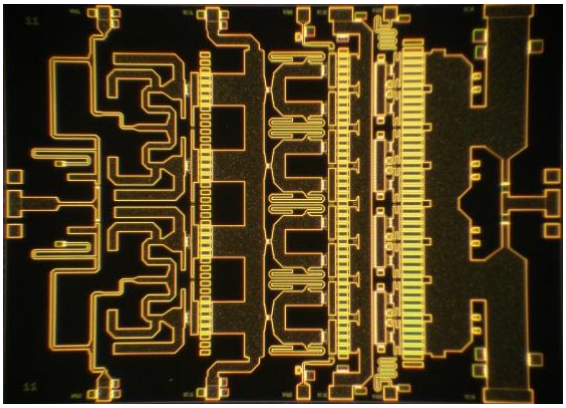
SDC3011

Ka Band 5W MMIC Power Amplifier



Key Features

- 30-41 GHz Bandwidth
- 37 dBm Average P_{sat}
- 17 dB Mid-Band Small Signal Gain
- Vd= 4V, $I_{DQ=}$ 4000 mA

Applications

- Point to Point Radio
- Ka Band Satellite Communication

Product Description

The SANDRA-SEMI SDC3011 is a three stage PA MMIC design that has been implemented with a 0.25-µm GaAs pHEMT process. This product provides 37 dBm of saturated output power over the 30 to 42 GHz with a typical small signal gain of 17dB.

Functional Block Diagram

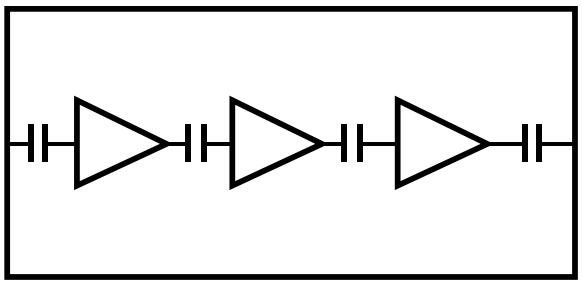


Table1: RF Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Frequency Range	Freq	30		42	GHz
Input Return Loss	S11	-23	-7	-5	dB
Output Return Loss	S22		-7		dB
Small Signal Gain	S21	10	17	20	dB
Saturated Output Power	P_{SAT}	36	37	37.7	dBm
Power Added Efficiency	PAE	24	25	28	%
Drain Bias Voltage	V_d		4		V
Gate Bias Voltage	V_g		-0.5		V

Absolute Maximum Ratings

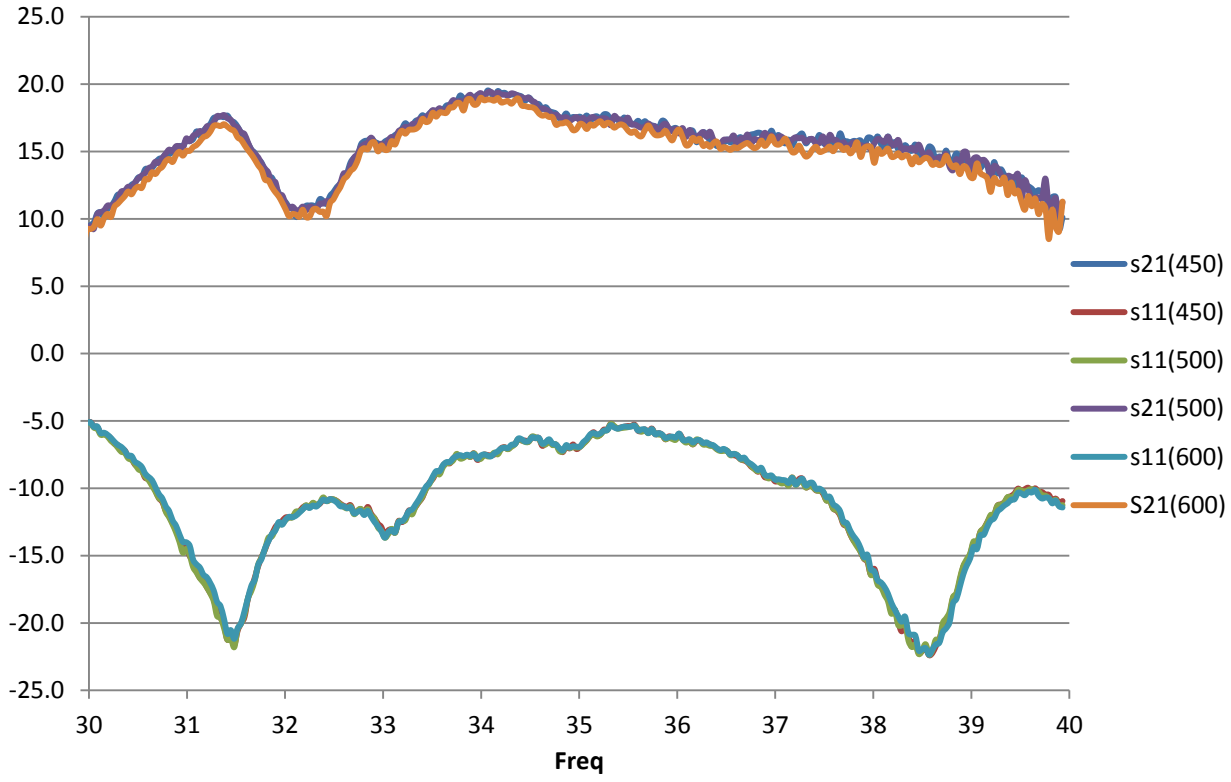
Parameter	Value
Drain Voltage	4
Gate Voltage 1, Vg1	-0.5
Gate Voltage 2, Vg2	-0.5
Gate Voltage 3, Vg3	-0.5
Drain Current, Id	4000
Channel Temperature, Tch	175 ºC
Storage Temperature	-65 to +150 ºC

