

1:2 Transmission Line Balun

0.01 - 10 GHz



MABA-011160

Rev. V1

Features

- Wide Bandwidth
- Suitable for all Telecommunication Bands
- Excellent RF Performance & Temperature Stability
- Surface Mount Package
- Available on Tape & Reel
- RoHS* Compliant

Applications

- CATV, Broadband

Description

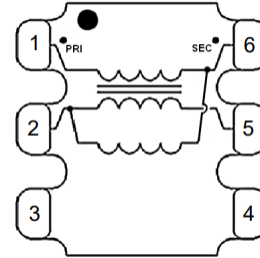
The MABA-011160 is a 1:2 balun transformer in a surface mount package. Ideally suited for 2G, 3G, 4G, LTE, WiFi, WiMax, wide band amplifiers, mixers & modulators.

Ordering Information^{1,2}

Part Number	Package
MABA-011160	500 piece reel
MABA-011060-TB	Sample Board

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

Functional Schematic



Pin Configuration³

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

3. MACOM recommends connecting unused package pins to ground.

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

1:2 Transmission Line Balun

0.01 - 10 GHz



MABA-011160

Rev. V1

Electrical Specifications: Freq. = 0.01 - 10 GHz, T_A = +25°C, Z₀ = 50 Ω, P_{IN} = 0 dBm

Parameter	Test Conditions Frequency (GHz)	Units	Min.	Typ.	Max.
Impedance Ratio	-	ratio	—	1:2	—
Balanced Insertion Loss	0.01 - 1.0	dB	—	1.8	2.6
	1.0 - 4.0			1.4	1.9
	4.0 - 7.0			1.6	2.3
	7.0 - 8.5			1.4	2.2
	8.5 - 10.0			2.1	—
Amplitude Balance	0.01 - 2.0	dB	—	0.3	±0.8
	2.0 - 4.0			1.0	±1.8
	4.0 - 8.5			1.3	±2.5
	8.5 - 10.0			0.9	—
Phase Balance	0.01 - 2.0	°	—	4	±8
	2.0 - 7.0			6	±17
	7.0 - 8.5			14	±23
	8.5 - 10.0			13	—
Input Return Loss (Pin 1)	0.01 - 4.0	dB	9	13	—
	4.0 - 7.0		7	11	
	7.0 - 8.5		7	16	
	8.5 - 10.0		—	9	
Output Return Loss (Pin 5 - Pin 6)	0.01 - 1.0	dB	6	7	—
	1.0 - 4.0		7	10	
	4.0 - 7.0		6	9	
	7.0 - 8.5		6	13	
	8.5 - 10.0		—	8	

Absolute Maximum Ratings^{4,5}

Parameter	Absolute Maximum
Input RF Power ⁶	1 W
DC Current	1 A
Operating Temperature	-40°C to +125°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.
6. Specified at +25°C only.

