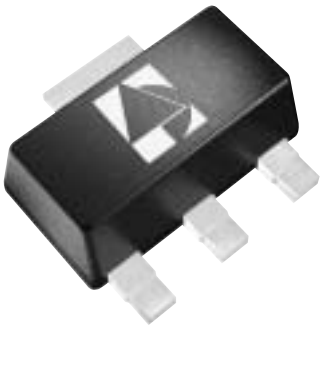
AGB3311

50Ω High Linearity Low Noise
Internally Biased Wideband Gain Block

PRELIMINARY DATA SHEET - Rev 1.0

FEATURES

- On-chip Active Bias
- DC-4500 MHz Operation Bandwidth
- +27 dBm Output IP3
- 6 dB Noise Figure at 850 MHz
- 20 dB Gain at 850 MHz
- +15 dBm P1dB
- SOT-89 Package
- Single +5 V Supply
- Case Temperature: -40 to +85 °C



S24 Package
SOT-89

APPLICATIONS

- Cellular Base Stations for W-CDMA, CDMA, TDMA, GSM, PCS and CDPD systems
- Fixed Wireless
- MMDS/WLL
- WLAN

PRODUCT DESCRIPTION

The AGB3311 is one of a series of high performance InGaP HBT amplifiers designed for use in applications requiring high linearity, low noise, and low distortion. Active bias circuits on-chip eliminate the need for external resistive feedback, and no external matching components are needed for insertion into a 50Ω system. With a high output IP3, low noise figure, and wide band operation, the AGB3311 is ideal for wireless infrastructure applications such as Cellular Base Stations, MMDS, and WLL. Offered in a low cost SOT-89 surface mount package, the AGB3311 requires a single +5 V supply, and typically consumes 0.175 Watts of power.

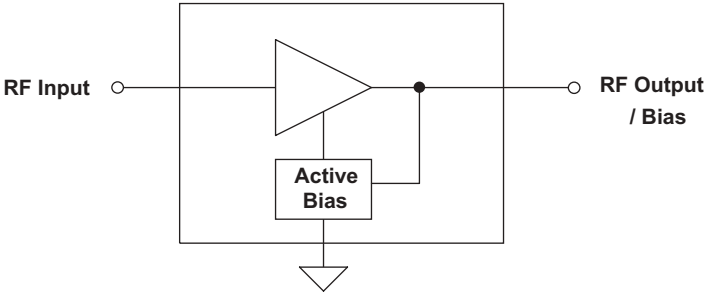


Figure 1: Block Diagram

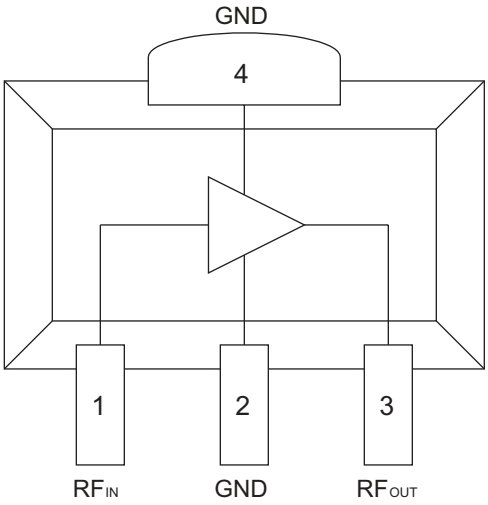


Figure 2: Pinout (X-ray Top View)

Table 1: Pin Description

PIN	NAME	DESCRIPTION
1	RF_{IN}	RF Input
2	GND	Ground
3	RF_{OUT}	RF Output / Bias
4	GND	Ground

ELECTRICAL CHARACTERISTICS

Table 2: Absolute Minimum and Maximum Ratings

PARAMETER	MIN	MAX	UNIT
Device Voltage (V_{CC})	0	+6	VDC
RF Input Power (P_{IN})	-	+10	dBm
Storage Temperature (T_{STG})	-40	+150	°C
Junction Temperature	-	+200	°C

Stresses in excess of the absolute ratings may cause permanent damage. Functional operation is not implied under these conditions. Exposure to absolute ratings for extended periods of time may adversely affect reliability.

Table 3: Operating Ranges

PARAMETER	IN	TYP	MAX	UNIT
Operating Frequency (f) (1)	-	-	4500	MHz
Supply Voltage (V_{SUPPLY})	-	+5	-	VDC
Case Temperature (T_C)	-40	-	+85	°C

The device may be operated safely over these conditions; however, parametric performance is guaranteed only over the conditions defined in the electrical specifications.

Notes:

(1) Operating frequency is defined by the output return loss (S22) having a VSWR less than 2:1.

