

## 1:1 Transmission Line Balun 5 MHz - 10GHz

Rev. V1

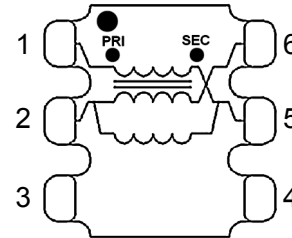
### Features

- Wide Bandwidth
- Low Insertion Loss
- Excellent Amplitude balance
- Small Surface Mount assembly
- Available on Tape and Reel
- RoHS\* Compliant and Lead Free
- 260°C Reflow Compatible

### Description

The MABA-011108 is a 1:1 balun transformer covering a very wide bandwidth. Appropriate for many applications including Cellular, Wideband Differential Amplifiers, Analog-to-digital Converters, Mixers, and Differential Modulators.

### Functional Schematic



### Pin Configuration<sup>3</sup>

Pin	Function	Pin	Function
1	Primary Dot (Input)	4	Not used (Ground)
2	Primary (Ground)	5	Secondary Dot (Output 2)
3	Not used (Ground)	6	Secondary (Output 1)

3. MACOM recommends connecting unused package pins to ground.

### Electrical Specifications: Freq. = 5 MHz - 10 GHz, T<sub>A</sub> = +25°C, Z<sub>0</sub> = 50 Ω, P<sub>IN</sub> = 0 dBm

Parameter	Test Conditions Frequency (MHz)	Units	Min	Typ	Max
Impedance Ratio	-	ratio	—	1:1	—
Balanced Insertion Loss	5 - 500	dB	—	1.7	1.9
	500 - 1000			1.5	1.6
	1000 - 6000			1.4	1.7
	6000 - 8000			1.4	2.9
	8000 - 10000			2.2	—
Amplitude Balance	5 - 3000	dB	—	0.0	±0.8
	3000 - 8000			1.5	±3.1
	8000 - 10000			2.0	—
Phase Balance	5 - 500	°	—	3	±8.0
	500 - 8000			14	±20
	8000 - 10000			5	—
Input Return Loss (Pin 1)	5 - 500	dB	13	17	—
	500 - 3000		10	15	
	3000 - 7000		6	15	
	7000 - 8000		5	9	
	8000 - 10000		—	7	
Output Return Loss (Pin 5-6)	5 - 5500	dB	9	14	—
	5500 - 8000		5	13	
	8000 - 10000		—	7	

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

Part Number	Description
MABA-011108	2000 piece reel
MABA-011108-TB	Sample Board

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

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

### Absolute Maximum Ratings<sup>4,5</sup>

Parameter	Absolute Maximum
Input RF Power	1 W, @ +25°C, 1 GHz
DC Current	1 A
Operating Temperature	-55°C to +85°C

4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

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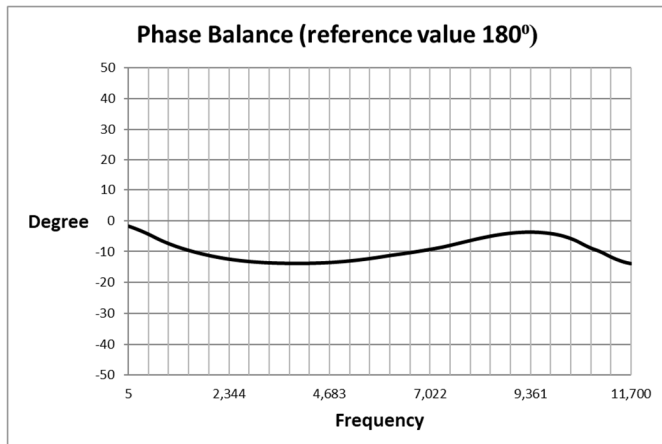
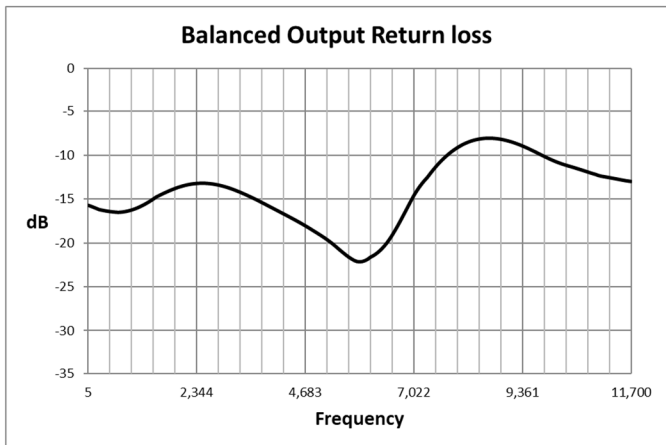
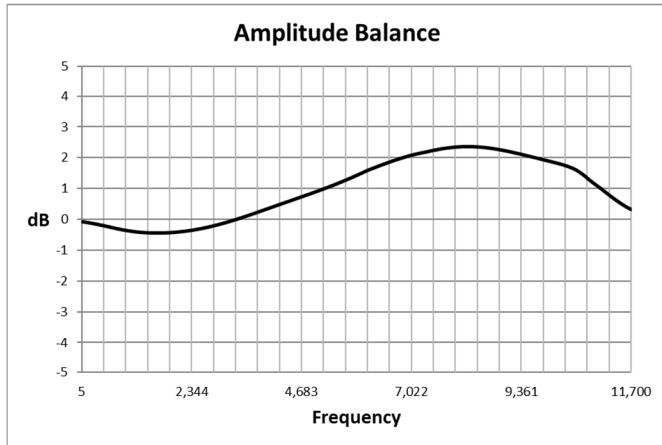
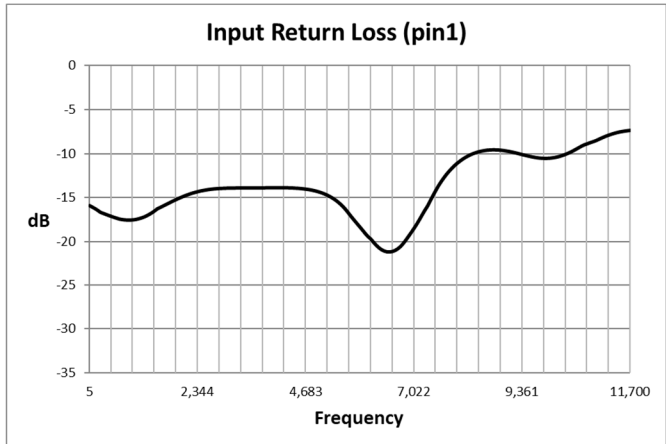
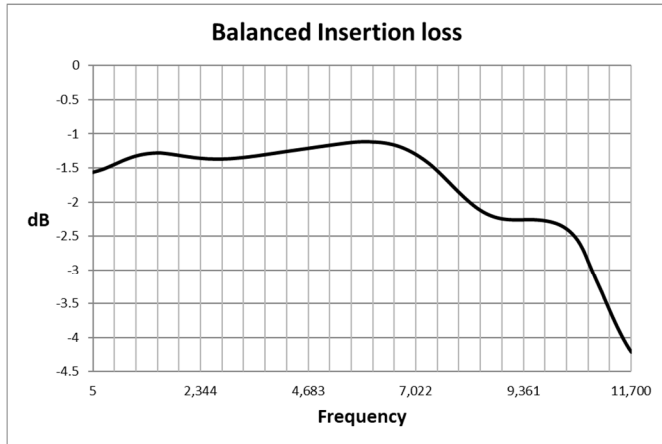
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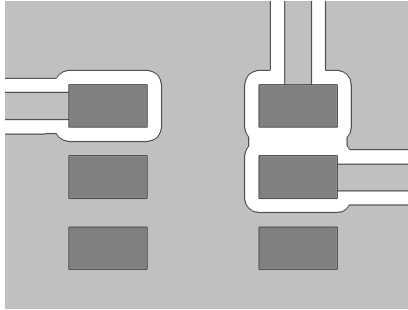
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Typical Performance Curves<sup>6</sup>: Freq. = 5 MHz - 10 GHz,  $T_A = +25^\circ\text{C}$ ,  $Z_0 = 50 \Omega$ ,  $P_{IN} = 0 \text{ dBm}$



