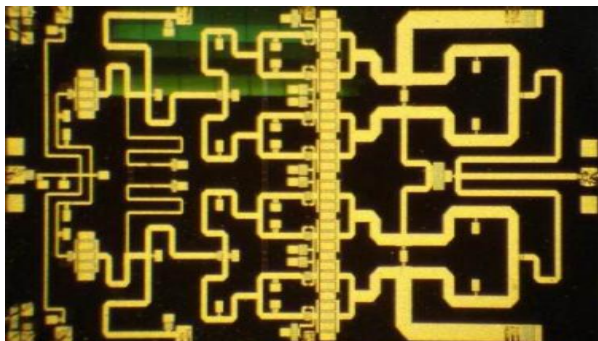


8-12.5 GHz GaAs MMIC Power Amplifier



Key Features

- X/K_u Band 5W Power Amplifier
- 17dB Large Signal Gain
- +37 dBm Saturated Output Power
- 40% power added Efficiency

Applications

- Point-to-Point Radio
- Communications

Product Description

The SANDRA-SEMI SDC2016 is a two-stage 8-12.5 GHz GaAs MMIC power amplifiers provides a large signal gain of 17 dB with 37 dBm saturated output power. The power amplifier exhibits average power added efficiency (PAE) of 40%. The MMIC has been implemented in 0.25-um GaAs pHEMT process. The process adopts optical gate lithography to ensure high repeatability and uniformity. The chip provides a rugged part with backside via holes and gold metallization to allow either a conductive epoxy or eutectic solder die attach process. The reliability of the chip has been verified through extensive tests.

Functional Block Diagram

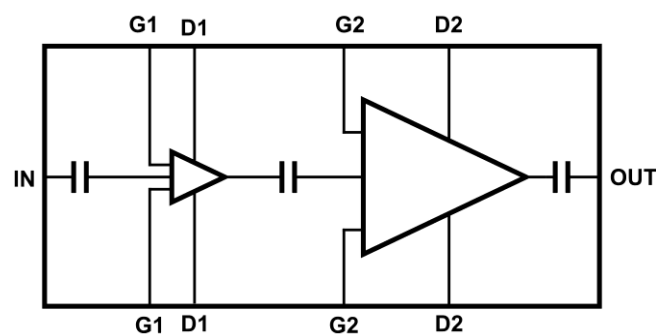


Table1: RF Specifications

Parameter	Symbol	Min	Typical	Max	Unit
Frequency Range	Freq	8.5		12.5	GHz
Input Return Loss	S11		-12		dB
Output Return Loss	S22		-8		dB
Small Signal Gain	S21		17		dB
Saturated Output Power	P _{SAT}		37		dBm
Drain Bias Voltage	V _d		8		V
Gate Bias Voltage	V _g	-0.9	-0.8	-0.7	V
Power Added Efficiency	PAE		40		%

