Frequency Doubler

Features
- INPUT: 2 TO 9 GHz
- OUTPUT: 4 TO 18 GHz
- INPUT DRIVE LEVEL: +19 dBm (NOMINAL)
- HERMETICALLY-SEALED PACKAGE

Description
The FD93H is a passive bridge diode frequency doubler, designed for use in the high volume commercial and test equipment applications. The design utilizes Schottky bridge quad diodes and broadband baluns to attain excellent performance. The use of high temperature solder and welded assembly processes used internally makes it ideal for use in semi-automated and automated assembly. Environmental screening available to MIL-STD-883, MIL-STD-202, or MIL-DTL-28837, consult factory.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>FD93H</td>
<td>Versapac</td>
</tr>
<tr>
<td>FD93HC</td>
<td>SMA Connectorized</td>
</tr>
</tbody>
</table>

Electrical Specifications: \( Z_0 = 50\Omega \quad P_{\text{in}} = +19 \text{ dBm} \)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Typical</th>
<th>Guaranteed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>+25(^\circ)C</td>
<td>-54(^\circ) to +85(^\circ)C</td>
</tr>
<tr>
<td>SSB Conversion Loss (max)</td>
<td>( f_{\text{in}} = 2 \text{ to } 4 \text{ GHz} ) ( f_{\text{in}} = 4 \text{ to } 9 \text{ GHz} )</td>
<td>dB</td>
<td>10.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Fundamental Suppression (min)</td>
<td>( f_{\text{in}} = 2 \text{ to } 9 \text{ GHz} )</td>
<td>dBc</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>Third Harmonic Suppression</td>
<td>( f_{\text{in}} = 2 \text{ to } 6 \text{ GHz} )</td>
<td>dBc</td>
<td>25</td>
<td>16</td>
</tr>
<tr>
<td>Input VSWR</td>
<td>( f_{\text{in}} = 2 \text{ to } 9 \text{ GHz} )</td>
<td>1.5:1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FD93H / FD93HC

Frequency Doubler

Typical Performance Curves

Conversion Loss Vs. LO Drive Power

Isolation vs. Frequency

Suppression vs. Input Frequency

VSWR vs. Frequency

Conversion Loss vs. Input Frequency

ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

North America Tel: 800.366.2266 • Europe Tel: +353.21.244.6400
India Tel: +91.80.4155721 • China Tel: +86.21.2407.1588

Rev. V4

2
**FD93H / FD93HC**

**Frequency Doubler**

**Rev. V4**

**Absolute Maximum Ratings**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-54°C to +100°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to +100°C</td>
</tr>
<tr>
<td>Peak Input Power</td>
<td>+26 dBm max @ +25°C</td>
</tr>
<tr>
<td></td>
<td>+23 dBm max @ +100°C</td>
</tr>
</tbody>
</table>

**Outline Drawing: Versapac**

Weight: 8 grams (0.28 oz.) max

**Outline Drawing: SMA Connectorized**

Weight: 29 grams (1.02 oz.) max

* Dimensions are inches (millimeters) ±0.015 (0.38) unless otherwise specified.

---

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

**PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

- **North America** Tel: 800.366.2266  -  **Europe** Tel: +353.21.244.6400
- **India** Tel: +91.80.4155721  -  **China** Tel: +86.21.2407.1588

Visit www.macomtech.com for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.