

Features

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

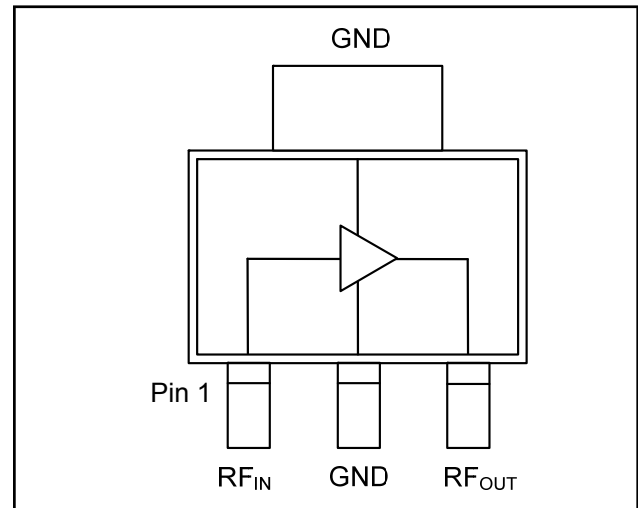
Description

M/A-COM's MAAMSS0031 CATV amplifier is a GaAs MMIC which exhibits low distortion in a low-cost miniature surface mount plastic package. The MAAMSS0031 employs a monolithic single stage design featuring a convenient 75 Ω 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^{1,2}

| 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 |

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

Absolute Maximum Ratings^{3,4,5}

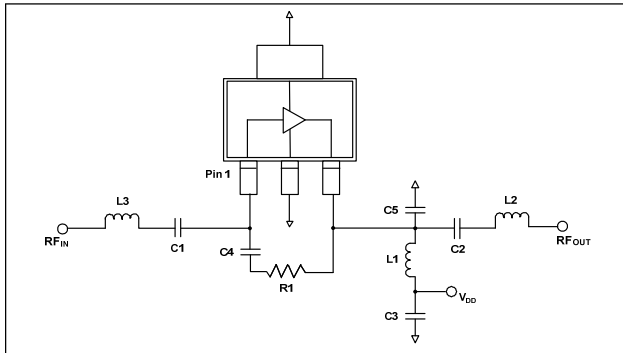
| Parameter | Absolute Maximum |
|-----------------------------------|------------------|
| RF Input Power | 15 dBm |
| Voltage | 10.0 volts |
| Operating Temperature | -40°C to +85°C |
| Junction Temperature ⁶ | +150°C |
| Storage Temperature | -65°C to +150°C |

3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. M/A-COM does not recommend sustained operation near these survivability limits.
5. These operating conditions will ensure MTTF > 1 x 10⁶ hours.
6. Junction Temperature (T_J) = $T_C + \Theta_{jc} * (V * I)$
Typical thermal resistance (Θ_{jc}) = 75° C/W.
 - a) For $T_C = 25^\circ\text{C}$,
 $T_J = 85^\circ\text{C} @ 8\text{ V}, 100\text{ mA}$
 - b) For $T_C = 85^\circ\text{C}$,
 $T_J = 139^\circ\text{C} @ 8\text{ V}, 90\text{ mA}$

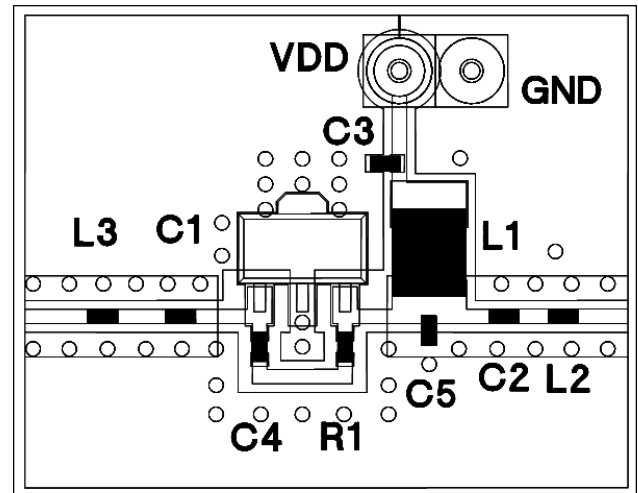
Electrical Specifications: $T_A = 25^\circ\text{C}$, Freq: 50 - 1000 MHz, $V_{DD} = +8$ Volts, $Z_0 = 75 \Omega$

