



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

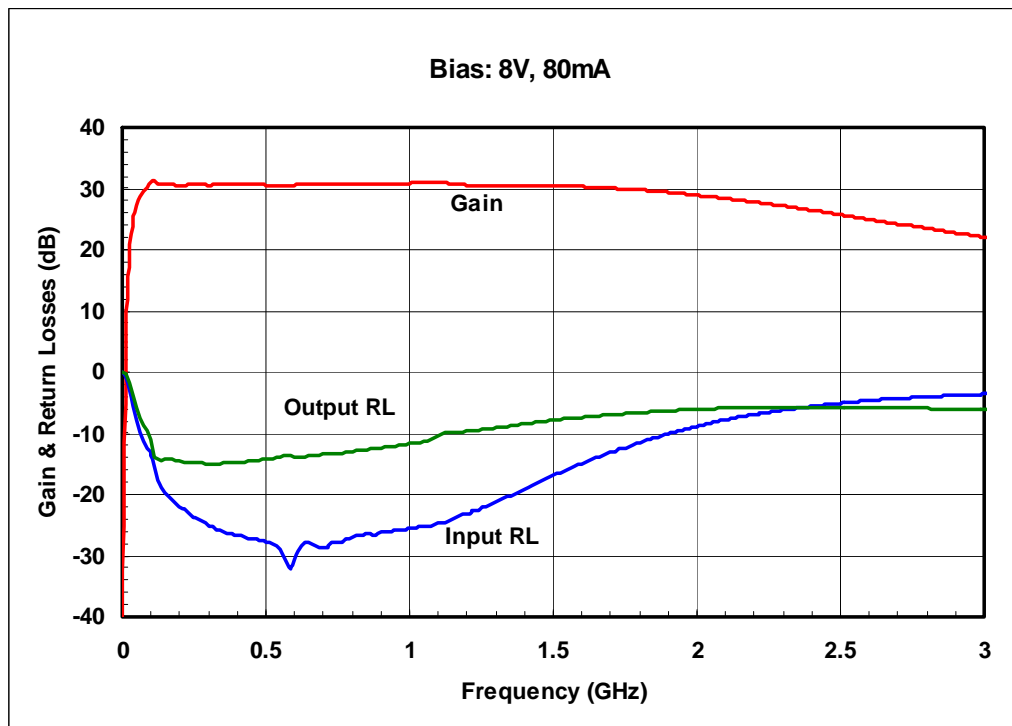


Figure 1: Gain & Return Losses vs. Frequency

