

## Wide Band GaAs MMIC Amplifier 2.0 - 8.0 GHz

Rev. V8

### Features

- Gain: 17 dB Typical
- Broadband Gain Flatness:  $\pm 0.5$  dB Typical
- Single Supply: +10 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 MAAM28000-A1 is a wide band, MMIC amplifier housed in a small, lead-free, 8-lead ceramic package. It includes two distributed gain stages to obtain flat gain and a good, 50-ohm input and output impedance match over a very wide bandwidth. The MAAM28000-A1 operates from a single +10 V supply. It is fully monolithic, requires no external components and is provided in a low-cost, user-friendly, microwave package.

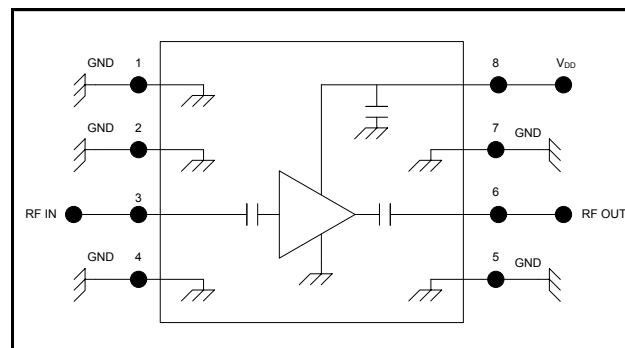
The MAAM28000-A1 performs well as a generic IF, driver or buffer amplifier where high gain, excellent linearity and low power consumption are important. Because of its wide bandwidth, the MAAM28000-A1 can be used in numerous commercial and government system applications, such as satellite communications, RLL, EW and radar.

The MAAM28000-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
MAAM28000-A1	8-lead Ceramic (CR-3)
MAAM28000-A1G	Gull Wing (CR-10)

### Schematic



### Pin Configuration<sup>1</sup>

Pin No.	Function	Pin No.	Function
1	Ground	5	Ground
2	Ground	6	RF Output
3	RF Input	7	Ground
4	Ground	8	V <sub>DD</sub>

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

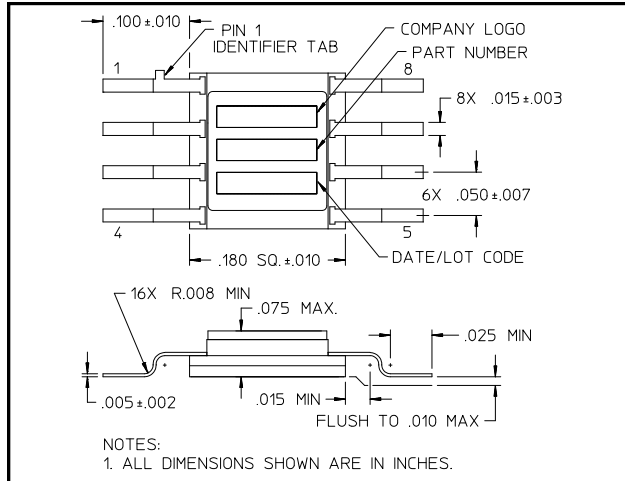
### Absolute Maximum Ratings<sup>2,3</sup>

Parameter	Absolute Maximum
V <sub>DD</sub>	+14 V
Input Power	+20 dBm
Current	150 mA
Channel Temperature	+150°C
Operating Temperature <sup>4</sup>	-55°C to +100°C
Storage Temperature	-65°C to +150°C

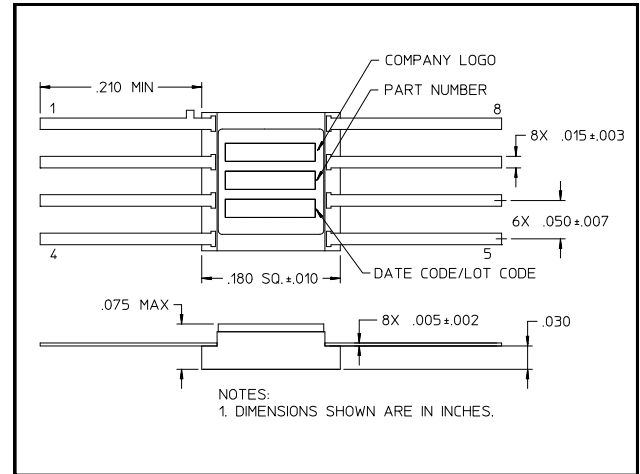
2. Exceeding any one or combination of these limits may cause permanent damage to this device.
3. M/A-COM Technology does not recommend sustained operation near these survivability limits.
4. Typical thermal resistance ( $\theta_{jc}$ ) = +45°C/W

