

# 1:1 Transmission Line Transformer with Tertiary Winding 50 - 1200 MHz



MABA-009057-CT19E0

Rev. V5

## Features

- 1:1 Impedance Ratio
- 75  $\Omega$
- Surface Mount Package
- 260°C Reflow Compatible
- RoHS Compliant, Lead Free
- Available on Tape & Reel

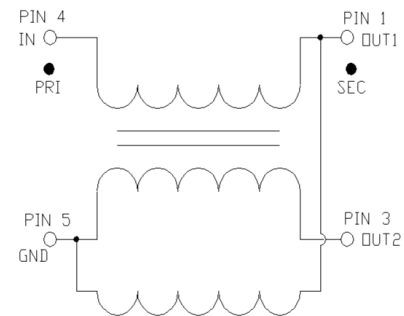
## Applications

- CATV

## Description

MABA-009057-CT19E0 is a 1:1 RF transmission line transformer with tertiary winding in a surface mount package. Ideally suited for high volume CATV application.

## Functional Schematic



## Pin Configuration<sup>3</sup>

Pin #	Function	Pin #	Function
1	Secondary Dot	4	Primary Dot
2	Not Connected	5	Primary
3	Secondary		

3. MACOM recommends connecting unused package pins to ground.

## Electrical Specifications: Freq. = 50 - 1200 MHz, T<sub>A</sub> = 25°C, Z<sub>0</sub> = 75 $\Omega$ , P<sub>IN</sub> = 0 dBm

Parameter	Test Conditions Frequency (MHz)	Units	Min.	Typ.	Max.
Insertion Loss 1: pin 4-1 (Through)	50 - 600	dB	—	0.4	0.8
	600 - 1000			0.8	1.1
	1000 - 1200			1.2	1.5
Insertion Loss 2: pin 4-3 (Coupled)	50 - 600	dB	—	0.5	0.7
	600 - 1200			0.5	1.0
Amplitude Un-Balance (Nominal 0 dB)	50 - 600	dB	—	$\pm 0.1$	$\pm 0.3$
	600 - 1200			$\pm 0.4$	$\pm 0.9$
Phase Un-Balance (Nominal 180°)	50 - 870	°	—	$\pm 1.0$	$\pm 3.0$
	870 - 1000			$\pm 1.5$	$\pm 5.0$
	1000 - 1200			$\pm 4.5$	$\pm 10.0$
Input Return Loss: pin 4	50 - 1200	dB	12	16	—

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

Part #	Description
MABA-009057-CT19E0	1500 piece reel
MABA-009057-CT19TB	Customer Test Board

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

## Absolute Maximum Ratings<sup>4,5</sup>

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

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

\* Restrictions on Hazardous Substances, compliant to current RoHS EU directive.

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DS-MABA-009057-CT19E0

# 1:1 Transmission Line Transformer with Tertiary Winding 50 - 1200 MHz

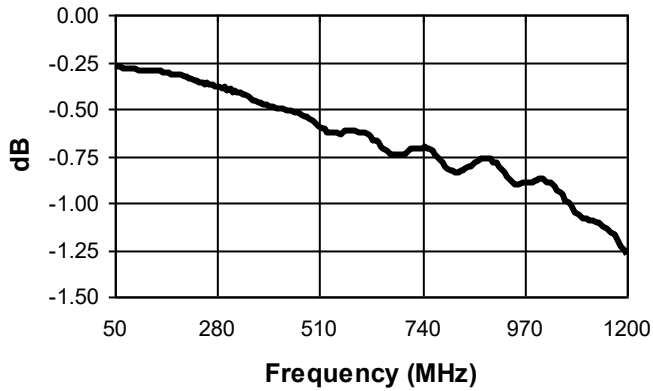


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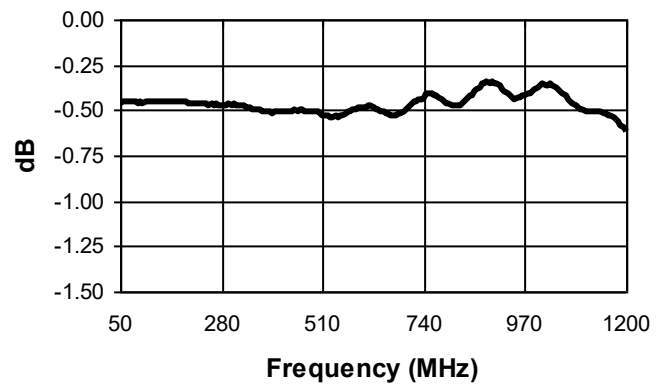
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## Typical Performance Curves<sup>6</sup>

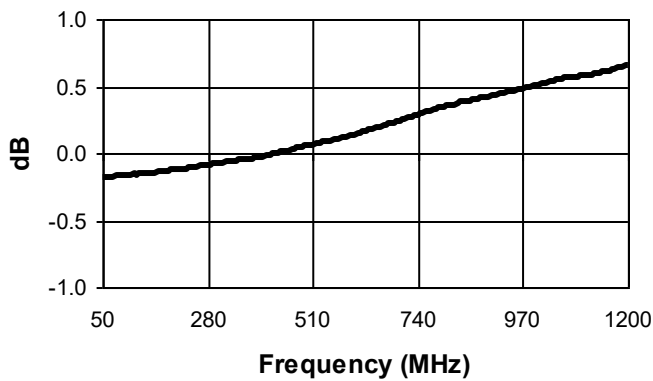
Insertion Loss 1 (Through pin 4 to pin 1)



