

## DESCRIPTION

AMCOM's AM008037TM-BM/FM-R is an ultra-broadband GaAsMMIC power amplifier. It has 18dB gain, and >30dBm output power over the 0.1 to 6GHz band. 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. AM008037TM-FM-R is AM008037TM-BM-R assembled on a copper flange carrier for screwing on to a metal heat sink. Both parts are RoHS compliant.

## FEATURES

- Ultra wide bandwidth from 100MHz to 8GHz
- High output power, Psat = 35dBm
- High gain, 18dB
- Input /Output matched to 50 Ohms

## APPLICATIONS

- Software Radio
- Instrumentation
- Gain block

## TYPICAL PERFORMANCE \*(Bias Conditions\*\*: V<sub>dd</sub> = +25V, I<sub>dq</sub> = 450mA)

Parameters	Minimum	Typical **	Maximum
Frequency	0.1 – 6GHz	0.1 – 8GHz	
Small Signal Gain	14dB	18dB	22dB
Gain Ripple		± 4dB	± 6.0dB
P1dB @ 1GHz	29dBm	30dBm	
P1dB from 0.1 to 6GHz		> 26dBm	
Psat @ 1GHz	33dBm	35dBm	
Psat from 0.1 to 8.0GHz		> 30dBm	
Efficiency @ Psat		24%	
Noise Figure		TBD	
IP3 @ 1GHz		TBD	
Input Return Loss	8dB	15dB	
Output Return Loss	3dB	5dB	
Thermal Resistance		TBD	

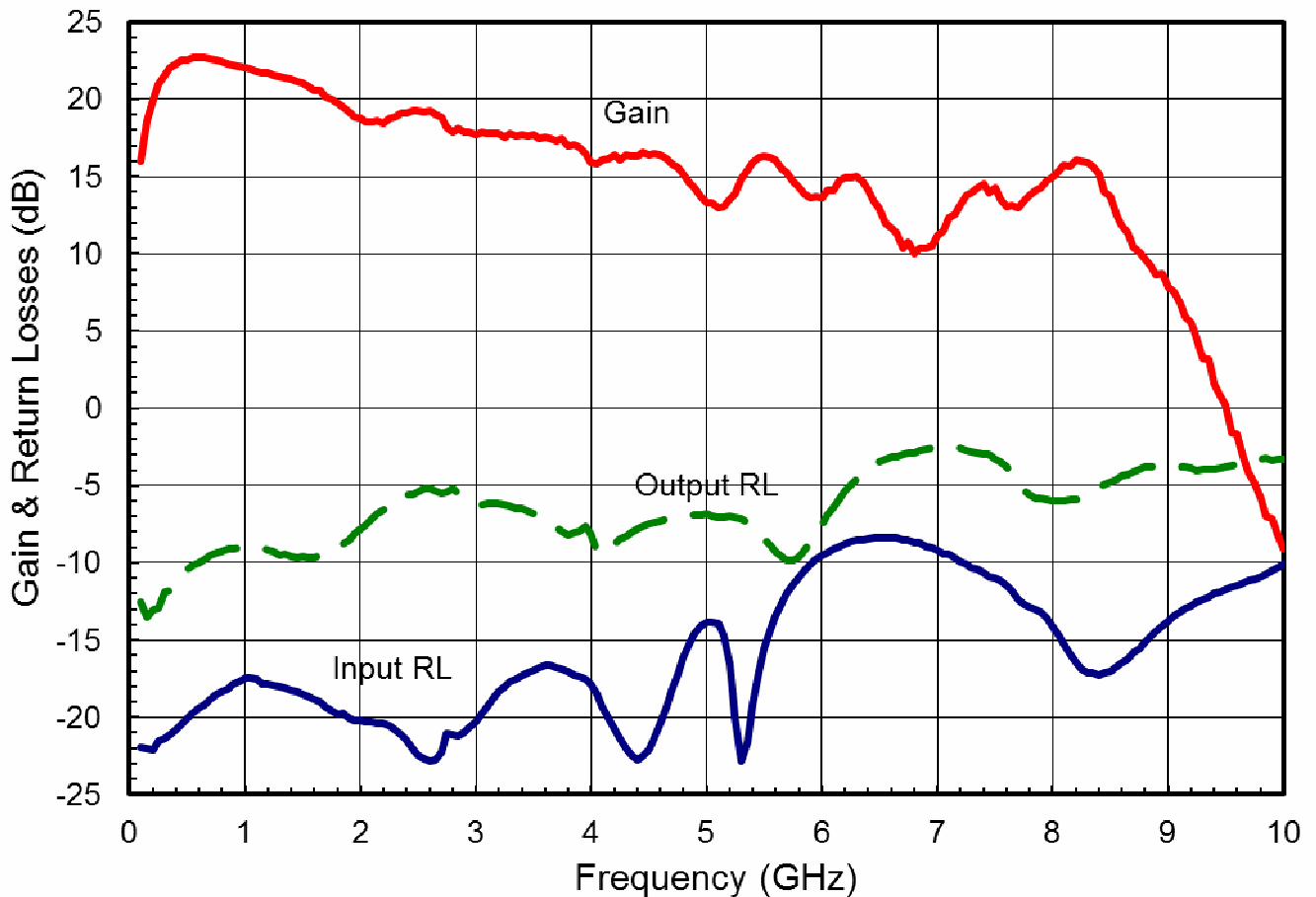
\* Specifications subject to change without notice.