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

### Lead-Free CR-10 (MAAM28000-A1G)<sup>†</sup>



### Lead-Free CR-3 (MAAM28000-A1)<sup>†</sup>



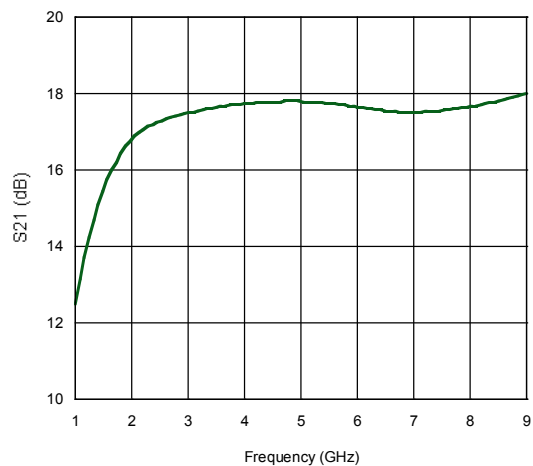
<sup>†</sup> Reference Application Note M538 for lead-free solder reflow recommendations.  
 Meets JEDEC moisture sensitivity level 1 requirements.

### Electrical Specifications: $T_A = 25^\circ\text{C}$ , $V_{DD} = +10\text{ V}$ , $Z_0 = 50\ \Omega$

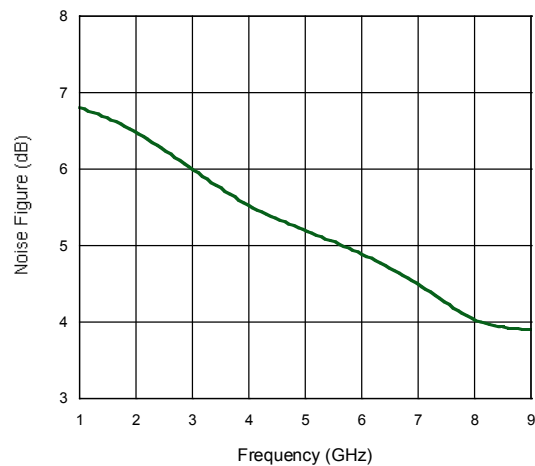
Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	dB	14	17	—
Noise Figure	2.0 - 4.0 GHz	dB	—	6.5	8.0
	4.0 - 6.0 GHz	dB	—	5.5	6.5
	6.0 - 8.0 GHz	dB	—	4.5	6.0
Gain Flatness	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	dB	—	± 0.5	—
Input VSWR	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	Ratio	—	1.6:1	—
	Output VSWR	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	Ratio	—	1.5:1
Output 1 dB Compression	2.0 - 8.0 GHz	dBm	—	+14	—
Input IP3	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	dBm	—	+7	—
Reverse Isolation	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	dB	—	35	—
Bias Current	—	mA	—	70	100

### Typical Performance Curves

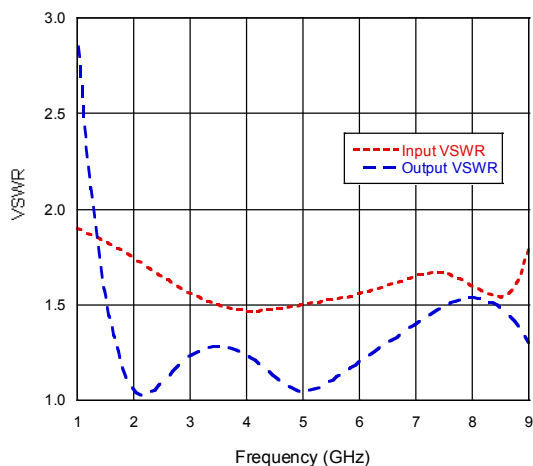
**Gain**



**Noise Figure**



**VSWR**



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