90º HYBRID
SURFACE MOUNT MODEL: DQS-15-150

WIDE BANDWIDTH 15 - 150 MHz

FEATURES:
► Ultra-Wide Bandwidth (10:1)
► Small Package Size
► Building Block For:
  - Amplifiers
  - Image Rejection Mixers
  - I & Q / SSB Modulators
  - Phase Shifters & More...

SPECIFICATIONS (Rev. A 03/27/19)

<table>
<thead>
<tr>
<th>Frequency</th>
<th>15 - 150 MHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insertion Loss (dB)¹</td>
<td>Typ. 1.2</td>
</tr>
<tr>
<td></td>
<td>Max. 1.7</td>
</tr>
<tr>
<td>Amplitude Unbalance (dB)</td>
<td>Typ. 0.9</td>
</tr>
<tr>
<td></td>
<td>Max. 1.2</td>
</tr>
<tr>
<td>Phase Unbalance (Deg.)</td>
<td>Typ. ± 2.5</td>
</tr>
<tr>
<td></td>
<td>Max. ± 4.0</td>
</tr>
<tr>
<td>Isolation (dB)</td>
<td>Typ. 23</td>
</tr>
<tr>
<td></td>
<td>Min. 18</td>
</tr>
<tr>
<td>Power Rating</td>
<td>1 Watt (Max.)</td>
</tr>
<tr>
<td>Impedance</td>
<td>50 Ohms (Nom.)</td>
</tr>
<tr>
<td>VSWR</td>
<td>1.2:1 (Typ)</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-40 to +85 °C</td>
</tr>
</tbody>
</table>

¹ Insertion loss in excess of the theoretical 3 dB coupling.

PORT CONFIGURATION

<table>
<thead>
<tr>
<th>Input</th>
<th>Isolated*</th>
<th>+90º Output*</th>
<th>0º Output</th>
<th>GND**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>8</td>
<td>7</td>
<td>All Others</td>
</tr>
</tbody>
</table>

*Terminate isolated port with 50 Ohms externally.
**Ground externally.
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15 - 150 MHz

Data @ 25°C

PERFORMANCE PLOTS

- Coupling and Insertion Loss (dB)
  - S21
  - S31

- Isolation (dB)
  - S41
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PERFORMANCE PLOTS

Return Loss (dB)

Frequency (MHz)

S11, S22, S33, S44

Phase Unbalance (deg.)

Frequency (MHz)
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PERFORMANCE PLOTS

Group Delay (nSec) vs. Frequency (MHz)

15 28.5 42 55.5 69 82.5 96 109.5 123 136.5 150
0 2 4 6 8 10 12 14