

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

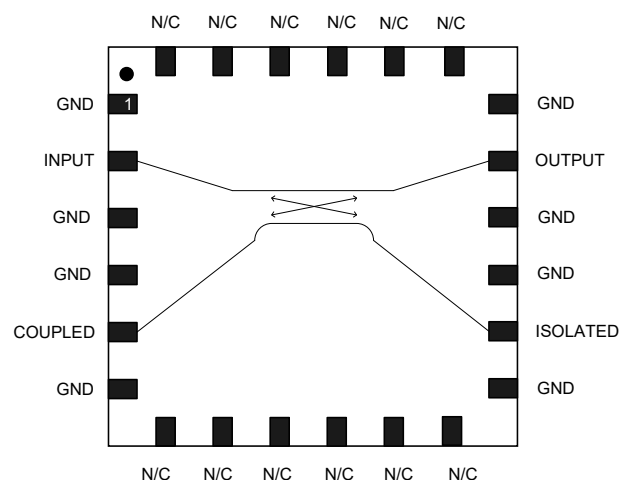
Applications

- 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 Configuration³

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 ⁴

Ordering Information^{1,2}

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

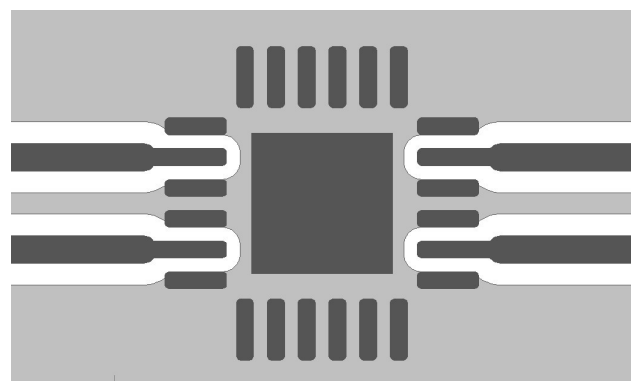
Parameter	Test Condition	Units	Min.	Typ.	Max.
Insertion Loss	2 - 6 GHz 6 - 13 GHz 13 - 18 GHz	dB	—	0.8	0.8 1.2 1.5
Coupling	2 - 18 GHz	dB	13	17	21
Forward & Reverse Isolation	2 - 18 GHz	dB	—	27	—
Input Return Loss	2 - 18 GHz	dB	—	18	—
Output Return Loss	2 - 18 GHz	dB	—	18	—
Coupling Return Loss	2 - 18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

Absolute Maximum Ratings^{5,6}

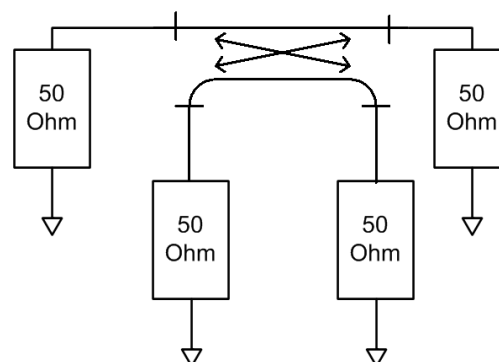
Parameter	Absolute Maximum
Input RF Power ⁷	3 W
DC Current	500 mA
Operating Temperature	-40°C to +105°C
Storage Temperature	-65°C to +150°C

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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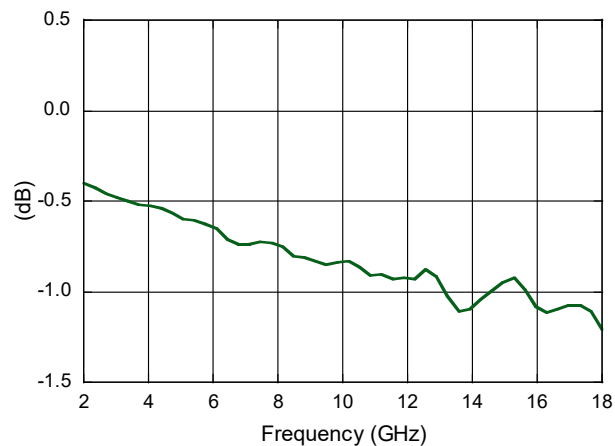