| Parameter | Test Conditions | Units | Min. | Typ. | Max. |
|-----------------------------|---|-------|------|------|------|
| Gain | | dB | 14.0 | 14.8 | 16.0 |
| Gain Flatness | | dB | — | 0.5 | 1.0 |
| Noise Figure | | dB | — | 2.7 | 3.8 |
| Input Return Loss | | dB | — | 20 | — |
| Output Return Loss | | dB | — | 18 | — |
| Output IP3 | 6 MHz 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 | 130 |

Schematic Including Off-Chip Components



Recommended Board Layout



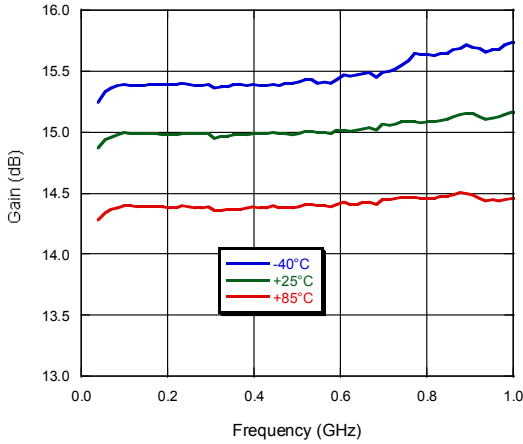
Off-Chip Component Values

| Component | Value | Package |
|-----------------|--------------------|---------|
| C1 - C4 | 0.01 μF | 0402 |
| C5 | 0.5 pF | 0402 |
| L1 ⁷ | 1000 nH | 1210 |
| L2 | 8.2 nH | 0402 |
| L3 | 5.6 nH | 0402 |
| R1 | 523 Ω | 0402 |

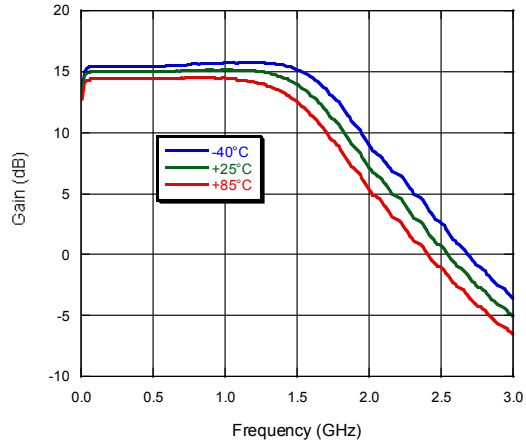
7. L1 supplied from EPCOS, part number B82422A1102K100.

Typical Performance Curves

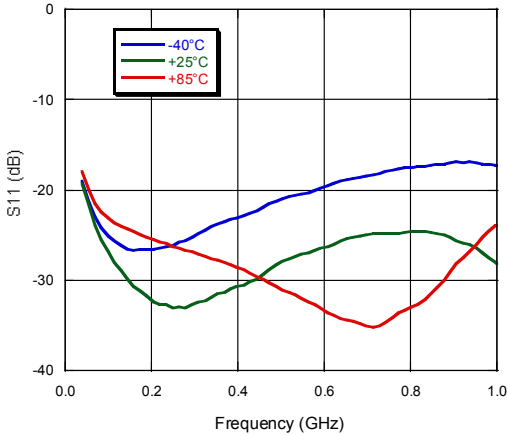
Gain vs. Frequency over Temperature to 1 GHz



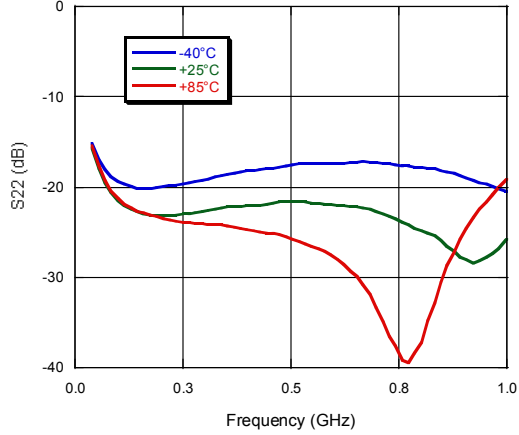
Gain vs. Frequency over Temperature to 3 GHz



