



DESCRIPTION

AMCOM's AM012020WM-BM/FM-R is a broadband low noise power amplifier. It has 2dB Noise Figure, 30dB gain, and 17dBm output P1dB over a broadband of 0.1 to 2GHz. 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. Because of high DC power dissipation, we strongly recommend to mount these devices directly on a metal heat sink. When mounting directly on PCB, please use Application Note AN700 for proper mounting procedures. The AM012020WM-FM-R is the AM012020WM-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 0.1 to 2GHz
- Low noise performance
- 20dBm of saturated output power
- High gain, 30dB
- Fully matched; 50-ohm input/output impedance

APPLICATIONS

- Instrumentation
- Cellular Bands
- Two way radio
- Broadband Receivers
- C-Band VSAT

PERFORMANCE* ($V_{d1\&2}=8V$, $I_{d1\&2} = 30mA, 50mA$, $V_{g1\&2}^{**} = -1.3, -1.15 V$ $T_a = 25^\circ C$)

Parameters	Minimum	Typical	Maximum
Frequency	0.2 – 1.8GHz	0.1 – 2.0GHz	
Gain (Small signal)	28dB	30dB	
Gain Ripple		$\pm 1.0dB$	$\pm 3.0dB$
P_{1dB}	15.0dBm	16.0dBm	
P_{sat}		17.0dBm	
Noise Figure @Pin=-20dBm		2.0dB	3.0dB
Input Return Loss	-10dB	-15dB	
Output Return Loss	-8dB	-10dB	
Thermal Resistance		4.9°C/W	

* Specifications subject to change without notice

** Gate bias is for reference only and may vary from lot to lot

ABSOLUTE MAXIMUM RATING

Parameters	Symbol	Rating
Drain source voltage	V_{ds}	15V
Gate source voltage	V_{gs}	-5V or +0.5V
Drain source current	I_{ds}	0.2A
Continuous dissipation at room temperature	P_t	3W
Channel temperature	T_{ch}	175°C
Operating temperature	T_{op}	-55°C to +100°C
Storage temperature	T_{sto}	-55°C to +135°C

