GSA504-12

InGaP HBT Gain Block

Product Features

- DC to 4GHz
- +15 dBm P-1dB at 2GHz
- +27 dBm OIP3 at 2GHz
- 12 dB Gain at 2GHz
- 3.6 dB Noise Figure
- Internally-Matched to 50 Ω
- Unique 0805 Lead–Free/green package
- Available as bare die

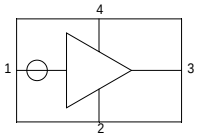
Product Description

The GSA504-12 is a 50 Ohm matched General Purpose Gain Block Amplifier that covers the 1MHz to 4GHz frequency range with 20dB nominal gain at 2GHz.

The GSA504-12 is a Darlington pair amplifier fabricated with high reliability InGaP/GaAs Heterojunction Bipolar Transistor (HBT) process. It only requires DC blocking capacitors, a bias stabilization resistor, Rbias, and a single RF choke for operation. The amplifier is ideal for wireless and test equipment applications. It is in a lead free/green RoHS compliant 0805 Surface Mount Transistor package.

This broadband RFIC can be used for current and next generation test equipment and wireless applications to 5GHz

Package



Function	Pin No.
Input	1
Output/Bias	3
Ground	2,4

Applications

- Mobile infrastructure
- ISM
- WLAN
- RFID
- Test Equipment

Specifications (1)

Parameter	Units	Min	Typ	Max
-3dB Bandwidth	MHz	DC		5000
Test Frequency	MHz		2000	
Gain	dB	19	20	
Pout @ -1dB GCP	dBm		+15	
Input Return Loss	dB		15	
Output Return Loss	dB		15	
OIP3	dBm		27	
Noise Figure	dB		3.6	

1. Test conditions unless otherwise specified: 25°C, Supply Voltage = +5.00V, Rbias=22Ω, 50 Ohm System

Figure 1.

