

DESCRIPTION

AMCOM's AM08011039WM-00 (SN-R) is a broadband GaAs MMIC power amplifier. It has 25dB small signal gain, and >40dBm output power over the 8 to 11GHz band at 8V bias. The AM08011039WM-00 is an un-packaged bare die. Because of high DC power dissipation, we strongly recommend to mount these devices with eutectic bonding directly on a copper heat sink. It is capable of working at 8V DC bias voltage under pulsed condition if the eutectic bonding does not have any voids. Otherwise, we recommend operating the MMIC at 7V DC bias to provide some thermal margin. The AM08011039WM-SN-R is in a ceramic package with a flange and straight RF and DC leads for drop-in applications. Good heat sinking is required. Both chip and packaged versions are RoHS compliant.

FEATURES

- Wide bandwidth from 8 to 11GHz
- 40dBm of saturated output pulsed power
- High gain, 28dB
- Input /Output matched to 50 Ohms

APPLICATIONS

- Fixed microwave backhaul
- Radar
- Satellite communications
- 2-way radio

TYPICAL PERFORMANCE * ($V_{ds} = +8V$ (1mS, 5% duty), $I_{dsq} = 3900mA$, $V_{gg} = -1.8V^{**}$)

Parameters	Minimum	Typical **	Maximum
Frequency	8.5 – 10.5GHz	8 – 11GHz	
Small Signal Gain		25dB	30dB
Gain Ripple		± 2dB	± 3.0dB
P_{1dB} ***	36dBm	39dBm	
P_{sat} ***	38dBm	40dBm	
Efficiency @ P_{1dB}		20%	
Noise Figure		-	10dB
IP3 @ 10GHz		46dBm	
Input Return Loss		12dB	
Output Return Loss		5dB	
Thermal Resistance		3°C/W	

* Specifications subject to change without notice.

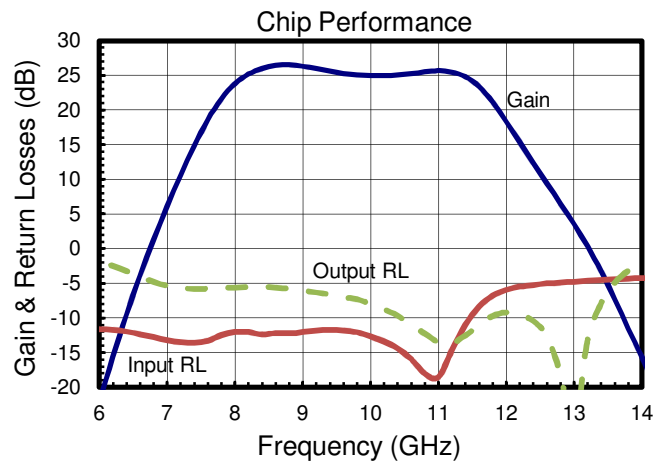
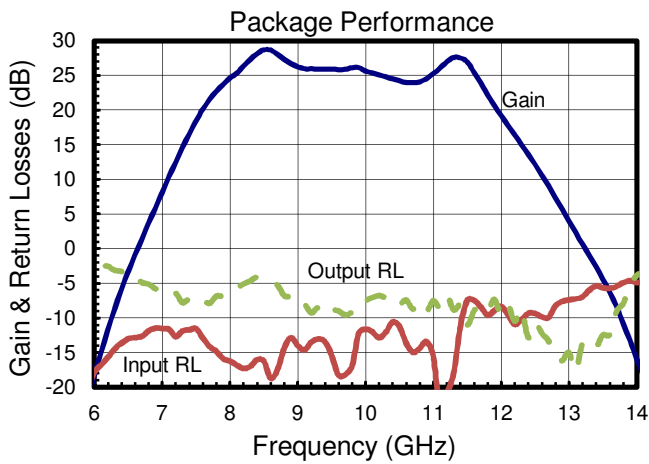
** Current may change from lot to lot. Adjust V_{gs} to reach $I_{dsq1}=300mA$, $I_{dsq2}=1.2A$, $I_{dsq3}=2.4A$. V_{ds} of 8V is at the MMIC drain terminal. Because I_{ds} is around 4 Amp, if your test system has a 0.1-ohm resistance between the DC power supply and the MMIC drain, it will have a drop of 0.4V, which reduces output power. In this case, we recommend raising the DC power supply voltage to 8.4V.

