

FEATURES

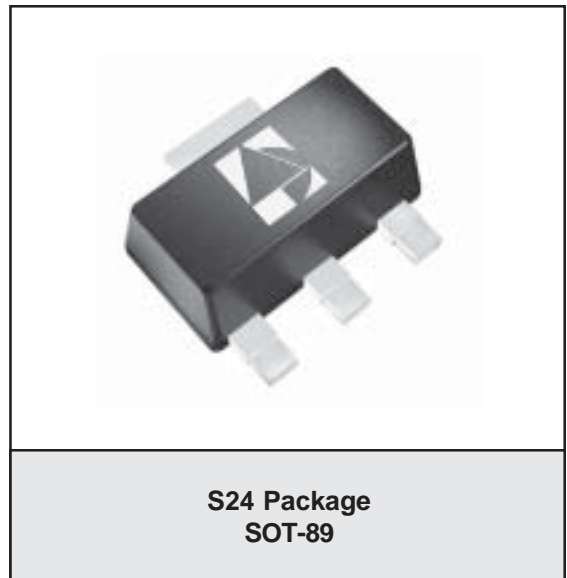
- On-chip Active Bias
- 250-2500 MHz Frequency Range
- +39 dBm Output IP3 at 850 MHz
- 5 dB Noise Figure at 850 MHz
- 18 dB Gain at 850 MHz
- +22 dBm P1dB
- SOT-89 Package
- Single +5 V Supply
- Case Temperature: -40 to +100 °C

APPLICATIONS

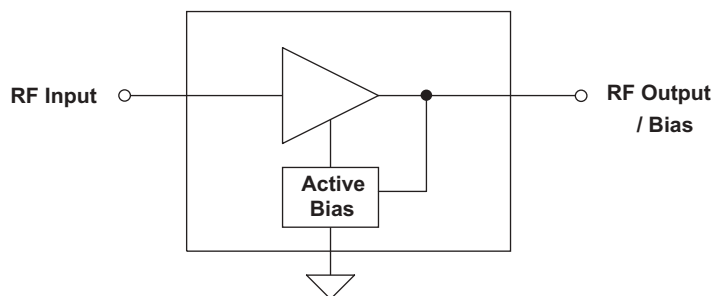
- Cellular Base Stations for W-CDMA, CDMA, TDMA, GSM, PCS and CDPD systems
- Fixed Wireless
- MMDS/WLL
- WLAN

PRODUCT DESCRIPTION

The AGB3304 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. With a high output IP3, low noise figure, and wide band operation,



the AGB3304 is ideal for 50 Ω wireless infrastructure applications such as Cellular Base Stations, MMDS, and WLL. Offered in a low cost SOT-89 surface mount package, the AGB3304 requires a single +5 V supply, and typically consumes 0.6 Watts of power.

**Figure 1: Block Diagram**

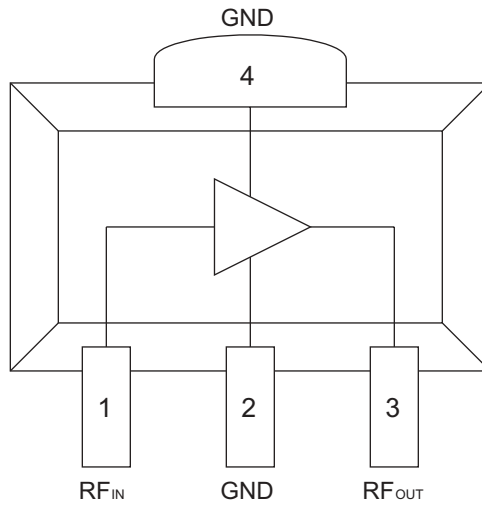


Figure 2: Pinout (X-ray Top View)

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	MIN	TYP	MAX	UNIT
Operating Frequency (f)	250	-	2500	MHz
Supply Voltage (V_{SUPPLY})	-	+5	-	VDC
Case Temperature (T_C)	-40	-	+100	°C

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

Table 4: Electrical Specifications
 (T_A = +25 °C, V_{SUPPLY} = +5 VDC, see Application Circuits ⁽²⁾)

PARAMETER	MIN	TYP	MAX	UNIT	
Gain (S ₂₁)	850 MHz	-	18	-	dB
	1950 MHz	-	14	-	dB
	2140 MHz	-	13.5	-	dB
Output IP3 ⁽¹⁾	850 MHz	-	+39	-	dBm
	1950 MHz	-	+37	-	dBm
	2140 MHz	-	+37	-	dBm
Output 1dB Compression (P1dB)	-	+22	-	dBm	
Noise Figure	850 MHz	-	5.2	-	dB
Thermal Resistance (θ _{JC})	-	94	-	°C/W	
Supply Current	-	120	-	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, using the appropriate Application Circuit (see Figures 3 through 5).

