MGA-25203

5.1-5.9GHz 3x3mm WiFi and WiMAX Power Amplifier

Preliminary Data Sheet

Description

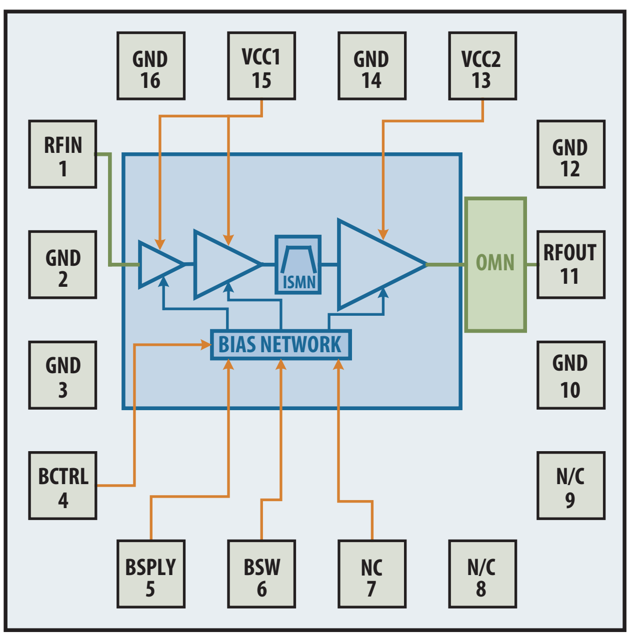
Avago Technologies MGA-25203 linear power amplifier is designed for mobile and fixed wireless data applications in the 5.1 to 5.9 GHz frequency ranges. The PA is optimized for IEEE 802.11a/b/g/n WLAN and 802.16 WiMAX applications. The PA exhibits flat gain and good match while providing linear power efficiency to meet stringent mask conditions. It utilizes Avago Technologies proprietary GaAs Enhancement-mode pHEMT technology for superior performance across voltage and temperature levels.

The MGA-25203 is packaged in a 3x3x1 mm size for space-constrained applications.

Applications

- Portable WiFi and WiMAX applications
- WiFi and WiMAX Access points

Functional Block Diagram



Features

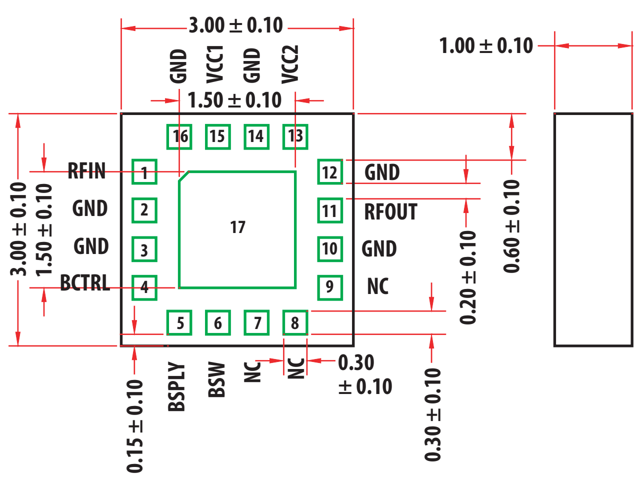
- Advanced GaAs E-pHEMT
- 50 Ω all RF ports
- Full performance across entire 5.1-5.9GHz
- Operates from 4.9-5.9 GHz
- Integrated CMOS compatible pins for shutdown
- 3 to 5V supply
- ESD protection all ports above 1000V HBM
- Small size: 3 x 3 x 1 mm
- Stable under all loads or conditions
- -40°C to +85°C operation

At 5.4GHz

- Meets all IEEE 802.11n masks at 23 dBm Pout with 3.3V and 500mA
- EVM of -34dB (2.2%) at 64QAM, 54Mbps @ Pout of 23dBm
- Gain of 30dB
- PAE of 13%

Package Diagram

MGA 2x003 3x3mm Package Dimensions



TOP VIEW THROUGH PACKAGE

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Electrical Specifications

All data measured on an FR4 demo board at Vcc1 = Vcc2 = 3.3V, Tc = 25°C, 50 Ω at all ports. Unless otherwise specified, all data is taken at 54Mbps 64QAM modulated signal per IEEE 802.11g with 20MHz BW at 5.4GHz.

