MABA-011104

Step Down Auto Transformer 1.5:1
5 - 1218 MHz

Features
- 1.5:1 Impedance
- Surface mount
- Available on tape and reel
- 260º reflow compatible
- RoHS compliant and Pb free
- Excellent temperature stability
- Suitable for all CATV, Broadband and FTTX applications

Description
The MABA-011104 is a 1.5:1 RF step-down auto-transformer offered in a surface mount package. Ideally suited for single ended 75 to 50 Ohm impedance matching in CATV DOCSIS 3.1 nodes and line extenders.

Electrical Specifications: Freq = 5 - 1218 MHz, $T_A = 25^\circ C$, $Z_0 = 75 \, \Omega$, $P_{in} = 0 \, dBm$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impedance Ratio</td>
<td>—</td>
<td>—</td>
<td>1.5:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Insertion Loss</td>
<td>5 - 200 MHz, 200 - 1218 MHz</td>
<td>dB</td>
<td>0.2</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>(Pin 3 - Pin 4)</td>
<td>—</td>
<td>—</td>
<td>1.09</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Input Return Loss</td>
<td>75 , \Omega, 5 - 1218 MHz</td>
<td>dB</td>
<td>19</td>
<td>29</td>
<td>—</td>
</tr>
<tr>
<td>(Pin 3)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Output Return Loss</td>
<td>50 , \Omega, 5 - 870 MHz, 50 , \Omega, 870 - 1218 MHz</td>
<td>dB</td>
<td>20</td>
<td>28</td>
<td>23</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MABA-011104</td>
<td>Tape &amp; Reel</td>
</tr>
<tr>
<td>MABA-011104-TB</td>
<td>Customer Sample 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>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power$^6$</td>
<td>2 W</td>
</tr>
<tr>
<td>DC Current</td>
<td>200 mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
</tbody>
</table>

4. Exceeding anyone or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.
6. Specified at +25°C only.

PRELIMINARY: Data Sheets contain information regarding a product MACOM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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DC-0020040
Typical Performance Curves\(^7\): \(T_A = 25^\circ\text{C}, Z_0 = 75\ \Omega,\ P_{IN} = 0\ \text{dBm}\)

**Insertion Loss (pin 3-4)**

![Insertion Loss Graph]

**Input Return Loss, 75 \(\Omega\) (pin 3)**

![Input Return Loss Graph]

**Output Return Loss, 50 \(\Omega\) (pin 4)**

![Output Return Loss Graph]

7. Full temperature plots available on request.
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**Step Down Auto Transformer 1.5:1**

5 - 1218 MHz

**Rev. V2**

**PCB Layout**

8. 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.

**Application Schematic**

**Outline Drawing**

9. Dimensions in mm.

10. Tolerance: ±0.2 mm unless otherwise noted.

11. Model number and lot code are printed on the reel.


**Carrier Tape Orientation**

**Tape & Reel Information**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty per reel</td>
<td>-</td>
<td>2000</td>
</tr>
<tr>
<td>Reel Size</td>
<td>mm</td>
<td>330</td>
</tr>
<tr>
<td>Tape Width</td>
<td>mm</td>
<td>12.00</td>
</tr>
<tr>
<td>Pitch</td>
<td>mm</td>
<td>8.00</td>
</tr>
<tr>
<td>Orientation</td>
<td>-</td>
<td>F5</td>
</tr>
</tbody>
</table>

Reference Application Note ANI-019 for orientation
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