

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

Rev. V3

### Features

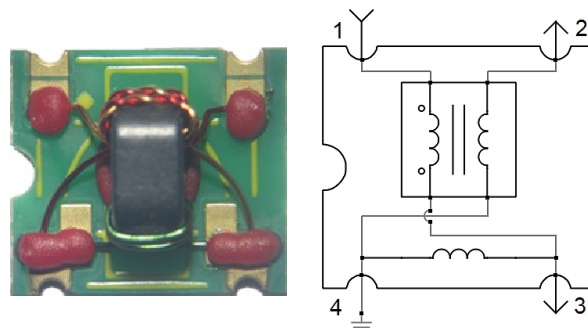
- Surface Mount
- 1:1 Impedance
- Available on Tape and Reel
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible
- Excellent Temperature Stability

### 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
1	Primary (input)
2	Secondary Dot (Output 2)
3	Secondary (Output 1)
4	Primary (ground)

### Electrical Specifications: Freq. = 5 - 1225 MHz, $T_A = 25^\circ\text{C}$ , $Z_0 = 75 \Omega$ , $P_{in} = 0 \text{ dBm}$

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

### Ordering Information<sup>1</sup>

Part Number	Description
MABA-011085-PPR	900 piece reel
MABA-011085-TB	sample board

1. All sample boards include 5 loose parts.

### Absolute Maximum Ratings

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

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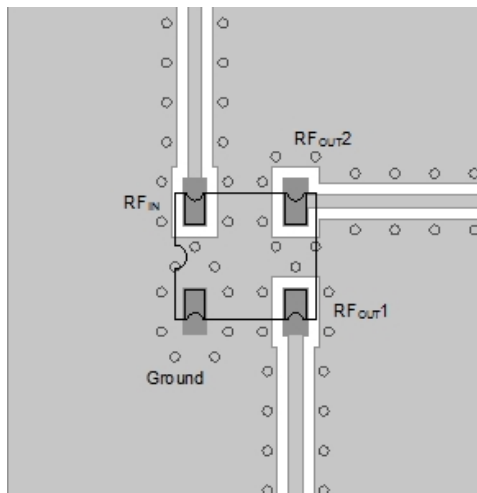
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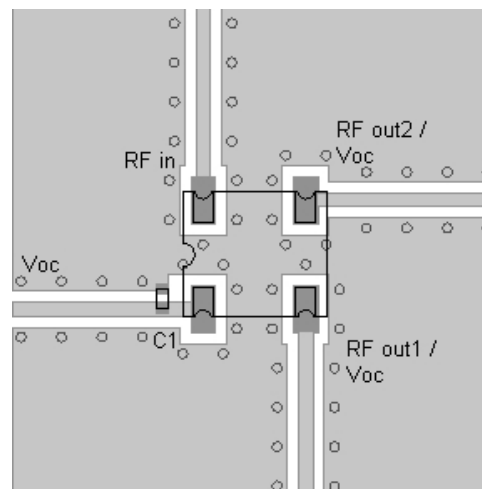
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### Recommended PCB Layout



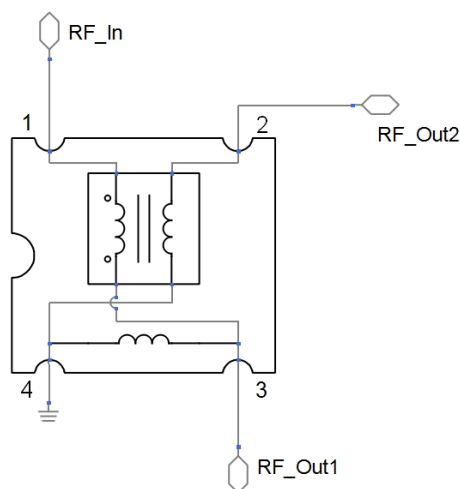
Layout Option 1 - no dc voltage on tertiary winding



