Ordering number : ENA1749

SMA3109

MMIC
Amplifier, 3V, 16mA, 0.1 to 3.6GHz, MCPH6

ON Semiconductor®

http://onsemi.com

Features

- High Gain : Gp=23dB typ. @1GHz
- Wideband response : fu=3.6GHz
- Low current : I_{CC}=16mA typ.
- High output power : Po(1dB)=4dBm
- Port impedance : input/output 50Ω

Specifications

Absolute Maximum Ratings at Ta=25°C

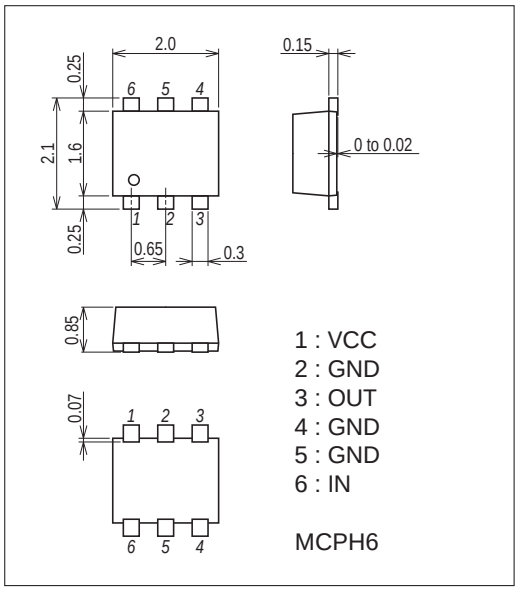
Parameter	Symbol	Conditions	Ratings	Unit
Supply Voltage	V_{CC}		5	V
Circuit Current	I_{CC}		25	mA
Allowable Power Dissipation	P_D		280	mW
Operating Temperature	Topr		−40 to +85	°C
Storage Temperature	Tstg		−55 to +150	°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Package Dimensions

unit : mm (typ)

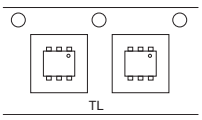
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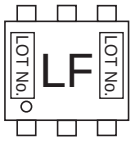
Product & Package Information

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

Type of Taping: TL



Marking



Semiconductor Components Industries, LLC, 2013

Recommended Operating Conditions at Ta=25°C

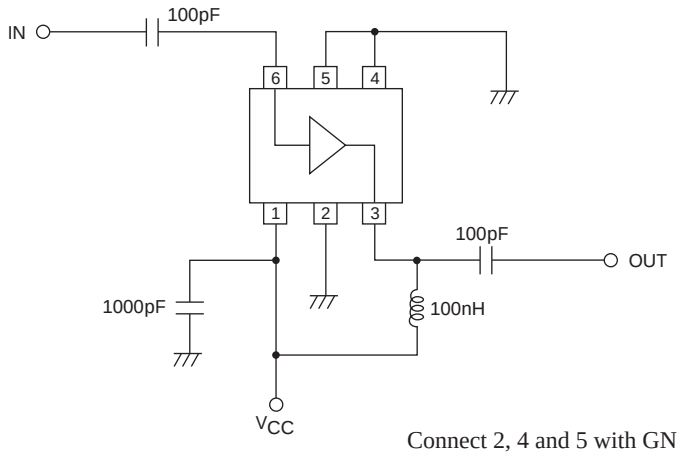
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply Voltage	V_{CC}		2.7	3	3.3	V
Operating Ambient Temperature	Topr		−40	+25	+85	°C

Electrical Characteristics at Ta=25°C, V_{CC}=3V, Zs=Z_L=50Ω

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Circuit Current	I_{CC}		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.

