Multi-Hole Directional Couplers

FEATURES

- Waveguide or split block configuration
- Light weight
- High directivity
- Low insertion loss
- Low cost

APPLICATIONS

- Test benches
- Subsystems
- Power sampling

DESCRIPTION

PCM series multi-hole directional couplers are offered for the frequency range of 18 to 110 GHz in seven waveguide bands. The standard coupling levels are 3, 6, 10, 30 and 40 dB with full waveguide operational bandwidth. The high directivity is achieved via low VSWR built-in termination. The couplers are typically used for power sampling or frequency monitoring with minimum signal loss on the main transmitting path. The multi-hole couplers are especially used in the test setups where power reflection measurement is required. The multi-hole couplers are offered in two physical configurations, waveguide and split block.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Waveguide Band</th>
<th>K</th>
<th>KA</th>
<th>Q</th>
<th>U</th>
<th>V</th>
<th>E</th>
<th>W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range (GHz)</td>
<td>18 to 26.5</td>
<td>26.5 to 40</td>
<td>33 to 50</td>
<td>40 to 60</td>
<td>50 to 75</td>
<td>60 to 90</td>
<td>75 to 110</td>
</tr>
<tr>
<td>Waveguide Size</td>
<td>WR-42</td>
<td>WR-28</td>
<td>WR-22</td>
<td>WR-19</td>
<td>WR-15</td>
<td>WR-12</td>
<td>WR-10</td>
</tr>
<tr>
<td>Coupling Level (dB, Typical)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coupling Flatness (dB, Maximum)</td>
<td>± 0.8</td>
<td>± 0.8</td>
<td>± 0.8</td>
<td>± 0.9</td>
<td>± 0.9</td>
<td>± 0.9</td>
<td>± 1.0</td>
</tr>
<tr>
<td>Insertion Loss (dB, Typical)¹</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.8</td>
<td>1.0</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>Directivity (dB, Typical)</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Main Line VSWR (Typical)</td>
<td>1.1:1</td>
<td>1.1:1</td>
<td>1.1:1</td>
<td>1.2:1</td>
<td>1.2:1</td>
<td>1.2:1</td>
<td>1.2:1</td>
</tr>
<tr>
<td>Secondary Line VSWR (Typical)</td>
<td>1.1:1</td>
<td>1.1:1</td>
<td>1.2:1</td>
<td>1.2:1</td>
<td>1.2:1</td>
<td>1.25:1</td>
<td>1.25:1</td>
</tr>
<tr>
<td>Outline for Split Block Version²</td>
<td>WT-E-9</td>
<td>WT-E-9</td>
<td>WT-E-9</td>
<td>WT-E-9</td>
<td>WT-E-9</td>
<td>WT-E-9</td>
<td>WT-E-9</td>
</tr>
<tr>
<td>Outline for Waveguide Version²</td>
<td>WT-E-10</td>
<td>WT-E-10</td>
<td>WT-E-10</td>
<td>WT-E-10</td>
<td>WT-E-10</td>
<td>WT-E-10</td>
<td>WT-E-10</td>
</tr>
</tbody>
</table>

¹ Insertion loss is defined as the power loss in addition to the coupling loss. Contact factory for other waveguide size or coupling level needs.

² Split block version does not have an E plane bend version. Contact factory for outline drawing of waveguide version with E bend coupling port.

Note:

1. Insertion loss is defined as the power loss in addition to the coupling loss. Contact factory for other waveguide size or coupling level needs.

HOW TO ORDER

Specify Model Number

Example: To order a WR-15 waveguide multi-hole directional coupler with 20 dB coupling level, 30 dB minimum directivity E plane bend for coupling port and waveguide version, specify PCM-152030EB-X2.
WT-E-1

**FEATURES**
- Rugged configuration
- Smooth adjustment
- Top and bottom plate skid pads
- Four size selections
- Laboratory setup supporting
- Waveguide system supporting

**APPLICATIONS**
WTJ series jacks are offered in four table size to provide total flexibility of waveguide or module supporting or positioning requirements in the laboratory environment. These jacks are engineered for smooth and continuous height adjustment through their height range. They are constructed with chromed steel and anti-skid pads to offer stable, slipping and scratch free support.

**DESCRIPTION**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>WTJ-050040-02</th>
<th>WTJ-075055-02</th>
<th>WTJ-100075-02</th>
<th>WTJ-140100-02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table Size (L x W)</td>
<td>50 x 40 mm</td>
<td>75 x 55 mm</td>
<td>100 x 75 mm</td>
<td>140 x 100 mm</td>
</tr>
<tr>
<td>Elevation Height (H)</td>
<td>37 - 93 mm</td>
<td>37 - 138 mm</td>
<td>43 - 182 mm</td>
<td>52 - 255 mm</td>
</tr>
</tbody>
</table>

Dimensions are in inches

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WT-E-4

**LOW PASS**

**FEATURES**
- Smooth adjustment

**DESCRIPTION**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>L</th>
<th>K</th>
<th>Ks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 PLS</td>
<td>3.00</td>
<td>2.50</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Dimensions are in inches

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WT-E-5

**HIGH PASS**

**FEATURES**
- Smooth adjustment

**DESCRIPTION**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Band</th>
<th>K</th>
<th>Ks</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>3.00</td>
<td>2.50</td>
</tr>
</tbody>
</table>

Dimensions are in inches

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WT-E-6

**LOW PASS**

**FEATURES**
- Smooth adjustment

**DESCRIPTION**

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Band</th>
<th>L</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-40 x 0.25 DP</td>
<td>2 PLS</td>
</tr>
</tbody>
</table>

Dimensions are in inches

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The flange pattern shown is for illustration purpose. Refer to Technical Reference Section for flange pattern details. The outline drawings shown are standard versions. Contact factory for your specific package requirements.
Passive Component Outline Drawings #2

The flange pattern shown is for illustration purpose. Refer to Technical Reference Section for flange pattern details. The outline drawings shown are standard versions. Contact factory for your specific package requirements.