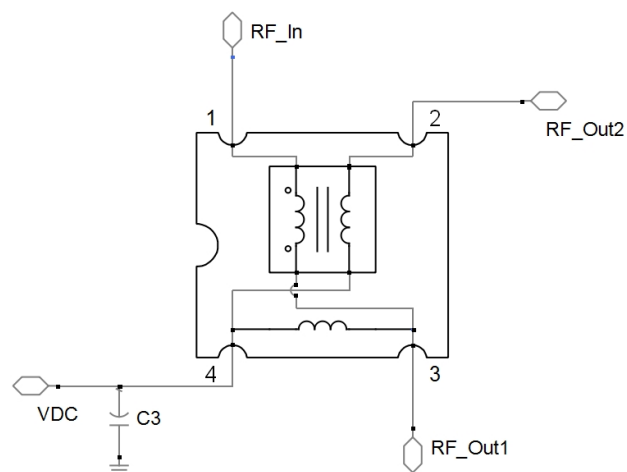
Layout Option 2 - dc voltage on tertiary winding

1. Recommended PCB layout shown above uses 1.6 mm FR4
2. Grounded coplanar wave guide transmission line
3. Trace width 0.70 mm
4. Gap 0.57 mm

### Application Schematics



Option 1 - no dc voltage on tertiary winding



Option 2 - dc voltage on tertiary winding

### Parts List

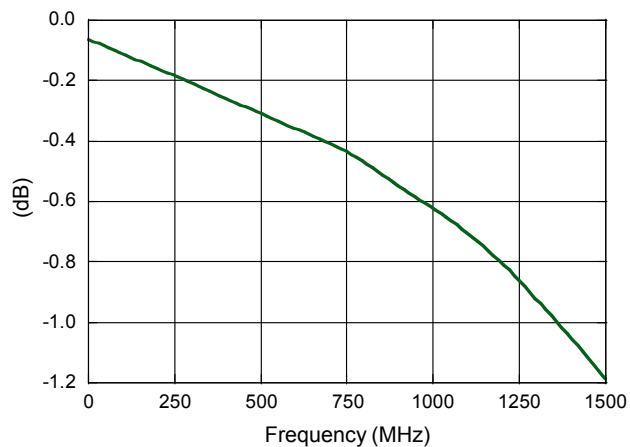
Component	Value	Package
C1	10 nF	0402

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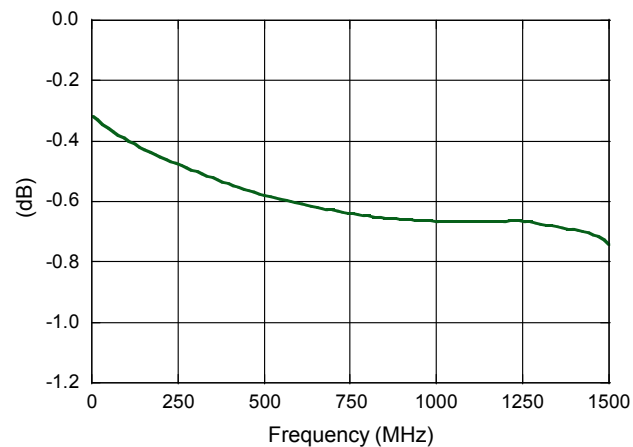
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Typical Performance Curves:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 75\ \Omega$ ,  $P_{IN} = 0\ \text{dBm}$