SMALL SIGNAL DATA

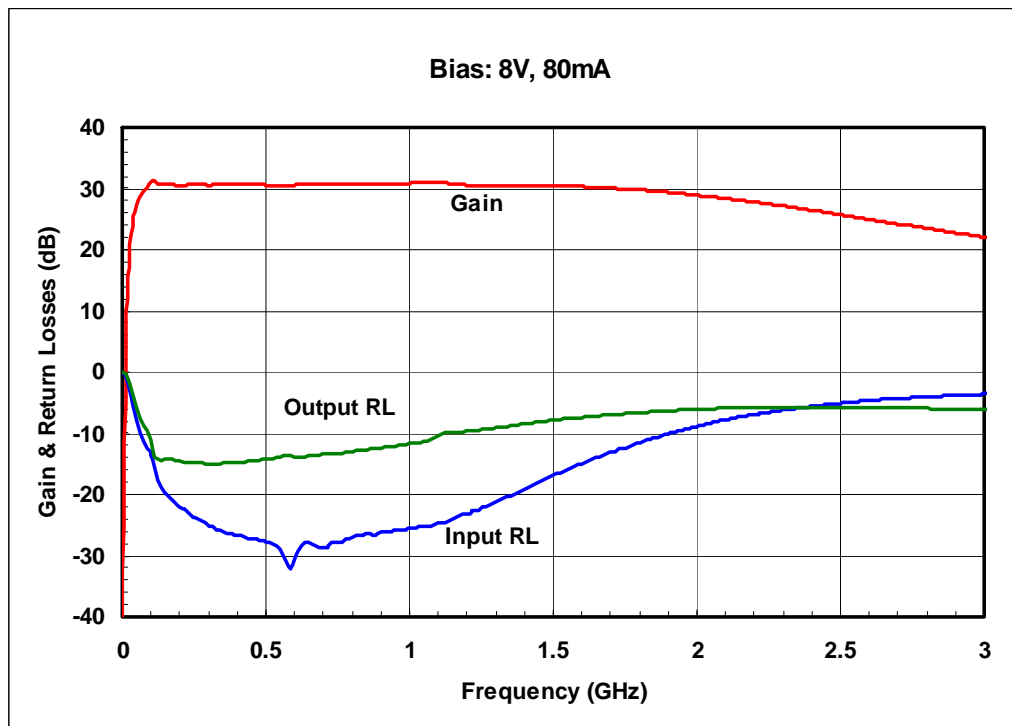


Figure 1: Gain & Return Losses vs. Frequency

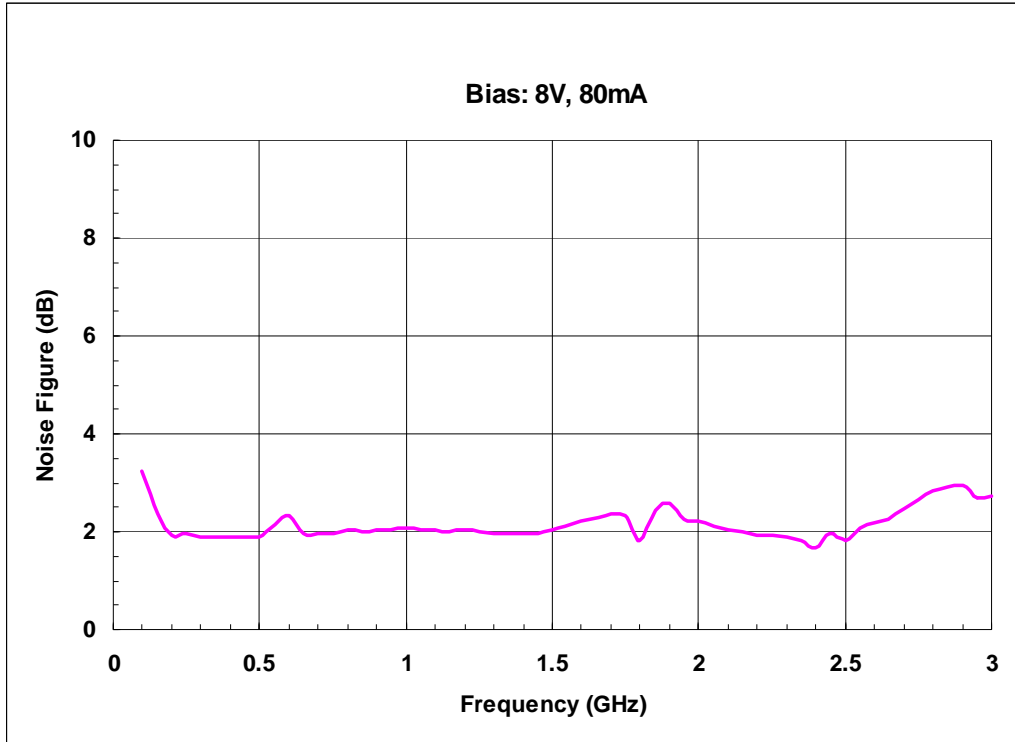