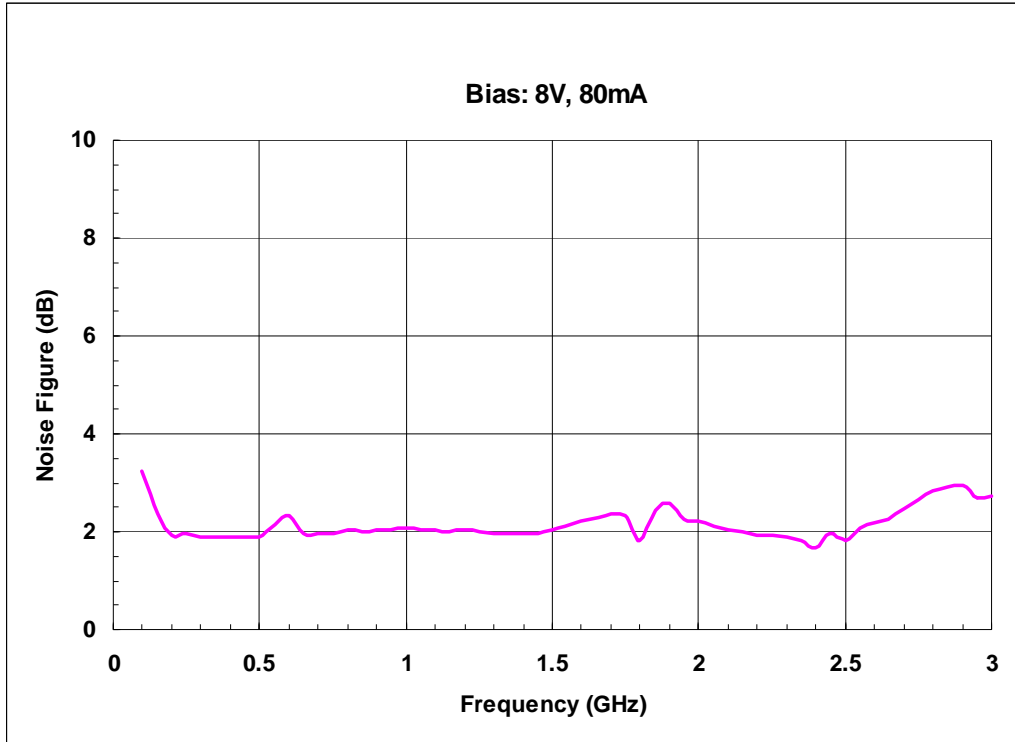


Figure 2: Noise Figure vs. Frequency

POWER DATA

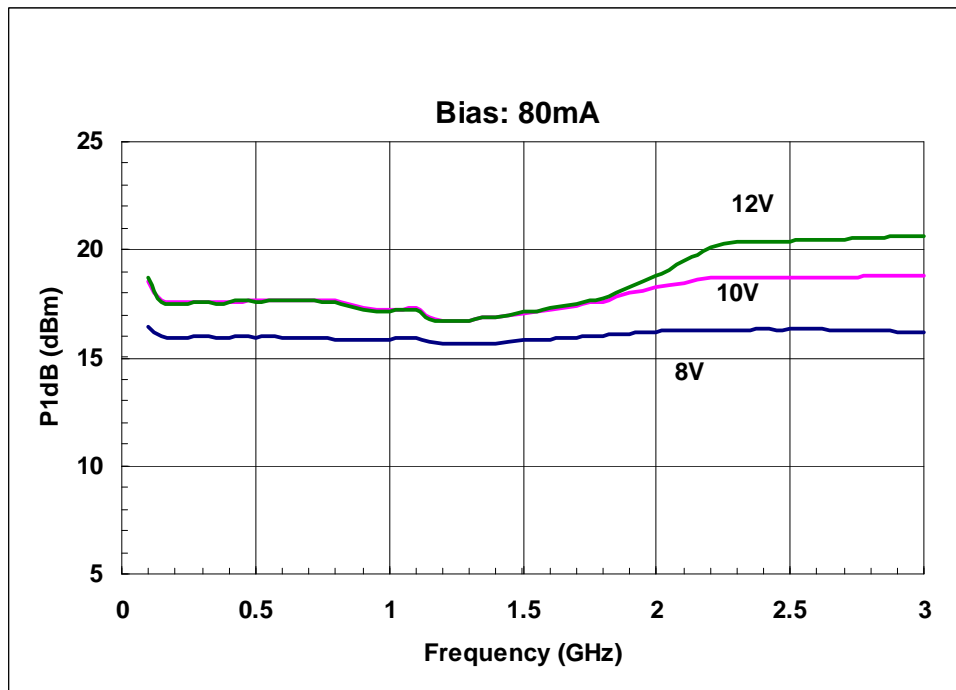


