MABA-011085

1:1 Transmission Line Balun with Tertiary Winding
5 - 1225 MHz

Rev. V4

Features

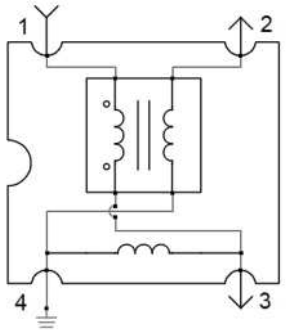
- Surface Mount
- 1:1 Impedance
- Available on Tape and Reel
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible
- Excellent Temperature Stability

Description

The MABA-011085 is a 1:1 transmission line balun with tertiary winding in a low cost surface mount package.

Ideally suited for all CATV Broadband and FTTx applications.

Functional Schematic



Pin Configuration

Pin #	Function	Pin #	Function
1	Primary (input)	3	Secondary (output 1)
2	Secondary (output 2)	4	Primary (ground)

Electrical Specifications: Freq. = 5 - 1225 MHz, T_A = 25°C, Z_0 = 75 Ω, P_{IN} = 0 dBm

Parameter	Test Conditions Frequency (MHz)	Units	Min.	Typ.	Max.
Impedance Ratio	—	—	—	1:1	—
Insertion Loss 1 (Pin 1 - Pin 3)	5 - 300 300 - 1000 1000 - 1225	dB	—	0.2 0.4 0.7	0.4 0.8 1.0
Insertion Loss 2 (Pin 1 - Pin 2)	5 - 300 300 - 1000 1000 - 1225	dB	—	0.4 0.6 0.7	0.7 0.9 0.9
Amplitude Balance	5 - 300 300 - 1225	dB	—	0.2 0.1	±0.4 ±0.5
Phase Balance (ref value 180°)	5 - 300 300 - 1225	dB	—	1.0 2.0	±4.0 ±9.0
Input Return Loss (Pin 1)	5 - 300 300 - 1225	dB	23 15	28 23	—

Ordering Information[1]

Part Number	Description
MABA-011085	900 piece reel
MABA-011085-TB	Sample Board

1. All sample boards include 5 loose parts.

Absolute Maximum Ratings[2,3]

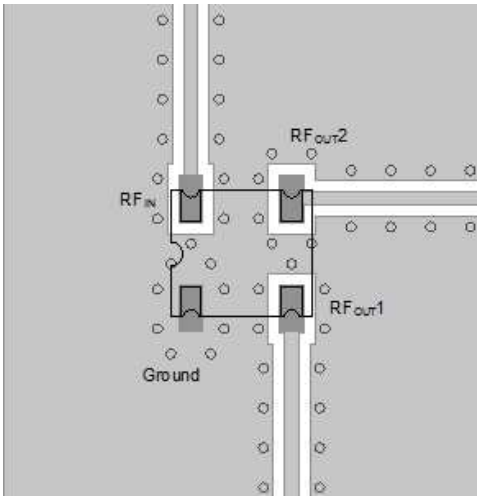
Parameter	Absolute Maximum
Input RF Power[4]	2000 mW
DC Current	1500 mA
Operating Temperature	-40°C to +125°C

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

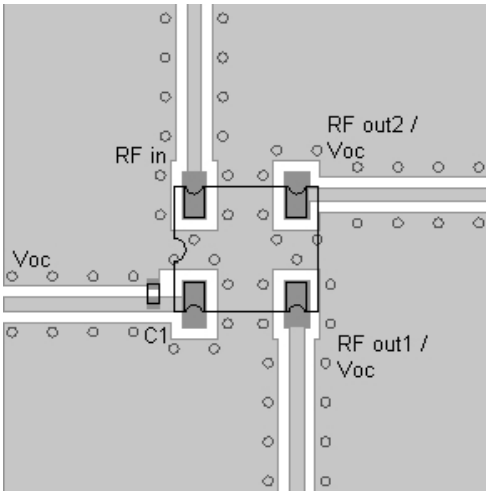
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Recommended PCB Layout[5,6,7,8]