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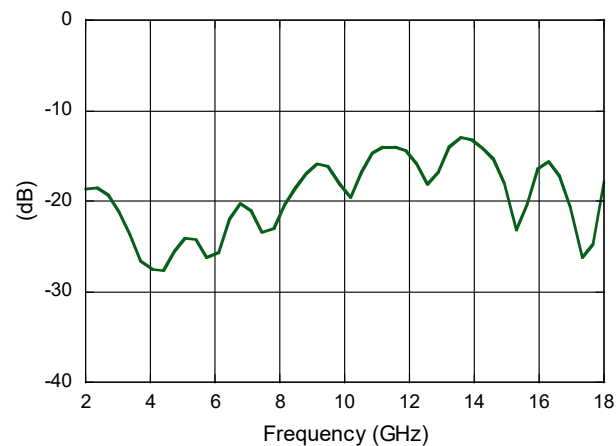
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Typical Performance Curves

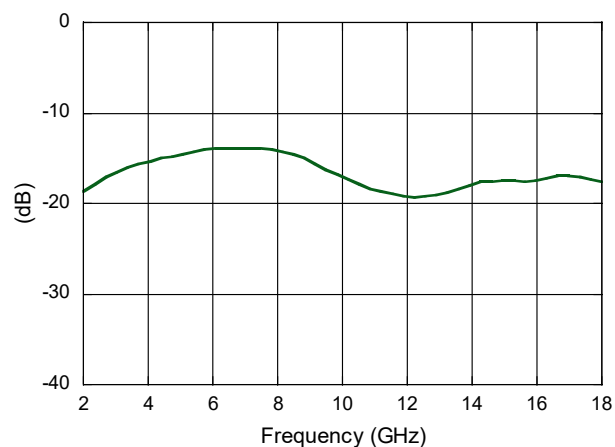
Main Line Loss



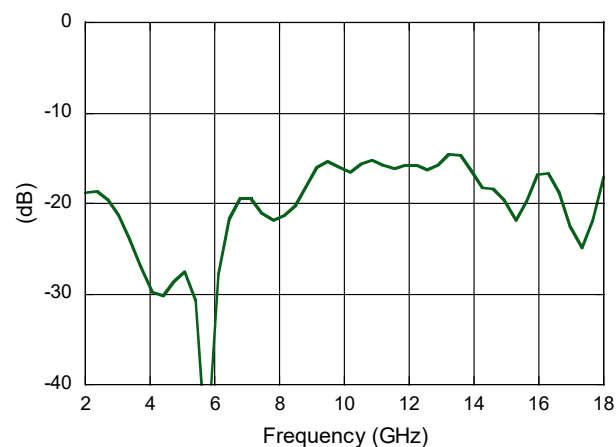
Input Return Loss



Coupling



Output Return Loss



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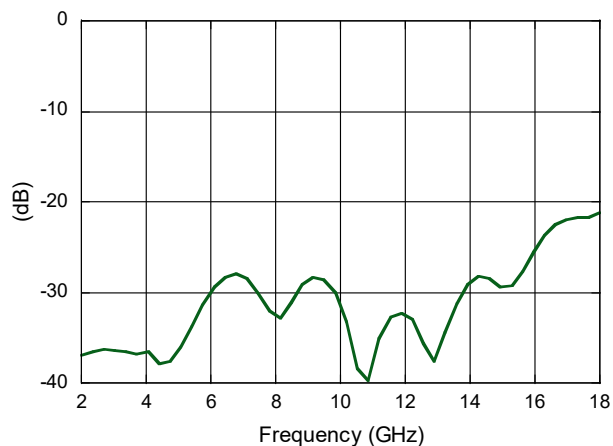


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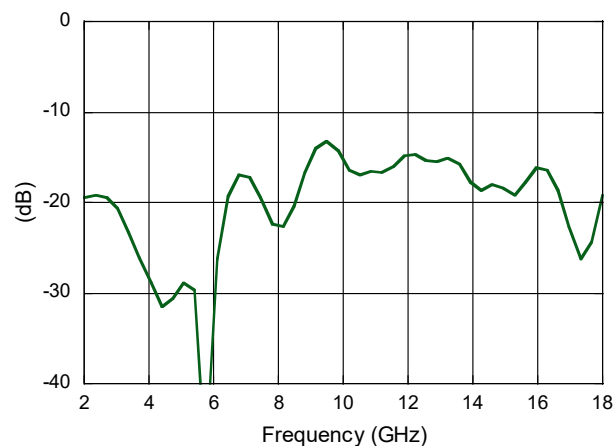
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Typical Performance Curves

