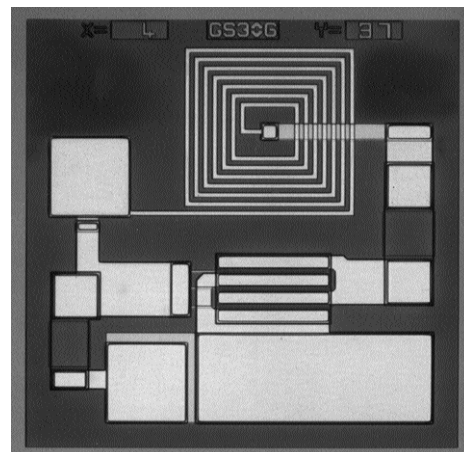


Monolithic Broadband Amplifier, 0.05 - 3.5GHz

Features

- Ultra Broadband
- Flat Frequency response with direct gain control
- 20dBm output power capability
- Input and output matched to 50Ω



Description

The P35-4100-0 is a high performance monolithic broadband amplifier designed for use in a wide range of applications including telecommunications, instrumentation and electronic warfare. The amplifier has typically 10dB gain over the frequency range 50MHz to 3.5GHz. The design requires the connection of a 5V drain supply and a negative gate supply, these are applied to the RF Output and RF Input respectively through an external bias network.

The die is fabricated using MOC's F14 Gallium Arsenide MESFET MMIC process. It is fully protected using Silicon Nitride passivation for excellent performance and reliability.

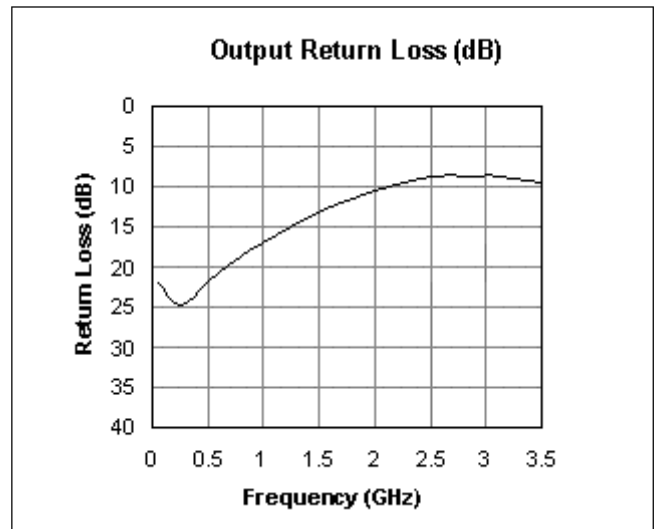
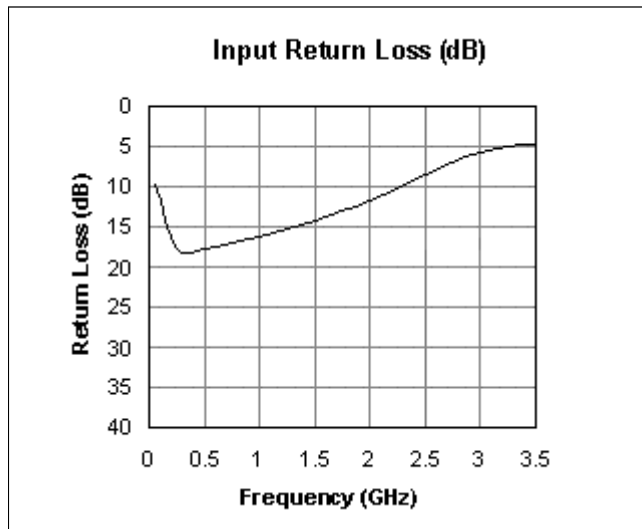
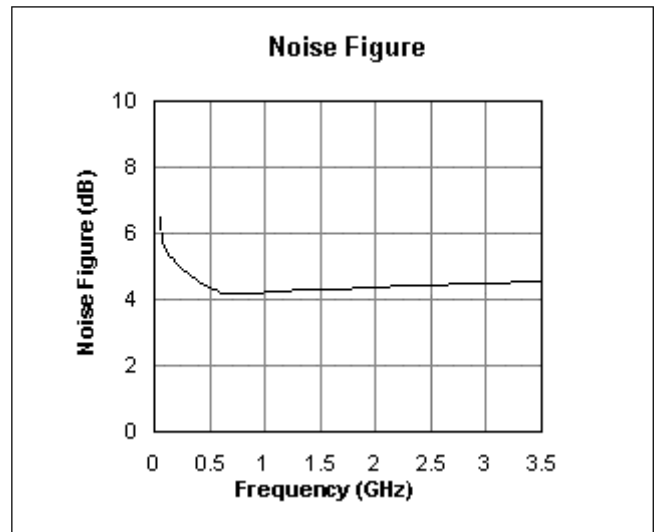
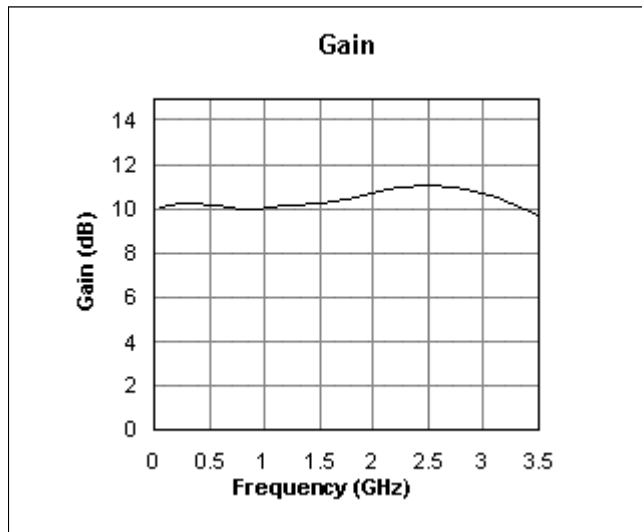
Electrical Performance