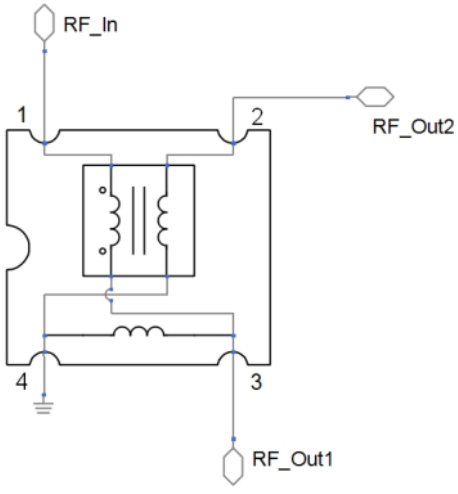
Layout Option 1 - no dc voltage on tertiary winding



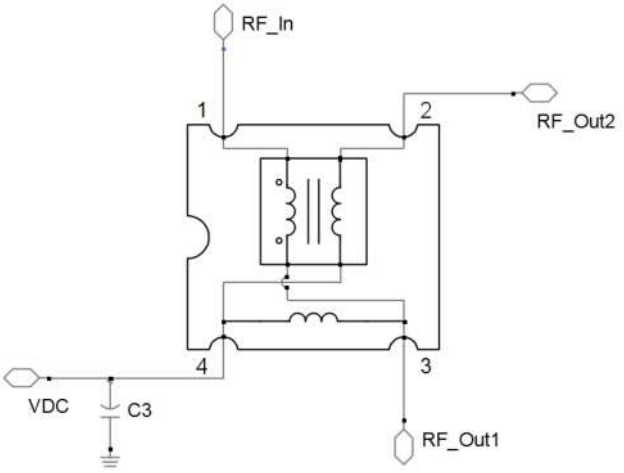
Layout Option 2 - dc voltage on tertiary winding

5. Recommended PCB layout shown above uses 1.6 mm FR4.
6. Grounded coplanar wave guide transmission line.
7. Trace width 0.70 mm.
8. Gap 0.57 mm.

Application Schematics



Option 1 - no dc voltage on tertiary winding



Option 2 - dc voltage on tertiary winding

Parts List

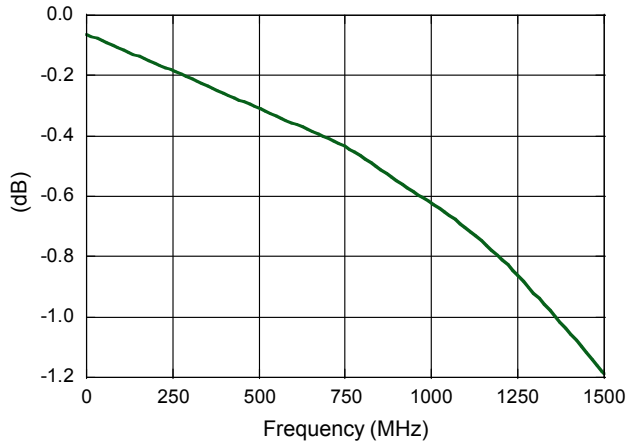
Component	Value	Package
C1	10 nF	0402

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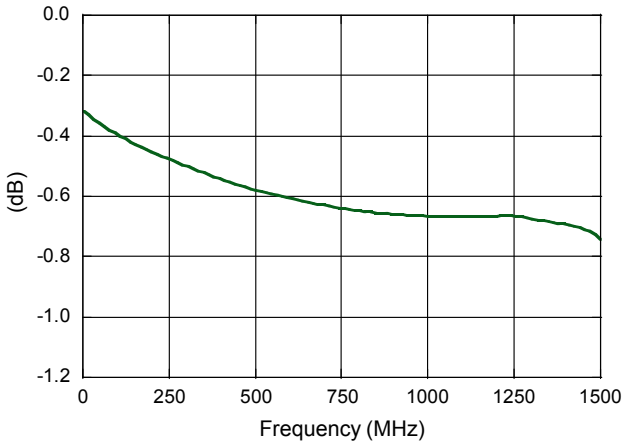
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Typical Performance Curves: T_A = 25°C, Z_0 = 75 Ω, P_{IN} = 0 dBm

