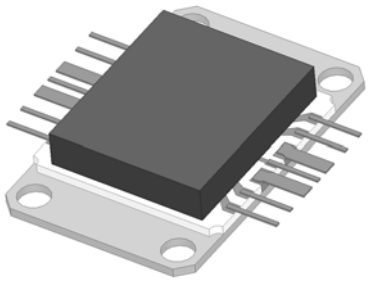
MR500CFL

50 W, 28 V, 5.0-6.0 GHz, GaN PA MMIC

Product Features

- Radar band 5000-6000 MHz
- Small signal gain 25.5 dB
- Saturated power 47 dBm (50 W)
- Drain efficiency 43.5% @P_{sat}=47 dBm (50 W)
- Packaged 2-stage power amplifier MMIC
- 11.3×17.3 mm^2 size flanged package with leads



11.3 mm × 17.3 mm flanged package

Applications

- Weather Radar
- Defense Radar

Description

The MR500CFL is a packaged 2-stage power amplifier MMIC designed for radar applications, covering frequency range from 5.0 GHz to 6.0 GHz. The device delivers saturated output power of 50 W and has 43.5% peak drain efficiency with operating drain voltage of 28 V.

Electrical Specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Frequency Range	f	5.0	5.5	6.0	GHz	
Small Signal Gain	G	25.5		26.5	dB	
Gain Flatness	ΔG	-0.5		+0.5	dB	Over any 100 MHz bandwidth
Input Return Loss	S_{11}	6.9		26.2	dB	
Output Return Loss	S_{22}	10.1		18.4	dB	
Saturated Output Power	P_{sat}	-	47	-	dBm	
Drain Efficiency	η	39.6	43.5	45.8	%	P_{IN}=26 dBm

Note: I_q=200 mA, V_{dd}=28 V, T=+25°C,
5ms / 10% pulse signal

DC Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Gate Threshold Voltage	V_{GS_TH}		-2.6		V_{DC}	V_D=28 V, I_D=1 mA
Gate Quiescent Voltage	V_{GS_Q}		-2.4		V_{DC}	V_D=28 V, I_D=200 mA
Saturated Drain Current	I_{D_SAT}	4.0	4.6		A	V_D=28 V, I_{D_Q}=200 mA
Drain-Source Breakdown Voltage	V_{D_B}		120		V_{DC}	I_D=1 mA/mm

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}	
Storage Temperature	T_{STG}	200	℃	
Operating Junction Temperature	T_J	250	℃	
Soldering Temperature	T_S	240	℃	
Screw Torque	τ	TBD	In-oz	
Thermal Resistance	R_{TH}	TBD	℃/W	
Case Operating Temperature	T_C	TBD	℃	
Forward Gate Current	I_{GS}	TBD	mA	

