MAAM37000-A1

Low Noise GaAs MMIC Amplifier
3.5 - 7.0 GHz

Rev. V8

Features

- Low Noise Figure: 2.2 dB Typical
- High Gain: 17 dB Typical
- Gain Flatness: ±0.5 dB
- Single Supply: +4 V
- No External Components Required
- DC Decoupled RF Input and Output
- Lead-Free 8-Lead Ceramic Package
- RoHS* Compliant and 260°C Reflow Compatible

Description

The MAAM37000-A1 is a wide-band, low noise, MMIC amplifier housed in a small, lead-free, 8-lead ceramic package. It includes two integrated gain stages and employs series inductive feedback to obtain excellent noise figure and a good, 50 Ω, input and output impedance match over the entire frequency band. The MAAM37000-A1 operates from a single +4 V supply. It is fully monolithic, requires no external components, and is provided in a user-friendly, microwave package.

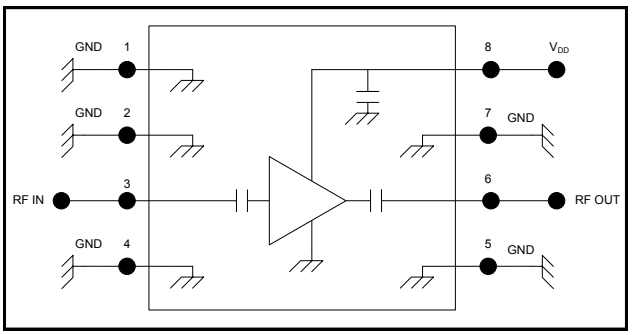
The MAAM37000-A1 performs well as a low noise amplifier in receive applications and as a driver or buffer amplifier where high gain, excellent linearity and low power consumption are important. Because of its wide bandwidth, the MAAM37000-A1 can be used in numerous commercial and government system applications, such as TVRO, VSAT, missile guidance and radar.

The MAAM37000-A1 is manufactured in-house using a reliable, 0.5-micron, GaAs MESFET process. This product is 100% RF tested to ensure compliance to performance specifications.

Ordering Information

Part Number	Package
MAAM37000-A1	8-lead Ceramic (CR-3)
MAAM37000-A1G	Gull Wing (CR-10)

Functional Schematic



Pin Configuration[1]

Pin No.	Function	Pin No.	Function
1	Ground	5	Ground
2	Ground	6	RF Output
3	RF Input	7	Ground
4	Ground	8	V_{DD}

1. The package bottom must be connected to RF and DC ground.

Absolute Maximum Ratings [2,3]

Parameter	Absolute Maximum
V_{DD}	+7 V
Input Power	+20 dBm
Current	150 mA
Channel Temperature	+150°C
Operating Temperature[4]	-55°C to +100°C
Storage Temperature	-65°C to +150°C

2. Exceeding any one or combination of these limits may cause permanent damage to this device.
3. M/A-COM Technology does not recommend sustained operation near these survivability limits.
4. Typical thermal resistance (Θ_{jc}) = +120°C/W

* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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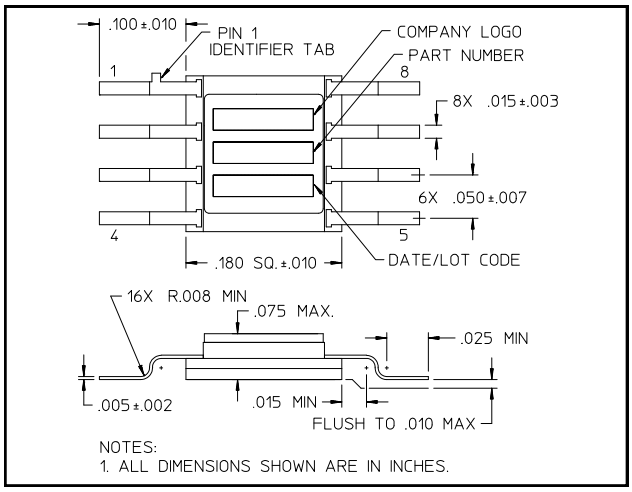
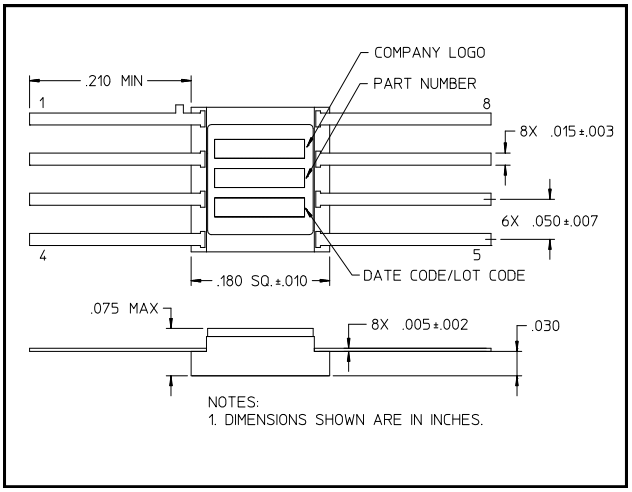
Lead-Free CR-10 (MAAM37000-A1G)†



Lead-Free CR-3 (MAAM37000-A1)†



† Reference Application Note M538 for lead-free solder reflow recommendations.
Meets JEDEC moisture sensitivity level 1 requirements.

Electrical Specifications: T_A = 25°C, V_{DD} = +4 V, Z_0 = 50 Ω

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	3.5 - 7.0 GHz, P_{IN} = -30 dBm	dB	15	17	—
Noise Figure	3.5 - 7.0 GHz	dB	—	2.2	3.2
Input VSWR	3.5 - 7.0 GHz, P_{IN} = -30 dBm	Ratio	—	2.0:1	—
Output VSWR	3.5 - 7.0 GHz, P_{IN} = -30 dBm	Ratio	—	2.0:1	—
Output 1 dB Compression	3.5 - 7.0 GHz	dBm	—	+14	—
Input IP3	3.5 - 7.0 GHz, P_{IN} = -30 dBm	dBm	—	+8	—
Reverse Isolation	3.5 - 7.0 GHz, P_{IN} = -30 dBm	dB	—	35	—
Bias Current	—	mA	—	75	110

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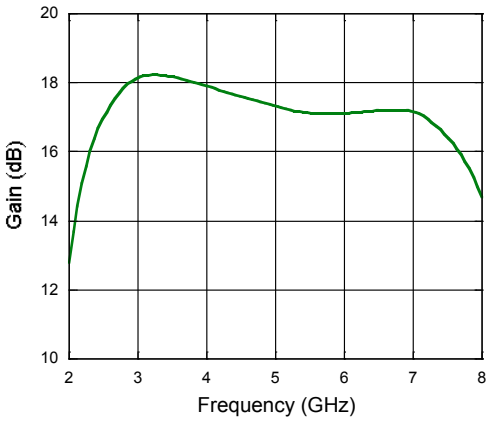
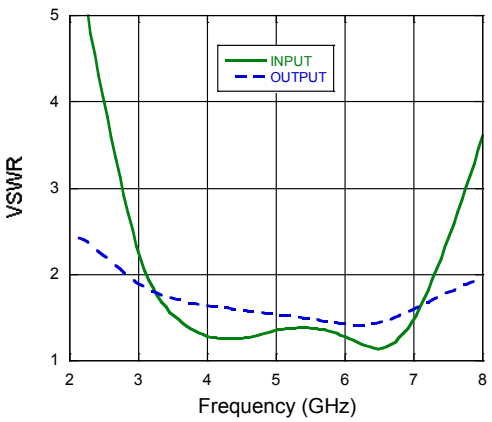
Typical Performance @ +25°C

Gain



VSWR



Noise Figure