

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

NSVG3109SG6

Features

- High Gain: $G_p = 23$ dB typ. @ 1 GHz
- Wideband response: $f_u = 3.6$ GHz
- Low current: $I_{CC} = 16$ mA typ.
- High output power: P_o (1dB) = 4 dBm
- Port impedance: input/output: 50 Ω
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q100 Qualified and PPAP Capable
- This is a Pb-Free Device

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

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

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

RECOMMENDED OPERATING CONDITIONS (Ta = 25°C)

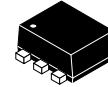
Symbol	Parameter	Ratings			Unit
		Min	Typ	Max	
V_{CC}	Supply Voltage	2.7	3	3.3	V
T_{opr}	Operating Ambient Temperature	- 40	+25	+85	°C

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.



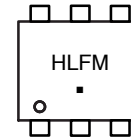
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SC88FL / MCPH6
CASE 419AS

MARKING DIAGRAM



HLF = Specific Device Code
M = Date Code
▪ = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information on page 5 of this data sheet.

NSVG3109SG6

ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$, $V_{CC} = 3\text{ V}$, $Z_s = Z_L = 50\ \Omega$)

Symbol	Parameter	Conditions	Ratings			Unit
			Min	Typ	Max	
I_{CC}	Circuit Current		11.5	16.0	20.5	mA
G_p	Power Gain	$f = 1\text{ GHz}$	21.0	23.0	26.0	dB
		$f = 2.2\text{ GHz}$	22.0	24.0	27.0	
ISL	Isolation	$f = 1\text{ GHz}$	27.0	31.5	-	dB
		$f = 2.2\text{ GHz}$	27.0	31.5	-	
RLin	Input Return Loss	$f = 1\text{ GHz}$	16.0	20.5	-	dB
		$f = 2.2\text{ GHz}$	10.0	15.0	-	
RLout	Output Return Loss	$f = 1\text{ GHz}$	15.0	20.0	-	dB
		$f = 2.2\text{ GHz}$	10.0	14.0	-	
NF	Noise Figure	$f = 1\text{ GHz}$	-	4.3	5.0	dB
		$f = 2.2\text{ GHz}$	-	4.3	5.0	
P_o (1dB)	Gain 1dB Compression Output Power	$f = 1\text{ GHz}$	4.0	6.4	-	dBm
		$f = 2.2\text{ GHz}$	2.0	4.2	-	
f_u	Upper Limit Operating Frequency	3 dB down below flat gain at $f = 1\text{ GHz}$	-	3.6	-	GHz

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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

Test Circuit

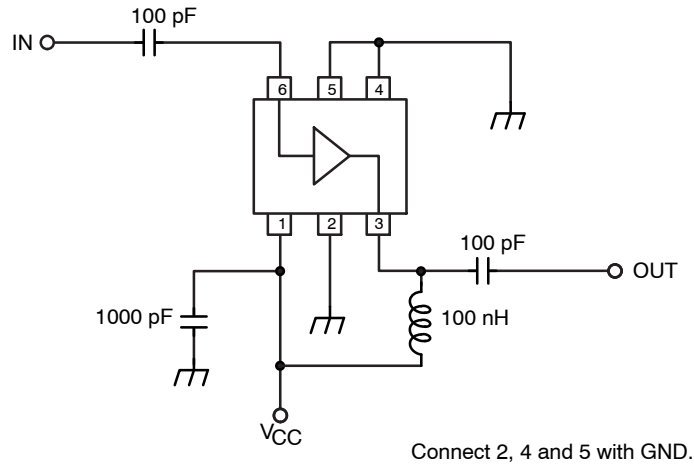
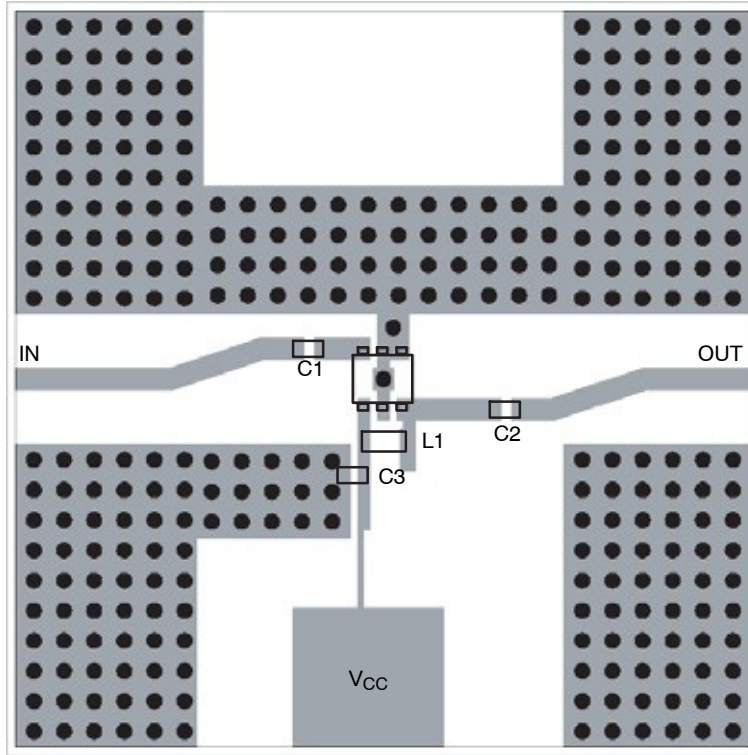


