

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

Rev. V4

### Features

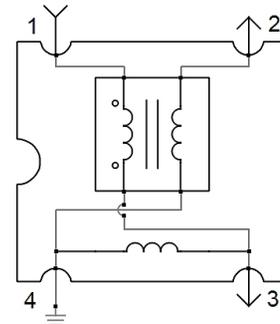
- Surface Mount
- 1:1 Impedance
- Available on Tape and Reel
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible
- Excellent Temperature Stability

### 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<sub>A</sub> = 25°C, Z<sub>0</sub> = 75 Ω, P<sub>IN</sub> = 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 Information<sup>1</sup>

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

1. All sample boards include 5 loose parts.

### Absolute Maximum Ratings<sup>2,3</sup>

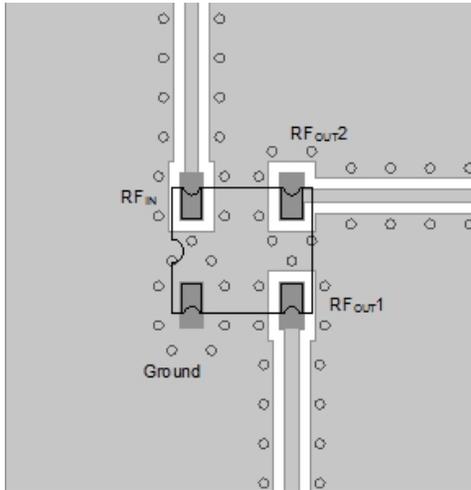
Parameter	Absolute Maximum
Input RF Power <sup>4</sup>	2000 mW
DC Current	1500 mA
Operating Temperature	-40°C to +125°C

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.

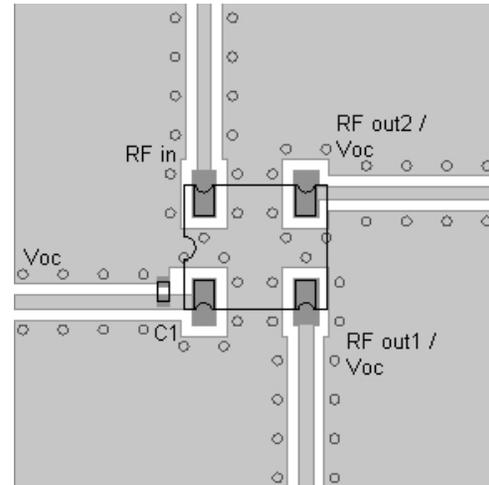
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Rev. V4

### Recommended PCB Layout<sup>5,6,7,8</sup>



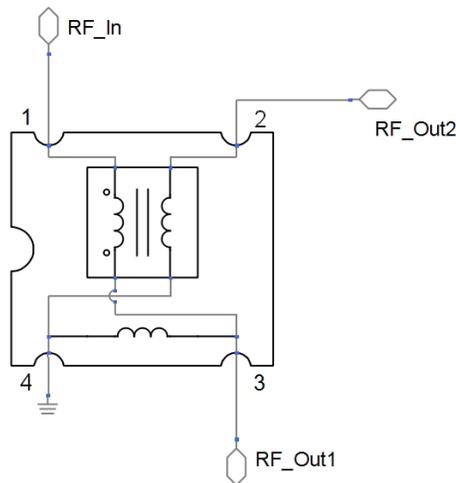
Layout Option 1 - no dc voltage on tertiary winding



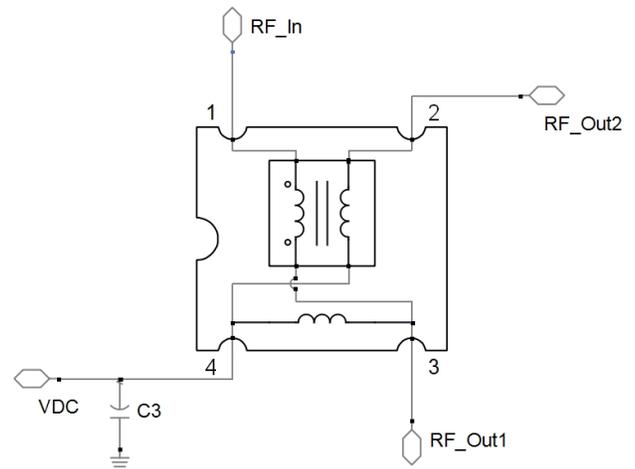
Layout Option 2 - dc voltage on tertiary winding