SDC2016

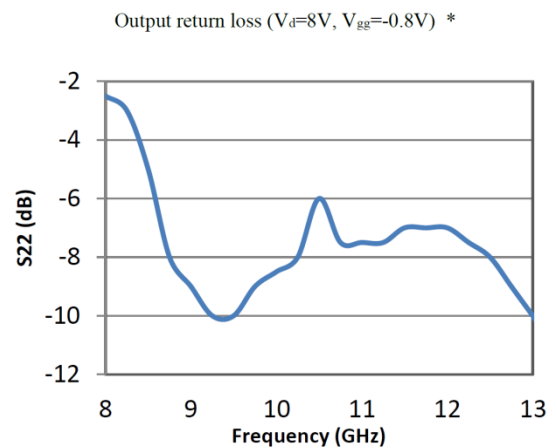
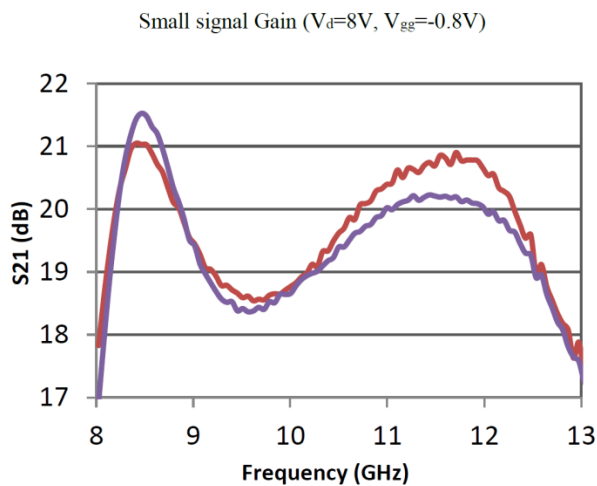
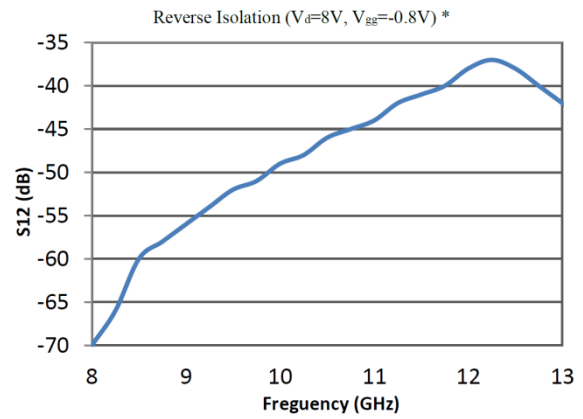
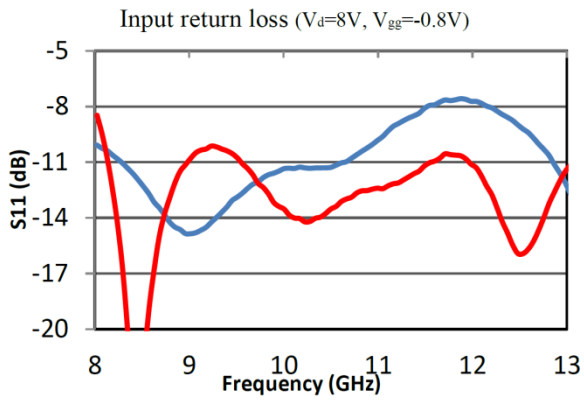
Absolute Maximum Ratings

Parameter	Value
Drain Voltage	8
