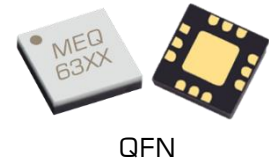


1 Device Overview

1.1 General Description

The MEQX-14ASM family of passive MMIC equalizer QFN are 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 14GHz with DC attenuation options between 3 and 10dB. 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.



1.2 Features

- DC attenuation options from 3 to 10dB
- Typical Insertion Loss 0.8 dB at 14GHz
- VSWR < 1.5:1 Over Entire Band
- S2P data: [MEQX-XASM.zip](#)

1.3 Applications

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

1.4 Functional Block Diagram



1.5 Part Ordering Options¹

| Part Number | Loss at DC (dB) | Description | Package | Green Status | Product Lifecycle | Export Classification |
|----------------|-----------------|---------------------------|---------|--------------|-------------------|-----------------------|
| MEQ3-14ASM | 3 | 3x3 mm QFN | SM | RoHS | Active | EAR99 |
| MEQ6-14ASM | 6 | | | | | |
| MEQ10-14ASM | 10 | | | | | |
| EVAL-MEQ3-14A | 3 | Connectorized Eval Module | Module | | | |
| EVAL-MEQ6-14A | 6 | | | | | |
| EVAL-MEQ10-14A | 10 | | | | | |

¹ Refer to our [website](#) for a list of definitions for terminology presented in this table.

Table of Contents

| | | | | | |
|-----|---|---|-------|------------------------------------|---|
| 1 | Device Overview | 1 | 3 | Specifications | 4 |
| 1.1 | General Description | 1 | 3.1 | Absolute Maximum Ratings | 4 |
| 1.2 | Features | 1 | 3.2 | Package Information..... | 4 |
| 1.3 | Applications | 1 | 3.3 | Electrical Specifications | 4 |
| 1.4 | Functional Block Diagram | 1 | 3.4 | Typical Performance Plots | 5 |
| 1.5 | Part Ordering Options..... | 1 | 3.4.1 | Insertion Loss | 5 |
| 2 | Port Configurations and Functions | 3 | 3.4.2 | Return Loss & Group Delay .. | 6 |
| 2.1 | Port Diagram | 3 | 4 | Mechanical Data..... | 7 |
| 2.2 | Port Functions | 3 | 4.1 | SM Package Outline Drawing | 7 |
| | | | 4.2 | Eval Package Outline Drawing | 8 |

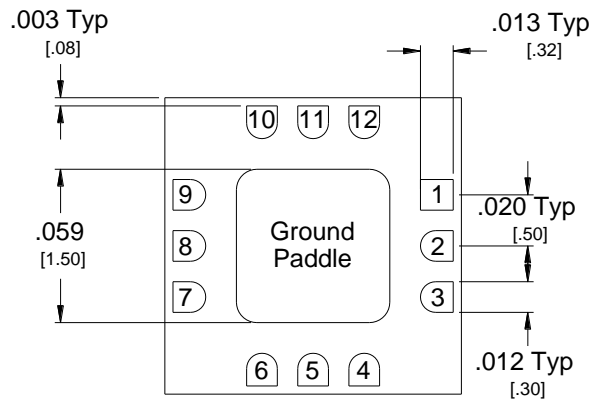
Revision History

| Revision Code | Revision Date | Comment |
|---------------|---------------|---------------------------|
| - | June 27, 2018 | Datasheet Initial Release |
| A | August 2018 | Added Section 4.2 |
| B | November 2018 | Updated Section 4.2 |

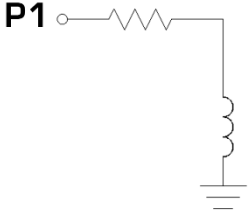
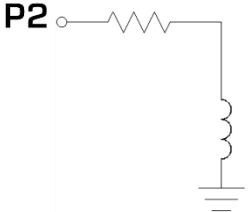
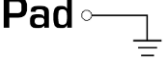
2 Port Configurations and Functions

2.1 Port Diagram

A top-down view of the MEQX-14ASM package outline drawing is shown below. The MEQ equalizers are symmetrical allowing Port 1 or Port 2 to be used as the input.



2.2 Port Functions

| Port | Function | Description | Equivalent Circuit |
|-------|--------------|---|---|
| Pin 1 | Input/Output | Port 1 is DC connected to ground through a resistor. DC block is required if voltage present. |  |
| Pin 9 | Input/Output | Port 2 is DC connected to ground through a resistor. DC block is required if voltage present. |  |
| GND | Ground | SM package ground path is provided through the ground paddle. |  |

3 Specifications

3.1 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 | Units |
|-----------------------------|----------------|-------|
| Port 1 DC Current | 40 | mA |
| Port 2 DC Current | 40 | mA |
| Power Handling, at any Port | +30 | dBm |
| Operating Temperature | -55 to +100 | °C |
| Storage Temperature | -65 to +125 | °C |

3.2 Package Information

| Parameter | Details | Rating |
|-----------|--|--------|
| ESD | Human Body Model (HBM), per MIL-STD-750, Method 1020 | TBD |

3.3 Electrical Specifications²

The electrical specifications apply at $T_A=+25^{\circ}\text{C}$ in a 50Ω system. Typical data shown is for the equalizer in a CH package with a sine wave input applied to port 1.

