



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## SMA3102 — Silicon MMIC Low Noise Amplifier

### Features

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

### Specifications

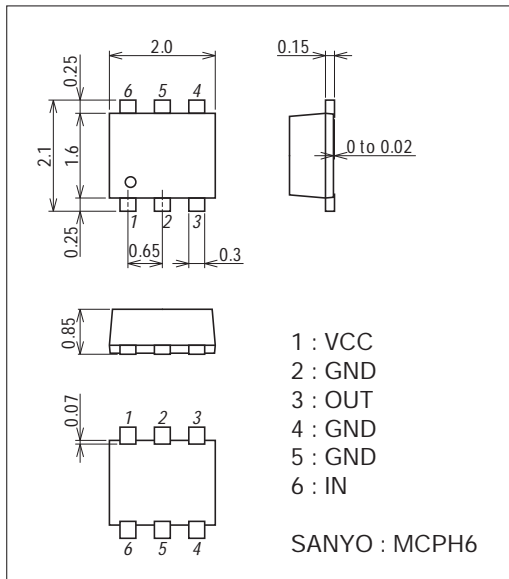
Absolute Maximum Ratings at  $T_a=25^\circ\text{C}$

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

### Package Dimensions

unit : mm (typ)

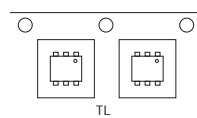
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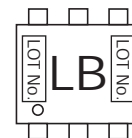
### Product & Package Information

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

### Type of Taping: TL



### Marking



# SMA3102

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

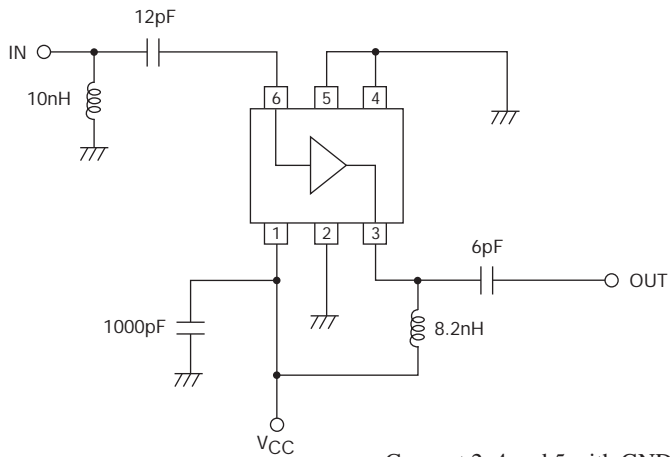
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	VCC		1.8	2	2.3	V
Operating Ambient Temperature	Topr		-40	+25	+85	$^\circ\text{C}$

## Electrical Characteristics at $T_a=25^\circ\text{C}$ , $V_{CC}=2.0\text{V}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	$I_{CC}$		7.0	10.0	14.0	mA
Power Gain	Gp	$f=1.575\text{GHz}$	21.5	24.5	27.5	dB
Isolation	ISL	$f=1.575\text{GHz}$	33.0	38.0		dB
Input Return Loss	RLin	$f=1.575\text{GHz}$	8.0	10.0		dB
Output Return Loss	RLout	$f=1.575\text{GHz}$	12.0	16.0		dB
Noise Figure	NF	$f=1.575\text{GHz}$		1.5	1.7	dB
Gain 1dB Compression Input Power	Pin(1dB)	$f=1.575\text{GHz}$	-25.0	-22.0		dBm
Input 3rd Order Intercept Point	IIP3	$f_1=1.574\text{GHz}$ , $f_2=1.575\text{GHz}$		-10.0		dBm

