



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## SMA3109 — Silicon MMIC Wideband Amplifier

### Features

- High Gain :  $G_p=23\text{dB typ. @1GHz}$
- Wideband response :  $f_u=3.6\text{GHz}$
- Low current :  $I_{CC}=16\text{mA typ.}$
- High output power :  $P_o(1\text{dB})=4\text{dBm}$
- Port impedance : input/output  $50\Omega$

### Specifications

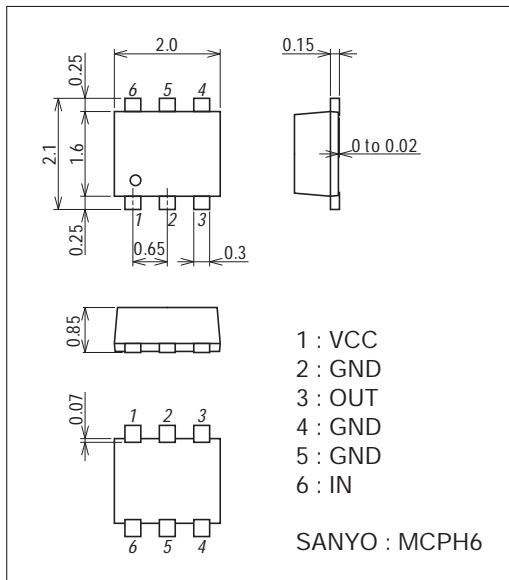
Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	$V_{CC}$		5	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	$^\circ\text{C}$

### Package Dimensions

unit : mm (typ)

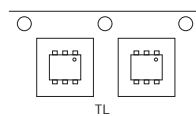
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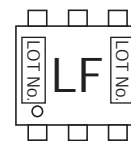
### Product & Package Information

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

### Type of Taping: TL



### Marking



# SMA3109

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

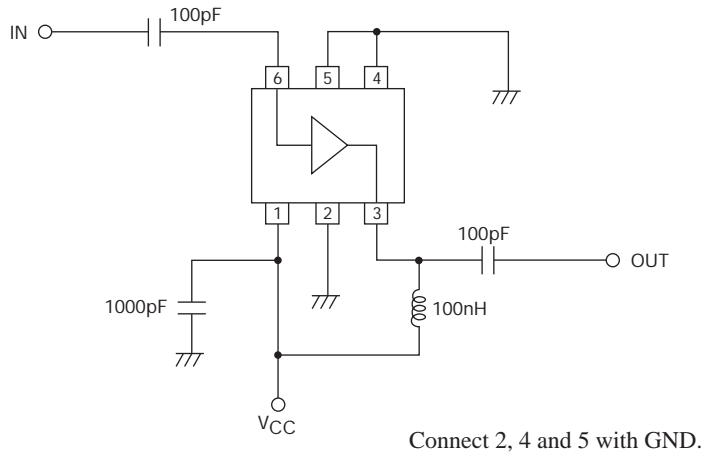
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	VCC		2.7	3	3.3	V
Operating Ambient Temperature	Topr		-40	+25	+85	$^\circ\text{C}$

## Electrical Characteristics at $T_a=25^\circ\text{C}$ , $V_{CC}=3\text{V}$ , $Z_s=Z_L=50\Omega$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	ICC		11.5	16.0	20.5	mA
Power Gain	Gp	f=1GHz	21.0	23.0	26.0	dB
		f=2.2GHz	22.0	24.0	27.0	
Isolation	ISL	f=1GHz	27.0	31.5		dB
		f=2.2GHz	27.0	31.5		
Input Return Loss	RLin	f=1GHz	16.0	20.5		dB
		f=2.2GHz	10.0	15.0		
Output Return Loss	RLout	f=1GHz	15.0	20.0		dB
		f=2.2GHz	10.0	14.0		
Noise Figure	NF	f=1GHz		4.3	5.0	dB
		f=2.2GHz		4.3	5.0	
Gain 1dB Compression Output Power	Po(1dB)	f=1GHz	4.0	6.4		dBm
		f=2.2GHz	2.0	4.2		
Upper Limit Operating Frequency	fu	3dB down below flat gain at f =1GHz		3.6		GHz

