

DESCRIPTION

AMCOM's AM132740MM-BM-R is part of the GaAs HIFET MMIC power amplifier series. It is a 2-stage GaAs HIFET MESFET MMIC power amplifier biased at 14V. The input and inter-stage matching networks cover 1.3 to 2.7GHz. The MMIC output requires partial external matching to cover 1.3GHz to 2.7GHz. The MMIC has 26dB gain and 38dBm output power at 14V. The BM package RF and DC leads are coplanar with the bottom level of the package, which serves as ground, to facilitate low-cost SMT assembly to the PC board. AM132740MM-FM-R is AM132740MM-BM-R assembled on a copper flange carrier for screwing on to a metal heat sink. Both parts are RoHS compliant.

FEATURES

- Frequency applications from 1.3 to 2.7 GHz
- High output power, P1dB = 38 dBm
- High gain > 22 dB
- Input matched from 1.3GHz to 2.7GHz
- Can cover the entire 1.3GHz to 2.7GHz band by adjusting output matching

APPLICATIONS

- PCS Base Station
- GPS Applications
- MMDS
- WLAN Repeaters
- 14V Applications

TYPICAL PERFORMANCE OF A TEST BOARD FOR 1.3 to 2.7 GHz*

Performance at $V_{dd} = +14V$, $V_{gs} = -0.63V$, $I_{dq} = 1700mA$, $T_a = 25^{\circ}C$

Parameters	Minimum	Typical	Maximum
Frequency	-	1.5 – 2.5 GHz	-
Small Signal Gain	20 dB	26 dB	
Gain Ripple	-	± 2.5 dB	± 4.0 dB
P1dB	36.5 dBm	38 dBm	-
Psat	37.0 dBm	39dBm	-
IP3	-	51 dBm	-
Efficiency @ P1dB	-	30 %	
Input Return Loss	-	10dB	
Output Return Loss	-	10dB	
Thermal Resistance		5 $^{\circ}C/W$	

*Specifications subject to change without notice.

** V_{gs} is for reference only and may vary from lot to lot

ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Rating
Drain source voltage	V_{dd}	17 V
Gate source voltage	V_{gs}	-5 V
Drain source current	I_{dd}	2.0 A
Continuous dissipation at room temperature	P_t	30 W
Channel temperature	T_{ch}	175 °C
Storage temperature	T_{sto}	-55°C to +135°C

NEGATIVE CURRENT REQUIREMENT

In order to maximize the bandwidth and linearity, this product has built-in feedback resistors on-chip. The product will draw negative current in the V_{gs} circuit through these resistors. The Table below shows the negative current values.

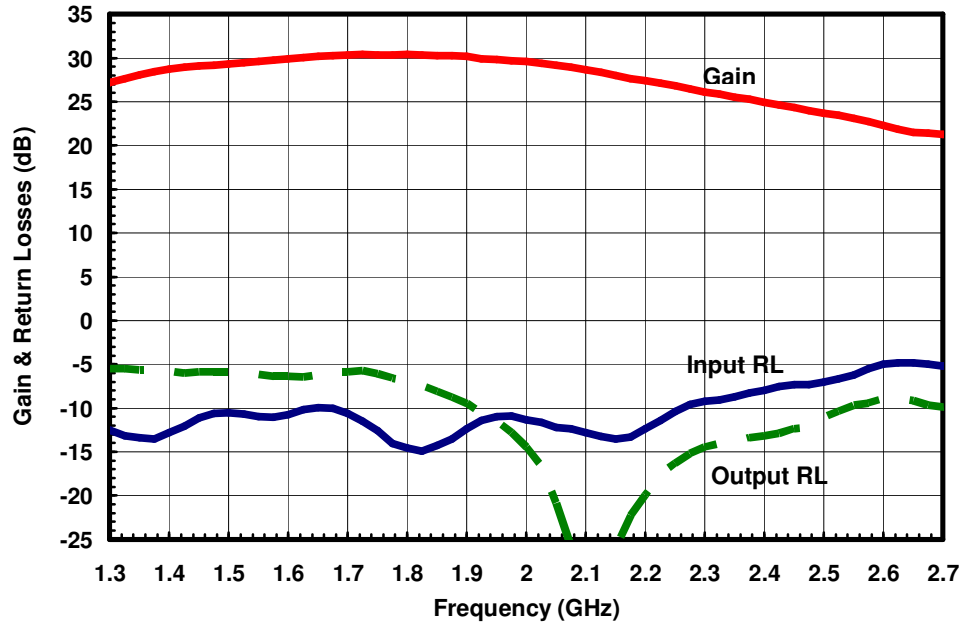
The typical negative currents for different V_{dd} are shown in the table below. The actual V_{gs} should be adjusted to have an I_{dd} of about 1.5A. The actual negative current value varies depending on V_{gs} and may also vary due to MMIC process variation.

