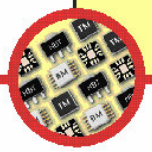
AMCOM COMMUNICATIONS
The RF Power House

GaAs MMIC Power Amplifier

AM009023WM-BM-R
AM009023WM-FM-R
July 2011
Rev 2



DESCRIPTION

AMCOM's AM009023WM-BM/FM-R is an ultra broadband GaAs MMIC power amplifier. It has 22dB gain, and 25dBm output power over the 0.05 to 9GHz band. The noise figure is 4.5dB up to 4GHz. This MMIC is in a ceramic package with both RF and DC leads at the bottom level of the package to facilitate low-cost SMT assembly to the PC board. The AM009023WM-FM-R is a AM009023WM-BM-R assembled on a gold plated copper flange carrier for screwing on to a metal heat sink. Both parts are RoHS compliant.

FEATURES

- Ultra wide bandwidth from 50MHz to 9GHz
- High output power, P1dB = 25dBm
- High gain, 22dB , low noise
- Input /Output matched to 50 Ohms

APPLICATIONS

- Software Radio
- Instrumentation
- Gain block
- Low Noise applications

TYPICAL PERFORMANCE * (Bias Conditions**: V_{dd} = +12V, I_{dq} = 210mA, V_{gs1}, V_{gs2}=-0.65V)

Parameters	Minimum	Typical **	Maximum
Frequency	0.1 – 8GHz	0.05 – 9GHz	
Small Signal Gain		22dB	25dB
Gain Ripple		± 3dB	± 4.0dB
P1dB @ 5GHz	22dBm	23dBm	
P1dB from 0.1 to 8GHz		> 22dBm	
Psat @ 5GHz	24dBm	25dBm	
Psat from 0.1 to 8.0GHz		> 23dBm	
IP3 @ 1GHz		30dBm	
Input Return Loss	3dB	5dB	
Output Return Loss	7dB	10dB	
Thermal Resistance		20℃/W	

* Specifications subject to change without notice.

** Gate biases corresponding to above currents are V_{gs1}=-0.65V, I_{gs1} < 0.25mA, V_{gs2}=-0.65V, I_{gs2} < 0.5mA and may vary from lot to lot. Gate currents could reach above limits only near power saturation

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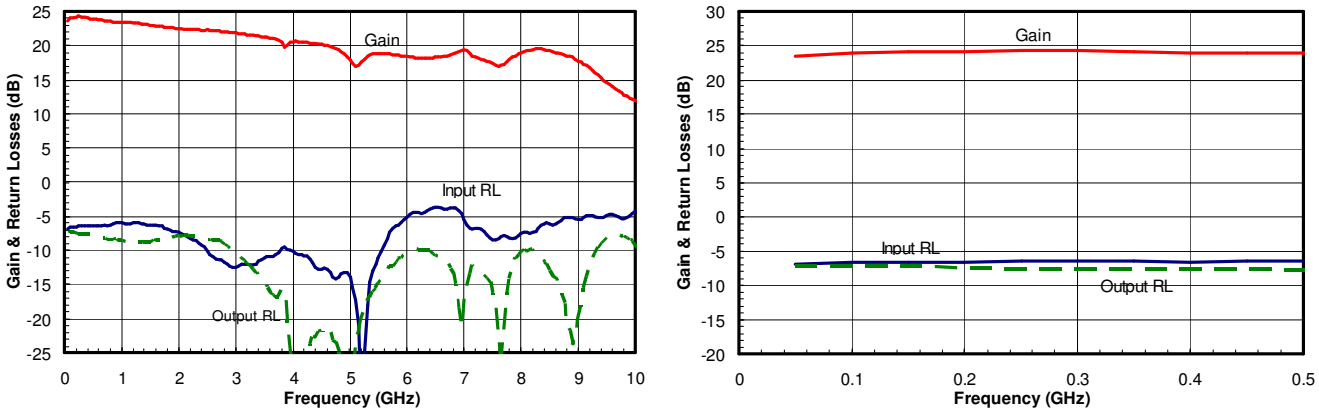
ABSOLUTE MAXIMUM RATING

