

50 - 1000 MHz

MAAMSS0031

MAAMSS0031

Features

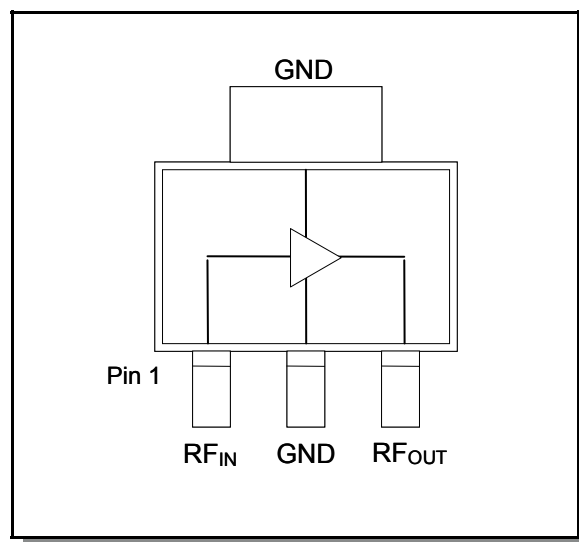
- Low Cost Plastic SOT-89 Package
- 75 Ohm Input / Output Match
- -80 dBc CTB
- 2.7 dB Noise Figure
- 14.8 dB Typical Gain

Description

M/A-COM's MAAMSS0031 CATV amplifier is a GaAs MMIC which exhibits low distortion in a low-cost miniature SOT-89 surface mount plastic package. The MAAMSS0031 employs a monolithic single stage design featuring a convenient 75 Ohm input/output impedance that minimizes the number of external components required. The MAAMSS0031 provides low noise and high linearity. It is ideally suited for Set Top Boxes, Home Gateways, and other Broadband internet based appliances.

The MAAMSS0031 is fabricated using M/A-COM's PHEMT process to realize low noise and low distortion. The process features full passivation for robust performance and reliability.

Functional Schematic



Pin Configuration

PIN No.	PIN Name	Description
1	RF _{IN}	RF Input
2	GND	Ground
3	RF _{OUT}	RF Output / Drain Supply

Ordering Information

Part Number	Package
MAAMSS0031	SOT-89 Plastic Package
MAAMSS0031TR	1000 Piece Tape and Reel
MAAMSS0031TR-3000	3000 Piece Tape and Reel
MAAMSS0031SMB	Sample Test Board (Includes 5 Samples)

Absolute Maximum Ratings ¹

Parameter	Absolute Maximum
RF Input Power	15 dBm
Voltage	10.0 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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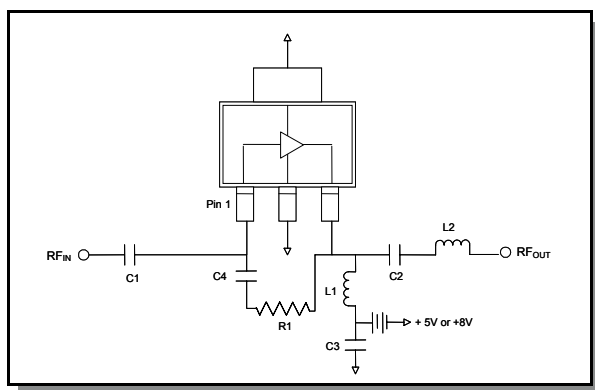
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Electrical Specifications: $T_A = 25^\circ\text{C}$, Freq: 50 - 1000 MHz, $V_{DD} = +8\text{ Volts}^2$, $Z_0 = 75$

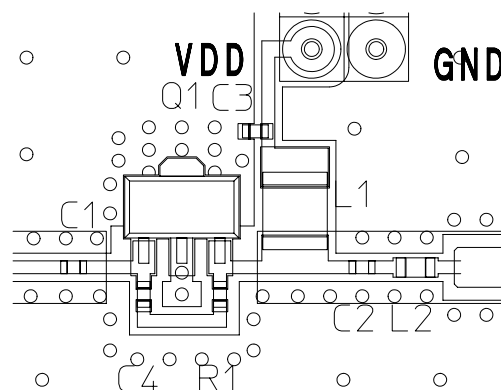
Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain		dB		14.8	
Gain Flatness		dB		0.5	
Noise Figure		dB		2.7	
Input Return Loss		dB		18	
Output Return Loss		dB		20	
Output IP3	Spacing -10 dBm output per tone	dBm		36	
Composite Triple Beat, CTB	132 Channels, +23 dBmV/ Channel at the output.	dBc		-80	
Composite Second Order, CSO	132 Channels, +23 dBmV/ Channel at the output.	dBc		-70	
P1dB		dBm		23	
I_{DD}	+ 8 Volts	mA		100	

2. Device will also operate at +5 V with little degradation to performance.

Schematic Including Off-Chip Components



Circuit Wiring Board



Off-Chip Component Values

Part	Value	Package
C1	0.01 μF	0402
C2	0.01 μF	0402
C3	0.1 μF	0402
L1	560 nH	1210
L2	8.2 nH	0402
R1	523 Ω	0402
C4	0.01 μF	0402

