**MCH3009**

1 TO 3400 MHz

TO-8H TRIPLE-BALANCED MIXER

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Port</th>
<th>Frequency (MHz)</th>
<th>Typ. (dB)</th>
<th>Max. (dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSB Conversion Loss and</td>
<td>f_R</td>
<td>5 to 1000</td>
<td>6.0</td>
<td>7.5</td>
</tr>
<tr>
<td>SSB Noise Figure</td>
<td>f_L</td>
<td>10 to 1500</td>
<td>6.0</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>f_I</td>
<td>1 to 500</td>
<td>6.0</td>
<td>7.5</td>
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<tr>
<td></td>
<td>f_R</td>
<td>1 to 3000</td>
<td>7.0</td>
<td>8.5</td>
</tr>
<tr>
<td></td>
<td>f_L</td>
<td>1 to 3100</td>
<td>7.0</td>
<td>8.5</td>
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<tr>
<td></td>
<td>f_I</td>
<td>1 to 2000</td>
<td>7.0</td>
<td>8.5</td>
</tr>
<tr>
<td></td>
<td>f_R</td>
<td>1 to 3400</td>
<td>8.0</td>
<td>9.5</td>
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<tr>
<td>Conversion Comp.</td>
<td>f_R</td>
<td>1 to 3400</td>
<td>—</td>
<td>1.0</td>
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<tr>
<td>Desensitization Level</td>
<td>f_L</td>
<td>1 to 3400</td>
<td>—</td>
<td>1.0</td>
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<tr>
<td>Isolation</td>
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<td></td>
<td>Typ. (dB)</td>
<td>Min. (dB)</td>
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<tr>
<td>f_L at R</td>
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<td>1 to 1500</td>
<td>40</td>
<td>22</td>
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<tr>
<td>f_I at I</td>
<td></td>
<td>1 to 2000</td>
<td>45</td>
<td>35</td>
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<tr>
<td>f_R at I</td>
<td></td>
<td>1 to 2000</td>
<td>40</td>
<td>30</td>
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<tr>
<td>f_L at R</td>
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<td>1 to 3400</td>
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<td>22</td>
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<tr>
<td>f_I at L</td>
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<td>2000 to 3400</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>f_R at L</td>
<td></td>
<td>2000 to 3400</td>
<td>35</td>
<td>25</td>
</tr>
</tbody>
</table>

*Measured in a 50-ohm system with nominal LO drive of +19.0 dBm as a downconverter.

**ABSOLUTE MAXIMUM RATINGS**

-85 to +125 °C

Peak Continuous Total Input Power = +28 dBm @ 25 °C
derate to +25 dBm @ 100 °C

Peak Continuous Total Input Current @ 25°C = 50 mA DC
Some variation in the R-port VSWR will occur as a function of the L-port frequency as shown above.

**Isolation (L to I) vs. Frequency**

- **R-port VSWR vs. Frequency**
  - $F_L = +19$ dBm
  - $F_L = 0.6$ GHz at $+19$ dBm

**Isolation (L to R) vs. Frequency**

- **L-port VSWR vs. Frequency**
  - $F_L = +19$ dBm
  - $F_L = 0.6$ GHz at $+19$ dBm

**Isolation (R to I) vs. Frequency**

- **R-port VSWR vs. Frequency**
  - $F_L = +19$ dBm
  - $F_L = 0.6$ GHz at $+19$ dBm

**I-port VSWR vs. Frequency**

- **I-port VSWR vs. Frequency**
  - $F_L = +19$ dBm
  - $F_L = 0.6$ GHz at $+19$ dBm

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1 Level of the $f_I$ signal fed through to the R- and I-ports with respect to the level of the $f_L$ signal at the L-port.

2 Level of the $f_R$ signal fed through the I-port with respect to the level of the $f_L$ signal at the R-port.

3 VSWR of the I- and R-ports in a 50-ohm system. Some variation in the R-port VSWR will occur as a function of the L-port frequency as shown above.

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**Conversion Loss vs. LO Drive Level**

- conversion loss of the mixer when used in an SSB system. The frequency ordinate refers to the R-port ($f_R$) with $f_I$ at 30 MHz. Data plotted with an $f_L$ level of $+19.0$ dBm.

**Conversion Loss vs. RF Frequency**

- FL = 0.6 GHz at $+19$ dBm
  - $F_L = 2030$ MHz @ $+19$ dBm
  - FL at $+19$ dBm
  - $F_L = 2000$ MHz @ $-5$ dBm
  - $F_L = +22$ dBm

**Harmonic Intermodulation Products**

- single tone
  - Harmonics of $f_R$
  - Harmonics of $f_L$

**Intercept Point**

- I$P_2$
  - $IF = 30$ MHz
  - HI-SIDE LO
  - I$P_3$
  - $FL = +19$ dBm
  - $FL = 2000$ MHz @ $-5$ dBm
  - $FL = 2030$ MHz @ $+19$ dBm

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5 Conversion loss of the mixer when used with an $f_L$ signal at 30 MHz. Data plotted with an $f_L$ level of $+19.0$ dBm.