Ambient temperature = 22±3°C , $Z_O = 50\Omega$, $V_d = 5V$, $I_d = 90mA$

Parameter	Conditions	Min	Typ	Max	Units
Small signal gain ¹	0.5GHz - 2GHz	-	9.0	-	dB
	0.05GHz - 3.5GHz	8.8	10.0	-	dB
Gain Flatness	0.5GHz - 2GHz	-	±0.4	-	dB
	0.05GHz - 3.5GHz	-	±1.0	-±1.0	dB
Input Return Loss	0.5GHz - 2GHz	-	10.8	-	dB
	0.05GHz - 3.5GHz	5.5	7.3	-	dB
Output Return Loss	0.5GHz - 2GHz	-	11.7	-	dB
	0.05GHz - 3.5GHz	6.0	7.3	-	dB
Noise figure	0.5GHz - 2GHz	-	4.5	-	dB
	0.05GHz - 3.5GHz	-	6.0	7	dB
Output Power at 1dB compression		18	20	-	dBm
Gate Voltage V_g		0	-0.6	-5	V
Drain Voltage V_d		+4.5	+5.0	+6.0	V
Drain Current I_d	$V_g = 0V$	100	135	180	mA

1. Automatic Gain Control may be achieved by controlling the magnitude of V_g

Typical Performance at 22°C



Note:- 2 SMA connectors and bondwires are included in the above data.

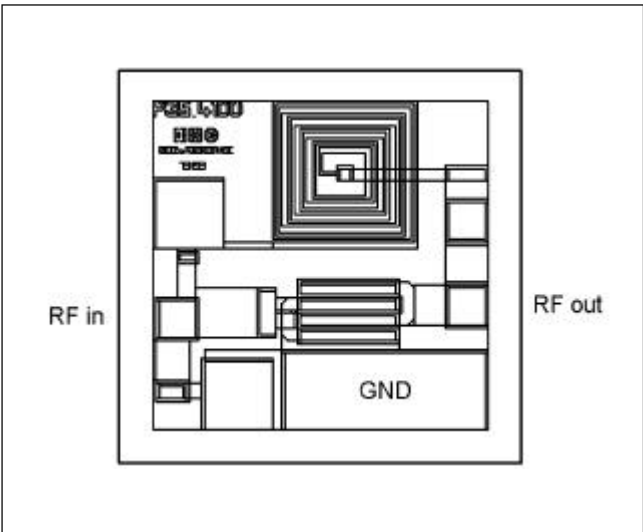
Absolute Maximum Ratings

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 P35-4100-0, 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 controlled by the voltage applied at RF in and should be set to give a drain current of 90mA. The input voltage required for this is typically -0.6V. It may be applied by a suitable bias arrangement, similar to that at the output. DC blocking capacitors of 330pF should be used at both the input and output. The ground pad must be bonded with minimum inductance to a good DC and RF ground. It is recommended that the Die is mounted using silver loaded epoxy and wire bonded with 25µm diameter gold wire using thermal compression bonding. See application note P35-41AN3 for more details.

Die Outline

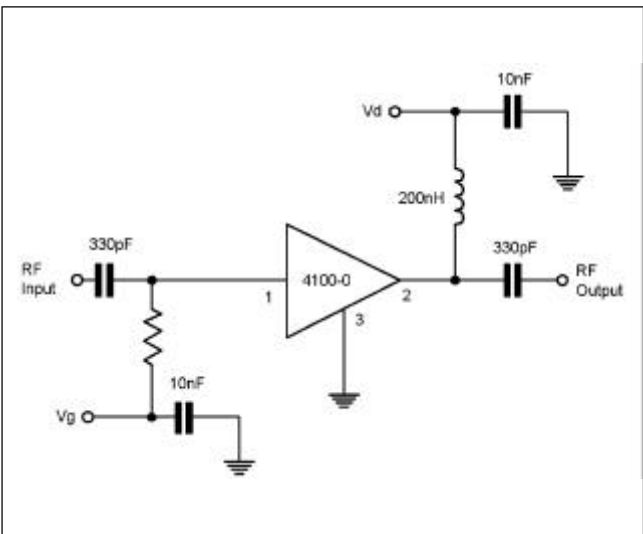


Die size:	1.22x1.22mm
Bond pad size:	120µm square
Die thickness:	200µm

Pad Details

Pad	Function
1	RF IN Gate voltage
2	RF OUT Drain Voltage
3	GND

Die Bias Connections



Ordering Information: P35-4100-0 Die

462/SM/00516/200 Issue1/2

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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