Typical Negative Currents Variation vs Positive Bias

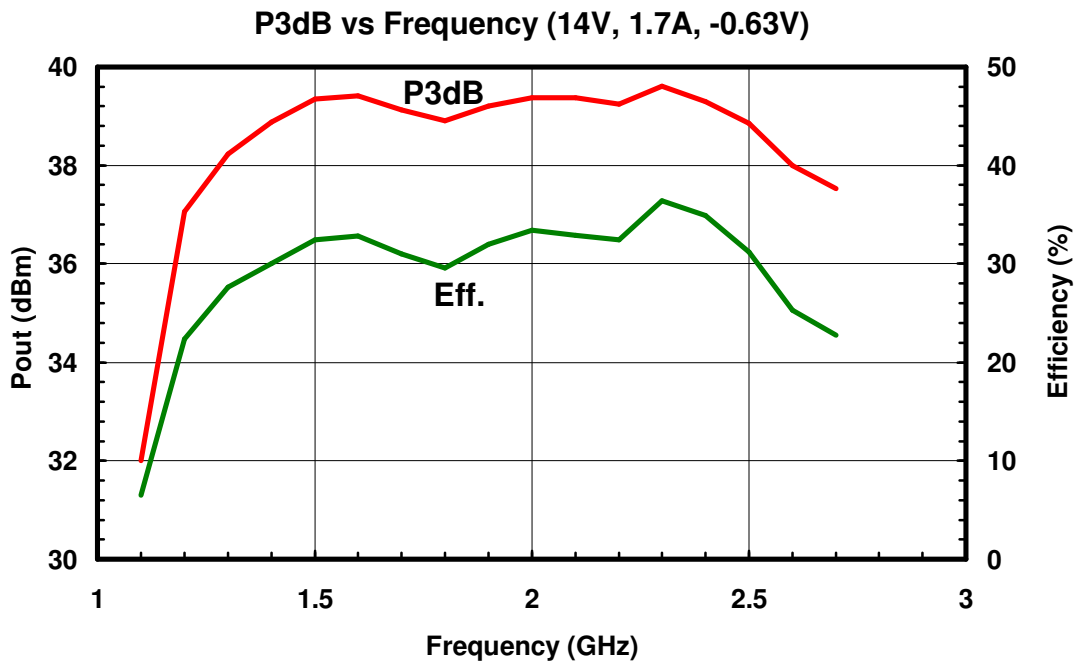
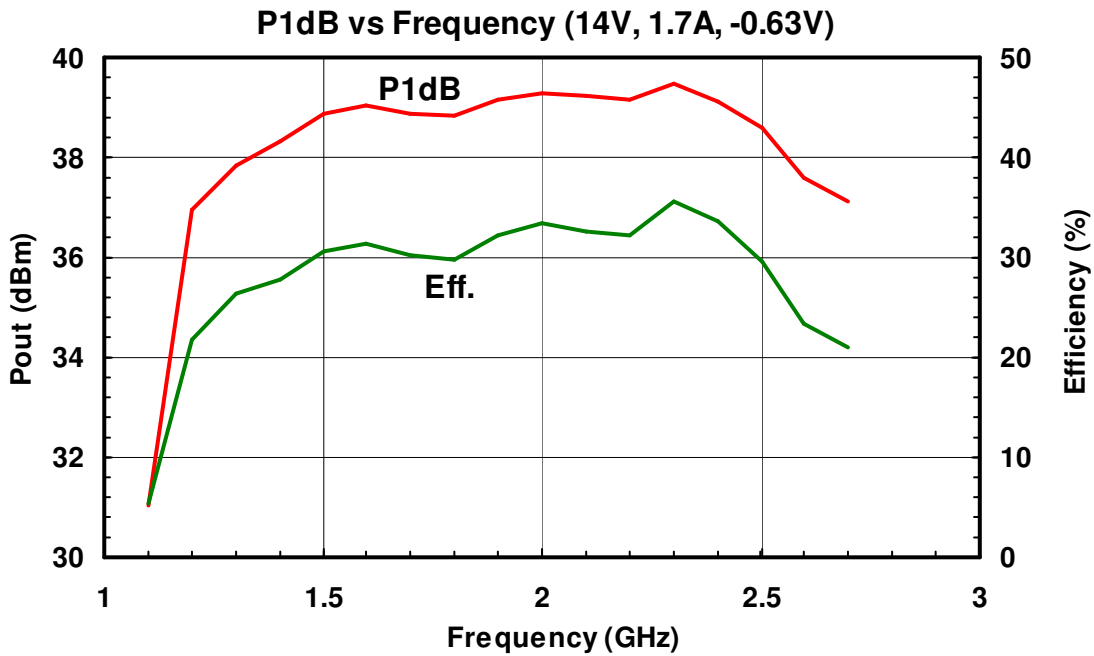
Parameter	$V_{dd} = 10V$	$V_{dd} = 12V$	$V_{dd} = 14V$
V_{gs}	- 1V	- 1V	- 1V
I_{gs1} (mA)	7.0	8.25	9.5
I_{gs2} (mA)	14.0	16.5	19.0
Total I_{gs} (mA)	21 mA	24.75 mA	28.5 mA

