

## 1:4 Transmission Line Balun Transformer 5 - 1200 MHz

Rev. V5

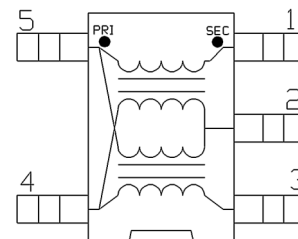
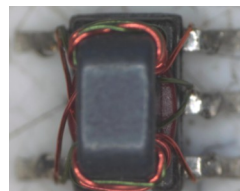
### Features

- 1:4 Impedance Ratio
- Surface Mount Package
- Excellent Temperature Stability
- Excellent Amplitude & Phase Balance
- Can be used in both 50  $\Omega$  & 75  $\Omega$  Systems
- 260°C Reflow Compatible
- RoHS\* Compliant & Lead Free
- Available on Tape & Reel

### Description

The MABA-010129-CT4A40 is a 1:4 RF transmission line transformer in a surface mount package. Ideally suited for broadband CATV applications.

### Schematic



### Pin Configuration

Pin #	Function
1	Secondary Dot
2	Secondary Centre Tap
3	Secondary
4	Primary
5	Primary Dot

### Electrical Specifications: $T_A = 25^\circ\text{C}$ , $Z_0 = 50 \Omega$ , $P_{IN} = 0 \text{ dBm}$

Parameter	Frequency Test Condition (MHz)	Units	Min.	Typ.	Max.
Insertion Loss 1 (Pin 4 to Pin 1)	5 - 50	dB	—	0.5	0.7
	50 - 879			0.7	1.5
	879 - 1200			1.2	2.0
Insertion Loss 2 (Pin 4 to Pin 3)	5 - 50	dB	—	0.5	0.7
	50 - 879			0.6	1.2
	879 - 1200			0.8	1.6
Amplitude Balance (Nominal 0 dB)	5 - 500	dB	—	0.05	$\pm 0.6$
	500 - 1200			0.23	$\pm 2.1$
Phase Balance (Nominal 180°)	5 - 500	°	—	1.4	$\pm 6$
	500 - 1000			2.8	$\pm 8$
	1000 - 1200			0.2	$\pm 22$
Input Return Loss (Pin 4)	5 - 50	dB	20	25	—
	50 - 500		15	23	
	500 - 1200		11	16	

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

Part #	Description
MABA-010129-CT4A40	2000 piece reel
MABA-010129-CT4ATB	Customer test board

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

### Recommended Maximum Ratings<sup>3</sup>

Parameter	Value
Input power	>28 dBm (631 mW)
DC Current, (tested @ 5 V)	>600 mA
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C

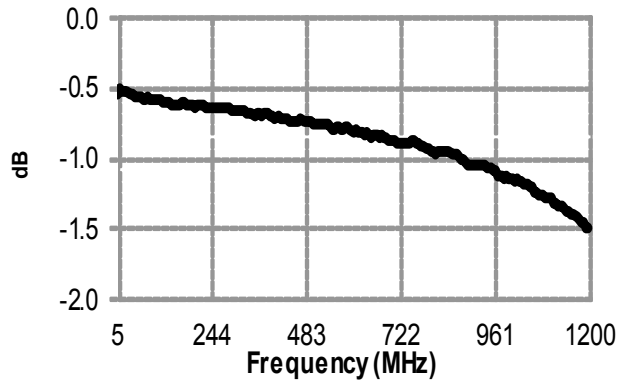
3. Exceeding any one or combination of these limits may cause permanent damage to this device.

## 1:4 Transmission Line Balun Transformer 5 - 1200 MHz

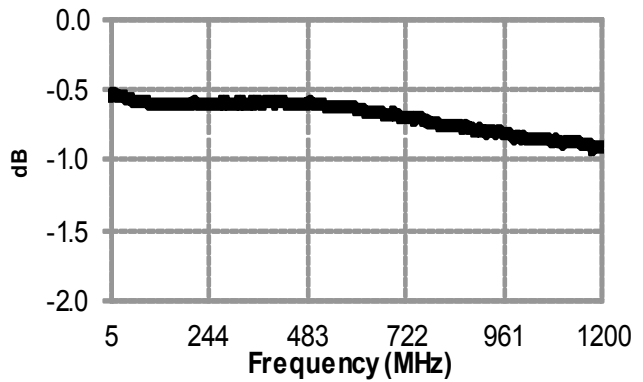
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Typical Performance Curves:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50 \Omega$ ,  $P_{IN} = 0 \text{ dBm}^4$