*** Power data are pulsed results for 5% pulse duty cycle and 1mS pulse width.

ABSOLUTE MAXIMUM RATING

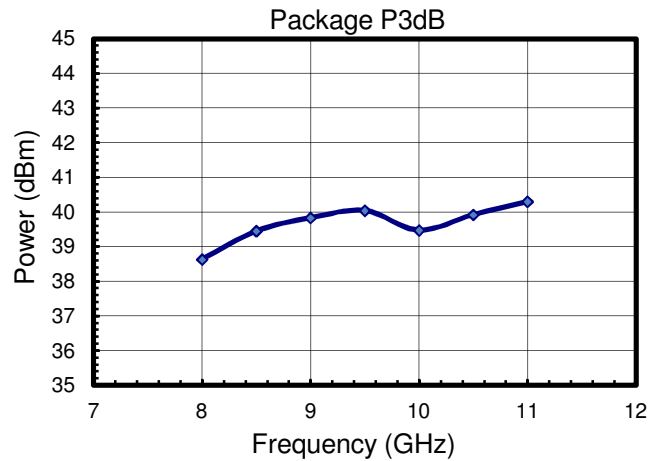
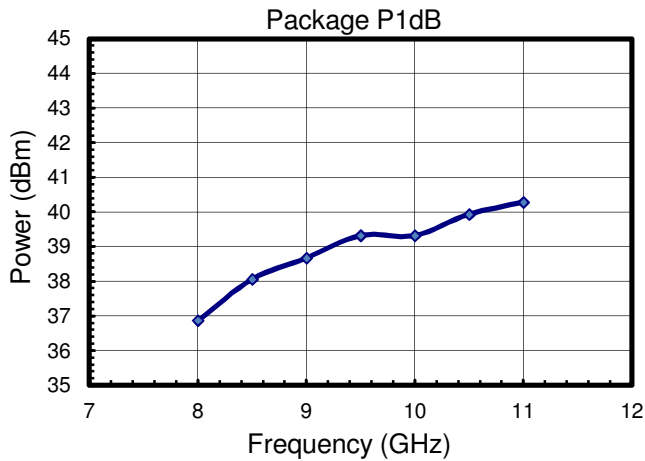
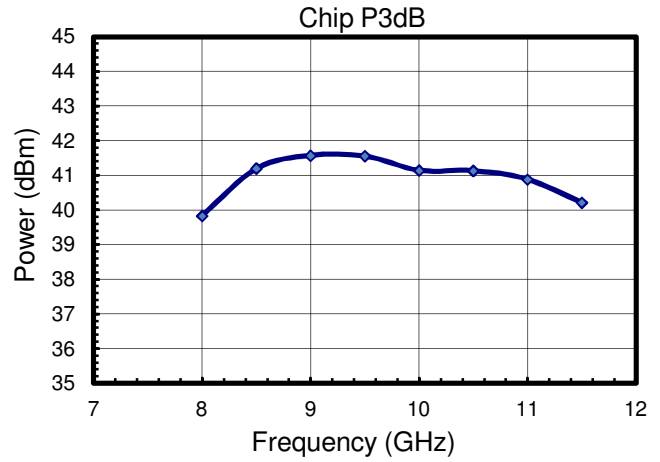
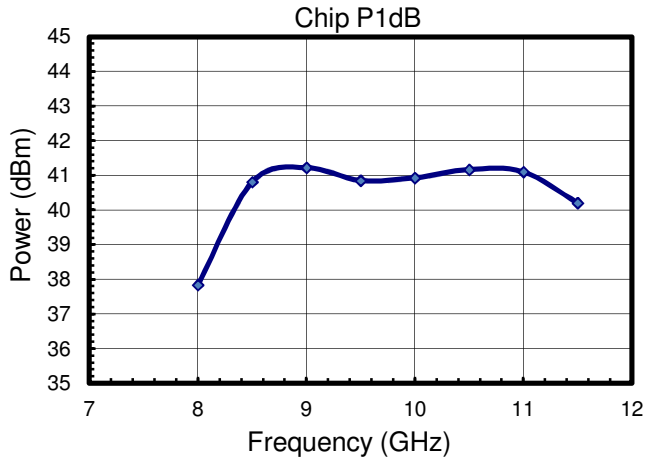
Parameters	Symbol	Rating
Drain source voltage	$V_{ds1}, V_{ds2}, V_{ds3}$	9V
Gate source voltage	V_{gg}	-3V
Drain source current	I_{dsq1}	0.35A
Drain source current	I_{dsq2}	1.5A
Drain source current	I_{dsq3}	3.6A
Continuous dissipation at 25°C	P_t	40W
Channel temperature	T_{ch}	175°C
Operating temperature	T_{op}	-55°C to +85°C
Storage temperature	T_{sto}	-55°C to +135°C

