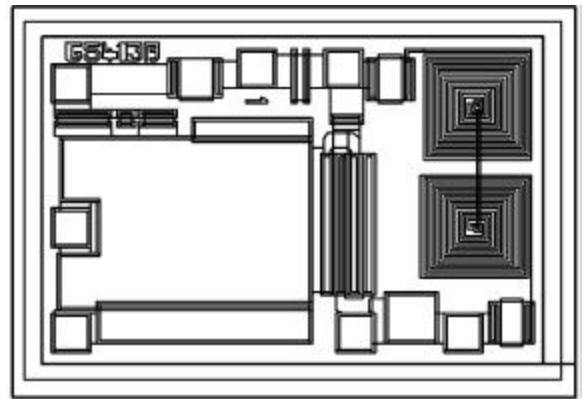


Monolithic Broadband Amplifier, 0.5 - 3.5GHz

Features

- Ultra Broadband
- Self biased. No separate gate supply required
- 19dBm output power capability
- Input and output matched to 50Ω
- Very small chip size, 1.14 x 0.76mm



Description

The P35-4103-000-200 is a high performance monolithic broadband amplifier designed for use in a wide range of applications including telecommunications, instrumentation and electronic warfare. The amplifier gives typically 11dB gain over the frequency range 500MHz to 3.5 GHz. The design is self biased, operating from a single 5 volt supply applied to the RF output terminal through an external bias network.

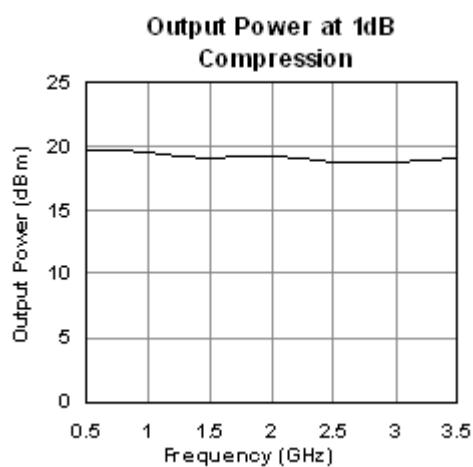
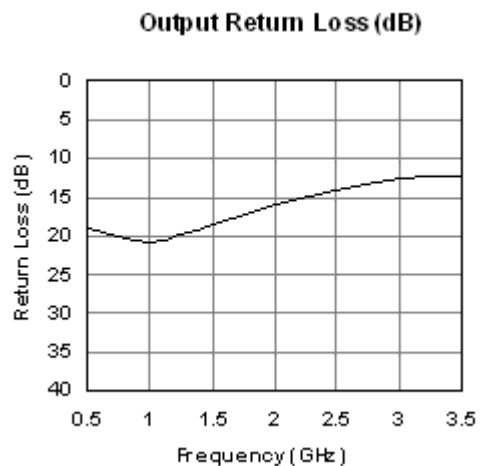
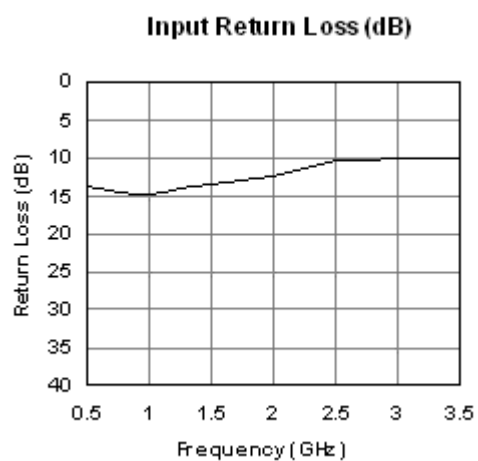
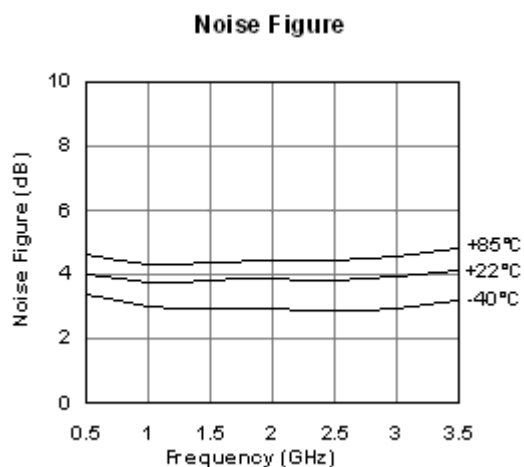
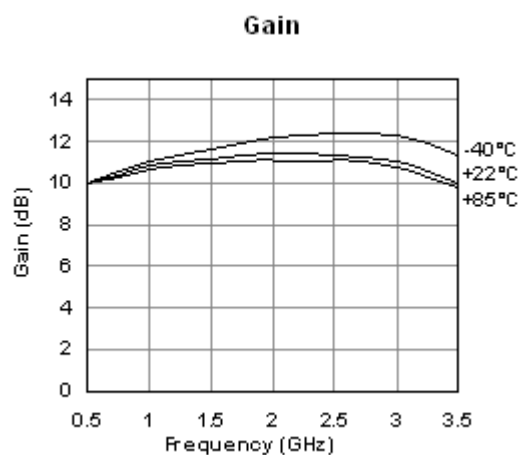
The die is fabricated using MOC's F20 Gallium Arsenide MESFET MMIC process. It is fully protected using Silicon Nitride passivation for excellent performance and reliability.

