

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

Rev. V4

Features

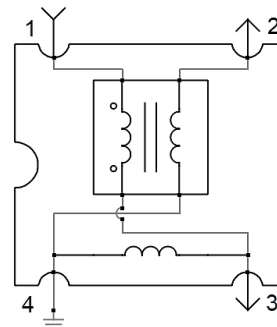
- Surface Mount
- 1:1 Impedance
- Available on Tape and Reel
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible
- Excellent Temperature Stability

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, Z₀ = 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	dB	—	0.2	0.4
	300 - 1000			0.4	0.8
	1000 - 1225			0.7	1.0
Insertion Loss 2 (Pin 1 - Pin 2)	5 - 300	dB	—	0.4	0.7
	300 - 1000			0.6	0.9
	1000 - 1225			0.7	0.9
Amplitude Balance	5 - 300	dB	—	0.2	±0.4
	300 - 1225			0.1	±0.5
Phase Balance (ref value 180°)	5 - 300	dB	—	1.0	±4.0
	300 - 1225			2.0	±9.0
Input Return Loss (Pin 1)	5 - 300	dB	23	28	—
	300 - 1225		15	23	

Ordering Information¹

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

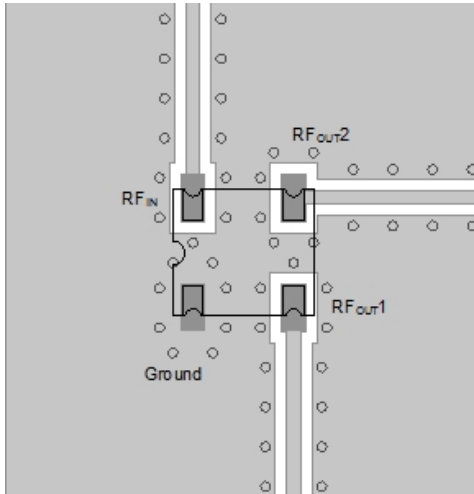
1. All sample boards include 5 loose parts.

Absolute Maximum Ratings^{2,3}

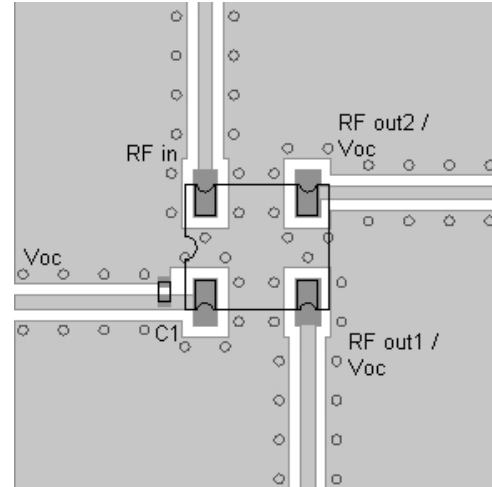
Parameter	Absolute Maximum
Input RF Power ⁴	2000 mW
DC Current	1500 mA
Operating Temperature	-40°C to +125°C

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.

Recommended PCB Layout^{5,6,7,8}



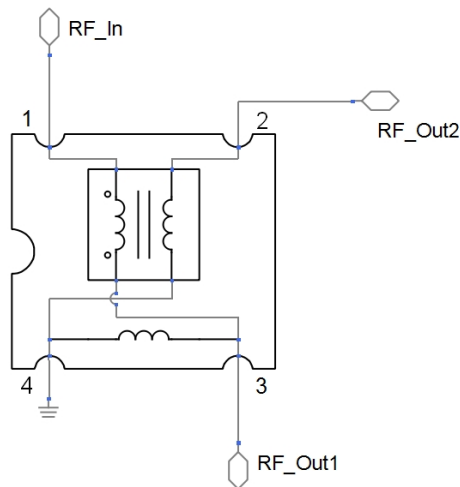
Layout Option 1 - no dc voltage on tertiary winding



