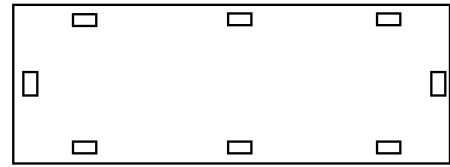


Product Features

- Radar band 13.0-16.0 GHz
- Small signal gain 31.9 dB
- Saturation power 37.2 dBm (5.2 W)
- Drain efficiency 34.9%
- 3-stage power amplifier MMIC
- GaN-HEMT MMIC
- 3.6×1.3 mm² size bare die



3.6 mm × 1.3 mm bare die

Applications

- Satellite Communication
- Defense Radar

Description

The MR050KuB is a fully integrated 3-stage power amplifier MMIC designed for satellite communication and radar applications, covering frequency range from 13.0 GHz to 16.0 GHz. The device delivers up to 5 W of saturation power and has 34.9% drain efficiency at saturation power with operating drain voltage of 28 V.

Electrical Specifications

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Frequency Range	f	13.0		16.0	GHz	
Small Signal Gain	G	31.9		35.4	dB	
Gain Flatness	ΔG	-1.9		+1.9	dB	Over any 500 MHz bandwidth
Input Return Loss	S ₁₁	7.3		34.3	dB	
Output Return Loss	S ₂₂	7.0		17.5	dB	
Saturated Output Power	P _{sat}	36.7		37.5	dBm	
Drain Efficiency	η	34.9		42.8	%	At saturated output power

Note: I_q=156 mA, V_{dd}=28 V, T=+25°C,
500 μs / 10% pulse signal

DC Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	CONDITIONS
Gate Threshold Voltage	V_{GS_TH}		-2.3		V_{DC}	$V_D=28\text{ V}$, $I_D=1\text{ mA}$
Gate Quiescent Voltage	V_{GS_Q}		-1.9		V_{DC}	$V_D=28\text{ V}$, $I_D=126\text{ mA}$
Saturated Drain Current	I_{D_SAT}	500		640	mA	$V_D=28\text{ V}$, $I_{D_Q}=126\text{ mA}$
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	$^{\circ}\text{C}$	
Operating Junction Temperature	T_J	250	$^{\circ}\text{C}$	
Soldering Temperature	T_S	240	$^{\circ}\text{C}$	
Thermal Resistance	R_{TH}	TBD	$^{\circ}\text{C/W}$	
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 MR050KuB

$V_{DD}=28\text{ V}$, $I_Q=156\text{ mA}$, $T=25^\circ\text{C}$

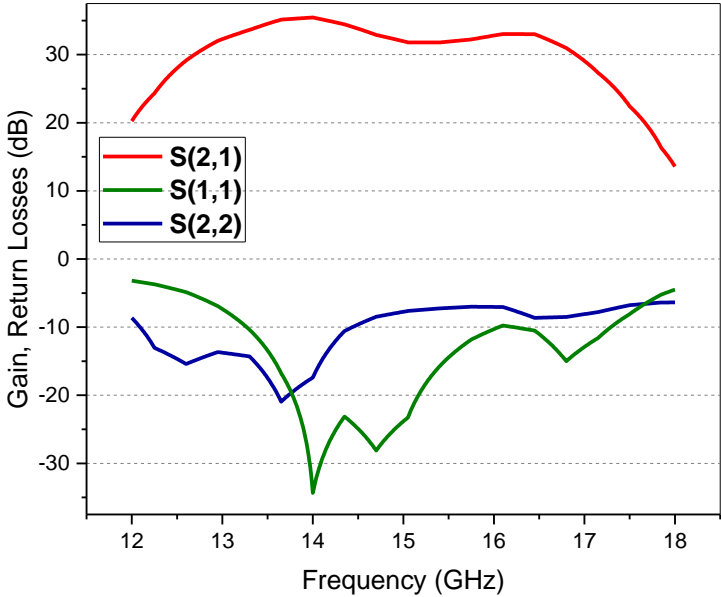


Figure 2. Output Power, Gain, and Drain Efficiency vs. Frequency of the MR5005060FL

$V_{DD}=28\text{ V}$, $I_Q=156\text{ mA}$, $T=25^\circ\text{C}$, $P_{IN}=6\text{ dBm}$, Pulse Width=50 μs , Duty Cycle=10%

