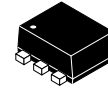


MMIC Amplifier, 5 V, 22.7 mA, 0.1 to 3 GHz, MCPH6

NSVG3117SG6

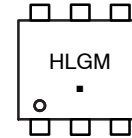


SC-88FL / MCPH6
CASE 419AS

Features

- High Gain: $G_p = 33.5$ dB typ. @ 2.2 GHz
- Wideband Response: $f_u = 3.0$ GHz
- Low Current: $I_{CC} = 22.7$ mA typ.
- High Output Power: P_o (1 dB) = 5.7 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

MARKING DIAGRAM



HLG = Specific Device Code
M = Date Code
■ = Pb-Free Package

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Symbol	Parameter	Ratings	Unit
V _{CC}	Supply Voltage	6	V
I _{CC}	Circuit Current	40	mA
P _D	Allowable Power Dissipation	280	mW
T _{opr}	Operating Temperature	-40 to +125	°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	4.5	5	5.5	V
T _{opr}	Operating Ambient Temperature	-40	+25	+125	°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.

ORDERING INFORMATION

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

NSVG3117SG6

ELECTRICAL CHARACTERISTICS (Ta = 25°C, VCC = 5 V, Zs = ZL = 50 Ω)

Symbol	Parameter	Conditions	Ratings			Unit
			Min	Typ	Max	
I _{CC}	Circuit Current		18.5	22.7	28.0	mA
G _p	Power Gain	f = 1 GHz	29.5	31.2	32.5	dB
		f = 2.2 GHz	30.5	33.5	35.5	
ISL	Isolation	f = 1 GHz	35.0	37.6	-	dB
		f = 2.2 GHz	34.0	36.5	-	
RL _{in}	Input Return Loss	f = 1 GHz	9.0	11.2	-	dB
		f = 2.2 GHz	4.5	6.0	-	
RL _{out}	Output Return Loss	f = 1 GHz	11.0	14.3	-	dB
		f = 2.2 GHz	12.0	16.3	-	
NF	Noise Figure	f = 1 GHz	-	4.1	5.0	dB
		f = 2.2 GHz	-	3.9	5.0	
Po (1dB)	Gain 1dB Compression Output Power (Note 2)	f = 1 GHz	7.5	9.8	-	dBm
		f = 2.2 GHz	3.7	5.7	-	
f _u	Upper Limit Operating Frequency (Note 2)	3 dB down below flat gain at f = 1GHz	-	3.0	-	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.
2. On evaluation board.