Figure 2: Noise Figure vs. Frequency

POWER DATA

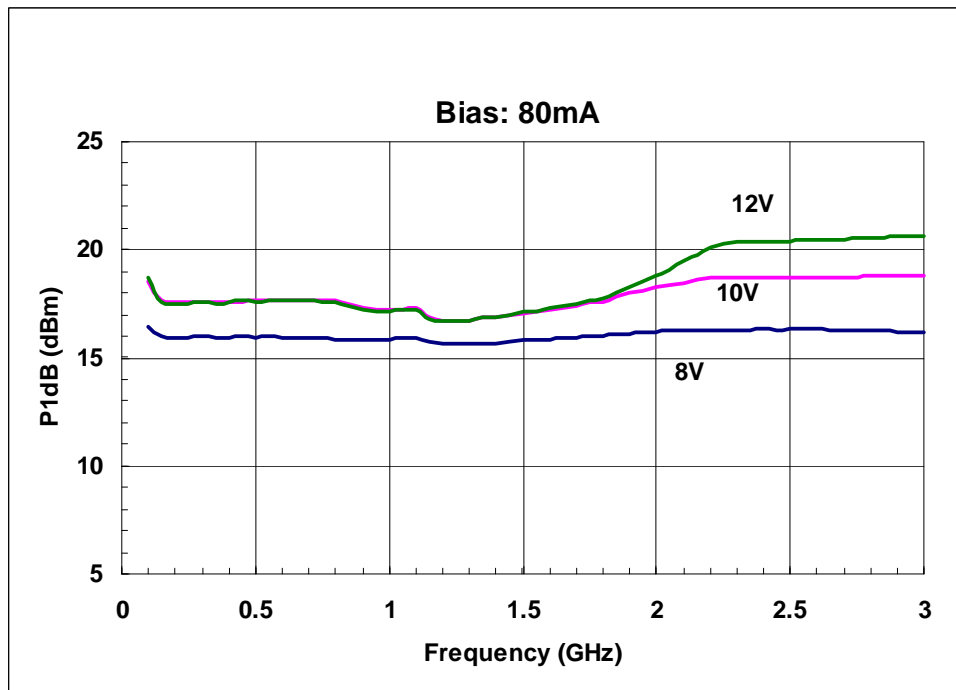


Figure 3: P1dB