



GaAs MMIC VSAT Power Amplifier, 2W 6.40 - 7.025 GHz



Features

- High Linear Gain: 30 dB Typ.
- High Saturated Output Power: +33 dBm Typ.
- High Power Added Efficiency: 22% Typ.
- 50Ω Input/Output Broadband Matched
- High Performance Ceramic Bolt Down Package

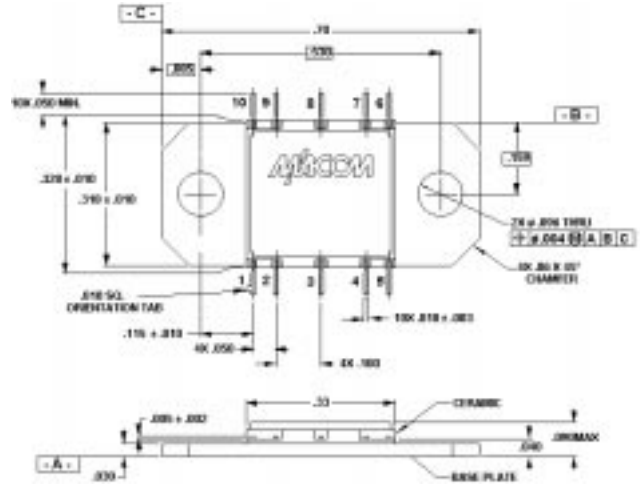
Description

M/A-COM's AM42-0039 is a three-stage MMIC power amplifier in a ceramic bolt down style hermetic package. The AM42-0039 employs a fully matched monolithic chip with internally decoupled Gate and Drain bias networks. The AM42-0039 is designed to be operated from a constant current Drain supply. By varying the Gate bias voltage, the saturated output power performance of this device can be tailored for various applications.

The AM42-0039 is designed for use as an output stage or driver amplifier for VSAT transmitter systems. This amplifier is monolithic and requires a minimum of external components.

M/A-COM's AM42-0039 is fabricated using a mature 0.5 micron GaAs MESFET process. The chip is fully passivated for increased performance and reliability. These amplifiers are 100% RF tested to ensure compliance to performance specifications.

CR-15



- Notes: (unless otherwise specified)
 1. Dimensions are in inches.
 2. Tolerance: .XXX = ± 0.005
 .XX = ± 0.010

Ordering Information

Part Number	Package
AM42-0039	Ceramic Bolt Down Package

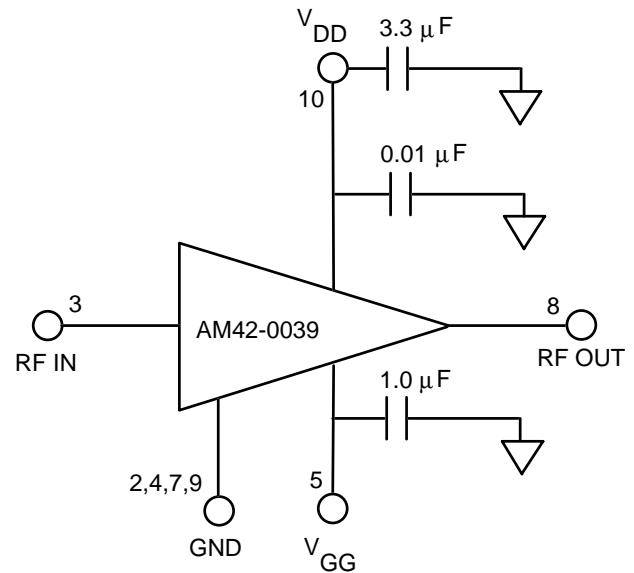
Electrical Specifications: T_A = +25°C, V_{DD} = +9V, V_{GG} adjusted for I_{DD} = 1050 mA, Freq. = 6.40 to 7.025 GHz