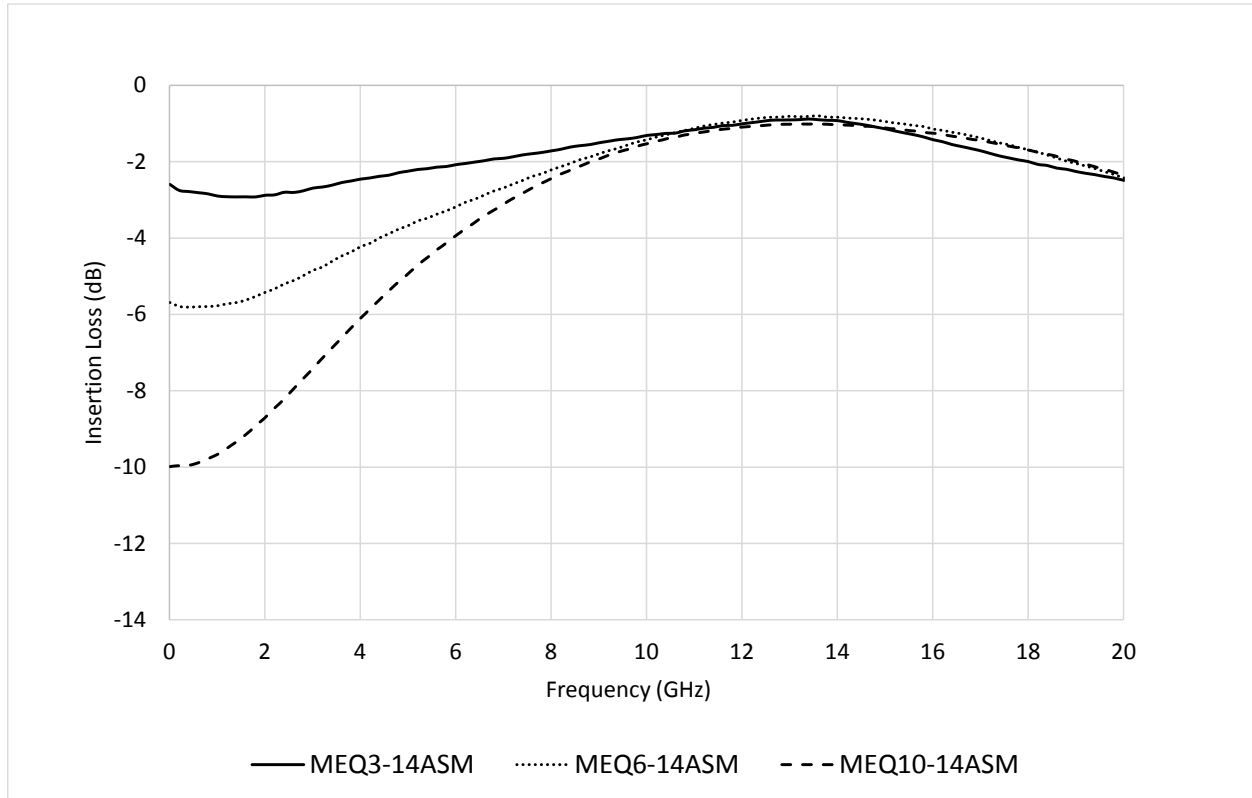
Min and Max limits are guaranteed at $T_A=+25^{\circ}\text{C}$. All bare die are 100% DC tested and visually inspected.

| Part Number | Typical Insertion Loss | | Typical Return Loss | Units |
|-------------|------------------------|--------|---------------------|-------|
| | DC | 14 GHz | DC-14 GHz | |
| MEQ3-14ASM | 3 | 0.8 | 23 | dB |
| MEQ6-14ASM | 6 | 0.8 | 28 | dB |
| MEQ10-14ASM | 10 | 0.8 | 29 | dB |