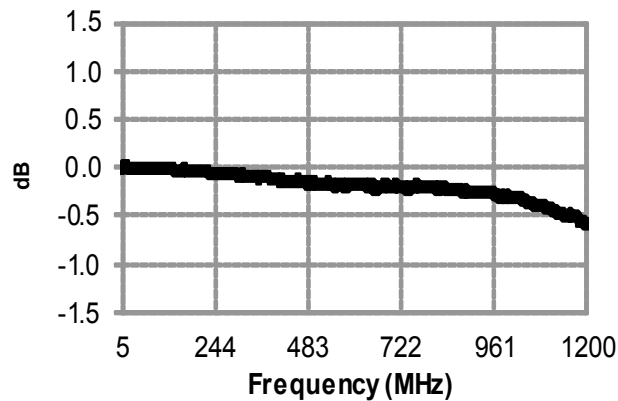
**Insertion Loss 1: (Pin 4 to 1)**



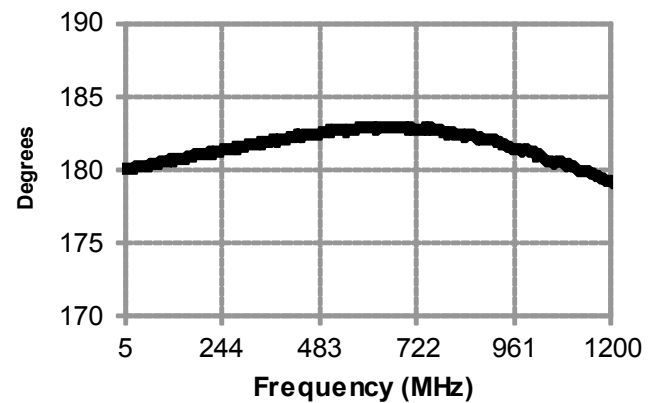
**Insertion Loss 2: (Pin 4 to 3)**



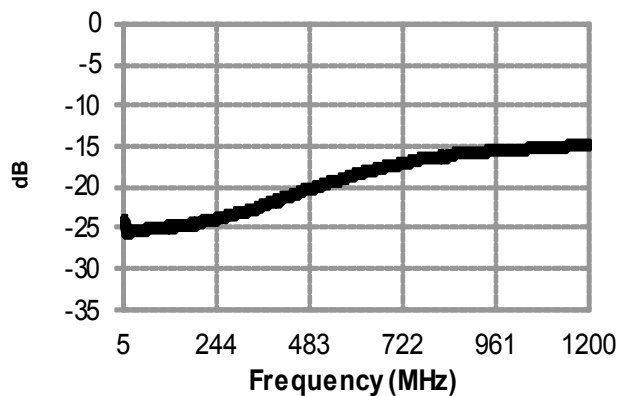
**Amplitude Balance**



**Phase Balance**



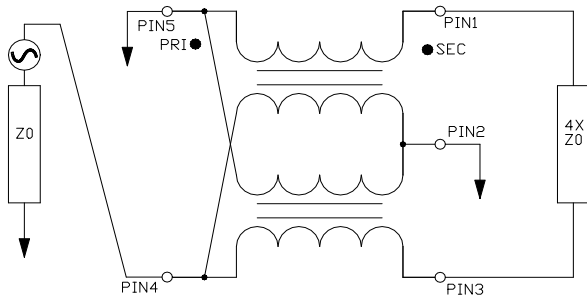
**Return Loss: Input (Pin 4)**



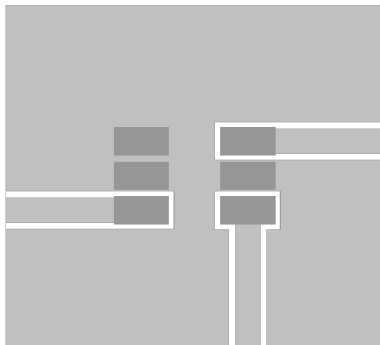
2 4. Temperature plots available on request.

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## Application Circuit

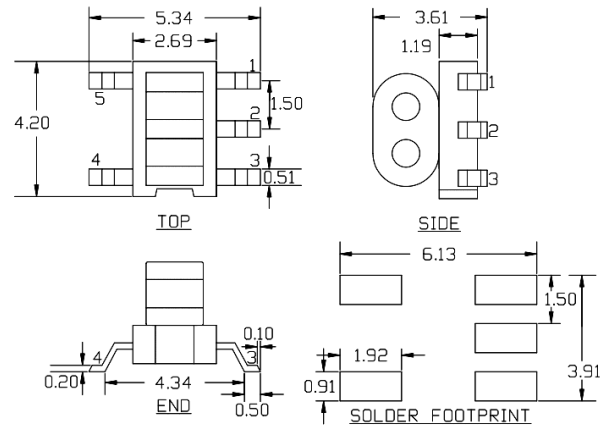


## Recommended Board Layout<sup>5</sup>



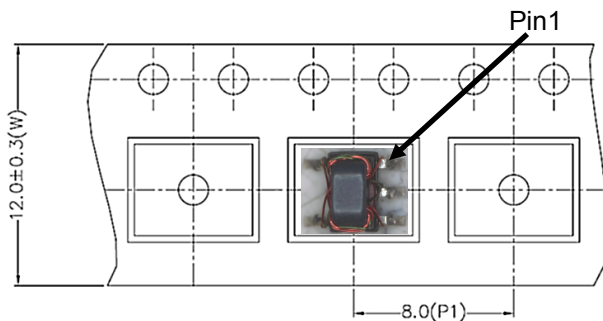
5. Recommended PCB layout shown above uses 1.6 mm FR4, Grounded coplanar wave guide, transmission line width 0.70 mm and gap 0.57 mm.

## Outline Drawing<sup>6,7,8,9</sup>



- 6. Dimensions in mm
- 7. Tolerance:  $\pm 0.2$ 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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