Parameter	Abbv.	Test Conditions	Units	Min.	Typ.	Max.
Linear Gain	G _L	P _{IN} ≤ -10 dBm	dB	27	30	—
Input VSWR	VSWR _{IN}	P _{IN} ≤ -10 dBm	—	—	2.3:1	2.7:1
Output VSWR	VSWR _{OUT}	P _{IN} ≤ -10 dBm	—	—	2.3:1	—
Output Power	P _{SAT}	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ.	dBm	31.5	33.0	34.0
Output Power vs. Frequency	P _{SAT}	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ.	dB	—	1.0	1.5
Output Power vs. Temperature (with respect to T _A = +25°C)	P _{SAT}	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ. T _A = -40°C to +70°C	dB	—	±0.4	—
Drain Bias Current	I _{DD}	P _{IN} = +10 dBm	mA	900	1050	1100
Gate Bias Voltage	V _{GG}	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ.	V	-2.4	-1.2	-0.4
Gate Bias Current	I _{GG}	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ.	mA	—	20	40
Thermal Resistance	θ _{JC}	25°C Heat Sink	°C/W	—	7 (Est.)	—
Second Harmonic	f ₂	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ.	dBc	—	-35	—
Third Harmonic	f ₃	P _{IN} = +10 dBm, I _{DD} = 1050 mA Typ.	dBc	—	-45	—

