

MA4GP907

GaAs
Flip Chip PIN Diode

RoHS Compliant

M/A-COM Products
Rev. V6

Features

- ◆ Low Series Resistance
- ◆ Ultra Low Capacitance
- ◆ Millimeter Wave Switching & Cutoff Frequency
- ◆ 2 Nanosecond Switching Speed
- ◆ Can be Driven by a Buffered TTL
- ◆ Silicon Nitride Passivation
- ◆ Polyimide Scratch Protection
- ◆ RoHS Compliant

Description

M/A-COM's MA4GP907 is Gallium Arsenide (GaAs) flip-chip PIN diode. It is fabricated using an OMCVD epitaxial wafer with a process designed for high device uniformity and extremely low parasitics. The diode exhibits an extremely low RC product, (0.1ps) and 2-3nS switching characteristics. They are fully passivated with silicon nitride and have an added polymer layer for scratch protection. The protective coating prevents damage to the junction and the anode air-bridge during handling and assembly.

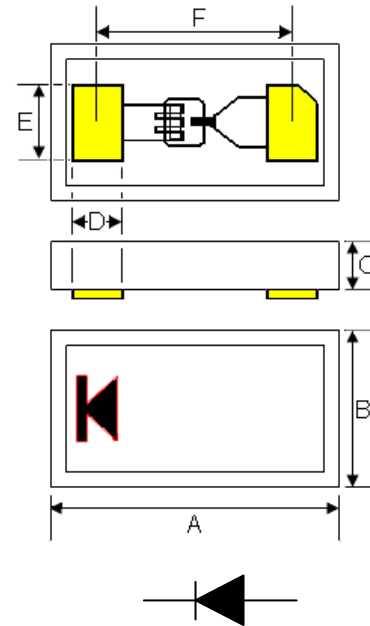
Applications

The ultra low capacitance of the MA4GP907 allows for operation up to millimeter frequencies for RF switches and switched phase shifter applications. The diode is designed for use in pulsed or CW applications, where single digit nS switching speed is required. The low capacitance of the MA4GP907 makes it for use in microwave multi-throw switch assemblies, where the series capacitance of each "off" port adversely loads the input and affects VSWR.

Absolute Maximum Ratings $T_{AMB} = +25^{\circ}\text{C}$ (unless otherwise specified)

Parameter	Absolute Maximum
Reverse Voltage	50V
Operating Temperature	-55°C to +125°C
Storage Temperature	-55°C to +150°C
Junction Temperature	+175°C
Dissipated Power (RF & DC)	50mW
C.W. Incident Power	+23 dBm
Mounting Temperature	+280°C for 10 seconds

Chip Dimensions



Notes:

1. Gold Pads 14µM thick.
2. Yellow areas indicate ohmic gold mounting pads.

DIM	Inches		Millimeters	
	MIN.	MAX.	MIN.	MAX.
A	0.026	0.027	0.6604	0.6858
B	0.0135	0.0145	0.3429	0.3683
C	0.0065	0.0075	0.1651	0.1905
D	0.0043	0.0053	0.1092	0.1346
E	0.0068	0.0073	0.1727	0.1854
F	0.0182	0.0192	0.4623	0.4877

ADVANCED: Data Sheets contain information regarding a product M/A-COM 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 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.

• **North America** Tel: 800.366.2266 / Fax: 978.366.2266
 • **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
 • **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298
 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.

Electrical Specifications @ T_{AMB} = +25°C

Parameter	Symbol	Conditions	Units	Typ.	Max.
Total Capacitance	C _T	-10V, 1MHz	pF	0.025	0.030
Total Capacitance ¹	C _T	-10V, 10GHz	pF	0.025	—
Series Resistance	R _S	+10mA, 1MHz	Ω	5.2	7.0
Series Resistance ²	R _S	+10mA, 10GHz	Ω	4.2	—
Forward Voltage	V _F	+10mA	V	1.33	1.45
Reverse Voltage Current ³	I _R	V _R = -50V	μA	—	10
Switching Speed ⁴	T _{RISE} T _{FALL}	10GHz	nS	2	—

