JH-139 / JHS-139

Quadrature Hybrid,
250 - 500 MHz

Rev. V3

Features
- Octave Bandwidth
- Low VSWR: 1.1:1 Typical
- High Isolation: 30 dB Typical
- Impedance: 50 Ohms Nominal
- Input Power: 4 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.

Pin Configuration (JH-139)

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
<th>Pin No.</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
<td>3</td>
<td>D</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>4</td>
<td>C</td>
</tr>
</tbody>
</table>

FP-2 (JH-139)

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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>250 - 500 MHz</td>
<td>dB</td>
<td>—</td>
<td>—</td>
<td>0.5</td>
</tr>
<tr>
<td>Isolation</td>
<td>—</td>
<td>250 - 500 MHz</td>
<td>dB</td>
<td>15</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Amplitude Balance</td>
<td>—</td>
<td>250 - 500 MHz</td>
<td>dB</td>
<td>—</td>
<td>—</td>
<td>1.0</td>
</tr>
<tr>
<td>VSWR</td>
<td>—</td>
<td>250 - 500 MHz</td>
<td>Ratio</td>
<td>—</td>
<td>—</td>
<td>1.5:1</td>
</tr>
<tr>
<td>Deviation from Quadrature</td>
<td>—</td>
<td>250 - 500 MHz</td>
<td>°</td>
<td>—</td>
<td>—</td>
<td>4</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

Phasing Diagram

Typical Performance Curves

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Typical Performance Curves

**Transmission Phase**

- Frequency (MHz)
- Transmission Phase (Degrees)

**Coupling**

- Frequency (MHz)
- Coupling (dB)

### Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>JH-139 PIN</td>
<td>FP-2</td>
</tr>
<tr>
<td>JHS-139 PIN</td>
<td>SF-1</td>
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