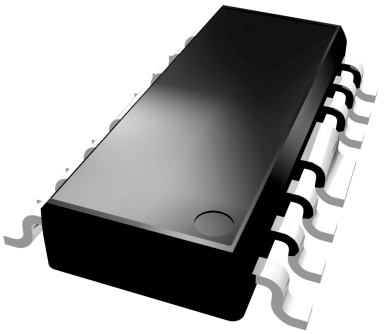
ADA10000S3C

Linear Amplifier MMIC

Data Sheet - Rev 1

FEATURES

- High Linearity (IIP_3 + 15 dBm)
- Low Noise Figure (2.0 dB)
- Single Supply (+8Vdc)
- Wide Bandwidth (50 MHz - 1 GHz)



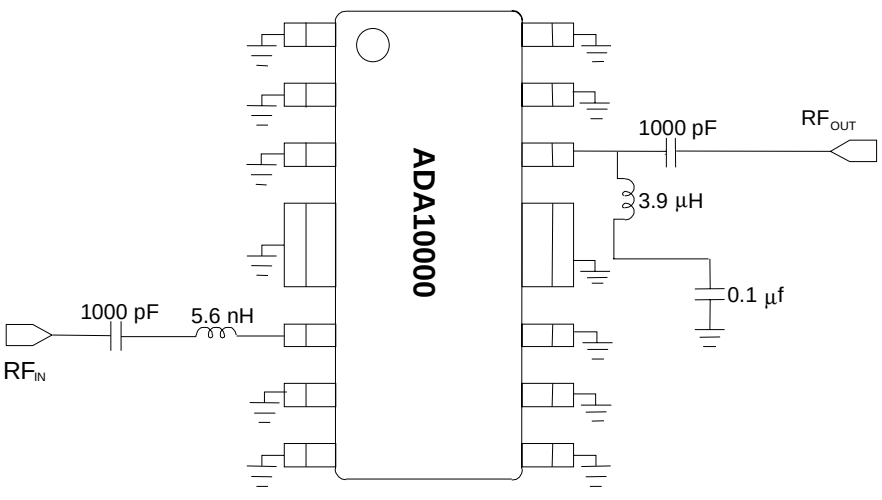
S3C
16 Pin SOIC Package

Description

The ADA10000 is a monolithic IC intended for use in applications requiring high linearity such as: Cellular Telephone Base Station Driver Amplifiers, CATV Fiber Receiver/Distribution Amplifiers and CATV Drop Amplifiers. Supplied in a surface mount, 16 lead-SOIC package, it is well suited for use in amplifiers where small size, reduced component count, and high reliability are important.

PIN	FUNCTION
1	GND
2	GND
3	GND
4	GND
5	GND
6	RF_{IN}
7	GND
8	GND
9	GND
10	GND
11	GND
12	GND
13	GND
14	RF_{OUT}
15	GND
16	GND

External Test Circuit



Absolute Maximum Ratings

PARAMETER	MIN	MAX	UNITS
V_{DD}/V_{RFOUT}	0	12	VDC
V_{RFIN}	-	0	VDC
RF_{IN}	-	+10	dBm
Storage Temperature	-65	+150	^{0}C
Soldering Temperature	-	260	^{0}C
Soldering Time	-	5.0	Sec.
Thermal Resistance	-	35	^{0} C/W

Operating Ranges

PARAMETER	MIN	TYP	MAX	UNIT
V_{DD}	4	8[1]	9	Volts
I_{DD}	50	-	150	mA
Case Temperature	-40	-	85*	^{0}C

* Median time to failure degraded above this temperature

Electrical Specifications

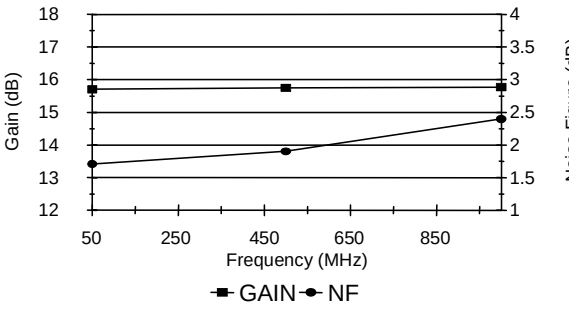
(T_A = +25 °C, RF = 50 to 1000 MHz, Test System = 75Ω, V_{DD} = + 8V_{DC})