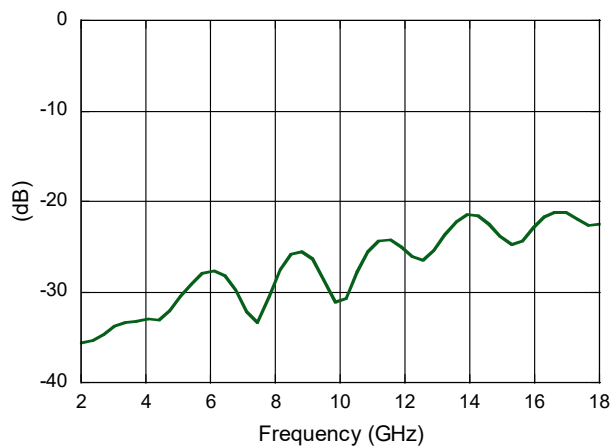
Forward Isolation



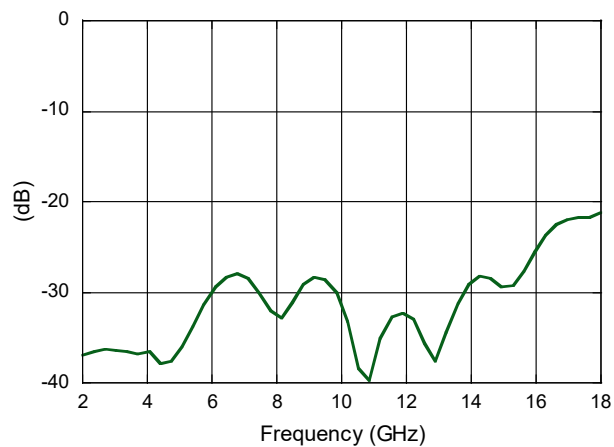
Coupled Return Loss



Reverse Isolation



Isolated Return Loss



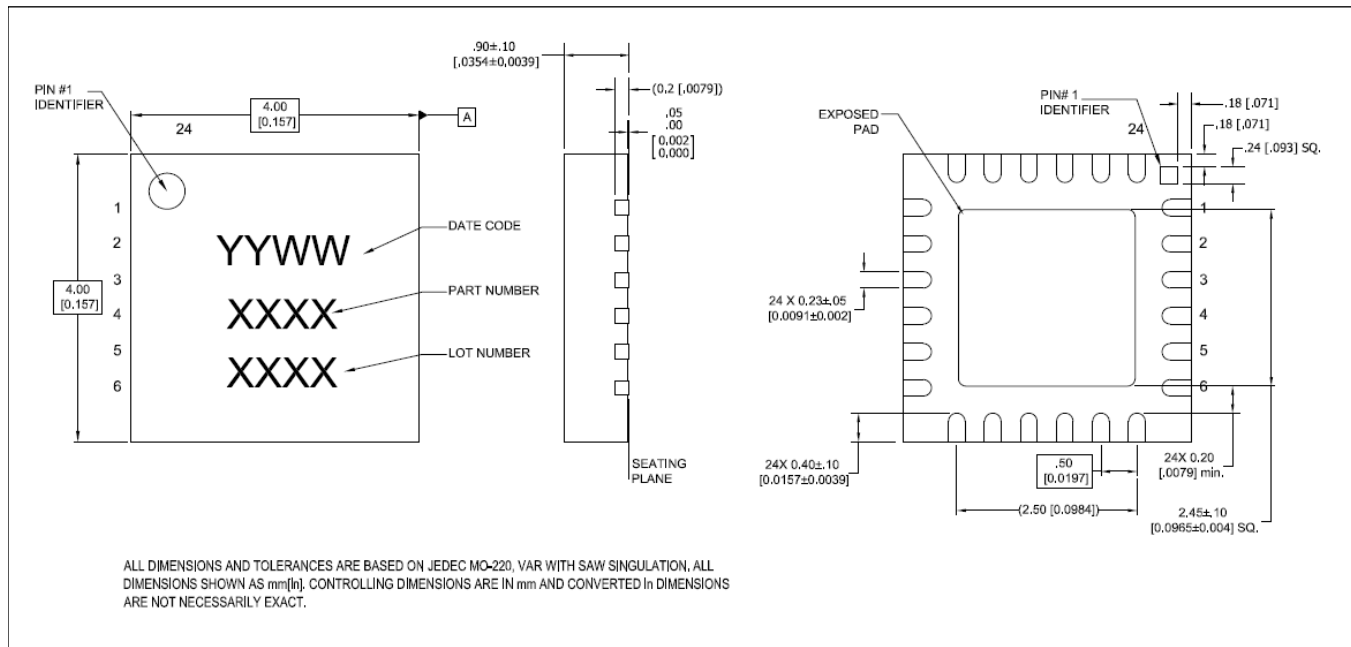
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Lead-Free 4 mm 24-Lead PQFN[†]



[†] Reference Application Note S2083 for lead-free solder reflow recommendations.
Meets JEDEC moisture sensitivity level 1 requirements.
Plating is 100% matte tin over copper.

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