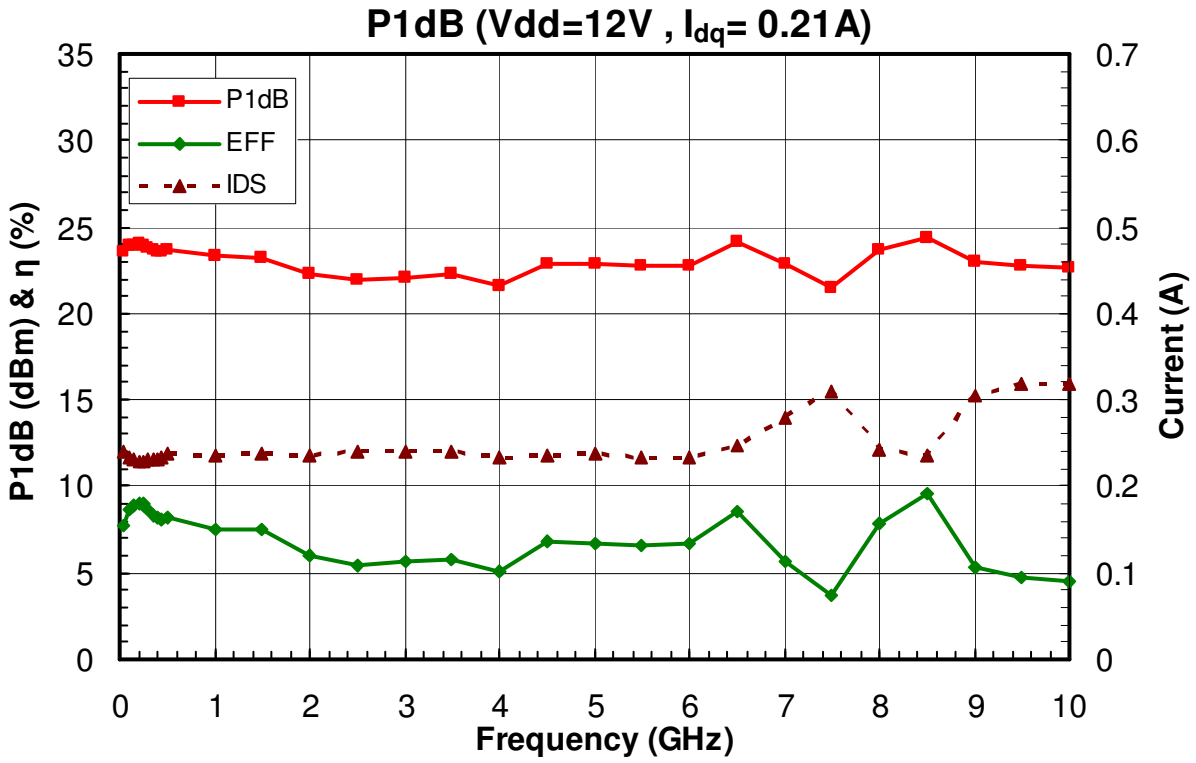
Parameters	Symbol	Rating
Drain source voltage	V_{dd}	14V
Gate source voltage	V_{gs1} & V_{gs2}	-3V
Drain source current	I_{dq1}	0.1A
Drain source current	I_{dq2}	0.20A
Continuous dissipation at 25ºC	P_t	4.2W
Channel temperature	T_{ch}	175°C
Operating temperature	T_{op}	-55°C to +85°C
Storage temperature	T_{sto}	-55°C to +135°C

