

# 17 dB Bi-Directional Coupler 2 - 18 GHz



MACP-011088

Rev. V2

## Features

- Broadband: 2 - 18 GHz
- Low insertion Loss: 0.8 dB
- Coupling Factor: 17 dB
- Lead-Free 4 mm 24 Lead QFN Package
- RoHS\* Compliant

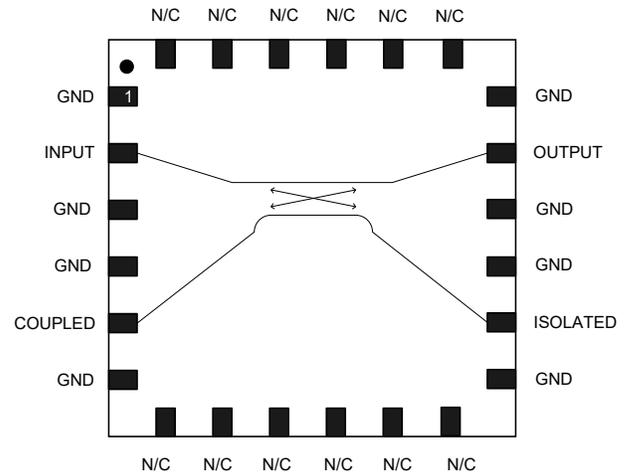
## Applications

- Test and Measurement
- Mil Comms
- Multi-band Radios

## Description

The MACP-011088 is a full integrated 2 - 18 GHz coupler. Offering best in class RF performance in a miniature package. This coupler is ideally suited to test point applications.

## Functional Schematic



## Pin Configuration<sup>3</sup>

Pin #	Function
1, 3, 4, 6, 13, 15, 16, 18	Ground
2	Input
5	Coupled Port
7 - 12, 19 - 24	N/C
14	Isolated Port
17	Output
25	Paddle <sup>4</sup>

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

Part Number	Package
MACP-011088-TR0500	500 Piece Reel
MACP-011088-SB1	Sample Board

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

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.

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

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**Electrical Specifications: Freq. = 2 - 18 GHz,  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50 \Omega$ ,  $P_{IN} = 0 \text{ dBm}$**

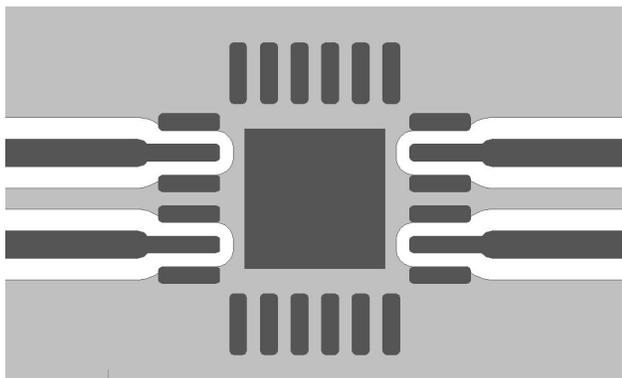
Parameter	Test Condition	Units	Min.	Typ.	Max.
Insertion Loss	2 - 6 GHz	dB	—	0.8	0.8
	6 - 13 GHz				1.2
	13 - 18 GHz				1.5
Coupling	2 - 18 GHz	dB	13	17	21
Forward & Reverse Isolation	2 - 18 GHz	dB	—	27	—
Input Return Loss	2 - 18 GHz	dB	—	18	—
Output Return Loss	2 - 18 GHz	dB	—	18	—
Coupling Return Loss	2 - 18 GHz	dB	—	18	—
Isolation Return Loss	2 - 18 GHz	dB	—	18	—

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

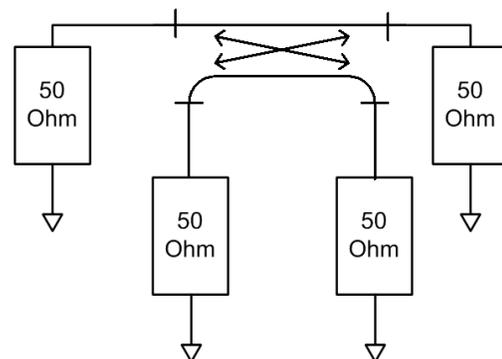
Parameter	Absolute Maximum
Input RF Power <sup>7</sup>	3 W
DC Current	500 mA
Operating Temperature	-40°C to +105°C
Storage Temperature	-65°C to +150°C

5. Exceeding any one or combination of these limits may cause permanent damage to this device.
6. MACOM does not recommend sustained operation near these survivability limits.
7. Specified at +25°C only.

