

MEQ12-7ACH

Passive GaAs MMIC 7GHz Equalizer

DEVICE OVERVIEW

General Description

The MEQ12-7ACH passive MMIC equalizer die is an ideal solution for compensating for low pass filtering effects in RF/microwave and high speed digital systems. They provide positive slope from DC to 7GHz with DC attenuation options between 3 and 12dB. The unique design offers superior return loss to competitors. GaAs MMIC technology provides consistent unit-to-unit performance in a small, low cost form factor.



[Download s-parameters here](#)

Features

- DC attenuation options from 3 to 12dB
- Typical Insertion Loss 0.5dB at 7GHz
- VSWR < 1.3:1 Over Entire Band

Applications

- RF Transceivers
- High-Speed Data
- Telecom
- Cable Loss Compensation
- Amplifier Compensation

Functional Block Diagram

N/A

Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
MEQ12-7ACH	Passive GaAs MMIC 7GHz Equalizer	CH	-		Released	EAR99

Table Of Contents

■ Device Overview	■ Specifications
General Description	Absolute Maximum Ratings
Features	Package Information
Applications	Electrical Specifications
	Typical Performance Plots
■ Port Configuration and Functions	■ Die Mounting Recommendations
Port Diagram	Mounting and Bounding Recommendations
Port Functions	
■ Revision History	■ Mechanical Data
	Outline Drawing

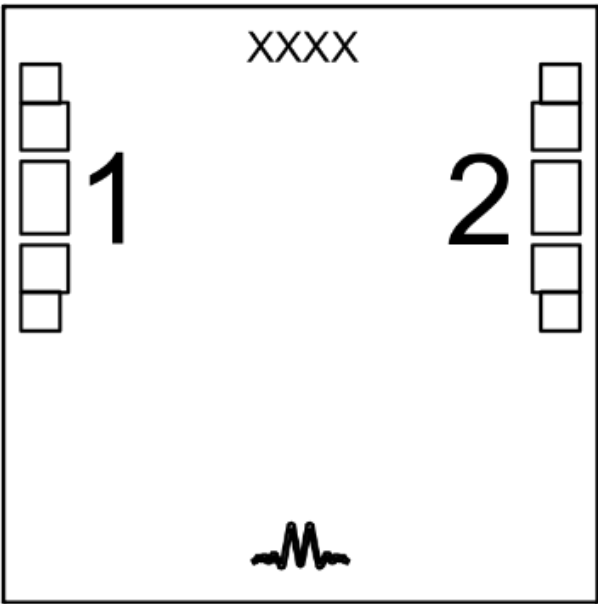
Revision History

Revision Code	Revision Date	Comment
-	2017-11-01	Datasheet Initial Release
A	2018-08-01	Evaluation Kit: MEQ7CH-KIT
B	2019-03-01	Updated ESD Rating
C	2019-05-01	Added Chip Dimension Tolerance Spec
D	2019-08-01	Added signal pad dimensions call-out, updated tolerance spec

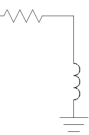
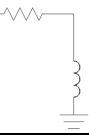
Port Configuration and Functions

Port Diagram

A top-down view of the MEQ12-7A CH package outline drawing is shown below. The MEQ equalizers are symmetrical allowing Port 1 or Port 2 to be used as the input.



Port Functions

Port	Function	Description	Equivalent Circuit for Package
Pad	Ground	CH package ground path is provided through the substrate and ground bond pads.	Pad 
Pad 1	Input/Output	Port 1 is DC connected to ground through a resistor. DC block is required if voltage present.	P1 
Pad 2	Output/Input	Port 2 is DC connected to ground through a resistor. DC block is required if voltage present.	P2 

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
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	125	°C
Minimum Storage Temperature	-65	°C
Port 1 DC Current	40	mA
Port 2 DC Current	40	mA
Power Handling, at any Port	30	dBm

