# MABA-010129-CT4A40

## 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 Ω & 75 Ω 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.

## Electrical Specifications: \( T_A = 25°C, Z_0 = 50 \Omega, P_{IN} = 0 \text{ dBm} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency Test Condition (MHz)</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss 1 (Pin 4 to Pin 1)</td>
<td>5 - 50 50 - 879 879 - 1200</td>
<td>dB</td>
<td>0.5</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Insertion Loss 2 (Pin 4 to Pin 3)</td>
<td>5 - 50 50 - 879 879 - 1200</td>
<td>dB</td>
<td>0.5</td>
<td>0.6</td>
<td>0.7</td>
</tr>
<tr>
<td>Amplitude Balance (Nominal 0 dB)</td>
<td>5 - 500 500 - 1200</td>
<td>dB</td>
<td>0.05</td>
<td>0.23</td>
<td>±0.6</td>
</tr>
<tr>
<td>Phase Balance (Nominal 180°)</td>
<td>5 - 500 500 - 1000 1000 - 1200</td>
<td>°</td>
<td>1.4</td>
<td>2.8</td>
<td>±6</td>
</tr>
<tr>
<td>Input Return Loss (Pin 4)</td>
<td>5 - 50 50 - 500 500 - 1200</td>
<td>dB</td>
<td>20</td>
<td>23</td>
<td>—</td>
</tr>
</tbody>
</table>

## Pin Configuration

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Secondary Dot</td>
</tr>
<tr>
<td>2</td>
<td>Secondary Centre Tap</td>
</tr>
<tr>
<td>3</td>
<td>Secondary</td>
</tr>
<tr>
<td>4</td>
<td>Primary</td>
</tr>
<tr>
<td>5</td>
<td>Primary Dot</td>
</tr>
</tbody>
</table>

## Ordering Information

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

## Recommended Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input power</td>
<td>&gt;28 dBm (631 mW)</td>
</tr>
<tr>
<td>DC Current, (tested @ 5 V)</td>
<td>&gt;600 mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-55°C to +100°C</td>
</tr>
</tbody>
</table>

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

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DS-MABA-010129-CT4A40
1:4 Transmission Line Balun Transformer
5 - 1200 MHz

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

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

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

**Amplitude Balance**

**Phase Balance**

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

4. Temperature plots available on request.
1:4 Transmission Line Balun Transformer
5 - 1200 MHz

Application Circuit

Recommended Board Layout

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

6. Dimensions in mm
7. Tolerance: ±0.2mm unless otherwise noted.
8. Model number and lot code are printed on the reel.

Tape & Reel Information

<table>
<thead>
<tr>
<th>Item</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>12.0 mm, +/-0.3 mm</td>
</tr>
<tr>
<td>P1</td>
<td>8.0 mm, +/-0.1 mm</td>
</tr>
</tbody>
</table>
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