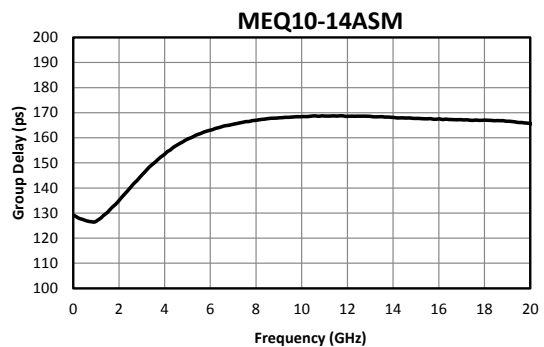
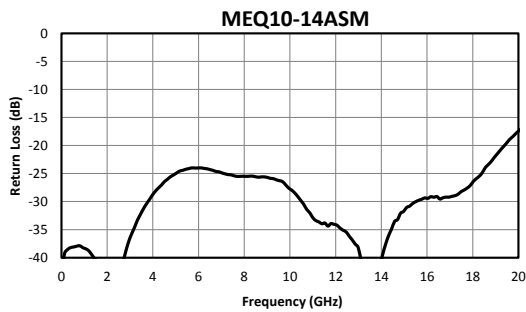
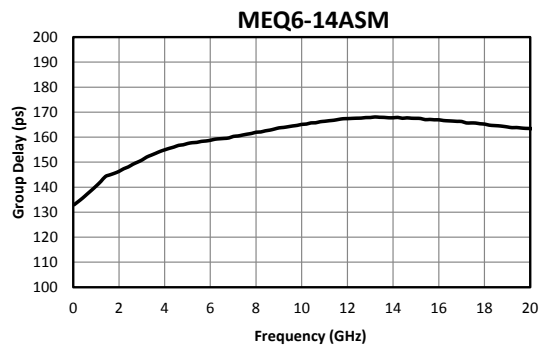
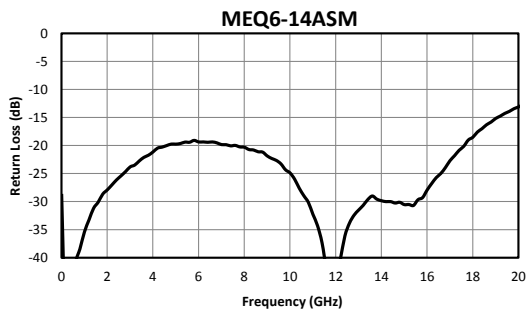
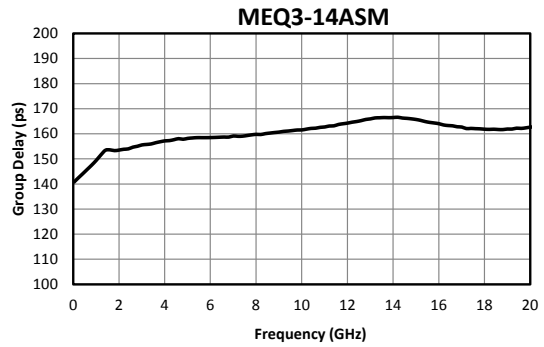
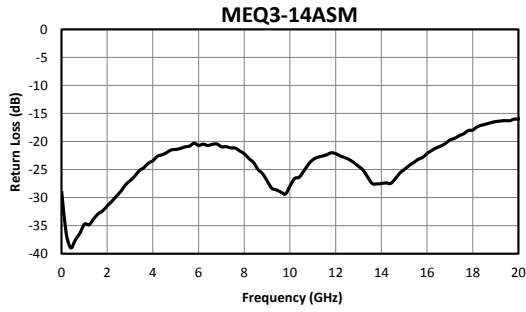
² Equalizer is symmetrical. Reverse measurement is equivalent to forward measurement. All measurements taken in eval board without de-embedding.