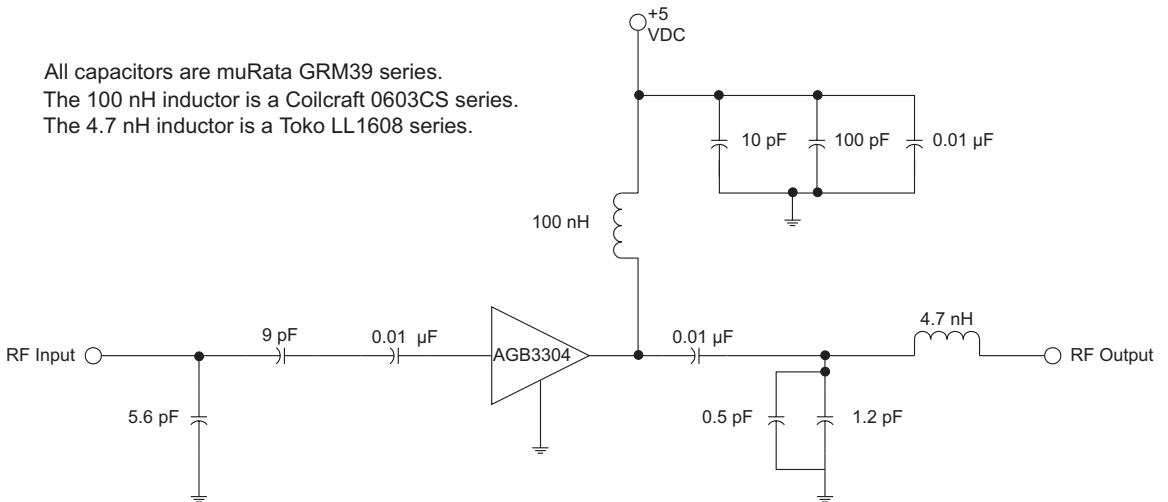


Figure 3: 850 MHz Application Circuit (50 Ω Terminations)

All capacitors are muRata GRM39 series.
 The 100 nH inductor is a Coilcraft 0603CS series.
 The 6.8 nH inductor is a Toko LL1608 series.

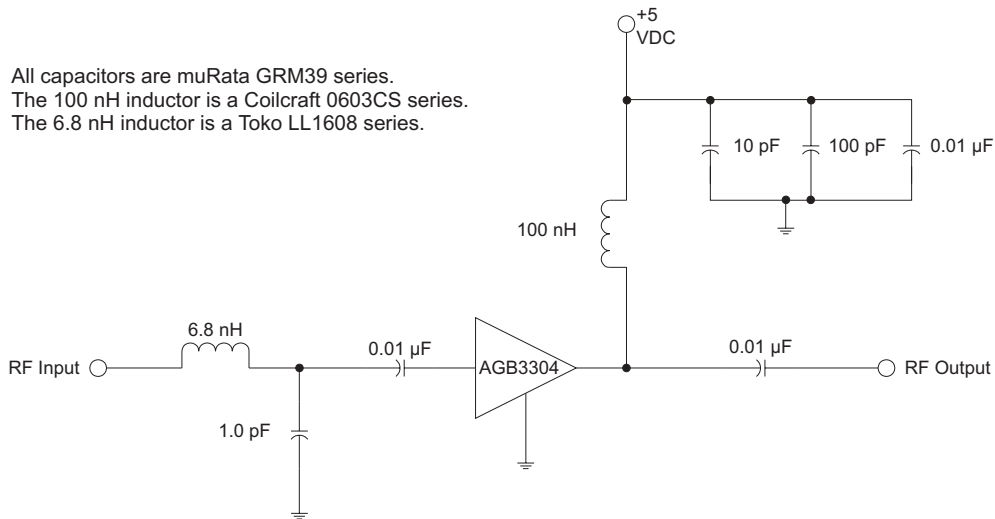


Figure 4: 1950 MHz Application Circuit (50 Ω Terminations)

All capacitors are muRata GRM39 series.
 The 100 nH inductor is a Coilcraft 0603CS series.
 The 5.6 nH inductor is a Toko LL1608 series.