Figure 3: P1dB vs. Frequency at different drain voltages

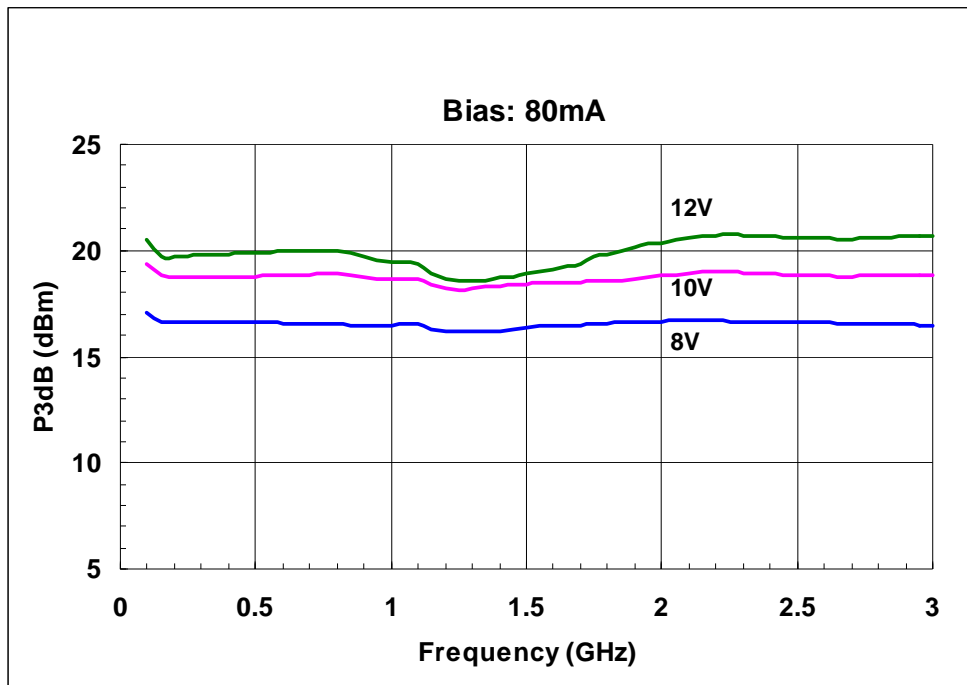


Figure 4: P3dB vs. Frequency at different drain voltages

