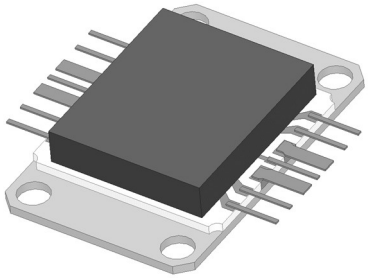
MR500XFL

50/80 W, 28/36 V, 8.0-10.5 GHz, GaN PA MMIC

Product Features

- Radar band 8.0-10.5 GHz
- Supply voltage 28 / 36 V
- Saturated output power 50 / 80 W
- Drain efficiency 35.5%
- Packaged 3-stage power amplifier
- 11.3×17.3 mm^2 size flange package



11.3 mm × 17.3 mm flange package

Applications

- Air Defense Radar
- Weather Radar

Description

The MR500XFL is a fully integrated flange-packaged 3-stage power amplifier designed for radar applications, covering frequency range from 8.0 GHz to 10.5 GHz. The device delivers saturated output power of 50 / 80 W and has typical 35.5% drain efficiency with operating drain voltage of 28 / 36 V.

Electrical Specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Frequency range	f	8.0		10.5	GHz	
Small signal gain	G		27.2 / 28.6		dB	
Gain flatness	ΔG	0.6		2.8	dB	Over any 1 GHz bandwidth
Input return loss	S_{11}		10		dB	
Output return loss	S_{22}		10		dB	
Saturated output power	P_{sat}		47.6 / 49.2		dBm	
Drain efficiency	η		38.5 / 35.5		%	

Note: V_{DD}=28/36 V, I_q=350/410 mA, T=+25°C, 100 μs 10% pulsed CW signal

DC Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Gate threshold voltage	V_{GS_TH}		-2.85		V	
Gate quiescent voltage	V_{GS_Q}		-2.55		V	
Saturated drain current	I_{D_SAT}	5000		8000	mA	
Drain-source breakdown voltage	V_{D_B}		120		V	

Absolute Maximum Ratings

PARAMETER	SYMBOL	RATING	UNIT	CONDITIONS
Drain-source voltage	V_{DSS}	120	V_{DC}	
Gate-source voltage	V_{GS}	-10, +2	V_{DC}	

Electrostatic Discharge (ESD) Classifications

PARAMETER	SYMBOL	CLASS	TEST METHODOLOGY
Human body model	HBM	TBD	TBD
Charge device model	CDM	TBD	TBD

