# MABACT0039



## 1:1 Transmission Line Transformer

## 5 - 3000 MHz

**V6** 

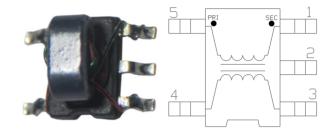
#### **Features**

- 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: $T_A = 25$ °C, $Z_0 = 75 \Omega$ , $P_{IN} = 0 \text{ dBm}$

Parameter	Conditions	Units	Min.	Тур.	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	±2.2
Phase Balance	50 - 2150 MHz	٥	_	5.0	±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.
- MACOM does not recommend sustained operation near these survivability limits.

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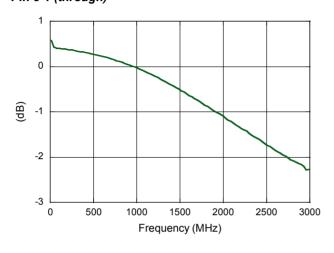


## 1:1 Transmission Line Transformer

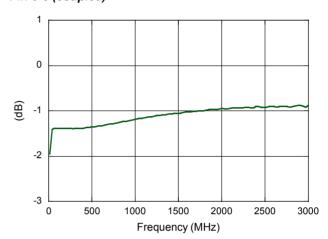
# 5 - 3000 MHz V6

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

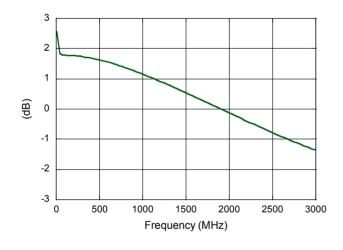
Insertion Loss 1
Pin 5-1 (through)



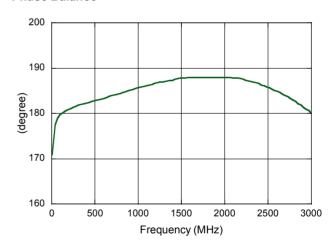
# Insertion Loss 2 Pin 5-3 (coupled)



#### Amplitude Balance



#### Phase Balance



#### 5. Full temperature plots available on request

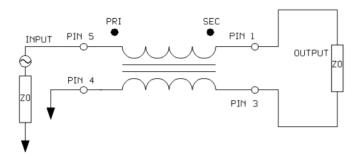


## 1:1 Transmission Line Transformer

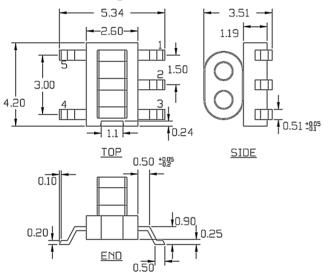
## 5 - 3000 MHz

**V6** 

# **Application Schematic**

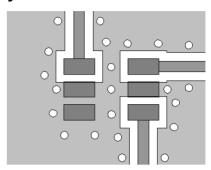


# Outline Drawing<sup>6,7,8,9</sup>



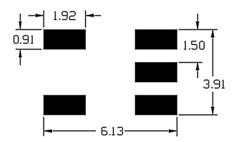
- 6. Dimensions in mm.
- 7. Tolerance: ±0.2 mm unless otherwise noted.
- 8. Model number and lot code printed on reel.
- 9. Lead plating (CuSn6) Lead finish SAC-305.

# PCB Layout<sup>10</sup>



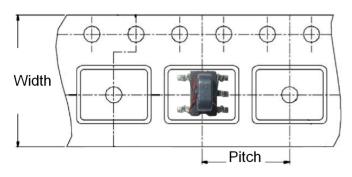
10.Recommended PCB layout shown above uses 1.6 mm FR4, grounded coplanar wave guide, transmission line width 0.70 mm and gap 0.57 mm.

# 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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