vs. Frequency at different drain voltages

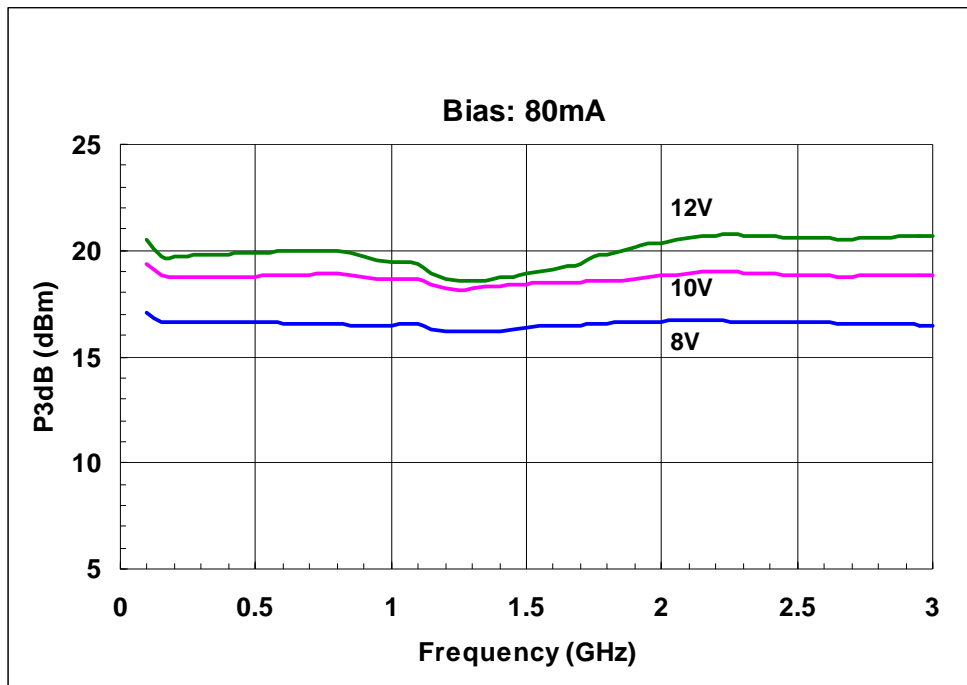


Figure 4: P3dB vs. Frequency at different drain voltages