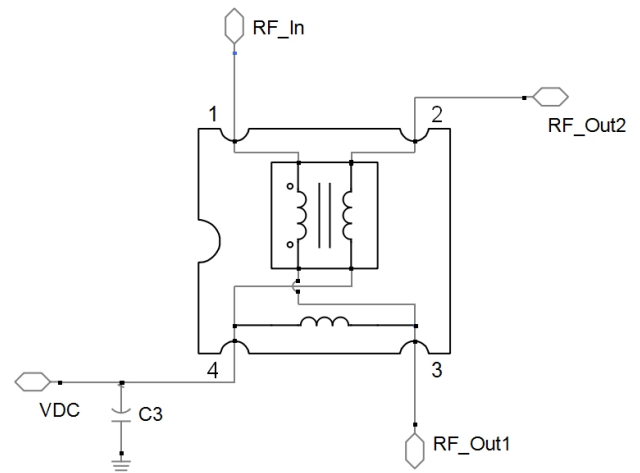
Layout Option 2 - dc voltage on tertiary winding

- 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

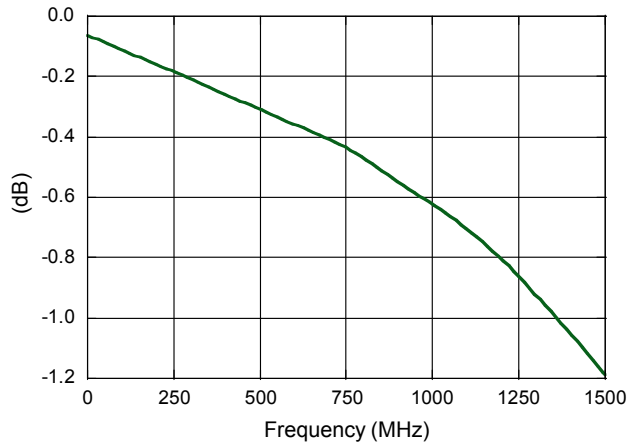
Component	Value	Package
C1	10 nF	0402

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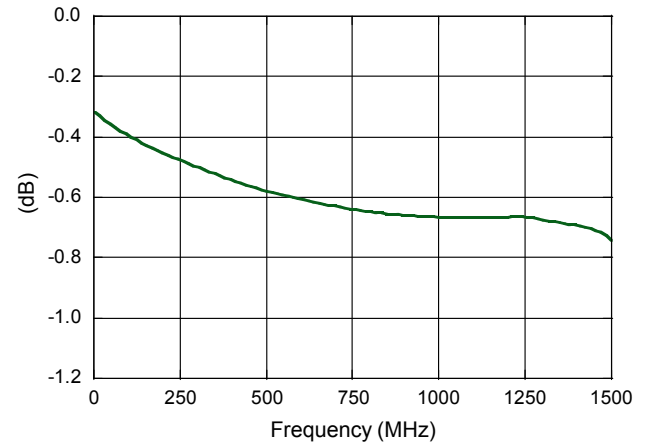
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Typical Performance Curves: $T_A = 25^\circ\text{C}$, $Z_0 = 75 \Omega$, $P_{IN} = 0 \text{ dBm}$

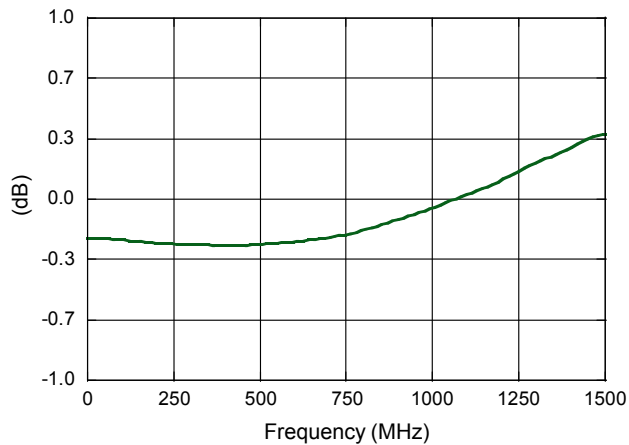
Insertion Loss (pin 1-3)



