MACP-011055

15.2 dB Coupler
5 - 1225 MHz

Features
• 15.2 dB Coupling Ratio
• Surface Mount
• Bi-directional
• Similar performance in both configurations
• Available on Tape and Reel
• Excellent Temperature Stability
• RoHS Compliant and lead free
• 260°C Reflow Compatible

Description
The MACP-011055 is a 15.2 dB coupler in a surface mount package. Ideally suited for broadband CATV applications. The bi-directional flexibility to use in either direction with similar performance.

Functional Schematic

Pin Configuration

<table>
<thead>
<tr>
<th>Pin #</th>
<th>Function</th>
<th>Pin #</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input</td>
<td>4</td>
<td>Isolation</td>
</tr>
<tr>
<td>2</td>
<td>Center Tap (Ground)</td>
<td>5</td>
<td>Not Used</td>
</tr>
<tr>
<td>3</td>
<td>Coupling</td>
<td>6</td>
<td>Output</td>
</tr>
</tbody>
</table>

2. MACOM recommends connecting unused package pins to ground.

Electrical Specifications: \( T_A = 25^\circ\text{C}, Z_0 = 75 \Omega, P_{IN} = 0 \text{ dBm} \)

<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>Coupling Ratio</td>
<td>-</td>
<td>dB</td>
<td>—</td>
<td>15.2</td>
<td>—</td>
</tr>
<tr>
<td>Coupling (Pin 1 - Pin 3)</td>
<td>5 - 1225 MHz</td>
<td>dB</td>
<td>14.8</td>
<td>15.2</td>
<td>15.8</td>
</tr>
<tr>
<td>Main Line Loss</td>
<td>5 - 1000 MHz</td>
<td>dB</td>
<td>—</td>
<td>0.7</td>
<td>1.0</td>
</tr>
<tr>
<td>(Pin 1 - Pin 6)</td>
<td>1000 - 1225 MHz</td>
<td></td>
<td>0.9</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Isolation (Pin 1 - Pin 4)</td>
<td>5 - 1225 MHz</td>
<td>dB</td>
<td>30</td>
<td>37</td>
<td>—</td>
</tr>
<tr>
<td>Input Return Loss (Pin 1)</td>
<td>5 - 1000 MHz</td>
<td>dB</td>
<td>19</td>
<td>23</td>
<td>—</td>
</tr>
<tr>
<td>(1000 - 1225 MHz)</td>
<td></td>
<td></td>
<td>18</td>
<td>22</td>
<td>—</td>
</tr>
<tr>
<td>Output Return Loss (Pin 6)</td>
<td>5 - 1000 MHz</td>
<td>dB</td>
<td>18</td>
<td>24</td>
<td>—</td>
</tr>
<tr>
<td>(1000 - 1225 MHz)</td>
<td></td>
<td></td>
<td>18</td>
<td>20</td>
<td>—</td>
</tr>
<tr>
<td>Coupling Return Loss (Pin 3)</td>
<td>5 - 1000 MHz</td>
<td>dB</td>
<td>18</td>
<td>23</td>
<td>—</td>
</tr>
<tr>
<td>(1000 - 1225 MHz)</td>
<td></td>
<td></td>
<td>18</td>
<td>22</td>
<td>—</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACP-011055</td>
<td>900 piece reel</td>
</tr>
<tr>
<td>MACP-011055-TB</td>
<td>Sample Board</td>
</tr>
</tbody>
</table>

1. All sample boards include 5 loose parts.

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>1.5 W</td>
</tr>
<tr>
<td>DC Current</td>
<td>500 mA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°C</td>
</tr>
</tbody>
</table>

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

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DC-0017762
Typical Performance Curves

5. Full temperature plots available on request.
Application Schematic

Recommended Board Layout

Recommended Footprint

Outline Drawing

Tape & Reel Information

6. Dimensions in mm.
7. Tolerance: ±0.2 mm unless otherwise noted.
8. Model number and lot code printed on reel.
9. Plating finish: ENIG on both sides, 0.05 to 0.1 µm gold over 3 to 6 µm nickel.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qty per reel</td>
<td>-</td>
<td>900</td>
</tr>
<tr>
<td>Reel Size</td>
<td>mm</td>
<td>330</td>
</tr>
<tr>
<td>Tape Width</td>
<td>mm</td>
<td>16.00</td>
</tr>
<tr>
<td>Pitch</td>
<td>mm</td>
<td>12.00</td>
</tr>
<tr>
<td>Orientation</td>
<td>-</td>
<td>F45</td>
</tr>
</tbody>
</table>
Carrier Tape Orientation

Alternate Configuration

Electrical Specifications:  $T_A = 25^\circ C$, $Z_0 = 75 \, \Omega$, $P_{in} = 0 \, \text{dBm}$

<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>Coupling Ratio</td>
<td>-</td>
<td>dB</td>
<td>—</td>
<td>15.2</td>
<td>—</td>
</tr>
<tr>
<td>Coupling (Pin 6 - Pin 4)</td>
<td>5 - 1225 MHz</td>
<td>dB</td>
<td>14.8</td>
<td>15.2</td>
<td>16.0</td>
</tr>
<tr>
<td>Main Line Loss (Pin 6 - Pin 1)</td>
<td>5 - 1000 MHz 1000 - 1225 MHz</td>
<td>dB</td>
<td>—</td>
<td>0.7</td>
<td>1.0</td>
</tr>
<tr>
<td>Isolation (Pin 6 - Pin 3)</td>
<td>5 - 1000 MHz 1000 - 1225 MHz</td>
<td>dB</td>
<td>29</td>
<td>34</td>
<td>31</td>
</tr>
<tr>
<td>Input Return Loss (Pin 6)</td>
<td>5 - 1000 MHz 1000 - 1225 MHz</td>
<td>dB</td>
<td>18</td>
<td>24</td>
<td>20</td>
</tr>
<tr>
<td>Output Return Loss (Pin 1)</td>
<td>5 - 1000 MHz 1000 - 1225 MHz</td>
<td>dB</td>
<td>19</td>
<td>23</td>
<td>22</td>
</tr>
<tr>
<td>Coupling Return Loss (Pin 4)</td>
<td>5 - 1000 MHz 1000 - 1225 MHz</td>
<td>dB</td>
<td>18</td>
<td>24</td>
<td>19</td>
</tr>
</tbody>
</table>
Alternate Configuration

Typical Performance Curves

11. Full temperature plots available on request.
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