Gate Voltage 1, Vg1	-0.8
Gate Voltage 2, Vg2	-0.8
Drain Current, Id	1.3
Channel Temperature, Tch	175 °C
Storage Temperature	-65 to +150 °C

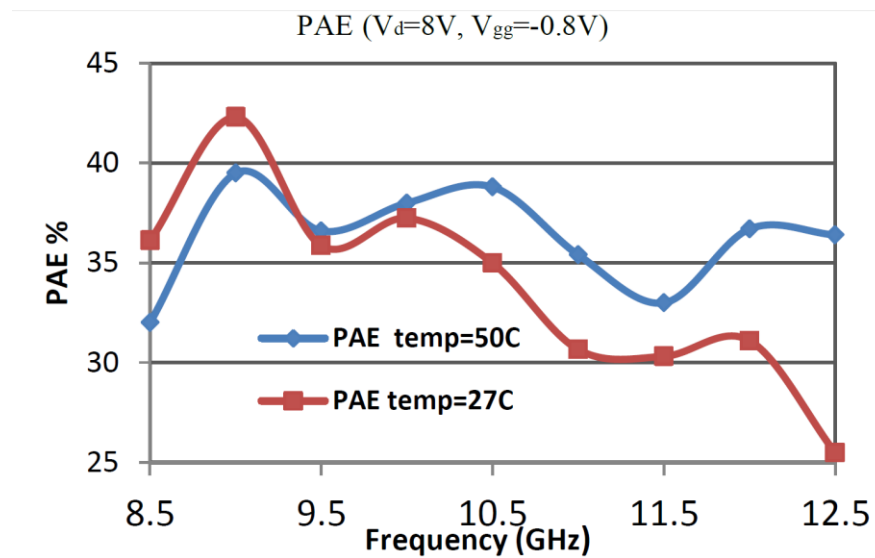
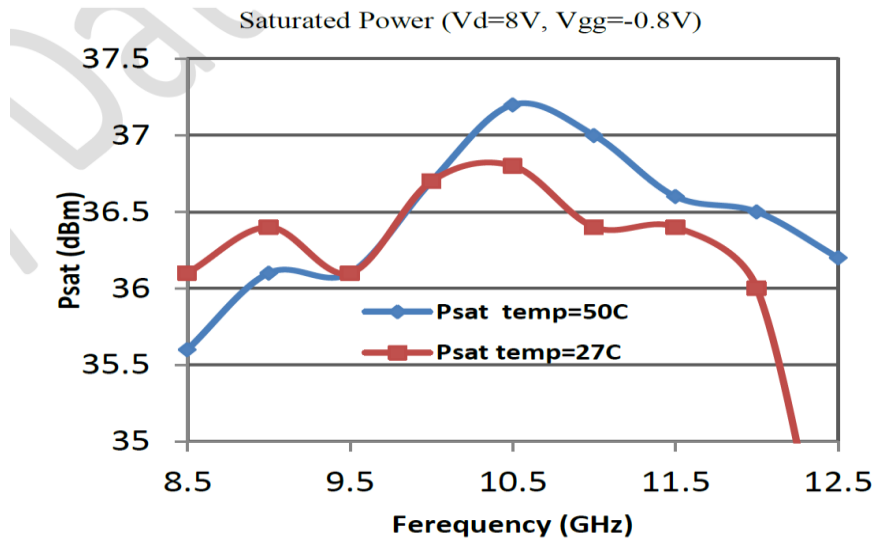
Recommended Operating Conditions