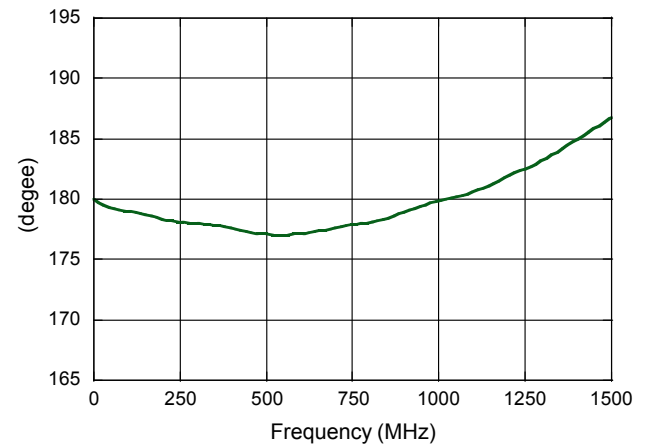
Insertion Loss (pin 1-2)



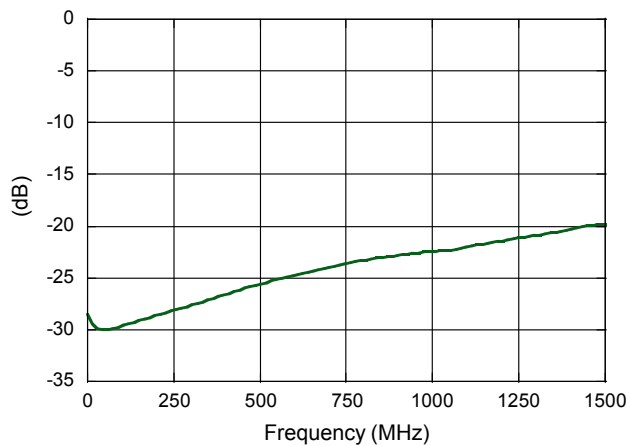
Amplitude Balance



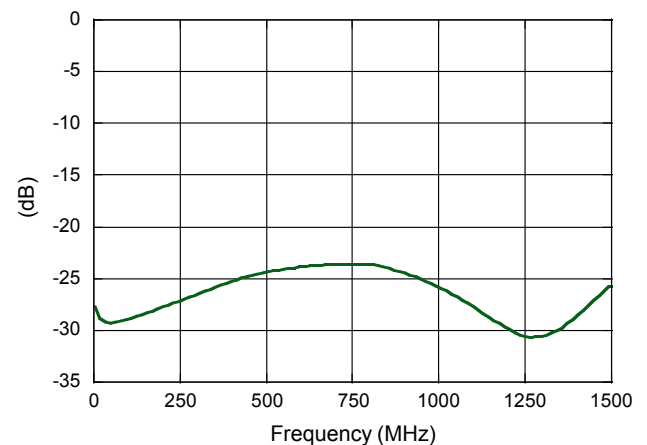
Phase Balance



Input Return Loss (pin 1)