Notes:

- 1) Capacitance is determined by measuring the isolation of a single series diode in a 50Ω transmission line at 10GHz.
- 2) Series resistance is determined by measuring the insertion loss of a single series diode in a 50Ω transmission line at 10GHz.
- 3) The max rated V_R(Reverse Voltage) is sourced and the resultant reverse leakage current, I_r, is measured to be <10μA
- 4) Switching speed is measured between 10% and 90% or 90% to 10% RF voltage for a single series mounted diode. Driver delay is not included.

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

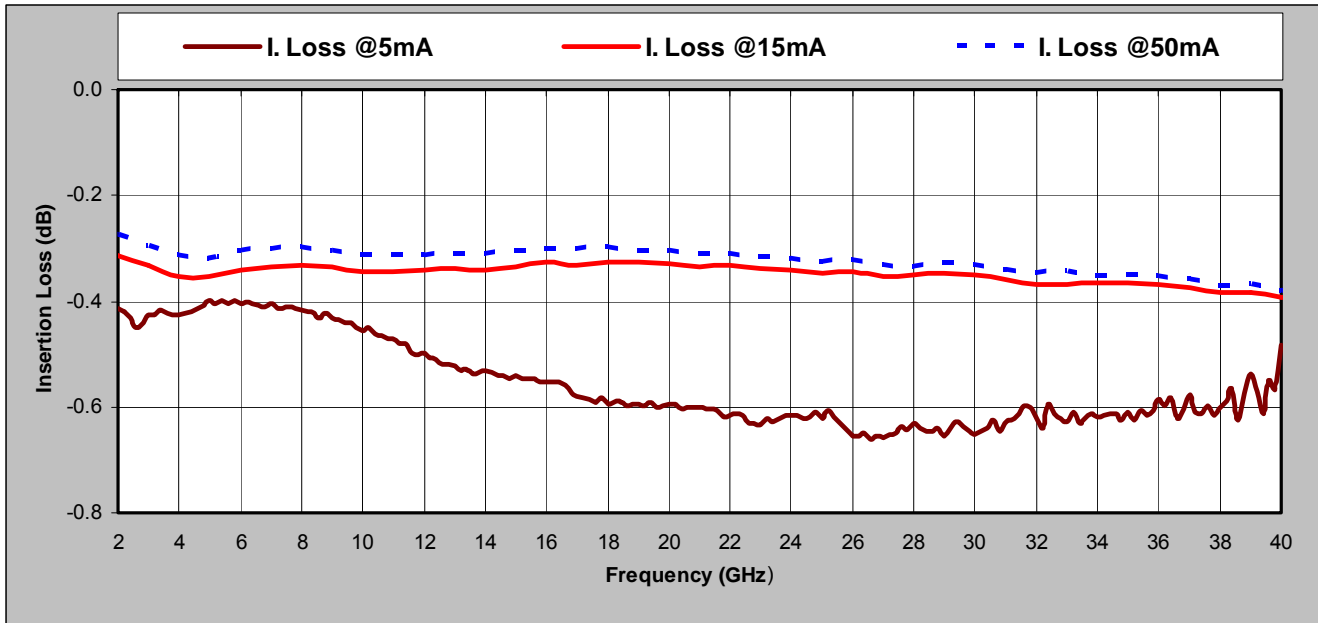
PRELIMINARY: Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

• **North America** Tel: 800.366.2266 / Fax: 978.366.2266
 • **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
 • **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298
 Visit www.macomtech.com for additional data sheets and product information.

