

FGN1902 19 GHz 4W GaN Power Amplifier (PRELIMINARY DATASHEET)



PRODUCT DESCRIPTION

Falcomm's ultra-efficient power amplifier technology is ideal for use in K-band applications such as satellite communications.

Our proprietary 2-stage power amplifier product works ideally for K-band applications near 19 GHz.

Falcomm's technology allows for lower thermal management cost, frees additional computational power, and can be combined with other efficiency-enhancing techniques.

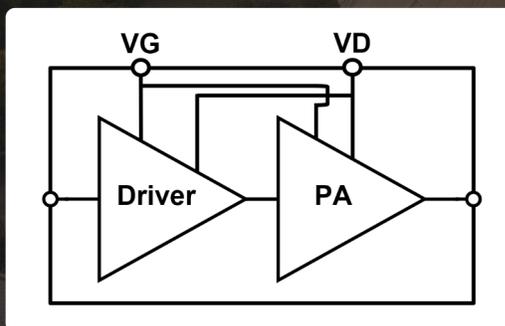
BENEFITS INCLUDE

- Best-in-class efficiency
- Plug-and-play
- Compact form factor

APPLICATIONS

- Satellite communication
- Point-to-point wireless backhaul
- Test and measurement instrumentation
- Defense and R&D

FUNCTIONAL BLOCK DIAGRAM

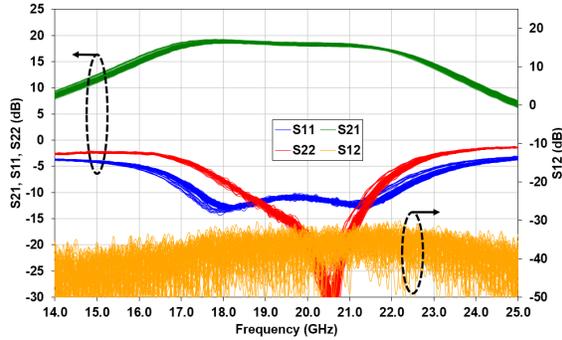


FEATURES

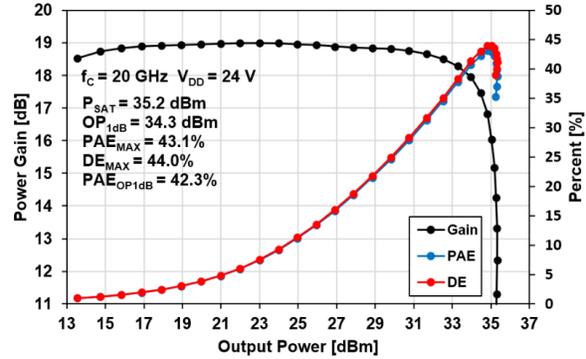
- **2-stage PAE_{MAX} = 43.1%**
- **PA-stage DE_{MAX} = 44%**
- **P_{SAT} = 36.5 dBm**
- **Gain = 19.1 dB**
- **Efficiency maintained at lower supply voltages for reliability**
- **High data rate modulation speeds**

PERFORMANCE PLOTS

Measured Pulsed S-Parameters (79 Chips)



Measured Pulsed Large Signal



ELECTRICAL SPECIFICATIONS

Pulsed Measurement Conditions:

($V_D = 24 \text{ V}$, $I_{DQ} = 80 \text{ mA}$, $V_G = -5.13 \text{ V}$)

($T_{AMB} = 27 \text{ }^\circ\text{C}$, $RF_{FREQ} = 20 \text{ GHz}$)

PARAMETER	MIN	TYP	MAX	Units
Frequency Range	17	20	22	[GHz]
Gain		19.1		[dB]
P_{SAT} (OP_{3dB})		35.2		[dBm]
OP_{1dB}		34.3		[dBm]
PAE_{MAX}		43.1		%
PAE_{OP1dB}		42.3		%
PAE @ 3 dB PBO		29.6		%
Supply Voltage	15	24	24	V
Operating Temperature	-40		+85	$^\circ\text{C}$
MTTF @ T_{MAX}		>1e8		[Hours @ T_{MAX}]
T_{MAX}		178		$^\circ\text{C}$
Θ_{jc}		16.7		$^\circ\text{C/W}$
Output VSWR Survivability		6:1		
Input Return Loss		-10.8		[dB]
Output Return Loss		-19.5		[dB]

RECOMMENDED OPERATING CONDITIONS

Parameter	Typ	Units
V_D	15 to 24	V
V_G	-6.6 to -2.2	V
Input Power at Psat	20	dBm
Max Power	11	W
Max DC Power Dissipation	6.6	W
Quiescent Current	80	mA

Table 1. Device was measured pulsed at room temperature using 50Ω for CW and S-Parameters.

MTTF calculation assumes $T_{BASE} = 85 \text{ }^\circ\text{C}$ and $P_{DISS} = 5.6 \text{ W}$. $T_{MAX} = T_{BASE} + (\Theta_{jc} \times P_{DISS})$.

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