Balanced Output Return Loss



3 Full temperature plots available on request.

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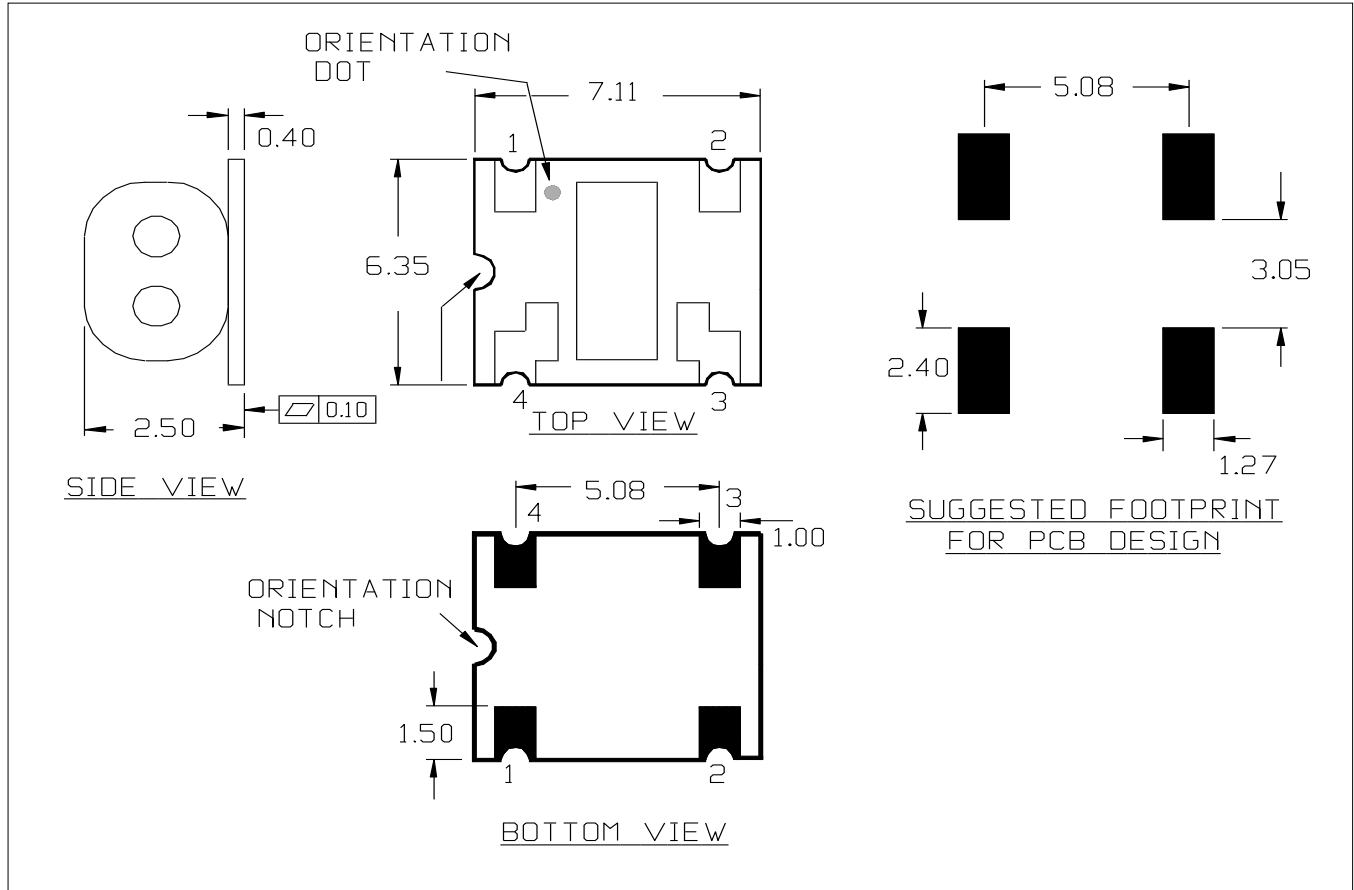
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DC-0012064

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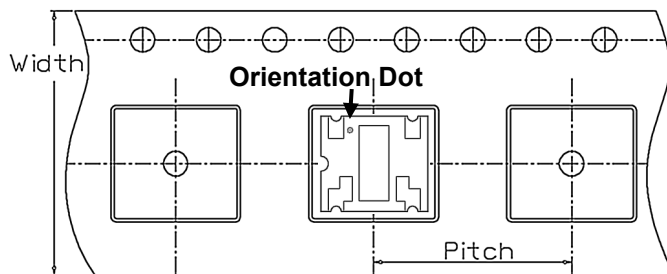
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Part Outline Drawing^{9,10,11,12}



- 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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