Absolute Maximum Ratings^{1,2,3,4}

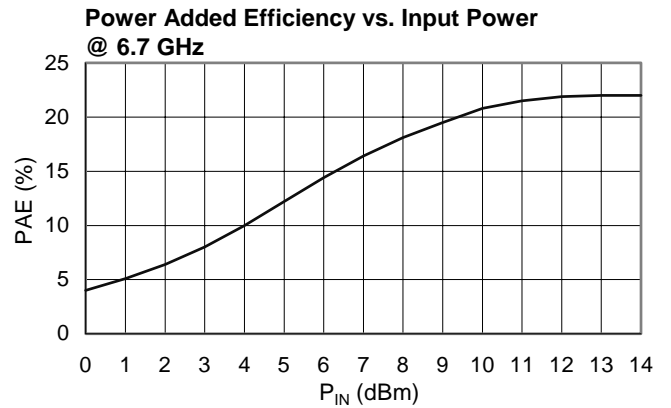
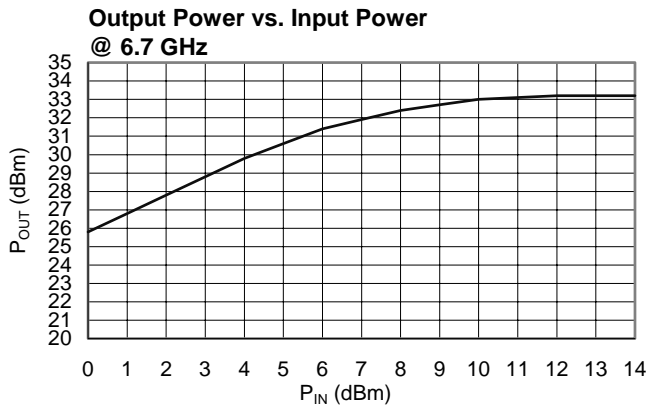
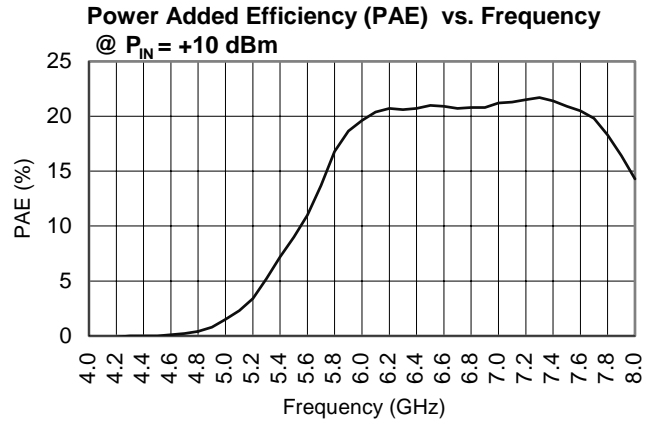
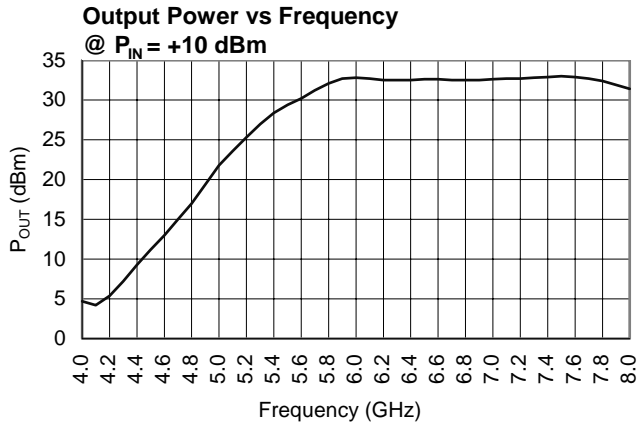
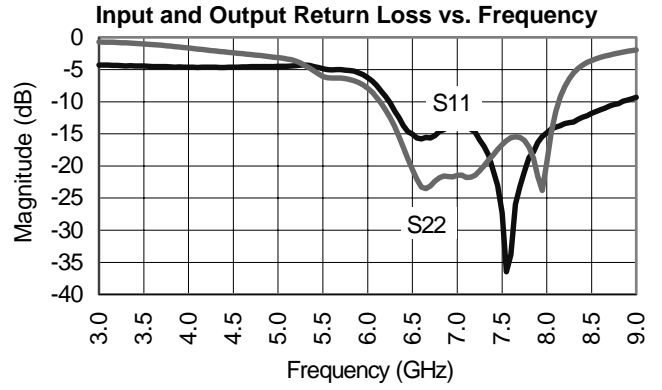
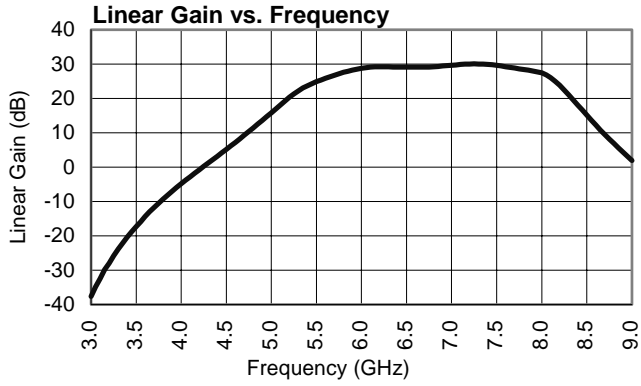
Parameter	Absolute Maximum
Input Power	+23 dBm
V _{DD}	+12 Volts
V _{GG}	-3 Volts
V _{DD} - V _{GG}	12 Volts
I _{DD}	1700 mA
Channel Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

- Exceeding any one or a combination of these limits may cause permanent damage.
- Case Temperature (T_C) = +25°C.
- Nominal bias is obtained by first connecting -2 volts to pin 5 (V_{GG}), followed by connecting +9 volts to pin 10 (V_{DD}). Note sequence. Adjust V_{GG} for a drain current of 1050 mA typical.
- RF ground and thermal interface is the flange (case bottom). Adequate heat sinking is required.
- No dc supply voltage will appear at the RF ports.
- The dc resistance at the input and output ports is a short circuit. No voltage is allowed on these ports.
- For optimum IP₃ performance, the V_{DD} bypass capacitors should be placed within 0.5 inches of the V_{DD} leads.

Typical Bias Configuration^{4,5,6,7}**Pin Configuration**

Pin No.	Pin Name	Description
1	N/C	No Connection
2	GND	DC and RF Ground
3	RF In	RF Input
4	GND	DC and RF Ground
5	V _{GG}	Gate Supply
6	N/C	No Connection
7	GND	DC and RF Ground
8	RF Out	RF Output
9	GND	DC and RF Ground
10	V _{DD}	Drain Supply

Typical Performance @ +25°C



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