Figure 1. Gain and return losses vs. frequency

V_{DD}=28 V, I_Q=350 mA, T=25℃

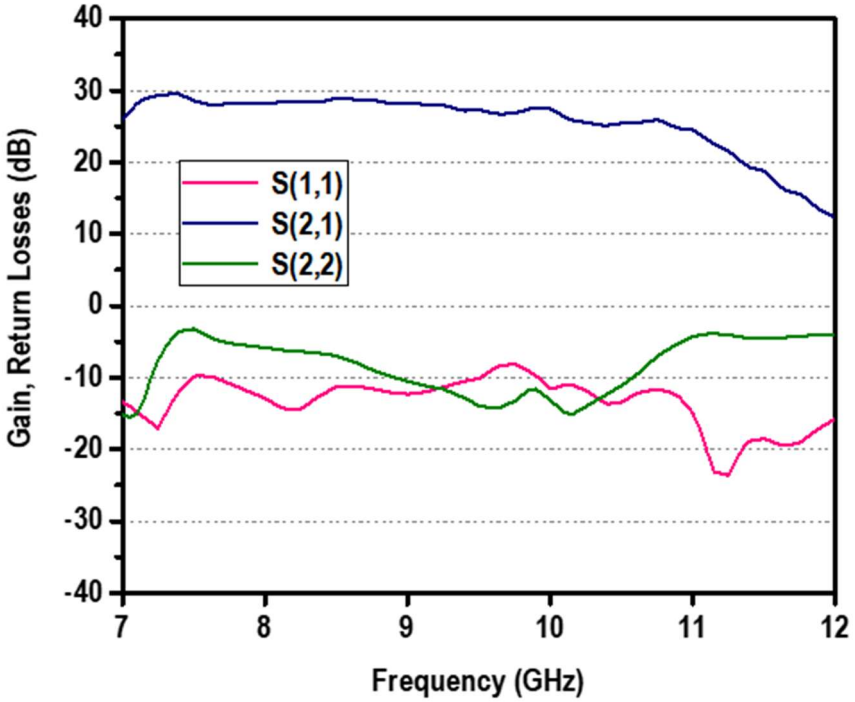


Figure 2. Gain and return losses vs. frequency

V_{DD}=36 V, I_Q=410 mA, T=25℃

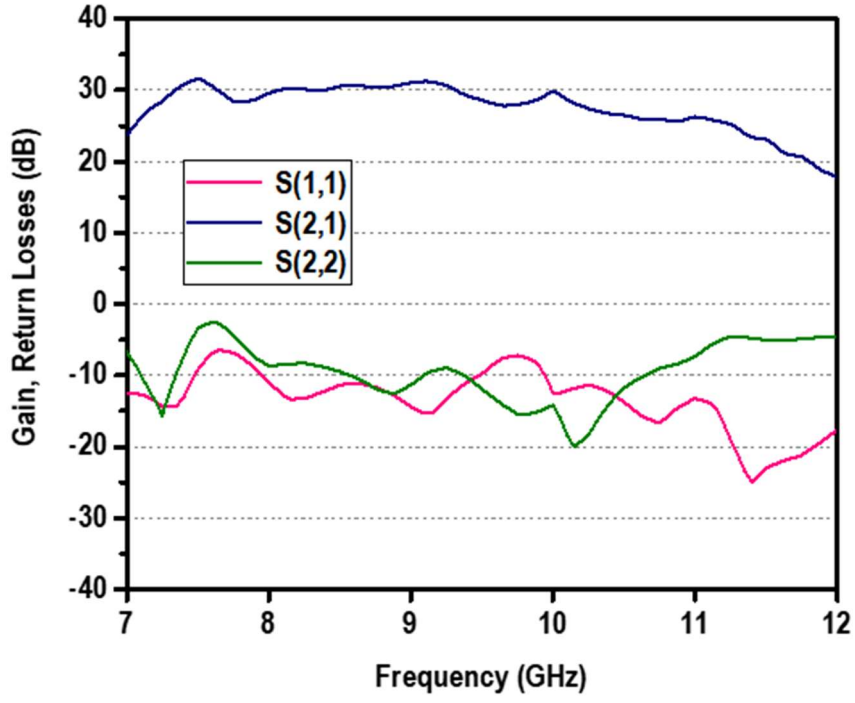