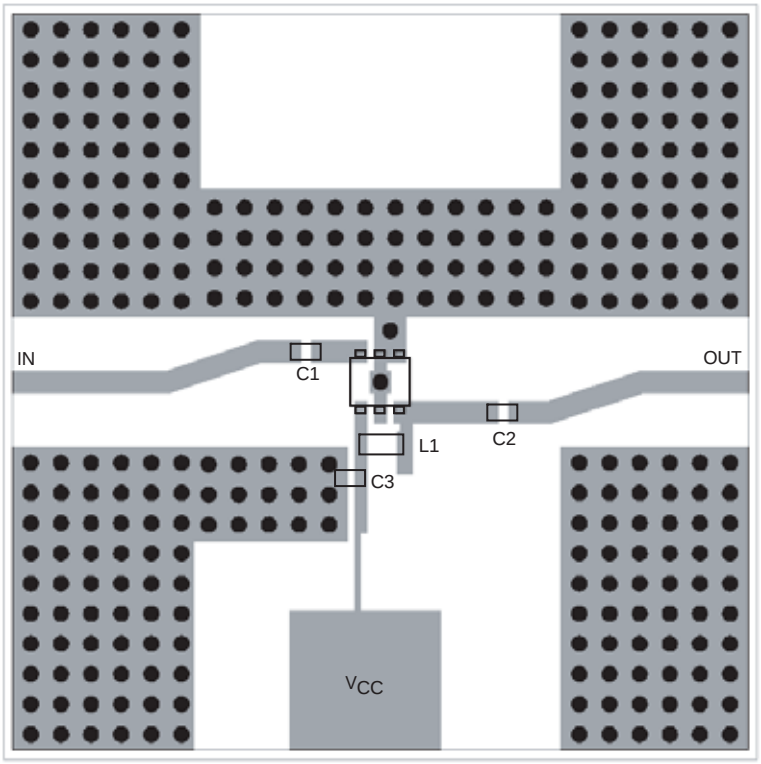
Test Circuit



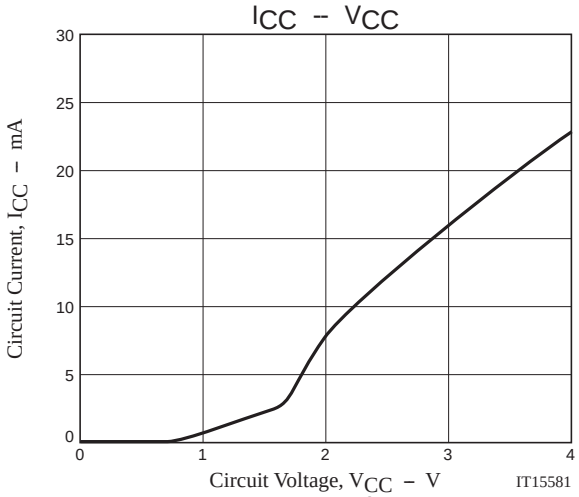
Connect 2, 4 and 5 with GND.

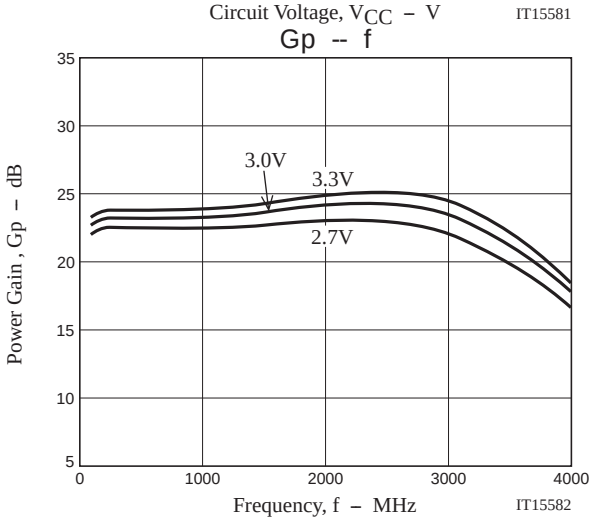
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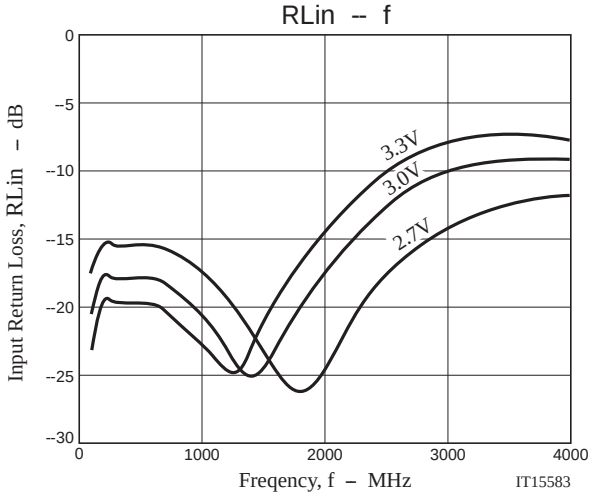
Evaluation Board

