

1:1 Transmission Line Transformer 5 - 3000 MHz

V6

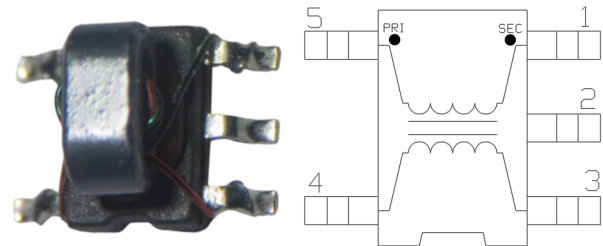
Features

- 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 Ω and 75 Ω 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	dB	—	1.0	2.0
	5 - 3000 MHz			1.5	3.5
Amplitude Balance	50 - 2150 MHz	dB	—	1.0	± 2.2
Phase Balance	50 - 2150 MHz	$^\circ$	—	5.0	± 13
Input Return Loss	5 - 550 MHz	dB	20	30	—
	550 - 2100 MHz		8	15	

Ordering Information^{1,2}

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^{3,4}

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

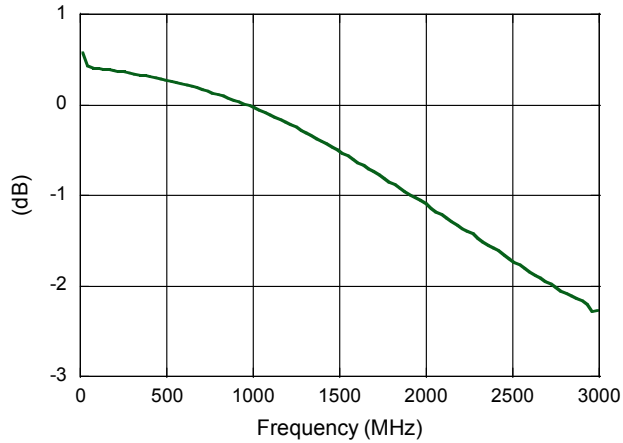
3. Exceeding any one or combination of these limits may cause permanent damage to this device.
4. MACOM does not recommend sustained operation near these survivability limits.

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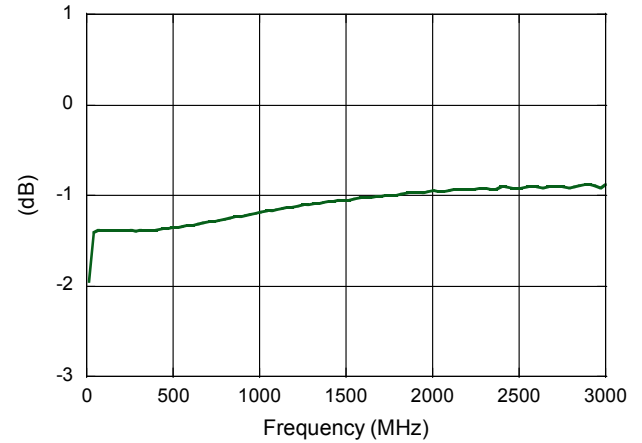
V6

Typical Performance Curves⁵: $T_A = 25^\circ\text{C}$, $Z_0 = 75 \Omega$, $P_{IN} = 0 \text{ dBm}$

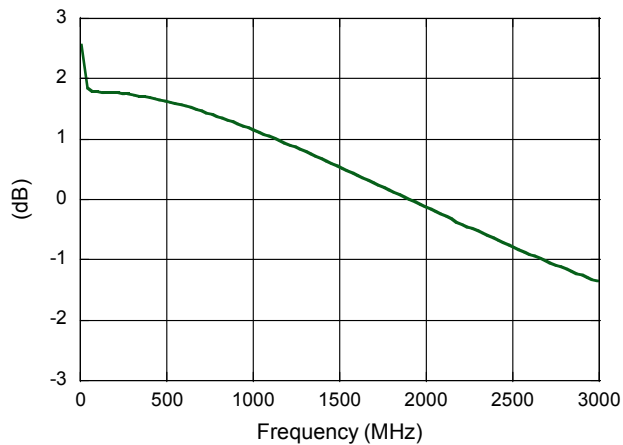
Insertion Loss 1
Pin 5-1 (through)