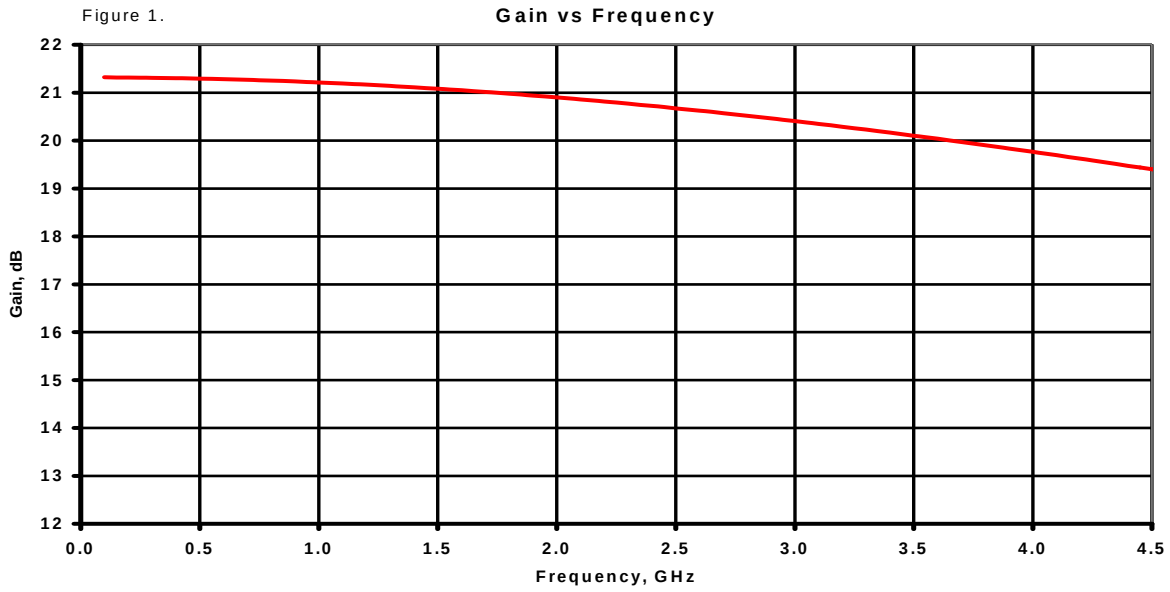


Figure 2. Return Loss vs Frequency

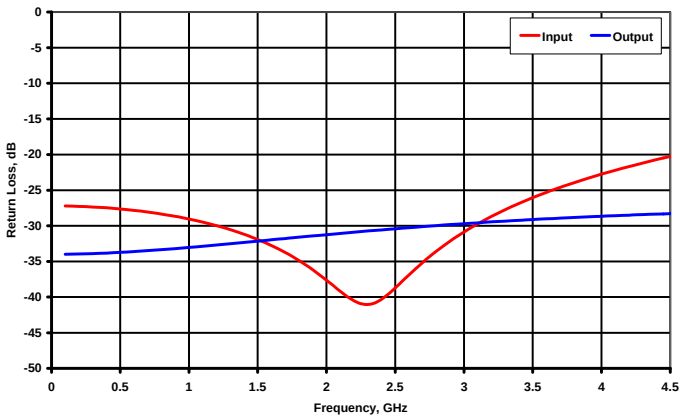


Figure 3. Output Power vs Frequency

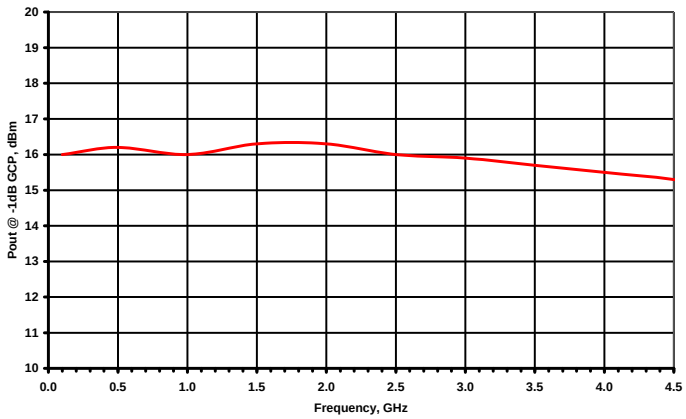


Figure 4. OIP3 vs Frequency

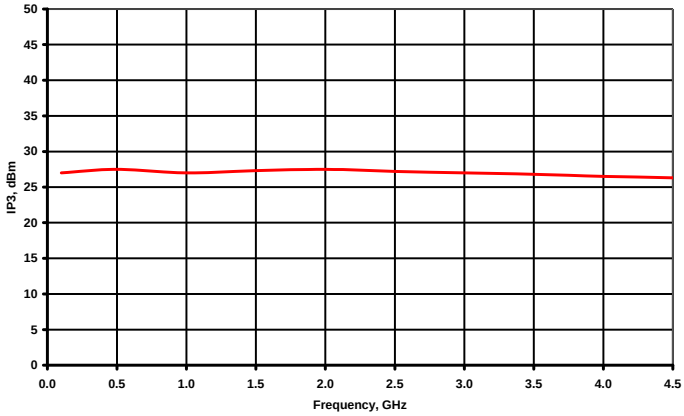


Figure 5. Group Delay vs Frequency

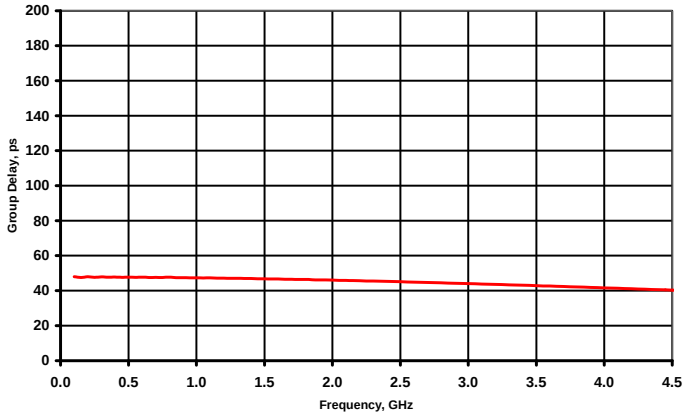
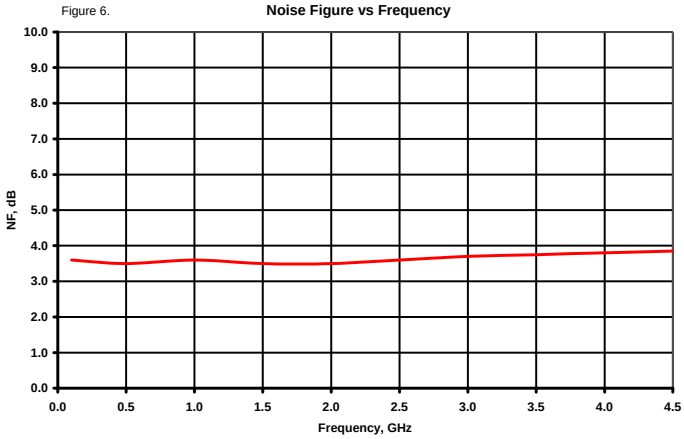


