Double-Balanced Mixer

Features
- LO 2.5 to 10.5 GHz
- RF 4.5 to 8.5 GHz
- IF DC to 2.0 GHz
- LO Drive +20 dBm (nominal)
- High Intercept Point +24 dBm (typ)

Description
The MY76H is a double balanced mixer, designed for use in military, commercial and test equipment applications. The design utilizes Schottky ring quad diodes and broadband soft dielectric and ferrite baluns to attain excellent performance. This mixer can also be used as a phase detector and/or bi-phase modulator since the IF port is DC coupled to the diodes. The use of high temperature solder and welded assembly processes used internally makes it ideal for use in manual, semi-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>MY76H</td>
<td>Versapac</td>
</tr>
<tr>
<td>MY76HC</td>
<td>SMA Connectorized</td>
</tr>
</tbody>
</table>

Electrical Specifications: \( Z_0 = 50 \Omega \) \( \text{Lo} = +20 \text{ dBm} \) (Downconverter application only)

<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°C</td>
<td>-54° to +85°C</td>
</tr>
<tr>
<td>SSB Conversion Loss (max)</td>
<td>( f_R = 4.5 \text{ GHz} ) to 8 GHz, ( f_L = 2.5 \text{ GHz} ) to 10 GHz, ( f_I = 0.03 \text{ GHz} ) to 2 GHz</td>
<td>dB</td>
<td>5.5</td>
<td>7.0</td>
</tr>
<tr>
<td></td>
<td>( f_R = 8 \text{ GHz} ) to 8.5 GHz, ( f_L = 6.5 \text{ GHz} ) to 10.0 GHz, ( f_I = 0.03 \text{ GHz} ) to 1.5 GHz</td>
<td>dB</td>
<td>6.5</td>
<td>8.0</td>
</tr>
<tr>
<td></td>
<td>( f_R = 8 \text{ GHz} ) to 8.5 GHz, ( f_L = 6 \text{ GHz} ) to 10.5 GHz, ( f_I = 0.03 \text{ GHz} ) to 2 GHz</td>
<td>dB</td>
<td>8.0</td>
<td>9.5</td>
</tr>
<tr>
<td>SSB Noise Figure (max)</td>
<td>Within 1 dB of conversion loss</td>
<td>dB</td>
<td>-----------</td>
<td>------------</td>
</tr>
<tr>
<td>Isolation, L to R (min)</td>
<td>( f_L = 2.5 \text{ GHz} ) to 10.5 GHz</td>
<td>dB</td>
<td>35</td>
<td>22</td>
</tr>
<tr>
<td>Isolation, L to I (min)</td>
<td>( f_L = 6.5 \text{ GHz} ) to 10.5 GHz</td>
<td>dB</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>( f_L = 2.5 \text{ GHz} ) to 6.5 GHz</td>
<td>dB</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>1 dB Conversion Comp.</td>
<td>( f_L = +20 \text{ dBm} )</td>
<td>dBm</td>
<td>+15</td>
<td></td>
</tr>
<tr>
<td>Input IP3</td>
<td>( f_R1 = 6.12 \text{ GHz} ) at 0 dBm, ( f_R2 = 6.18 \text{ GHz} ) at 0 dBm, ( f_L = 7.2 \text{ GHz} ) at +20 dBm</td>
<td>dBm</td>
<td>+24</td>
<td></td>
</tr>
</tbody>
</table>
Typical Performance Curves

**Conversion Loss vs. LO Drive Power**

- RF = 5.0 GHz
- IF = 1.0 GHz
- f_L > f_R

- LO DRIVE POWER - dBm

**Conversion Loss**

- RF = 7.0 GHz
- INPUT TO R-PORT
- LO POWER = +20 dBm

**Conversion Loss**

- (DOWN CONVERSION)
- f_R > f_L

- IF = 1000 MHz
- OUTPUT AT I-PORT
- LO POWER = +20 dBm

**Isolation**

- L-1
- LD = +20 dBm

- LO FREQUENCY - GHz

**Conversion Loss**

- (UP CONVERSION)
- SATELLITE UP-LINK BAND
- f_L > f_R

- IF = 1000 MHz
- INPUT TO I-PORT
- LO POWER = +20 dBm

- f_R > f_L

- OUTPUT FREQUENCY - GHz

**Conversion Loss**

- (DOWN CONVERSION)
- f_L > f_R

- IF = 2000 MHz
- OUTPUT AT I-PORT
- LO POWER = +20 dBm

- f_R > f_L

- RF FREQUENCY - GHz
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>+25 dBm max @ +25°C</td>
</tr>
<tr>
<td></td>
<td>+20 dBm max @ +100°C</td>
</tr>
<tr>
<td>Peak Input Current</td>
<td>100 mA DC</td>
</tr>
</tbody>
</table>

**Isolation**

**VSWR**

Outline Drawing: Versapac *

![Versapac Outline Drawing]

Weight: 6 grams (0.21 oz.) max

Outline Drawing: SMA Connectorized *

![SMA Connectorized Outline Drawing]

Weight: 12 grams (0.42 oz.) max

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