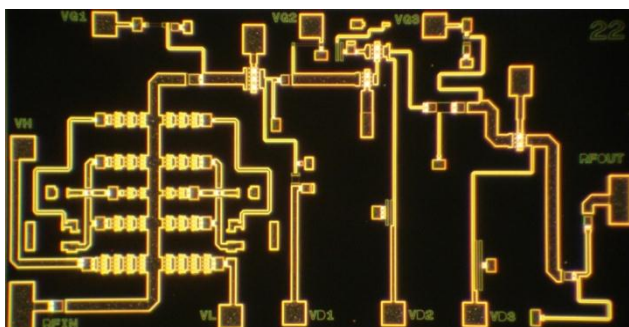


Ka-Band LNA Limiter

Key Features

- 30-40 GHz LNA/Limiter
- 2.5 dB Noise Figure
- Input Power CW Survivability > 2W
- 22 dB Small Signal Gain
- Integrated DC block on both input and output
- Chip Size: 2.7 mm x 1.4 mm



Applications

- Point-to-Point Link
- Satellite Communication
- Receiver Front-end Block Building
- Test Instrumentation

Product Description

The SANDRA-SEMI SDC3022 is a combination Limiter/LNA which tolerates 2W input power, 2 dB mid-band noise figure, and 22 dB mid-band gain, with frequency range of 30-40 GHz. This product is fabricated with GaAs pHEMT 0.1 um process. Fully matched to 50 ohms and with integrated DC blocking capacitors on both I/O ports.

Functional Block Diagram

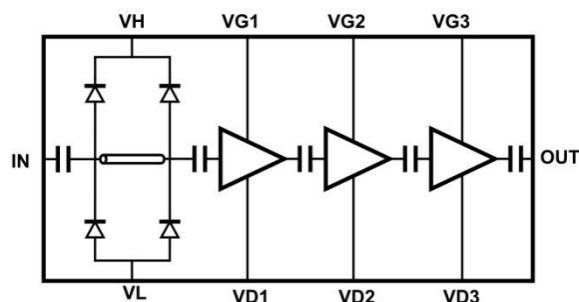


Table1: RF Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Frequency Range	Freq	30		40	GHz
Noise Figure	NF	2	2.5	3.5	dB
Input Return Loss	S11	-24	-15	-6	dB
Output Return Loss	S22	-15	-9	-6	dB
Small Signal Gain	S21	19	22		dB
1dB-Compression Point	OP1dB	14		15	dBm
Drain Bias Voltage	V _d		2		V
Gate Bias Voltage	V _g	-.8	-.5	-.35	V

SDC3022

Absolute Maximum Ratings

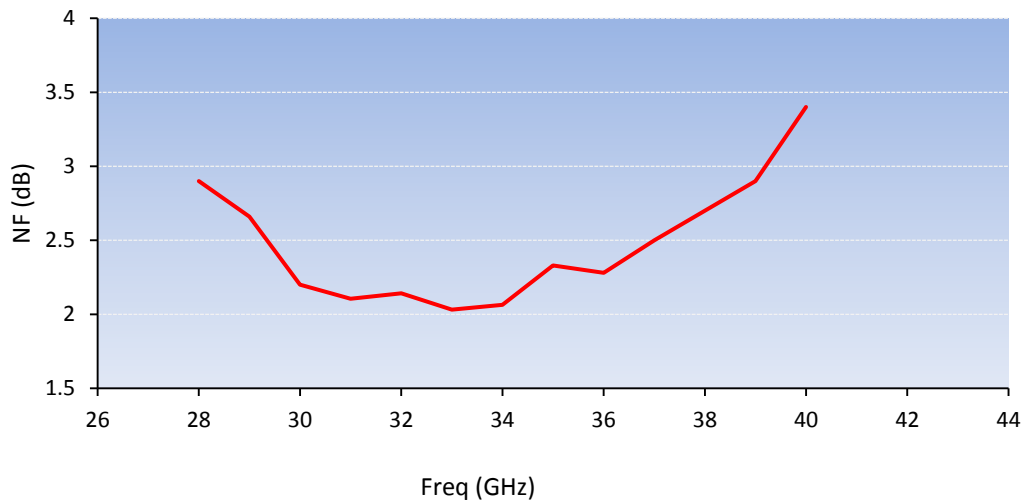
Parameter	Value
Drain Voltage	2
Gate Voltage 1, Vg1	-2.5
Gate Voltage 2, Vg2	-1
Drain Current, Id	50
RF Input Power, CW	2W
Channel Temperature, Tch	175 °C
Storage Temperature	-65 to +150 °C

Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Vd		2		V
Id		50		mA
Vg1		-0.35		V
Vg2		-0.5		V

