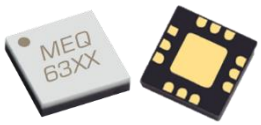
1 Device Overview



QFN

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 Options[1]

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.

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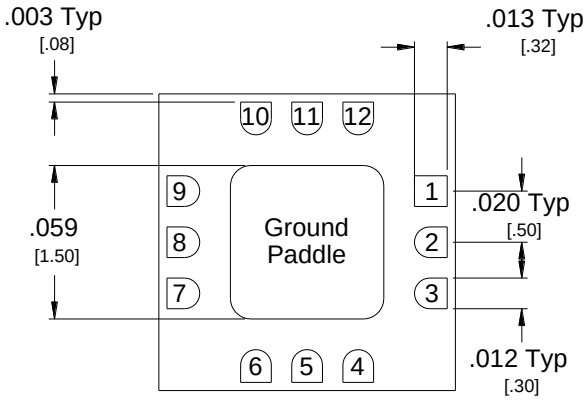
Revision History

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
C	March 2019	Updated ESD Rating

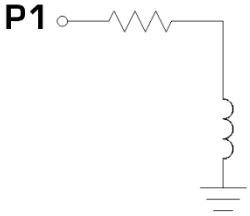
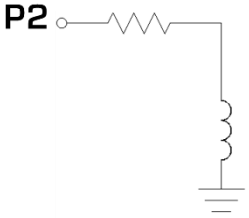
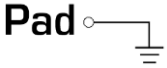
2 Port Configurations and Functions

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	1A

3.3 Electrical Specifications[2]

The electrical specifications apply at T_A=+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.

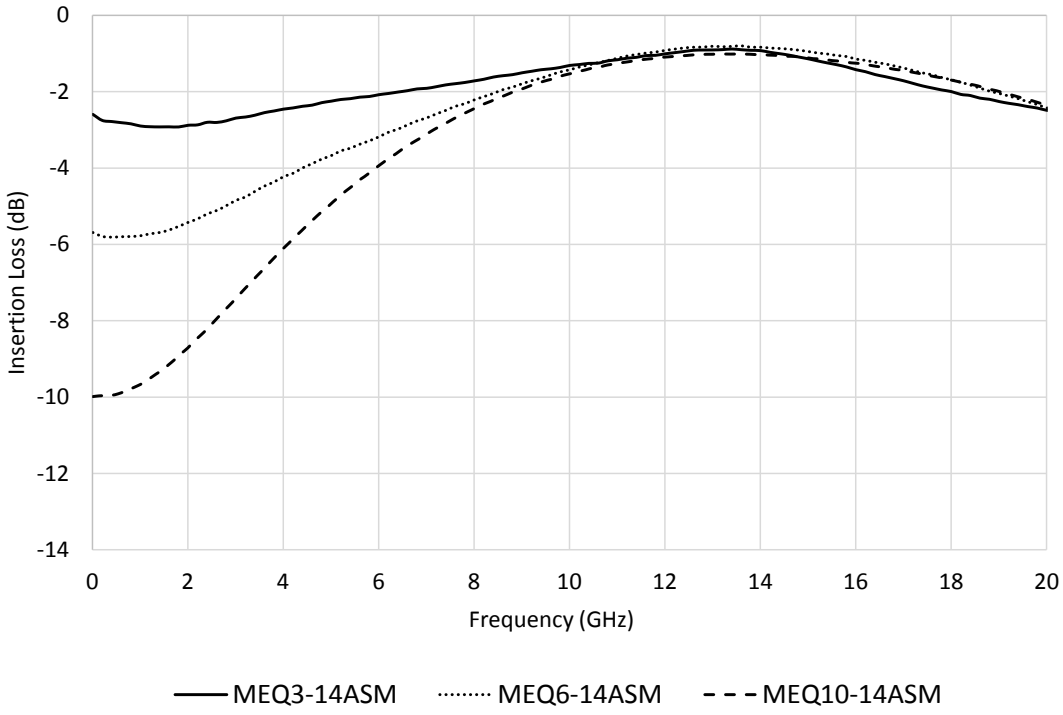
Min and Max limits are guaranteed at T_A=+25°C. All bare die are 100% DC tested and visually inspected.