\*\* Gate biases corresponding to above currents are V<sub>gs1</sub> = -0.7V, I<sub>gs1</sub> < 0.5mA, V<sub>gs2</sub> = -0.7V, I<sub>gs2</sub> < 1mA and may vary from lot to lot. Gate currents could reach above limits only near power saturation

**ABSOLUTE MAXIMUM RATING**

Parameters	Symbol	Rating
Drain source voltage	$V_{dd}$	30V
Gate source voltage	$V_{gs1}$ & $V_{gs2}$	-6V
Drain source current	$I_{dq1}$	0.2A
Drain source current	$I_{dq2}$	0.40A
Continuous dissipation at 25°C	$P_t$	15W
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\***

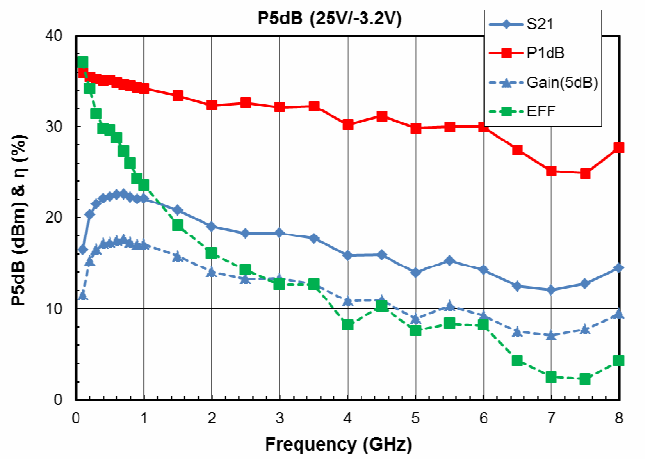
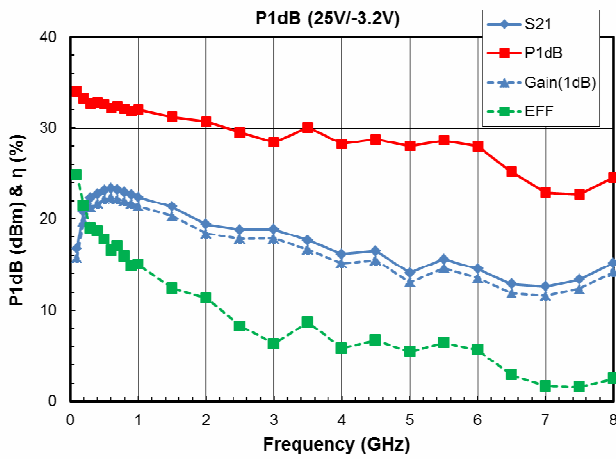
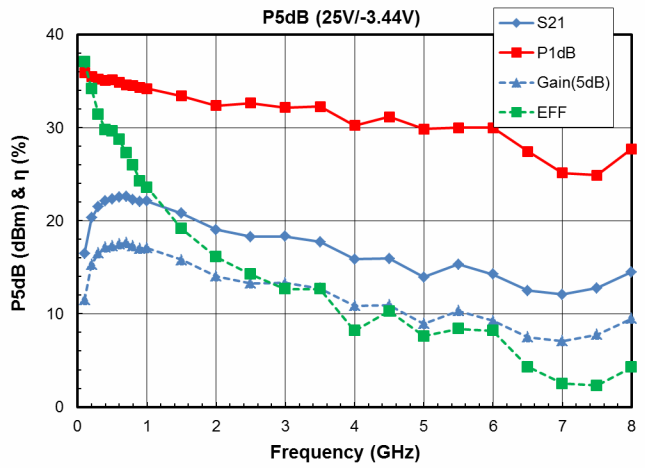
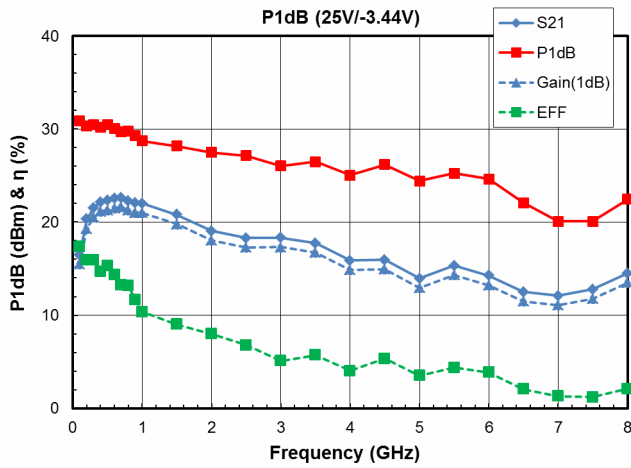


