

Broadband CATV Amplifier

50 - 1000 MHz

Rev. V1

Features

- 75 Ω Input / Output Match
- CTB: -75 dBc
- Noise Figure: 1.9 dB
- Gain: 17 dB
- Lead Free SOT-89 Package
- Halogen-Free "Green" Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description

The MAAM-009633 CATV amplifier is a GaAs MMIC which exhibits low distortion in a lead free miniature surface mount plastic package. This device employs a monolithic single stage design featuring a convenient 75 Ω input/output impedance that minimizes the number of external components required.

The MAAM-009633 provides low noise and high linearity. It is ideally suited for set top boxes, home gateways, FTTX, Drop Amplifiers, and other broadband internet based applications.

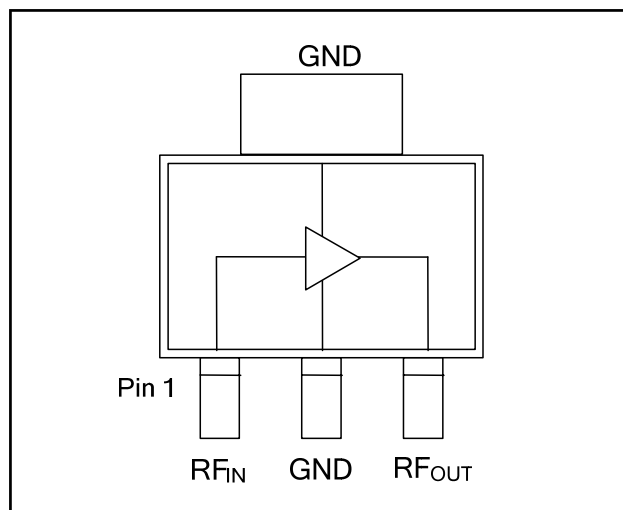
The MAAM-009633 is fabricated using M/A-COM Technology's pHEMT process to realize low noise and low distortion. The process features full passivation for robust performance and reliability.

Ordering Information ^{1,2}

Part Number	Package
MAAM-009633-TR1000	1000 piece reel
MAAM-009633-TR3000	3000 piece reel
MAAM-009633-001SMB	Sample Test Board

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

Functional Schematic



Pin Configuration

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

Absolute Maximum Ratings ^{3,4,5}

Parameter	Absolute Maximum
RF Input Power	6 dBm
Voltage	10.0 volts
Operating Temperature	-40°C to +85°C
Junction Temperature ⁶	+160°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 Technology 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}) = 81° C/W.
a) For $T_C = 25^\circ\text{C}$,
 $T_J = 103^\circ\text{C} @ 8 \text{ V}, 120 \text{ mA}$
b) For $T_C = 85^\circ\text{C}$,
 $T_J = 156^\circ\text{C} @ 8 \text{ V}, 110 \text{ mA}$

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

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Broadband CATV Amplifier

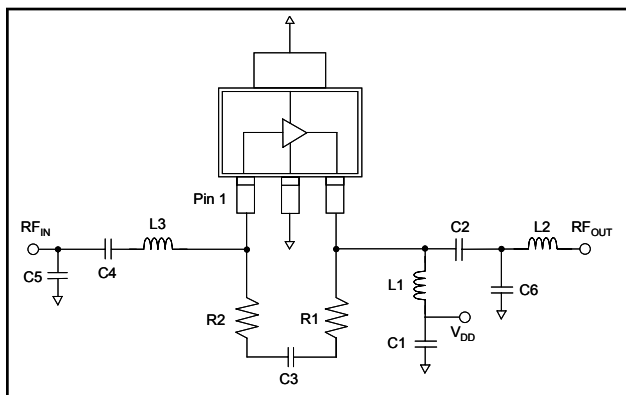
50 - 1000 MHz

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

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Gain		dB	15.8	17	17.8
Gain Flatness		dB	—	0.5	1
Noise Figure		dB	—	1.9	3.5
Input Return Loss		dB	—	20	—
Output Return Loss		dB	—	20	—
Output IP2	6 MHz Spacing, -10 dBm output per tone	dBm	—	56	—
Output IP3	6 MHz Spacing, -10 dBm output per tone	dBm	—	37	—
Composite Triple Beat, CTB	132 channels, +30 dBmV / channel at the output.	dBc	—	-75	—
Composite Second Order, CSO	132 channels, +30 dBmV / channel at the output.	dBc	—	-60	—
P1dB		dBm	—	23	—
I_{DD}	8 Volts	mA	—	120	140