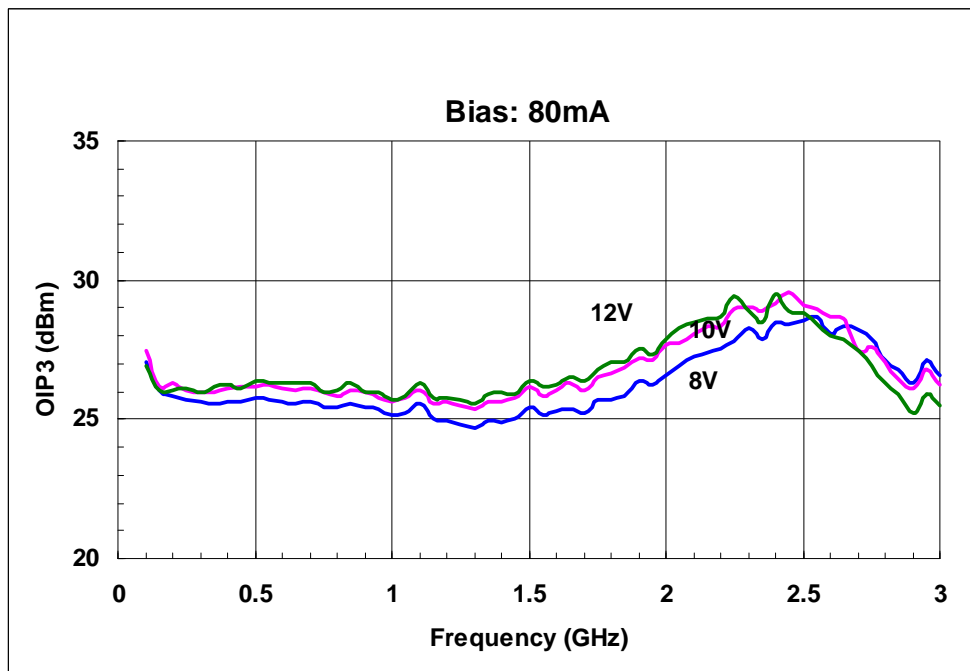
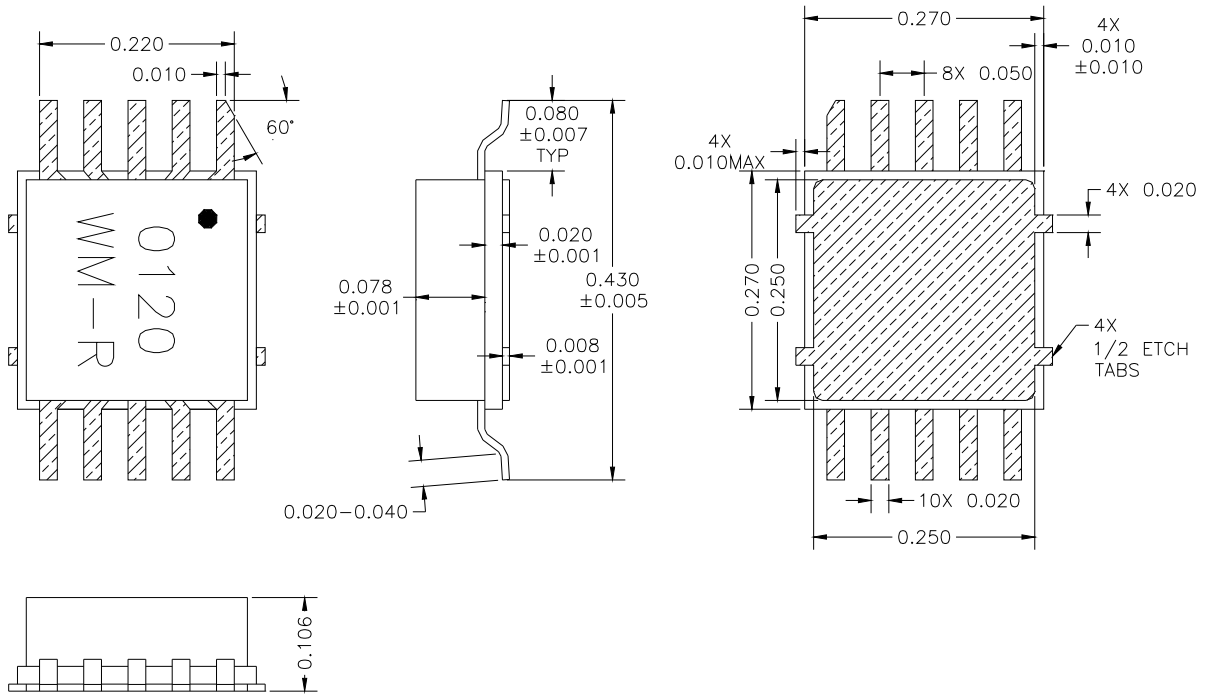
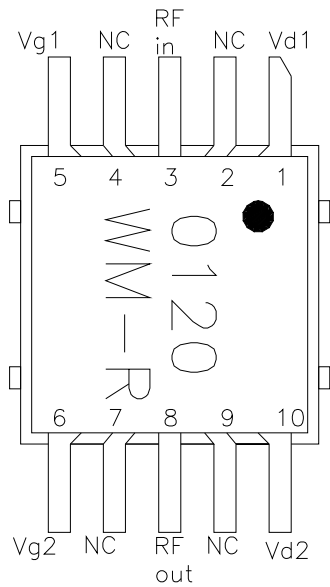