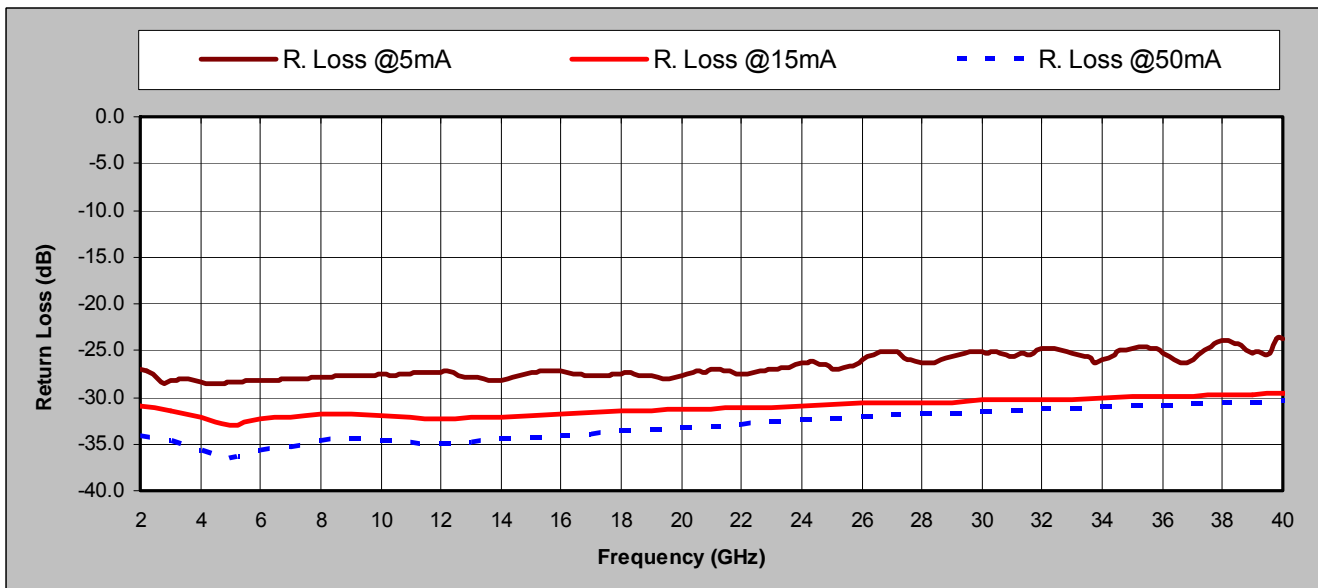
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Typical RF Performance @ $T_{AMB} = +25^{\circ}C$

Insertion Loss vs. Frequency



Return Loss vs. Frequency



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

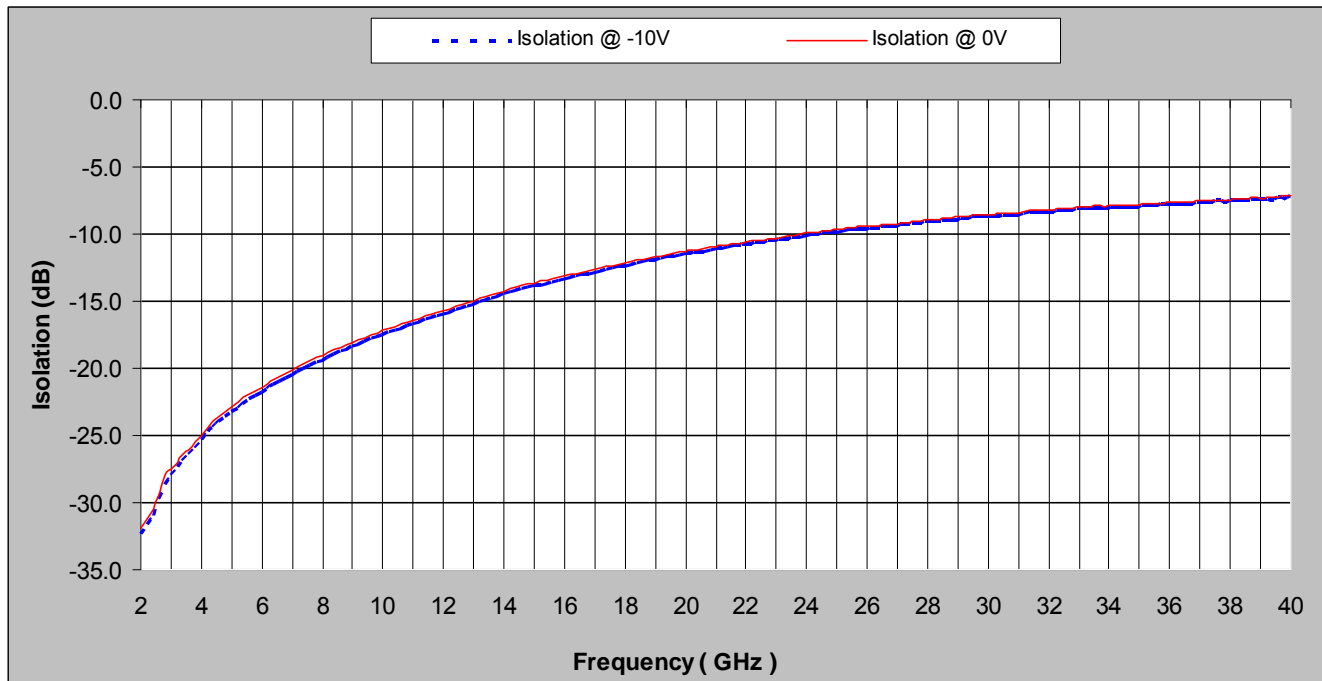
PRELIMINARY: Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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.