Figure 3. Output power and drain efficiency vs. input power

V_{DD}=28 V, I_Q=350 mA, T=25℃, pulse width=100 μs, duty cycle=10%

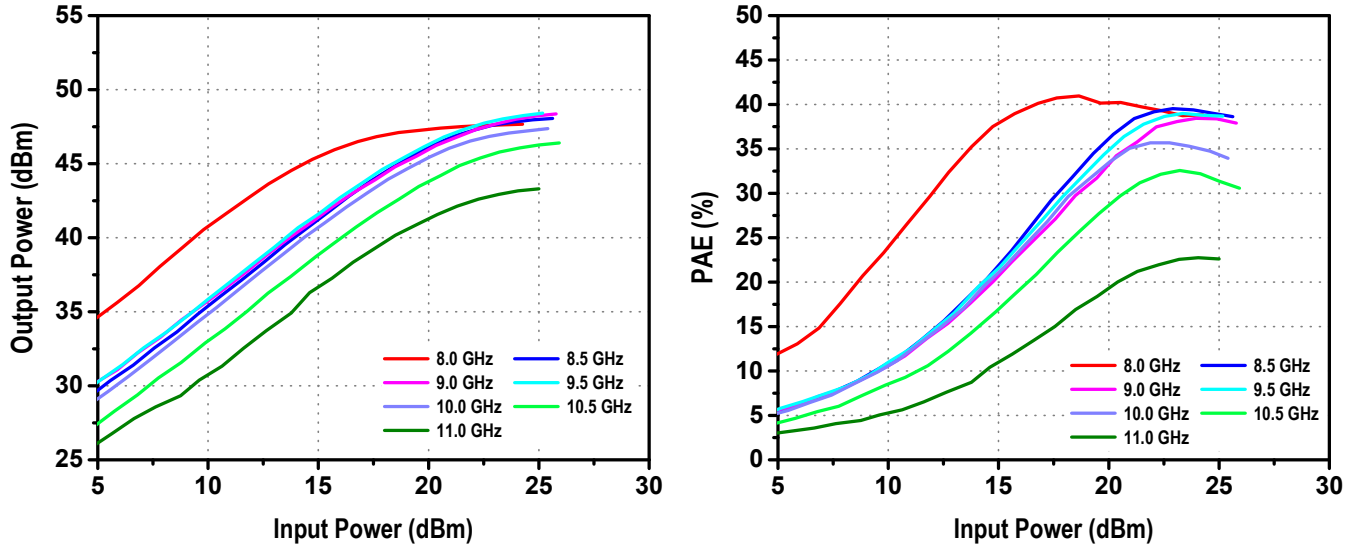
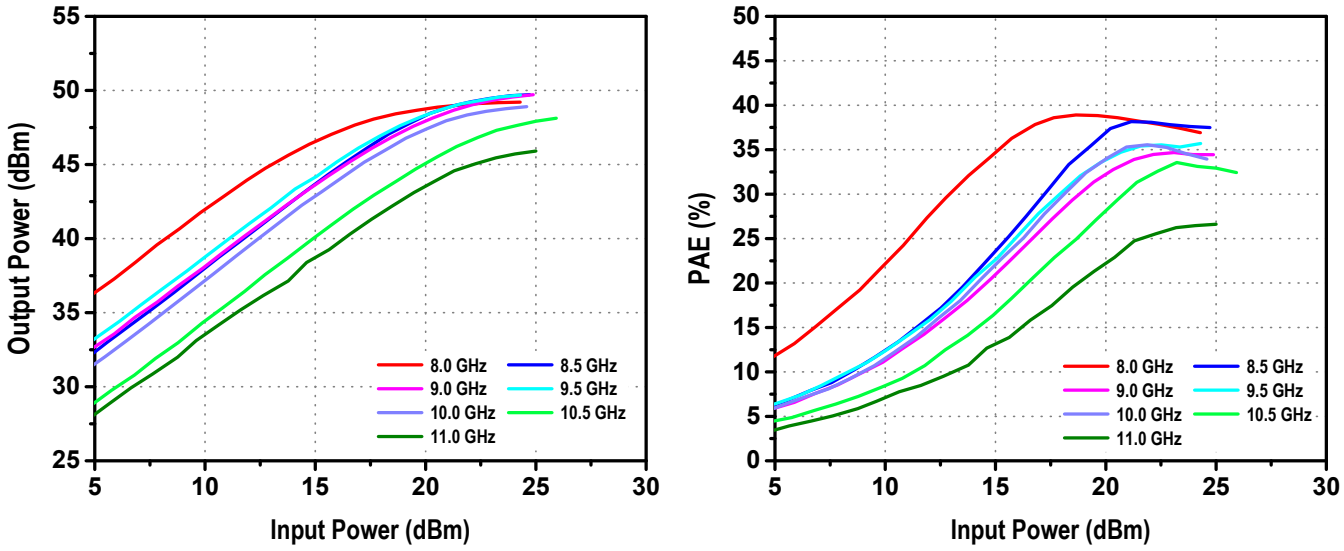
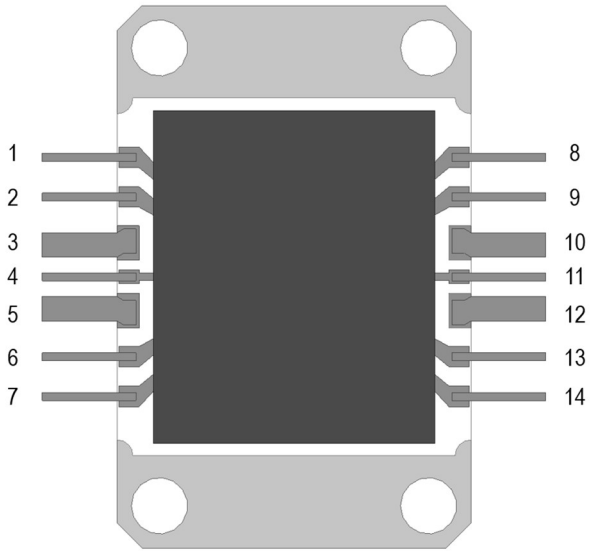


