

## DESCRIPTION

AMCOM's AM304031WM-BM/FM-R is part of the GaAs MMIC power amplifier series. It has 31dB gain and 32 dBm output power over the 2.6 to 4.6GHz band. This MMIC is in a ceramic package with both RF and DC leads at the lower level of the package to facilitate low-cost SMT assembly to the PC board. When mounting directly to PCB, please see application note AN700 for instructions. Because of high DC power dissipation, we strongly recommend to mount these devices directly on a metal heat sink. The AM304031WM-FM-R is the AM304031WM-BM-R mounted on a gold plated copper flange carrier. There are two screw holes on the flange to facilitate screwing on to a metal heat sink. This MMIC is RoHS compliant.

## FEATURES

- Wide bandwidth from 2.6 to 4.6GHz
- High output power, P1dB = 32dBm
- High gain, 31dB
- Fully matched; 50-ohm input/output impedance

## APPLICATIONS

- Wireless Internet Access
- Wireless Local Loop
- Broadband Wireless Access (BWA)

## PERFORMANCE\* ( $V_{ds} = 8V$ , $I_{dq} = 670mA$ , $V_{gs} = -0.6V$ , $T_a = 25^\circ C$ )

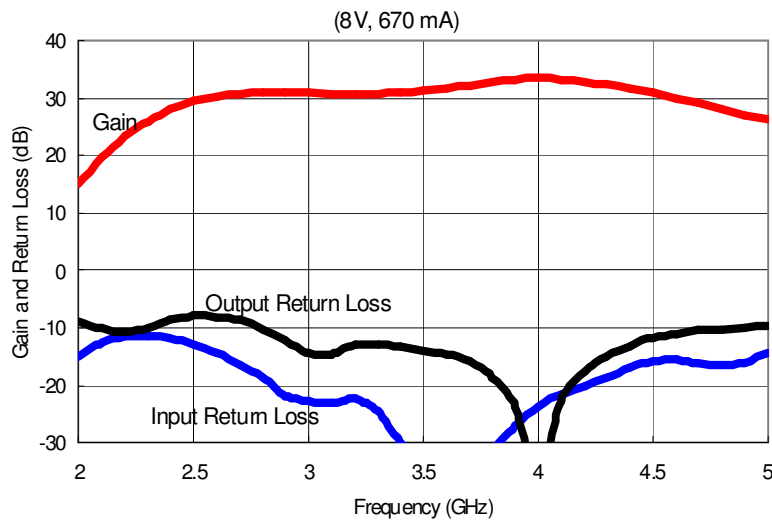
Parameters	Minimum	Typical	Maximum
Frequency	3.0 – 4.0GHz	2.6 – 4.6GHz	
Gain (Small signal)	29dB	31dB	
Gain Ripple		$\pm 1.0dB$	$\pm 2.0dB$
P1dB	30.5dBm	32.0dBm	
P3dB	31.0dBm	32.5dBm	
IP3	37.0dBm	39.0dBm	
Efficiency		25%	
Input Return Loss	15dB	20dB	
Output Return Loss	10dB	15dB	
Thermal Resistance		11.7°C/W	

\*Specifications subject to change without notice.

