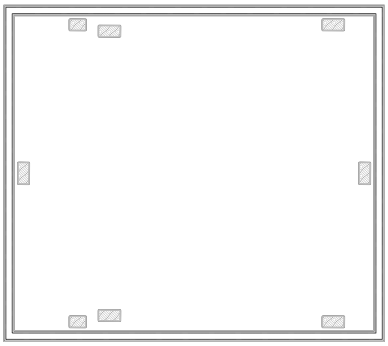
## Product Features

- Radar band 8.0-11.0 GHz
- Small signal gain 23.5 dB
- Saturation power 43.9 dBm (24.5 W)
- Drain efficiency 40%
- 2-stage power amplifier MMIC
- GaN-HEMT MMIC
- 3.5×3.1 $mm^2$ size bare die



**3.5 mm × 3.1 mm bare die**

## Applications

- Air Defense Radar
- AESA Radar
- Weather Radar

## Description

The MR200XB is a fully integrated 2-stage power amplifier MMIC designed for radar applications, covering frequency range from 8.0 GHz to 11.0 GHz. The device delivers up to 24 W of saturation power and has 40% drain efficiency with operating drain voltage of 28 V.

## Electrical Specifications

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT | CONDITIONS |
|---|---|---|---|---|---|---|
| **Frequency Range** | f | 8.0 | | 11.0 | GHz | |
| **Small Signal Gain** | G | 23.5 | | 26.8 | dB | |
| **Gain Flatness** | ΔG | -2.5 | | +2.5 | dB | Over any 1 GHz bandwidth |
| **Input Return Loss** | $S_{11}$ | 11.1 | | 28.3 | dB | |
| **Output Return Loss** | $S_{22}$ | 11.5 | | 20.7 | dB | |
| **Saturated Output Power** | $P_{sat}$ | 43.9 | 44.1 | 44.4 | dBm | |
| **Drain Efficiency** | η | 40.4 | 44.0 | 48.8 | % | $P_{IN}$=24 dBm |

Note: $I_q$=250 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** | $V_{GS\_TH}$ | | -2.25 | | $V_{DC}$ | $V_D$=28 V, $I_D$=1 mA |
| **Gate Quiescent Voltage** | $V_{GS\_Q}$ | | -1.9 | | $V_{DC}$ | $V_D$=28 V, $I_D$=250 mA |
| **Saturated Drain Current** | $I_{D\_SAT}$ | 1.9 | | 2.35 | A | $V_D$=28 V, $I_{D\_Q}$=250 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 | ℃ | |
| **Thermal Resistance** | $R_{TH}$ | TBD | ℃/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 MR200XB

$V_{DD}$=28 V, $I_Q$=250 mA, T=25℃

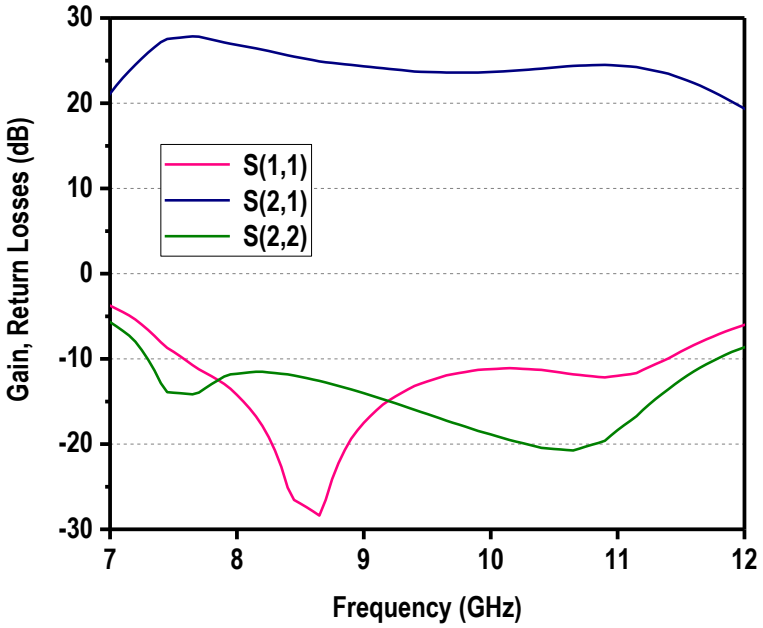



Figure 2. Output Power, Gain, and Drain Efficiency vs. Frequency of the MR200XB

$V_{DD}$=28 V, $I_Q$=250 mA, T=25℃, $P_{IN}$=24 dBm, Pulse Width=50 μs, Duty Cycle=10%