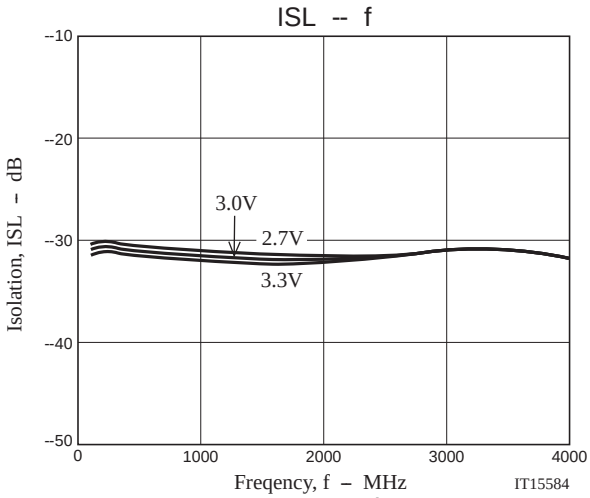


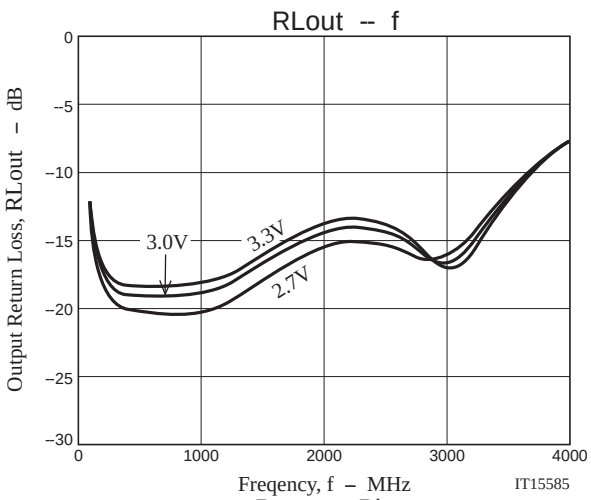
Symbol	Value
C1, C2	100pF
C3	1000pF
L1	100nH

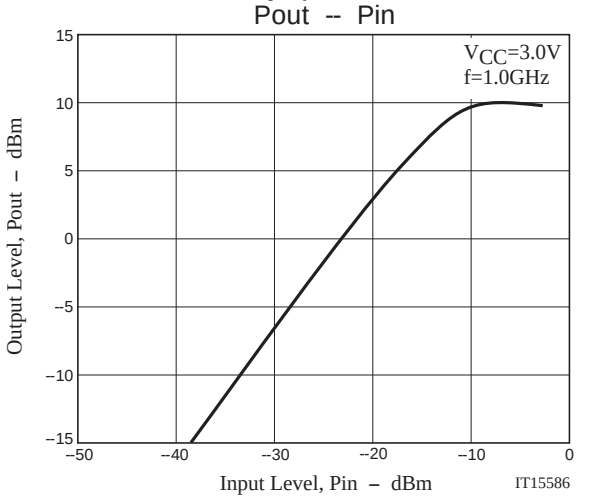


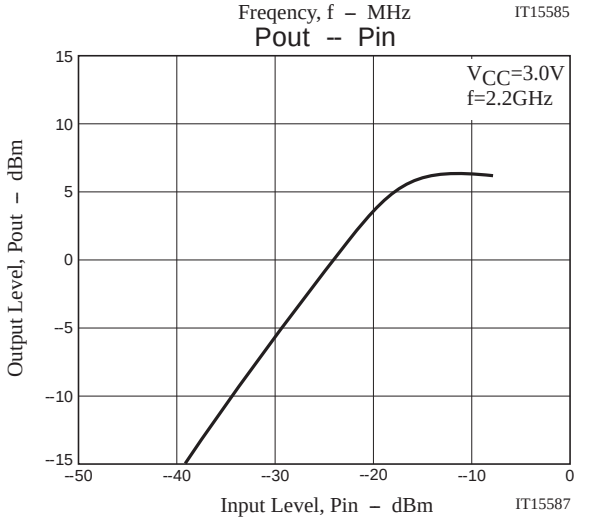






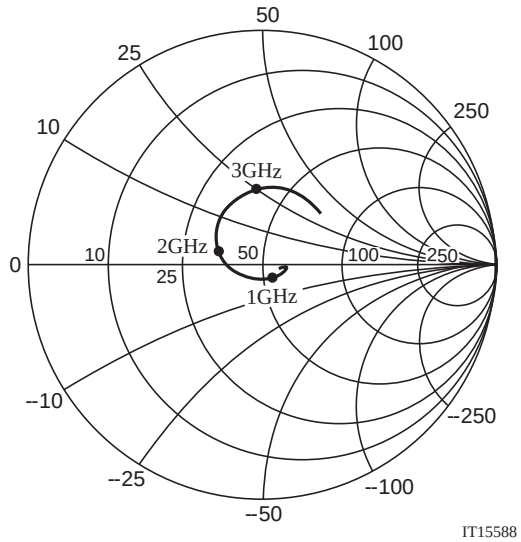




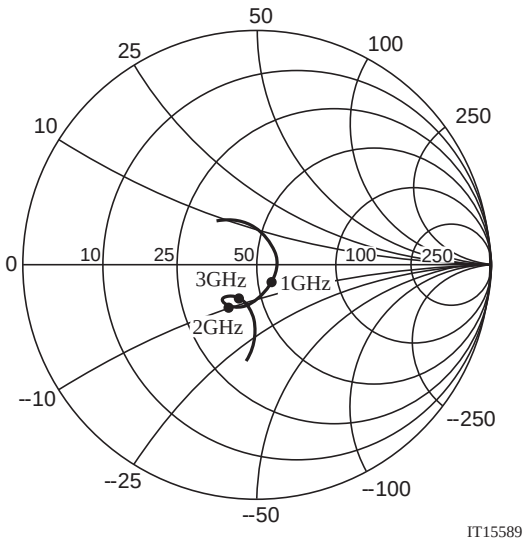


S Parameter

S11



S22



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