SMALL SIGNAL DATA*



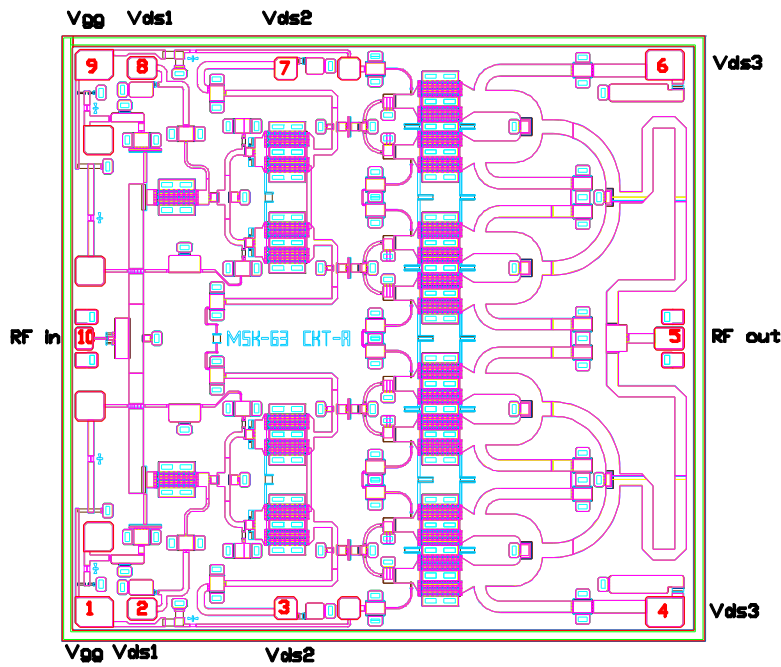
* MMIC could be operated at lower than $V_{ds}=+8V$ with almost same small signal parameters.

POWER DATA ($V_d = 8V$, $V_g = -1.8V$, $I_{dsq1} = 300mA$, $I_{dsq2} = 1.2A$, $I_{dsq3} = 2.4A$, 1mS, 5% duty) *



* MMIC could be operated from 5 to 8V. All power data is pulsed with 5% duty cycle and 1000 cycles per second.

CHIP OUTLINE (X*Y Dimensions 4378x4108 μm^2)

