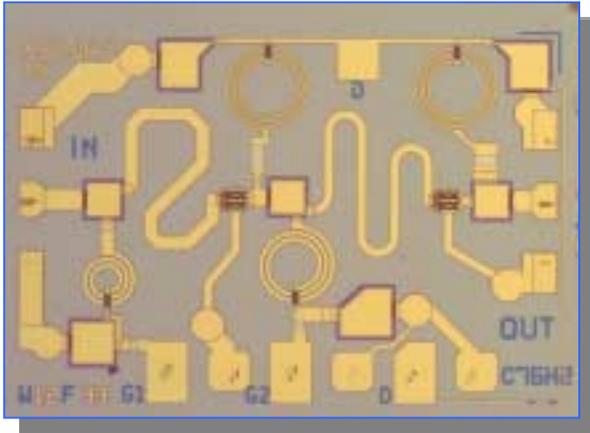


MMIC Features

XLNA2S.02***



- Low Noise 1.3 dB N.F.
- High Gain 22 dB Gain
- Frequency Range : 9 - 12 GHz
- 50 Ω Zin / Zout
- 10 dB Input / Output Return Loss
- 8 dBm Output Power at 1dB gain compression
- Chip size : 1.4 mm X 0.9 mm
- Substrate Thickness : 75 μm
- Bond Pad dimensions 100 μm x 100 μm

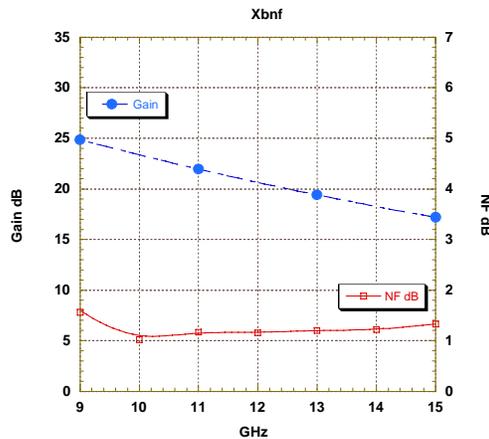
Description

The Rockwell XLNA2S.02 is a PHEMT low noise amplifier that operates from 9 to 12 GHz .This 2 stage amplifier has 22 dB nominal gain with 1.3 dB nominal noise figure and 8 dBm P1dB compression output power. This MMIC is unconditionally stable.

Absolute Maximum Ratings

Symbol	Parameters/Conditions	Min	Max	Units
V _d 1 2	Drain Supply Voltage		5	Volts
V _g 1 2	Gate Supply Voltage	-0.6	0.4	Volts
I _d total	Total drain current		60	mA
I _g total	Total gate current		0.1	mA
P _{in}	RF input power		30	dBm
T _{ch}	Operating channel temperature		150	° C
T _{max}	Max assembly temperature		300*	° C
T _{stg}	Max storage temperature	- 65	165	° C
T _{base}	Maximum base plate temperature		140	° C

* 30 minute maximum



Sample Gain and Noise Figure Characteristics

RF and Electrical Specifications
Conditions T base = 25 ° C, Z source = Z load 50 +/- 5 Ω

Symbol	Parameters/Conditions	Min	Typ	Max	Units
V _d 1 2	Drain Supply Voltage	2.5	3	5	Volts
V _g 1 2	Gate Supply Voltage	-0.6	-0.2	0.2	Volts
ID total	Total drain current (@ typ Vgs)	10	35	60	mA
Frequency	Specified Bandwidth edges	9		12	GHz
Gain**	Small signal	20	22	24	dB
Δ Gain	Small signal gain flatness		<2		dB/GHz
P1dB	Power output at 1dB gain compression	8	10		dBm
RL in	Input port return loss	8	10		dB
RL out	Output port return loss	8	10		dB
Isolation	Reverse isolation	30	40		dB
NF	Noise figure		1.3	1.7	dB

- Each die is fully DC tested and RF S-parameters are measured. A representative sample of dice are tested for noise figure on each wafer. For a nominal charge full 2-port S-parameter data on individual die will be supplied.
- All die will pass visual inspection as dictated by the rules contained in Section A of the General Notes on Rockwell PHEMT Products.
- Every die has a unique identifier number on-chip for complete traceability.
- A conductive epoxy or a flux-less solder die attach is recommended . The die should be attached to an electrically conductive surface to complete DC and RF ground paths .The ground path inductance should be minimized (<10 pH) to assure stability .
- The front side metal is compatible with thermo-sonic 1 mil wire bonding. The backside metal is compatible with die attach methods not exceeding Tmax .
- GaAs MMICs are ESD sensitive. Proper precautions should be used when handling these devices. Front and backside metal is Gold.
- In the event of performance verification, die will be mounted and tested in a standard Rockwell approved test fixture for X band. (See Section B of the General Notes on Rockwell PHEMT Products)

** Within the temperature range -35° C to +85° C, Small Signal Gain shall not vary by more than +/- 2.0 dB and shall remain within the range 18 dB to 26 dB . Under the same conditions the Noise Figure shall not exceed 2.0 dB.

*** Rockwell Science Center reserves the right to make improvements in this device, while maintaining all specifications. The General Notes on Rockwell PHEMT Products will be supplied upon user’s request . In addition to inspection criteria it will contain descriptions, biasing instructions, reliability data and lists of other MMICs.