Recommended Operating Conditions

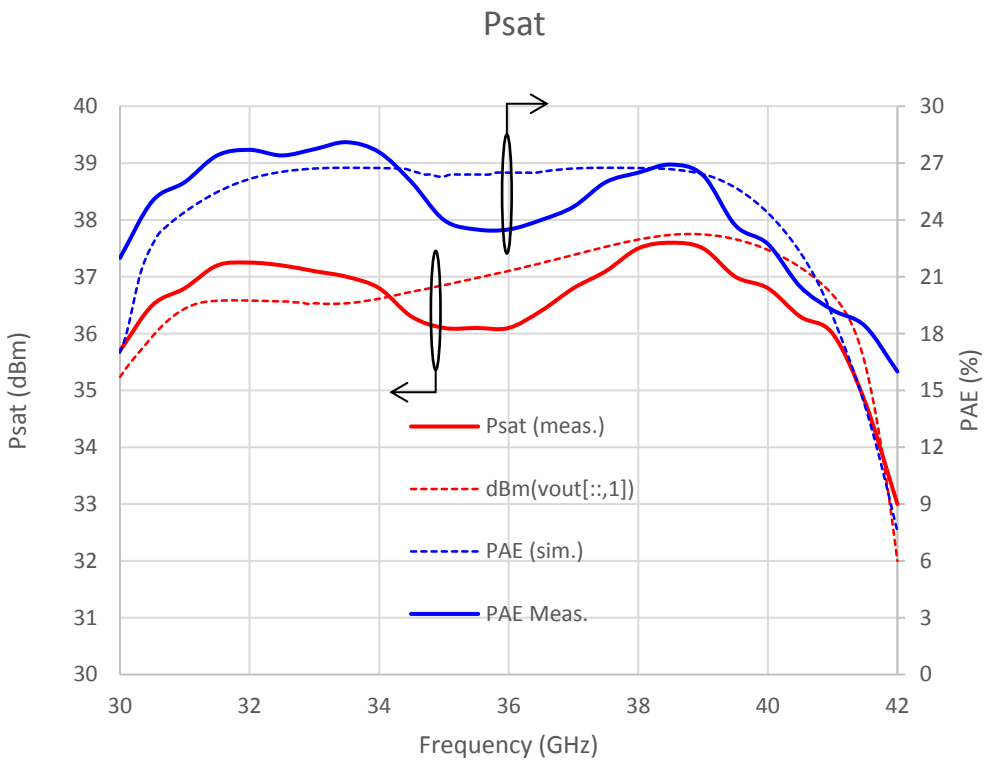
Parameter	Min	Typ	Max	Unit
Vd		4		V
Id		4000		mA
Vg		-0.5		V