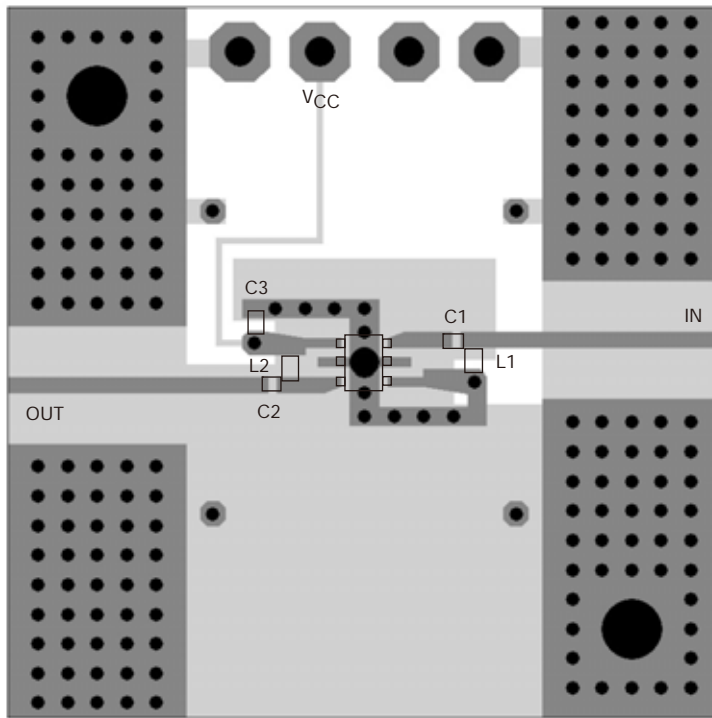
Note) Pay attention to handling since it is liable to be affected by static electricity due to the high frequency process adopted.

## Test Circuit

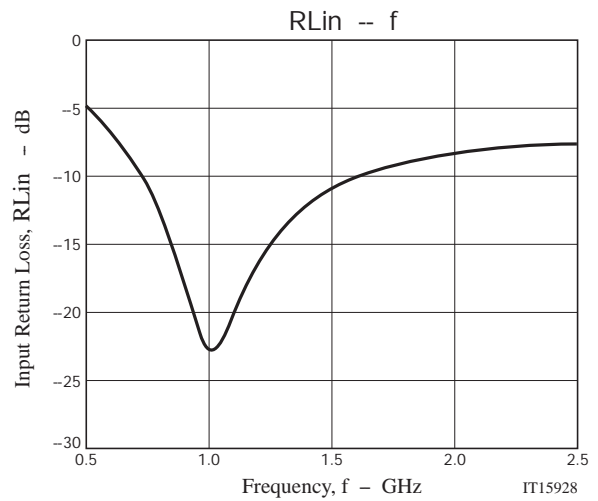
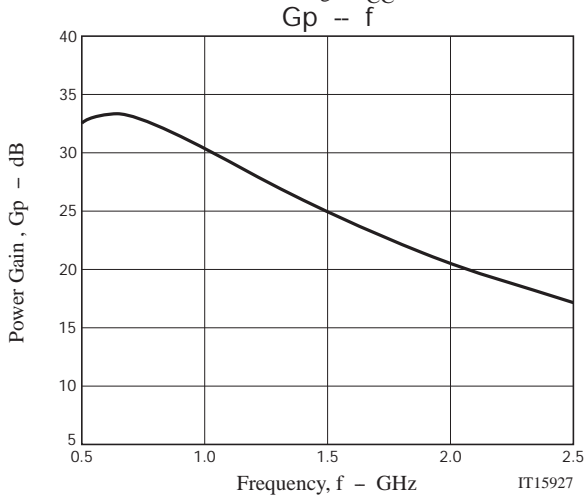
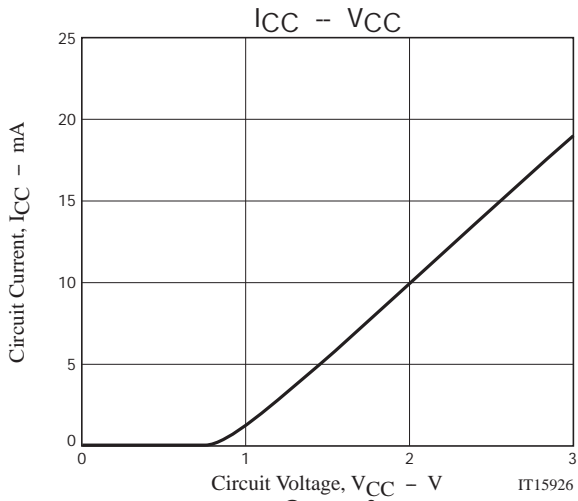


