MABA-011108

1:1 Transmission Line Balun
5 MHz - 10GHz

Rev. V1

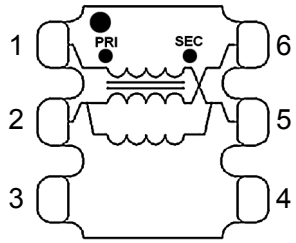
Features

- 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[3]

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_A = +25°C, Z_0 = 50 Ω, P_{IN} = 0 dBm

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

Ordering Information[1,2]

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.

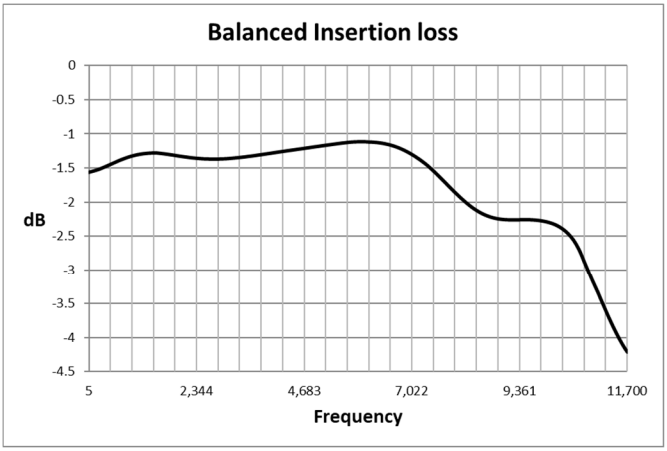
* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

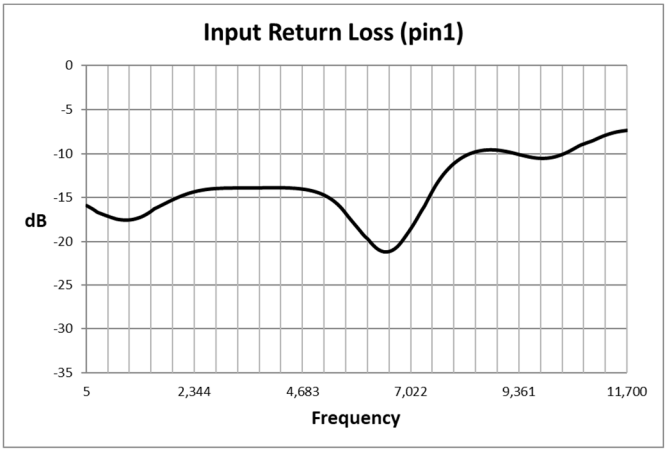
Absolute Maximum Ratings[4,5]

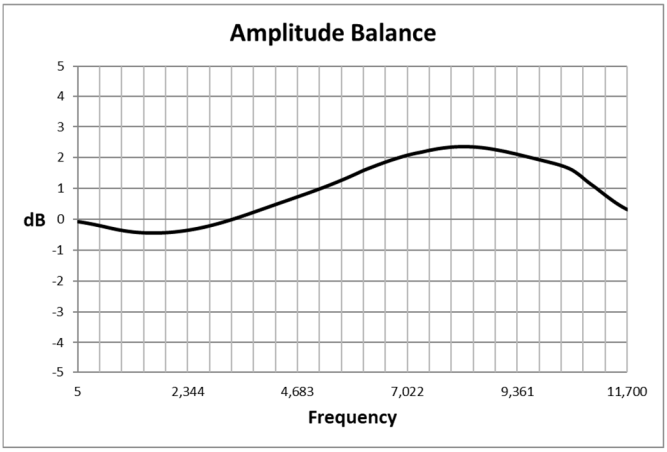
Parameter	Absolute Maximum
Input RF Power	1 W, @ +25°C, 1 GHz
DC Current	1 A
Operating Temperature	-55°C to +85°C

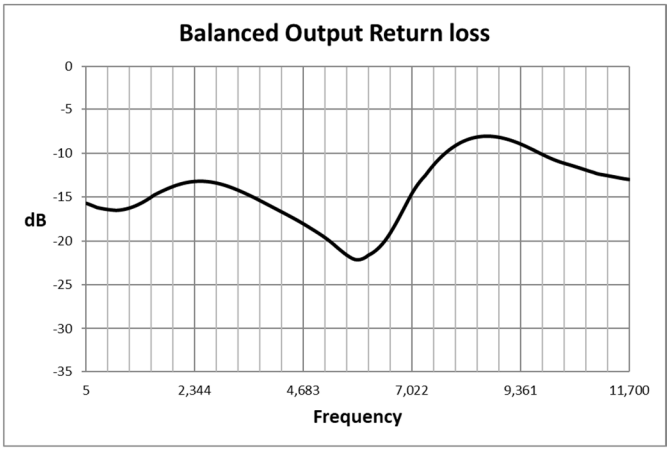
4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