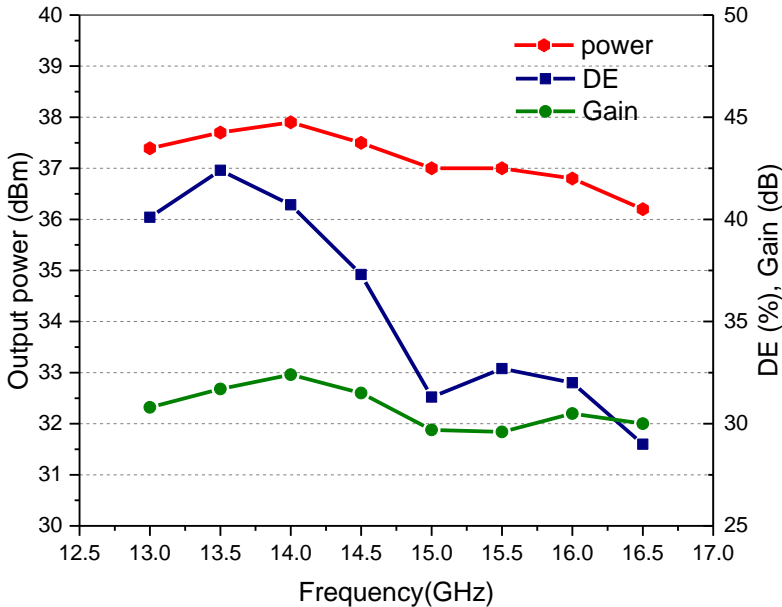
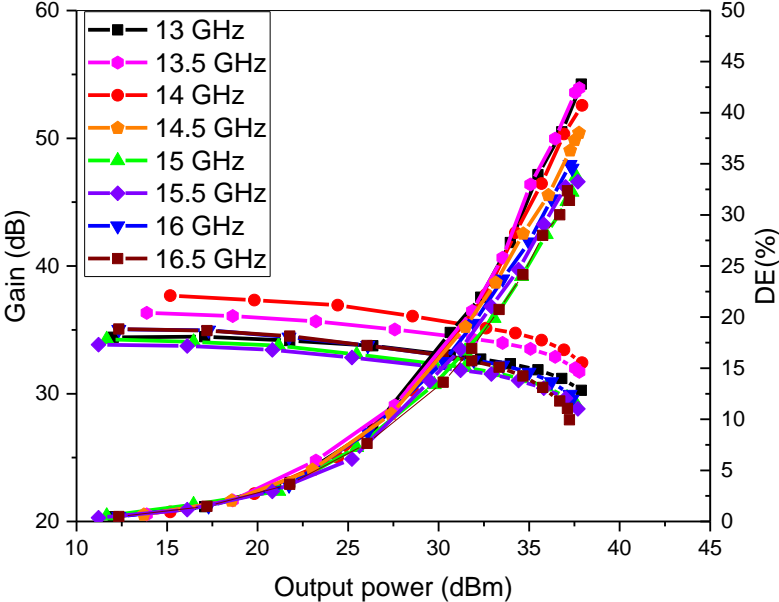
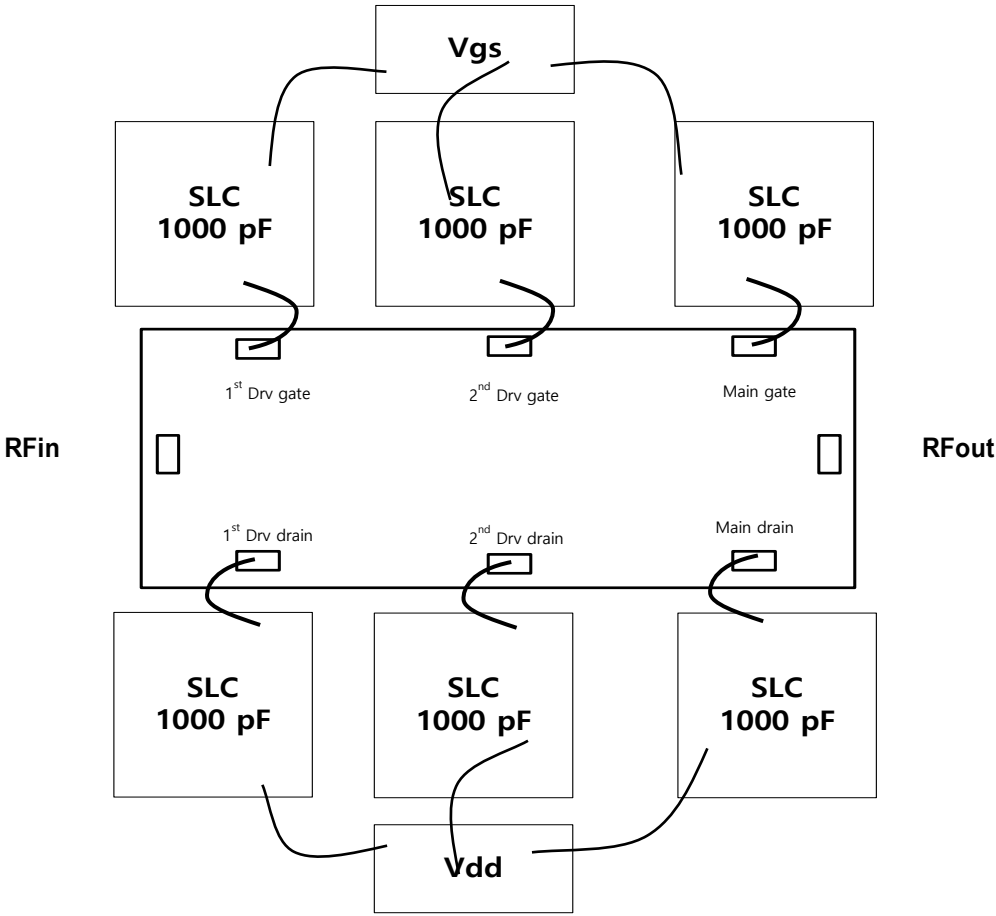


Figure 3. Gain and Drain Efficiency vs. Output Power of the MR5005060FL

$V_{DD}=28\text{ V}$, $I_Q=156\text{ mA}$, $T=25^\circ\text{C}$, Pulse Width=50 μs , Duty Cycle=10%



MR050kuB Pin Map



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