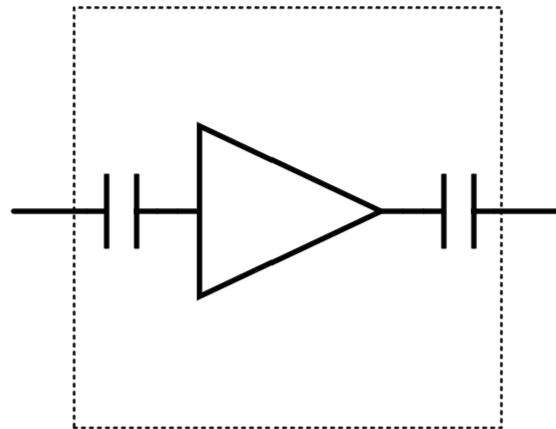
Product Overview

The ASA0001 is a GaN MMIC single-stage distributed amplifier. The amplifier provides >5 dB of power gain, +37 dBm of saturated power and >20% PAE from a +30V supply voltage. All data is measured with the chip in a 50 Ohm test fixture connected via two 0.025 mm (1 mil) diameter bondwires of minimal length 0.51 mm (20 mil).

Functional Block Diagram



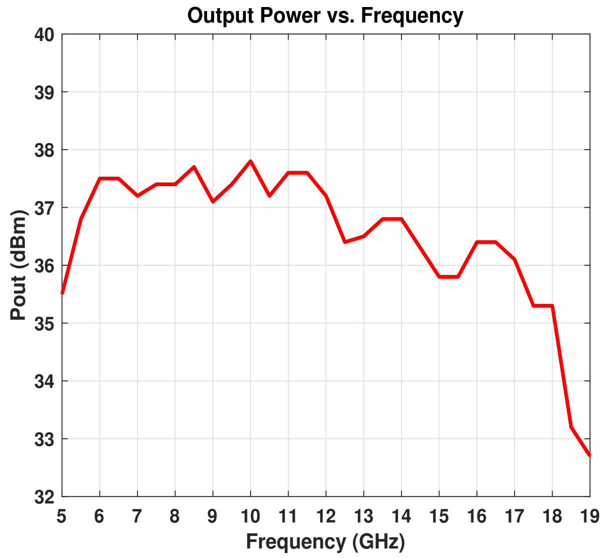
Electrical Specifications

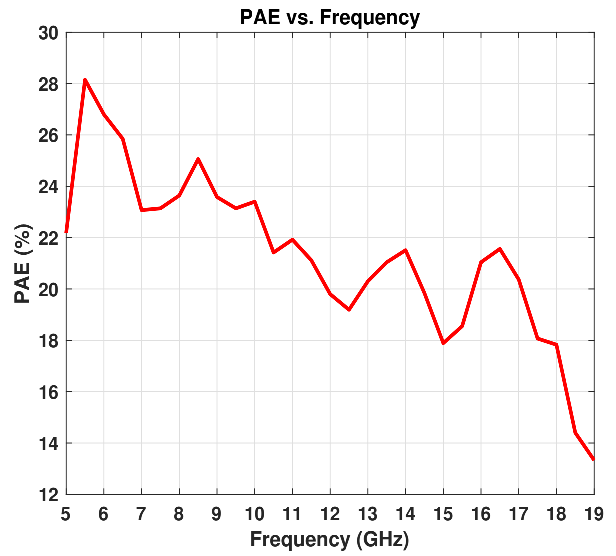
Parameter	Min.	Typ.	Max.	Units
Frequency Range	-	2-18	-	GHz
Power Gain	6	7	-	dB
Small Signal Gain	-	4	-	dB
Input Return Loss	-	12	-	dB
Power Added Efficiency (PAE)	-	24	-	%
Saturated Output Power	-	37	-	dBm

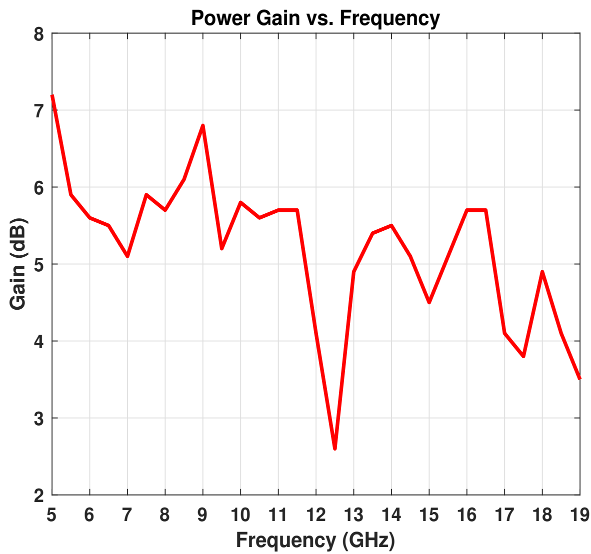
Test conditions unless otherwise noted: Tcase=15 ˚C, VDD=30 V, VGG=-3.2 V, Pin=30 dBm, Z0=50 Ω