Figure 1. Test Circuit

NSVG3109SG6

Evaluation Board



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

Figure 2. Evaluation Board

Characteristics

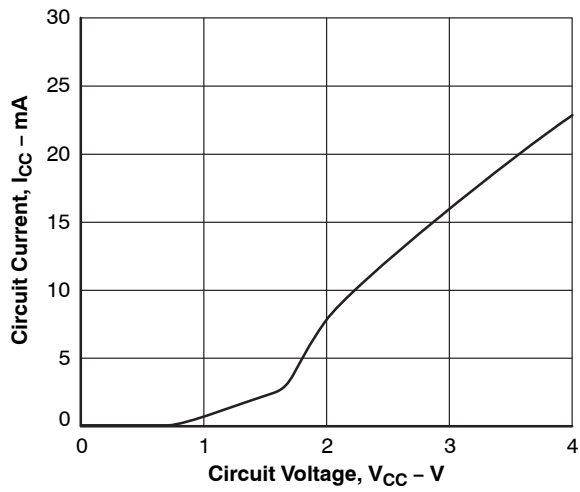


Figure 3. I_{CC} - V_{CC}

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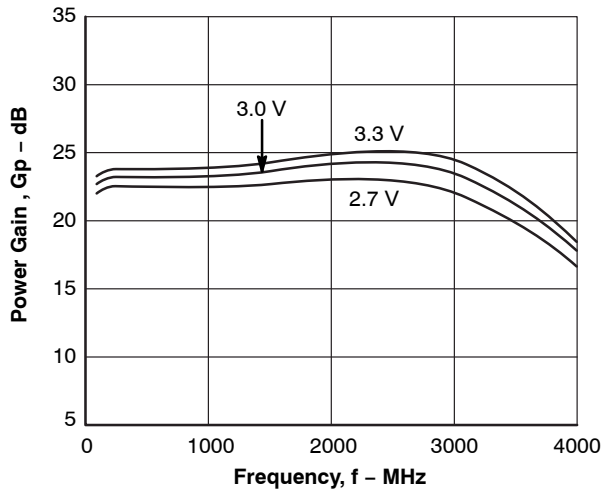