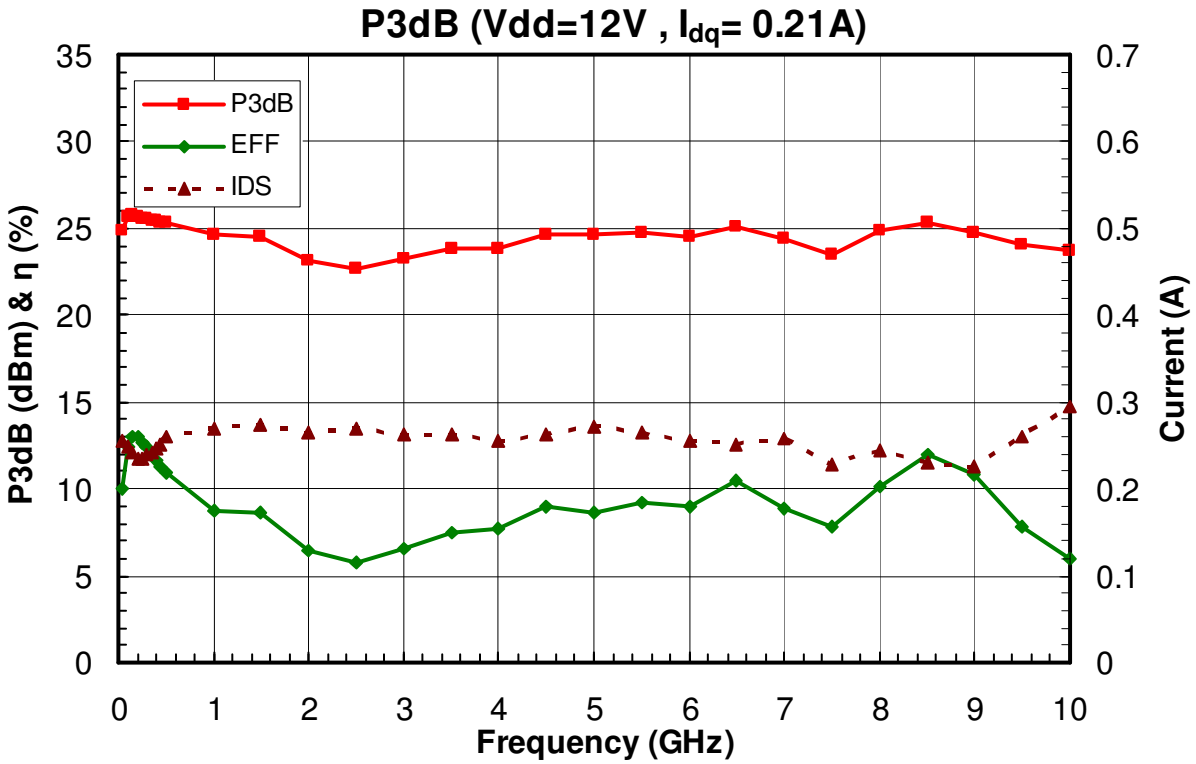
SMALL SIGNAL DATA*



* S-Parameters measured using bias tee at the output for DC block. MMIC could be operated at lower than V_{dd}=+12V with almost same small signal parameters.