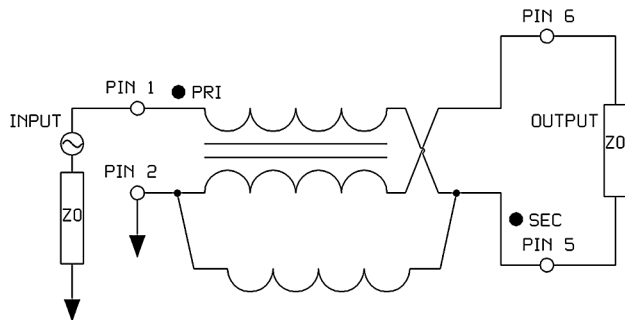
6. Temperature plots available on request.

## Recommended Board Layout<sup>7,8</sup>

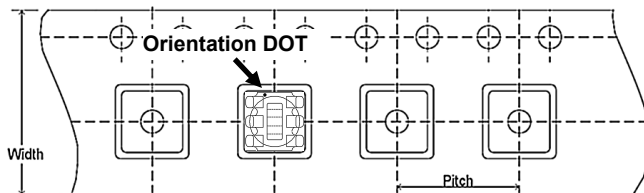


- 7. Recommended PCB layout shown above uses Rogers RO4350B substrate, thickness 0.254 mm.
- 8. Grounded coplanar wave guide trace, width 0.48 mm and Gap 0.25 mm.

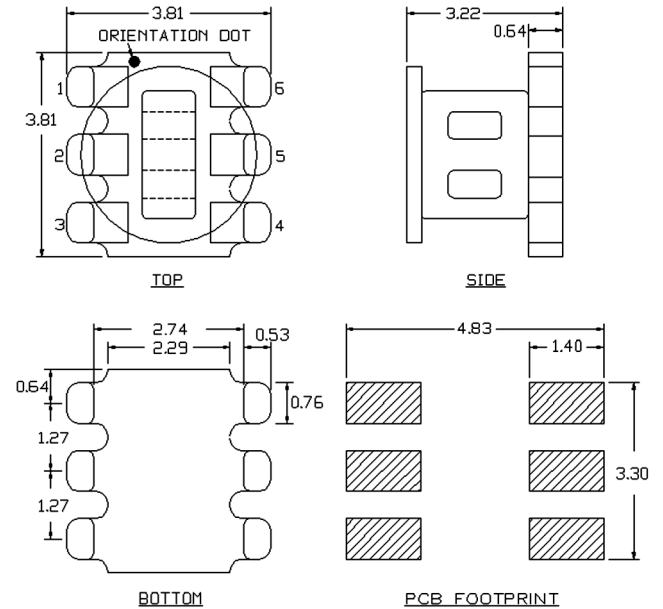
## Application Schematic



## Carrier Tape Orientation



## 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.

## Tape & Reel Information<sup>13</sup>

Parameter	Units	Value
Qty per Reel	-	2000
Reel Size	mm	330
Tape Width	mm	12.00
Pitch	mm	8.00
Orientation	-	F33

13. Reference Application Note ANI-019 for orientation.

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- Техническая поддержка проекта;
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