Parameter		Typical Performance	Minimum	Maximum	Unit
Input Return Loss		-10			dB
Pass-Band Gain		30	25	33	dB
Gain Flatness		1			dB
PAE		13			%
Gain Variation over VCC		1	-1	1	dB
Variation over Temp		1	-1.5	1.5	dB
23dBm	EVM	-34		-32	dB
	Current	500		600	mA
20dBm	EVM	-37			dB
	Current				mA
15dBm	EVM	-38			dB
	Current				mA
PA NF		TBD			dB
SEM @11MHz		-25			dBm
SEM @30MHz		-48			dBm
P1dB		28			dBm
Psat		29			dBm
2Fo		TBD		-12	dBm/Mhz
3Fo		TBD		-45	dBm/Mhz
Settling Time				.5	uS
Idq		300			mA
Icc leakage current				15	uA

Selected performance plots

3.3V Data

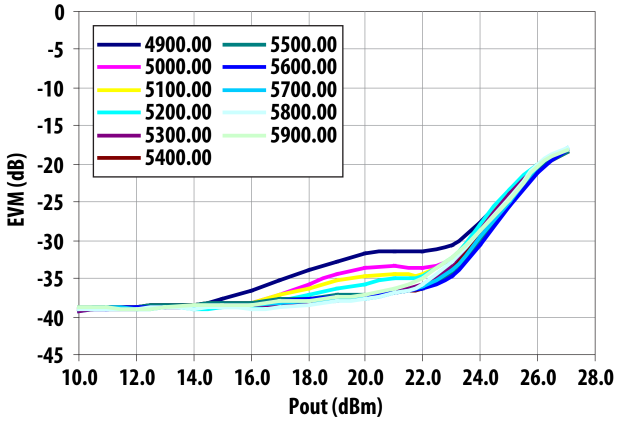


Figure 3. EVM vs. Pout at 3.3V

