9 dB Coupler
5 - 1225 MHz

Features
- 9 dB Coupling Ratio
- Surface Mount Package
- Available on Tape & Reel
- High Isolation from 100 - 700 MHz
- Excellent Temperature Stability
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible

Description
The MACP-011050 is a 9 dB coupler in a surface mount package.

Ideally suited for CATV, Full Duplex and DOCSIS 3.1 applications.

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>External 75 Ω</td>
</tr>
<tr>
<td>2</td>
<td>Ground</td>
<td>5</td>
<td>Output</td>
</tr>
<tr>
<td>3</td>
<td>Coupled</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. MACOM recommends connecting unused package pins to ground.

Electrical Specifications: Freq. = 5 - 1225 MHz, $T_A = +25°C$, $Z_0 = 75 \, \Omega$, $P_{IN} = 0 \, \text{dBm}$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Freq. Test Conditions (MHz)</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>9</td>
<td>—</td>
</tr>
<tr>
<td>Coupling (Pin 1 - Pin 3)</td>
<td>5 - 1225</td>
<td>dB</td>
<td>8.5</td>
<td>9.0</td>
<td>9.5</td>
</tr>
</tbody>
</table>
| Main Line Loss (Pin 1 - Pin 5)| 5 - 700
700 - 1225                  | dB    | —    | 1.4  | 1.65 |
| Isolation (Pin 5 - Pin 3)     | 5 - 100
100 - 700
700 - 1225                  | dB    | 35   | 37   | 30   |
| Input Return Loss (Pin 1)     | 5 - 700
700 - 1225                  | dB    | 15   | 17   | —    |
| Output Return Loss (Pin 5)    | 5 - 700
700 - 1225                  | dB    | 20   | 22   | —    |
| Coupling Return Loss (Pin 3)  | 5 - 700
700 - 1225                  | dB    | 17   | 20   | —    |

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MACP-011050</td>
<td>900 piece reel</td>
</tr>
<tr>
<td>MACP-011050-TB</td>
<td>Sample Board</td>
</tr>
</tbody>
</table>

1. Reference Application Note M513 for reel size information.
2. 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>2 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>

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

Coupling (pin1-3)

Mainline Loss (pin1-5)

Input Return Loss (pin1)

Output Return Loss (pin5)

Coupling Return Loss (pin3)

Isolation (pin3-5)

6. Full temperature plots available on request.
MACP-011050

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Application Schematic

Outline Drawing

Recommended Board Layout

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>900</td>
</tr>
<tr>
<td>Reel Size</td>
<td>mm</td>
<td>330</td>
</tr>
<tr>
<td>Tape Width</td>
<td>mm</td>
<td>16.0</td>
</tr>
<tr>
<td>Pitch</td>
<td>mm</td>
<td>12.0</td>
</tr>
<tr>
<td>Orientation</td>
<td>—</td>
<td>F33</td>
</tr>
</tbody>
</table>

Reference Application Note ANI-019 for orientation

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