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

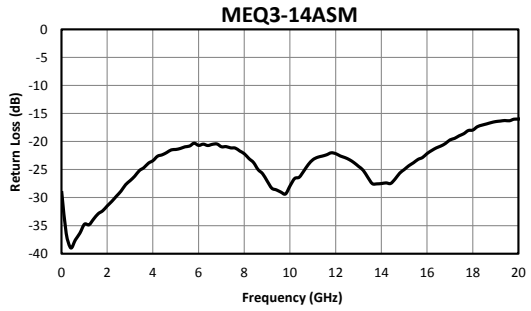
[2] Equalizer is symmetrical. Reverse measurement is equivalent to forward measurement. All measurements taken in eval board without de-embedding.

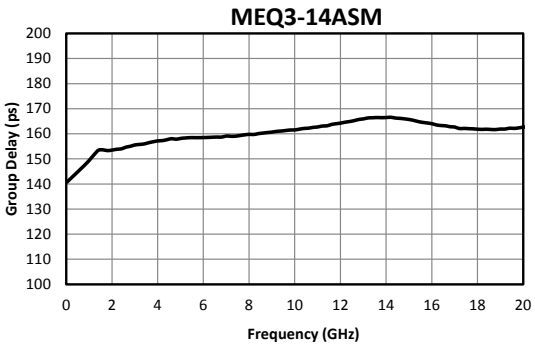
3.4 Typical Performance Plots

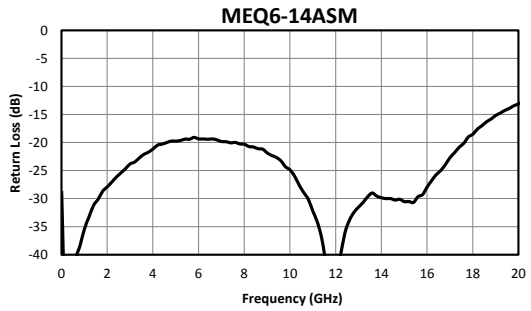
3.4.1 Insertion Loss

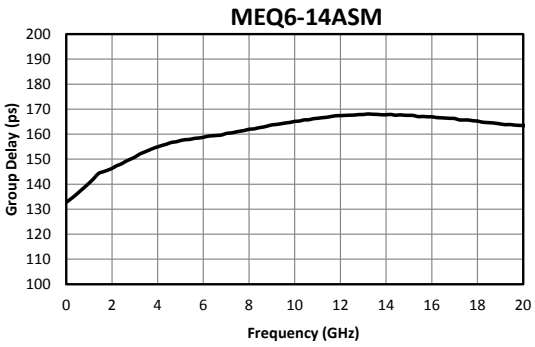


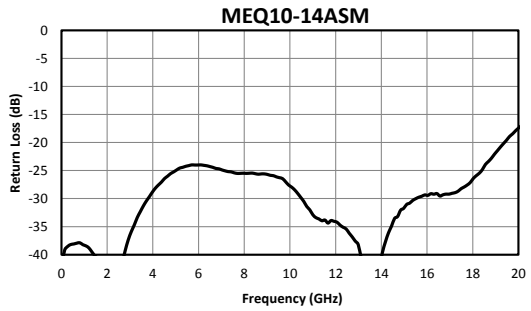
3.4.2 Return Loss & Group Delay[3]