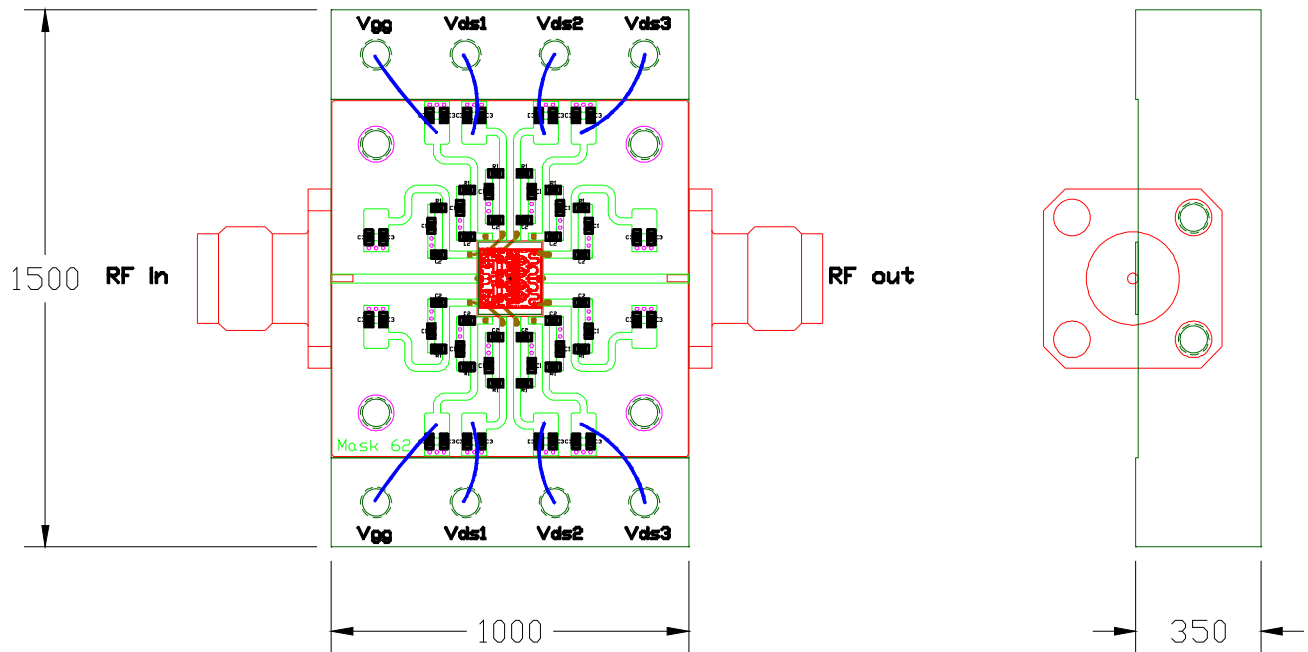


Pin No.	Function	Bias
1	V _{gg}	-1.8V
2	V _{ds1}	+8V
3	V _{ds2}	+8V
4	V _{ds3}	+8V
5	RF out	NA
6	V _{ds3}	+8V
7	V _{ds2}	+8V
8	V _{ds1}	+8V
9	V _{gg}	-1.8V
10	RF in	NA

* It is important to connect V_{ds} to both the upper and lower bonding pads, such as #4 and #6 for V_{ds3}, #3 and #7 for V_{ds2}

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

CHIP TEST FIXTURE

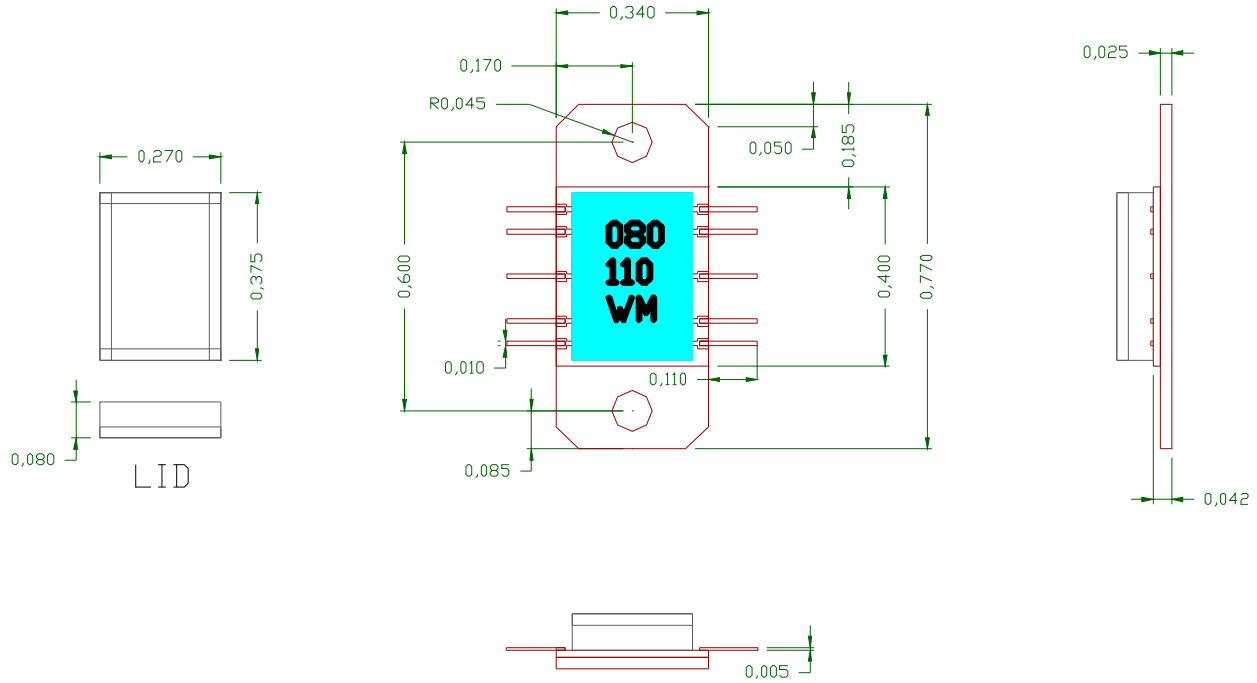


- Notes:
- 1- Dimensions in mils
 - 2- PCB is 10 mils Taconic TSM-DS-0100
 - 3- Board is gold plated for wire bonding
 - 4- R1=50 Ωhm , C1=100pF , C2=10pF
 C3=1000pF