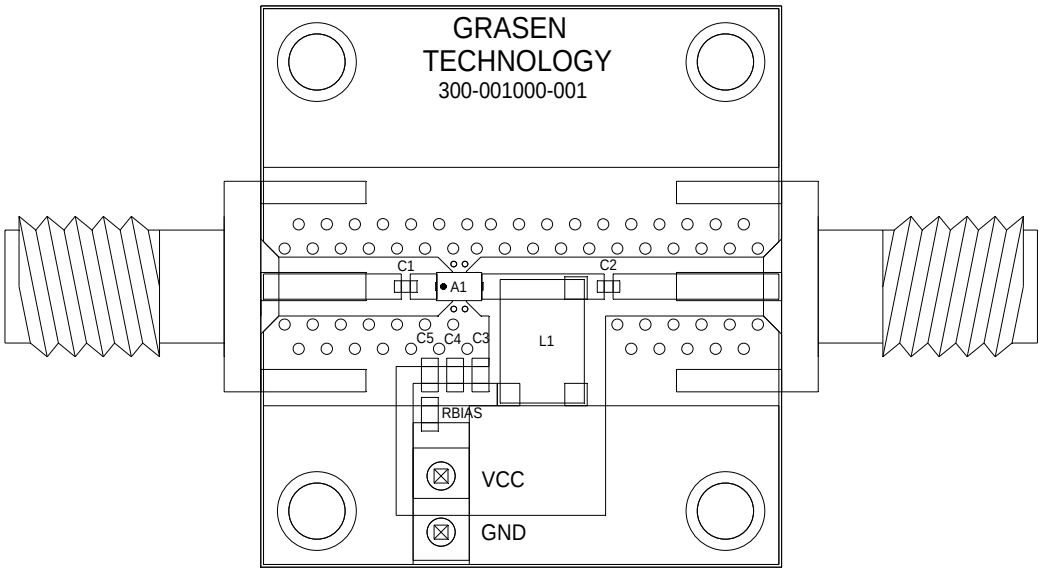
Figure 6. Noise Figure vs Frequency



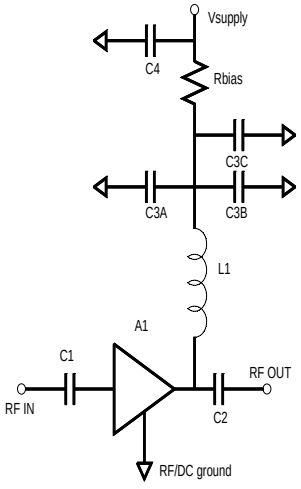
Absolute Maximum Ratings

Parameter	Rating
Case Temperature, Operating	-40 to +85 °C
Storage Temperature	-55 to +150 °C
Device Current	80mA
RF Input Power, continuous	+10 dBm
Junction Temperature	250 °C

Operation of this device above any of these parameters will cause permanent damage.