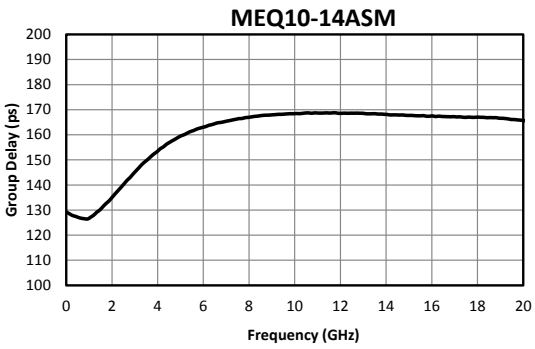








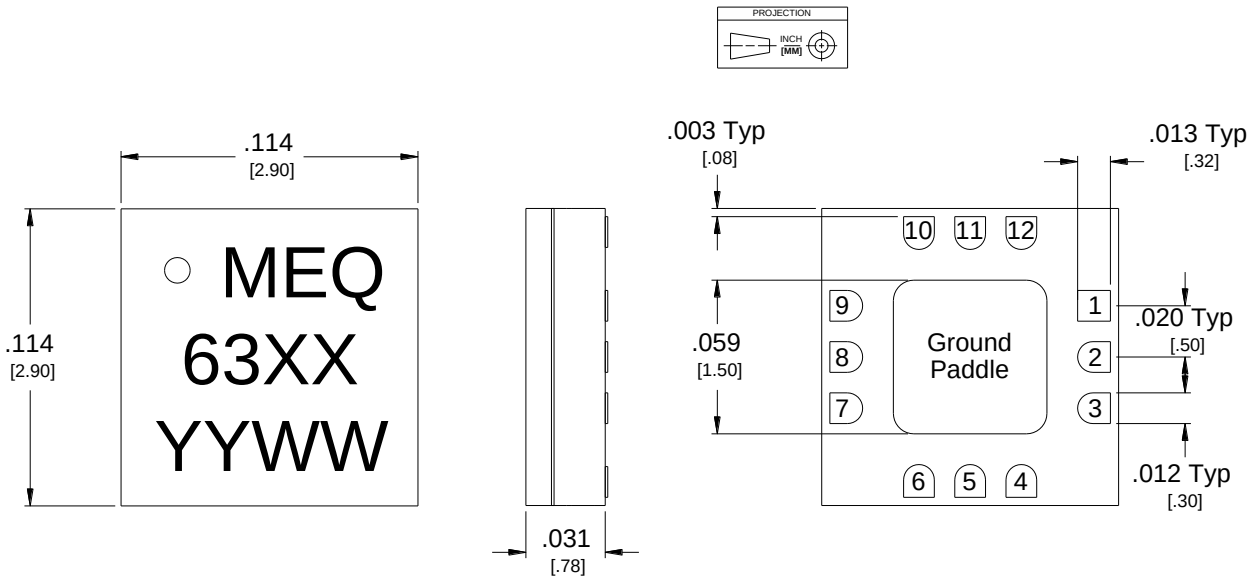




[3] Group delay measured in eval board without de-embedding.

4 Mechanical Data

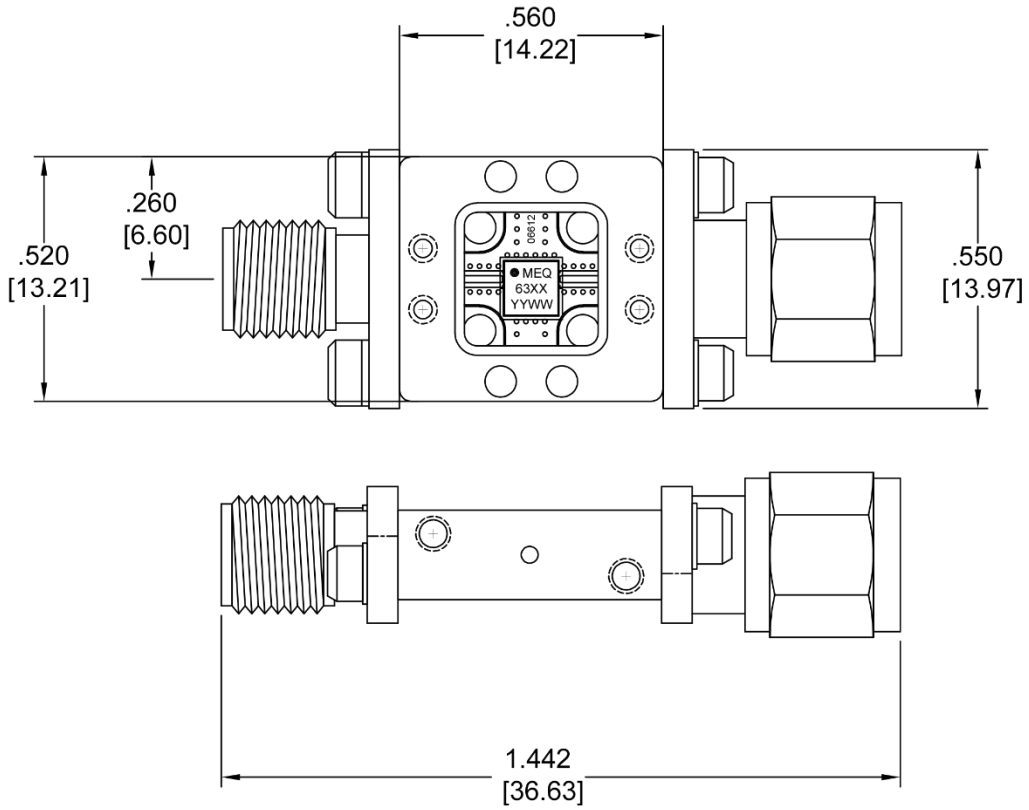
4.1 SM Package Outline Drawing



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.	