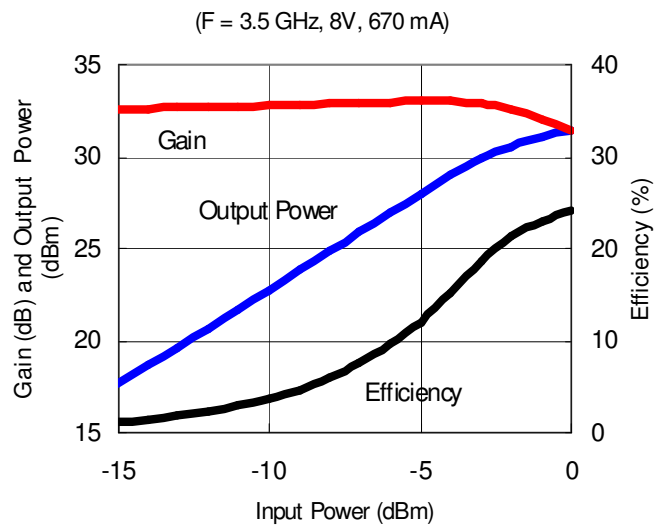
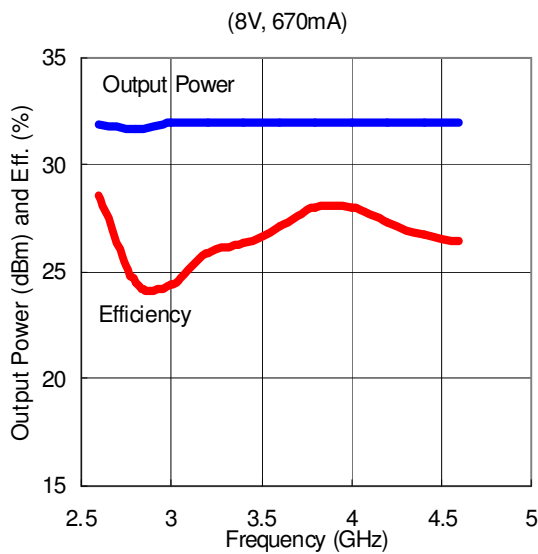
**ABSOLUTE MAXIMUM RATING**

Parameters	Symbol	Rating
Drain source voltage	$V_{ds}$	10V
Gate source voltage	$V_{gs}$	-5V
Drain source current	$I_{ds}$	1.3A
Continuous dissipation at room temperature	$P_t$	12.8W
Channel temperature	$T_{ch}$	175°C
Storage temperature	$T_{sto}$	-55°C to +135°C