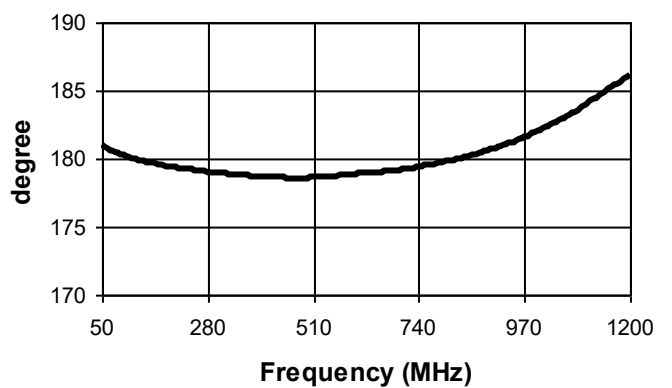
Insertion Loss 2 (Coupled pin 4 to pin 3)



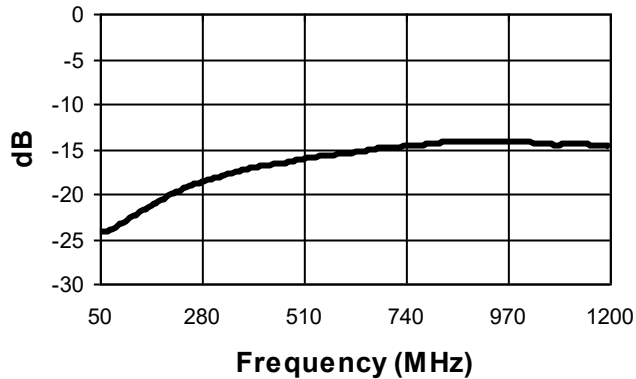
Amplitude Balance



Phase Balance



Return Loss: Input (pin 4)



6. Full temperature plots available on request.

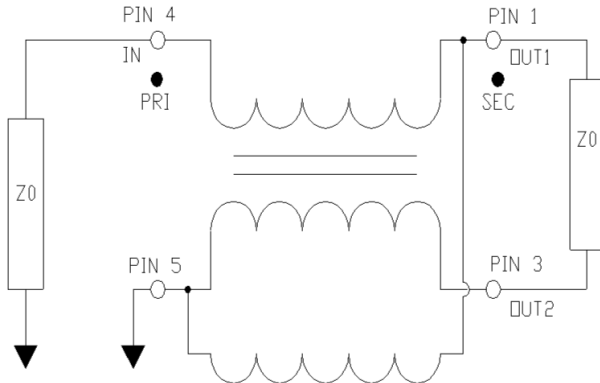
# 1:1 Transmission Line Transformer with Tertiary Winding 50 - 1200 MHz



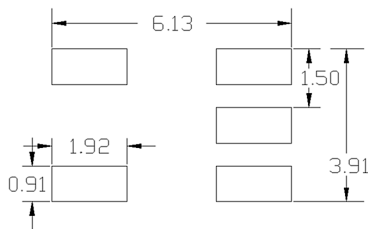
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## Application Schematic

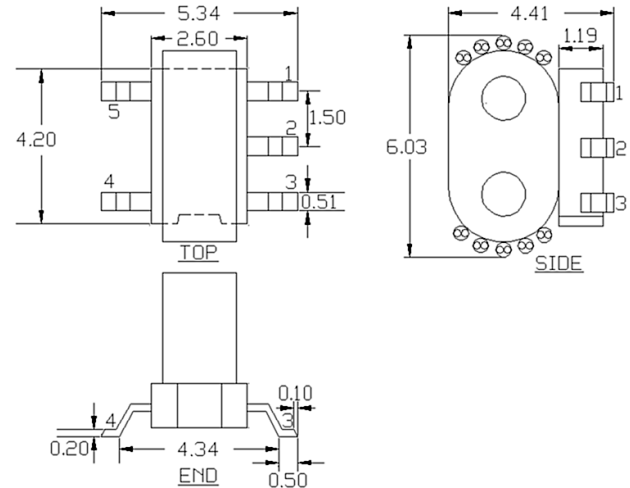


## Recommended Board Layout<sup>7</sup>



7. 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>8,9,10,11</sup>



8. Dimensions in mm.  
9. Tolerance:  $\pm 0.2$  mm unless otherwise noted.  
10. Model number and lot code are printed on the reel.  
11. Plating finish: CuSn6

## Tape & Reel Information

Parameter	Units	Value
Qty per reel	-	1500
Reel Size	mm	330
Tape Width	mm	16.00
Pitch	mm	12.00
Orientation	-	F33
Reference Application Note ANI-019 for orientation		

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