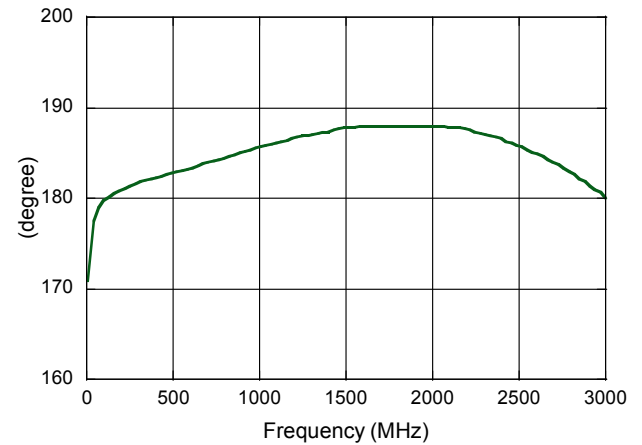
Insertion Loss 2
Pin 5-3 (coupled)



Amplitude Balance



Phase Balance

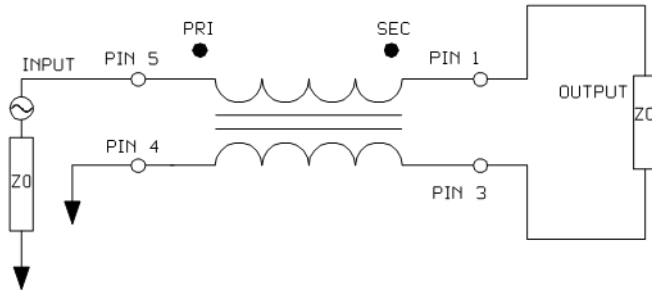


5. Full temperature plots available on request

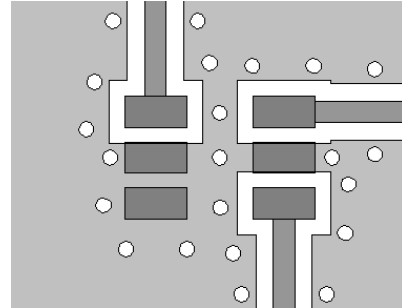
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Application Schematic

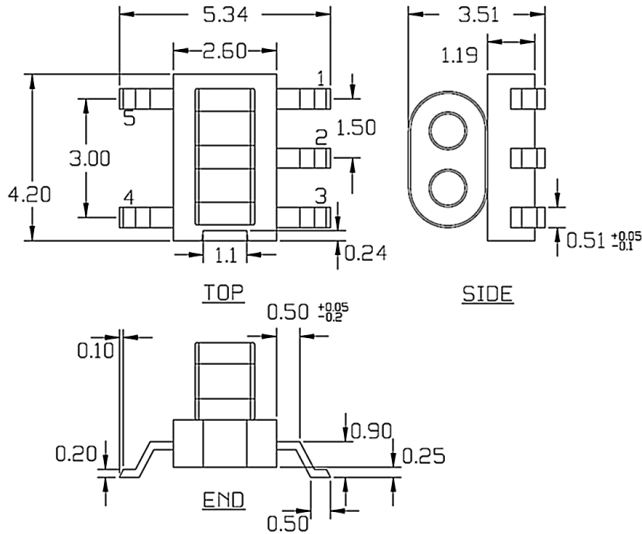


PCB Layout¹⁰



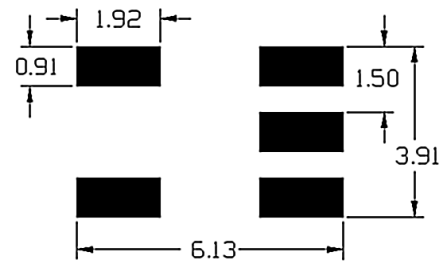
10. Recommended PCB layout shown above uses 1.6 mm FR4, grounded coplanar wave guide, transmission line width 0.70 mm and gap 0.57 mm.

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



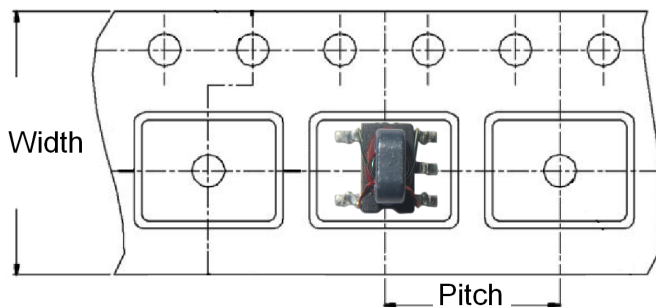
- 6. Dimensions in mm.
- 7. Tolerance: ± 0.2 mm unless otherwise noted.
- 8. Model number and lot code printed on reel.
- 9. Lead plating (CuSn6) Lead finish SAC-305.

Recommended Board Layout¹¹



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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