\* S-Parameters measured using bias tee at the output. MMIC could be operated at lower than  $V_{dd}=+25V$  with almost same small signal parameters.

**NOISE DATA**

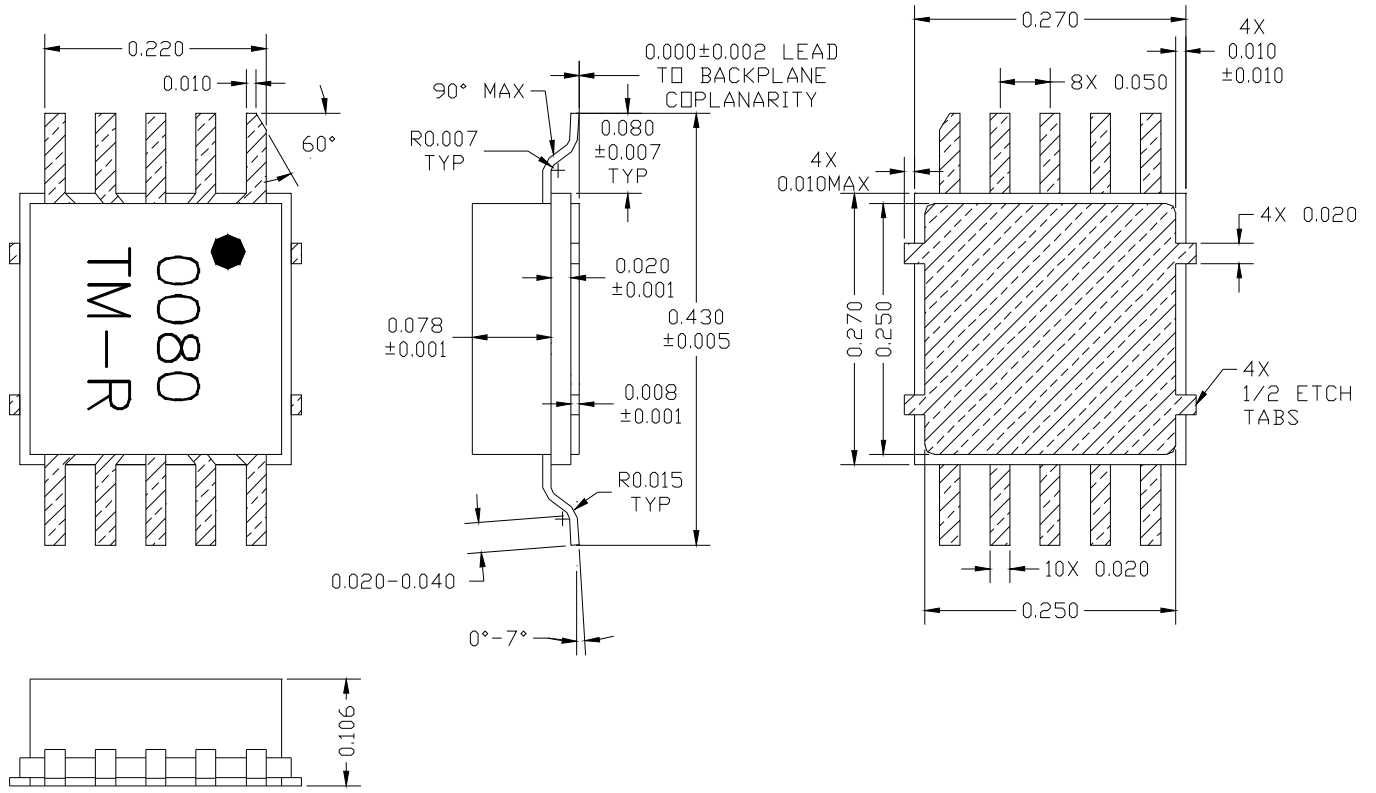
(TBD)

