

1:1 Transmission Line Balun Transformer 5 - 1200 MHz

Rev. V5

Features

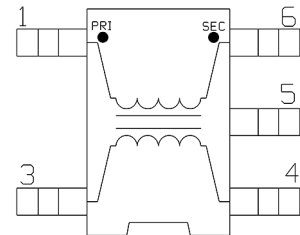
- 1:1 Impedance Ratio
- Surface Mount Package
- Excellent Amplitude and Phase Balance
- Can be used in both 50 Ω & 75 Ω Systems
- 260°C Reflow Compatible
- RoHS Compliant
- Available on Tape & Reel

Description

The MABACT0043 is a 1:1 transmission line transformer in a surface mount package.

Ideally suited for broadband CATV applications.

Schematic



Pin Configuration

Pin #	Function
1	Primary Dot (input)
3	Primary (ground)
4	Secondary (output 2)
5	Not used (ground)
6	Secondary Dot (output 1)

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

Parameter	Frequency Test Condition (MHz)	Units	Min.	Typ.	Max.
Insertion Loss	5 - 700	dB	—	0.56	0.70
	700 - 870			0.51	1.10
	870 - 1000			0.55	1.50
	1000 - 1200			0.79	2.40
Amplitude Unbalance	5 - 870	dB	—	± 0.33	± 1.0
	870 - 1200			± 0.47	± 1.3
Phase Unbalance	5 - 450	°	—	1.6	± 5
	450 - 1200			4.2	± 7
Input Return Loss	5 - 90	dB	30	38	—
	90 - 550		15	22	
	550 - 1200		5	11	

Ordering Information^{1,2}

Part #	Description
MABACT0043	2000 piece reel
MABACT0043-TB	Customer Test Board

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

Recommended Maximum Ratings³

Parameter	Value
Input Power	+24 dBm (250 mW)
DC Current	40 mA
Operating Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C

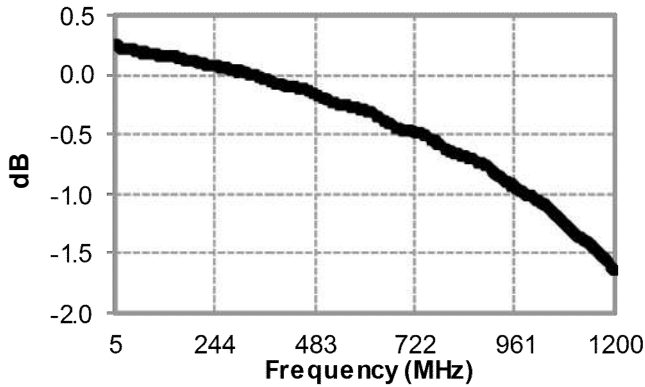
3. Exceeding any one or combination of these limits may cause permanent damage to this device.

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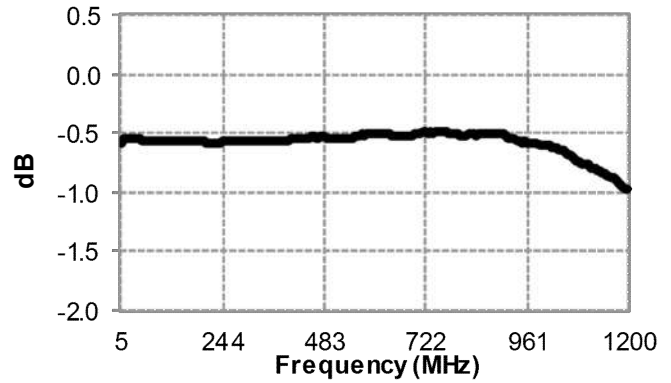
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Typical Performance Curves: $T_A = 25^\circ\text{C}$, $Z_0 = 75 \Omega$, $P_{IN} = 0 \text{ dBm}^4$

Insertion Loss 1: (Pin 1 to 6)



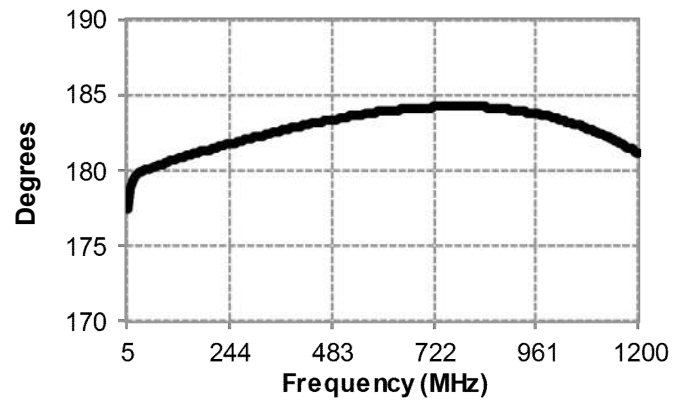
Insertion Loss 2: (Pin 1 to 4)