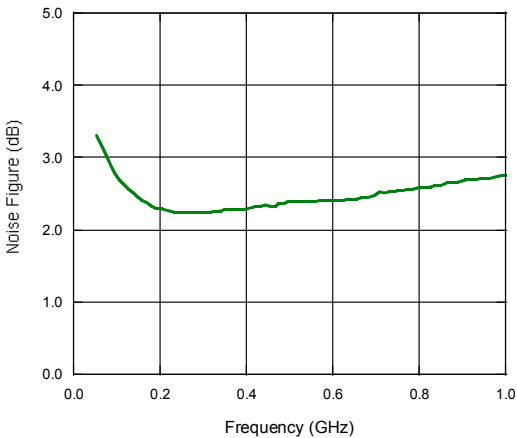
Input Return Loss vs. Frequency over Temperature



Output Return Loss vs. Frequency over Temperature



Noise Figure vs. Frequency



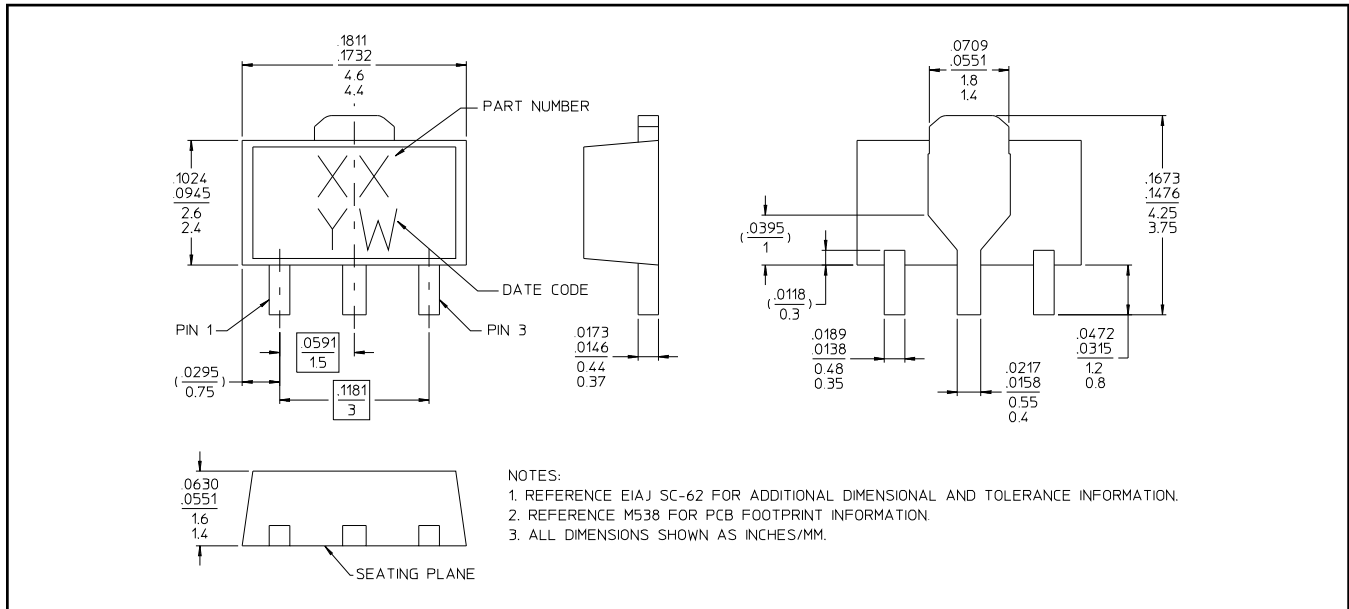
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SOT-89 Plastic Package†



† Meets JEDEC moisture sensitivity level 1 requirements.

Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

Gallium Arsenide Integrated Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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