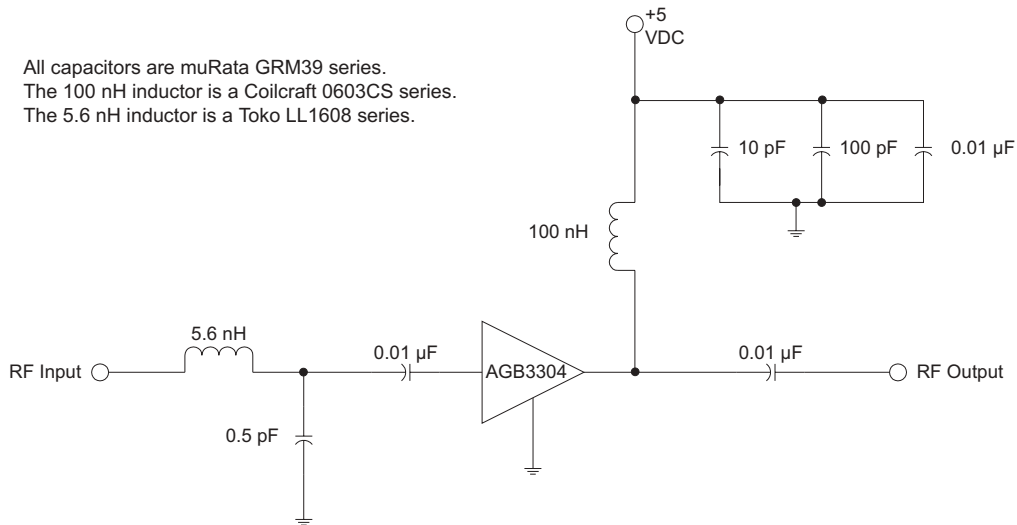
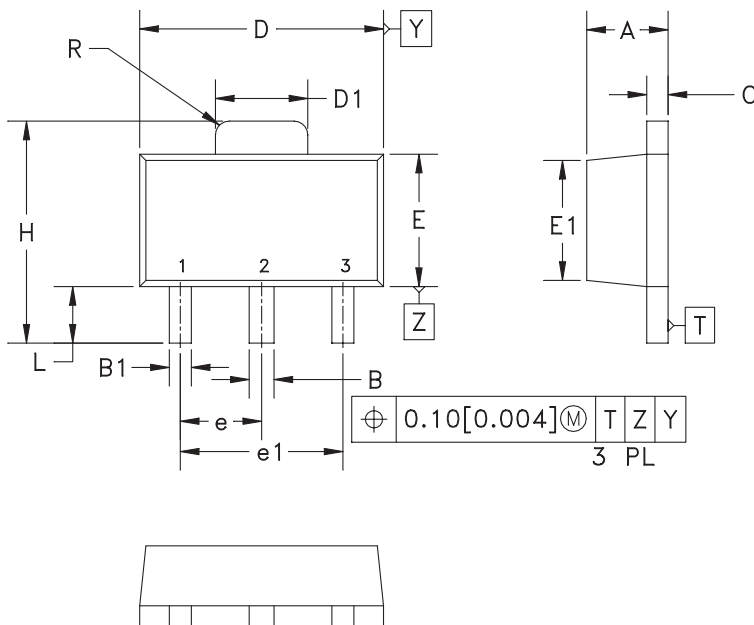


Figure 5: 2140 MHz Application Circuit (50 Ω Terminations)

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	—
B1	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	—
D1	1.62	1.83	0.064	0.072	—
E	2.29	2.60	0.090	0.102	—
E1	2.13	2.29	0.084	0.090	4
e	1.50	BSC	0.059	BSC	—
e1	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	—

NOTES:

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

Figure 6: 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 7: Branding Specification

NOTES

ORDERING INFORMATION

PART NUMBER	TEMPERATURE RANGE	PACKAGE DESCRIPTION	COMPONENT PACKAGING
AGB3304S24Q1	-40 to +100°C	SOT-89 Package	1,000 piece Tape and Reel

**ANADIGICS, Inc.**

141 Mount Bethel Road
 Warren, New Jersey 07059, U.S.A.
 Tel: +1 (908) 668-5000
 Fax: +1 (908) 668-5132

URL: <http://www.anadigics.com>
 E-mail: Mktg@anadigics.com

IMPORTANT NOTICE

ANADIGICS, Inc. reserves the right to make changes to its products or to discontinue any product at any time without notice. The product specifications contained in Advanced Product Information sheets and Preliminary Data Sheets are subject to change prior to a product's formal introduction. Information in Data Sheets have been carefully checked and are assumed to be reliable; however, ANADIGICS assumes no responsibilities for inaccuracies. ANADIGICS strongly urges customers to verify that the information they are using is current before placing orders.

WARNING

ANADIGICS products are not intended for use in life support appliances, devices or systems. Use of an ANADIGICS product in any such application without written consent is prohibited.