Small Signal Performance

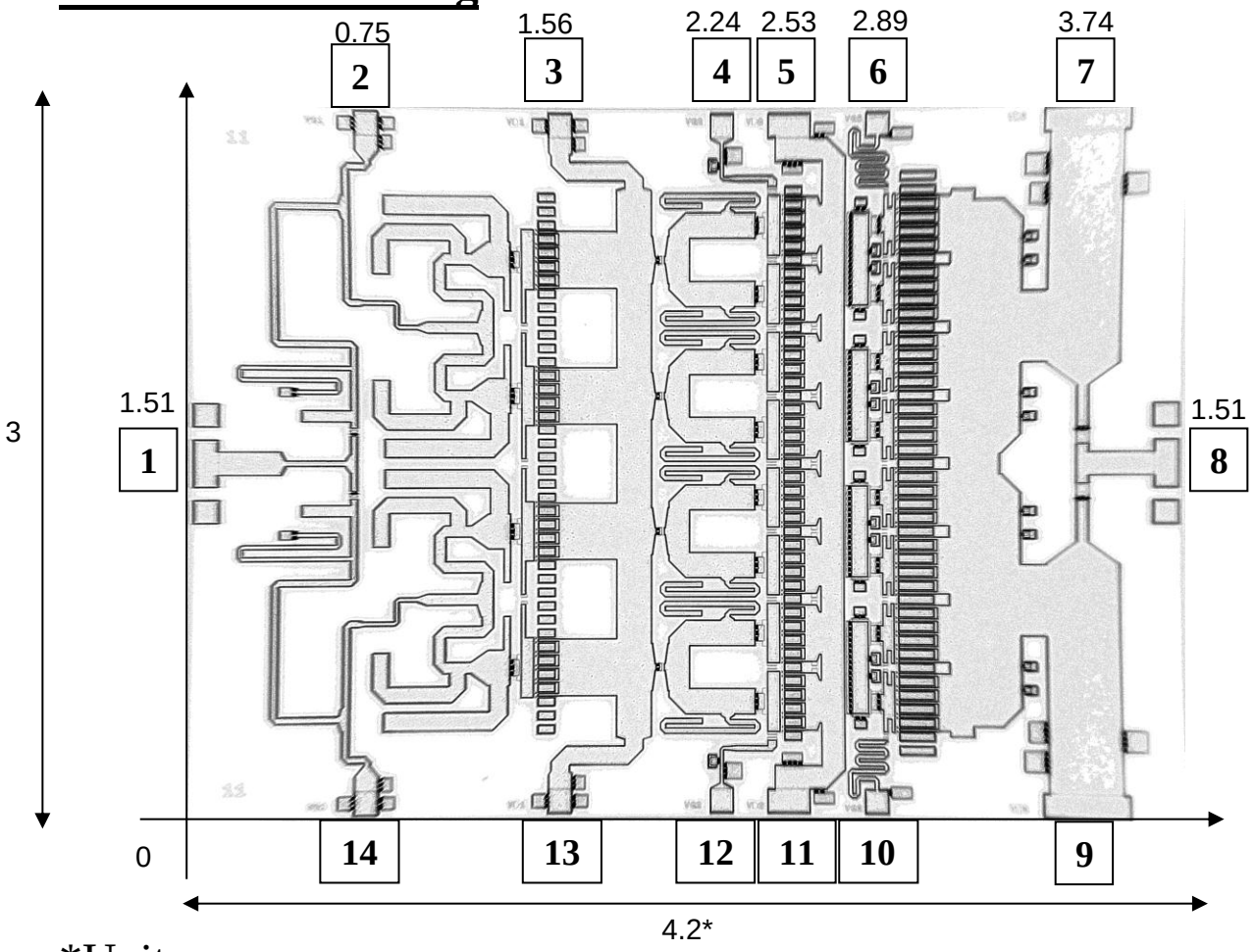
S11 and S21 versus Frequency at V_G=-450 mV, -500 mV and -600 mV



Large Signal Performance



Mechanical Drawing



*Units: mm

Pin Description

Symbol	Pin	Description
V_{G1}	2,14	First Stage Gate Voltage
V_{D1}	3,13	First Stage Drain Voltage
V_{G2}	4,12	Second Stage Gate Voltage
V_{D2}	5,11	Second Stage Drain Voltage
V_{G3}	6,10	Third Stage Gate Voltage
V_{D3}	7,9	Third Stage Gate Voltage
IN	1	RF Input
OUT	8	RF Output