Test Circuit

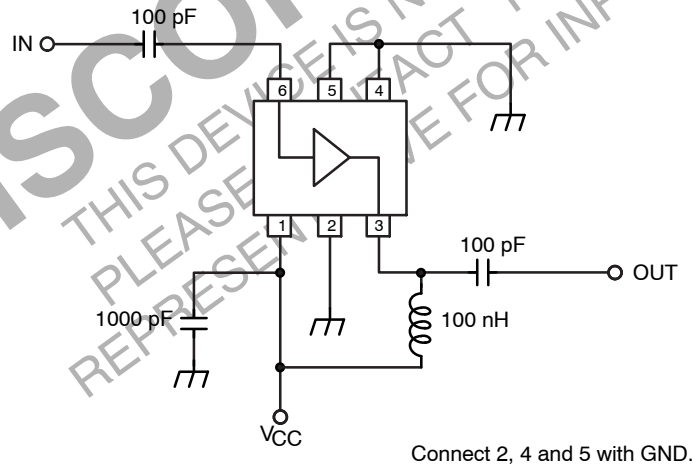


Figure 1. Test Circuit

NSVG3117SG6

Evaluation Board

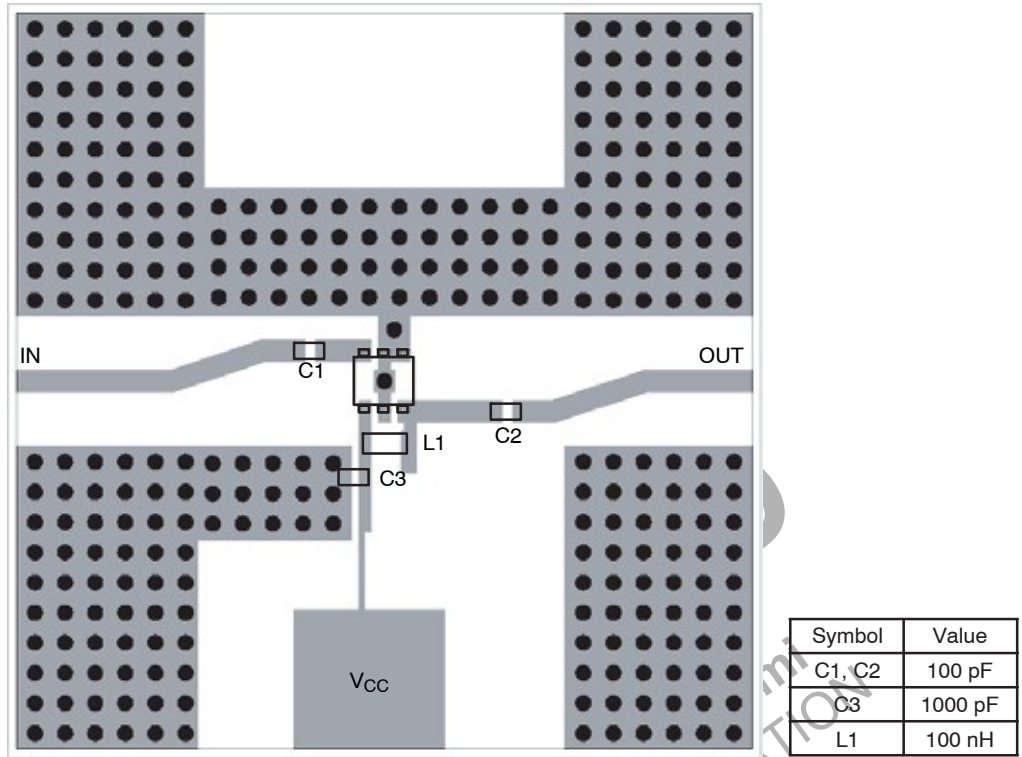


Figure 2. Evaluation Board

Characteristics

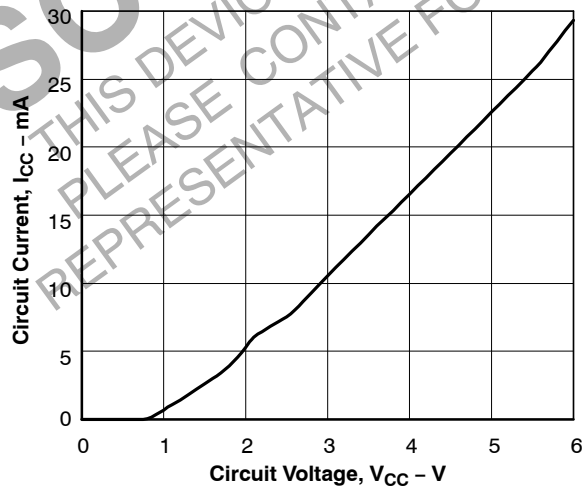


Figure 3. I_{CC} - V_{CC}

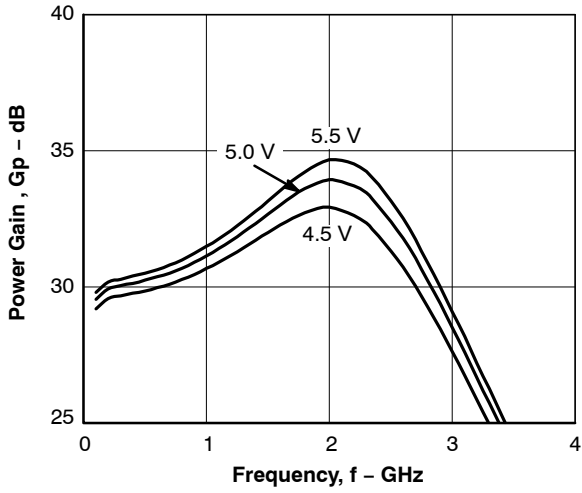


Figure 4. Gp - f