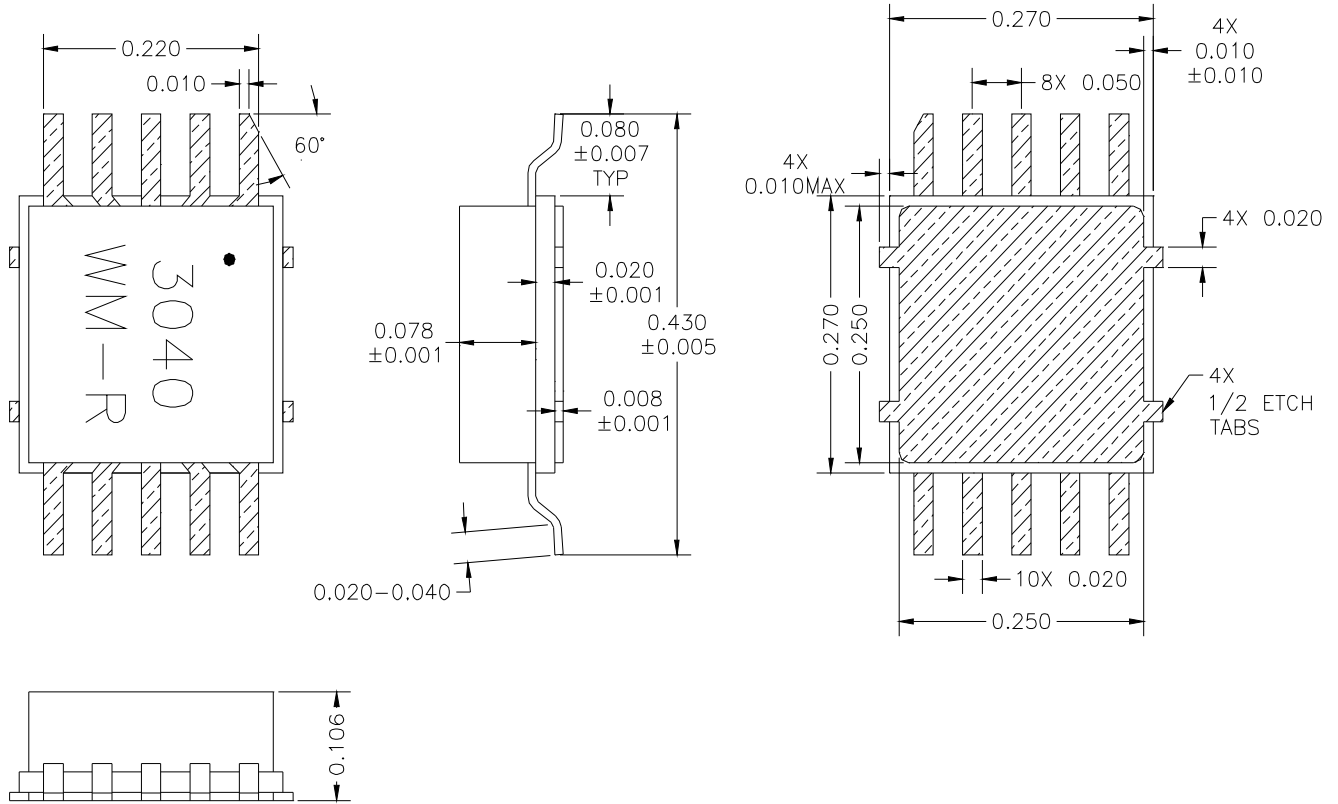
**SMALL SIGNAL DATA**



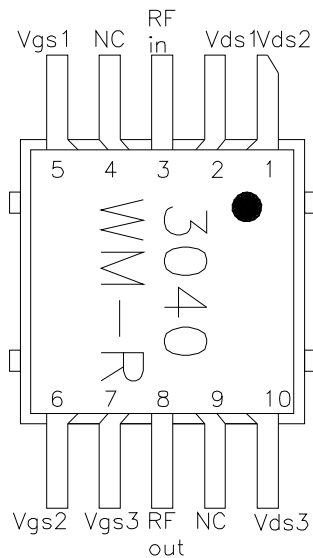
**POWER DATA**



PACKAGE OUTLINE (BM)



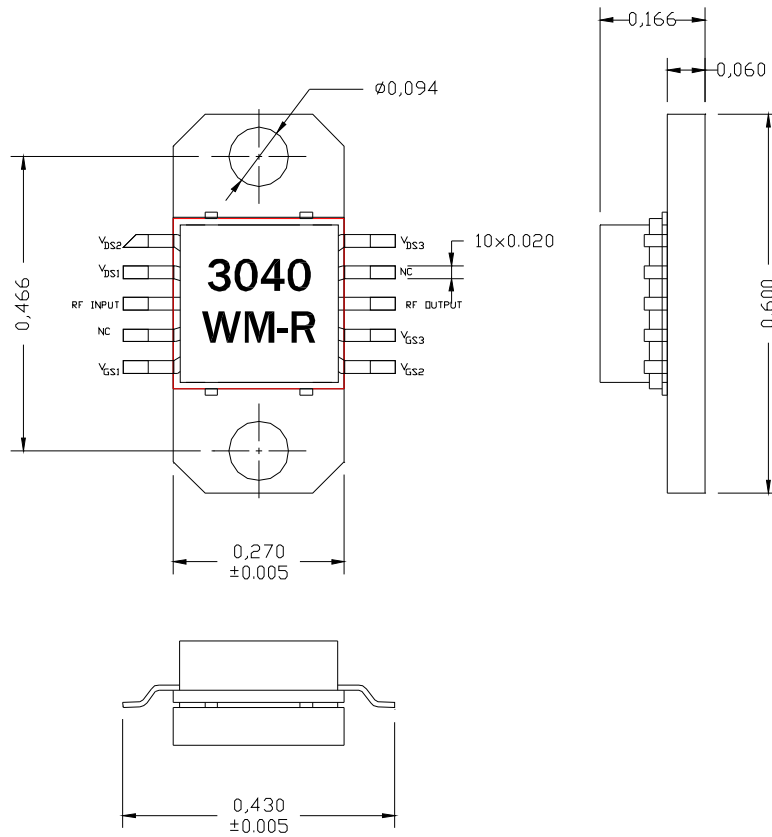
PIN LAYOUT



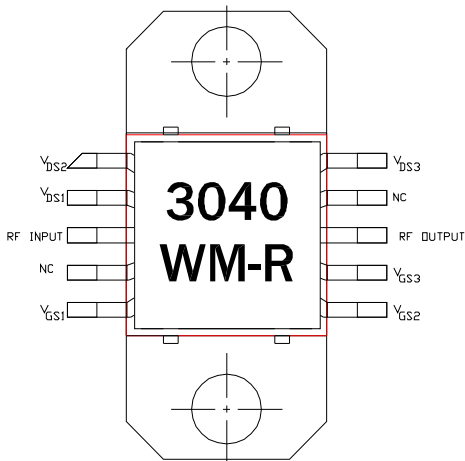
Pin No.	Function	Bias*
1	Vds2	+8V
2	Vds1	+8V
3	RF in	
4	NC	
5	Vgs1	-0.6V
6	Vgs2	-0.6V
7	Vgs3	-0.6V
8	RF out	
9	NC	
10	Vds3	+8V