Figure 5: Output IP3 vs. Frequency at different drain voltages

PACKAGE OUTLINE (BM)



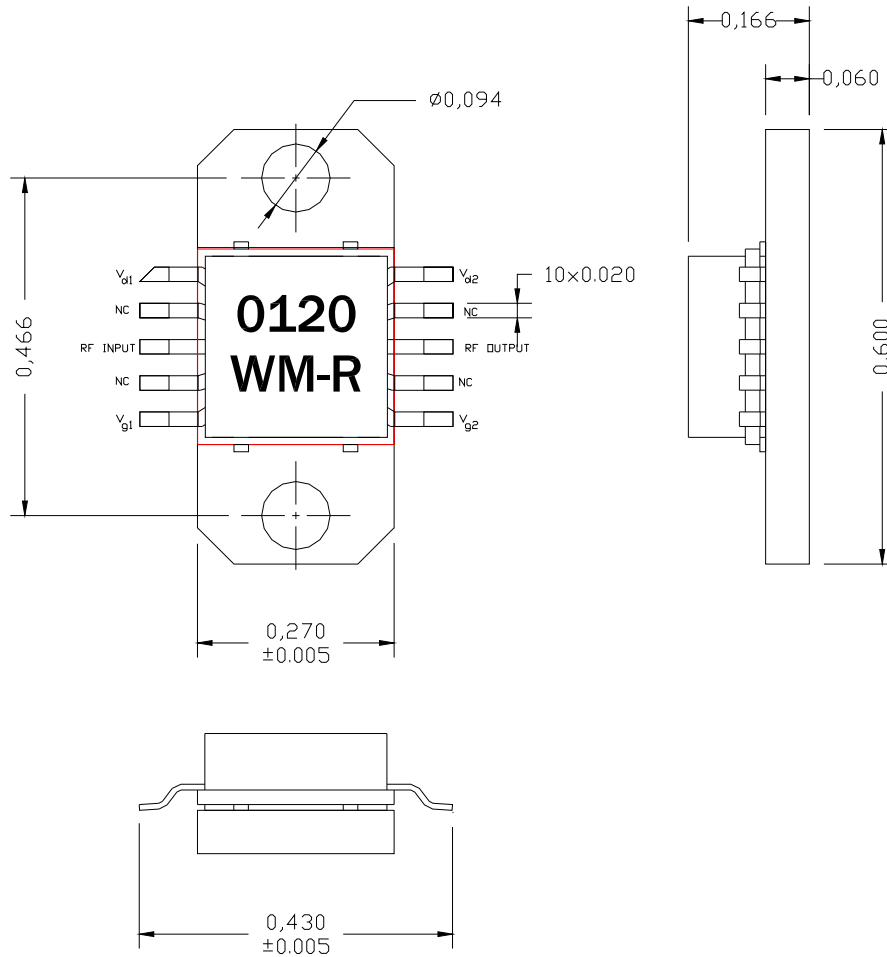
PIN LAYOUT



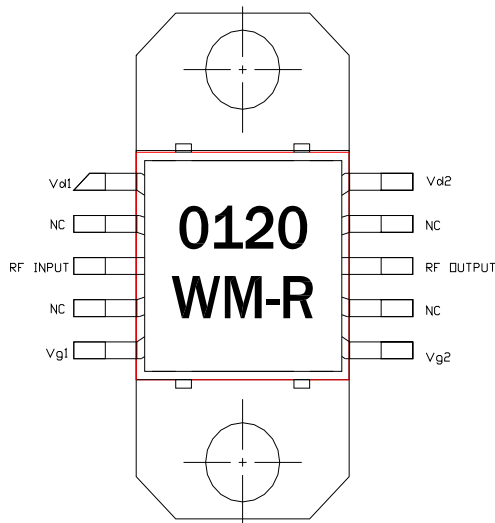
| Pin No. | Function | Bias* |
|---------|----------|--------|
| 1 | Vd1 | +8V |
| 2 | NC | |
| 3 | RF In | |
| 4 | NC | |
| 5 | Vg1 | -1.3V |
| 6 | Vg2 | -1.15V |
| 7 | NC | |
| 8 | RF Out | |
| 9 | NC | |
| 10 | Vd2 | +8V |

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

PACKAGE OUTLINE (FM)



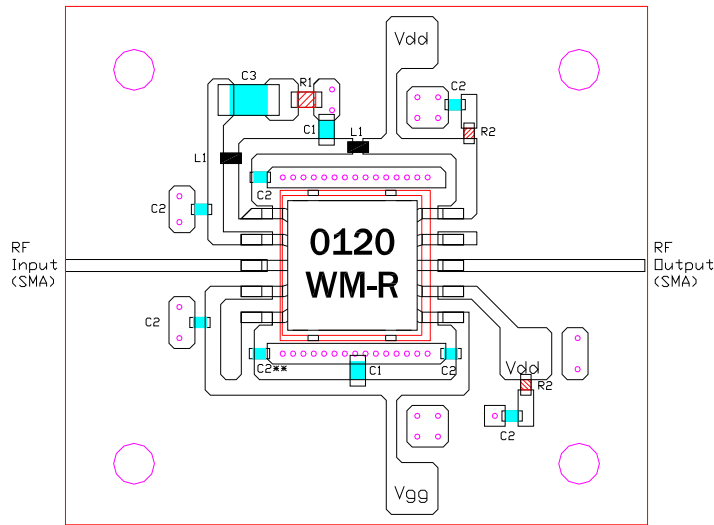
PIN LAYOUT



| 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