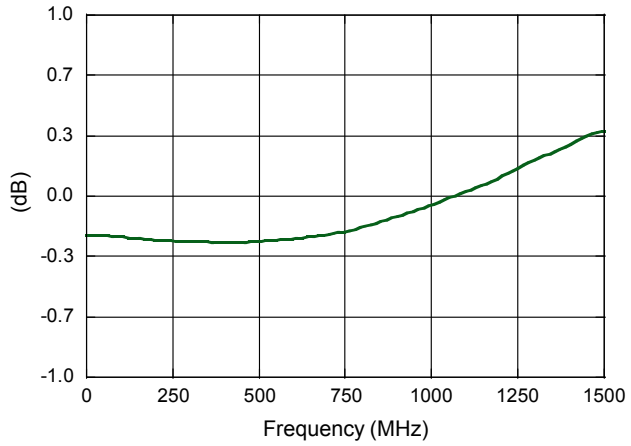
Insertion Loss (pin 1-3)



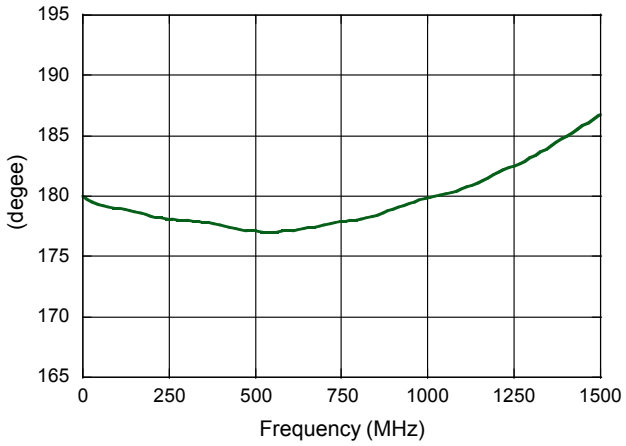
Insertion Loss (pin 1-2)



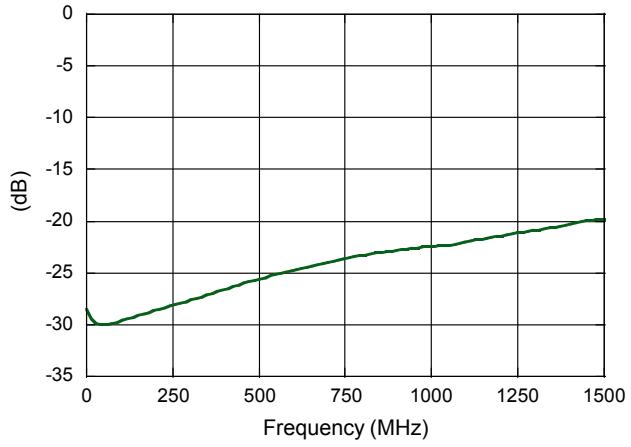
Amplitude Balance



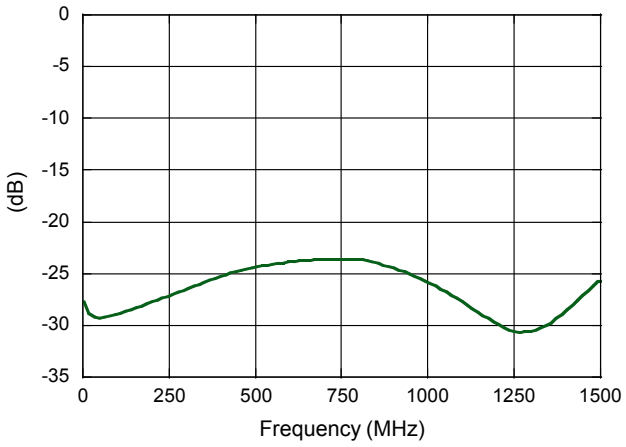
Phase Balance



Input Return Loss (pin 1)



