Features
- LO 2 to 18 GHz
- RF 2 to 18 GHz
- IF 0 to 1000 MHz
- LO Drive: +7 dBm (Nominal)
- DC Coupled I-Port
- Wide Bandwidth

Description
The M85 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>M85</td>
<td>Minpac</td>
</tr>
<tr>
<td>M85C</td>
<td>SMA Connectorized</td>
</tr>
</tbody>
</table>

Electrical Specifications: $Z_0 = 50 \, \Omega$  $\text{Lo} = +7 \, \text{dBm}$ (Downconverter application only)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Typ.</th>
<th>Guaranteed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$+25^\circ\text{C}$</td>
</tr>
</tbody>
</table>
| SSB Conversion Loss & SSB Noise Figure (max.) | $f_R = 4$ to $14$ GHz, $f_L = 3$ to $15$ GHz, $f_I = 0$ to $1$ GHz  
$f_R = 2$ to $3$ GHz, $f_L = 2$ to $3$ GHz, $f_I = 0$ to $1$ GHz  
$f_R = 3$ to $18$ GHz, $f_L = 3$ to $18$ GHz, $f_I = 0$ to $1$ GHz | dB    | 7.0  | 9.0          | 11.0          | 11.5          | 11.0          |
| Isolation, L to R (min.)           | $f_L = 2$ to $18$ GHz                                                           | dB    | 35   | 22           | 20           |
| Isolation, L to I (min.)           | $f_L = 2$ to $18$ GHz                                                           | dB    | 20   | 15           | 13           |
| Isolation, R to I (min.)           | $f_L = 2$ to $18$ GHz                                                           | dB    | 20   | —            | —            |
| 1 dB Conversion Comp.              | $f_L = +7$ dBm                                                                  | dBm   | +1   | —            | —            |
| Input IP3                          | $f_{R1} = 5.00$ GHz @ -10 dBm,  
$f_{R2} = 5.01$ GHz @ -10 dBm,  
$f_L = 5.50$ GHz @ +7 dBm  
$f_{R1} = 15.00$ GHz @ -10 dBm,  
$f_{R2} = 15.01$ GHz @ -10 dBm,  
$f_L = 14.50$ GHz @ +7 dBm | dBm   | +10  | —            | —            |
Double-Balanced Mixer

Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absolute Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-54ºC to +100ºC</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65ºC to +100ºC</td>
</tr>
<tr>
<td>Peak Input Power</td>
<td>+23 dBm @ +25ºC</td>
</tr>
<tr>
<td></td>
<td>+20 dBm @ +100ºC</td>
</tr>
<tr>
<td>Peak Input Current</td>
<td>100 mA DC</td>
</tr>
</tbody>
</table>

Typical Performance Curves

VSWR

Isolation

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Typical Performance Curves

Conversion Loss vs LO Power Level

Conversion Loss

Up Conversion Loss

<table>
<thead>
<tr>
<th>Port Bandwidth</th>
</tr>
</thead>
</table>

Insertion Loss with DC Driven I-Port

Conversion Loss over Temperature

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Outline Drawing: Minpac

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.
Double-Balanced Mixer

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