Electrostatic Discharge (ESD) Classification

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 of the MR500CFL

V_{DD}=28 V, I_Q=200 mA, T=25℃

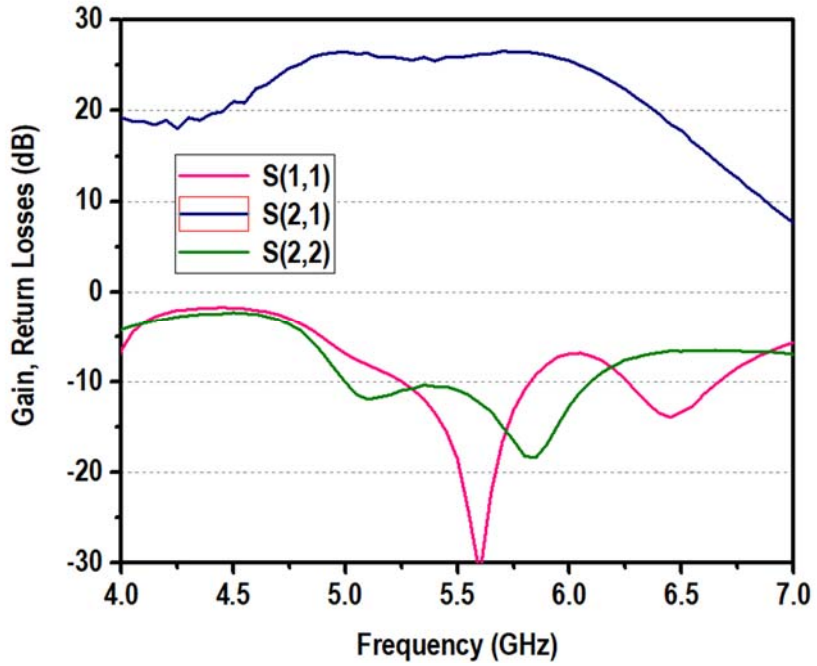
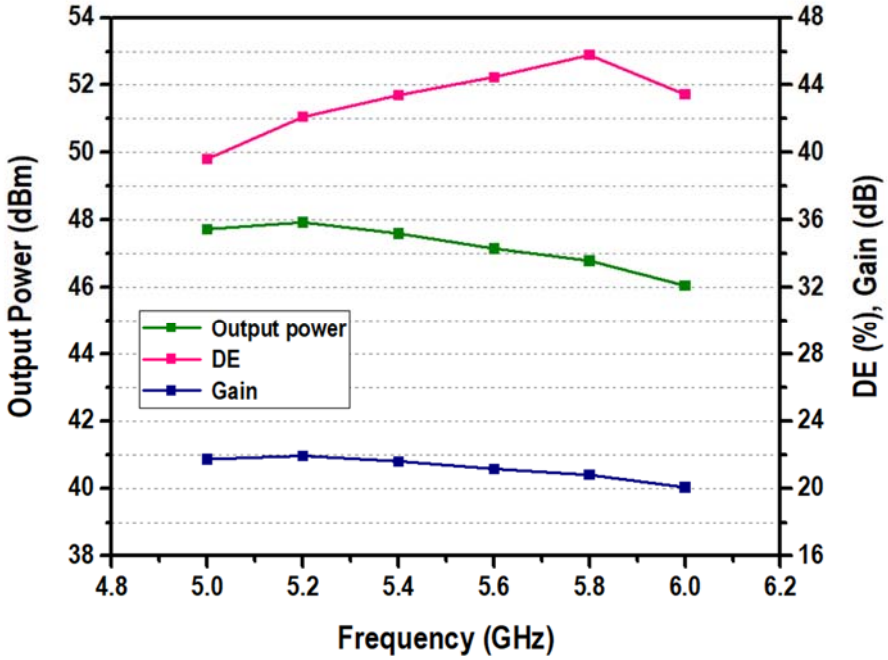
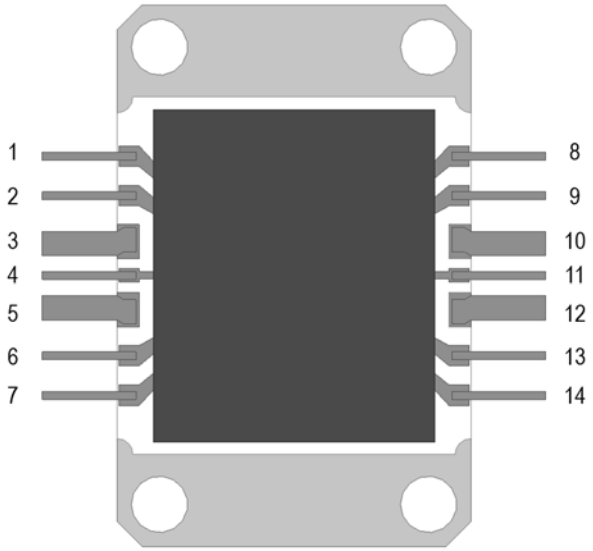


Figure 2. Output Power, Gain, and Drain Efficiency vs. Frequency of the MR500CFL

V_{DD}=28 V, I_Q=200 mA, T=25℃, P_{IN}=26 dBm, Pulse Width=500 μs, Duty Cycle=10%



MR500CFL Pin Map



Pin Number

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

For more information, please contact:

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