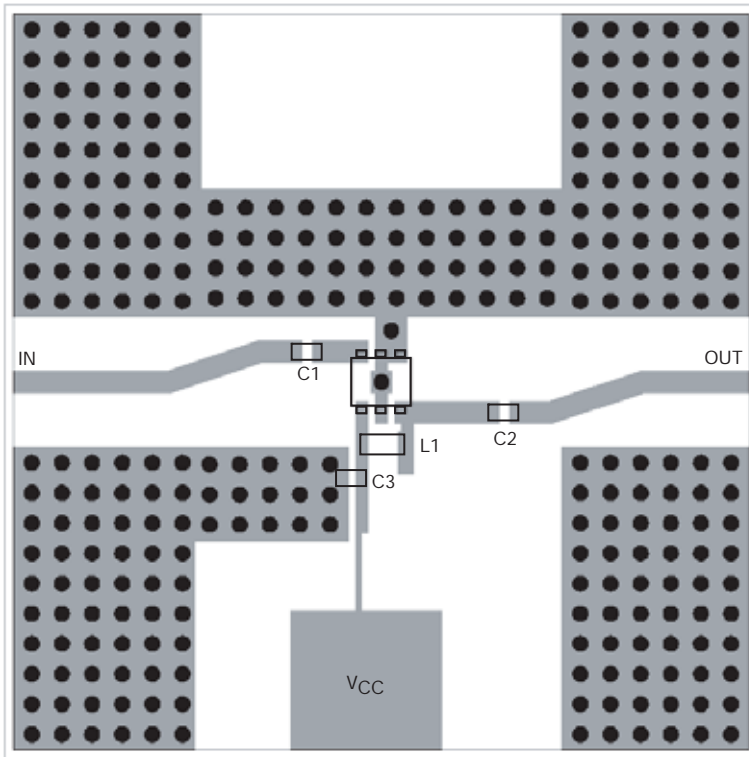
Note) Pay attention to handling since it is liable to be affected by static electricity due to the high frequency process adopted.

## Test Circuit

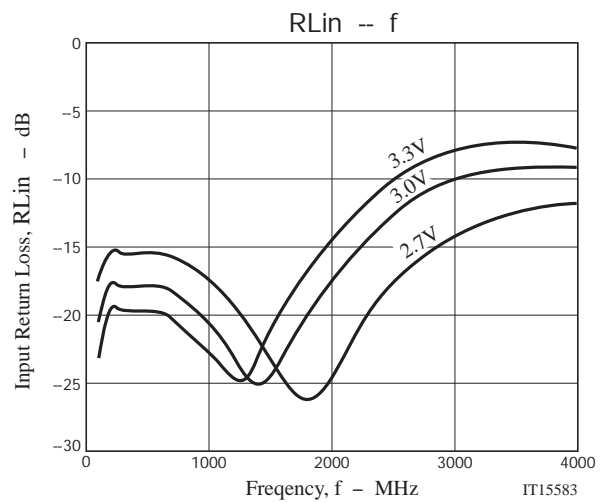
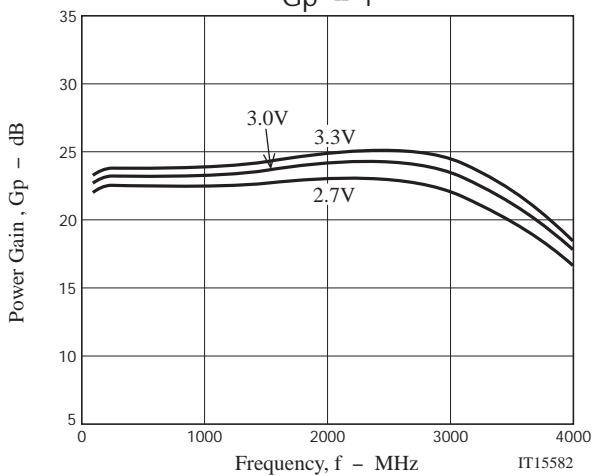
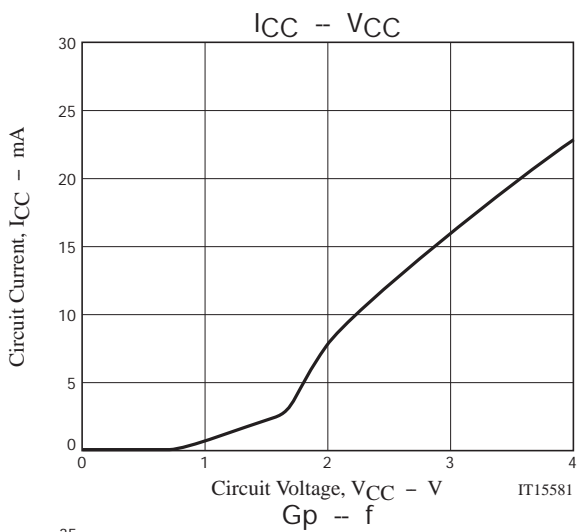