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

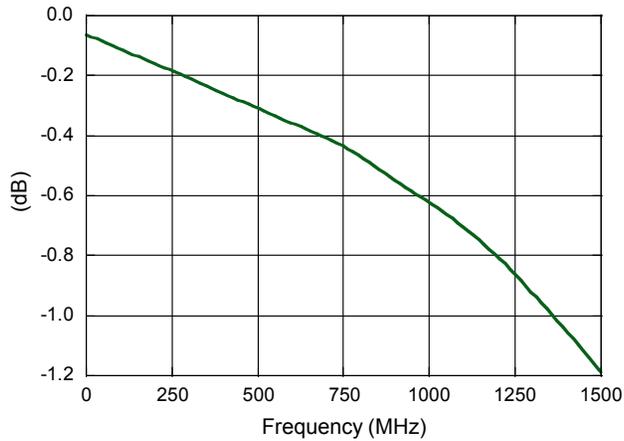
Component	Value	Package
C1	10 nF	0402

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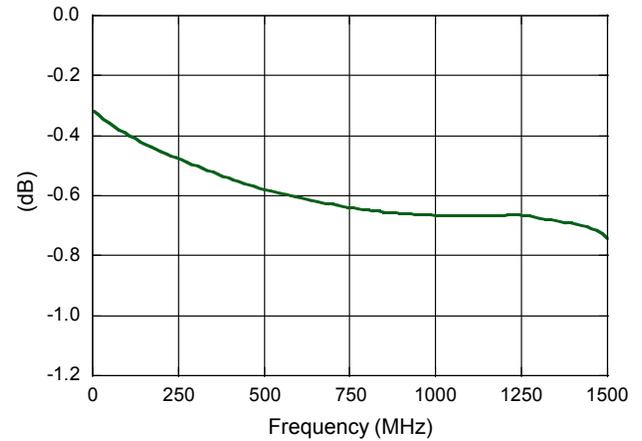
Rev. V4

