

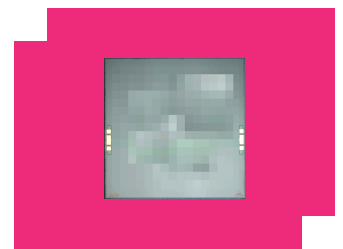
# MFLP-00012CH

## Passive GaAs MMIC 9.2 GHz Lowpass Filter

### DEVICE OVERVIEW

#### General Description

The MFLP-00012CH is a passive MMIC surface mount 9.2 GHz lowpass filter that is an ideal solution for small form factor, high rejection filtering. The MFLP-00012CH features a 9.2 GHz 3 dBc cutoff and 25 dB passband return loss. Passive GaAs MMIC technology allows production of smaller filter constructions that replace larger form factor circuit board constructions. Tight fabrication tolerances allow for less unit-to-unit variation than traditional filter technologies. The MFLP-00012CH is available as a wire-bondable die. Low unit to unit variation allows for accurate simulations using the provided S2P file taken from measured production units.



[Download s-parameters here](#)

#### Features

- Low Passband Insertion Loss with Fast Roll-off
- 25 dB Return Loss
- High Stop Band Suppression

#### Applications

- Test and Measurement Equipment
- SATCOM
- Radar
- RF Transceivers

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MFLP-00012CH	Passive GaAs MMIC 9.2 GHz Lowpass Filter	CH	RoHS REACH	Pre-release	EAR99

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**Revision History**

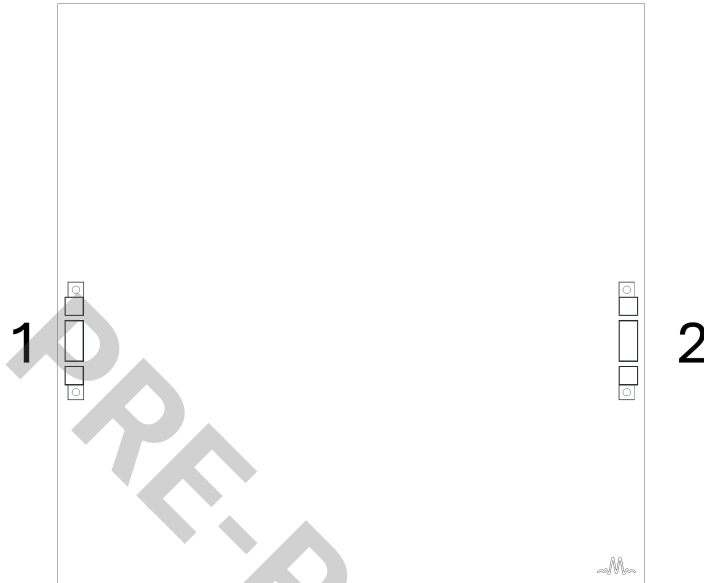
Revision Code	Revision Date	Comment
G1	2025-04-24	Pre-Release

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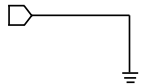
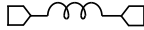
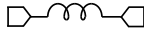
### Port Configuration and Functions

#### Port Diagram

A top-down view of the MFLP-00012CH package outline drawing is shown below.



#### Port Functions

Port	Function	Description	Equivalent Circuit for Package
Pad	Ground	CH package ground path is provided through the substrate and ground bond pads.	
Port 1	Input	Port 1 is DC short to Port 2.	
Port 2	Output	Port 2 is DC short to Port 1.	

**Specifications**

**Absolute Maximum Ratings**

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C

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### Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the filter in a CH package with a sine wave input applied to Port 1.