Performance Plots – Large Signal

Test conditions unless otherwise noted:VDD=30 V, VGG=-3.2 V, Pin=30 dBm, Tcase=15 °C, CW

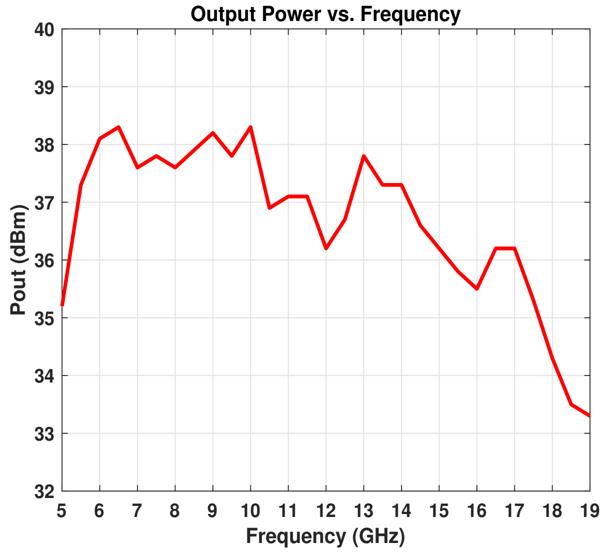


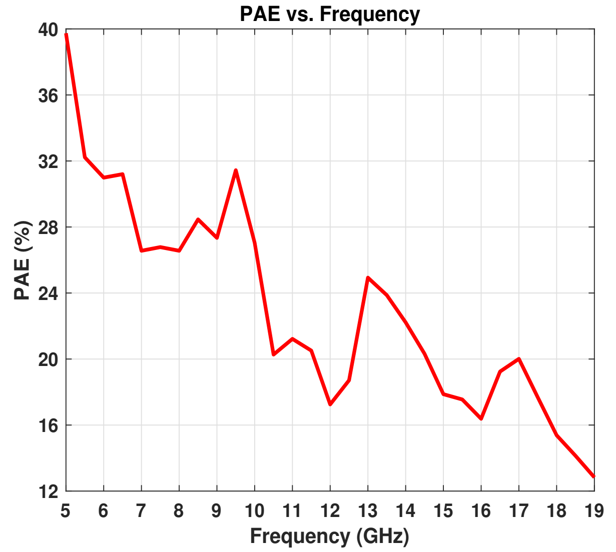


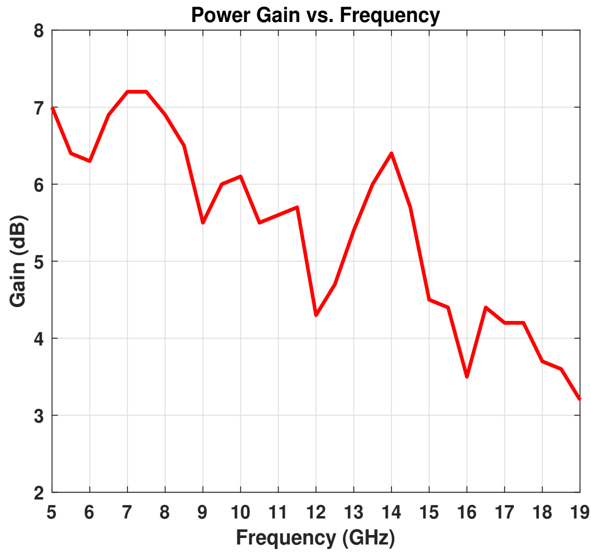


Performance Plots – Large Signal

Test conditions unless otherwise noted:VDD=30 V, VGG=-3.2 V, Pin=30 dBm, Tcase=15 °C, 5 KHz, Pulse 30%