1:2 Transmission Line Balun

0.01 - 10 GHz

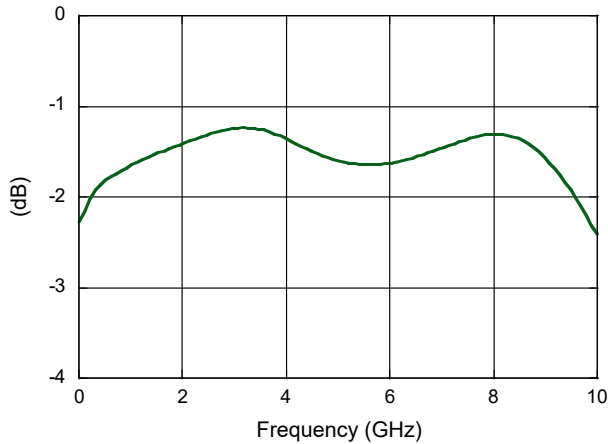


MABA-011160

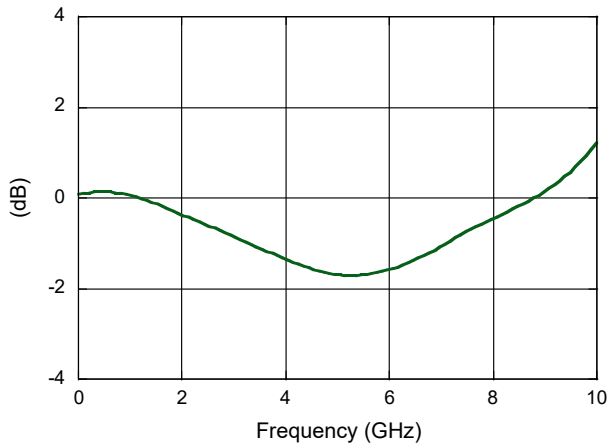
Rev. V1

Typical Performance Curves⁷

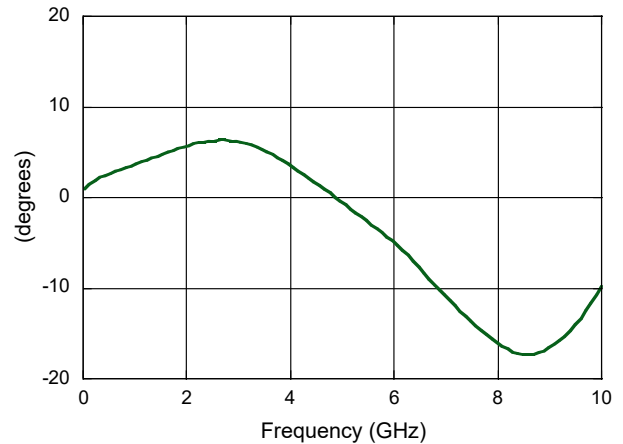
Balanced Insertion Loss



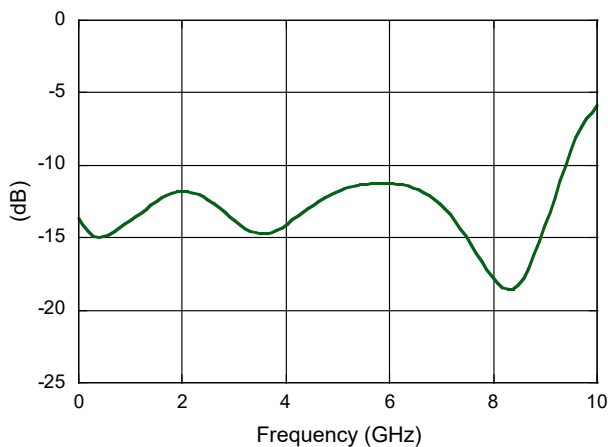
Amplitude Balance



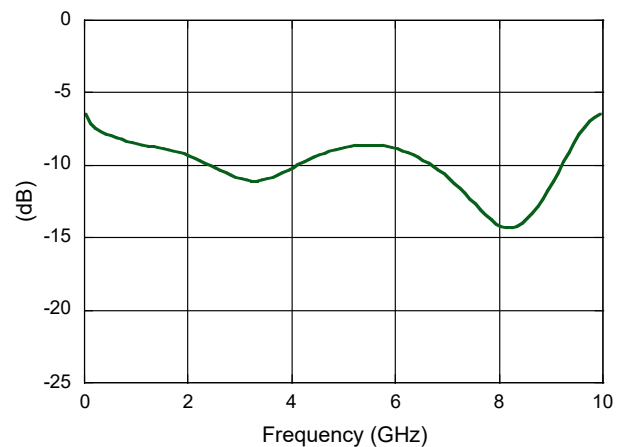
Phase Balance (ref level 180°)



Input Return Loss (pin 1)



Output Return Loss (pin 5-6)



