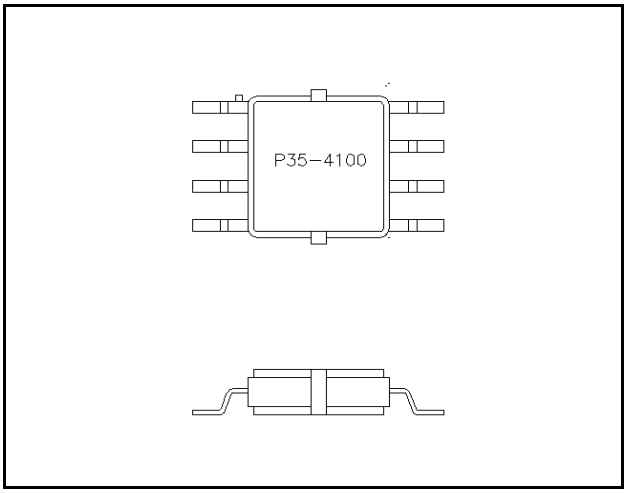
MONOLITHIC BROADBAND AMPLIFIER, 0.05 - 3.5GHz



Features

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

Description

The P35-4100-2 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 9dB 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 MCL'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 Ω, Vd = 5V, Id = 90mA

Parameter	Condition	Min	Typ	Max	Units
Small signal gain [1]	0.05GHz - 2GHz	8.0	9.0	-	dB
	2GHz - 3.5GHz	7.0	10.0	-	dB
Gain Flatness	0.05GHz - 2GHz	-	±0.4	-	dB
	2GHz - 3.5GHz	-	±1.0	-	dB
Input Return Loss	0.05GHz - 2GHz	10.0	10.8	-	dB
	2GHz - 3.5GHz	5.0	7.3	-	dB
Output Return Loss	0.05GHz - 2GHz	6.0	11.7	-	dB
	2GHz - 3.5GHz	4.0	7.3	-	dB
Noise figure	0.05GHz - 2GHz	-	4.5	-	dB
	2GHz - 3.5GHz	-	6.0	7	dB
Output Power at 1dB compression		18	20	-	dBm
Gate Voltage Vg		0	-0.6	-5	Volts
Drain Voltage Vd		+4.5	+5.0	+6.0	Volts
Drain Current Id	Vg = 0V	100	135	180	mA

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

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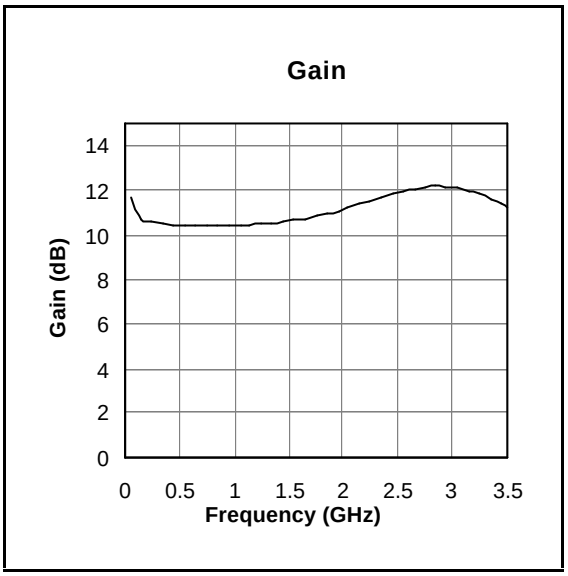
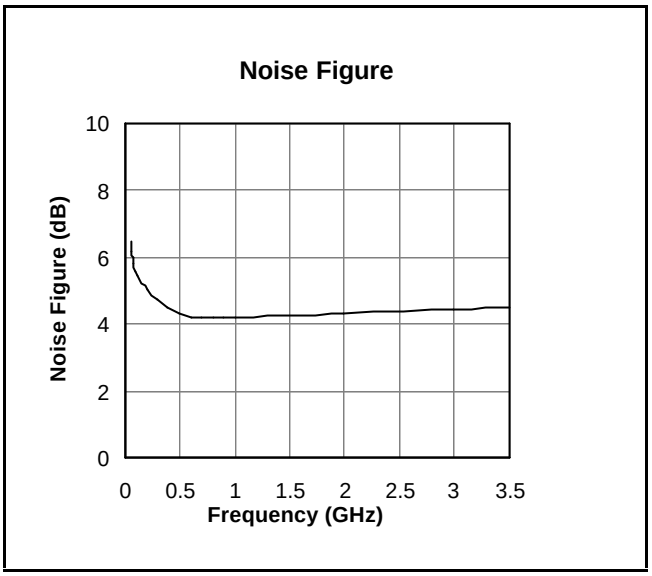
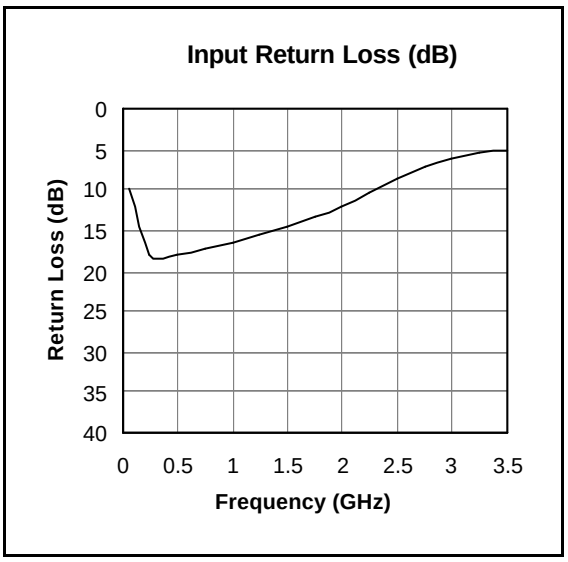
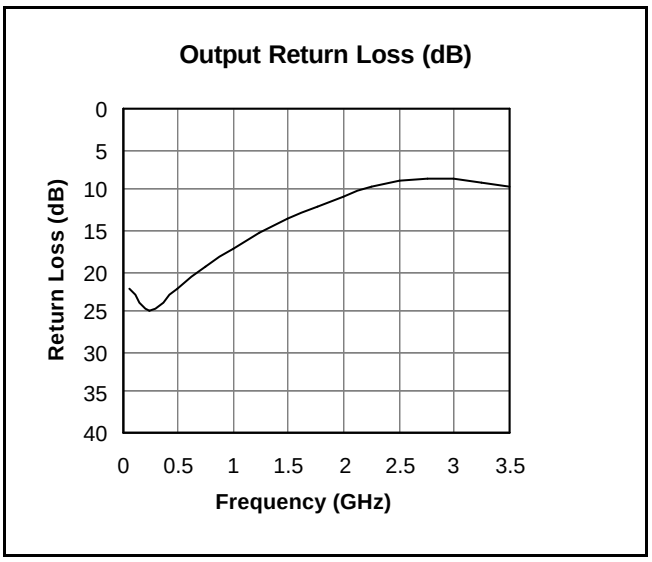
Typical Performance at 22°C









