

## 1:1 Transmission Line Transformer 5 - 3000 MHz

V6

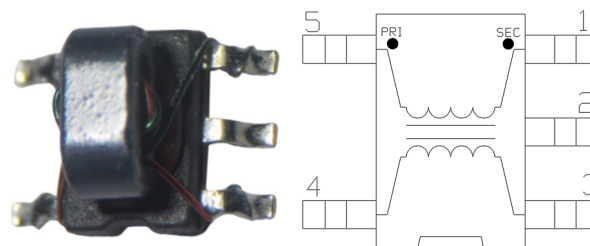
### Features

- Surface Mount
- 1:1 Impedance
- Available on Tape and Reel
- RoHS Compliant
- 260°C Reflow Compatible

### Description

MABACT0039 is a 1:1 transmission line transformer in a surface mount package. Suitable for use in both 50  $\Omega$  and 75  $\Omega$  systems. Ideally suited for high volume CATV/Broadband applications.

### Functional Schematic



### Pin Configuration

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

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

Parameter	Conditions	Units	Min.	Typ.	Max.
Impedance Ratio	5 - 3000 MHz	ratio	—	1:1	—
Insertion Loss	50 - 2150 MHz 5 - 3000 MHz	dB	—	1.0 1.5	2.0 3.5
Amplitude Balance	50 - 2150 MHz	dB	—	1.0	$\pm 2.2$
Phase Balance	50 - 2150 MHz	$^\circ$	—	5.0	$\pm 13$
Input Return Loss	5 - 550 MHz 550 - 2100 MHz	dB	20 8	30 15	—

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

Part Number	Description
MABACT0039	2000 piece reel
MABA-008031-CT39TB	Sample Board

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

### Absolute Maximum Ratings<sup>3,4</sup>

Parameter	Absolute Maximum
RF Input Power	250 mW
DC Current	30 mA
Operating Temperature	-40°C to +85°C

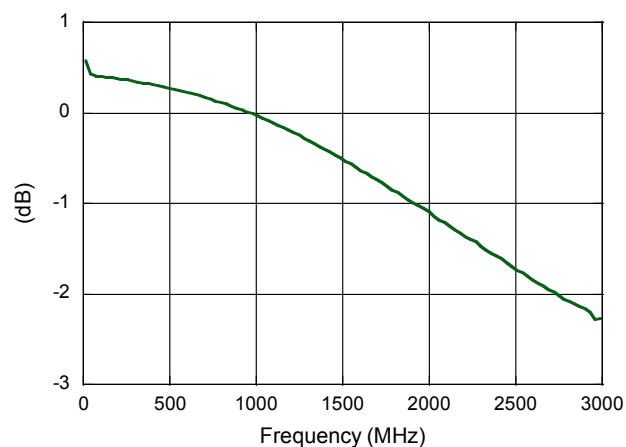
3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.

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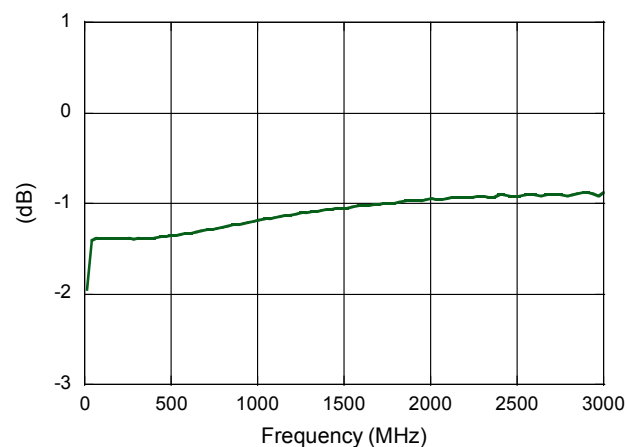
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Typical Performance Curves<sup>5</sup>:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 75\ \Omega$ ,  $P_{IN} = 0\ \text{dBm}$

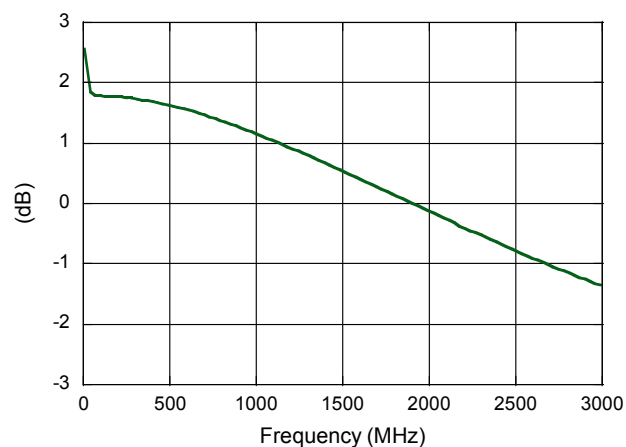
**Insertion Loss 1**  
*Pin 5-1 (through)*