1:2 Transmission Line Balun

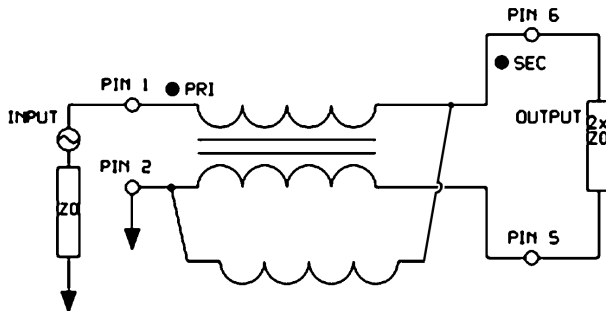
0.01 - 10 GHz



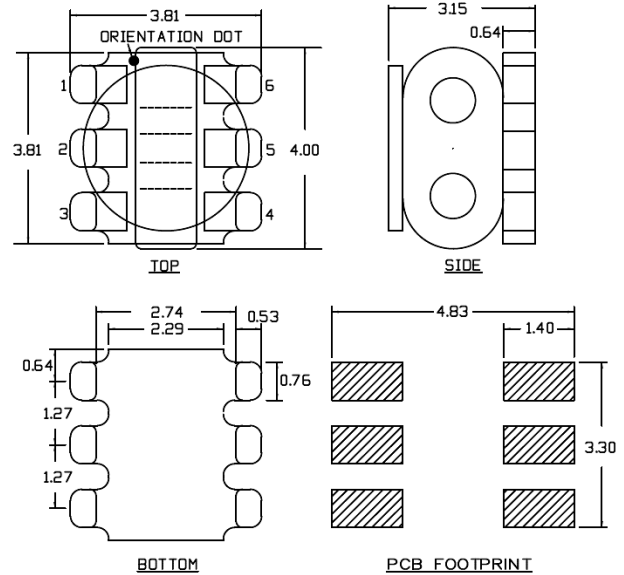
MABA-011160

Rev. V1

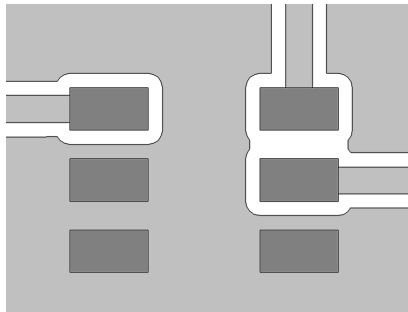
Application Schematic



Outline Drawing¹⁰⁻¹⁵



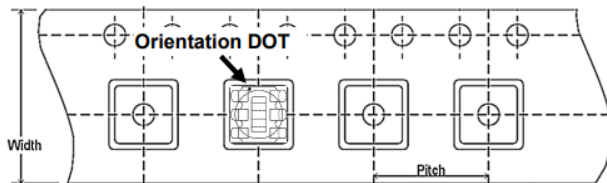
Recommended Board Layout^{8,9}



8. Recommended PCB layout shown above uses Rogers RO4350B substrate, thickness 0.254 mm.
9. Grounded coplanar wave guide trace, width 480 μ m and gap 250 μ m.

10. Dimensions in mm.
11. Tolerance: ± 0.2 mm unless otherwise noted.
12. Model number and lot code are printed on the reel.
13. Plating finish: ENIG.
14. Reference Application Note J-STD-020E for lead-free solder reflow recommendations.
15. Meets JEDEC moisture sensitivity level 1 requirements.

Carrier Tape Orientation



Tape & Reel Information¹⁶

Parameter	Units	Value
Qty per Reel	-	500
Reel Size	mm	330
Tape Width	mm	12.00
Pitch	mm	8.00
Orientation	-	F33

16. Reference Application Note ANI-019 for orientation.

Rev	Date	Change Description
V1	2023-December-22	Production Release

1:2 Transmission Line Balun

0.01 - 10 GHz



MABA-011160

Rev. V1

MACOM Technology Solutions Inc. ("MACOM"). All rights reserved.

These materials are provided in connection with MACOM's products as a service to its customers and may be used for informational purposes only. Except as provided in its Terms and Conditions of Sale or any separate agreement, MACOM assumes no liability or responsibility whatsoever, including for (i) errors or omissions in these materials; (ii) failure to update these materials; or (iii) conflicts or incompatibilities arising from future changes to specifications and product descriptions, which MACOM may make at any time, without notice. These materials grant no license, express or implied, to any intellectual property rights.

THESE MATERIALS ARE PROVIDED "AS IS" WITH NO WARRANTY OR LIABILITY, EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT, ACCURACY OR COMPLETENESS, OR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.