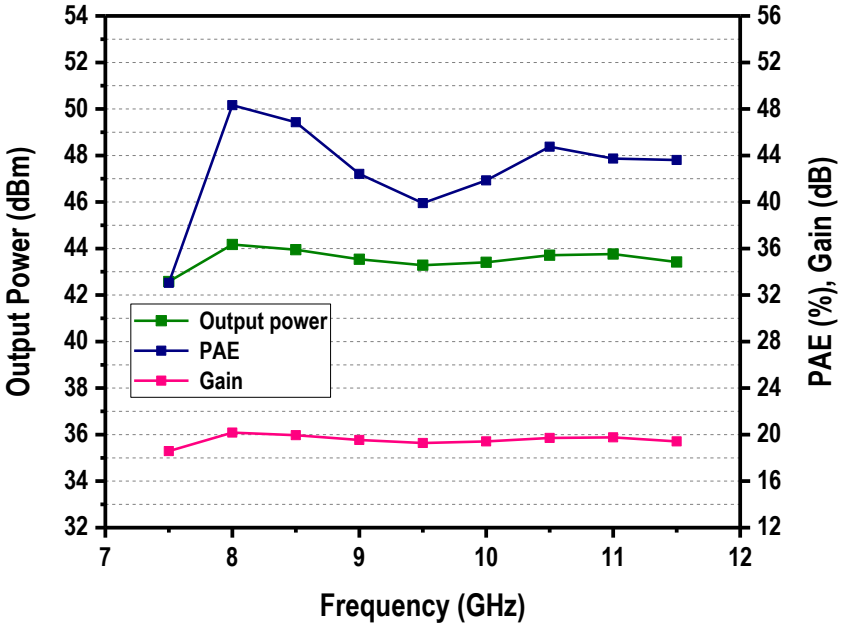
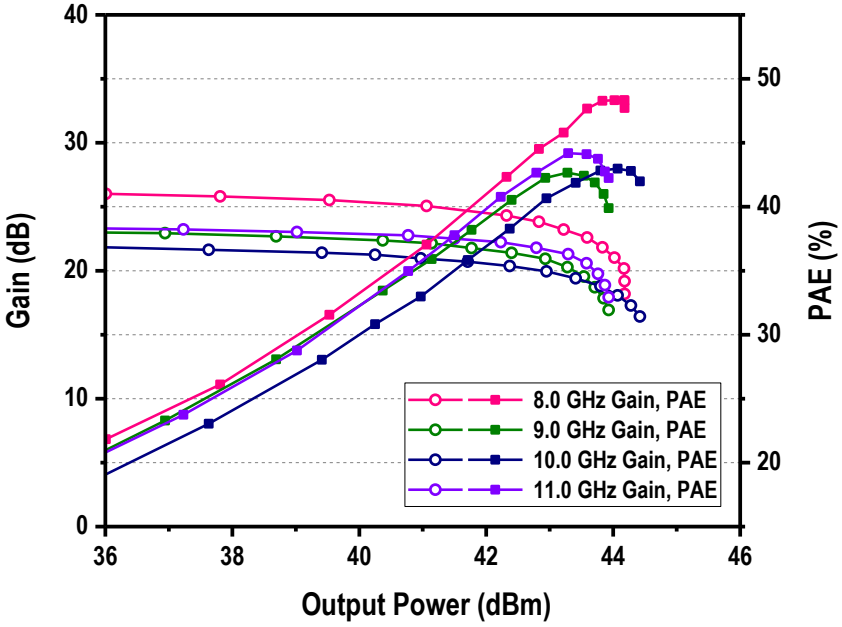
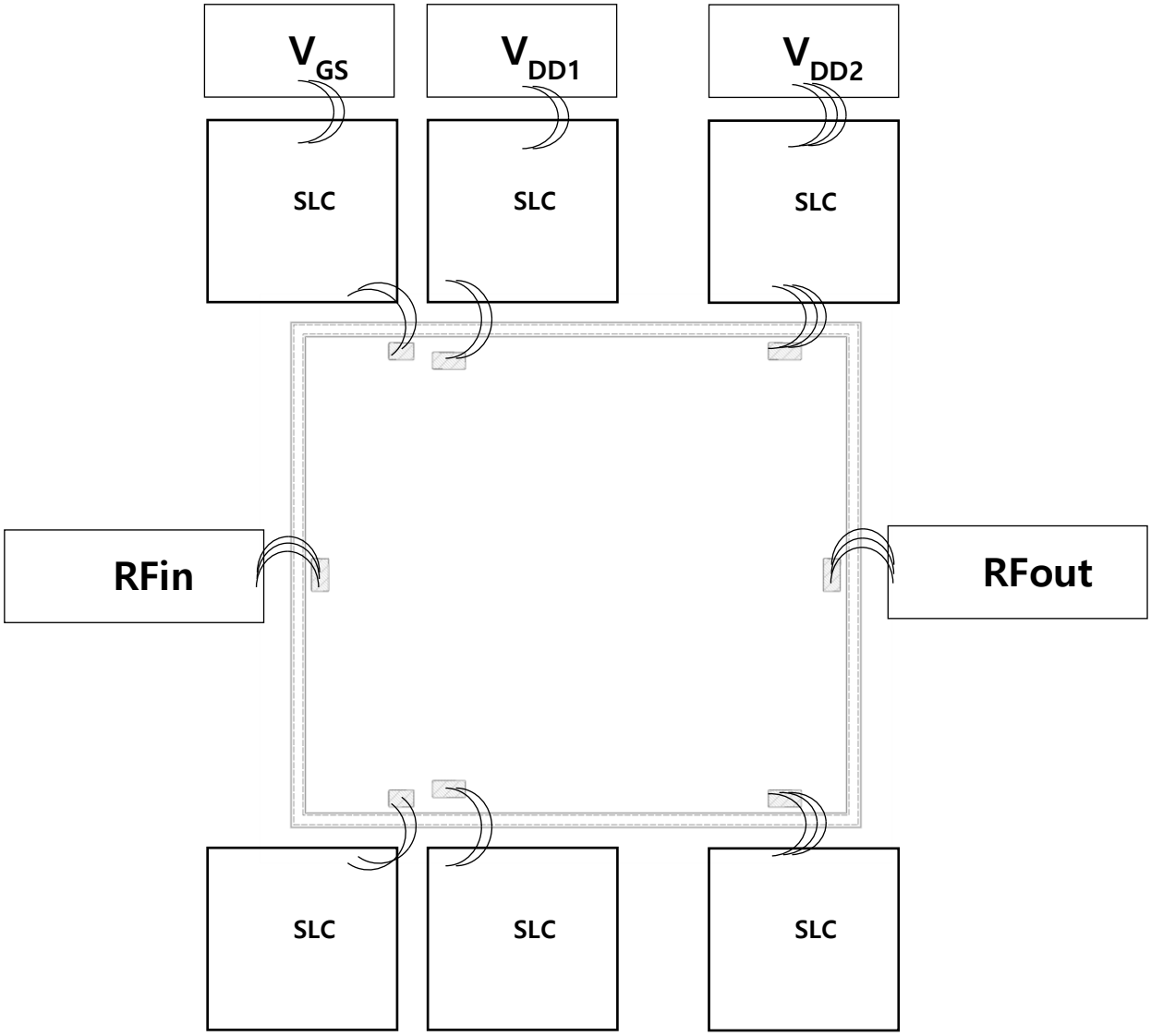


Figure 3. Gain and Drain Efficiency vs. Output Power of the MR200XB

$V_{DD}$=28 V, $I_Q$=250 mA, T=25℃, Pulse Width=50 μs, Duty Cycle=10%



## MR200XB Pin Map



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