

**Features**

- Broadband: 2 - 20 GHz
- Impedance Ratio 1:2
- Low insertion Loss: 2 dB
- Lead-Free 3 mm 16 Lead QFN Package
- RoHS\* Compliant

**Applications**

- Test and Measurement
- Mil Comms
- Multi-band Radios
- Clock Distribution
- High Frequency ADC & DAC's

**Description**

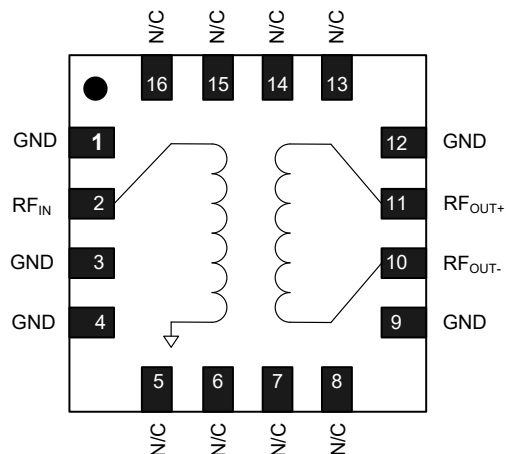
The MABA-011125 is a full integrated 2-20GHz 1:2 balun. Offering best in class insertion loss performance in a miniature package. Ideally suited to wideband applications including balanced amplifiers, high frequency analog to digital converter circuits , high frequency digital to analog converter circuits and clock distribution.

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

Part Number	Package
MABA-011125-TR0500	500 Piece Reel
MABA-011125-SB1	Sample Board

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

**Functional Block**



**Pin Configuration<sup>3,4</sup>**

Pin #	Function
1,3,4,9,12	Ground
2	Input
5 - 8, 13 - 16	No Connection
10	Output 1
11	Output 2
17	paddle

3. MACOM recommends connecting N/C pin to ground.
4. The exposed pad centered on the package bottom must be connected to PCB ground with low electrical and thermal resistances.

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

**Electrical Specifications: Freq. = 2 - 20 GHz,  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50 \Omega$ ,  $P_{IN} = 0 \text{ dBm}$**

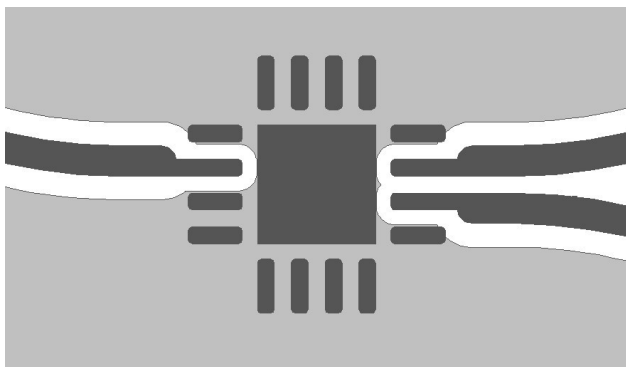
Parameter	Test Condition	Units	Min.	Typ.	Max.
Balanced Insertion Loss	2 - 20 GHz	dB	—	2	4
Amplitude Balance	2 - 18 GHz 18 - 20 GHz	dB	—	0	0.8 1.25
Phase Balance	2 - 20 GHz	°	—	0	9
Input Return Loss	2 - 20 GHz	dB	—	13	—
Output Return Loss	2 - 20 GHz	dB	—	12	—

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

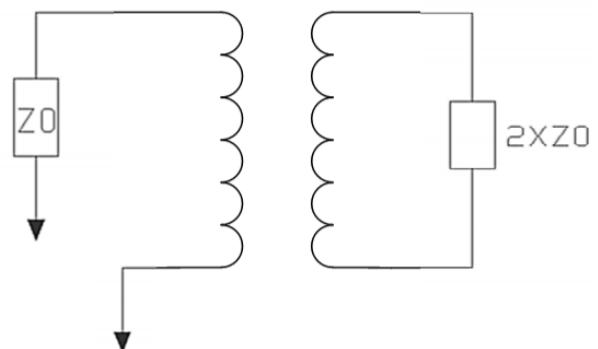
Parameter	Absolute Maximum
Input RF Power <sup>7</sup>	3 W
DC Current	500 mA
Operating Temperature	-40°C to +105°C
Storage Temperature	-65°C to +150°C