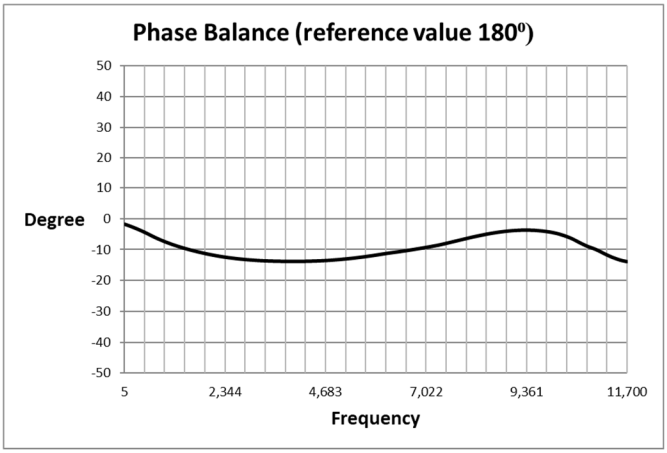
Typical Performance Curves[6]: Freq. = 5 MHz - 10 GHz, T_A = +25°C, Z_0 = 50 Ω, P_{IN} = 0 dBm





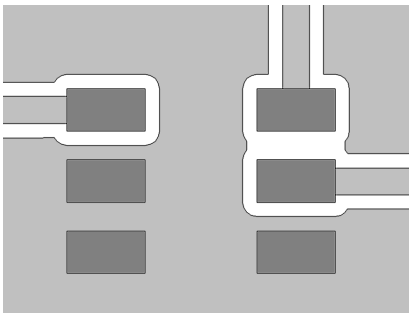






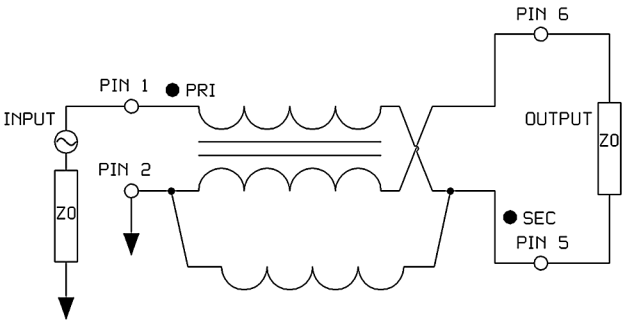
6. Temperature plots available on request.

Recommended Board Layout[7,8]

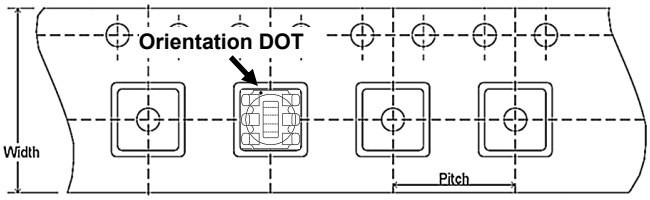


7. Recommended PCB layout shown above uses Rogers RO4350B substrate, thickness 0.254 mm.
8. Grounded coplanar wave guide trace, width 0.48 mm and Gap 0.25 mm.

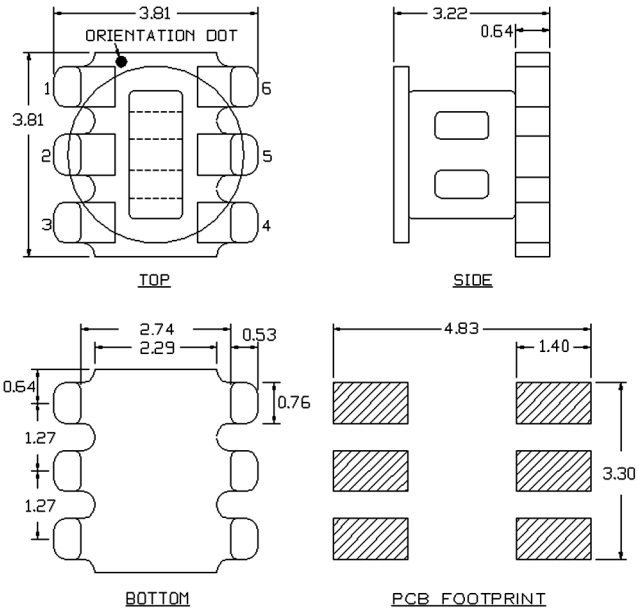
Application Schematic



Carrier Tape Orientation



Outline Drawing[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.

Tape & Reel Information[13]

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.