

MR200XQ

20 W, 28 V, 8.5-10.5 GHz, GaN PA MMIC



Product Features

- Radar band 8.5-10.5 GHz
- Small signal gain 23.7 dB
- Saturated output power 43 dBm (20 W)
- Drain efficiency 42%
- 2-stage power amplifier MMIC
- GaN-HEMT MMIC
- 10×10 mm² size QFN package

Applications

- Air Defense Radar
- AESA Radar
- Weather Radar

Description

The MR200XQ is a packaged 2-stage power amplifier MMIC designed for radar applications, covering frequency range from 8.5 GHz to 11.5 GHz. The device delivers saturated output power of 20 W and has drain efficiency of 42% with operating drain voltage of 28 V.



10 mm × 10 mm QFN package

Electrical Specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Frequency Range	f	8.5		10.5	GHz	
Small Signal Gain	G	23.7		26.1	dB	
Gain Flatness	ΔG	0.3		1.4	dB	Over any 500 MHz bandwidth
Input Return Loss	S ₁₁	8.5		17.4	dB	
Output Return Loss	S ₂₂	11.2		23.0	dB	
Saturated Output Power	P _{sat}	43.1		43.9	dBm	
Drain Efficiency	η	42.1		48.1	%	P _{IN} =25 dBm

Note: I_q=250 mA, V_{dd}=28 V, T=+25°C,
500 μ s / 10% pulse signal

DC Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Gate Threshold Voltage	V_{GS_TH}		-2.25		V_{DC}	$V_D=28\text{ V}$, $I_D=1\text{ mA}$
Gate Quiescent Voltage	V_{GS_Q}		-1.9		V_{DC}	$V_D=28\text{ V}$, $I_D=250\text{ mA}$
Saturated Drain Current	I_{D_SAT}	1.5		1.7	A	$V_D=28\text{ V}$, $I_{D_Q}=250\text{ mA}$
Drain-Source Breakdown Voltage	V_{D_B}		120		V_{DC}	$I_D=1\text{ mA/mm}$

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	°C	
Operating Junction Temperature	T_J	250	°C	
Soldering Temperature	T_S	240	°C	
Thermal Resistance	R_{TH}	TBD	°C/W	
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 MR200XQ

$V_{DD}=28$ V, $I_Q=250$ mA, $T=25^\circ\text{C}$

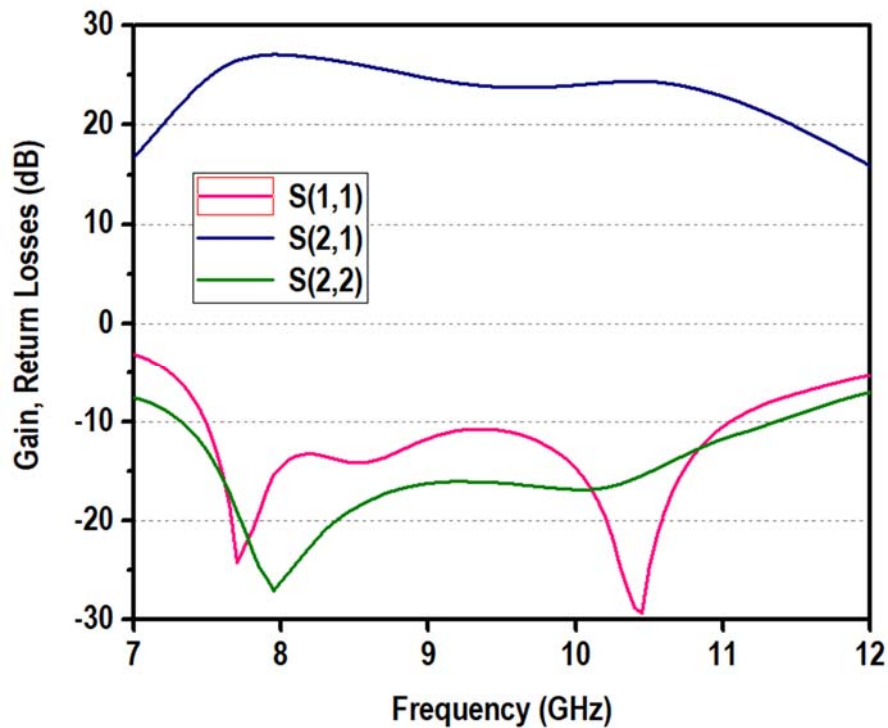
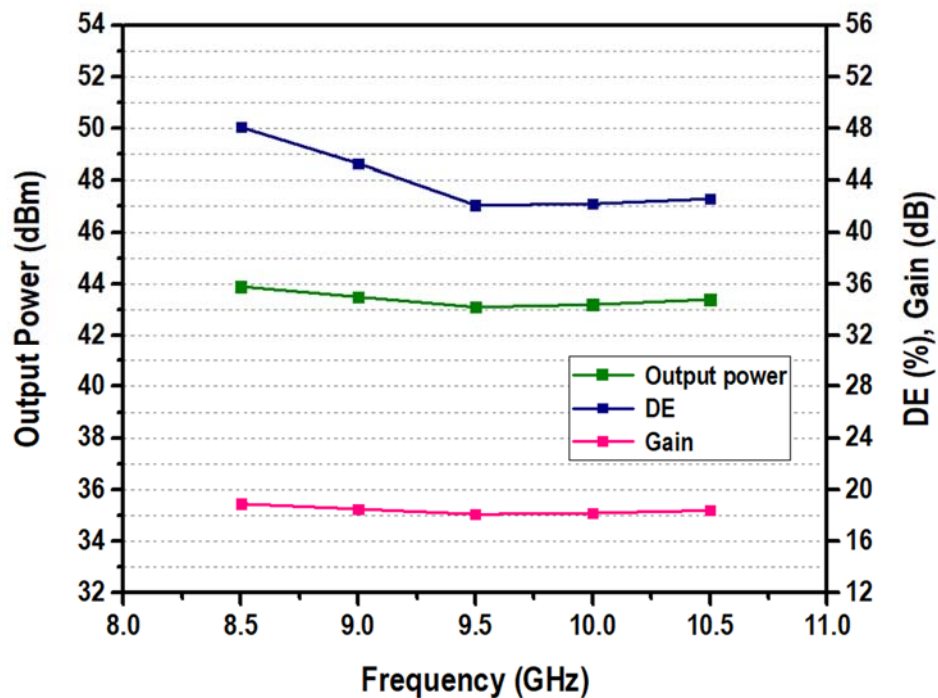


Figure 2. Output Power, Gain, and Drain Efficiency vs. Frequency of the MR200XQ

$V_{DD}=28$ V, $I_Q=250$ mA, $T=25^\circ\text{C}$, $P_{IN}=25$ dBm, Pulse Width=500 μs , Duty Cycle=10%



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