HMC204C8
GaAs MMIC SMT PASSIVE FREQUENCY DOUBLER, 4 - 8 GHz INPUT

Typical Applications
The HMC204C8 is suitable for:
- Wireless Local Loop
- LMDS, VSAT, and Point-to-Point Radios
- Test Equipment

Features
- Conversion Loss: 16 dB
- Fo, 3Fo, 4Fo Isolation: 40 dB
- Passive: No Bias Required

General Description
The HMC204C8 is a passive miniature frequency doubler in a non-hermetic surface mount package. Suppression of undesired fundamental and higher order harmonics is 40 dB typical with respect to input signal level. The doubler utilizes the same GaAs Schottky diode/balun technology found in Hittite MMIC mixers. It features small size, no DC bias, and no measurable additive phase noise onto the multiplied signal.

Functional Diagram

Electrical Specifications, $T_A = +25^\circ C$, As a Function of Drive Level

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Input = +10 dBm</th>
<th>Input = +13 dBm</th>
<th>Input = +15 dBm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency Range, Input</td>
<td>5.5</td>
<td>7.5</td>
<td></td>
</tr>
<tr>
<td>Frequency Range, Output</td>
<td>11.0</td>
<td>15.0</td>
<td></td>
</tr>
<tr>
<td>Conversion Loss</td>
<td>16</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>FO Isolation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(with respect to input level)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3FO Isolation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(with respect to input level)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4FO Isolation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(with respect to input level)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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Conversion Gain vs. Temperature @ +15 dBm Drive Level

Isolation @ +15 dBm Drive Level*

*With respect to input level

Output Return Loss for Several Input Frequencies

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 Phone: 781-329-4700 • Order online at www.analog.com Application Support: Phone: 1-800-ANALOG-D

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Conversion Gain @ 25 °C vs. Drive Level

Output Return Loss with 4 GHz Input

Conversion Gain @ -40 °C vs. Drive Level

Output Return Loss with 6 GHz Input

Conversion Gain @ +85 °C vs. Drive Level

Output Return Loss with 8 GHz Input

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Absolute Maximum Ratings

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Input Drive</td>
<td>+27 dBm</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65 to +150 °C</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 to +85 °C</td>
</tr>
</tbody>
</table>

Outline Drawing

NOTES:
1. PACKAGE BODY MATERIAL: WHITE ALUMINA 92%
2. LEAD, PACKAGE BOTTOM MATERIAL: COPPER
3. PLATING: ELECTROLYTIC GOLD 100 - 200 MICROINCHES OVER ELECTROLYTIC NICKEL 100 TO 200 MICROINCHES.
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. PACKAGE LENGTH AND WIDTH DIMENSIONS DO NOT INCLUDE LID SEAL PROTRUSION .005 PER SIDE.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB PF GROUND.
Evaluation PCB

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<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>J1, J2</td>
<td>PCB Mount SMA Connector</td>
</tr>
<tr>
<td>U1</td>
<td>HMC204C8, Doubler</td>
</tr>
<tr>
<td>PCB [2]</td>
<td>107165 Eval Board</td>
</tr>
</tbody>
</table>
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[1] Reference this number when ordering complete evaluation PCB

The circuit board used in the final application should be generated with proper RF circuit design techniques. Signal lines should have 50 ohm impedance while the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown. The evaluation circuit board shown is available from Hittite upon request.
Notes:

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