- 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**

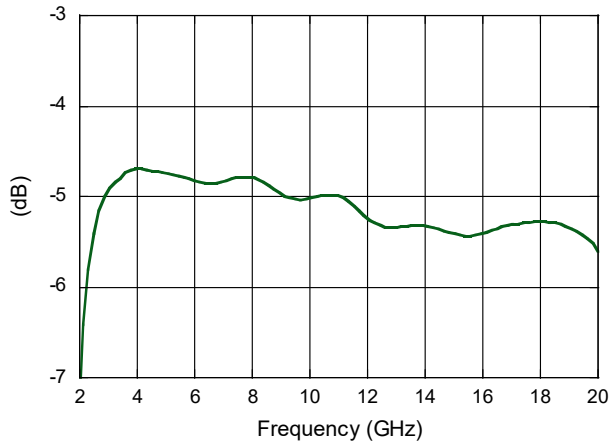


**Application Schematic**

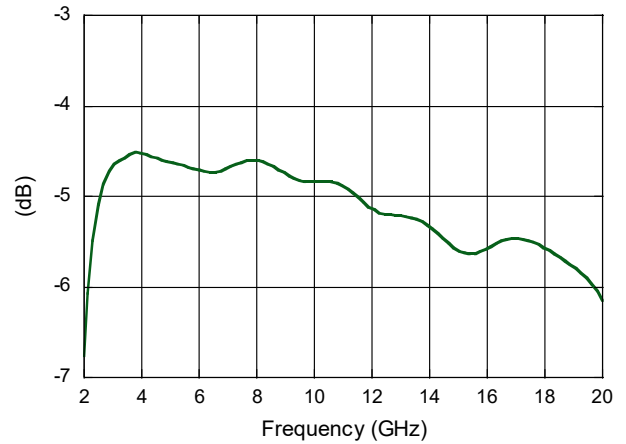


**Typical Performance Curves**

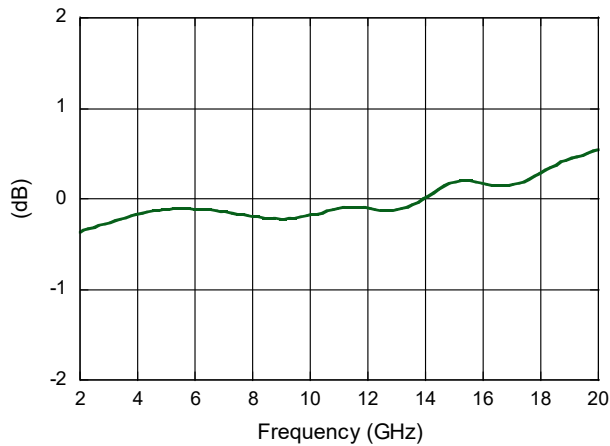
**Insertion Loss 1 (ref. level -3 dB)**



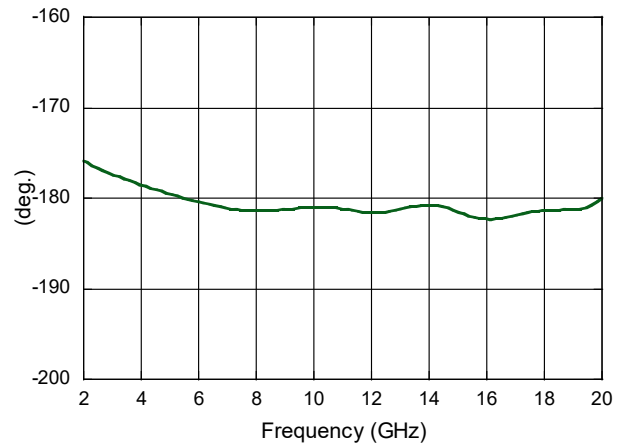
**Insertion Loss 2 (ref. level -3 dB)**



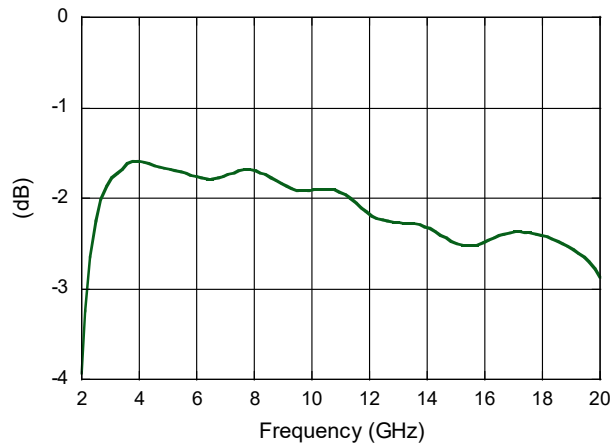