## PCB Layout



## Application Schematic



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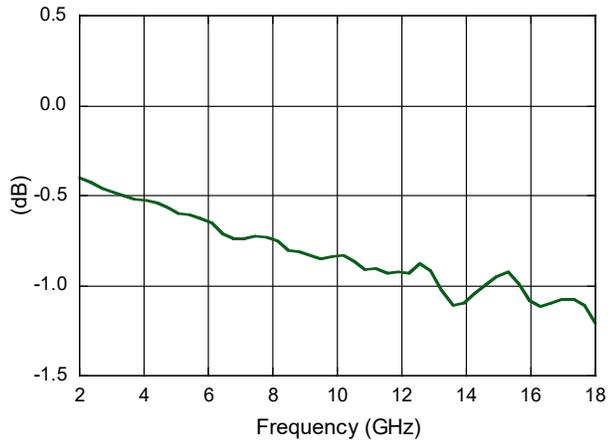


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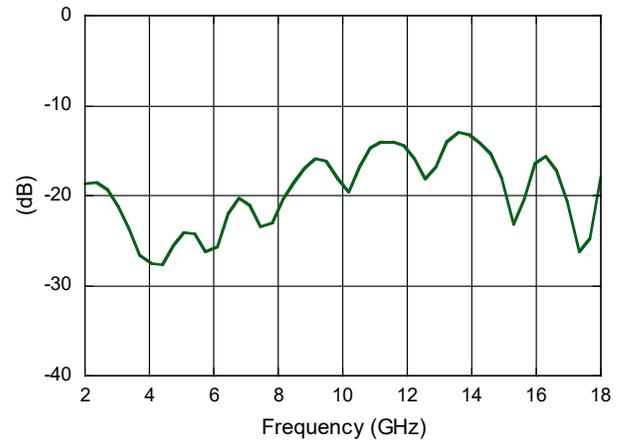
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## Typical Performance Curves

