

## Features

- 0 dB Equalizer
- Broadband: 20 GHz
- Low insertion Loss: <1dB
- Broadband Matched
- Miniature 3 mm 16 lead PQFN package
- RoHS\* Compliant

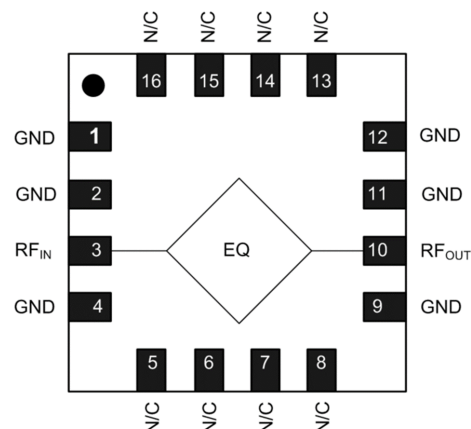
## Applications

- Cable Loss Compensation
- Amplifier Gain Slope Compensation

## Description

The MAFL-011156 equalizer is broadband matched with excellent power handling. Offering best in class RF performance.

## Functional Schematic



## Ordering Information<sup>1,2</sup>

Part Number	Package
MAFL-011156-TR0100	100 Piece Reel
MAFL-011156-TR0500	500 Piece Reel
MAFL-011156-SB1	Sample Board

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

## Pin Names<sup>3,4</sup>

Pin #	Function
1, 2, 4, 9, 11, 12	Ground
3	Input
5-8 & 13-16	No Connection <sup>3</sup>
10	Output
17	Paddle <sup>4</sup>

3. MACOM recommends connecting unused package pins to ground.
4. The exposed pad centered on the package bottom must be connected to RF, DC and thermal ground.

## Electrical Specifications: $T_A = 25^\circ\text{C}$ , $Z_0 = 50 \Omega$ , $P_{IN} = 0 \text{ dBm}$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Insertion Loss	0 GHz	dB	—	0.0	—
	20 GHz			0.5	
Return Loss	0 - 20 GHz	dB	—	20	—

\* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

# Equalizer, 0 dB 20 GHz



MAFL-011156

Rev. V1

## Absolute Maximum Ratings<sup>5,6</sup>

Parameter	Absolute Maximum
Input RF Power	1 W
DC Current	100 mA
Operating Temperature	-40°C to +85°C

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- MACOM does not recommend sustained operation near these survivability limits.

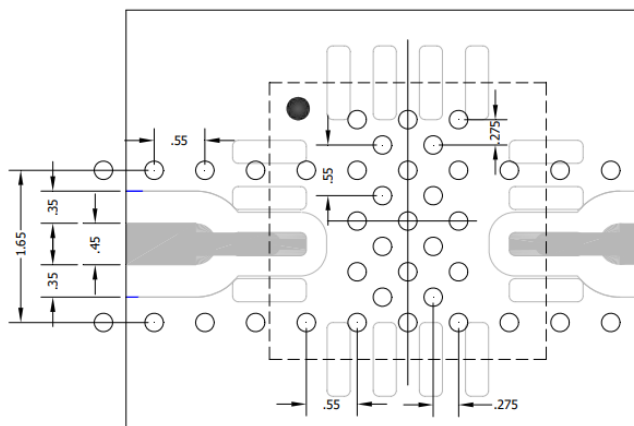
## Handling Procedures

Please observe the following precautions to avoid damage:

## Static Sensitivity

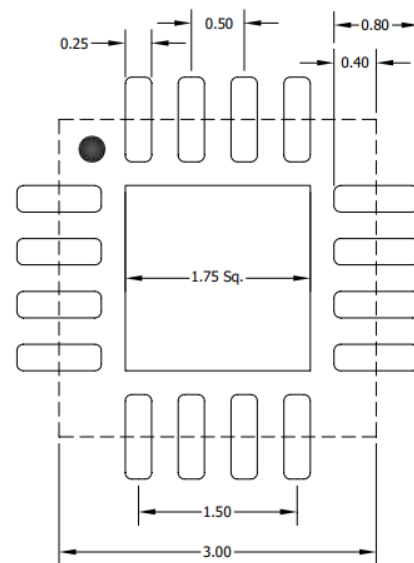
These electronic devices are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these Class 1B devices.

## Recommended PCB Layout<sup>7,8,9,10,11</sup>

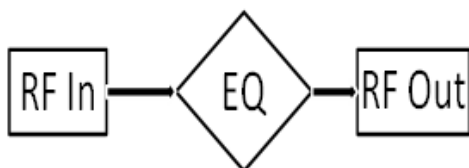


- Dielectric: 0.25 mm ROGERS 4350B.
- Copper Thickness 10 oz, ENIG Finish.
- All VIAs to be filled and over plated.
- Line width tolerance to be +/- 0.025 µm.
- Drawing dimension is in µm.

