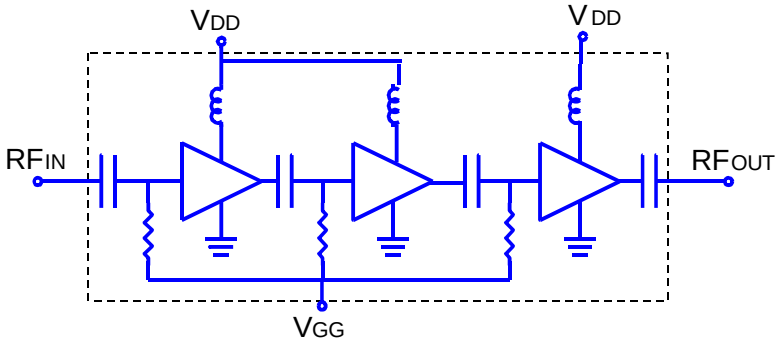
MA08509D

Preliminary Release

10W Power Amplifier Die (8.0-11 GHz)

FEATURES

- Broadband Performance
- 32% Typical Power Added Efficiency
- 50 Ω Input/Output Impedance
- Self-Aligned MSAG® MESFET Process



Description

The MA08509D is a three stage MMIC power amplifier fabricated using M/A-COM's mature GaAs Self-Aligned MSAG® MESFET Process. This product is fully matched to 50 ohms on both the input and the output.

Maximum Ratings (T_A = 25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
DC Drain Supply Voltage	V_{DD}	12	**Vdc**
DC Gate Supply Voltage	V_{GG}	-6	Vdc
RF Input Power	P_{IN}	500	mW
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-40 to +85	°C

ELECTRICAL CHARACTERISTICS V_{DD} = 10.0 V, V_{GG} = -4 V, P_{IN} = 18 dBm, T_A = 25 °C

Characteristic	Symbol	Min	Typ	Max	Unit
Frequency	f	8.0	-	11.0	GHz
Output Power, saturated	P_{SAT}	39.0	40	41.5	dBm
Power Gain, saturated	G_{SAT}	20	22		dB
Gain Flatness Over Frequency @ P_{in} = 18 dBm	-		+/- 1.0		dB
Power Added Efficiency (P_{OUT}=P_{SAT})	PAE	25	32		%
Return Loss	S_{11}		-6	-4	dB
Harmonics	$2f_o$, $3f_o$		-30		dBc
Output Stage Thermal Resistance @ Pin = 18 dBm	R_{th}		5.4		°C/W

Specifications subject to change without notice.

902179 D

■ **North America:** Tel. (800)366-2266, Fax (800)618-8883
■ **Asia/Pacific:** Tel. +81-44-844-8296, Fax +81-44-844-8298
■ **Europe:** Tel. +44 (1344) 869 595, Fax +44 (1344) 300 020

Visit www.macom.com for additional data sheets and product information

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TYPICAL CHARACTERISTICS (V_{DD} = 10 V, V_{GG} = -4 V, P_{IN} = 18 dBm)