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

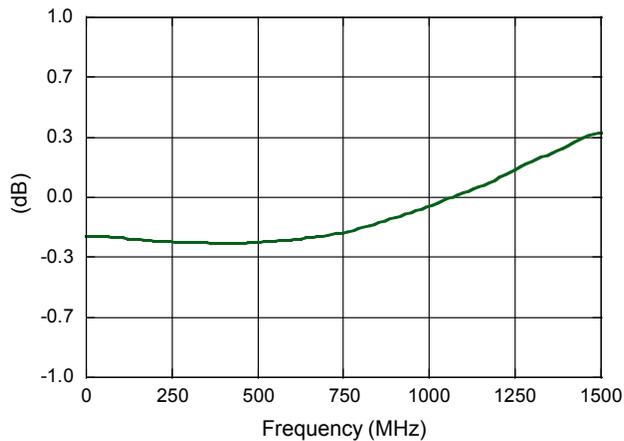
**Insertion Loss (pin 1-3)**



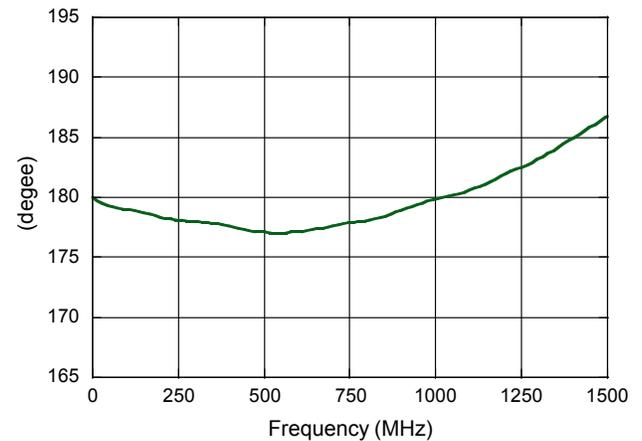
**Insertion Loss (pin 1-2)**



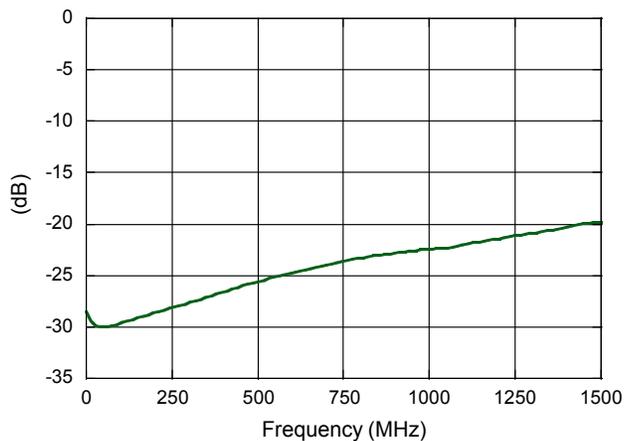
**Amplitude Balance**



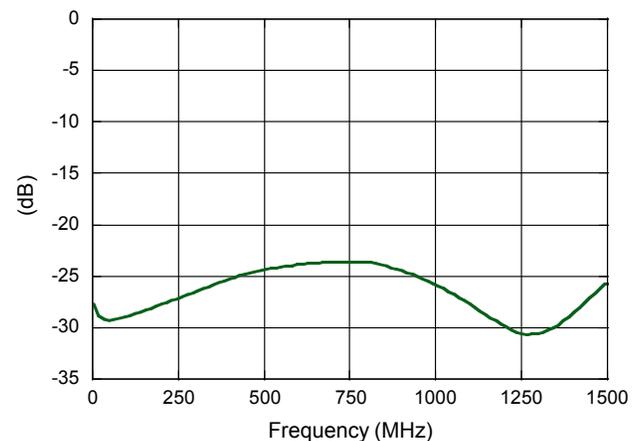
**Phase Balance**



**Input Return Loss (pin 1)**



**Balanced Output Return Loss**



3 Full temperature plots available on request.

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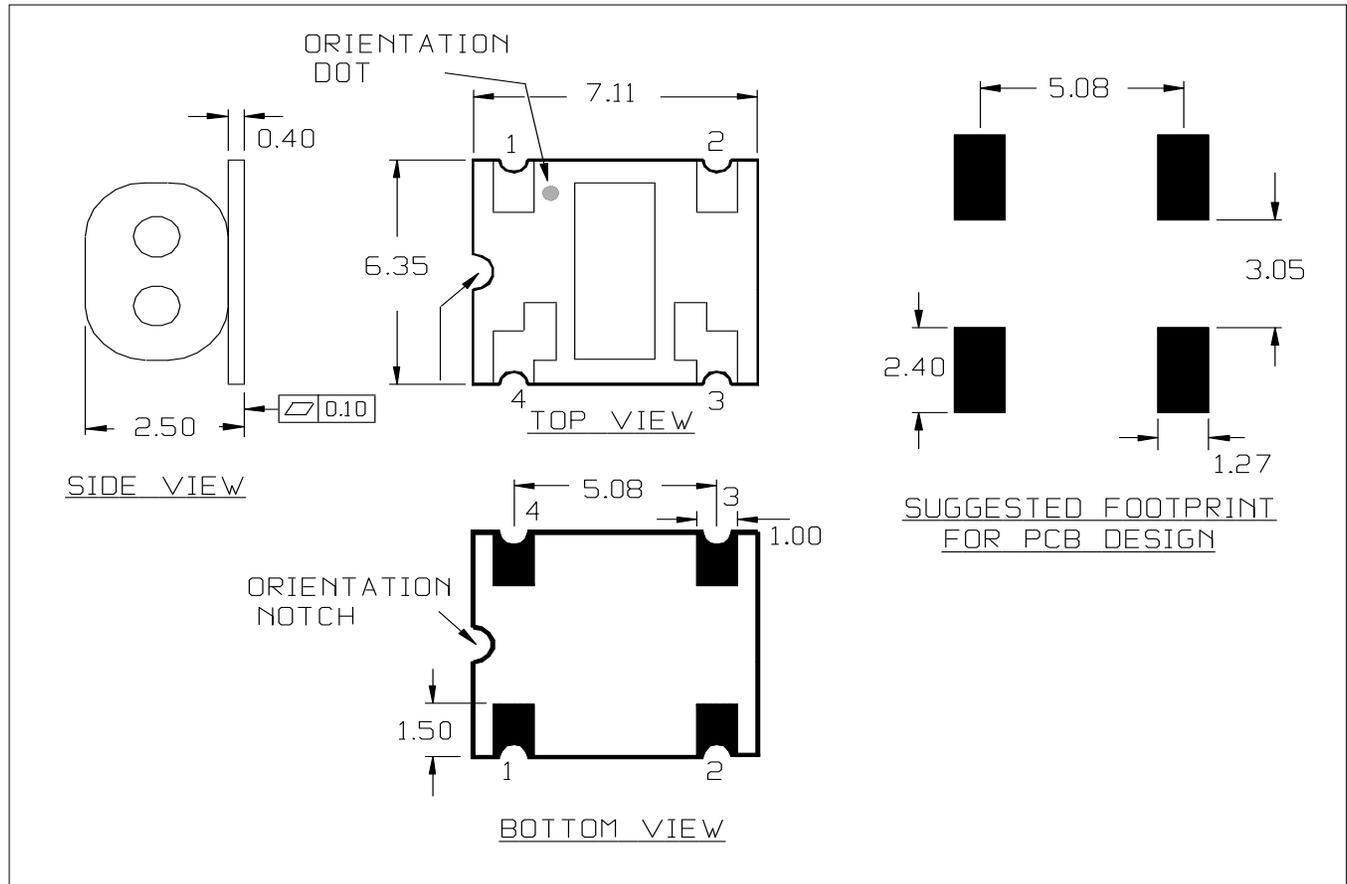
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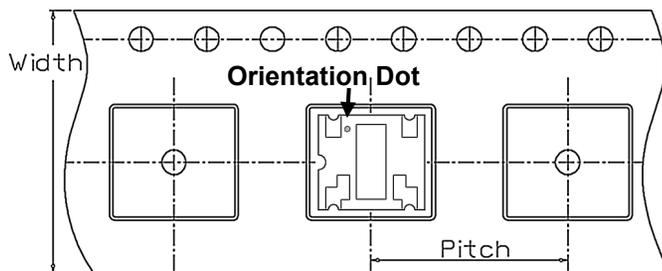
Rev. V4

### Part Outline Drawing<sup>9,10,11,12</sup>



- 9. Dimensions in mm
- 10. Tolerance:  $\pm 0.2$  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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