Evaluation Board

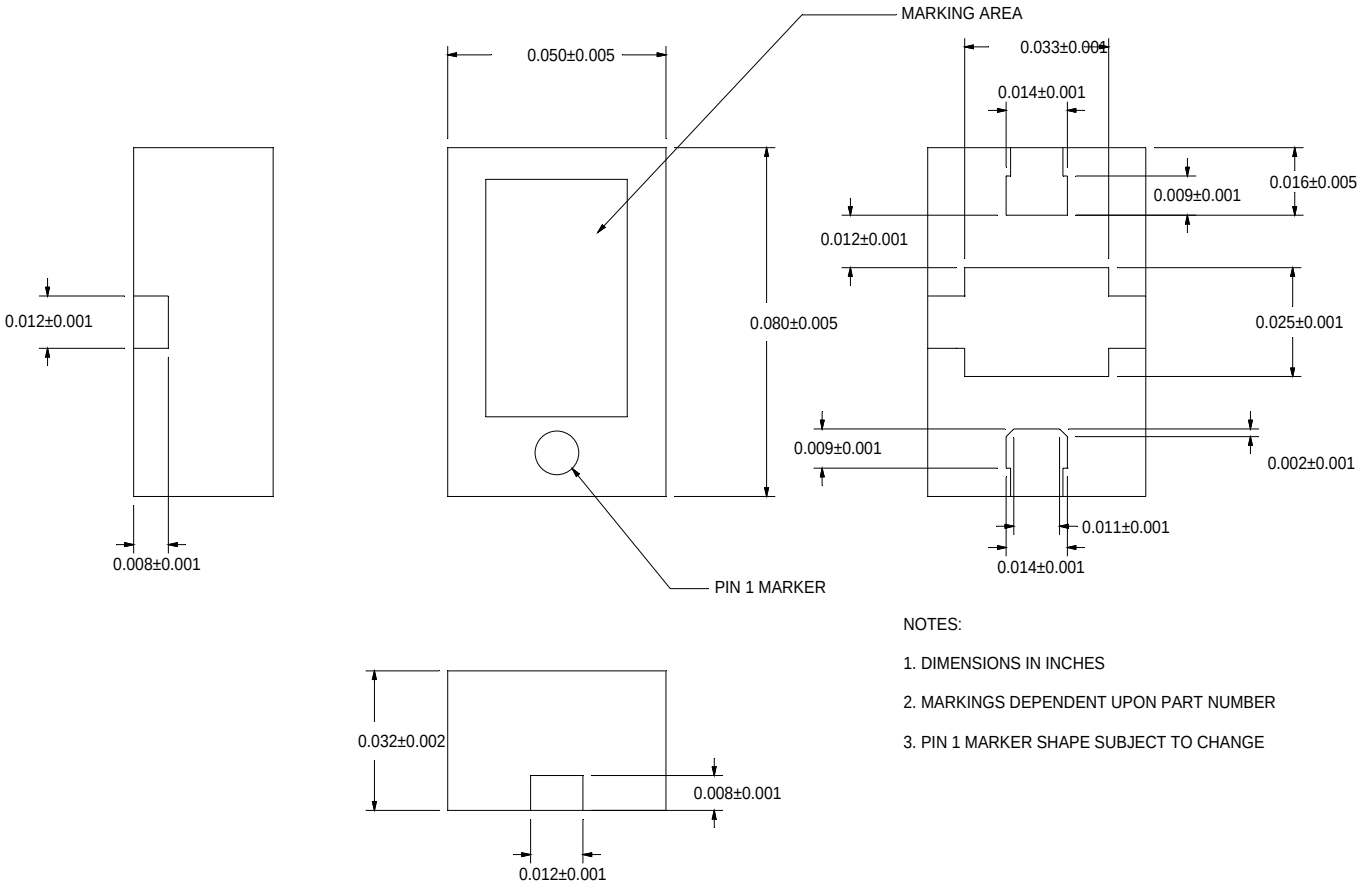


Application Schematic

Parts List: (Vsupply = 5.00Vdc)

Rbias	22 Ohms	0603 size
C1, C2	10nF	0402 ATC520L103KT16T
C3A	10pF	0603
C3B	220pF	0603
C3C	0.1uF	0603
C4	4.7uF	1210
L1	8uH	Coilcraft BCS-802JLC

Note that Rbias is required for DC current stability with temperature.



NOTES:

1. DIMENSIONS IN INCHES
2. MARKINGS DEPENDENT UPON PART NUMBER
3. PIN 1 MARKER SHAPE SUBJECT TO CHANGE

0805 Package outline