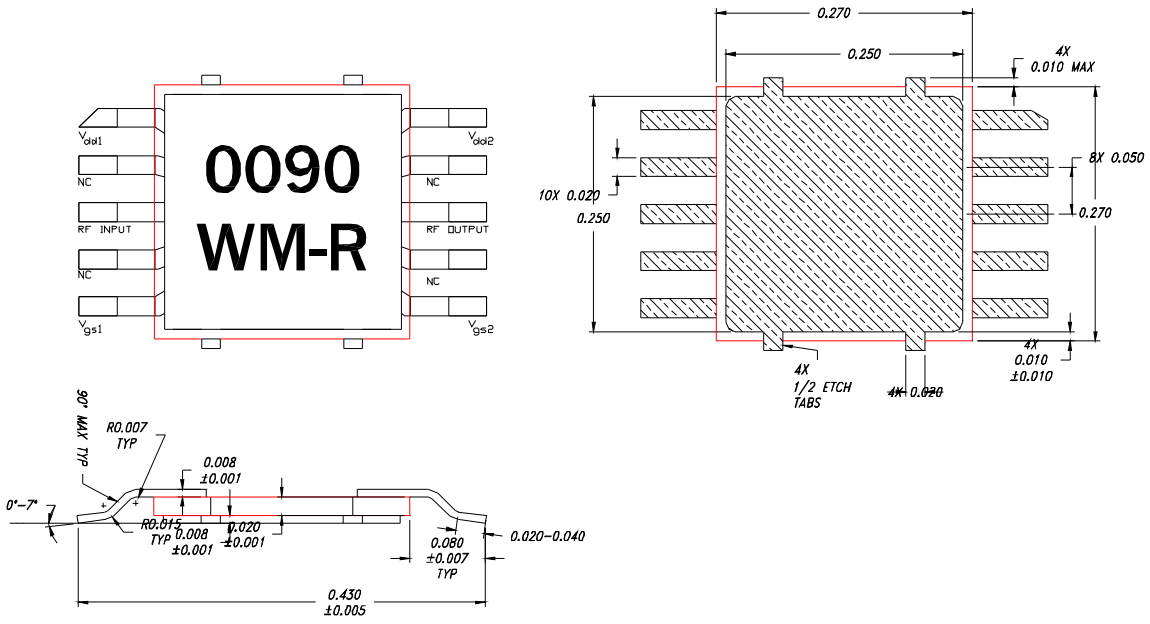
POWER DATA*





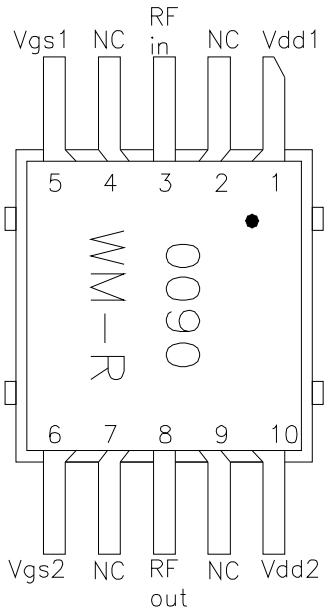
* Power measured using bias tee at the output for DC block. MMIC could be operated at lower than V_{dd}=+12V with reduced power output.

PACKAGE OUTLINE (BM)



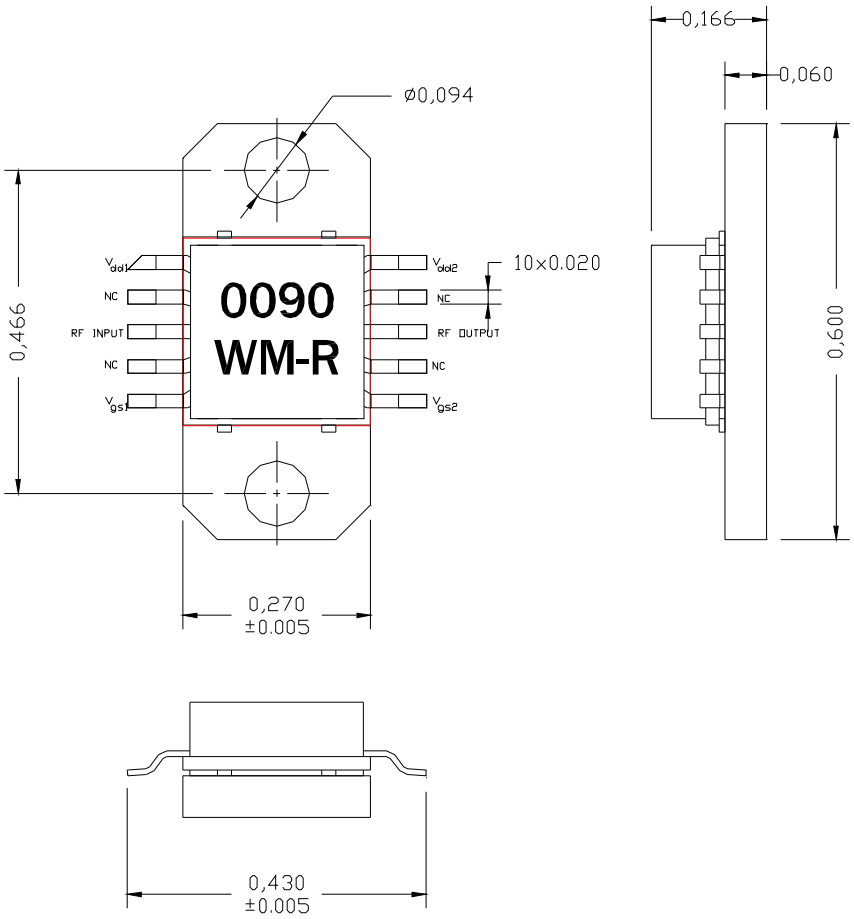
- Gate biases are for reference only and may vary from lot to lot

