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 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>15</td>
<td>16</td>
</tr>
</tbody>
</table>

Ordering Information\(^1,2\)

<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\(^3\)

<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.

---

MACOM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

For further information and support please visit: [https://www.macom.com/support](https://www.macom.com/support)

DS-MABA-010129-CT4A40
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.

MACOM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.
1:4 Transmission Line Balun Transformer
5 - 1200 MHz

Application Circuit

Outline Drawing\textsuperscript{6,7,8,9}

Recommended Board Layout\textsuperscript{5}

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>

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

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.
MACOM Technology Solutions Inc. All rights reserved.

Information in this document is provided in connection with MACOM Technology Solutions Inc ("MACOM") products. These materials are provided by MACOM as a service to its customers and may be used for informational purposes only. Except as provided in MACOM’s Terms and Conditions of Sale for such products or in any separate agreement related to this document, MACOM assumes no liability whatsoever. MACOM assumes no responsibility for errors or omissions in these materials. MACOM may make changes to specifications and product descriptions at any time, without notice. MACOM makes no commitment to update the information and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to its specifications and product descriptions. No license, express or implied, by estoppels or otherwise, to any intellectual property rights is granted by this document.

THESE MATERIALS ARE PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING LIABILITY OR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, CONSEQUENTIAL OR INCIDENTAL DAMAGES, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT OR OTHER INTELLECTUAL PROPERTY RIGHT. MACOM FURTHER DOES NOT WARRANT THE ACCURACY OR COMPLETENESS OF THE INFORMATION, TEXT, GRAPHICS OR OTHER ITEMS CONTAINED WITHIN THESE MATERIALS. MACOM SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION, LOST REVENUES OR LOST PROFITS, WHICH MAY RESULT FROM THE USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.

MACOM Technology Solutions Inc. (MACOM) and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. Visit www.macom.com for additional data sheets and product information.

For further information and support please visit: https://www.macom.com/support

DS-MABA-010129-CT4A40