**Amplitude Balance**



**Phase Balance**

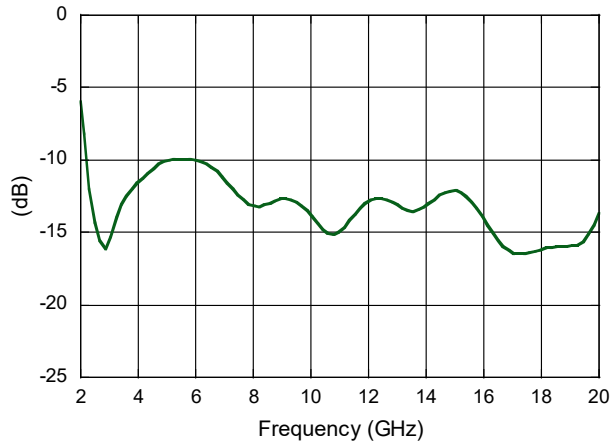


**Balanced Insertion Loss**

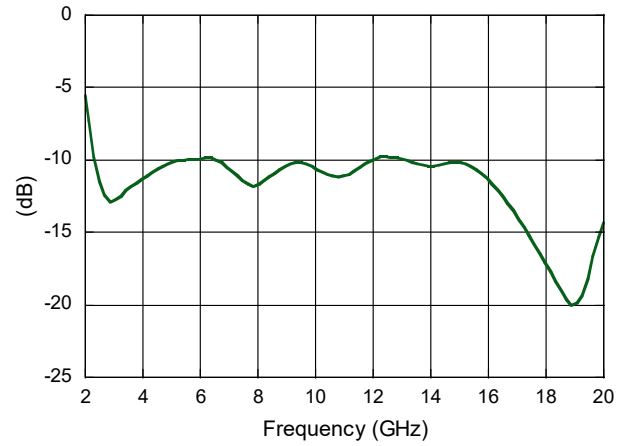


### Typical Performance Curves

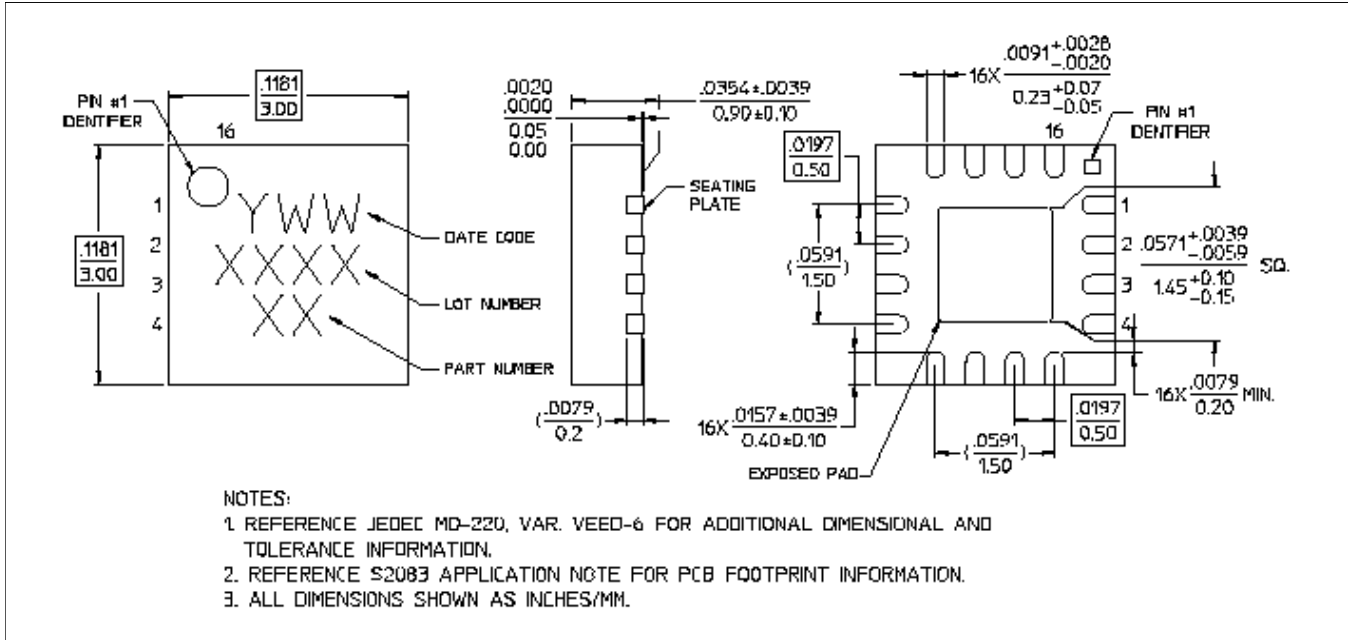
*Input Return Loss*



*Output 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) 3 requirements in accordance to JEDEC J-STD-020D.  
Plating is 100% matte tin over copper.

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