Parameter	Min	Typ	Max	Unit
Vd		8		V
Id		1.3		A
Vg1	-0.9	-0.8	-0.7	V
Vg2		0.8		V

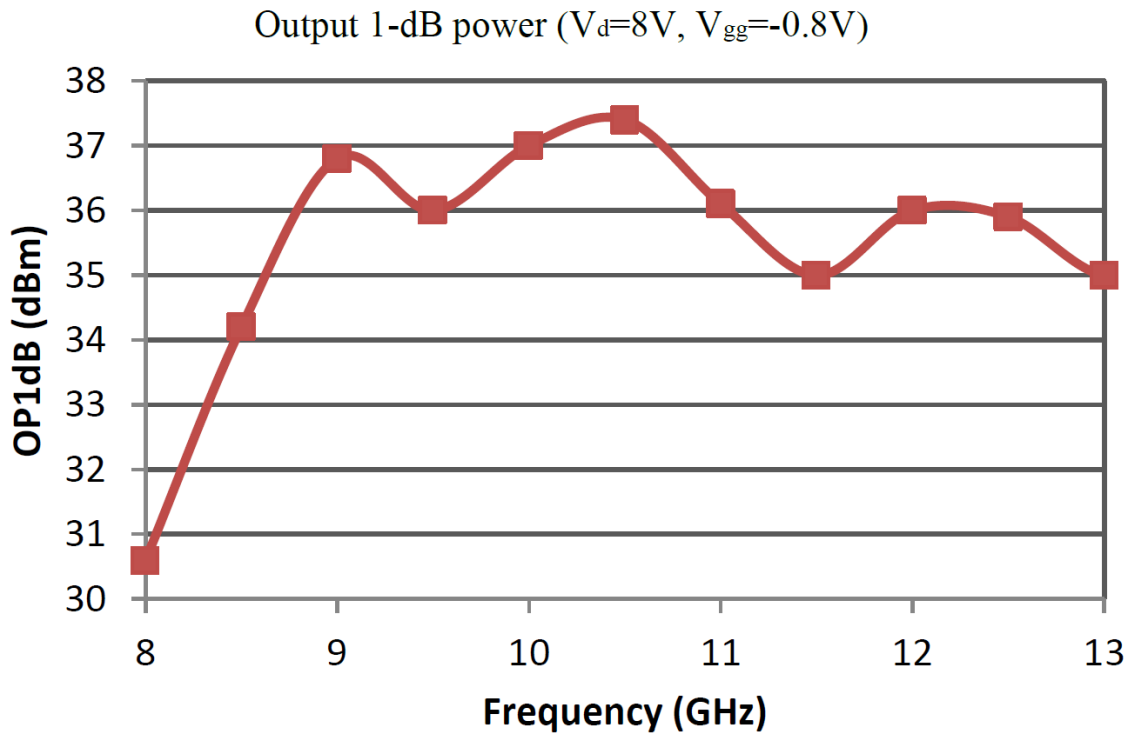
Small Signal Performance



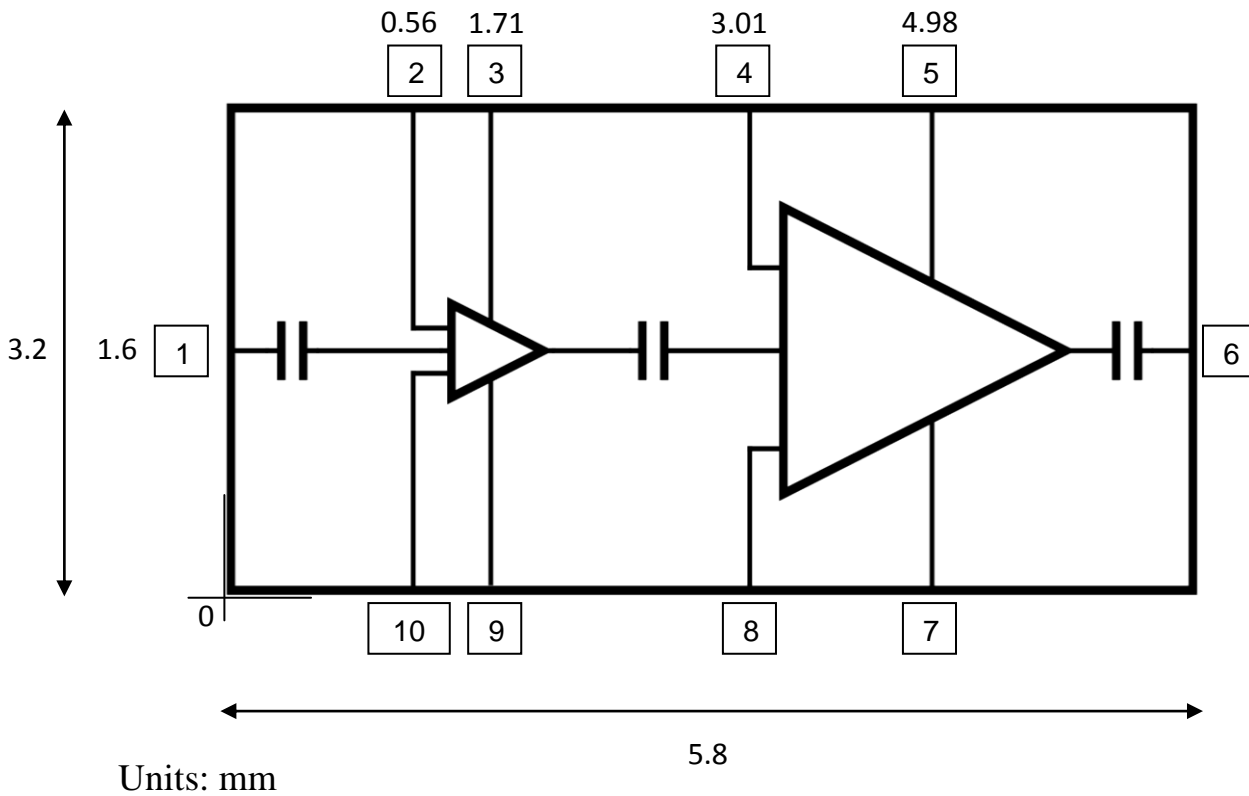
Large Signal Performance



SDC2016



Mechanical Drawing



Pin Description

Symbol	Pin	Description
IN	1	RF Input
Vg1	2	Gate Voltage 1
Vd1	3	Drain Voltage 1
Vg2	4	Gate Voltage 2
Vd2	5	Drain Voltage 2
OUT	6	RF Output
Vd2	7	Drain Voltage 2
Vg2	8	Gate Voltage 2
Vd1	9	Drain Voltage 1
Vg1	10	Gate Voltage 1