Broadband CATV Amplifier 50 - 1100 MHz

Features

- 75 Ω Input / Output Match
- Low Noise Figure: 2.2 dB
- High Gain: 22 dB
- High Linearity: -74 dBc CTB, -62 dBc CSO
- High ESD Threshold: HBM Class 1B
- Lead Free SOT-89 Package
- Halogen-Free "Green" Mold Compound
- RoHS* Compliant and 260°C Reflow Compatible

Description

The MAAM-010373 CATV amplifier is a GaAs MMIC that exhibits low distortion and high gain in a lead-free surface mount package.

The MAAM-010373 employs a monolithic single stage design featuring a convenient 75 Ω input/ output impedance that minimizes the number of external components required.

The MAAM-010373 is fabricated using a 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-010373-000000	Bulk Packaging
MAAM-010373-TR1000	1000 piece reel
MAAM-010373-TR3000	3000 piece reel
MAAM-010373-001SMB	Sample Test Board

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

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

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. **PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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 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.

- M/A-COM Technology Solutions does not recommend sustained operation near these survivability limits.
- 5. Operating at nominal conditions with $T_J \le +150^{\circ}C$ will ensure MTTF > 1 x 10^6 hours.
- Junction Temperature (T_J) = T_C + Θjc * ((V * I) (P_{OUT} P_{IN})) Typical thermal resistance (Θjc) = 32 °C/W.

a) For T_C = 25 °C, T_J = 63 °C @ 8 V, 148 mA

- $I_{J} = 03 C @ 0 V, I$
- b) For T_C = 85 °C,
- T_J = 123 °C @ 8 V, 148 mA
- North America Tel: 800.366.2266 Europe Tel: +353.21.244.6400
- India Tel: +91.80.43537383 China Tel: +86.21.2407.1588

Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.



Rev. V2

¹



Broadband CATV Amplifier 50 - 1100 MHz

Rev. V2

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

Parameter	Test Conditions	Units	Min.	Тур.	Max.
Gain	_	dB	20	22	24
Gain Flatness	_	dB	_	+/- 0.5	1
Noise Figure	_	dB	_	2.2	3
Input Return Loss	_	dB	-	18	-
Output Return Loss	_	dB	-	20	-
Reverse Isolation	_	dB	-	25	-
Output IP3	6 MHz Spacing, -10 dBm output per tone	dBm	-	40	_
Output IP2	6 MHz Spacing, -10 dBm output per tone	dBm	-	50	-
Composite Triple Beat, CTB	80 ch. NTSC flat, +33 dBmV / ch. at the output	dBc	-	-74	-
Composite Second Order, CSO	80 ch. NTSC flat +33 dBmV / ch. at the output	dBc	_	-62	_
P1dB	403.25 MHz	dBm	_	25	_
I _{DD}	8 Volts	mA	_	148	165

Schematic Including Off-Chip Components



Off-Chip Component Values

Component	Value	Package
C1	1.5 pF	0402
C2, C3, C4	0.01 µF	0402
C5	270 pF	0402
C6	0.5 pF	0402
L1	10 nH	0402
L2 ⁷	1 µH	1210
L3	8.2 nH	0402
R1	360 Ω	0402
R2	715 Ω	0402
R3	0 Ω	0805
R4	2Ω	0805

7. L2 is EPCOS part number B82422A1102K100.

2

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. **PRELIMINARY**: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

North America Tel: 800.366.2266
Europe Tel: +353.21.244.6400
India Tel: +91.80.43537383
Visit www.macomtech.com for additional data sheets and product information.

Broadband CATV Amplifier 50 - 1100 MHz



Rev. V2



Recommended PCB Layout—Component Side Metal Layer (Viewed from Top)

Recommended PCB Layout—Bottom Side Metal Layer (Viewed from Bottom)



3

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology

North America Tel: 800.366.2266
Europe Tel: +353.21.244.6400
India Tel: +91.80.43537383
Visit www.macomtech.com for additional data sheets and product information.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Broadband CATV Amplifier 50 - 1100 MHz

Typical Performance Curves:

Gain to 1000 MHz



Input Return Loss







4

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. **PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available.



Rev. V2



Output Return Loss





North America Tel: 800.366.2266
Europe Tel: +353.21.244.6400
India Tel: +91.80.43537383
Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. M/A-COM Tec Commitment to produce in volume is not guaranteed. Commitment to produce in volume is not guaranteed.

Broadband CATV Amplifier 50 - 1100 MHz

Technology Solutions

Rev. V2

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.

5

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

North America Tel: 800.366.2266
Europe Tel: +353.21.244.6400
India Tel: +91.80.43537383
China Tel: +86.21.2407.1588

Visit www.macomtech.com for additional data sheets and product information.



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.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- 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

Телефон: 8 (812) 309 58 32 (многоканальный) **Факс:** 8 (812) 320-02-42 **Электронная почта:** <u>org@eplast1.ru</u> **Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.