

Wide Band GaAs MMIC Amplifier 2.0 - 8.0 GHz

Rev. V8

Features

- Gain: 17 dB Typical
- Broadband Gain Flatness: ± 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.

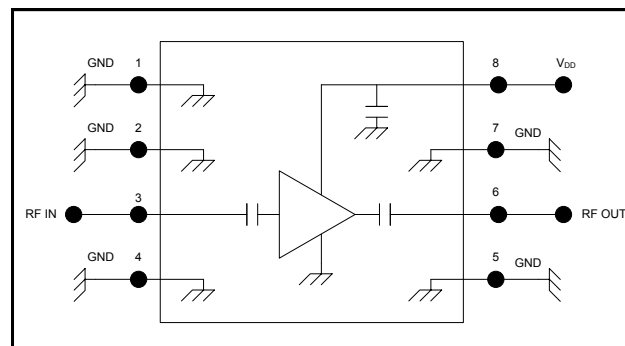
The MAAM28000-A1 performs well as a generic IF, driver or buffer amplifier where high gain, excellent linearity and low power consumption are important. Because of its wide bandwidth, the MAAM28000-A1 can be used in numerous commercial and government system applications, such as satellite communications, 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 Configuration¹

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.

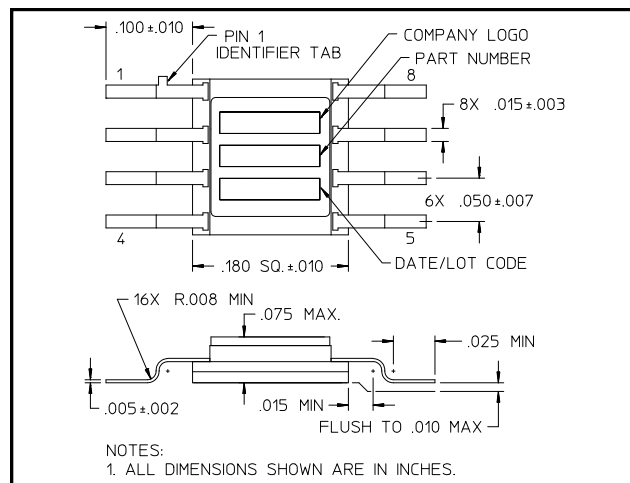
Absolute Maximum Ratings^{2,3}

Parameter	Absolute Maximum
V _{DD}	+14 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

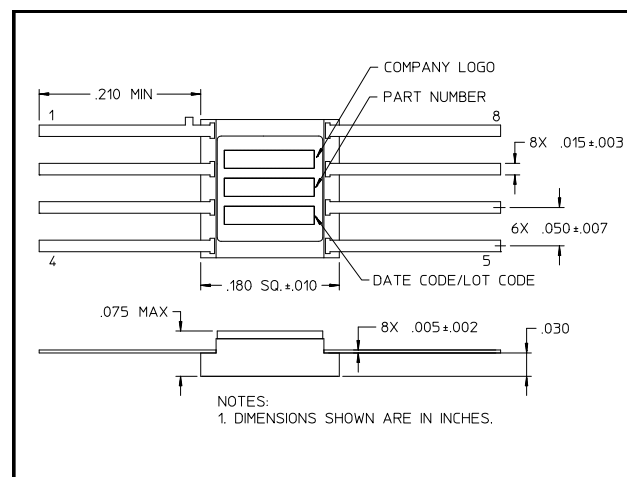
- Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM Technology does not recommend sustained operation near these survivability limits.
- Typical thermal resistance (θ_{jc}) = +45°C/W

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

Lead-Free CR-10 (MAAM28000-A1G)[†]



Lead-Free CR-3 (MAAM28000-A1)[†]



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

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

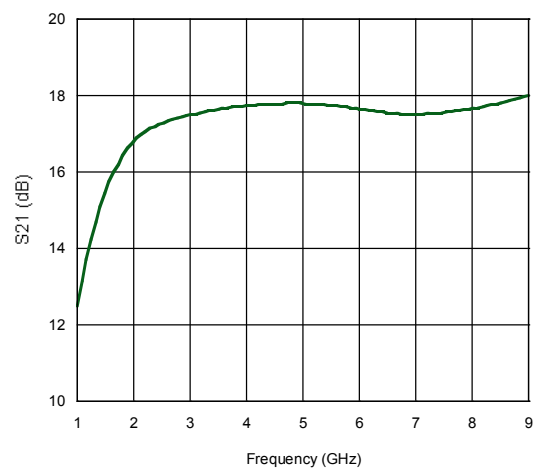
Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	dB	14	17	—
Noise Figure	2.0 - 4.0 GHz	dB	—	6.5	8.0
	4.0 - 6.0 GHz	dB	—	5.5	6.5
	6.0 - 8.0 GHz	dB	—	4.5	6.0
Gain Flatness	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	dB	—	± 0.5	—
Input VSWR Output VSWR	2.0 - 8.0 GHz, $P_{IN} = -30\text{ dBm}$	Ratio	—	1.6:1	—
	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

Wide Band GaAs MMIC Amplifier 2.0 - 8.0 GHz

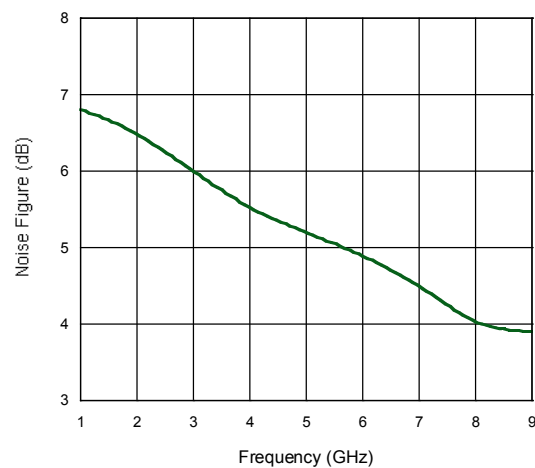
Rev. V8

Typical Performance Curves

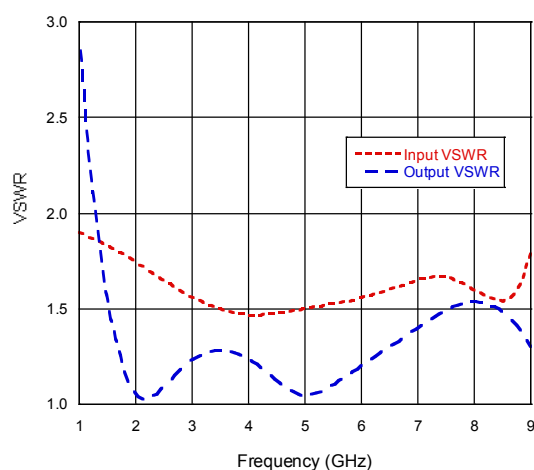
Gain



Noise Figure



VSWR



M/A-COM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with M/A-COM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM's Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.