Typical RF Performance @ $T_{AMB} = +25^{\circ}C$

Isolation vs. Frequency



ADVANCED: Data Sheets contain information regarding a product M/A-COM 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 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.

• **North America** Tel: 800.366.2266 / Fax: 800.366.2266
 • **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
 • **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298
 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.

MA4GP907

GaAs
Flip Chip PIN Diode

RoHS Compliant

M/A-COM Products
Rev. V6

Device Installation Guidelines

Cleanliness

This device should be handled in a clean environment. The chip is resistant to solvents and may be cleaned using approved industry standard practices.

Static Sensitivity

Gallium Arsenide PIN diodes are ESD sensitive and can be damaged by static electricity. Proper ESD handling techniques should be used. These devices are rated Class 0, (0-199V) per HBM MIL-STD-883, method 3015.7 should be handled in a static-free environment.

General Handling

The die has a polymer layer which provides scratch protection for the junction area and the anode air bridge. Die can be handled with plastic tweezers or picked and placed with a #27 tip vacuum pencil.

Assembly Requirements using Electrically Conductive Silver Epoxy and Solder

The MA4GP907 is designed to be inserted onto hard or soft substrates with the junction/pad side down. It may be mounted onto a silk-screened circuit using electrically conductive silver epoxy, approximately 1-2 mils in thickness and cured at approximately 90°C to 150°C per manufacturer's schedule. For extended cure times, > 30 minutes, temperatures must be kept below 200°C.

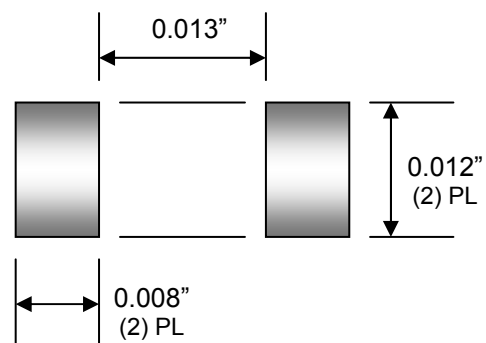
Eutectic Die Attached

Tin rich solders (>30% Sn by weight) are not recommended as they will scavenge gold from the contact pads exposing the tungsten metallization beneath and creating a poor solder connection. Indalloy or 80Au/20Sn type solders are acceptable. Maximum soldering temperature must be kept below 280°C for less than 10 seconds.

Ordering Information

Part Number	Packaging
MA4GP907	Waffle Pack
MADP-000907-13050P	Pocket Tape

Circuit Pad Layout



ADVANCED: Data Sheets contain information regarding a product M/A-COM 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 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.

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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.



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: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.