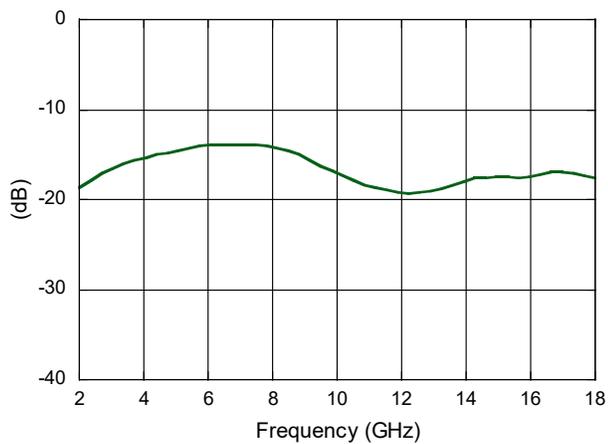
**Main Line Loss**



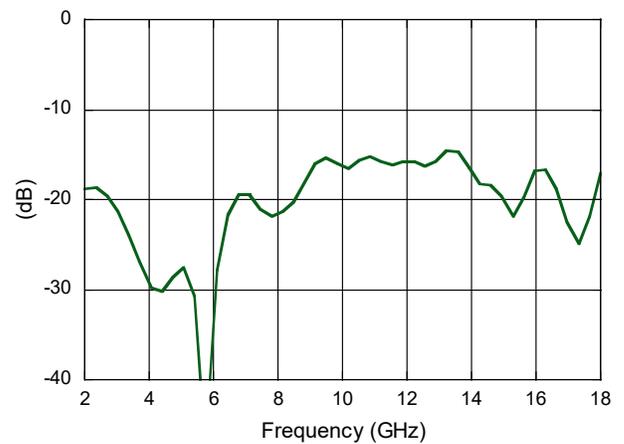
**Input Return Loss**



**Coupling**



**Output Return Loss**



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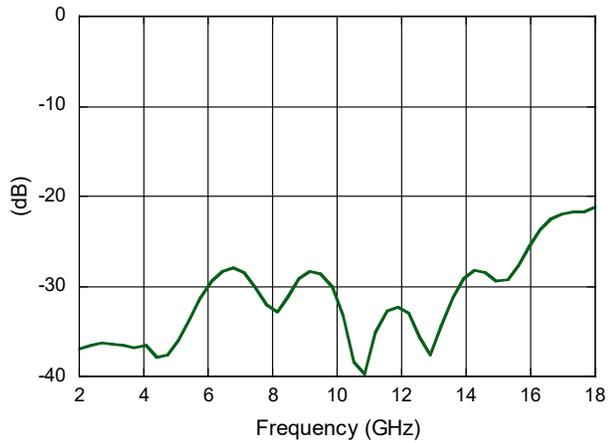


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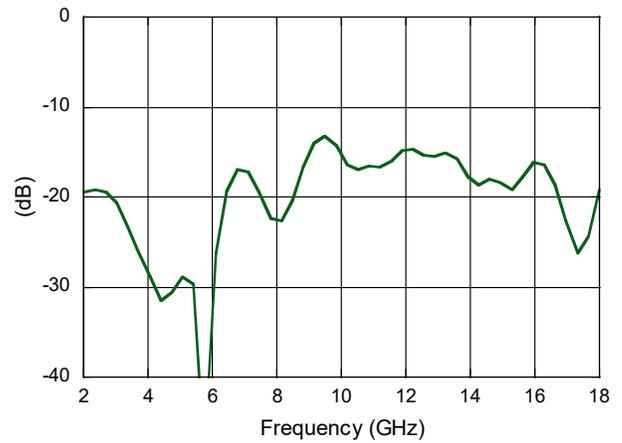
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## Typical Performance Curves

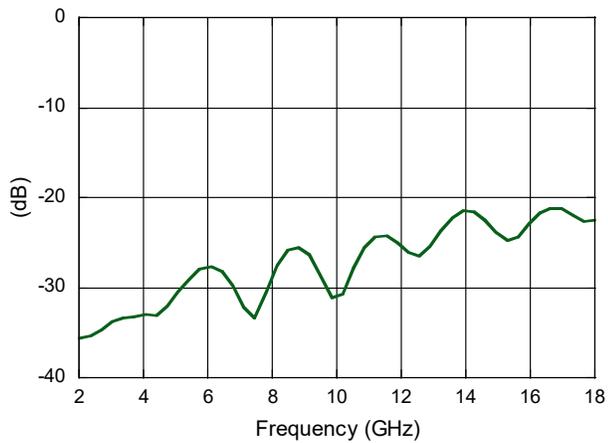
**Forward Isolation**



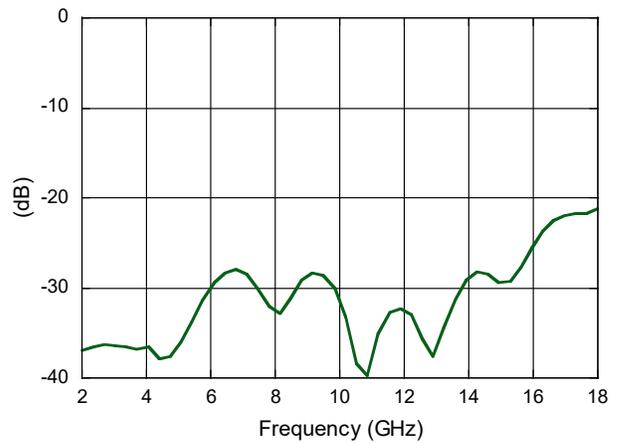
**Coupled Return Loss**



**Reverse Isolation**



**Isolated Return Loss**





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