SMALL SIGNAL DATA

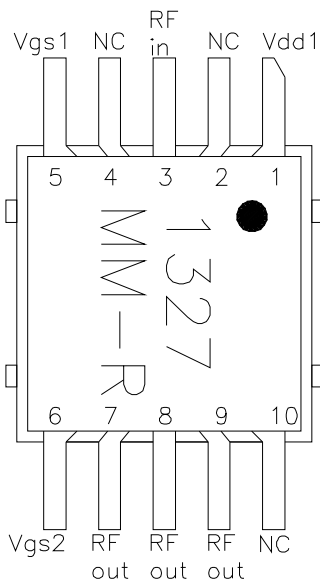
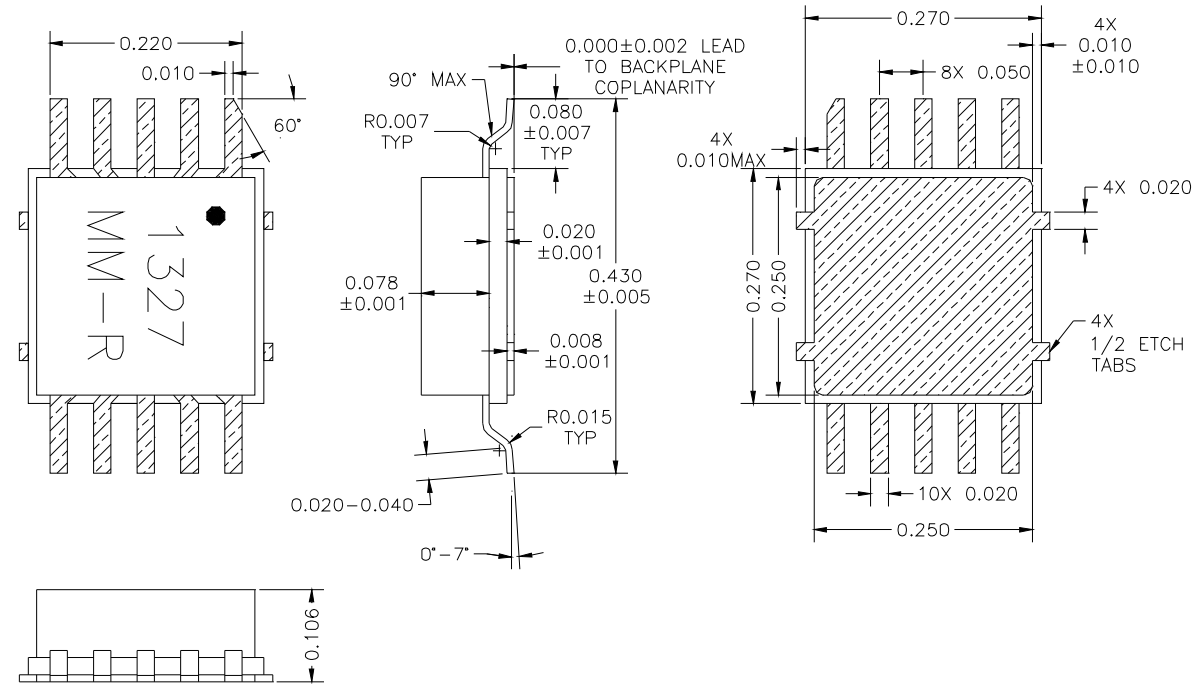
1.3 to 2.7GHz Test Circuit