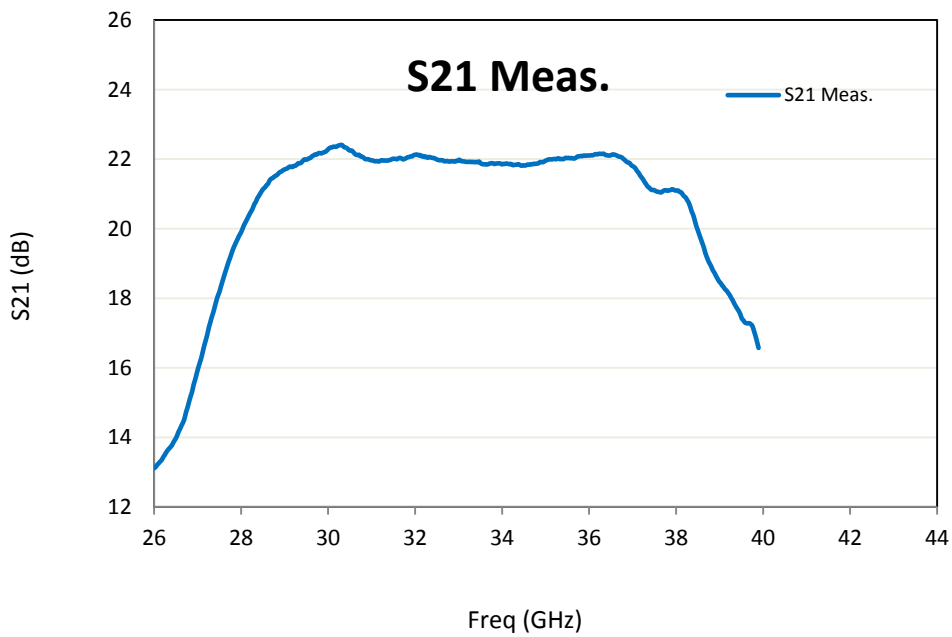
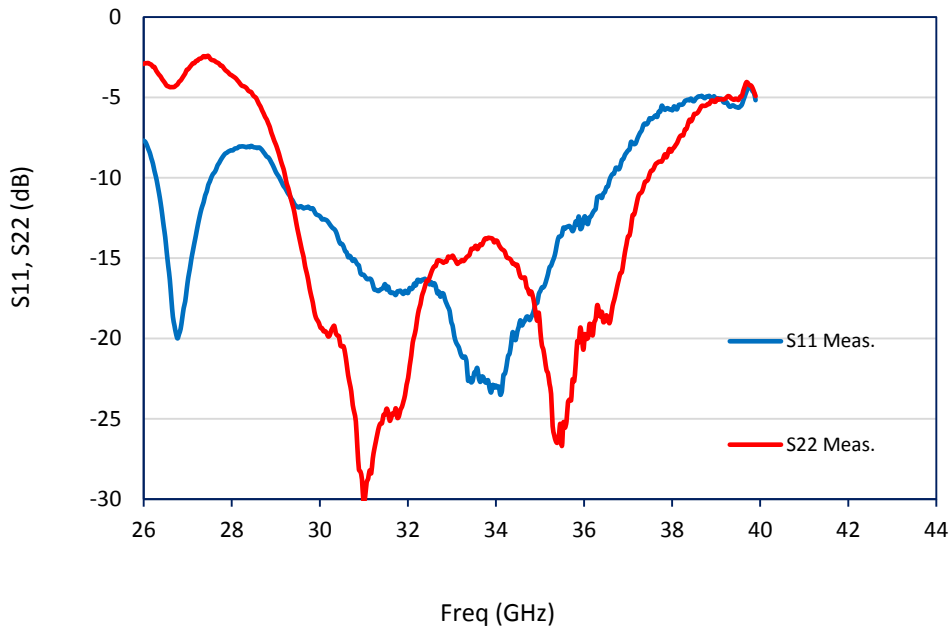
Noise Figure vs. Frequency:

Measure Temperature = 25°C

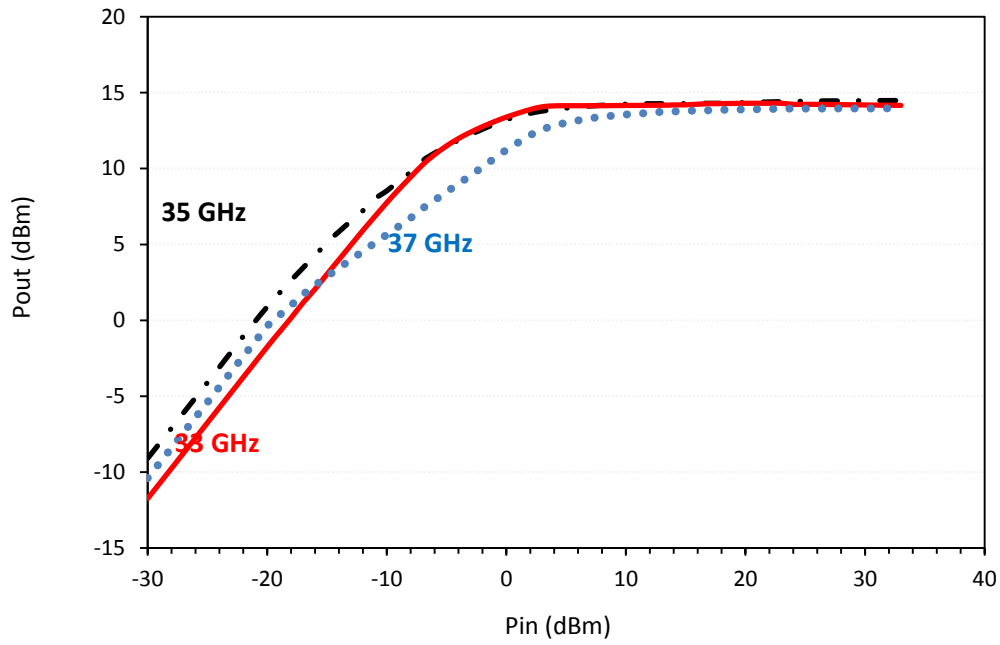


SDC3022

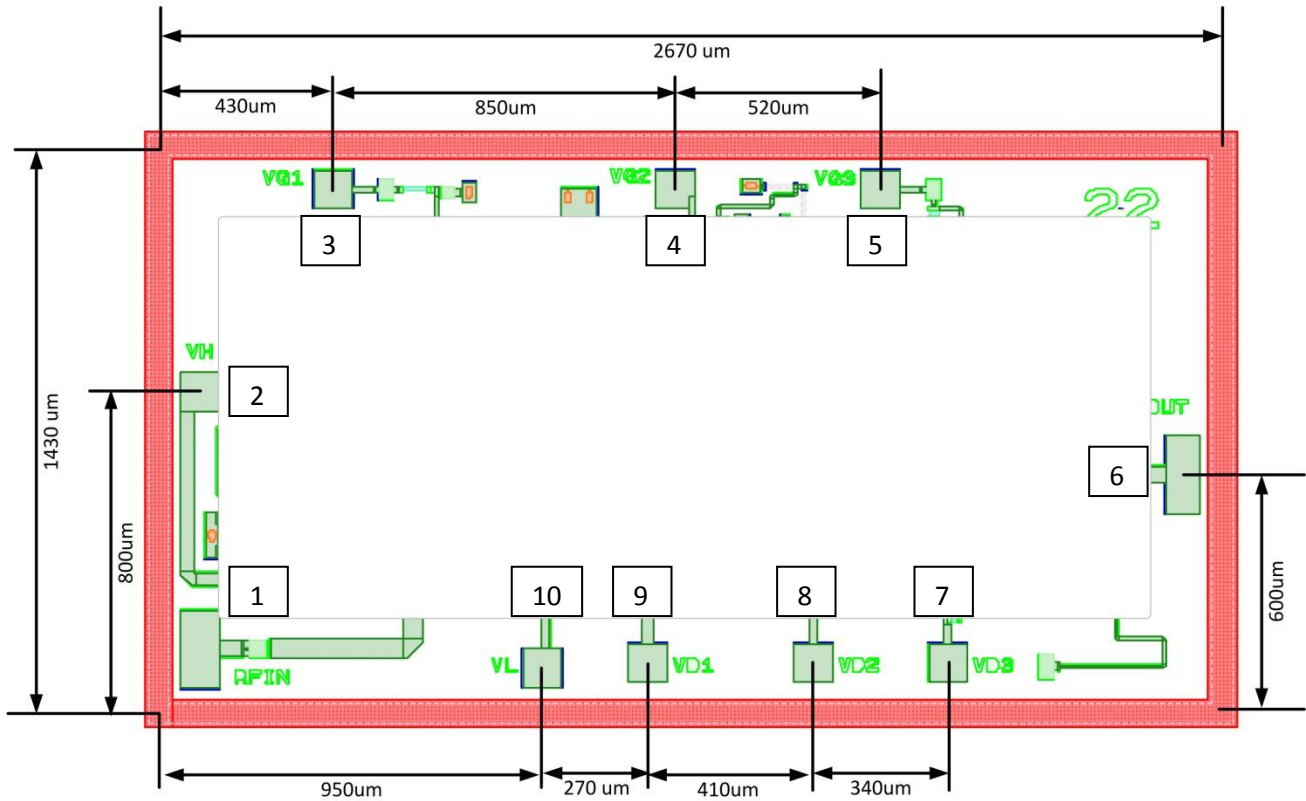
Small Signal Performance



Large Signal Performance



Mechanical Drawing



Pin Description

Symbol	Pin	Description
RF_IN	1	RF input
VH	2	High voltage of limiter
VG1	3	Gate Voltage 1
VG2	4	Gate Voltage 2
VG3	5	Gate Voltage 3
RF_OUT	6	RF output
VD3	7	Drain Voltage 3
VD2	8	Drain Voltage 2
VD1	9	Drain Voltage 1
VL	10	Low voltage of limiter