Schematic Including Off-Chip Components

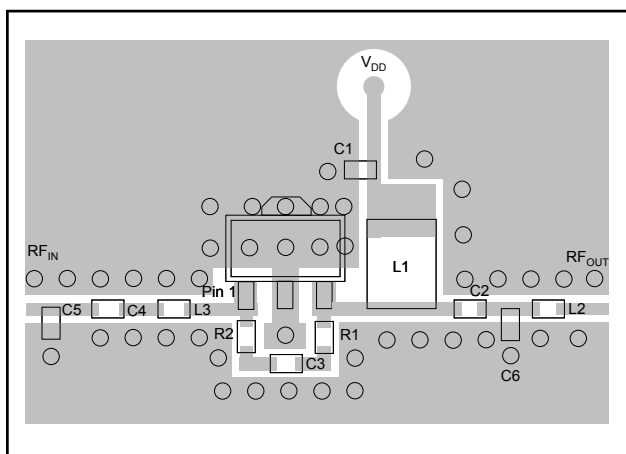


Off-Chip Component Values

Component	Value	Package
C1, C3, C4	0.01 μF	0402
C2	470 pF	0402
C5, C6	0.5 pF	0402
$L1^7$	1 μH	1210
L2	7.5 nH	0402
L3	8.2 nH	0402
R1	560 Ω	0402
R2	91 Ω	0402