Figure 4. Gp - f

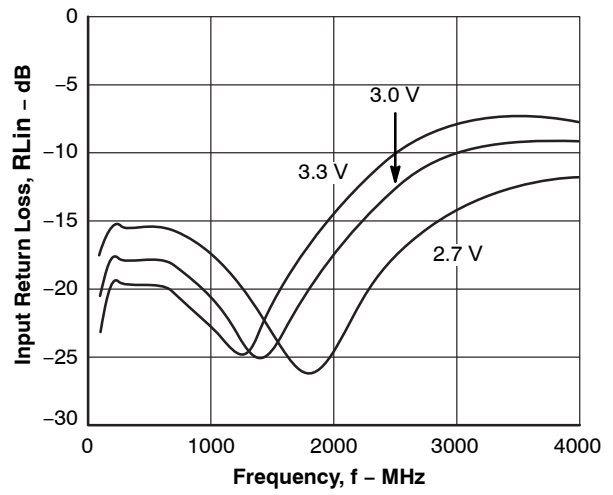


Figure 5. RLin - f

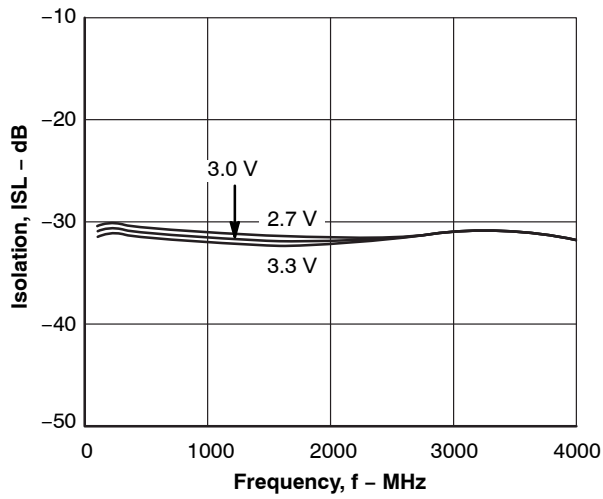


Figure 6. ISL - f

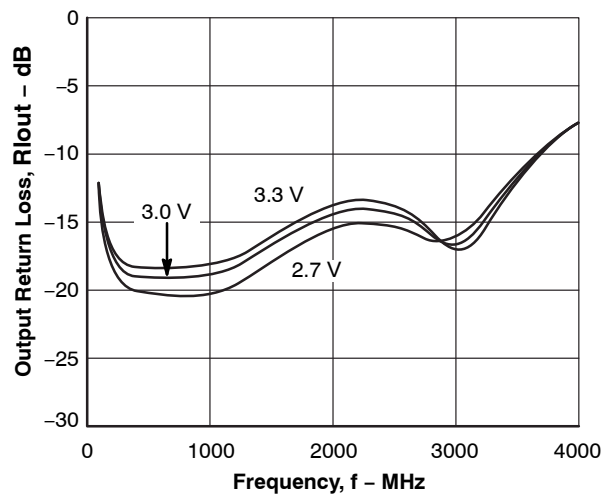


Figure 7. RLout - f

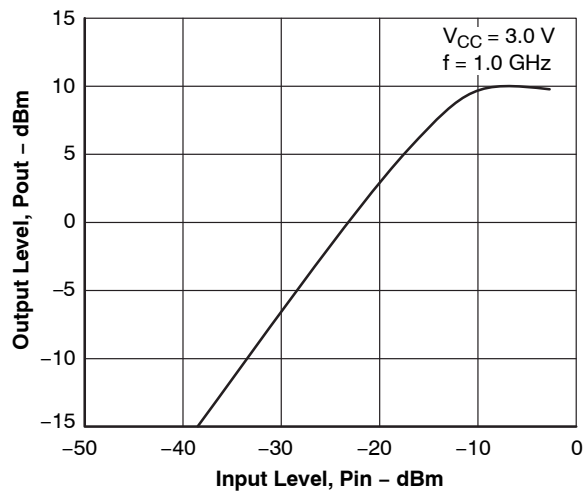


Figure 8. Pout - Pin

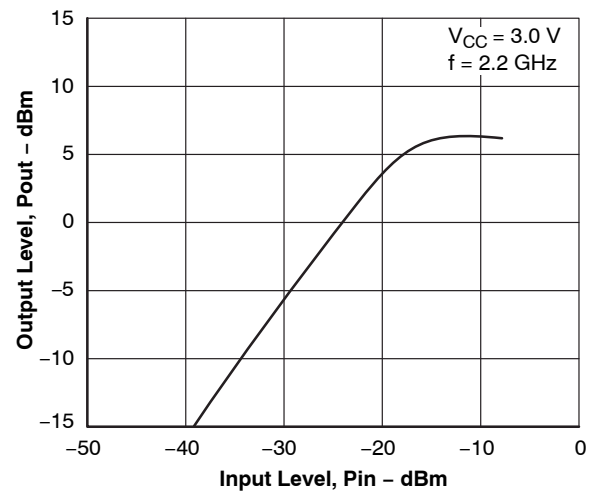


Figure 9. Pout - Pin

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S Parameter

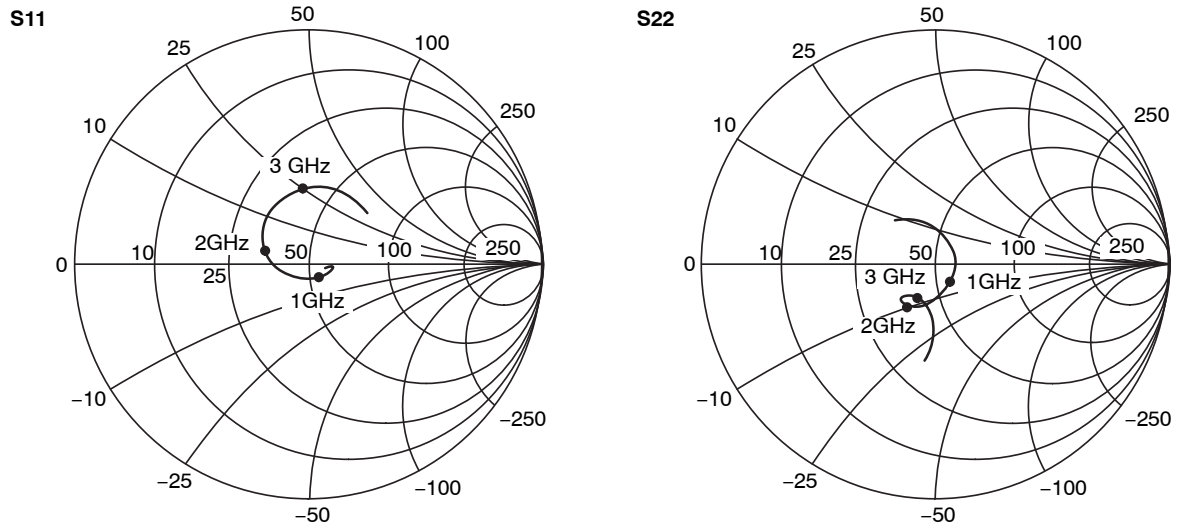


Figure 10. S Parameter

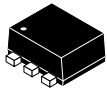