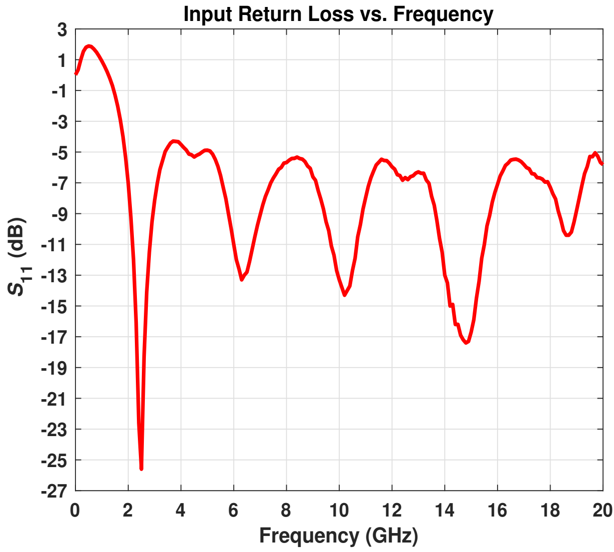


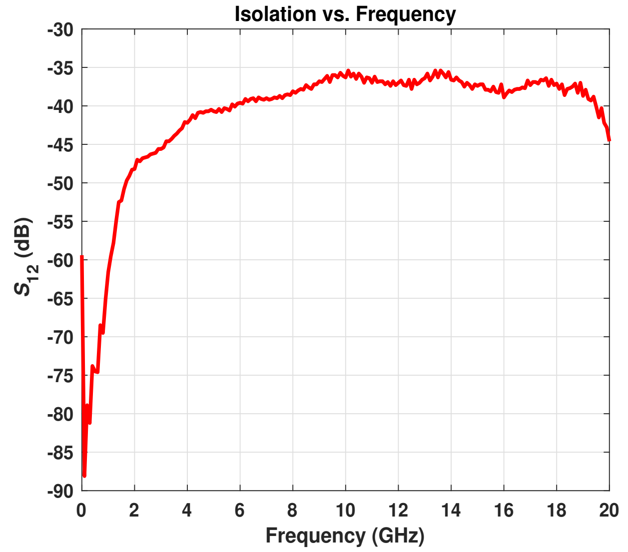


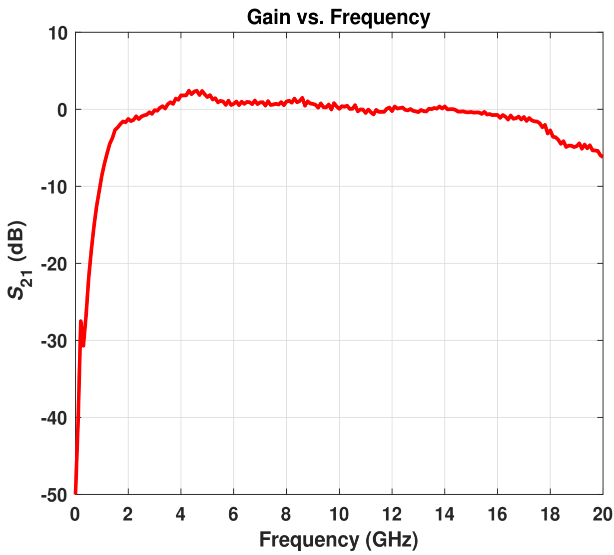


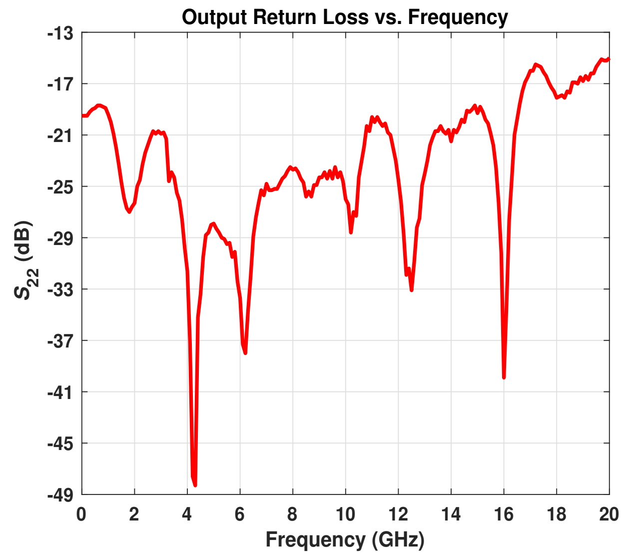
Performance Plots – Small Signal

Test conditions unless otherwise noted:VDD=30 V, VGG=-3.2 V, Tcase=15 °C

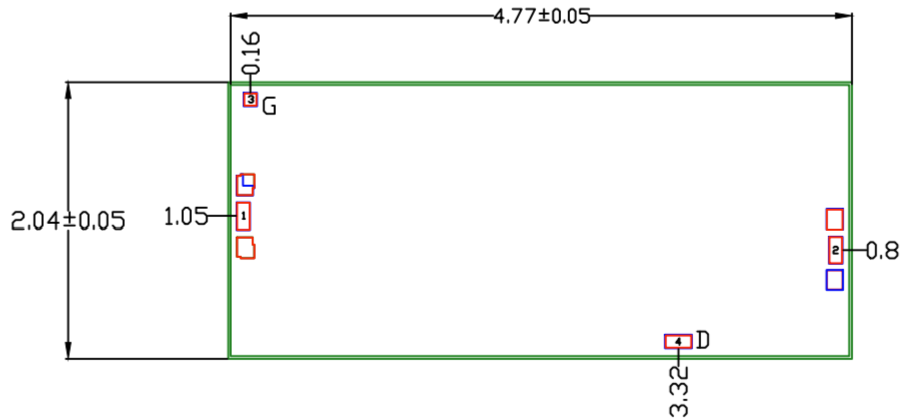








Mechanical Information



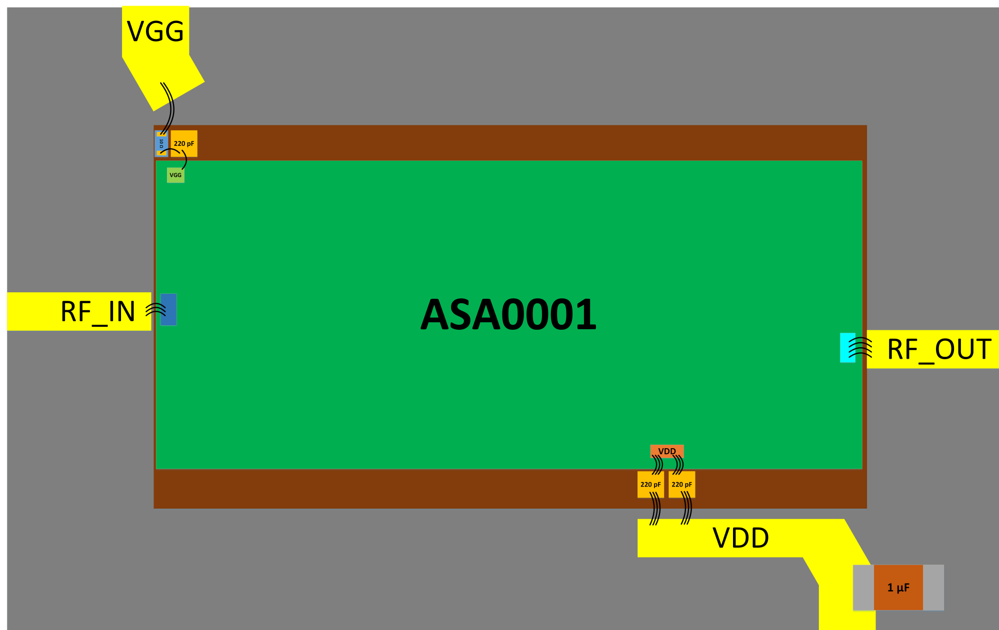
NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS
2. CHIP SIZE = 4.77 mm × 2.04 mm (DICING STREET INCLUDED) ± 0.05 mm
3. RF PADS (1,2) = 0.1 × 0.2 mm
4. DC PADS (3,4) = 0.1 × 0.1 mm
5. BACKSIDE METALLIZATION: GOLD
6. BACKSIDE METAL IS GROUND
7. BOND PAD METALIZATION: GOLD
8. NO CONNECTION REQUIRED FOR UNLABELED BOND PADS
9. OVERALL DIE SIZE ±50 µm

Bond Pad Description

1	RF-IN	This pad is AC coupled and matched to 50 Ohms.
2	RF-OUT	This pad is AC coupled and matched to 50 Ohms.
3	VGG	Negative Supply Voltage for the amplifier.
4	VDD	Positive Supply Voltage for the amplifier. External bypass capacitors of 220 pF are required.

Assembly Diagram



Assembly Notes

Component Placement and Adhesive Attachment Assembly Notes:

1. Use vacuum collet to pick up the die.
2. The force should be controlled during placement and mounting specially no force should be applied to air bridges.

Reflow process assembly notes:

1. Use CMC or MoCu carrier to decrease thermal expansion mechanical stress
2. Use AuSn (80/20) solder and limit exposure to temperatures above 300 °C to 3-4 minutes, maximum.
3. An alloy station or conveyor furnace with reducing atmosphere should be used.
4. Do not use any kind of flux.
5. Devices must be stored in a dry nitrogen atmosphere.
6. Use Au bond wire.

Contact Information

For the latest specifications, additional product information:
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