POWER DATA of 1.3 to 2.7 GHz TEST BOARD



PACKAGE OUTLINE (BM Package)

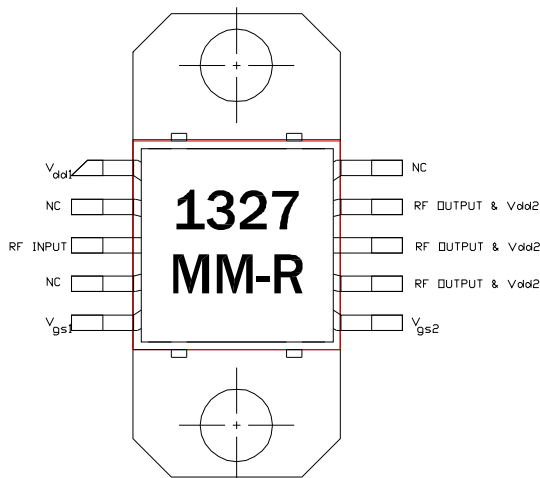
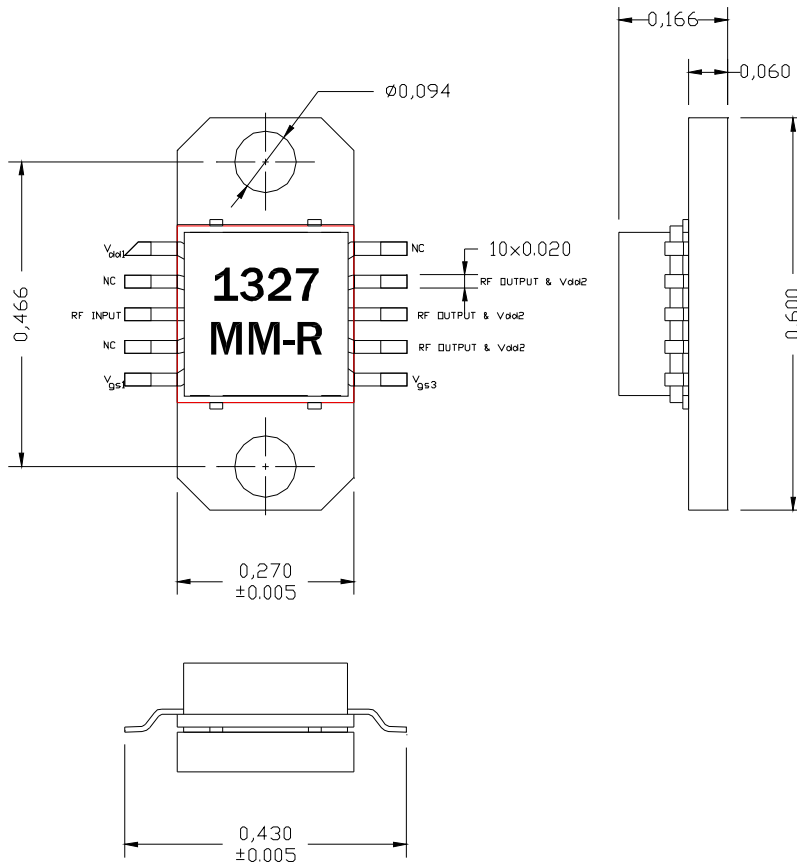