ORDERING INFORMATION

Device Order Number	Specific Device Marking	Package Type (JEITA, JEDEC)	Package Type	Shipping [†]
NSVG3109SG6T1G	HLF	SC82, SC82A, SC88 (Pb-Free)	MCPH6 (Pb-Free)	3000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

MECHANICAL CASE OUTLINE

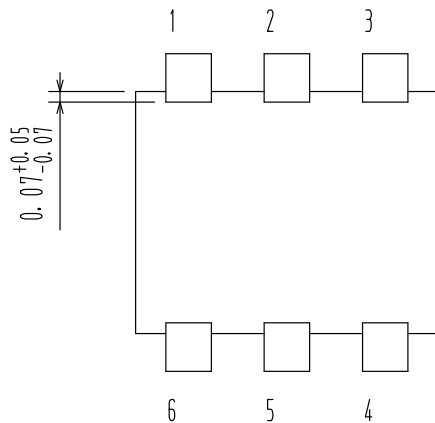
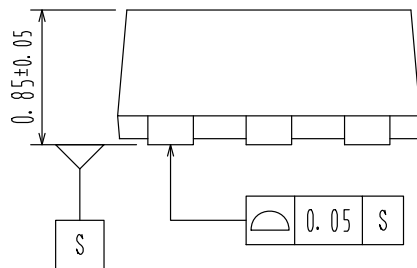
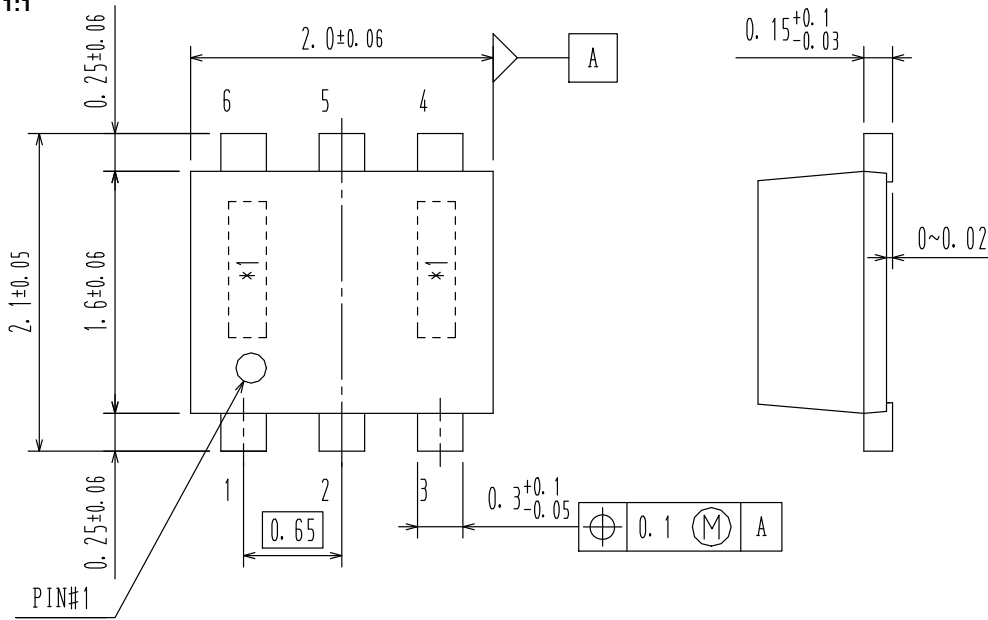
PACKAGE DIMENSIONS




SCALE 1:1

SC-88FL / MCPH6
CASE 419AS
ISSUE O

DATE 30 DEC 2011



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