MABA-010129-CT4A40

1:4 Transmission Line Balun Transformer
5 - 1200 MHz

**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 180º)</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>16</td>
</tr>
</tbody>
</table>

**Ordering Information**

<table>
<thead>
<tr>
<th>Part #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MABA-010129-CT4A40</td>
<td>2000 piece reel</td>
</tr>
<tr>
<td>MABA-010129-CT4ATB</td>
<td>Customer test board</td>
</tr>
</tbody>
</table>

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

**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.

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Application Circuit

Outline Drawing

Recommended Board Layout

Reel Orientation

Tape & Reel Information

- Dimensions in mm
- Tolerance: ±0.2mm unless otherwise noted.
- Model number and lot code are printed on the reel.
- Finish: Pin material CuSn6.

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.

<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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