Electrical Performance

Ambient temperature = 22±3°C, $Z_O = 50\Omega$, $V_d = 5V$, $P_{in} = -20dBm$

Parameter	Conditions	Min	Typ	Max	Units
Small Signal Gain	0.5GHz - 3.5GHz	9	11	-	dB
Gain Flatness	0.5GHz - 3.5GHz	-	±0.75	±1.0	dB
Input Return Loss	0.5GHz - 3.5GHz	9	10	-	dB
Output Return Loss	0.5GHz - 3.5GHz	11	15	-	dB
Noise Figure	0.5GHz - 3.5GHz	-	3.5	4.5	dB
Output Power at 1dB compression	0.5GHz - 3.5GHz	-	19	-	dBm
Output referred IP3	2GHz - 3.5GHz	-	30	-	dBm
Supply Voltage		-	5	6	Volts
Current	$V_d=5V$	60	90	105	mA

Typical Performance at 22°C



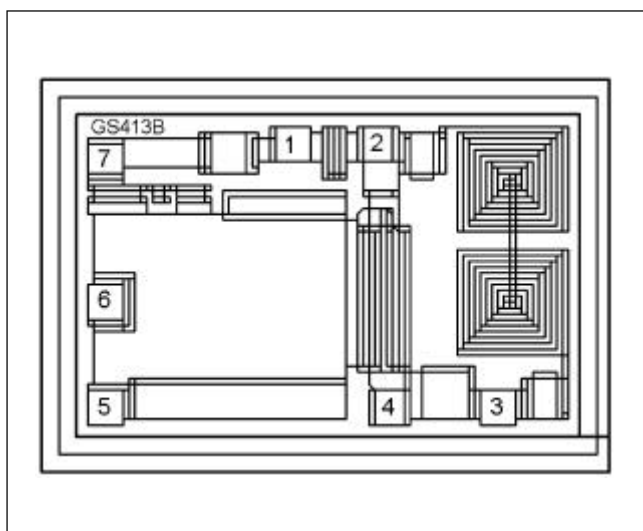
Absolute Maximum Ratings

Max Vds	+6.0V
Max Vgs	-5.0V
Die operating temperature	-55°C to 125°C
Storage temperature	-65°C to +150°

Operation

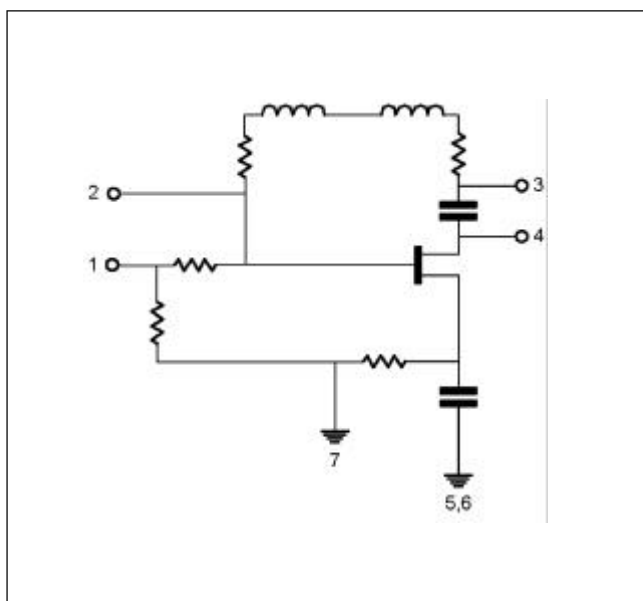
To operate the P35-4103-000-200, a drain supply of 5V is connected to the RFout via a suitable bias circuit. Typically a 200nH inductor and 10nF decoupling capacitor can be used. The amplifier circuit is self biased and the drain current will be typically 90mA at 5V. A DC blocking capacitor of 330pF should be used at both the input and output. A further blocking capacitor may be used at the output as appropriate. The ground pads must be bonded with minimum inductance to a good DC and RF ground. It is recommended that the die is mounted with silver loaded epoxy and bonding to all pads is with 25μm diameter gold wire using thermal compression bonding.

Die Outline



Die size: 1.143 x 0.762mm
 Bond pad size: 9μm square
 Die thickness: 200μm

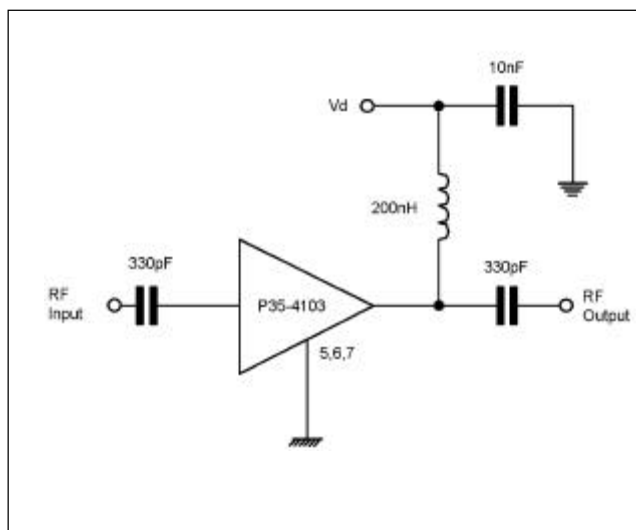
Circuit Diagram



Pad Details

Pad	Function
1	RF Input
2	NC
3	NC
4	RF Output
5	GND
6	GND
7	GND

Die Bias Connections



Ordering Information: P35-4103-000-200

The data and product specifications are subject to change without notice. These devices should not be used for device qualification and production without prior notice.

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The Marconi logo features a stylized, cursive 'M' followed by the word 'arconi' in a serif font. A horizontal line is positioned beneath the 'arconi' portion of the logo.

www.moc.marconi.com

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