POWER DATA\*



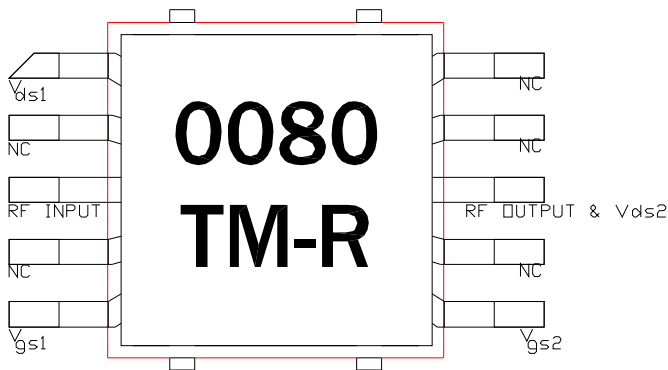
\* Power measured using bias tee at the output. MMIC could be operated at lower than  $V_{dd}=+25V$  with reduced power output.

PACKAGE OUTLINE (BM)



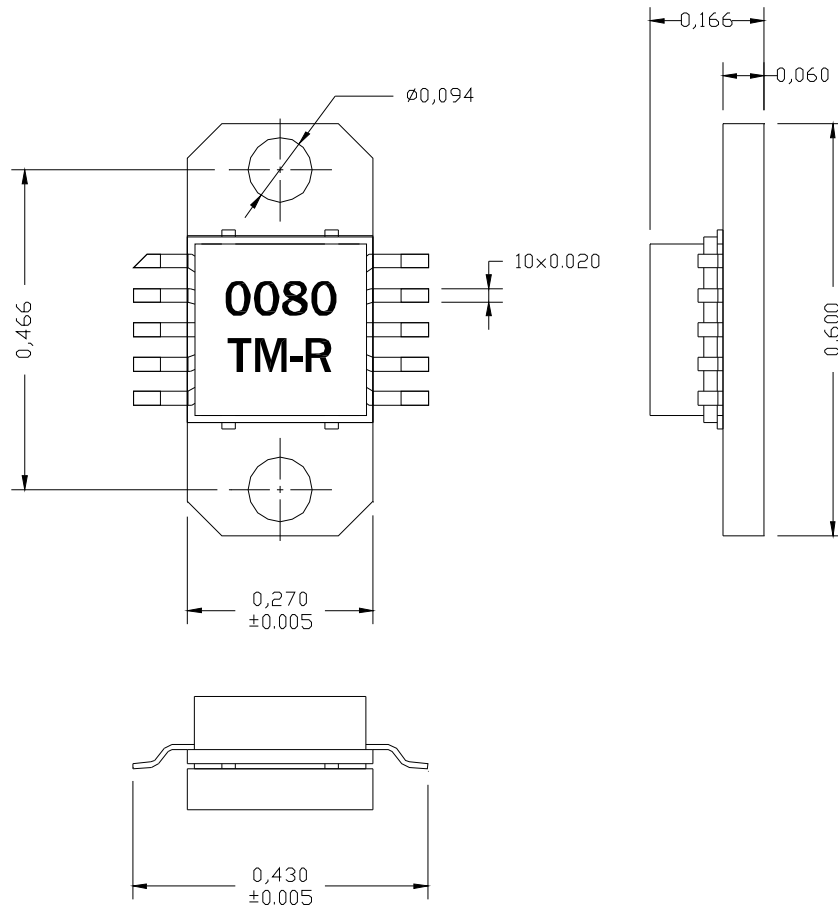
- Gate biases are for reference only and may vary from lot to lot