Pin Layout

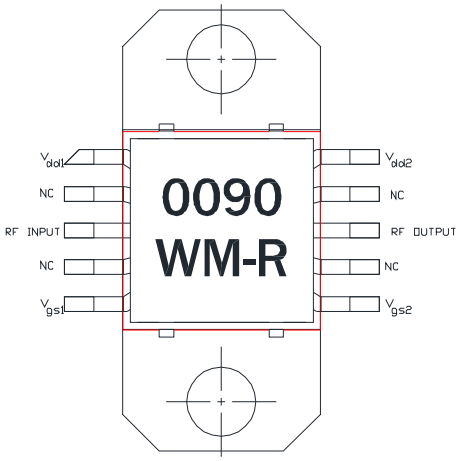


Pin No.	Function	Bias
1	Vdd1	+12V
2	NC	
3	RF in	
4	NC	
5	Vgs1	-0.65V
6	Vgs2	-0.65V
7	NC	
8	RF out	
9	NC	
10	Vdd2	+12V

PACKAGE OUTLINE (FM)



Pin Layout



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1	Vdd1	+12V
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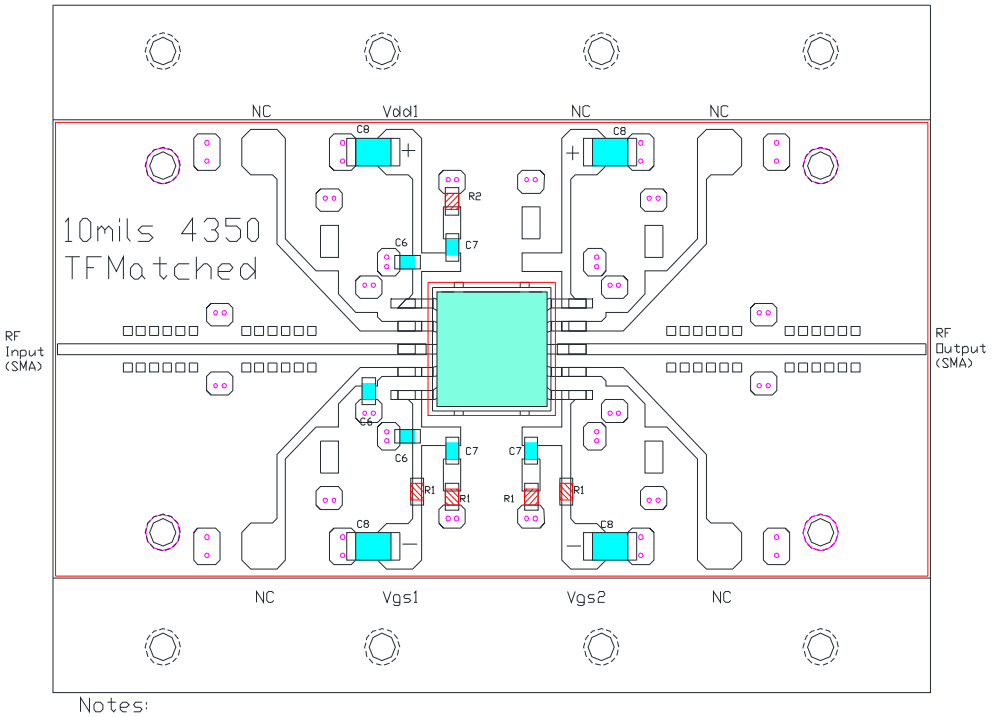
6	Vdd2	-0.65V
7	NC	
8	RF out	
9	NC	
10	Vgs2	+12V

TEST CIRCUIT for BM Package



Notes:
1- 10mils Rogers 4350 Material epoxied
2- Ckt is for matched MMICs
3- C6=20pf, C7=1000pF, C8=10uF
   R1=50 Ohms, R2=10 Ohms, R3=5 Ohms
4- All Caps & Resistors are 0603 size
   except for C8: 1206 size

Important Notes:

1- Recommended current biases are 70mA and 140mA for the first stage and second stage respectively. Gate biases of -0.65V are for reference only. V_{gs1} & V_{gs2} could be adjusted to vary the currents going thru the first stage (V_{dd1} pin) and the second stage (V_{dd2} pin) respectively.

2- Do not apply V_{dd1} & V_{dd2} without proper negative voltages on V_{gs1} & V_{gs2}.

3- The currents flowing out of the V_{gs1} & V_{gs2} pins are less than 0.25mA & 0.5mA respectively at P_{1dB}.