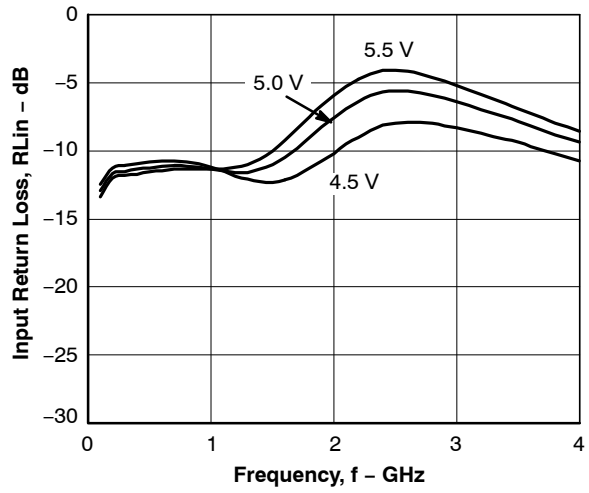


Figure 5. RLin - f

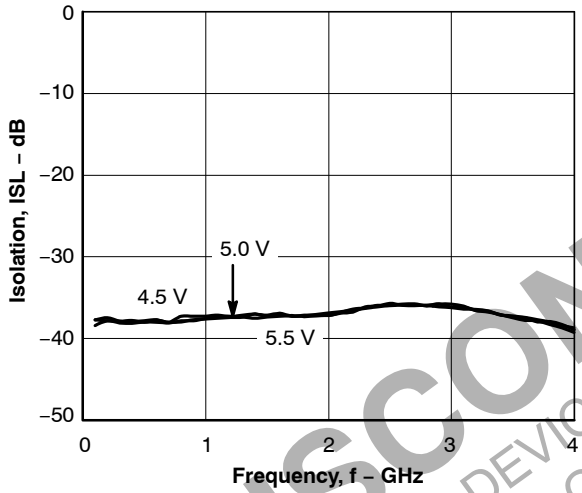


Figure 6. ISL - f

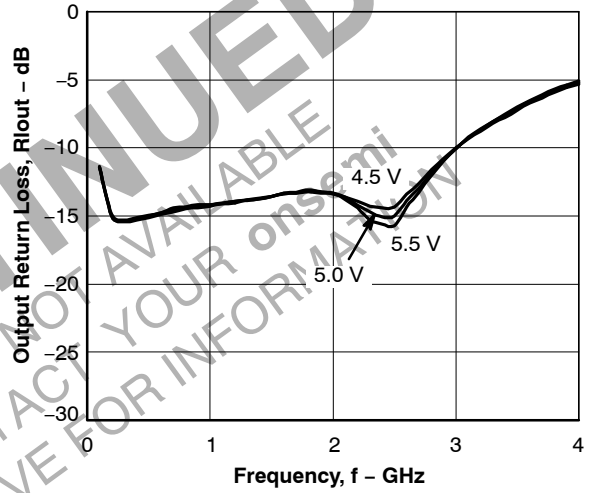


Figure 7. RLout - f

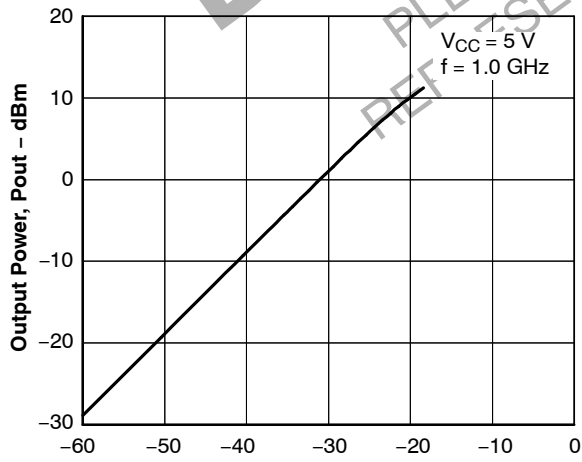


Figure 8. Pout - Pin

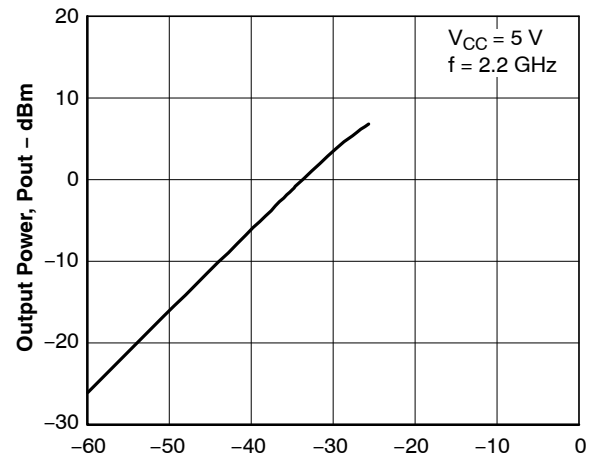


Figure 9. Pout - Pin

NSVG3117SG6

S Parameter