\*  $V_{gs1}$ ,  $V_{gs2}$  &  $V_{gs3}$  may vary from lot to lot

PACKAGE OUTLINE (FM)



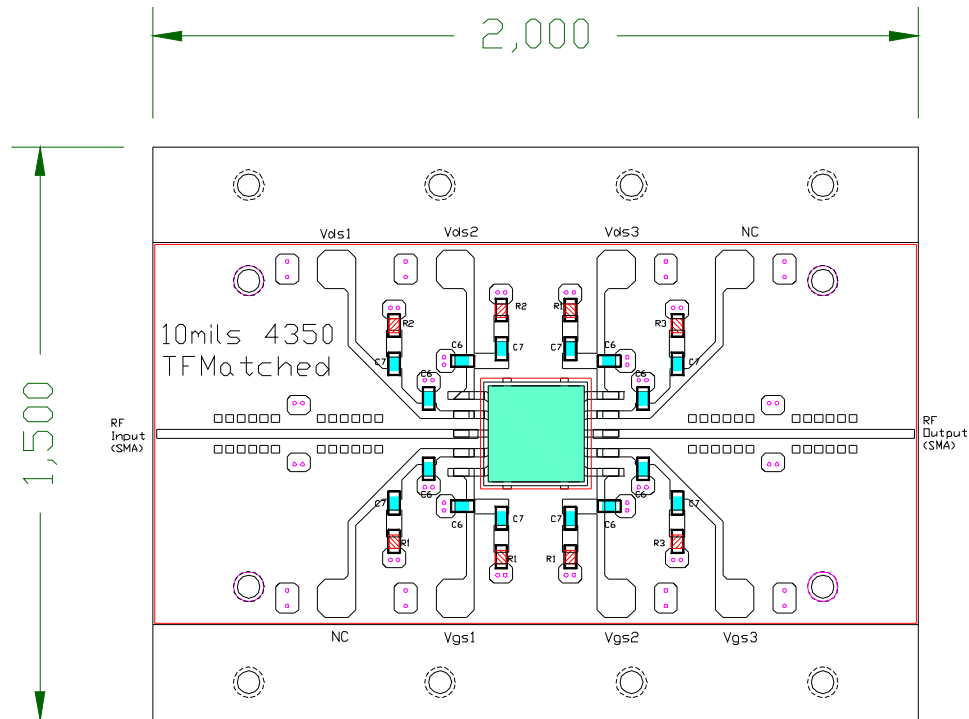
PIN LAYOUT



Pin No.	Function	Bias*
1	Vds2	+8V
2	Vds1	+8V
3	RF in	
4	NC	
5	Vgs1	-0.6V
6	Vgs2	-0.6V
7	Vgs3	-0.6V
8	RF out	
9	NC	
10	Vds3	+8V

\* V<sub>gs1</sub>, V<sub>gs2</sub>, & V<sub>gs3</sub> gate biases are for reference only and may vary from lot to lot