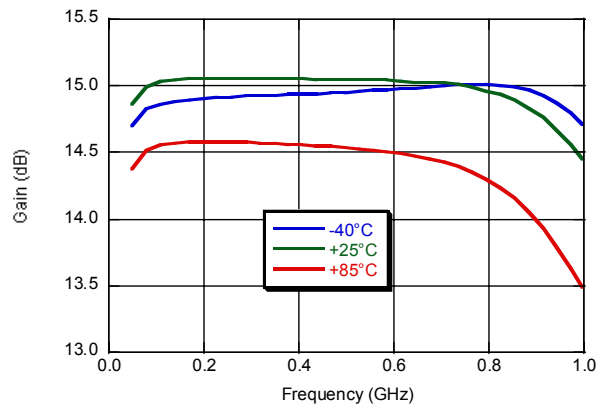
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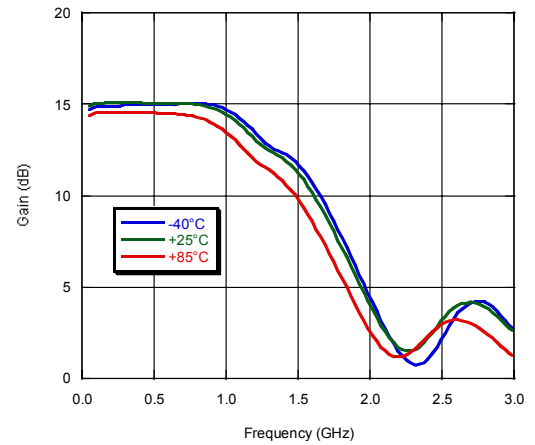
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Typical Performance Curves

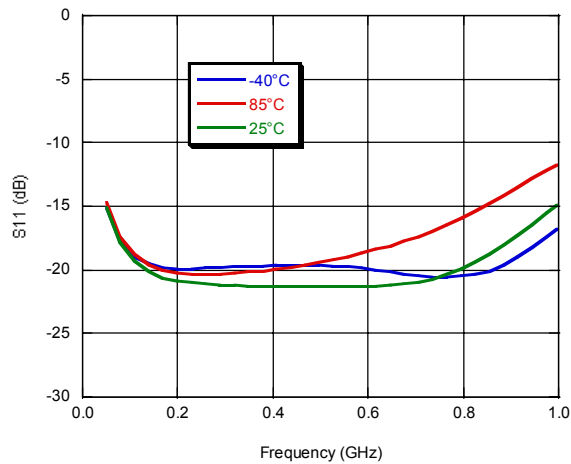
Gain vs. Frequency over Temperature to 1 GHz



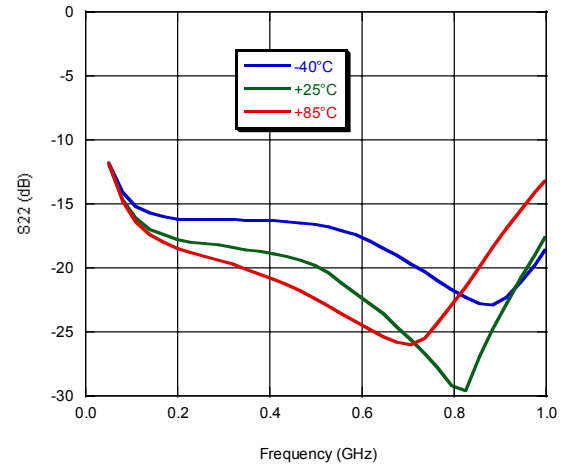
Gain vs. Frequency over Temperature to 3 GHz



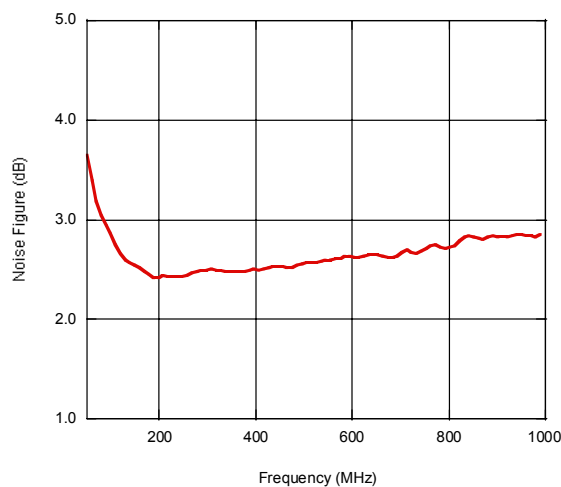
Input Return Loss vs. Frequency over Temperature



Output Return Loss vs. Frequency over Temperature



Noise Figure vs. Frequency

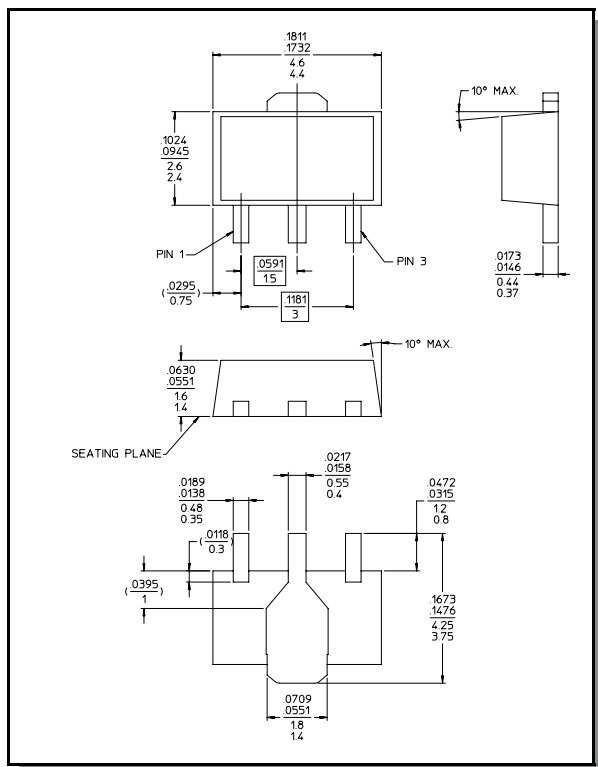


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SOT-89 Plastic Package



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