Table 4: Electrical Specifications
(T_A = +25 °C, V_{SUPPLY} = +5 VDC, 50Ω system)

PARAMETER	MIN	TYP	MAX	UNIT
Gain (S_{21})				
850 MHz	-	20	-	dB
1950 MHz	-	17.5	-	
2140 MHz	-	17.5	-	
2450 MHz	-	16.5	-	
Output IP3 (1)				
850 MHz	-	+27	-	dBm
1950 MHz	-	+27	-	
2140 MHz	-	+27	-	
2450 MHz	-	+27	-	
Output 1dB Compression (P1dB)				
850 MHz	-	+15	-	dBm
Noise Figure				
850 MHz	-	6	-	dB
Thermal Resistance (θ_{JC})	-	320	-	°C/W
Supply Current (I_{CC})	-	37	-	mA

Notes:
(1) OIP3 is measured with two tones at 1 MHz spacing at 0 dBm output power per tone.
2. Performance as measured on ANADIGICS test fixture (see Figure 3).

All capacitors are muRata GRM39 series.
The inductor is a Coilcraft 0603CS series.

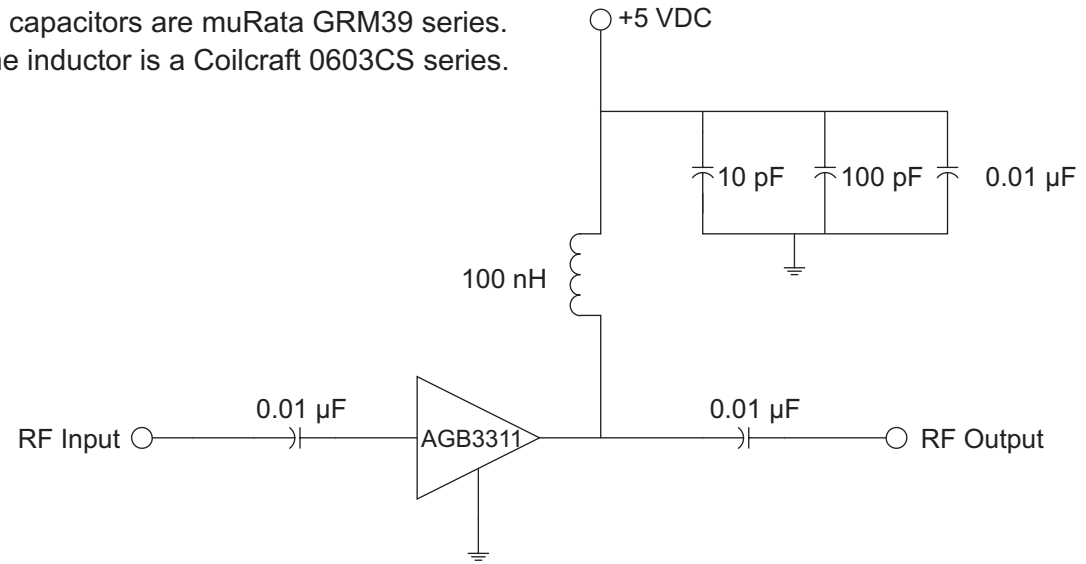


Figure 3: Application Circuit (50 Ω Terminations)

PERFORMANCE DATA

Figure 4: Gain vs. Frequency
De-embedded 50Ω S-parameter
(T_A = +25 °C, V_{SUPPLY} = +5 V, I_{CC} = 37 mA)

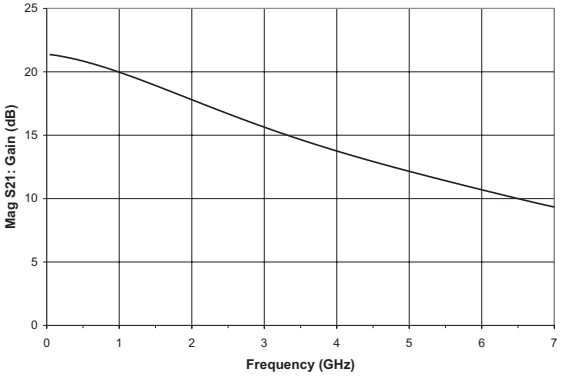


Figure 5: Isolation vs. Frequency
De-embedded 50Ω S-parameter
(T_A = +25 °C, V_{SUPPLY} = +5 V, I_{CC} = 37 mA)

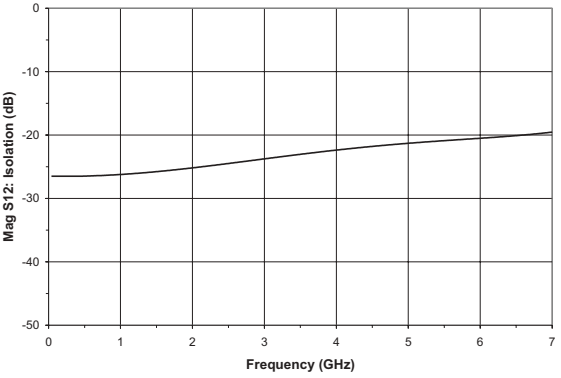


Figure 6: Input Return Loss vs. Frequency
De-embedded 50Ω S-parameter
(T_A = +25 °C, V_{SUPPLY} = +5 V, I_{CC} = 37 mA)