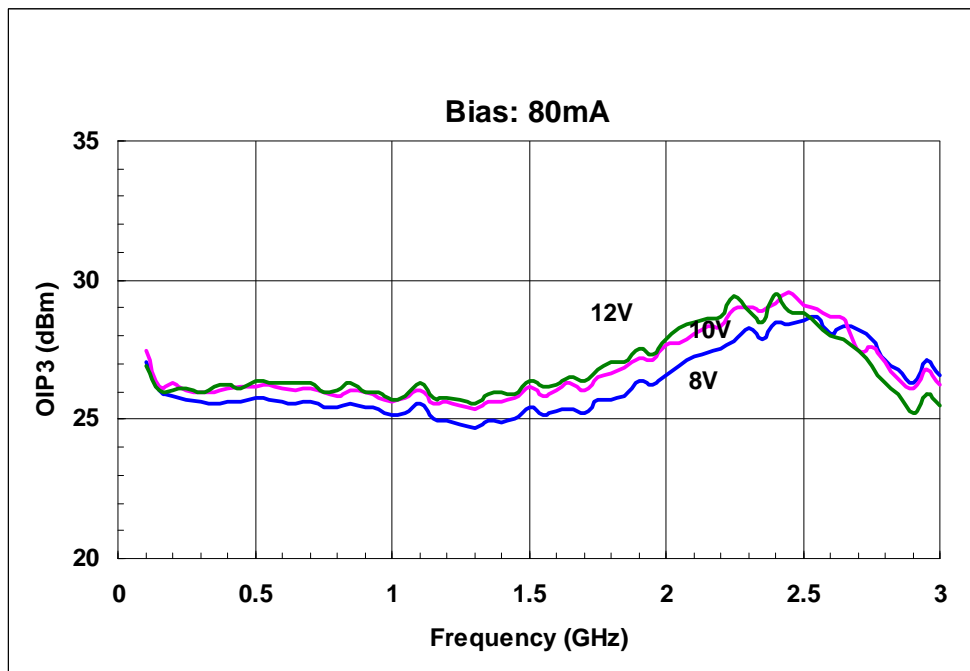
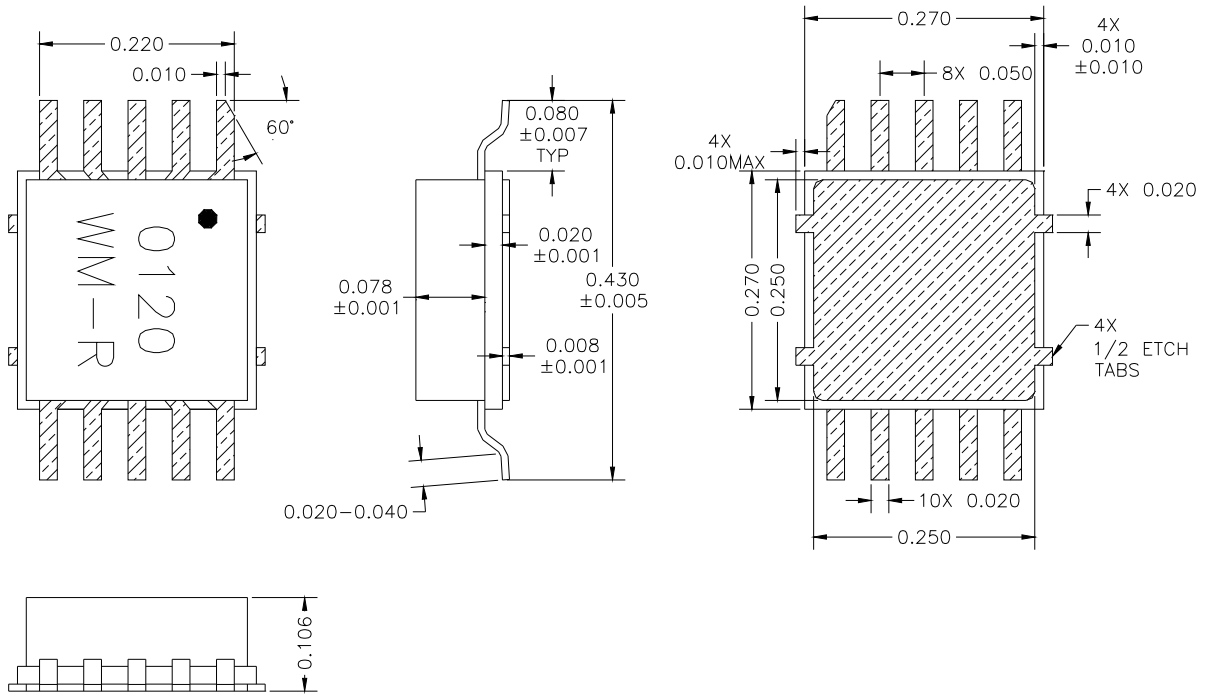
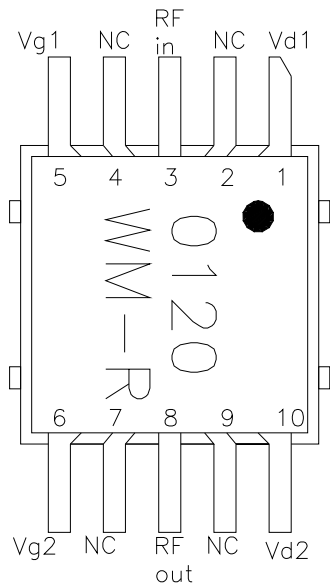