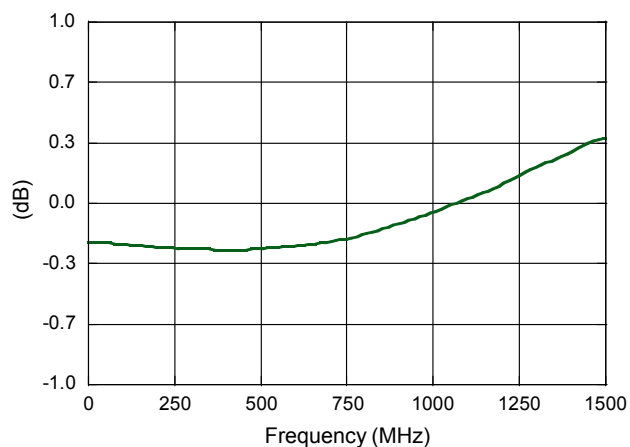
**Insertion Loss (pin 1-3)**



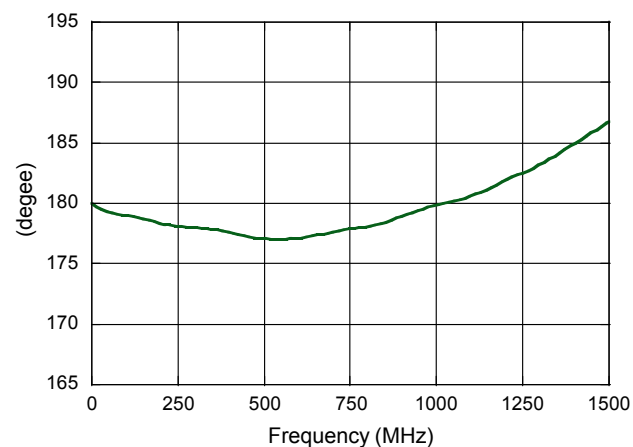
**Insertion Loss (pin 1-2)**



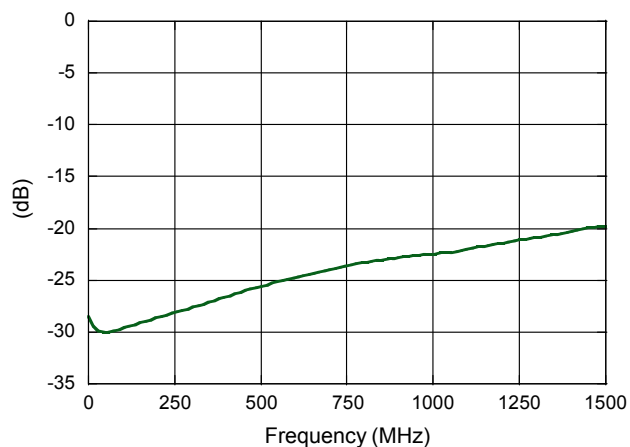
**Amplitude Balance**



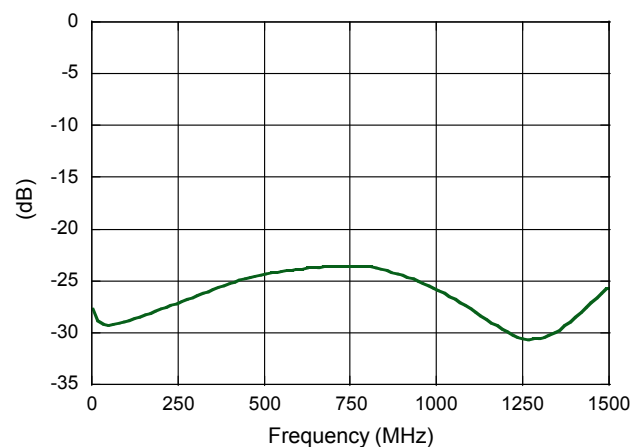
**Phase Balance**



**Input Return Loss (pin 1)**



**Balanced Output Return Loss**



3 Full temperature plots available on request.

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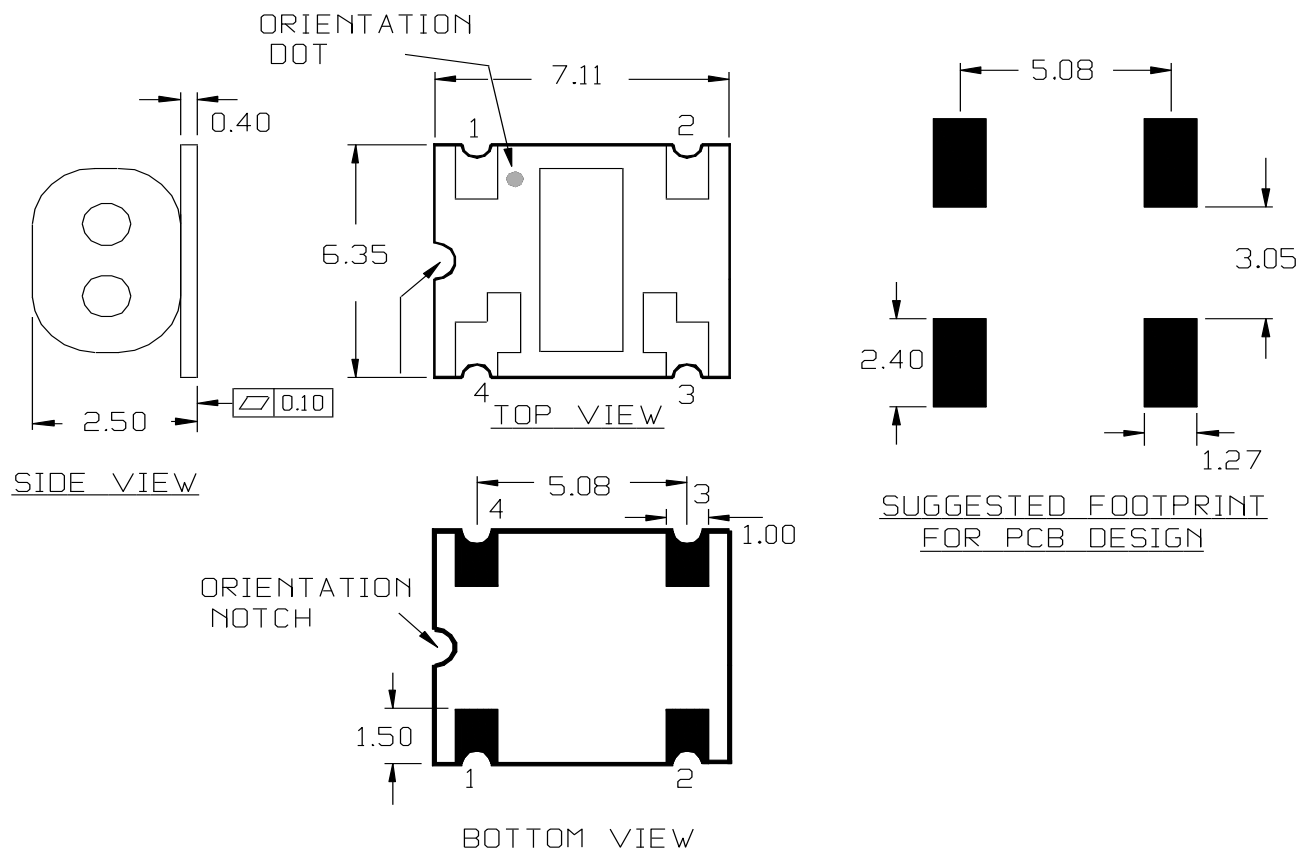
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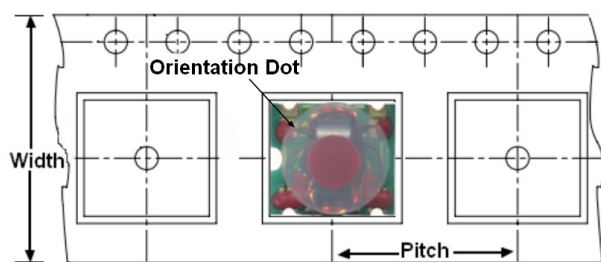
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### Part Outline Drawing



1. Dimensions in mm
2. Tolerance:  $\pm 0.2$  mm unless otherwise noted
3. Model number and lot code are printed on the reel
4. 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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