

Broadband Low Noise Amplifier
1.7 - 2.1 GHz

MAALSS0024
V2

Features

- High Gain: 20 dB
- Low Noise Figure: 1.0 dB
- High IP₃: 26 dBm
- Single +3 V or +5 V Bias
- Small Package: SOT-26

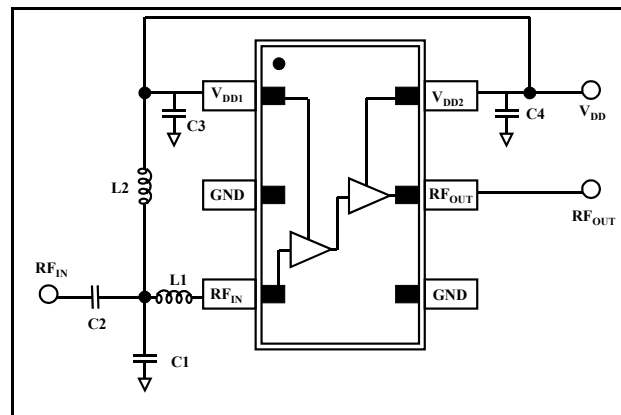
Description

M/A-COM's MAALSS0024 is a broadband GaAs MMIC low noise amplifier in a low-cost SOT-26 surface mount plastic package. It employs a monolithic two-stage self-biased design that provides excellent performance from 1.7 to 2.1 GHz.

The MAALSS0024 is ideal for both wireless handset and wireless infrastructure applications including PHS, GSM, PCS, UMTS and EDGE applications. It can also be used as a gain stage, buffer, or driver amplifier in fixed and portable systems.

M/A-COM fabricates the MAALSS0024 using an E/D MESFET process to realize low noise and high dynamic range. The process features full passivation for performance and reliability.

Application Schematic



PIN Configuration

PIN	Pin Name	Description
1	V _{DD1}	Stage 1 Voltage
2	GND	Ground
3	RF IN	RF input
4	GND	Ground
5	RF OUT	RF output
6	V _{DD2}	Stage 2 Voltage

Ordering Information

Part Number	Package
MAALSS0024	Bulk Packaging
MAALSS0024SMB-01	1.7-1.9 GHz Sample Kit
MAALSS0024SMB-02	1.85-2.1 GHz Sample Kit
MAALSS0024TR	1000 Piece Tape and Reel
MAALSS0024TR-3000	3000 Piece Tape and Reel

Note: Reference Application Note M513 for reel size information.

Absolute Maximum Ratings¹

Parameter	Absolute Maximum
RF Input Power	8 dBm
Voltage	6.0 volts
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C

1. Exceeding any one or combination of these limits may cause permanent damage to this device.

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Electrical Specifications: $T_A = 25^\circ\text{C}$, $Z_0 = 50\ \Omega$, $V_{DD} = +5\ \text{V}$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain	1.9 GHz	dB	18	20	22
Noise Figure	1.9 GHz	dB	—	1.0	1.4
Input Return Loss	1.9 GHz	dB	—	12	—
Output Return Loss	1.9 GHz	dB	—	12	—
1dB Compression	1.9 GHz	dBm	—	11	—
Output IP_3	Two tone, -20 dBm/tone, 1 MHz spacing, 1.9 GHz	dBm	—	26	—
Current	—	mA	—	30	45

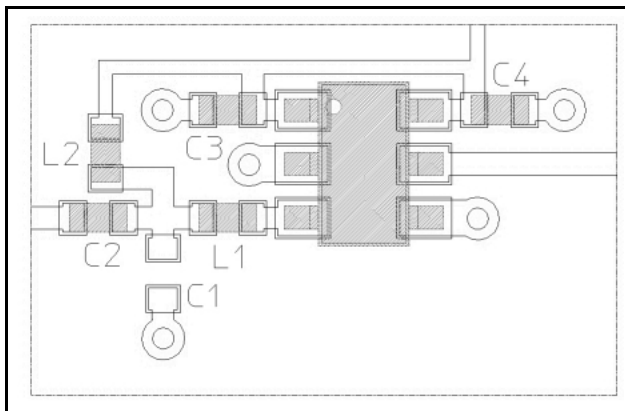
Recommended Tuning for 1.7-1.9 GHz

Component	Description
L1	Inductor, 10 nH, 0402
L2	Inductor, 68 nH, 0603
C1	Open
C2	Capacitor, 5 pF, 0402
C3-C4	Capacitor, 0.01 μF , 0402