PARAMETER	MIN	TYP	MAX	UNITS
CSO[2]/CSO[4]	60/62	-	-	dBc
CTB[2]/CTB[4]	65/74	-	-	dBc
Gain	14	15	-	dB
Noise Figure	-	2.0	3.5	dB
2nd Order Input Intercept Point (IIP2)[3]	+29	+34	-	dBm
3rd Order Input Intercept Point (IIP3)[3]	+13	+15	-	dBm

1. The device can be operated at + 6 V_{DC} for lower power dissipation; Refer to the figures on page for performance variation with supply voltage.
2. 160 channels, + 17 dBmV per channel, (measured at the output) 6 MHz channel spacing.
3. Two tones, - 10 dBm per tone at input.
4. 80 channels, + 19 dBmV per channel @ output, 6 MHz channel spacing.

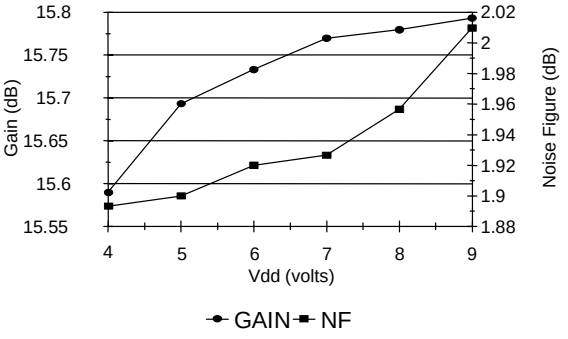
Gain and Noise Figure vs Frequency

Tc = 25 deg C, VDD = +8V



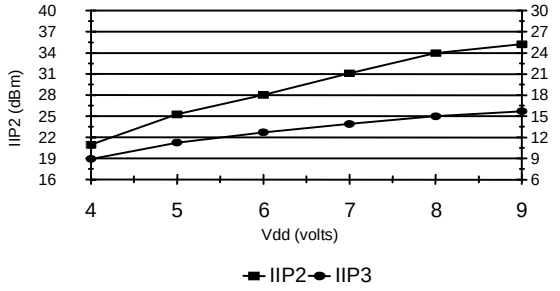
Gain and Noise Figure vs. Vdd

Tc = 25 deg C, RF = 500 MHz



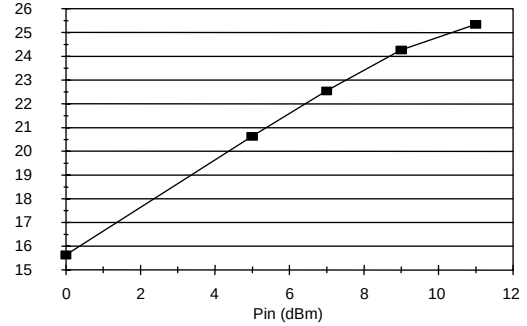
IIP2,IIP3 vs. Vdd

Tc = 25 deg C



Pin vs. Pout

Tc = 25 deg C, VDD = +8V, RF = 500 MHz



* Notes:

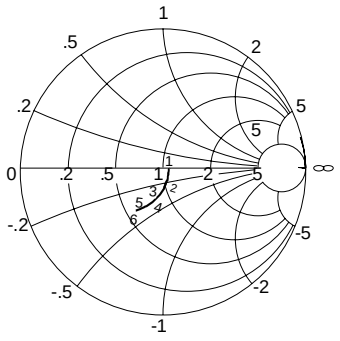
IIP 2 Measured at 986.5 MHz, Input = two tones at 55.25 MHz and 931.25 MHz at - 10 dBm

