



## 1 Watt/2 Watt L-Band Power Amplifier 1.435 - 1.525 GHz

AM42-0054 V1

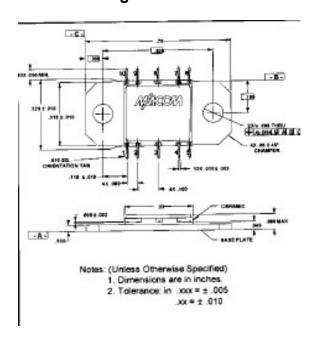
#### **Features**

- High Linear Gain: 26 dB typ.
- High Saturated Output Power: +33 dBm typ.
- 50 Ohm Input/Output Broadband Matched

#### **Description**

M/A-COM's AM42-0054 is a two stage MMIC power amplifier in a bolt down ceramic package, allowing easy assembly. The AM42-0054 employs a fully matched chip with internally decoupled gate and grain bias networks. The AM42-0054 is designed to operate from a constant current drain supply or a constant voltage gate supply. By varying the bias conditions, the saturated output power performance of this device may be tailored for various applications. The AM42-0054 is ideally suited for use as an output stage in telemetry systems. The AM42-0054 includes internal supply line bypassing in the package. minimizing the number of external components required. M/A-COM's AM42-0054 is fabricated using a mature 0.5micron MBE based GaAs MESFET process. The process features full passivation for increased performance and This product is 100% RF tested to ensure compliance to performance specifications.

### Outline Drawing 1



1. Die available upon request (die size = 2970 x 2550 μm).

## Electrical Specifications: , $V_{DD}$ = +5V/+8V, $V_{GG}$ adjusted for Ids = 800 mA (with RF), $Z_0$ = 50 $\Omega$ , $T_A$ = 25°C

Parameter	Test Conditions	Frequency	Units	V <sub>DD</sub> = +5 V (1 W operation)	V <sub>DD</sub> = +8 V (2 W operation)
Linear Gain	Pin = -20 dBm, Ids = 800 mA typ.	1.4 - 1.55 GHz	dB	25 typ.	25 typ.
Input VSWR	Pin = -20 dBm	1.4 - 1.55 GHz	Ratio	<2.0:1	<2.0:1
Output VSWR	Pin = -20 dBm	1.4 - 1.55 GHz	Ratio	<2.0:1	<2.0:1
Saturated Output Power	Pin = +10 dBm	1.4 - 1.55 GHz	dBm	30 typ.	33 typ.
Output Power vs. Frequency	Pin = +10 dBm	1.4 - 1.55 GHz	dBm	±0.9 typ.	±0.4 typ.
Drain Bias Current	Pin = +100 dBm	1.4 - 1.55 GHz	mA	700 typ.	800 typ.
Gate Bias Voltage (V <sub>GG)</sub>	Pin = +10 dBm	1.4 - 1.55 GHz	V	-2.0 min; -0.4 max	-2.0 min; -0.4 max
Gate Bias Current (I <sub>GG</sub> )	Pin = +10 dBm	1.4 - 1.55 GHz	mA	25 typ.	25 typ.
Power Added Efficiency	Pin = +100 dBm	1.4 - 1.55 GHz	%	37 typ.	29 typ.

<sup>1</sup> 

- North America Tel: 800.366.2266 / Fax: 978.366.2266
- Europe Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- Asia/Pacific Tel: 81.44.844.8296 / Fax: 81.44.844.8298





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### **Absolute Maximum Ratings** 2,3,4,5,6

Parameter	Absolute Maximum	
Input Power	+ 12 dBm	
$V_{DD}$	+ 10 Volts	
$V_{GG}$	-5 Volts	
$V_{DD}$ $V_{GG}$	12 Volts	
I <sub>ds</sub>	1200 mA	
Channel Temperature	+150°C	
Operating Temperature	-40°C to +85°C	
Storage Temperature	-65°C to +150°C	

- 2. Operation of this device outside any of these limits may cause permanent damage.
- 3. Adequate heat sinking and grounding required on flange base.
- 4. Apply -3 volts to pins 5 and 6 (V<sub>GG</sub>), prior to applying +8 volts to pins 1 pr 10 (V<sub>DD</sub>). Adjust V<sub>GG</sub> for typical drain current.
- $_5$  For optimum IP $_3$  performance, the  $V_{\rm DD}$  bypass capacitors should be placed within 0.5 inches of the  $V_{\rm DD}$  leads.
- 6. DC blocks are required for RF input and output ports.