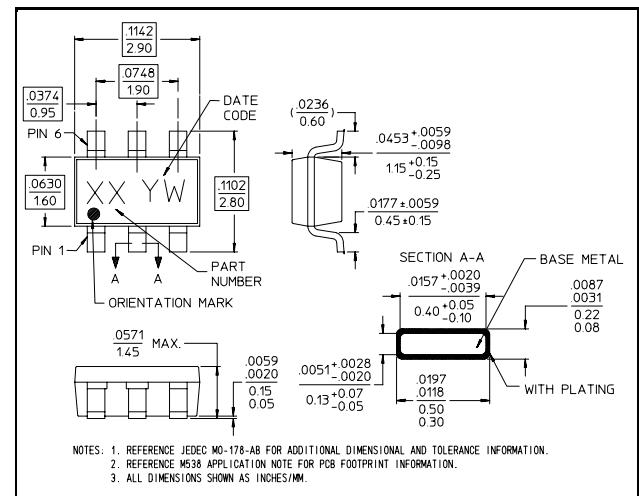
Recommended Tuning for 1.85-2.1 GHz

Component	Description
L1	Inductor, 9 nH, 0402
L2	Inductor, 68 nH, 0603
C1	Open
C2	Capacitor, 5 pF, 0402
C3-C4	Capacitor, 0.01 μF , 0402

Recommended PCB Configuration



SOT-26 6-Lead Package

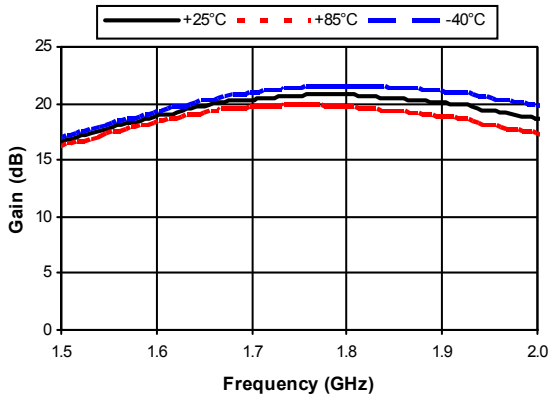


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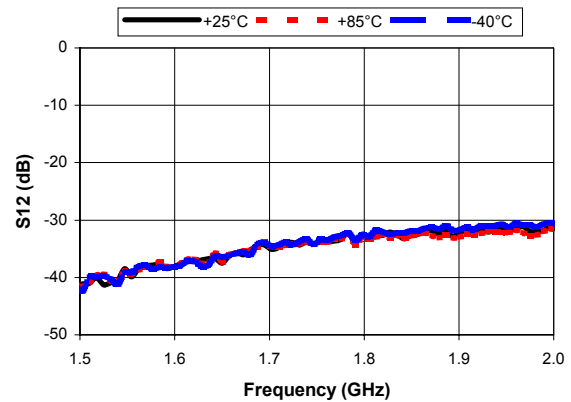
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Typical Performance Curves (1.7 - 1.9 GHz Configuration)