Pin Layout

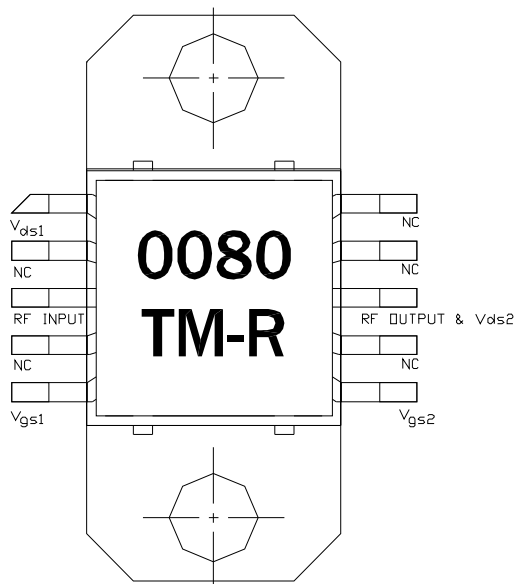


Pin No.	Function	Bias
1	Vds1	+25V
2	NC	
3	RF in	
4	NC	
5	Vgs1	-3.2V
6	Vgs2	-3.2V
7	NC	
8	RF out & Vds2	+25V
9	NC	
10	NC	

PACKAGE OUTLINE (FM)

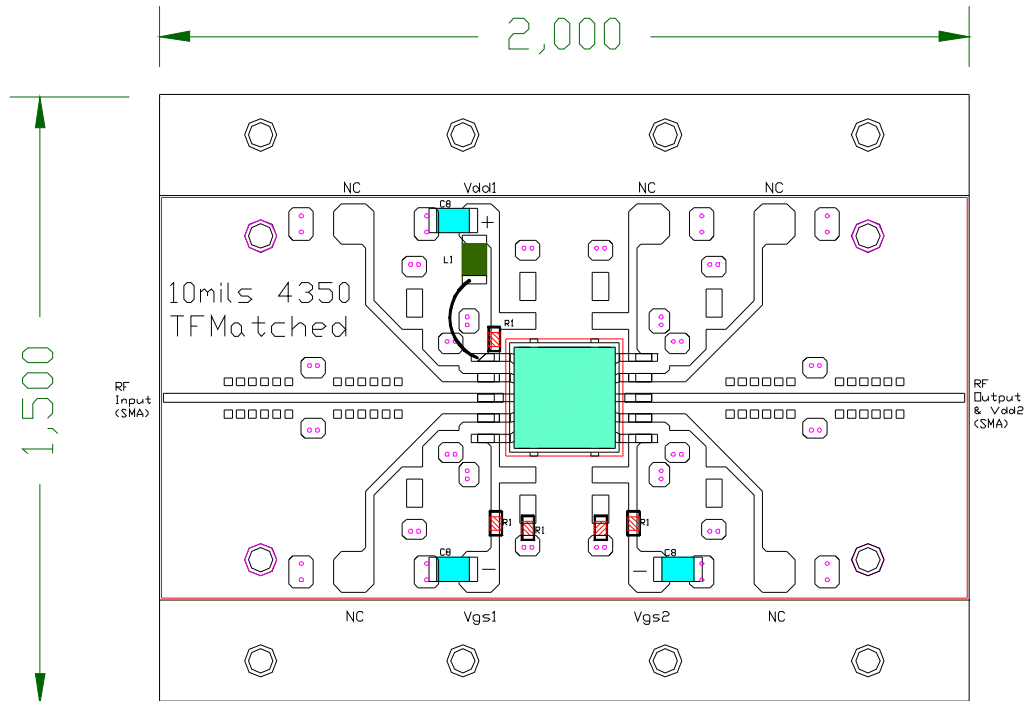


Pin Layout



Pin No.	Function	Bias
1	V <sub>ds1</sub>	+25V
2	NC	
3	RF in	
4	NC	
5	V <sub>gs1</sub>	-3.2V
6	V <sub>gs2</sub>	-3.2V
7	NC	
8	RF out & V <sub>ds2</sub>	+25V
9	NC	
10	NC	