## Recommended Solder Mask Openings for DUT in PCB layout

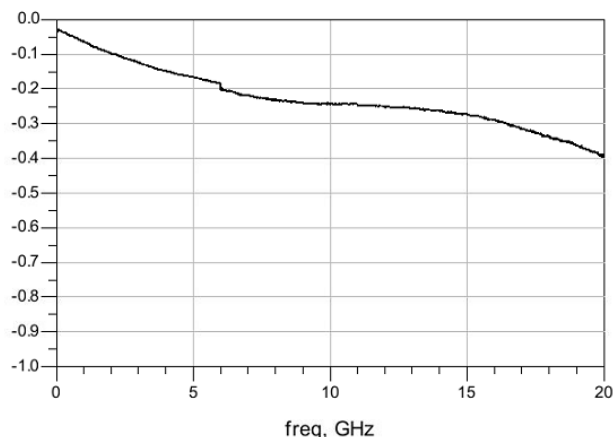


## Application Schematic

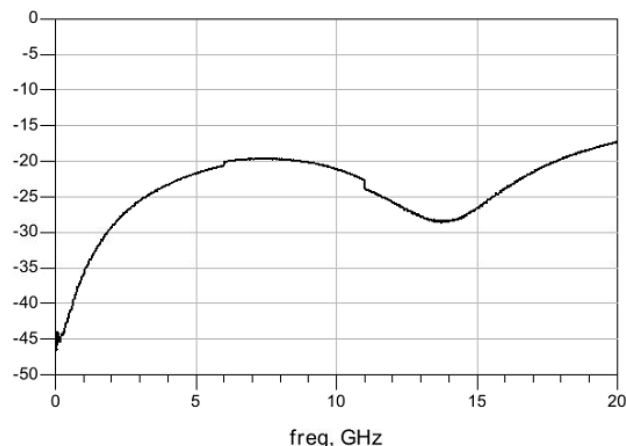


### Typical Performance Curves

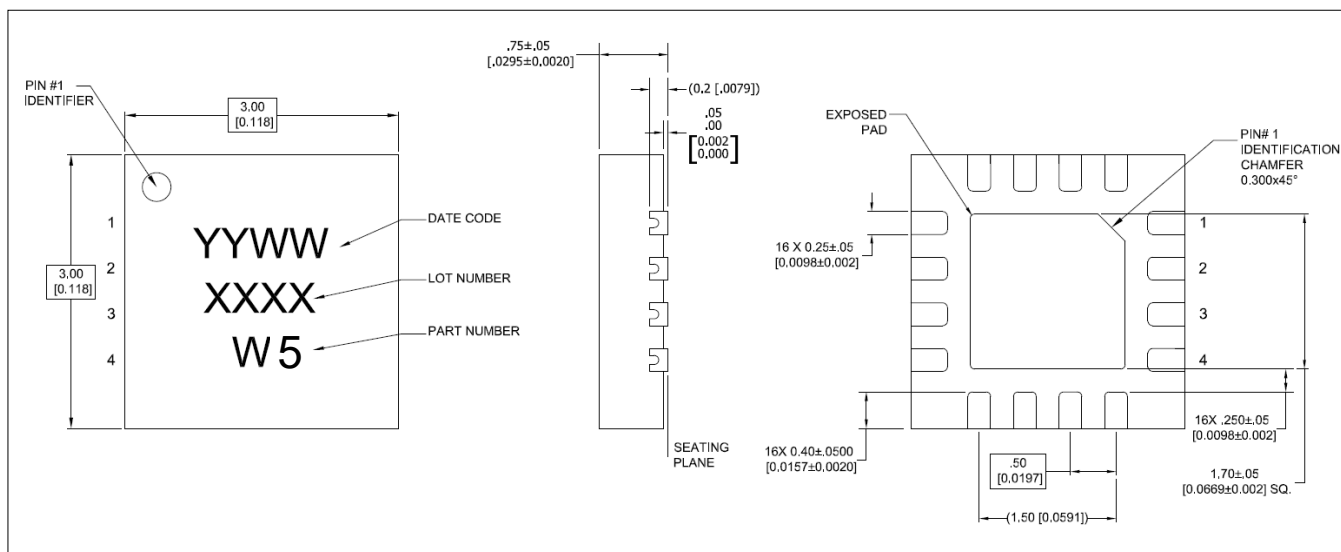
**Insertion Loss**



**Return Loss**



### Lead-Free 3 mm 16-Lead PQFN<sup>†</sup>



<sup>†</sup> Reference Application Note S2083 for lead-free solder reflow recommendations.  
 Meets JEDEC moisture sensitivity level (MSL) 1 requirements in accordance to JEDEC J-STD-020D.  
 Plating is 100% matte tin over copper.  
 Tolerance is ±0.05 mm unless otherwise noted.

MACOM Technology Solutions Inc. ("MACOM"). All rights reserved.

These materials are provided in connection with MACOM's products as a service to its customers and may be used for informational purposes only. Except as provided in its Terms and Conditions of Sale or any separate agreement, MACOM assumes no liability or responsibility whatsoever, including for (i) errors or omissions in these materials; (ii) failure to update these materials; or (iii) conflicts or incompatibilities arising from future changes to specifications and product descriptions, which MACOM may make at any time, without notice. These materials grant no license, express or implied, to any intellectual property rights.

THESE MATERIALS ARE PROVIDED "AS IS" WITH NO WARRANTY OR LIABILITY, EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT, ACCURACY OR COMPLETENESS, OR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.