High Frequency Quadrature Hybrid,
1 - 2 GHz

Features
- Octave Bandwidth
- Low VSWR: 1.25:1 Typical
- Miniature Size: 1/2" x 3/8" Flatpack
- Impedance: 50 Ohms Nominal
- Input Power: 25 Watts Max @ +25°C, Derated to 1 Watt @ +85°C
- MIL-STD-202 Screening Available

Description
3 dB Hybrids are ideal for dividing a signal into two signals of equal amplitude and a constant 90° or 180° phase differential and for Quadrature combining or performing summation/differential combining.

Phasing Diagram

<table>
<thead>
<tr>
<th>IN</th>
<th>OUT</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td>ISO</td>
<td>-90°</td>
<td>0°</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>ISO</td>
<td></td>
<td>0°</td>
<td>-90°</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>-90°</td>
<td>0°</td>
<td></td>
<td>ISO</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0°</td>
<td>-90°</td>
<td></td>
<td>ISO</td>
<td></td>
</tr>
</tbody>
</table>

Electrical Specifications\(^1\): \(T_A = -55°C \text{ to } +85°C\)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Frequency</th>
<th>Units</th>
<th>Min</th>
<th>Typ</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss (^2)</td>
<td>Less Coupling</td>
<td>1- 2 GHz</td>
<td>dB</td>
<td>—</td>
<td>—</td>
<td>0.3</td>
</tr>
<tr>
<td>Isolation</td>
<td></td>
<td>1- 2 GHz</td>
<td>dB</td>
<td>18</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Amplitude Balance</td>
<td></td>
<td>1- 2 GHz</td>
<td>dB</td>
<td>—</td>
<td>—</td>
<td>1.0</td>
</tr>
<tr>
<td>VSWR</td>
<td></td>
<td>1- 2 GHz</td>
<td>Ratio</td>
<td>—</td>
<td>—</td>
<td>1.5:1</td>
</tr>
<tr>
<td>Deviation from Quadrature</td>
<td></td>
<td>1- 2 GHz</td>
<td>*</td>
<td>—</td>
<td>—</td>
<td>5</td>
</tr>
</tbody>
</table>

\(^1\) All specifications apply with 50 ohm source and load impedance.
\(^2\) Average of coupled output less 3 dB.

This product contains elements protected by United States Patent Number 3,484,724.

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

**Isolation**

- Graph showing isolation vs. frequency for 1 - 2 GHz.

**Deviation from Quadrature**

- Graph showing deviation from quadrature vs. frequency for 1 - 2 GHz.

**VSWR**

- Graph showing VSWR vs. frequency for 1 - 2 GHz.

**Transmission Phase**

- Graph showing transmission phase vs. frequency for 1 - 2 GHz.

**Coupling**

- Graph showing coupling vs. frequency for 1 - 2 GHz.

**Ordering Information**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>JH-141 PIN</td>
<td>FP-2</td>
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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)
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1 - 2 GHz

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