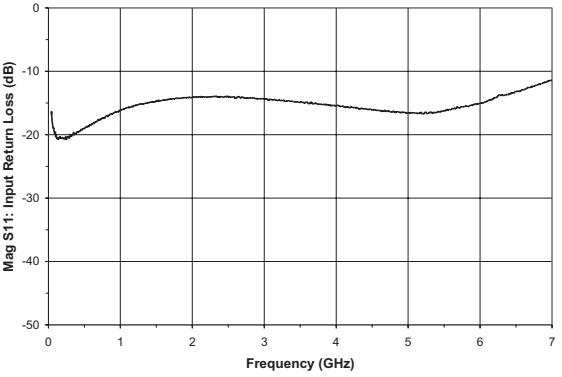
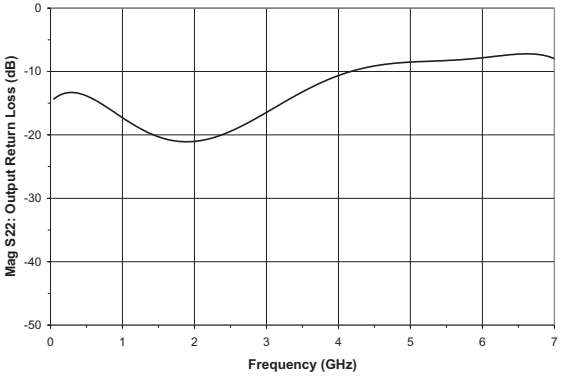
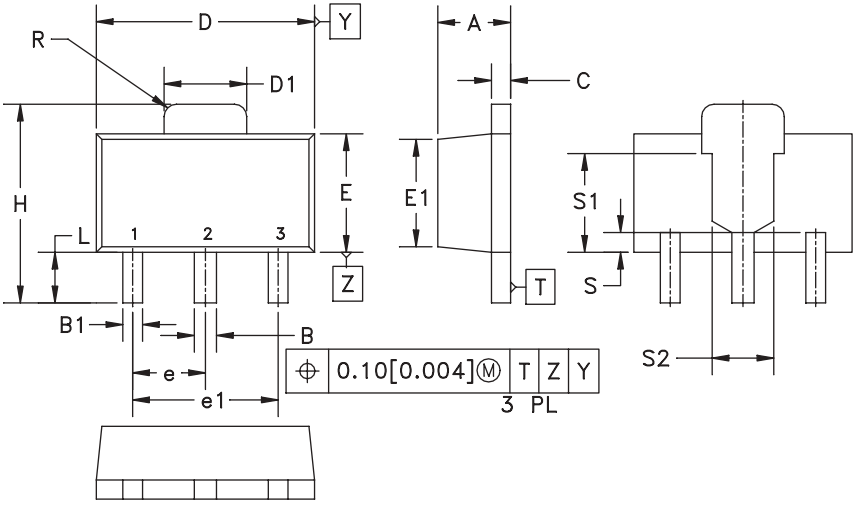


Figure 7: Output Return Loss vs. Frequency
De-embedded 50Ω S-parameter
(T_A = +25 °C, V_{SUPPLY} = +5 V, I_{CC} = 37 mA)



PACKAGE OUTLINE



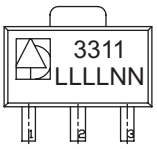
SYMBOL	MILLIMETERS		INCHES		NOTE
	MIN.	MAX.	MIN.	MAX.	
A	1.40	1.60	0.055	0.063	–
B	0.44	0.56	0.017	0.022	–
B_1	0.36	0.48	0.014	0.019	3
C	0.35	0.44	0.014	0.017	–
D	4.40	4.60	0.173	0.181	–
D_1	1.62	1.83	0.064	0.072	–
E	2.29	2.60	0.090	0.102	–
E_1	2.13	2.29	0.084	0.090	4
e	1.50 BSC		0.059 BSC		–
e_1	3.00 BSC		0.118 BSC		–
H	3.94	4.25	0.155	0.167	–
L	0.89	1.20	0.035	0.047	–
R	–	0.25	–	0.010	–
S	0.40 NOM.		0.016 NOM.		4
S_1	2.03 NOM.		0.080 NOM.		4
S_2	1.27 NOM.		0.050 NOM.		4

NOTES:

1. CONTROLLING DIMENSIONS: MILLIMETERS.
2. DIMENSIONS DO NOT INCLUDE END FLASH, MOLD FLASH OR MATERIAL PROTRUSIONS.
3. DIMENSION B1, 2 PLACES.
4. DIMENSIONS E1, S, S1 & S2 – REFERENCE ONLY.
5. REFERENCE JEDEC TO-243 (AA).

Figure 8: S24 Package Outline – SOT-89

TOP BRAND



NOTES:

1. ANADIGICS LOGO SIZE: X=0.040±0.010 Y=0.048±0.010
2. PART NUMBER: FOUR NUMERIC CHARACTERS
3. WAFER LOT NUMBER: LLLL= FOUR NUMERIC CHARACTERS
   NN= TWO ALPHABETIC CHARACTERS
4. TYPE : ELITE
   SIZE : 2-POINT
   COLOR : LASER

Figure 9: Branding Specification

NOTES

ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
AGB3311S24Q1	-40 to +85°C	SOT-89 Package	1,000 piece Tape and Reel

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