#### **Pin Configuration**

Pin No.	Pin Name	Description
1	VD1	Drain Supply to First Stage
2	GND	RF and DC Ground
3	RF IN	RF Input
4	GND	RF and DC Ground
5	VG1	Gate Supply to First Stage
6	VG2	Gate Supply to Second Stage
7	GND	RF and DC Ground
8	RF OUT	RF Output
9	GND	RF and DC Ground
10	VD2	Drain Supply to Second Stage

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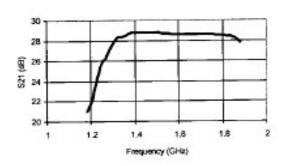


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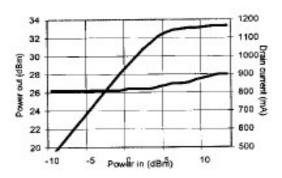
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#### **Typical Performance Curves**

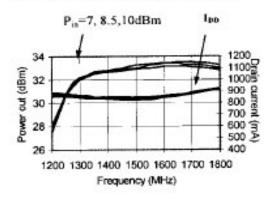
#### 2 WATT PERFORMANCE LINEAR GAIN VS FREQUENCY



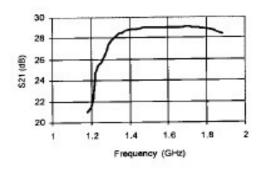
#### 2 WATT PERFORMANCE POUT AND CURRENT VS PIN



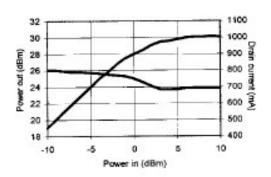
#### 2 WATT PERFORMANCE GAIN AND CURRENT VS FREQ.



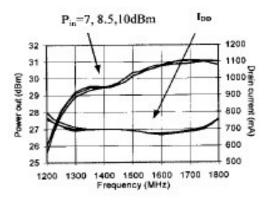
#### 1 WATT PERFORMANCE LINEAR GAIN VS FREQUENCY



#### 1 WATT PERFORMANCE POUT AND CURRENT VS PIN



#### 1 WATT PERFORMANCE GAIN AND CURRENT VS FREQ.



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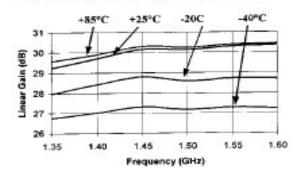


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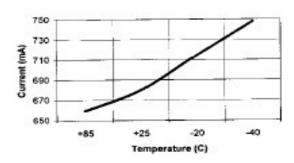
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#### **Typical Performance Curves**

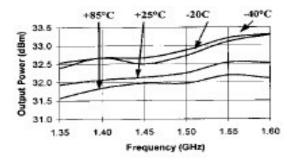
#### 2 WATT PERFORMANCE LINEAR GAIN VS FREQ AND TEMP



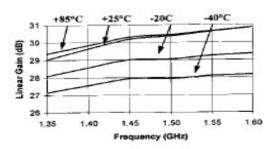
#### 2 WATT PERFORMANCE CURRENT VS TEMP AT 1.5 GHz



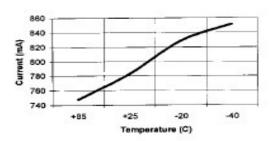
#### 2 WATT PERFORMANCE Pout VS FREQ AND TEMP



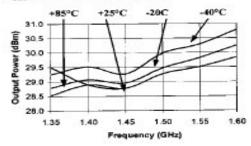
#### 1 WATT PERFORMANCE LINEAR GAIN VS FREQUENCY



#### 1 WATT PERFORMANCE CURRENT VS TEMP AT 1.5 GHz



#### 1 WATT PERFORMANCE Pout VS FREQ AND TEMP



### Ordering Information <sup>7</sup>

Part Number	Package	
AM42-0054	CR-15 Package	

7. Die available upon request.

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