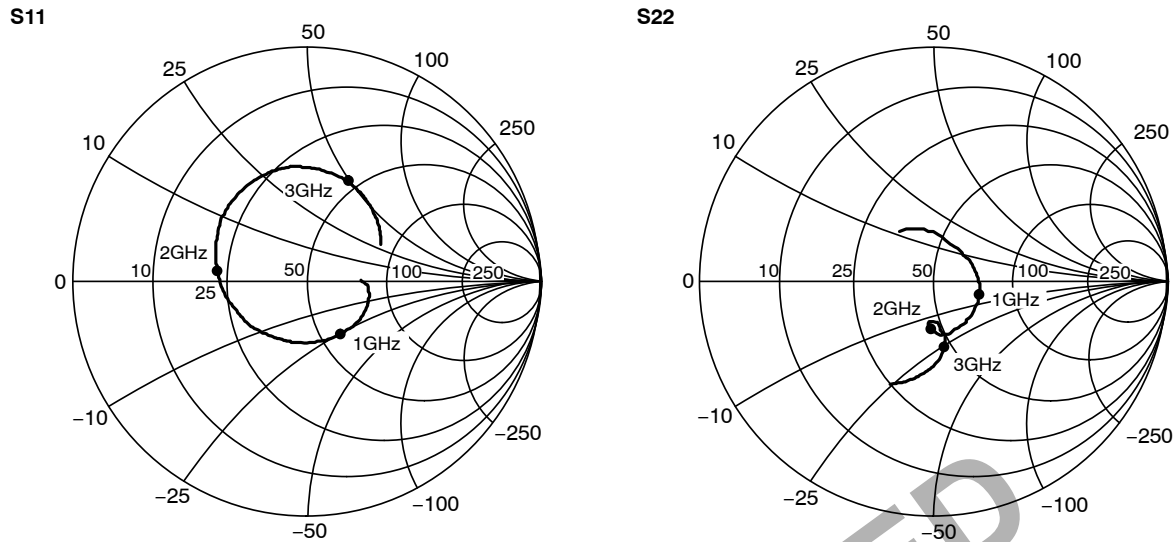


Figure 10. S Parameter ($V_{CC} = 5\text{ V}$)

ORDERING INFORMATION

Device Order Number	Specific Device Marking	Package Type (JEITA, JEDEC)	Package Type	Shipping [†]
NSVG3117SG6T1G	HLG	SC-88FL (Pb-Free/Halogen Free)	MCPH6 (Pb-Free/Halogen 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.