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	1.25 x 1.25 mm

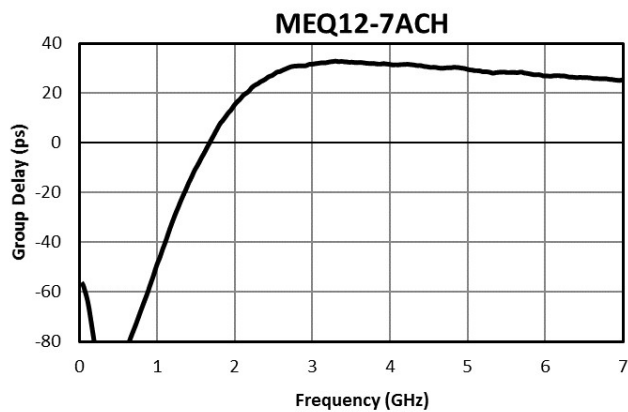
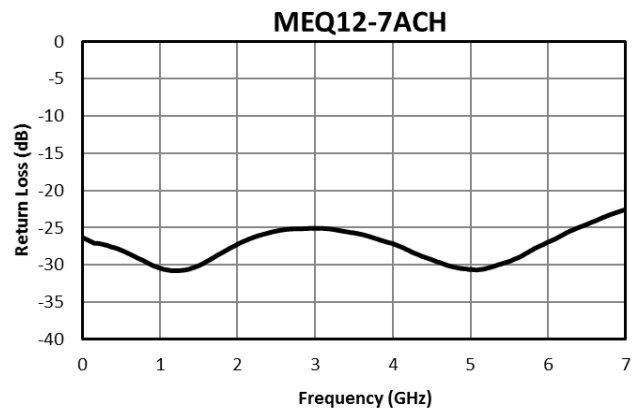
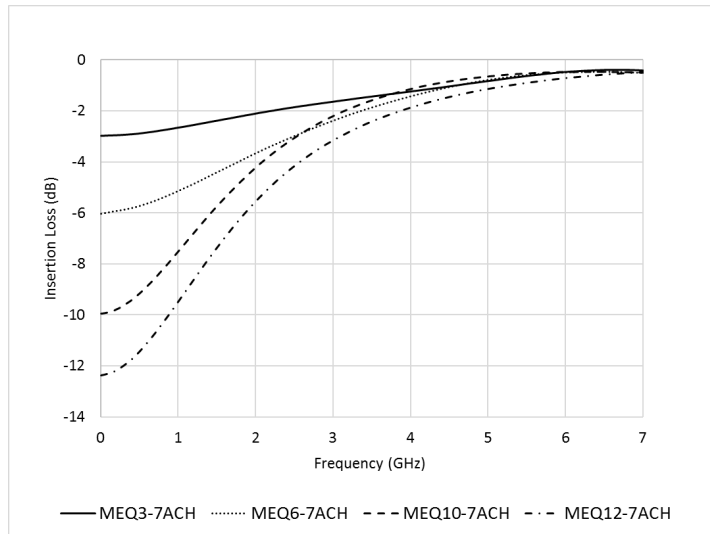
Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the equalizer 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
Insertion Loss	Freq = 0GHz	-	-	-	12	-	dB
Insertion Loss	Freq = 7GHz	-	-	-	0.5	-	dB
Return Loss	Freq = 7GHz	0	7	-	29	-	dB

Equalizer is symmetrical. Reverse measurement is equivalent to forward measurement.

Typical Performance Plots



Die Mounting Recommendations

Mounting and Bonding Recommendations

General Handling

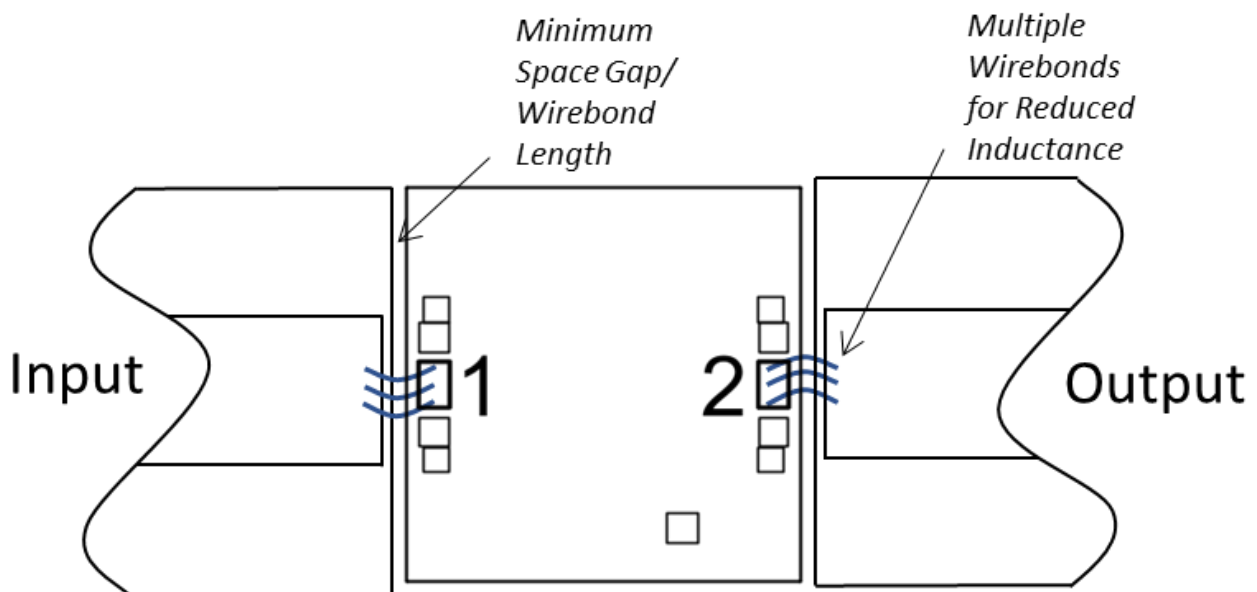
Chips should be handled with care using tweezers or a vacuum collet. Users should take precautions to protect chips from direct human contact that can deposit contaminants, like perspiration and skin oils on any of the chip's surfaces.