Figure 4. Output power and drain efficiency vs. input power

V_{DD}=36 V, I_Q=410 mA, T=25℃, pulse width=100 μs, duty cycle=10%

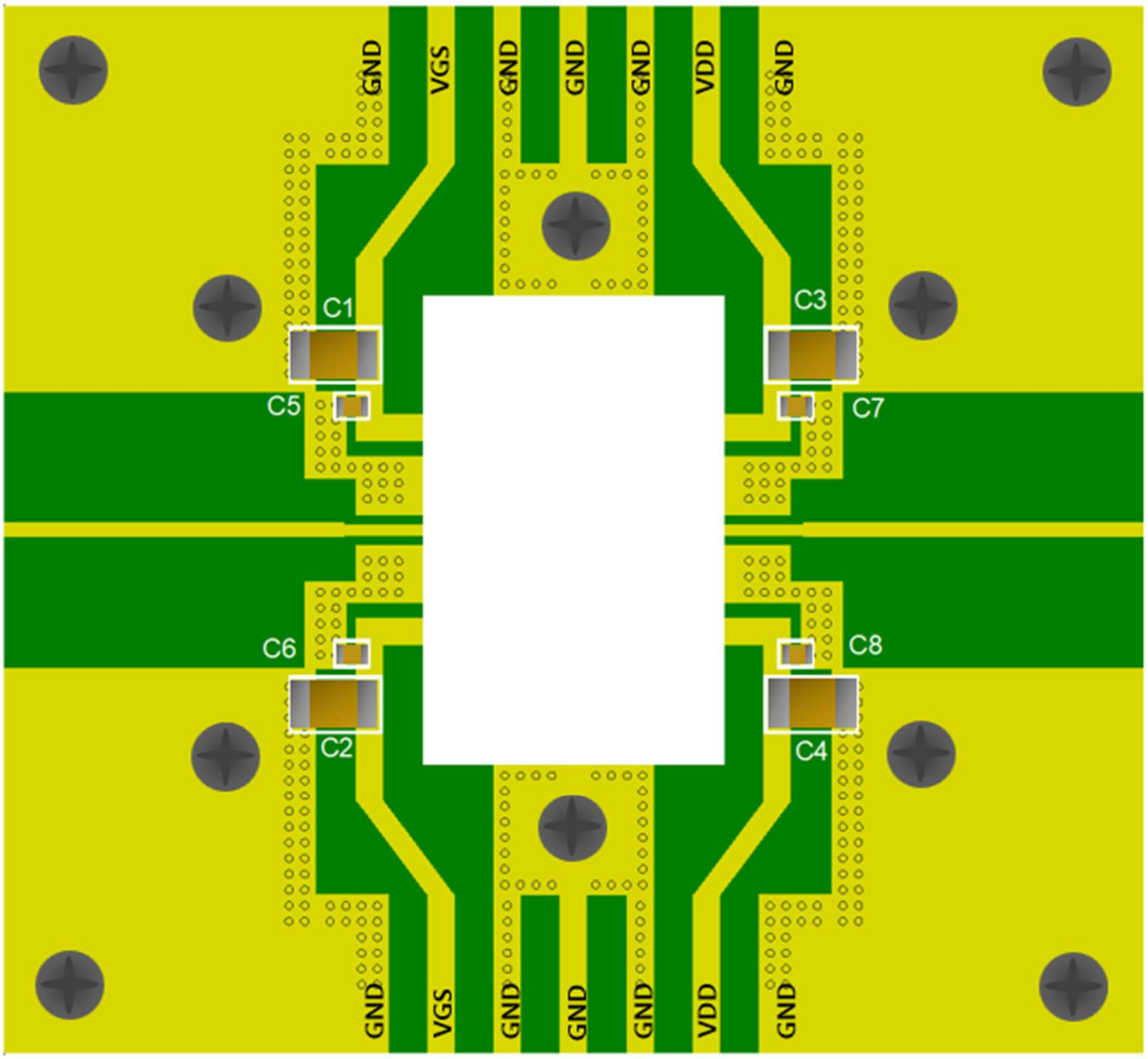


MR500XFL Pin Map



PIN NO.	DESCRIPTION
1, 7	V_{GS}
2, 3, 5, 6, 9, 10, 12, 13	GND
4	RF input
8, 14	V_{DD}
11	RF output

MR500XFL Evaluation Board



Ref. Des.	Component	Value	Manuf.	Part Number
C1, C2, C3, C4	SMT Cap.	10 uF, 1206 size, 10%, X5R, 50 V	Various	
C5, C6, C7, C8	SMT Cap.	0.1 uF, 0402 size, 10%, X7R, 50 V	Various	

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