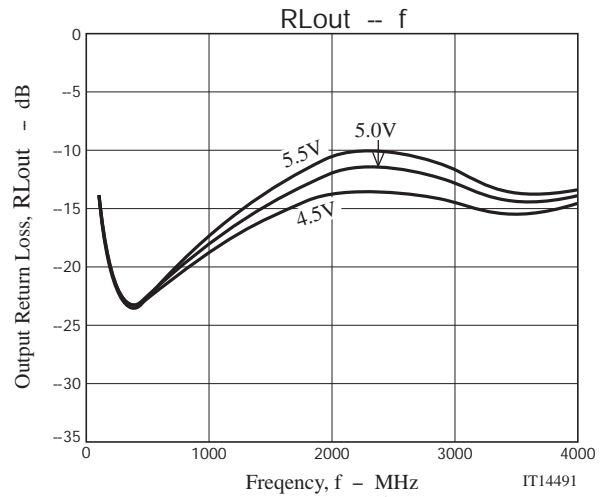
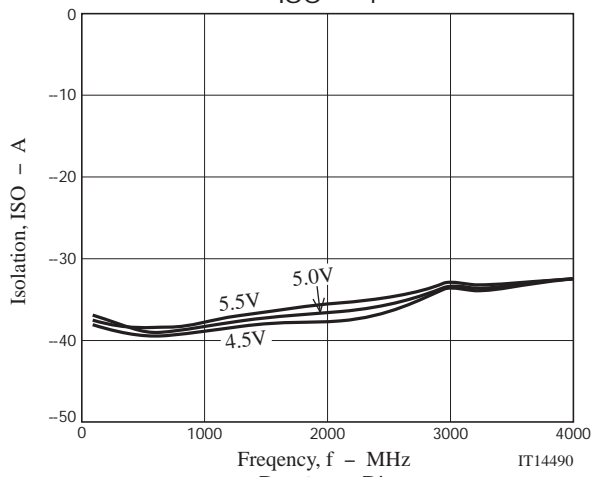
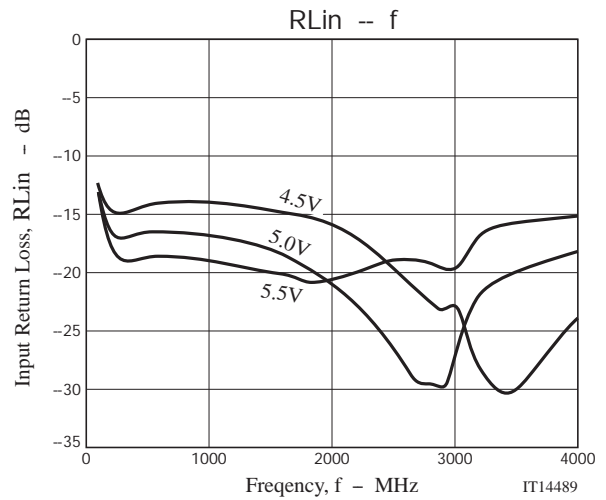
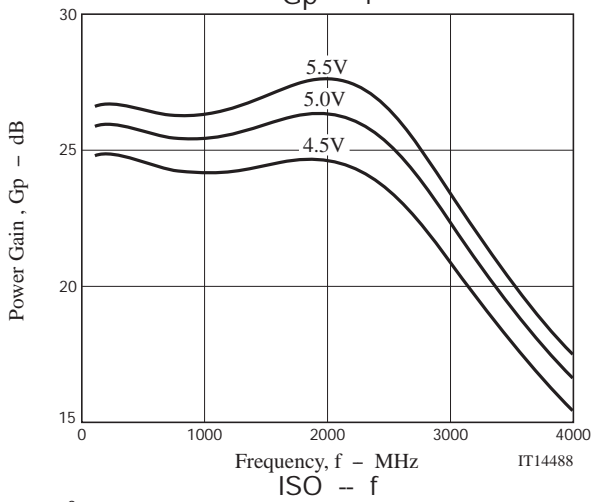
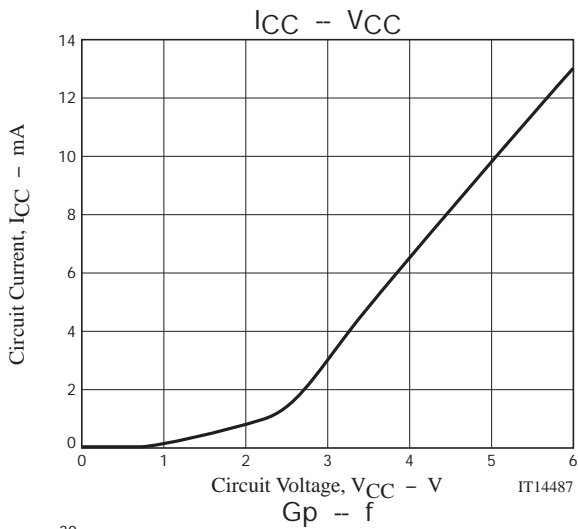
IT14497

Design of the Evaluation Board



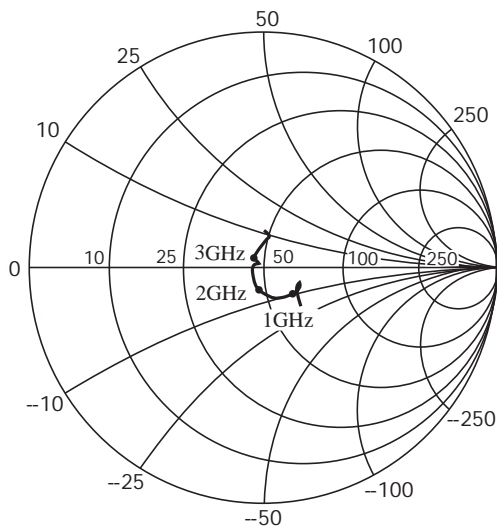
Symbol	Value
C1, C3	100pF
C2	1000pF

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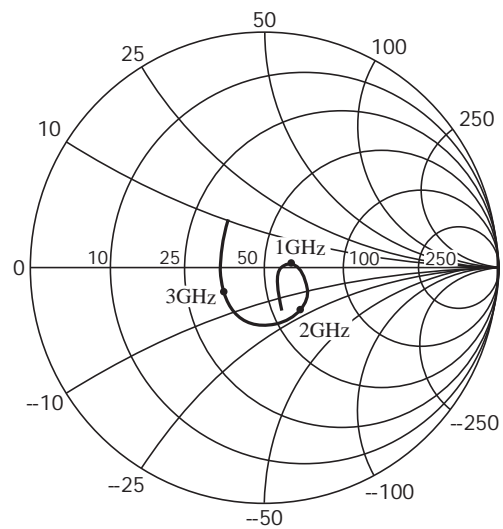


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S Parameter
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