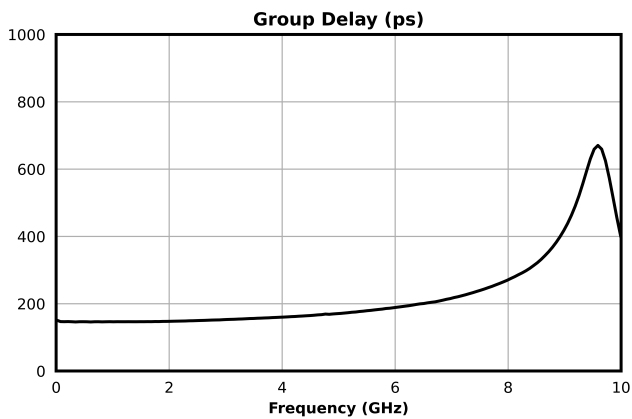
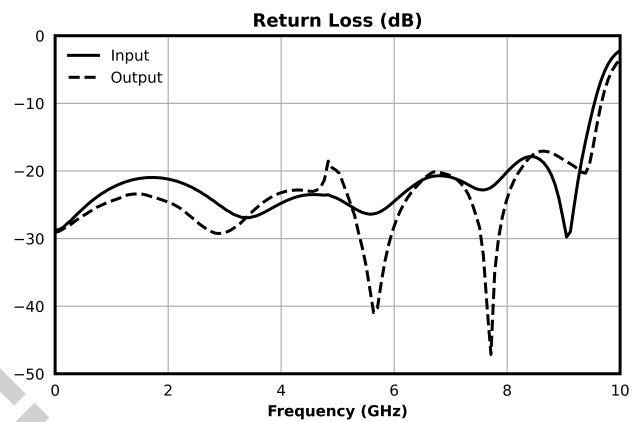
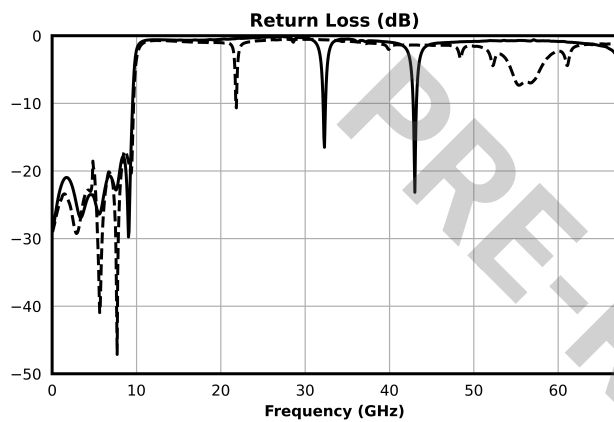
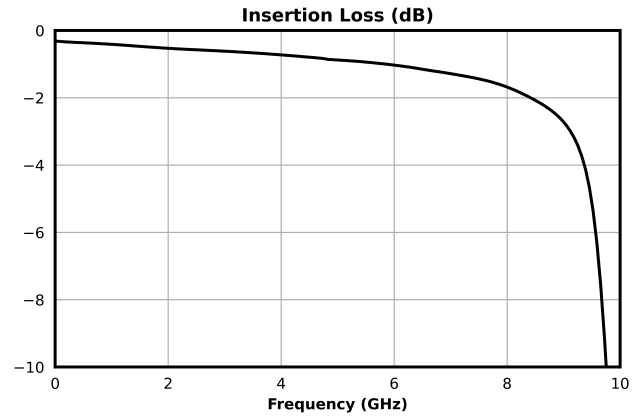
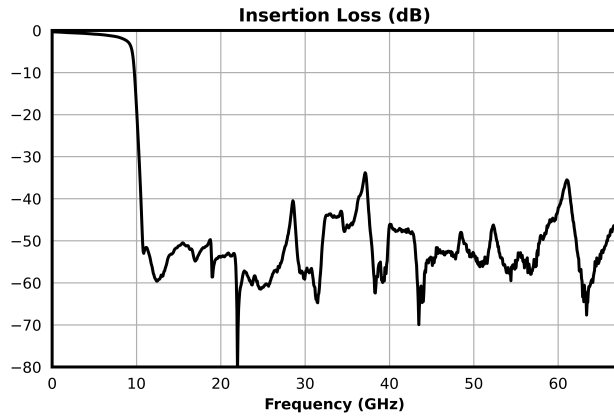
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
1 dBc Passband	Configuration A, Temp = 25°C	0	7.11	-	-	-	GHz
3 dBc Passband	Configuration A, Temp = 25°C	0	9.19	-	-	-	GHz
30 dBc Rejection Point	Configuration A, Temp = 25°C	10.26	10.26	-	-	-	GHz
Center Freq	Configuration A, Temp = 25°C	-	-	-	3.56	-	GHz
Passband Return Loss	Configuration A, Temp = 25°C	-	-	-	25	-	dB
Group Delay	Configuration A, Temp = 25°C	-	-	-	157	-	ps
Impedance	Configuration A, Temp = 25°C	-	-	-	50	-	Ω

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## MFLP-00012CH

### Passive GaAs MMIC 9.2 GHz Lowpass Filter

#### Typical Performance Plot



## Die Mounting Recommendations

### Mounting and Bonding Recommendations

Marki MMICs should be attached directly to a ground plane with conductive epoxy. The ground plane electrical impedance should be as low as practically possible. This will prevent resonances and permit the best possible electrical performance. Datasheet performance is only guaranteed in an environment with a low electrical impedance ground.