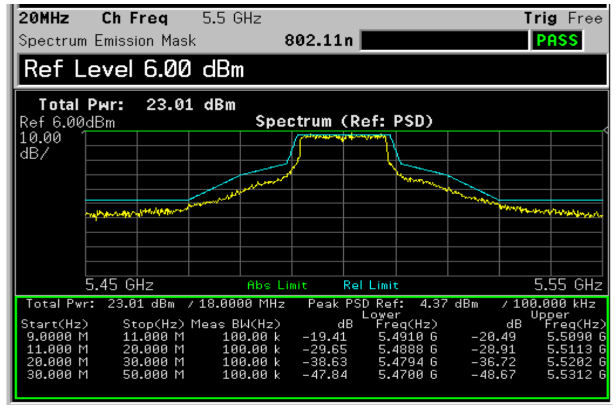


Figure 4. WiFi 802.11n SEM at 23dBm Pout at 3.3V

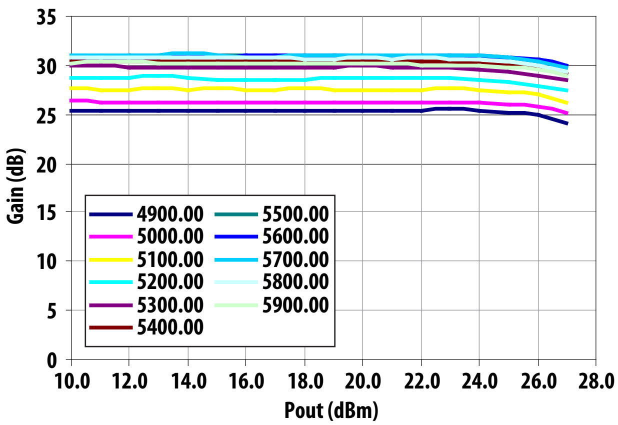


Figure 5. Gain vs. Pout at 3.3V

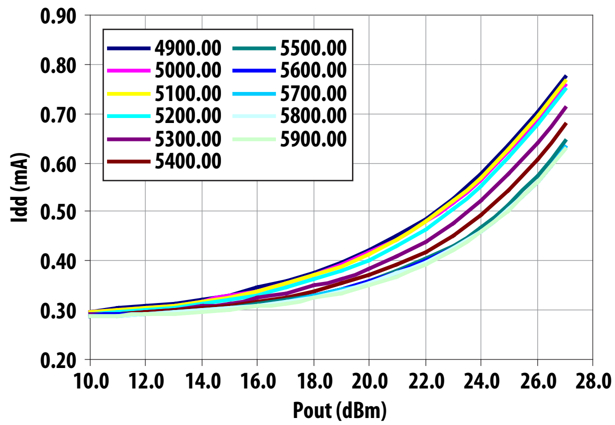


Figure 6. Idd vs. Pout at 3.3V

5V Data

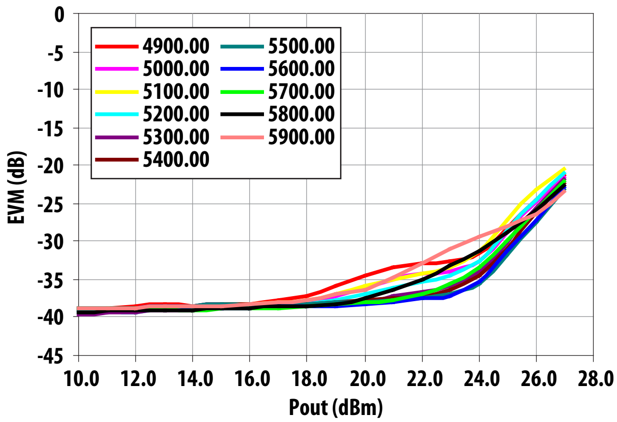


Figure 7. EVM vs Pout at 5V

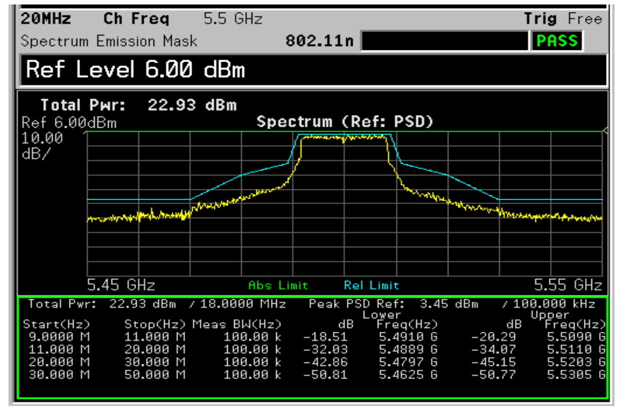


Figure 8. WiFi 802.11n SEM at 23dBm Pout at 5V

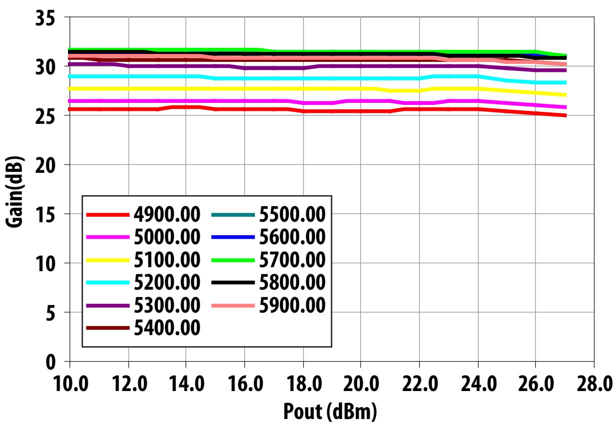


Figure 9. Gain vs Pout at 5V

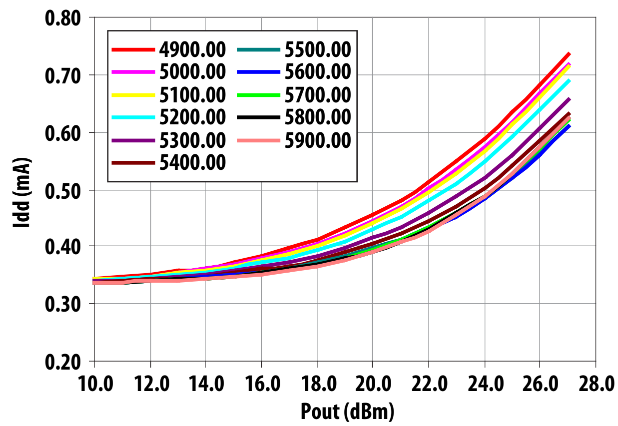


Figure 10. Idd vs Pout at 5V

Evaluation Board Description

Pin Description:

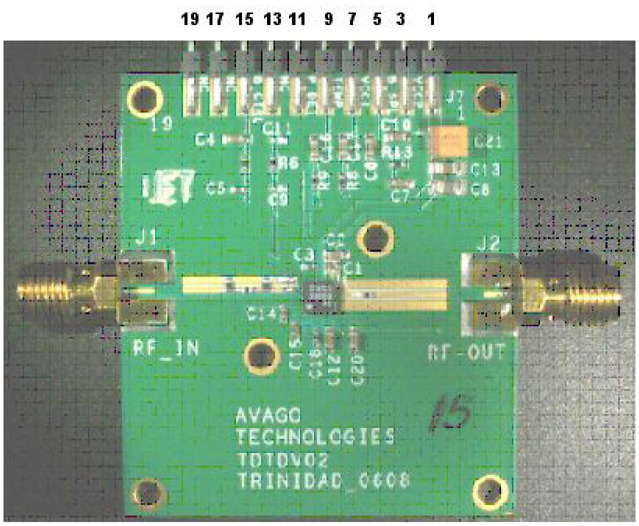
Top Pin No.	Function
1	VCC2
3	B_SPLY
5	VCC1
7	NC
9	NC
11	NC
13	NC
15	B_CTRL
17	NC
19	NC

Bottom Pin No.	Function
2	VCC2_S
4	GND
6	GND
8	GND
10	GND
12	GND
14	B_SW
16	GND
18	GND
20	GND

Recommended turn on sequence

- Apply VCC1 and VCC2 3.3V
- Apply BSPLY 3.3V
- Apply BCTRL 2.8V
- Apply BSW 1.8V
- Apply RF In, not to exceed 10dBm

Demoboard Top Pins:



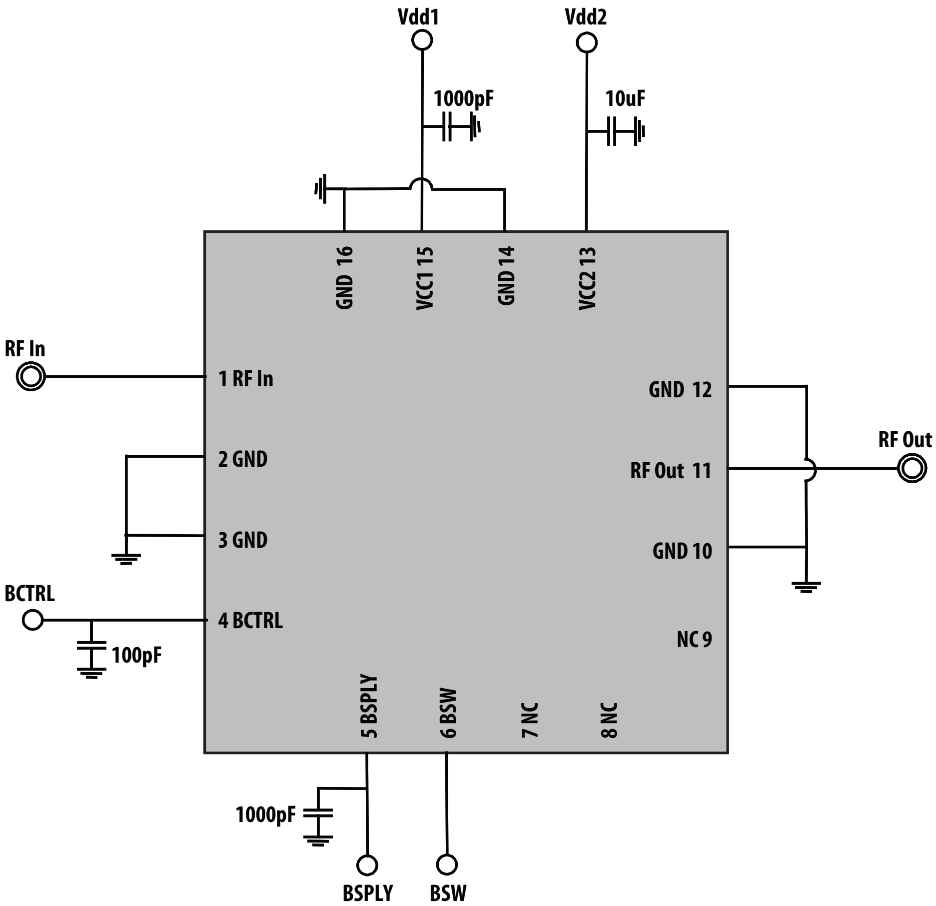
Demoboard Bottom Pins:

Typical Test Conditions:

	HPM	
VCC1,2	3.3V	Supply Voltage
B_SPLY	3.3V	Bias Voltage
B_CTRL	2.8V	Bias Control
B_SW	1.8V	PA Enable

Note1: VCC1, VCC2 and B_SPLY can be tied together to reduce supply voltages, but B_CTRL needs to be a regulated voltage which is optimized for 2.8V.

Application Circuit MGA-25203



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For product information and a complete list of distributors, please go to our web site: **www.avagotech.com**

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