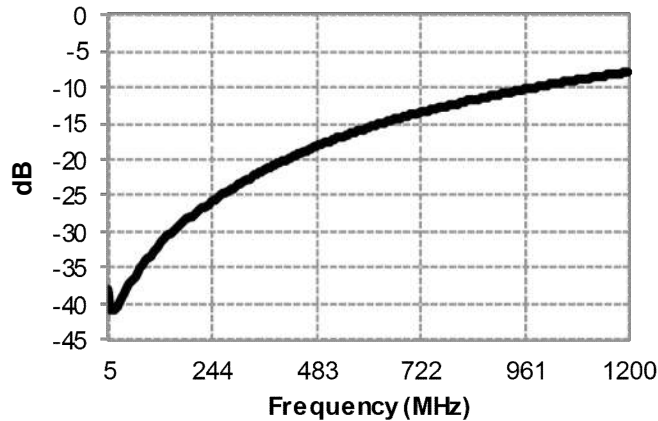
Amplitude Balance



Phase Balance



Return Loss: Input

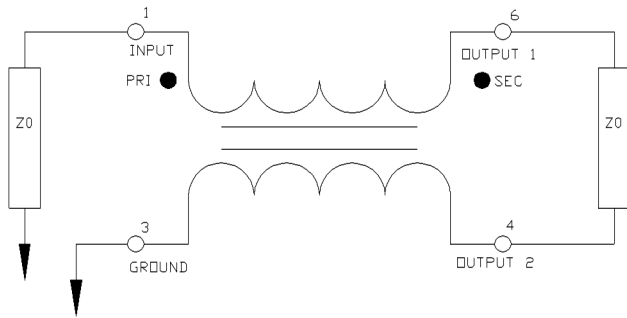


4. Temperature plots available on request.

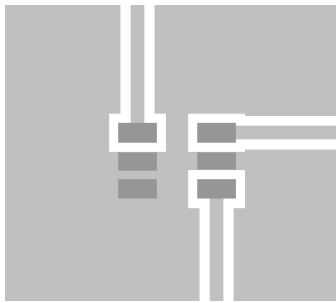
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Application Circuit

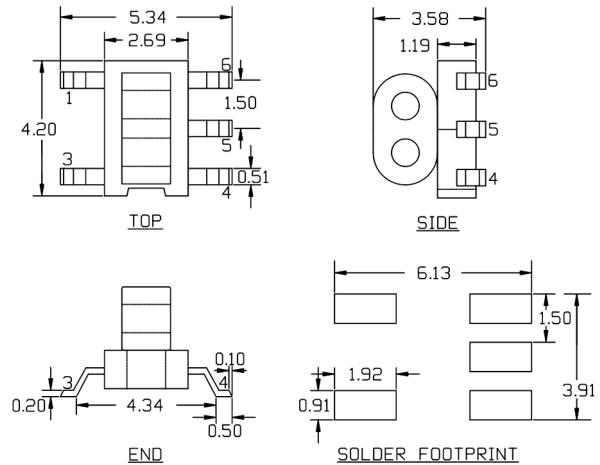


Recommended Board Layout⁵



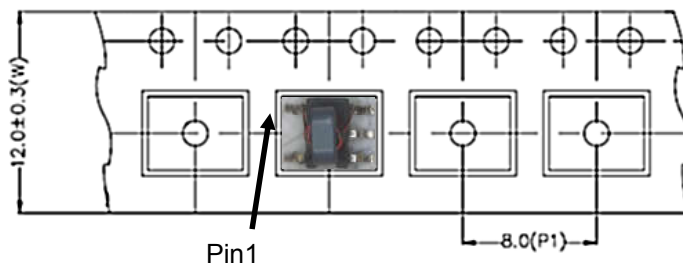
5. Recommended PCB layout shown above uses 1.6 mm FR4, Grounded coplanar wave guide, transmission line width 0.70 mm and gap 0.57 mm.

Outline Drawing^{6,7,8,9}



- 6. Dimensions in mm.
- 7. Tolerance: ± 0.2 mm unless otherwise noted.
- 8. Model number and lot code are printed on the reel.
- 9. Finish: Pin material CuSn6.

Reel Orientation



Tape & Reel Information

Item	Dimension
W	12.0 mm, +/-0.3 mm
P1	8.0 mm, +/-0.1 mm

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