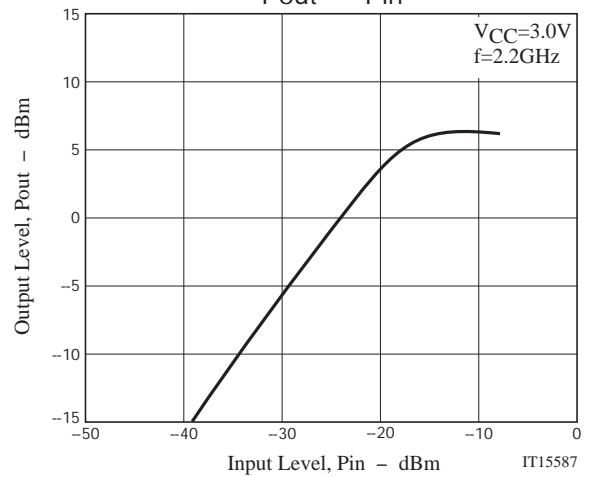
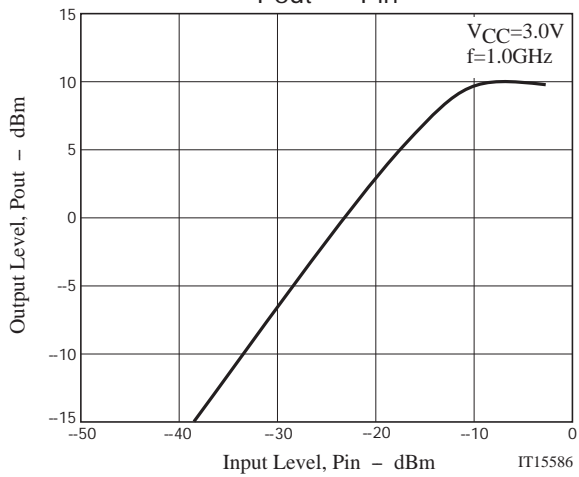
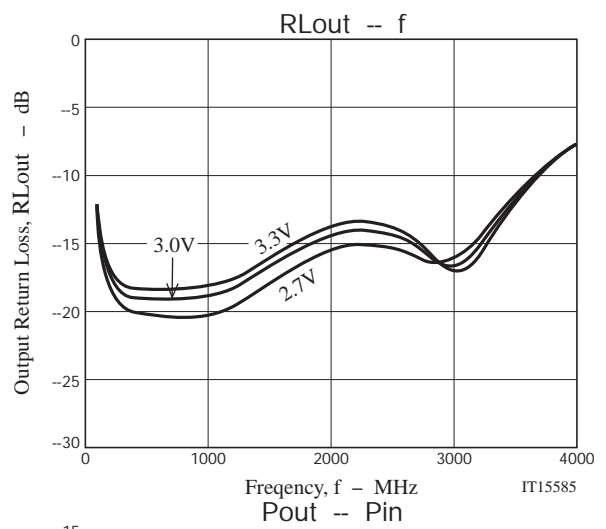
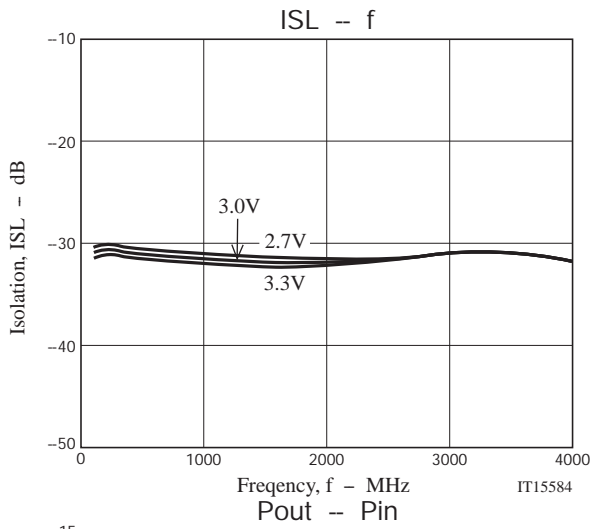
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Evaluation Board

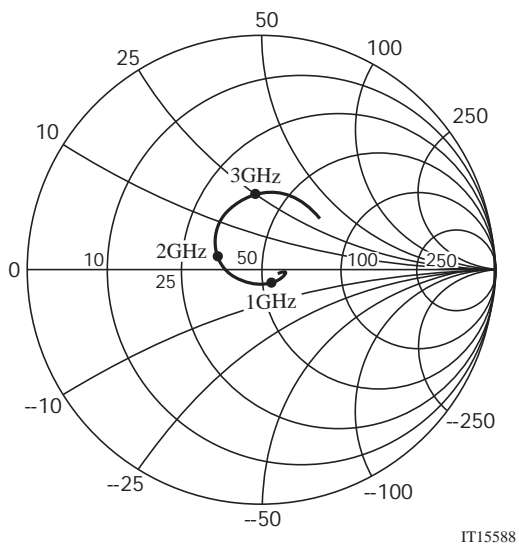


Symbol	Value
C1, C2	100pF
C3	1000pF
L1	100nH

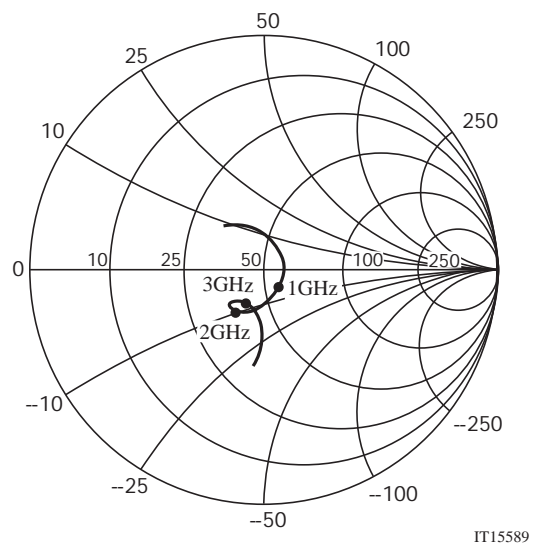




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