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.

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.

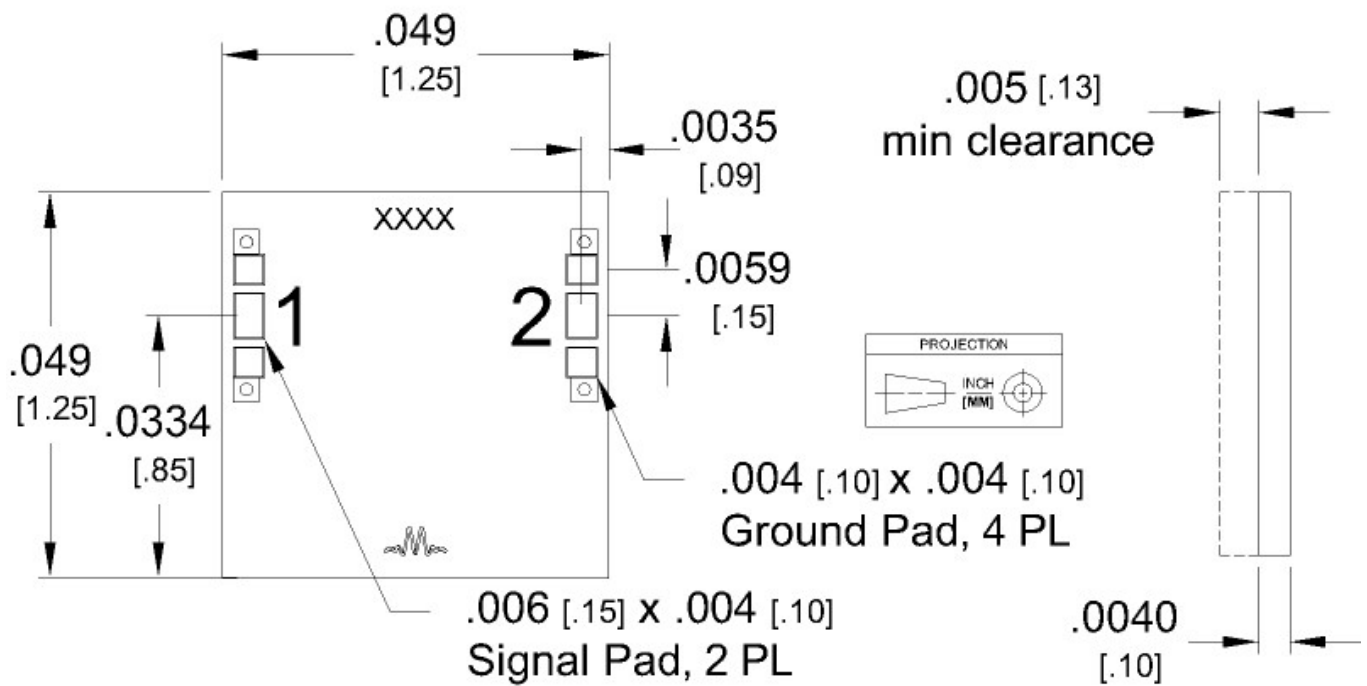
Cleaning and Storage: Do not attempt to clean the chip with a liquid cleaning system or expose the bare chips to liquid. Once the ESD sensitive bags the chips are stored in are opened, chips should be stored in a dry nitrogen atmosphere.

MEQ12-7ACH

Passive GaAs MMIC 7GHz Equalizer

Mechanical Data

Outline Drawing



DISCLAIMER

MARKI MICROWAVE, INC., ("MARKI") PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES "AS IS" AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product.

Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, Inc. All other trademarks used are the property of their respective owners.

© 2017 - 2019, Marki Microwave, Inc