Pin No.	Function	Bias*
1	Vdd1	+14V
2	NC	
3	RF in	
4	NC	
5	Vgs1	-0.7V
6	Vgs2	-0.7V
7	RF out & Vdd2	+14V
8	RF out & Vdd2	+14V
9	RF out & Vdd2	+14V
10	NC	

Pin Layout

* V_{gs1} & V_{gs2} are for reference only and may vary from lot to lot

PACKAGE OUTLINE (FM Package)

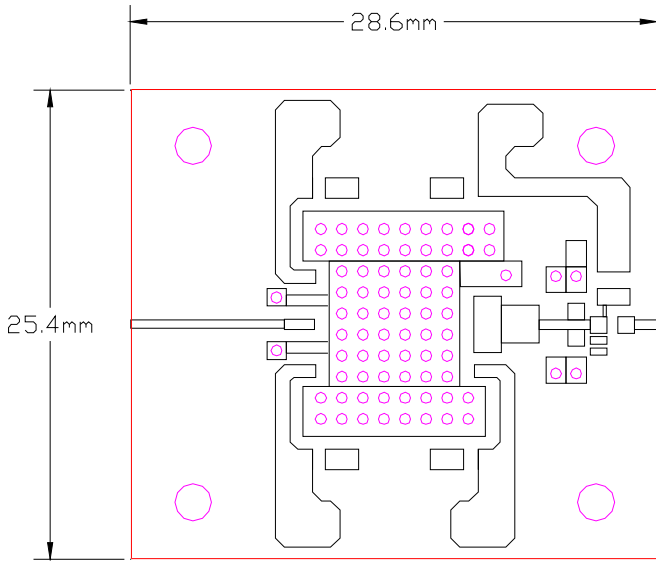


Pin No.	Function	Bias*
1	Vdd1	+14V
2	NC	
3	RF in	
4	NC	
5	Vgs1	-0.7V
6	Vgs2	-0.7 V
7	RF out & Vdd2	+14V
8	RF out & Vdd2	+14V
9	RF out & Vdd2	+14V
10	NC	

Pin Layout

* V_{gs1} & V_{gs2} are for reference only and may vary from lot to lot

1.3 to 2.7GHz TEST CIRCUIT (BM Package)



Notes:

- 1- Material is 10mils FR4 with 1oz Copper
- 2- All vias are plated thru
- 3- Min. via thickness = 25um
- 4- R1=500hms, C1=1000pF, C2=100pF, C3=20pF, C4=1pF
- 5- All capacitors & resistors are 0603 size
- 6- Inductors are 1206 size
- 7- This PCB is for 1.3 to 2.7GHz applications
- 8- Dimensions are in mm