3.4 Typical Performance Plots

3.4.1 Insertion Loss



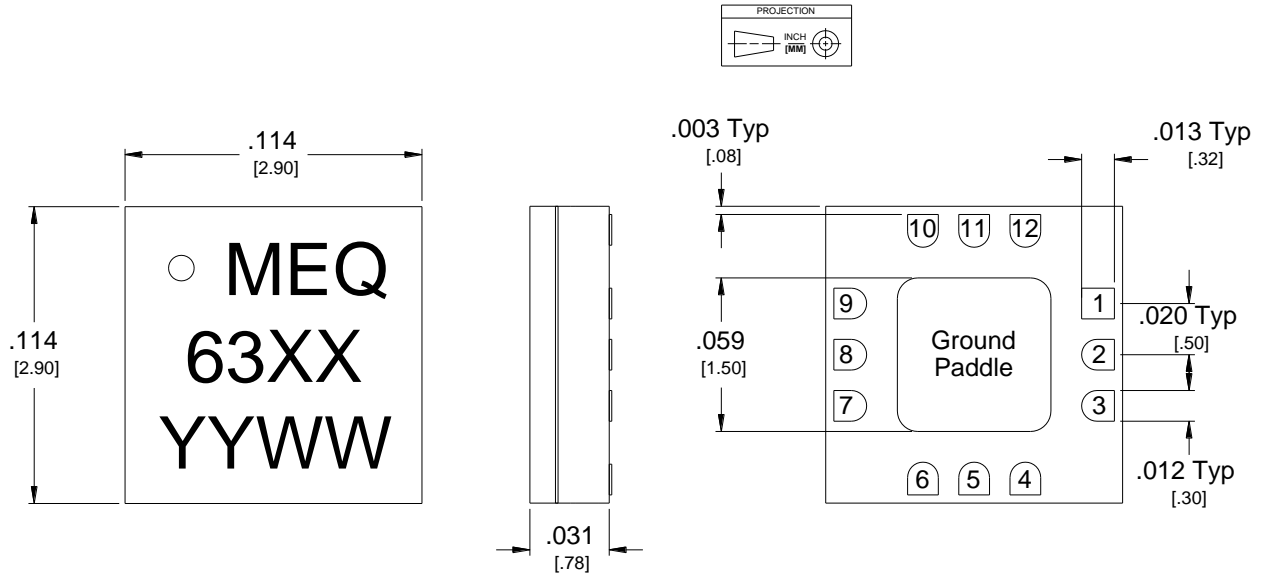
3.4.2 Return Loss & Group Delay³



³ Group delay measured in eval board without de-embedding.

4 Mechanical Data

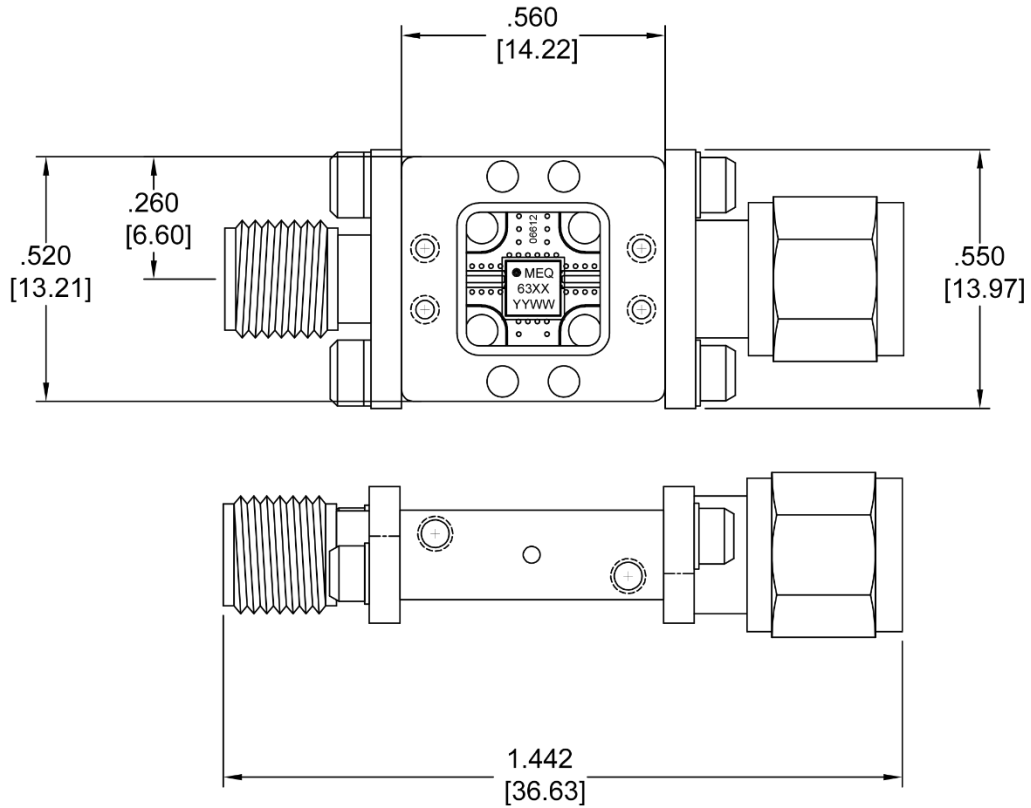
4.1 SM Package Outline Drawing



1. Substrate material is ceramic.
2. I/O Leads and Ground Paddle plating is (from base to finish):
 - Ni: 8.89um MAX 1.27um MIN
 - Pd: 0.17um MAX 0.07um MIN
 - Au 0.254um MAX 0.03um MIN
3. All unconnected pads should be connected to PCB RF ground.

| Part Number | Circuit Number |
|-------------|----------------|
| MEQ3-14ASM | 6336 |
| MEQ6-14ASM | 6337 |
| MEQ10-14ASM | 6338 |

4.2 Eval Package Outline Drawing



| XX | Part Number |
|----|----------------|
| 36 | Eval-MEQ3-14A |
| 37 | Eval-MEQ6-14A |
| 38 | Eval-MEQ10-14A |

| Port | Connector Type |
|------|----------------|
| I | SMA Female |
| O | SMA Male |

Note: Eval-Package Connectors are not removeable.