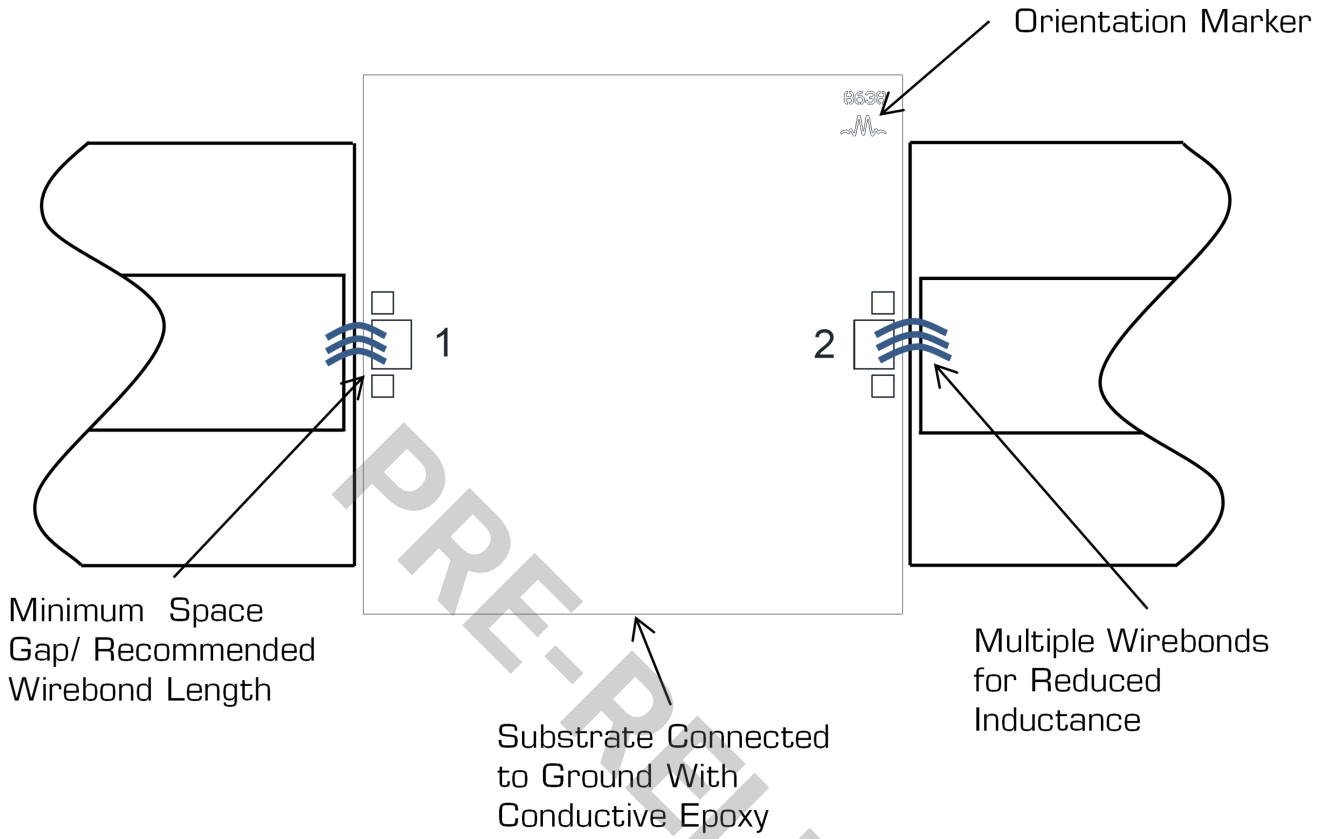
**Mounting** - To epoxy the chip, apply a minimum amount of conductive epoxy to the mounting surface so that a thin epoxy fillet is observed around the perimeter of the chip. Cure epoxy according to manufacturer instructions.

**Wire Bonding** - Ball or wedge bond with 0.025 mm (1 mil) diameter pure gold wire. Thermosonic wirebonding with a nominal stage temperature of 150 °C and a ball bonding force of 40 to 50 grams or wedge bonding force of 18 to 22 grams is recommended. Use the minimum level of ultrasonic energy to achieve reliable wirebonds. Wirebonds should be started on the chip and terminated on the package or substrate. Bond wire inductance will improve return loss. Bondwire inductance in the range of 30pH to 200pH will improve performance.

**Circuit Considerations**– 50  $\Omega$  transmission lines should be used for all high frequency connections in and out of the chip. Wirebonds should be kept as short as possible, with multiple wirebonds recommended for higher frequency connections to reduce parasitic inductance. Refer to table on page 11 for wirebond recommendation. In circumstances where the chip is more than .001" thinner than the substrate, a heat spreading spacer tab is optional to further reduce bondwire length and parasitic inductance.

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**Bonding Diagram**



## Handling Precautions

### General Handling

Chips should be handled with care using tweezers or a vacuum collet. Users should take precautions to protect chips from direct human contact that can deposit contaminants, like perspiration and skin oils on any of the chip's surfaces.

### Static Sensitivity

GaAs MMIC devices are sensitive to ESD and should be handled, assembled, tested, and transported only in static protected environments.

### Cleaning and Storage

Do not attempt to clean the chip with a liquid cleaning system or expose the bare chips to liquid. Once the ESD sensitive bags the chips are stored in are opened, chips should be stored in a dry nitrogen atmosphere.

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