

## 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.

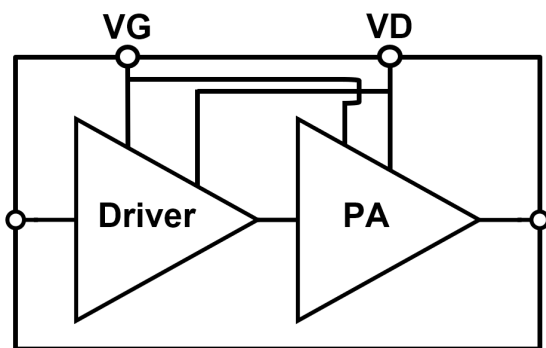
### BENEFITS INCLUDE

- 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

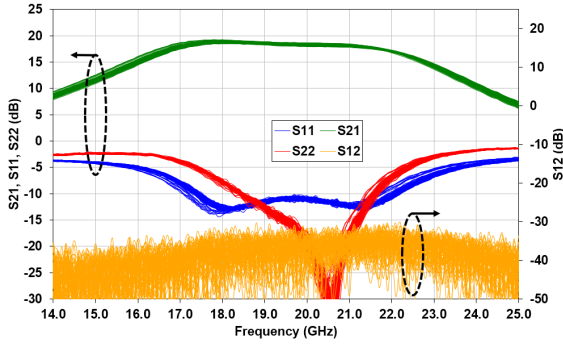
- **2-stage PAE<sub>MAX</sub> = 43.1%**
- **PA-stage DE<sub>MAX</sub> = 44%**
- **P<sub>SAT</sub> = 36.5 dBm**
- **Gain = 19.1 dB**
- **Efficiency maintained at lower supply voltages**
- **High data rate modulation speeds**

### RECOMMENDED OPERATING CONDITIONS

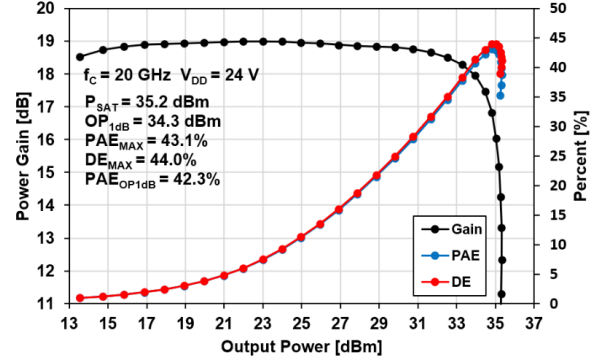
Parameter	Typ	Units
VD	15 to 24	V
VG	-6.6 to -2.2	V
Input Power at Psat	20	dBm
Max Power	11	W
Max DC Power Dissipation	6.6	W
Quiescent Current	80	mA

## 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		$^\circ\text{C}$
$\Theta_{jc}$		16.7		$^\circ\text{C/W}$
Output VSWR Survivability		6:1		
Input Return Loss		-10.8		[dB]
Output Return Loss		-19.5		[dB]

Table 1. Device was measured pulsed at room temperature using 50  $\Omega$  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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