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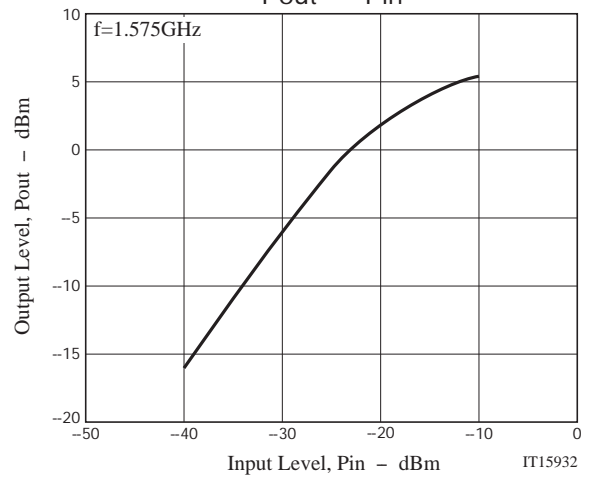
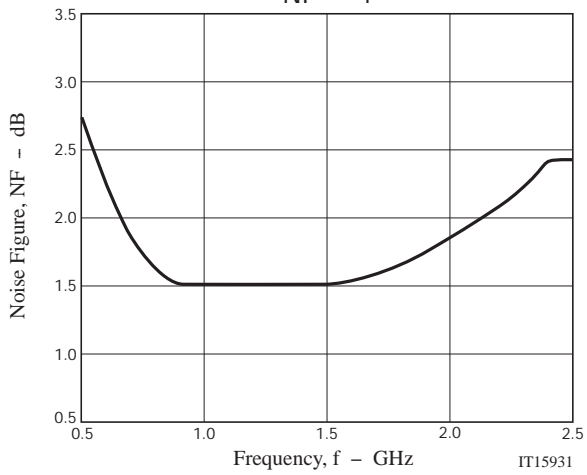
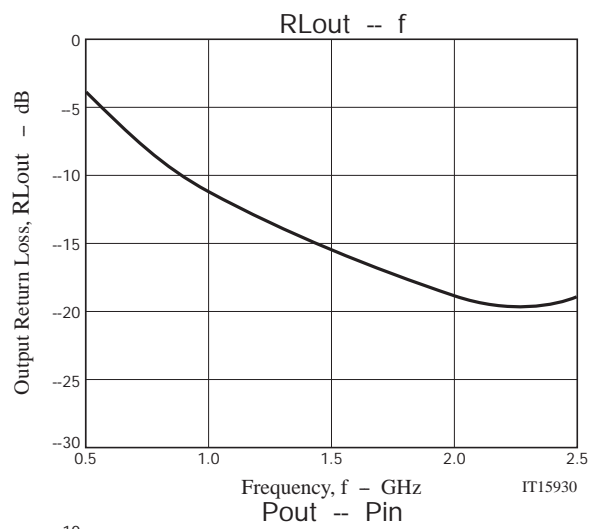
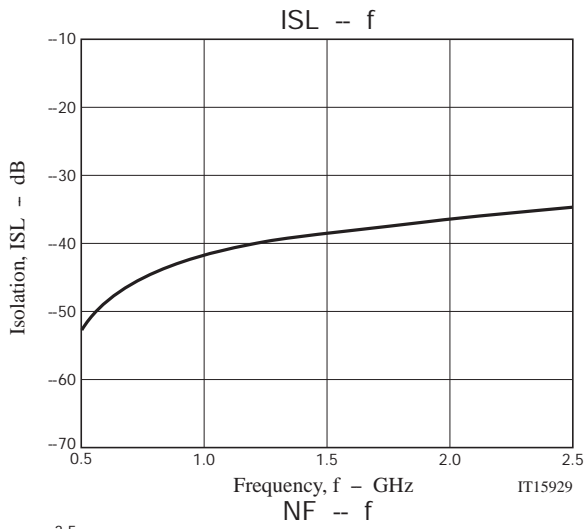
Design of the Evaluation Board



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



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