TEST CIRCUIT OUTLINE for BM Package

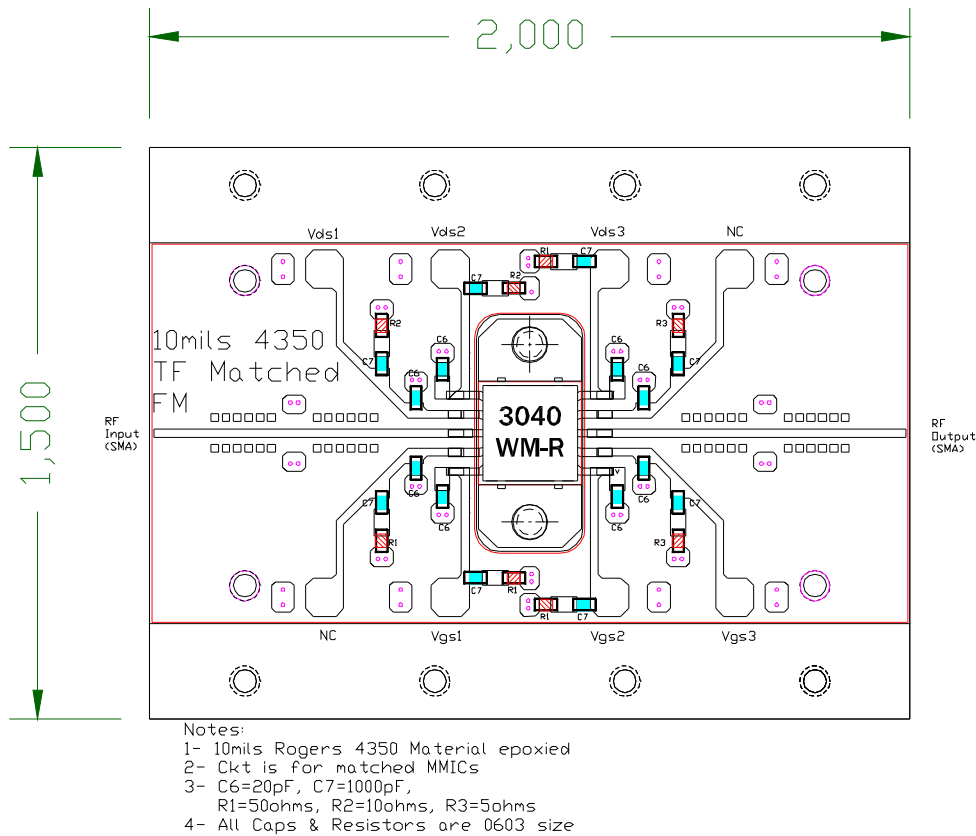


- Notes:
- 1- 10mils Rogers 4350 Material epoxied
  - 2- Ckt is For matched MMICs
  - 3- C6=20pF, C7=1000pF,  
R1=50ohms, R2=10ohms, R3=5ohms
  - 4- All Caps & Resistors are 0603 size

Important Notes:

- 1- The MMIC should have a good heat sink to avoid overheating. If SMT is used use PC board thickness  $\leq 10$  mils and ensure vias are filled with solder or metal to lower PCB heat resistance. MMIC could be attached on direct ground for lowest junction temperature.
- 2- Recommended current biases are 70mA, 150mA & 450mA for the first, second and third stages respectively.
- 3- Do not apply  $V_{ds1}$ ,  $V_{ds2}$  &  $V_{ds3}$  without proper negative voltages on  $V_{gs1}$ ,  $V_{gs2}$  &  $V_{gs3}$ .
- 4- The currents flowing out of the  $V_{gs1}$ ,  $V_{gs2}$  &  $V_{gs3}$  pins are less than 70 $\mu$ A, 150 $\mu$ A & 3mA at  $P_{1dB}$ .
- 5- External 1  $\mu$ F dipped tantalum capacitor should be attached to Vd and Vg to decouple external bias leads.

TEST CIRCUIT for FM package



Important Notes:

- 1- The MMIC should have a good heat sink to avoid overheating. If SMT is used use PC board thickness  $\leq 10$  mils and ensure vias are filled with solder or metal to lower PCB heat resistance. MMIC could be attached on direct ground for lowest junction temperature.
- 2- Recommended current biases are 70mA, 150mA & 450mA for the first, second and third stages respectively.
- 3- Do not apply  $V_{ds1}$ ,  $V_{ds2}$  &  $V_{ds3}$  without proper negative voltages on  $V_{gs1}$ ,  $V_{gs2}$  &  $V_{gs3}$ .
- 4- The currents flowing out of the  $V_{gs1}$ ,  $V_{gs2}$  &  $V_{gs3}$  pins are less than  $70\mu A$ ,  $150\mu A$  &  $3mA$  at  $P_{1dB}$ .
- 5- External  $1\ \mu F$  dipped tantalum capacitor should be attached to Vd and Vg to decouple external bias leads.