Figure 5: Output IP3 vs. Frequency at different drain voltages

PACKAGE OUTLINE (BM)



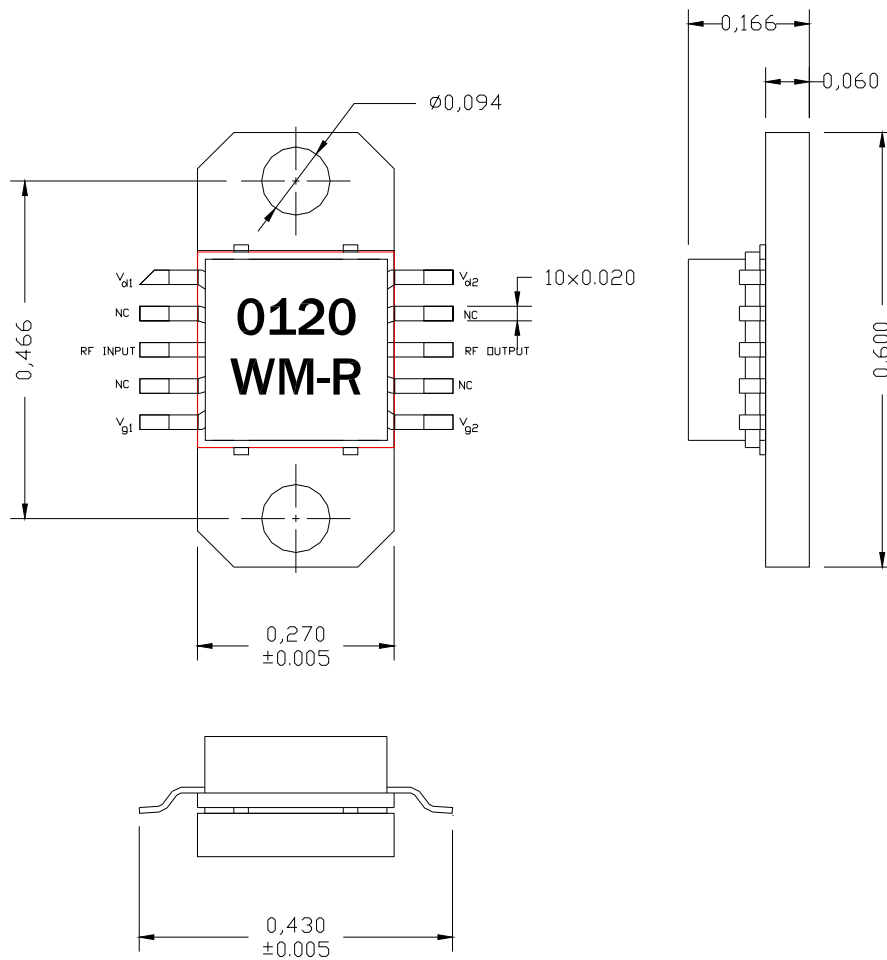
PIN LAYOUT



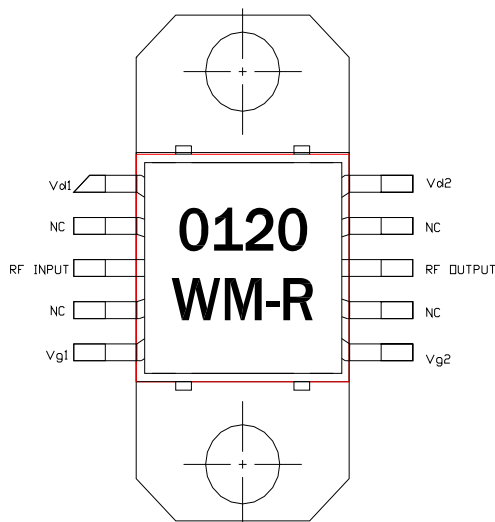
Pin No.	Function	Bias*
1	Vd1	+8V
2	NC	
3	RF In	
4	NC	
5	Vg1	-1.3V
6	Vg2	-1.15V
7	NC	
8	RF Out	
9	NC	
10	Vd2	+8V

* V_{gs1} , V_{gs2} may vary from lot to lot

PACKAGE OUTLINE (FM)



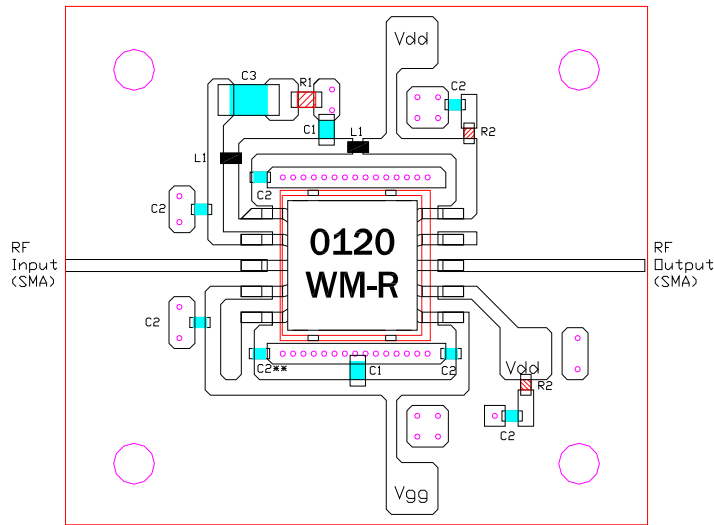
PIN LAYOUT



Pin No.	Function	Bias*
1	Vd1	+8V
2	NC	
3	RF In	
4	NC	
5	Vg1	-1.3V
6	Vg2	-1.15V
7	NC	
8	RF Out	
9	NC	
10	Vd2	+8V

* V_{gs1}, V_{gs2} may vary from lot to lot

TEST CIRCUIT OUTLINE



Notes:

- 1- 10mils Rogers 4350 Material epoxied to test fixture
- 2- Ckt is for matched MMICs
- 3- C1=0.56uF (0603), C2=1000pF (0402),
C3=10uF (1206), R1=3 ohms (0603), R2=5.1 ohms (0603)
L1=1nH (0402 or 0603), ** May be omitted and replaced by 00hm resistor
- 4- External 1uF dipped tantalum capacitors should be attached to Vd and Vg to decouple external bias leads