**DOUBLE-BALANCED MIXERS**

**M8-0412**

### Features
- LO/RF 4.0 to 12.0 GHz
- IF DC to 2.0 GHz
- 5.0 dB Typical Conversion Loss
- 40 dB Typical LO to RF Isolation
- Multi-Octave RF and LO
- Superior Bi-Phase Performance

### Electrical Specifications - Specifications guaranteed from -55 to +100°C, measured in a 50-Ohm system.

| Parameter                          | LO (GHz) | RF (GHz) | IF (GHz) | Min | Typ | Max | Diode Option  
|-----------------------------------|----------|----------|----------|-----|-----|-----|----------------
| Conversion Loss (dB)              | 4.0-12.0 | 4.0-12.0 | DC-1.0   | 5.0 | 7.0 |     | LO drive level (dBm) |
|                                   | 4.0-12.0 | 4.0-12.0 | 1.0-2.0  | 6.5 | 8.0 |     | |
| Isolation (dB)                    | 4.0-12.0 | 4.0-12.0 |          | 30  | 40  | 25  | LO-RF |
| LO-IF                             | 4.0-12.0 | 4.0-12.0 |          | 25  | 25  |     | LO-IF |
| RF-IF                             | 4.0-12.0 | 4.0-12.0 |          |     |     |     | RF-IF |
| Input 1 dB Compression (dBm)      | 4.0-12.0 | 4.0-12.0 |          | +2  | +5  | +8  | L (+7 to +10) |
|                                   |          |          |          | +11 | +14 | +18 | M (+10 to +13) |
|                                   |          |          |          | +21 | +24 | +24 | N (+13 to +16) |
|                                   |          |          |          |     |     |     | H (+16 to +19) |
|                                   |          |          |          |     |     |     | S (+19 to +22) |
| Input Two-Tone Third Order        | 4.0-12.0 | 4.0-12.0 |          | +12 | +15 | +18 | L (+7 to +10) |
| Intercept Point (dBm)             |          |          |          | +21 | +21 | +24 | M (+10 to +13) |
|                                   |          |          |          |     |     |     | N (+13 to +16) |
|                                   |          |          |          |     |     |     | H (+16 to +19) |
|                                   |          |          |          |     |     |     | S (+19 to +22) |

### Part Number Options

Please specify diode level and package style by adding to model number.

<table>
<thead>
<tr>
<th>Package Style(s)</th>
<th>Example</th>
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</thead>
<tbody>
<tr>
<td>R, S, Z</td>
<td>M8-0412 R</td>
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LO/RF 4.0 to 12.0 GHz  
IF DC to 2.0 GHz  

Typical Performance

Conversion Loss - dB

4.0 5.0 6.0 7.0
4.0 5.0 6.0 7.0

Relative IF Response - dB

Ref DC GHz 3.0
1.0 2.0 3.0
1.0 2.0 3.0

LO to RF Isolation - dB

20 30 40 50
20 30 40 50

LO Port VSWR

1:1 2:1 3:1
1:1 2:1 3:1

LO to IF Isolation - dB

4.0 5.0 6.0
4.0 5.0 6.0

RF Port VSWR

50 40 30 20
50 40 30 20

DATA SHEET NOTES:

1. Mixer Conversion Loss Plot is done with an IF frequency of 100 MHz.
2. Mixer Noise Figure typically measures within +0.5 dB of conversion loss for IF frequencies greater than 5 MHz.
3. Conversion Loss typically degrades less than 0.5 dB for LO drives 2 dB below the lowest and 3 dB above highest nominal LO drive levels.
4. Conversion Loss typically degrades less than 0.5 dB at +100°C and improves less than 0.5 dB at -55°C.
5. Maximum input power is +23 dBm at +25°C, derated linearly to +20 dBm at +100°C.
6. Specifications are subject to change without notice. Contact Marki Microwave for the most recent specifications and data sheets.
7. Catalog mixer circuits are continually improved. Configuration control requires custom mixer model numbers and specifications.