IIP 3 Measured with two tones at the input,

R_F = 986.5 MHz and 992.5 MHz at - 10 dBm

INPUT IMPEDANCE

START: 0.050 GHz
STOP: 1.00 GHz



1: 0.050 GHz 79.76 Ω - 4.79 jΩ

2: 0.20 GHz 77.88 Ω - 13.21 jΩ

3: 0.40 GHz 70.02 Ω - 21.83 jΩ

4: 0.6 GHz 59.63 Ω - 26.56 jΩ

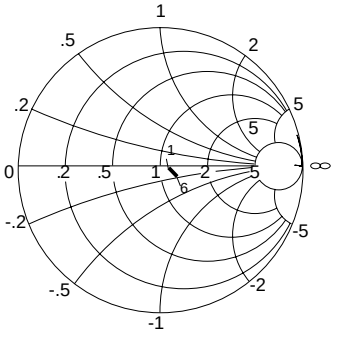
5 : 0.8 GHz 49.91 Ω - 26.56 jΩ

6: 1.0 GHz 41.77 Ω - 25.15 jΩ

Measured in 75 Ω System

OUTPUT IMPEDANCE

START: 0.050 GHz
STOP: 1.00 GHz



1: 0.050 GHz 83.9 Ω - 8.1 jΩ

2: 0.20 GHz 84.17 Ω - 1.19 jΩ

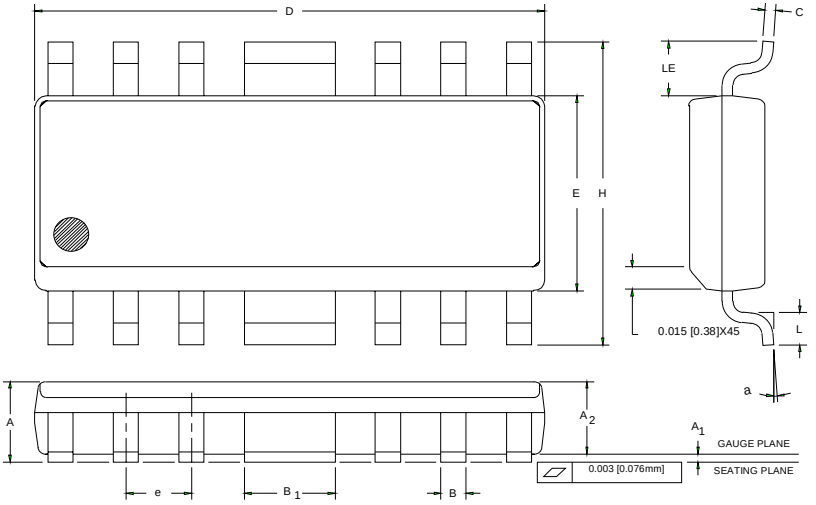
3: 0.40 GHz 85.38 Ω - 2.27 jΩ

4: 0.6 GHz 87.64 Ω - 3.82 jΩ

5 : 0.8 GHz 90.20 Ω - 6.60 jΩ

6: 1.0 GHz 93.57 Ω - 11.76 jΩ

Measured in 75 Ω System



SYMBOL	INCHES		MILLIMETERS		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	0.058	0.068	1.47	1.73	
A_1	0.004	0.010	0.10	0.25	
A_2	0.055	0.065	1.40	1.65	
B	0.013	0.020	0.33	0.50	
B_1	0.062	0.070	1.58	1.78	
C	0.008	0.010	0.20	0.25	4
D	0.380	0.400	9.66	10.16	2
E	0.150	0.160	3.81	4.06	3
e	0.050 BSC		1.27 BSC		
H	0.226	0.244	5.74	6.20	
L	0.016	0.040	0.41	1.02	
LE	0.030	—	0.76	—	
a	0	8	0	8	

NOTES:

1. CONTROLLING DIMENSION: INCHES
2. DIMENSION "D" DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS AND GATE BURRS SHALL NOT EXCEED 0.006 [0.15mm] PER SIDE.
3. DIMENSION "E" DOES NOT INCLUDE INTER-LEAD FLASH OR PROTRUSIONS. INTER-LEAD FLASH AND PROTRUSIONS SHALL NOT EXCEED 0.010 [0.25mm] PER SIDE.
4. LEAD THICKNESS AFTER PLATING TO BE 0.013 [0.33mm] MAXIMUM.

SPECIFICATION: 98000-006

SUBJECT: PUBLISHED OUTLINE,
16 LEAD BATWING SOIC PKG.

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