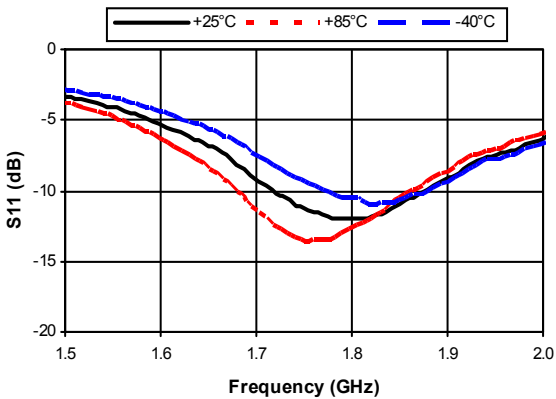
Gain



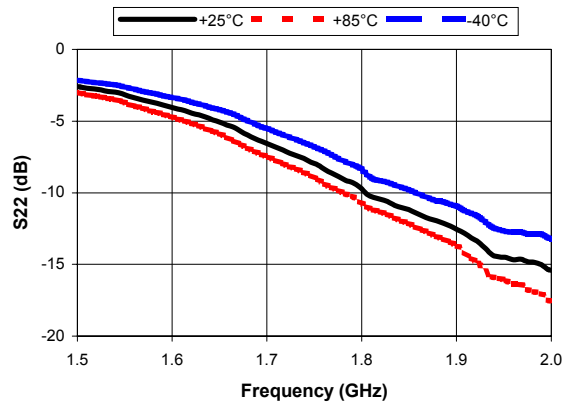
Reverse Isolation



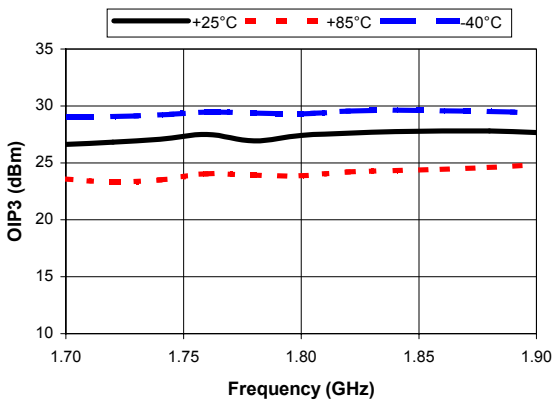
Input Return Loss



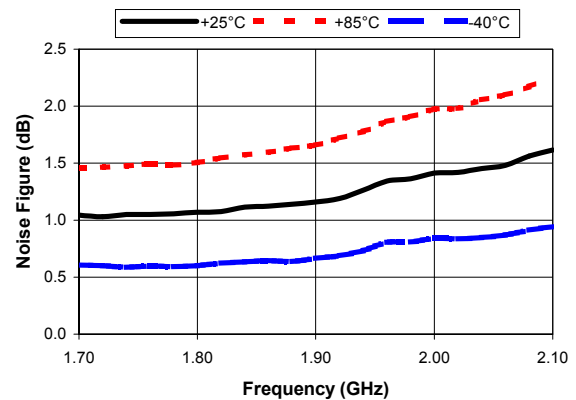
Output Return Loss



OIP3



Noise Figure



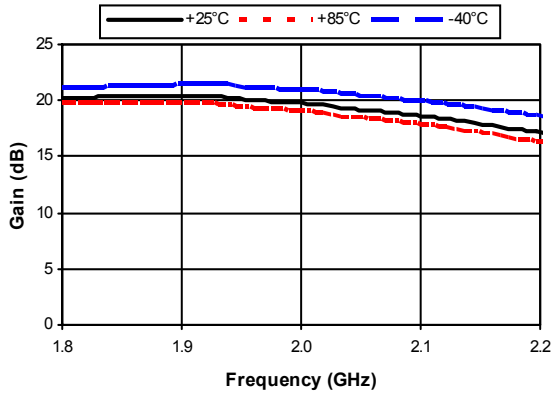
Note: The sample kit will read 0.23 dB higher in noise figure due to transmission line and connector losses.