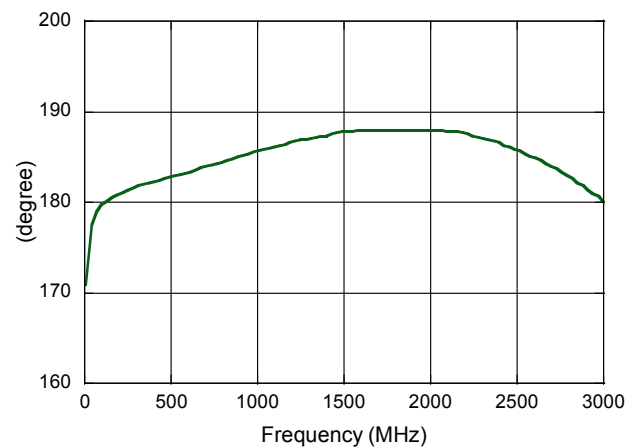
**Insertion Loss 2**  
*Pin 5-3 (coupled)*



**Amplitude Balance**



**Phase Balance**

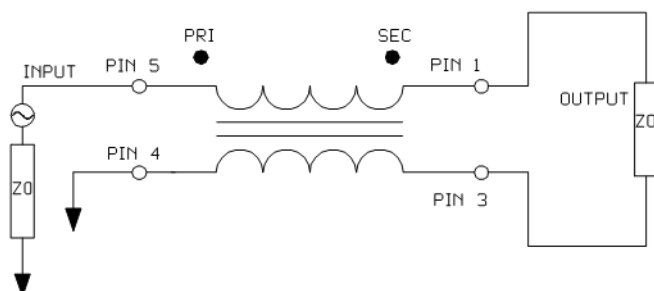


5. Full temperature plots available on request

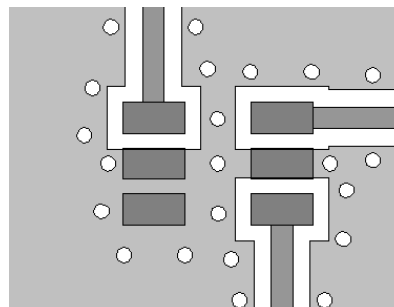
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### Application Schematic

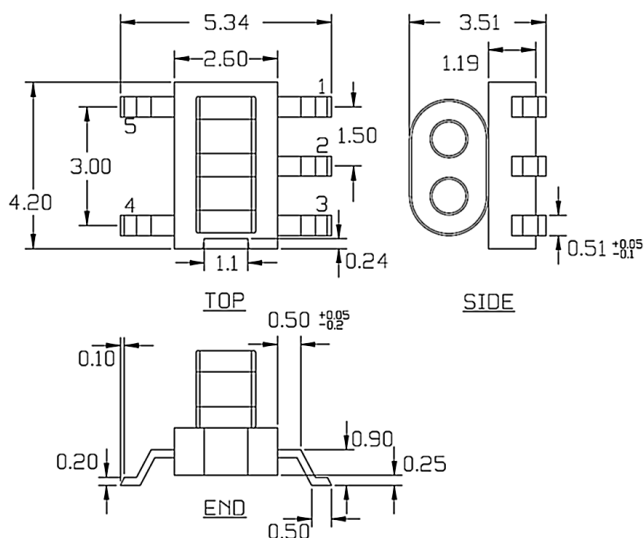


### PCB Layout<sup>10</sup>



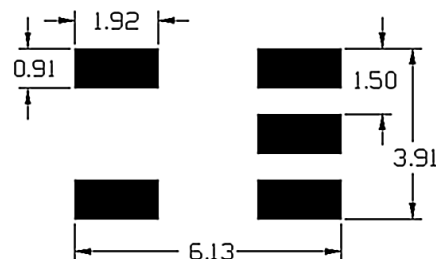
10. Recommended PCB layout shown above uses 1.6 mm FR4, grounded coplanar wave guide, transmission line width 0.70 mm and gap 0.57 mm.

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



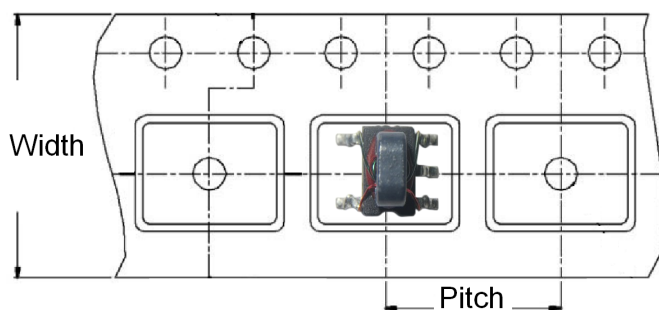
- 6. Dimensions in mm.
- 7. Tolerance:  $\pm 0.2$  mm unless otherwise noted.
- 8. Model number and lot code printed on reel.
- 9. Lead plating (CuSn6) Lead finish SAC-305.

### Recommended Board Layout<sup>11</sup>



11. Dimensions in mm.

### Tape & Reel Orientation



### Tape & Reel Information

Parameter	Units	Value
Qty per reel	-	2000
Reel Size	mm	330
Tape Width	mm	12.0
Pitch	mm	8.0
Orientation	-	F26
Reference Application Note ANI-019 for orientation		

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