7. $L1$ supplied from EPCOS, part number B82422A1102K100

Recommended Board Layout



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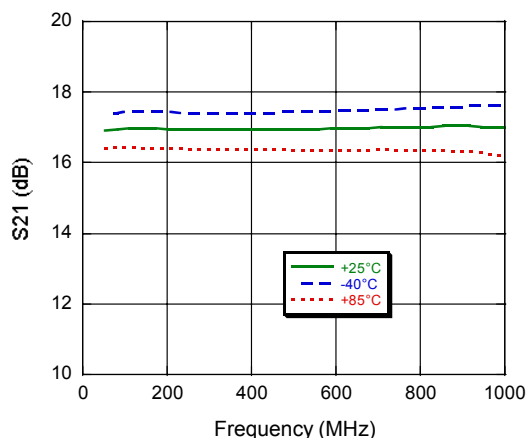
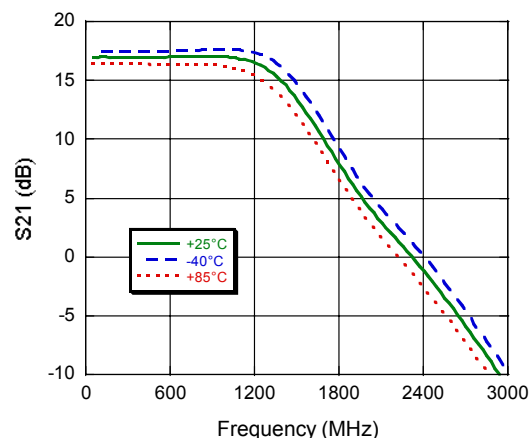
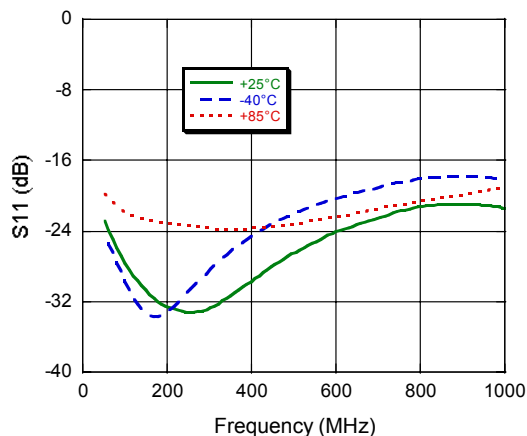
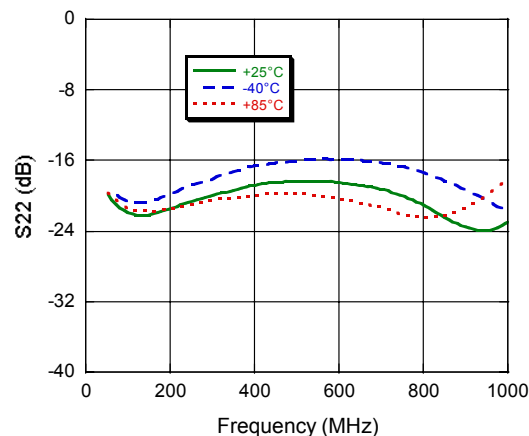
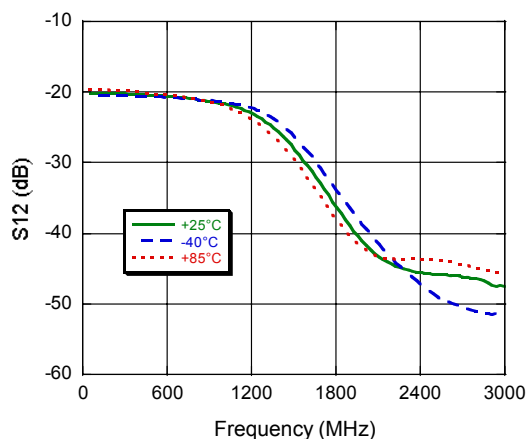
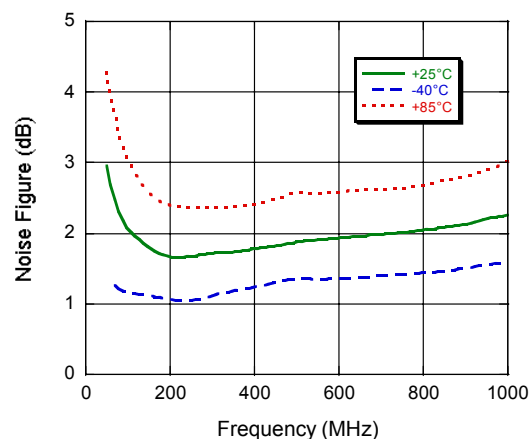
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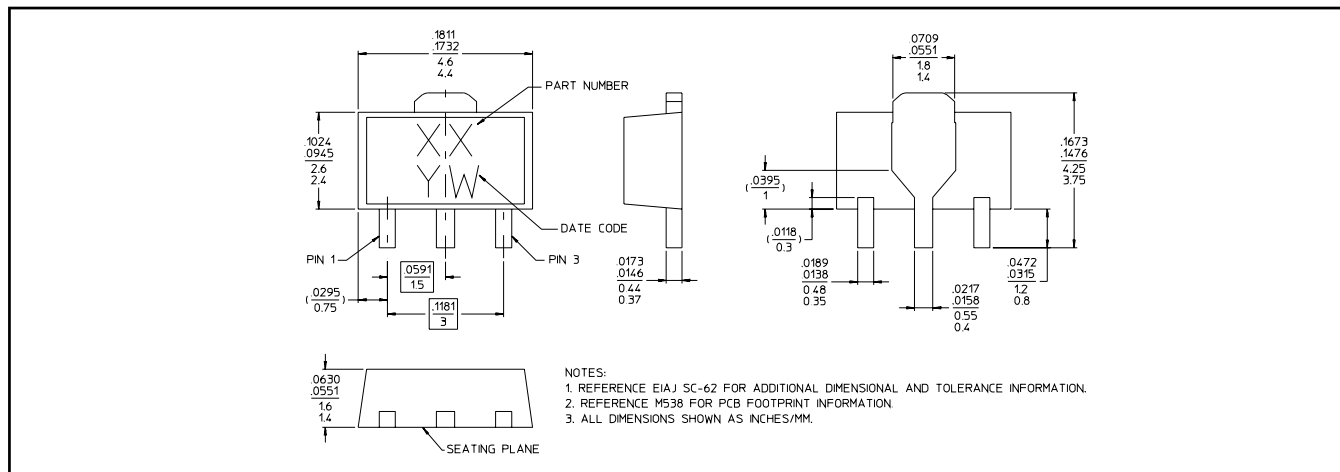
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Typical Performance Curves over temperature

Gain to 1000 MHz

Gain to 3000 MHz

Input Return Loss

Output Return Loss

Reverse Isolation to 3000 MHz

Noise Figure


Lead-Free SOT-89 Plastic Package[†]


[†] Reference Application Note M538 for lead-free solder reflow recommendations.
 Meets JEDEC moisture sensitivity level 1 requirements.
 Plating is 100% matte tin over copper.

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. An external protection circuit using an anti-parallel diode pair can be used to protect the IC.

Please reference application note AN3028 on <http://www.macomtech.com> for further detail.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

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