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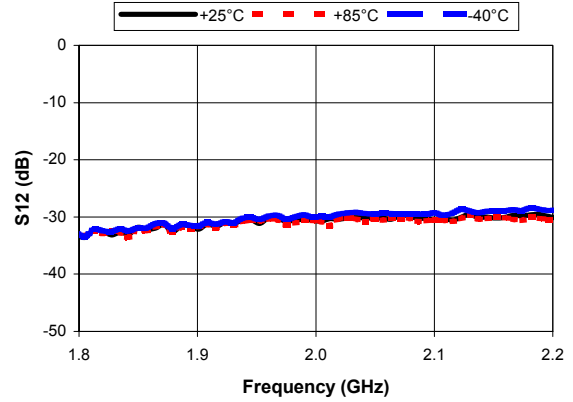
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Typical Performance Curves (1.85 - 2.1 GHz Configuration)

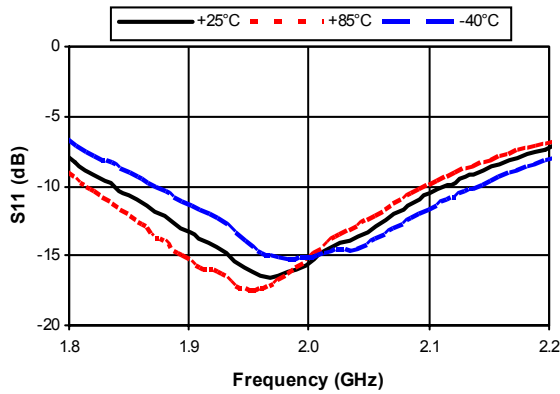
Gain



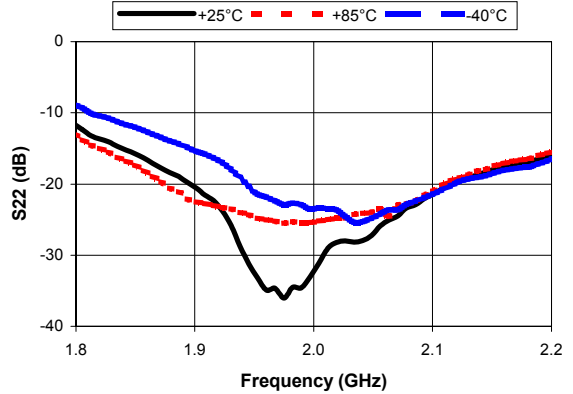
Reverse Isolation



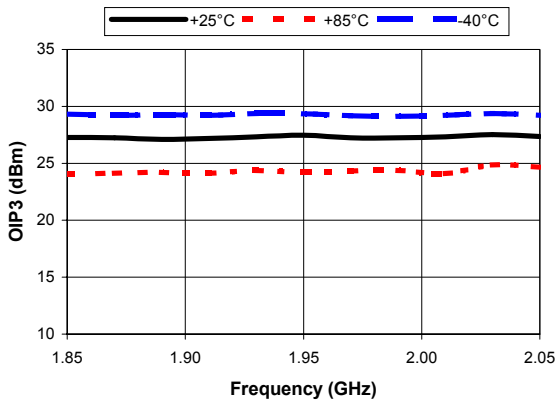
Input Return Loss



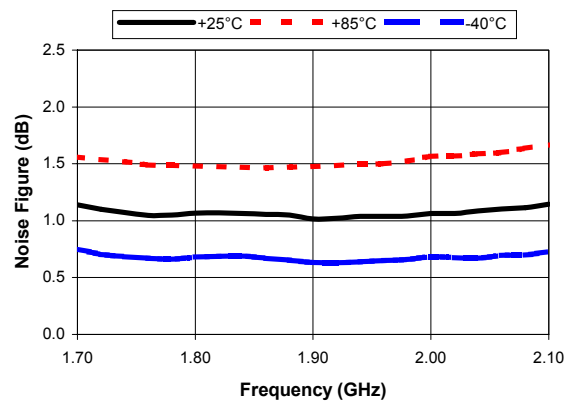
Output Return Loss



OIP3



Noise Figure



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