TEST CIRCUIT for BM Package

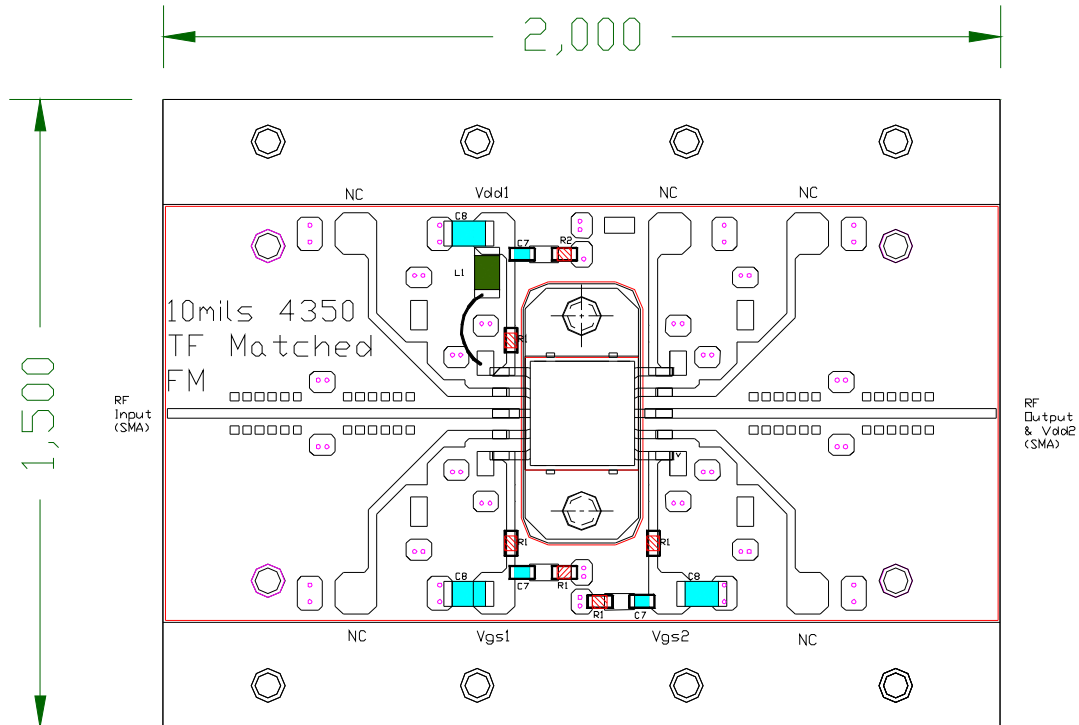


- Notes:
- 1- 10mils Rogers 4350 Material epoxied
  - 2- Ckt is for matched MMICs
  - 3- C6=20pF, C7=1000pF, C8=10uF  
 R1=50 Ohms, R2=10 Ohms, R3=5 Ohms
  - 4- All Caps & Resistors are 0603 size except for L1 & C8: 1206 size
  - 5- L1 is coilcraft 1206CS-101X\_LC

Important Notes:

- 1- The +25V Bias to the output port could be provided via a bias tee or suitable chokes to be soldered on the board. Inductance of choke should be large enough to have high impedance at lowest frequency of operation (300nH is adequate).
- 2- Recommended current biases are 150mA and 300mA for the first stage and second stage respectively. Gate biases of -3.2V are for reference only.  $V_{gs1}$  &  $V_{gs2}$  could be adjusted to vary the currents going thru the first stage ( $V_{ds1}$  pin) and the second stage ( $V_{ds2}$  pin) respectively.
- 3- Do not apply  $V_{ds1}$  &  $V_{ds2}$  without proper negative voltages on  $V_{gs1}$  &  $V_{gs2}$ .
- 4- The currents flowing out of the  $V_{gs1}$  &  $V_{gs2}$  pins are less than 0.5mA & 1mA respectively at  $P_{sat}$ .

TEST CIRCUIT for FM 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 L1 & C8: 1206 size
  - 5- L1 is coilcraft 1206CS-101X\_LC

Important Notes:

- 1- The +25V Bias to the output port could be provided via a bias tee or suitable chokes to be soldered on the board. Inductance of choke should be large enough to have high impedance at lowest frequency of operation (300nH is adequate).
- 2- Recommended current biases are 150mA and 300mA for the first stage and second stage respectively. Gate biases of -3.2V are for reference only.  $V_{gs1}$  &  $V_{gs2}$  could be adjusted to vary the currents going thru the first stage ( $V_{ds1}$  pin) and the second stage ( $V_{ds2}$  pin) respectively.
- 3- Do not apply  $V_{ds1}$  &  $V_{ds2}$  without proper negative voltages on  $V_{gs1}$  &  $V_{gs2}$ .
- 4- The currents flowing out of the  $V_{gs1}$  &  $V_{gs2}$  pins are less than 0.5mA & 1mA respectively at  $P_{sat}$ .