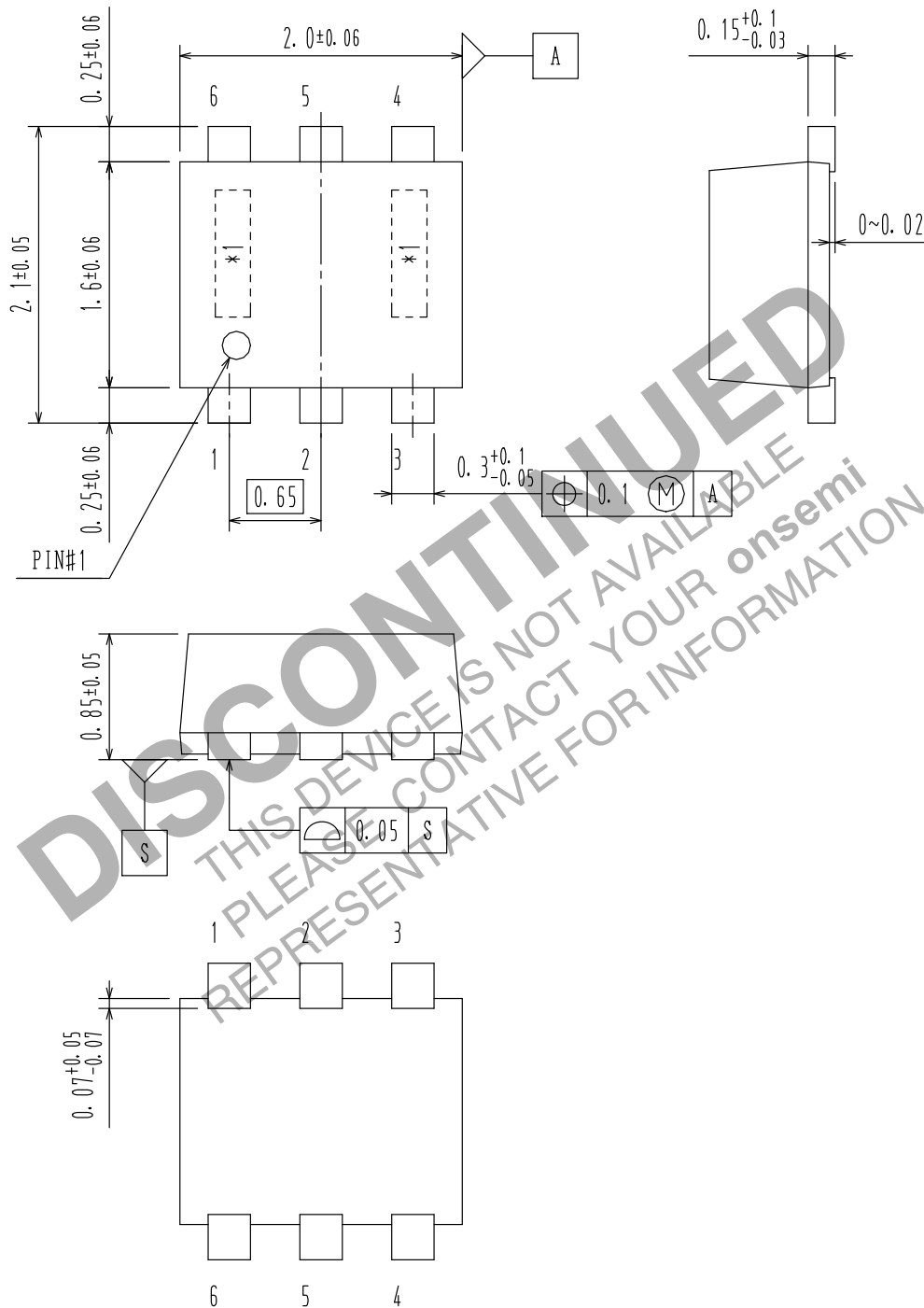
DISCONTINUED

THIS DEVICE IS NOT AVAILABLE
PLEASE CONTACT YOUR ONSEMI
REPRESENTATIVE FOR INFORMATION

NSVG3117SG6

PACKAGE DIMENSIONS

SC-88FL / MCPH6
CASE 419AS
ISSUE O



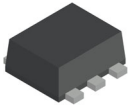
NSVG3117SG6

REVISION HISTORY

Revision	Description of Changes	Date
1	Data Sheet Discontinued.	1/15/2026

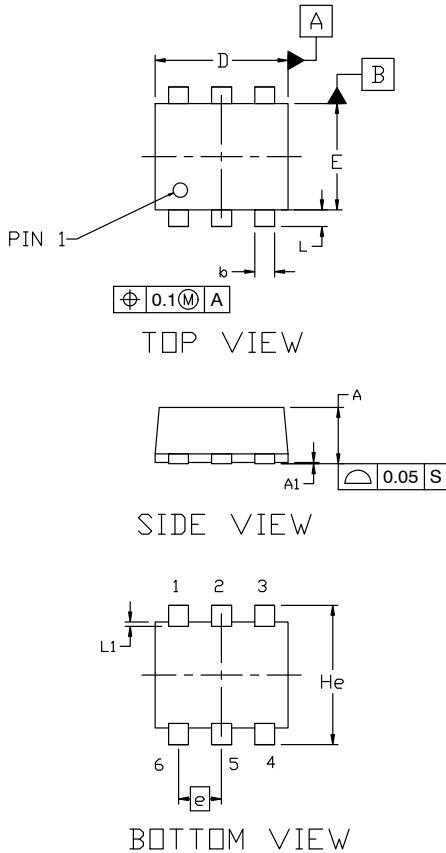
This document has undergone updates prior to the inclusion of this revision history table. The changes tracked here only reflect updates made on the noted approval dates.

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SC-88FL / MCPH6
CASE 419AS
ISSUE A

DATE 28 SEP 2022

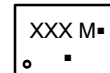


NOTES:

1. NO INDUSTRY STANDARD APPLIES TO THIS PACKAGE.
2. ALL DIMENSIONS ARE IN MILLIMETERS.
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND THE BAR PROTRUSIONS.

DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.80	0.85	0.90
A1	0.00	---	0.02
b	0.25	0.30	0.40
c	0.12	0.15	0.25
D	1.94	2.00	2.06
E	1.54	1.60	1.66
He	2.05	2.10	2.15
L	0.19	0.25	0.31
L1	0.00	0.07	0.12
e	0.65 BSC		

GENERIC MARKING DIAGRAM*



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present. Some products may not follow the Generic Marking.

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