Balanced Output Return Loss



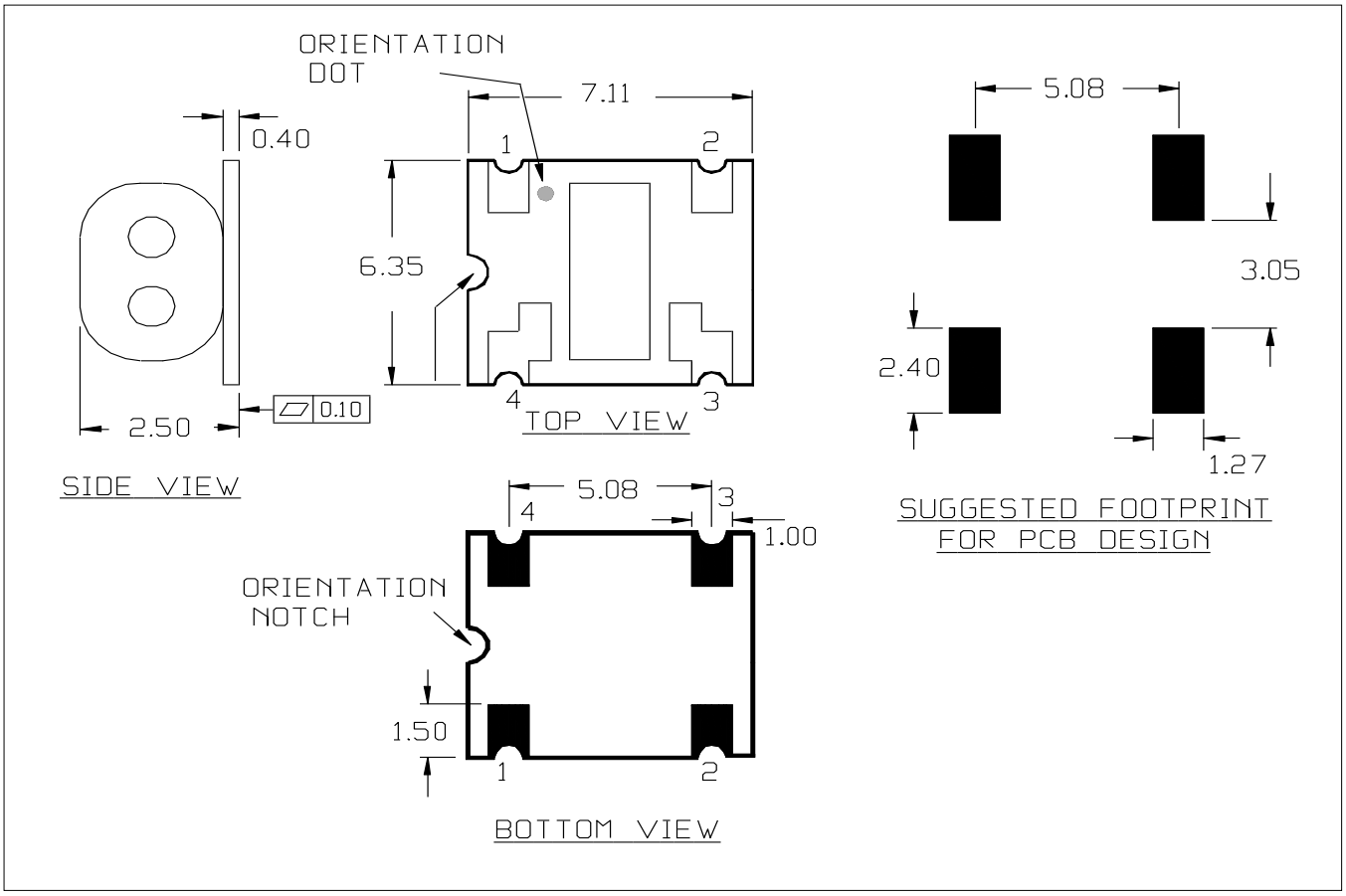
3 Full temperature plots available on request.

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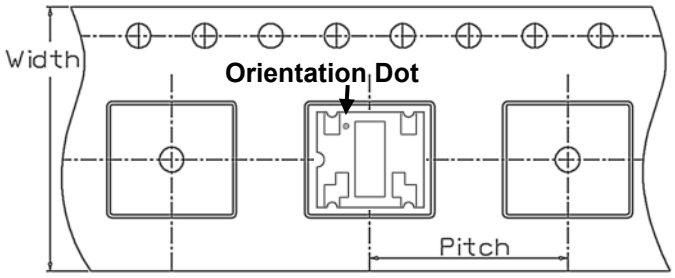
1:1 Transmission Line Balun with Tertiary Winding
5 - 1225 MHz

Part Outline Drawing[9,10,11,12]



9. Dimensions in mm
10. Tolerance: ±0.2 mm unless otherwise noted
11. Model number and lot code are printed on the reel
12. Plating finish: ENIG

Carrier Tape Orientation



Tape & Reel Information

Parameter	Units	Value
Qty per reel	-	900
Reel Size	mm	330
Tape Width	mm	16.00
Pitch	mm	12.00
Orientation	-	F60
Reference Application Note ANI-019 for orientation		

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