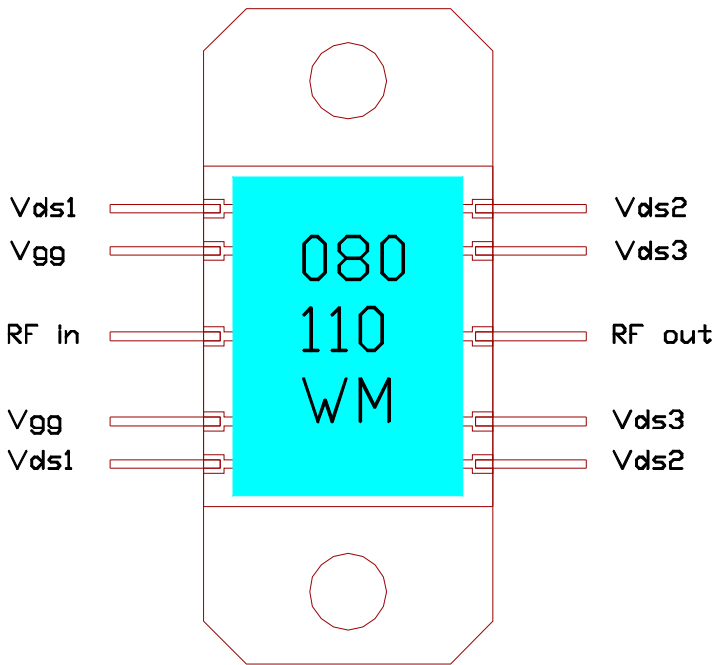
Important Notes:

- 1- Recommended current biases are 0.3A , 1.2A and 2.4A for the first stage , second and third stage respectively. Gate bias of -1.8V is for reference only. V_{gg} could be adjusted to vary the currents going thru the MMIC.
- 2- Do not apply V_{ds1} & , V_{ds2} & V_{ds3} without proper negative voltages.
- 3- The currents flowing out of the two V_{gg} pins are around 300mA.

SN PACKAGE OUTLINE

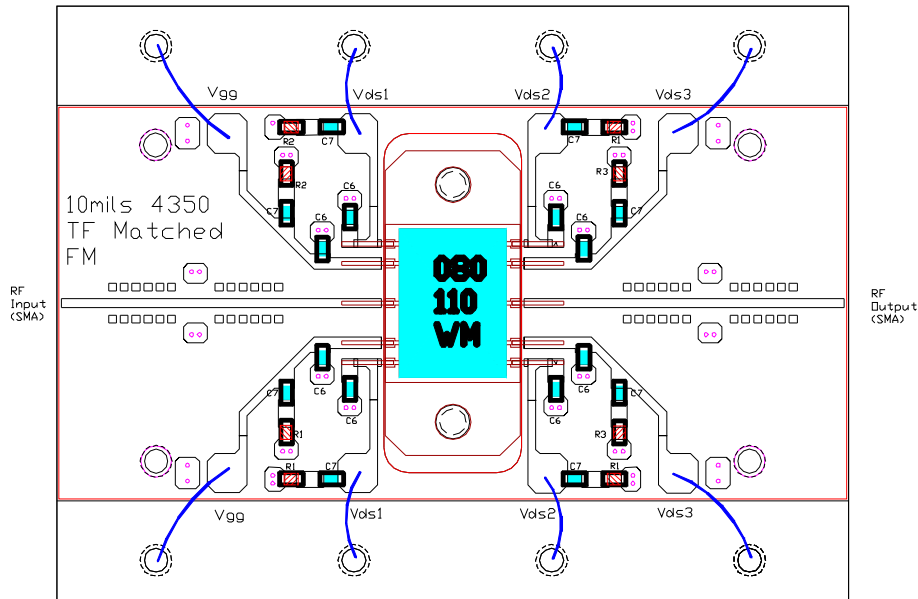


Pin Layout



Pin No.	Function	Bias
1	Vds1	+8V
2	Vgg	-1.8V
3	RF in	NA
4	Vgg	-1.8V
5	Vds1	+8V
6	Vds2	+8V
7	Vds3	+8V
8	RF out	NA
9	Vds3	+8V
10	Vds2	+8V

TEST CIRCUIT for SN 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:

- 4- Recommended current biases are 0.3A , 1.2A and 2.4A for the first stage , second and third stage respectively. Gate bias of -1.8V is for reference only. V_{gg} could be adjusted to vary the currents going thru the MMIC.
- 5- Do not apply V_{ds1} & V_{ds2} & V_{ds3} without proper negative voltages.
- 6- The currents flowing out of the two V_{gg} pins are around 300mA.