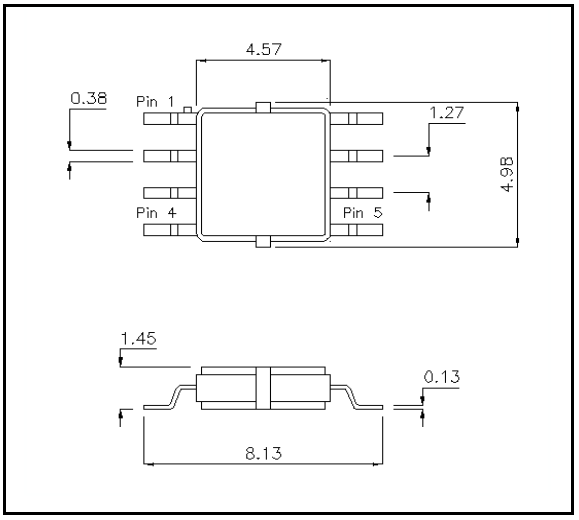
Absolute maximum Ratings

Max Vds	+6.0V
Max Vgs	-5.0V
Package operating temperature	-40°C to 85°C
Storage temperature	-65°C to +150°

Operation

To operate the P35-4100-2, 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. See application note P35-41AN3 for more details.

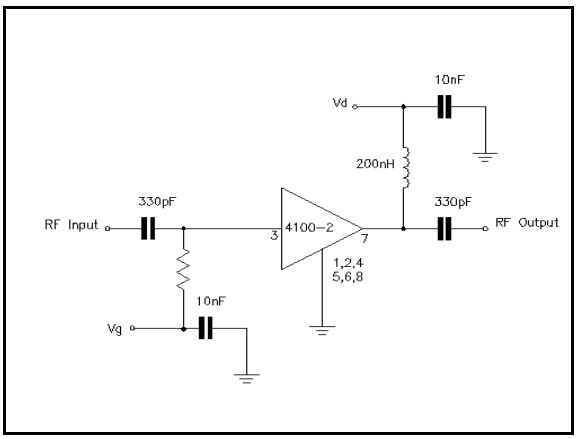
Package Outline



Package Details

Pad	Function
1	GND
2	GND
3	RF IN / Gate voltage
4	GND
5	GND
6	GND
7	RF OUT / Drain voltage
8	GND

Package Bias Connections



Ordering Information

P35-4100-2 8 Lead Gull Wing Flat Pack