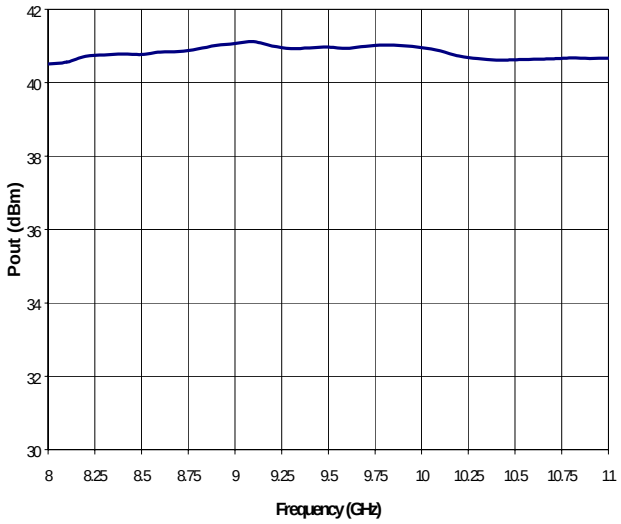


Figure 1. Output Power vs. Frequency

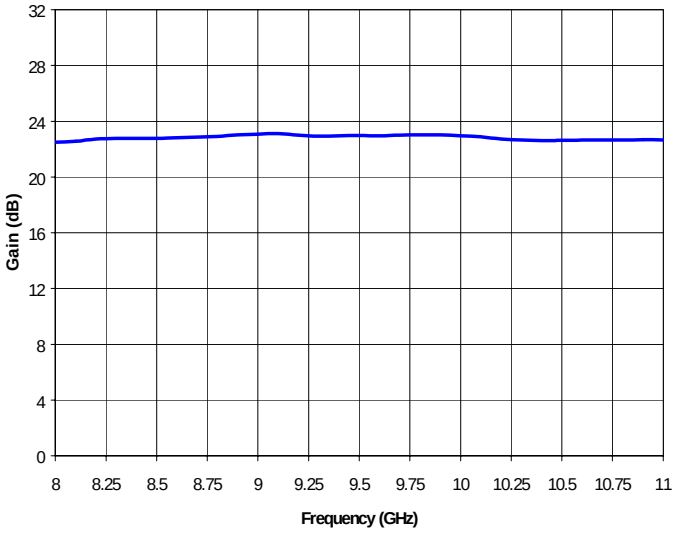


Figure 2. Gain vs. Frequency

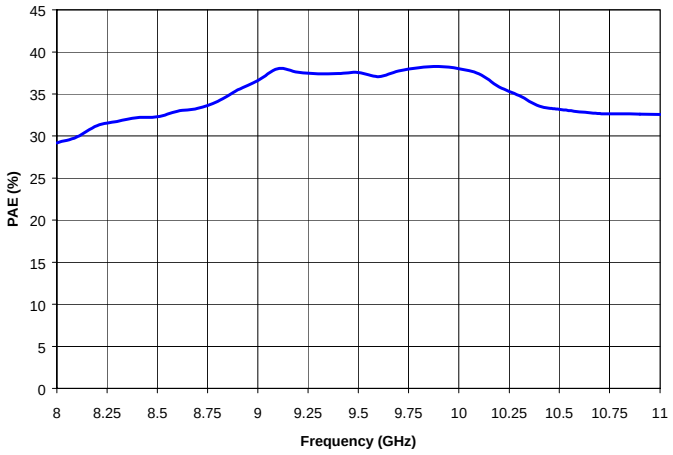


Figure 3. Power Added Efficiency vs. Frequency

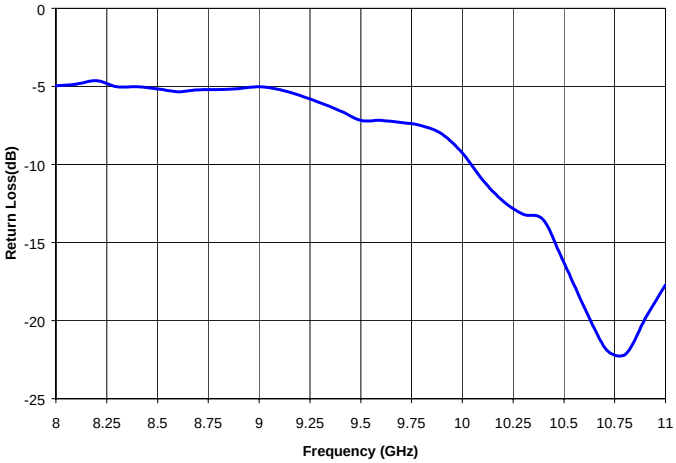


Figure 4. Input Return Loss vs. Frequency

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APPLICATION INFORMATION

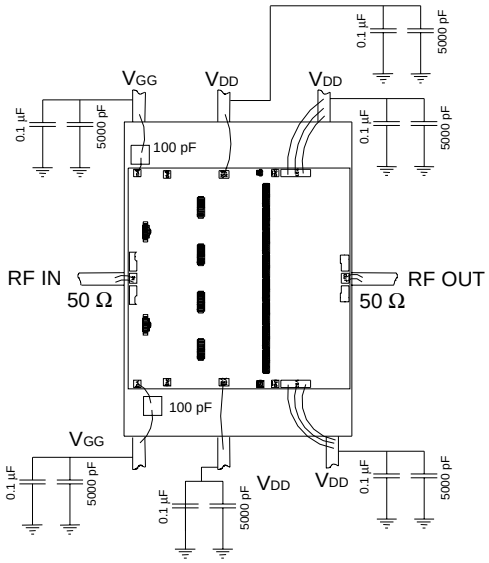


Figure 5. Recommended bonding diagram for pedestal mount. Support circuitry typical of MMIC characterization fixture for CW testing

Assembly:

Chip dimensions: 4.6 mm x 4.6 mm, .003" thickness.

Die attach: Use AuSn (80/20) 1-2 mil. preform solder. Limit time @ 300 °C to less than 5 minutes.

Wirebonding: Bond @ 160 °C using standard ball or thermal compression wedge bond techniques. For DC pad connections, use either ball or wedge bonds. For best RF performance, use wedge bonds of shortest length, although ball bonds are also acceptable.

Biasing:

1. User must apply negative bias to V_{GG} before applying positive bias to V_{DD} to prevent damage to amplifier.

