Bi Directional RF Coupler - BroadBand - Surface Mount - BBTLine

Splitter Features:

- BroadBand - 0.8 GHz to Greater Than 6 GHz
- Low Loss - Less Than 0.65 dB at 6 GHz
- High Directivity - Greater Than 20 dB to 6 GHz
- Optional BOM Configuration
- RoHs Compliant
- Immersion Silver Finish

Part Number:
BBTLine_Coupler1_SMT

Description:

Shown below is a Four Port Surface Mount (SMT) Bi Directional RF Coupler. The Coupler has excellent performance from 0.8 GHz to greater than 6 GHz. Two different BOM configurations allow the user to select between Directivity options. The device below is shown without components populated.

Note: Directivity is a strong function of surrounding parasitics. Allow at least 250 mil Z-height clearance from this device to minimize impact upon Directivity.
Mechanical Dimensions:

RF Specifications:

<table>
<thead>
<tr>
<th>Specifications (at Room Temperature):</th>
<th>BOM1 Configuration</th>
<th>BOM2 Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range [GHz]</td>
<td>0.8 to 6</td>
<td>0.8 to 6.6</td>
</tr>
<tr>
<td>Insertion Loss [dB] at 6 GHz</td>
<td>&lt; 0.65</td>
<td>&lt; 0.7</td>
</tr>
<tr>
<td>Directivity [dB]</td>
<td>&gt; 20</td>
<td>&gt; 15</td>
</tr>
<tr>
<td>Mean Coupling [dB]</td>
<td>-19</td>
<td>-19</td>
</tr>
<tr>
<td>Coupling Ripple [dB]</td>
<td>+/- 2</td>
<td>+/- 2</td>
</tr>
<tr>
<td>Return Loss [dB], All Ports</td>
<td>&lt; -20</td>
<td>&lt; -19</td>
</tr>
<tr>
<td>RF Power [Watts]*</td>
<td>&gt; 20 *</td>
<td>&gt; 20 *</td>
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</tbody>
</table>

* Note: 20 Watts is the test setup limitation, not the coupler power-handling limitation. Tested at a CW freq of 3.55 GHz.
Typical Device RF Performance:

BOM Option #1: Higher Directivity at Lower Frequencies (> 23 dB to 6.2 GHz)

P1 to P2
or
P3 to P4

red = P1
blue = P2
yellow = P3
black = P4

P1 to P4
or
P2 to P3

Input = P1, P2, P3, P4
Output = P2, P1, P4, P3
Coupled In = P3, P4, P1, P2
Coupled Out = P4, P3, P2, P1

P1  P2
P3  P4
BOM Option #2: Lower Directivity To Higher Frequencies (>15 dB to 6.9 GHz)

P1 to P2 or P3 to P4
red = P1, blue = P2, yellow = P3, black = P4

Return Loss (dB) vs. freq. (GHz)

Directivity (dB) vs. freq. (GHz)

Isolation (dB) vs. freq. (GHz)

Coupled (dB) vs. freq. (GHz)

P1
Input = P1, P2, P3, P4
Output = P2, P1, P4, P3
Coupled In = P3, P4, P1, P2
Coupled Out = P4, P3, P2, P1

P2

P3

P4