MAMX-090950-1277LT

Silicon Double Balanced HMIC Mixer
850 - 1050 MHz

Features
- +21 dBm Typical Input IP3
- 8.3 dB Typical Conversion Loss
- +5 to +10 dBm LO Drive
- Fully Balanced Passive Mixer
- Low Cost Miniature Plastic MLP Package
- Lead Free (RoHS* Compliant) with 260°C Re-flow Capability
- 100% Matte Tin Plating

Description
MAMX-090950-1277LT is a 850 - 1050 MHz silicon monolithic double balanced mixer in a low cost miniature surface mount MLP 3 mm, 16 lead plastic package. The die uses M/A-COM’s unique HMIC silicon/glass process to realize low loss passive elements while retaining the advantages of medium barrier silicon Schottky barrier diodes.

Applications
These mixers are well suited for GSM and CDMA Cellular basestation applications where small size and high performance are required. Typical Applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

Ordering Information

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAMX-090950-1277LT</td>
<td>Tape and Reel</td>
</tr>
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Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-65°C to +125°C</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-65°C to 150°C</td>
</tr>
<tr>
<td>Incident LO Power</td>
<td>+20 dBm</td>
</tr>
<tr>
<td>Incident RF Power</td>
<td>+20 dBm</td>
</tr>
<tr>
<td>Soldering Temperature</td>
<td>+260°C max.</td>
</tr>
</tbody>
</table>

1. Exceeding these limits may cause permanent damage.
2. Please refer to application note M538 for surface mounting instructions


MLP 3mm Package - Circuit Side

PIN Configuration

<table>
<thead>
<tr>
<th>PIN</th>
<th>Function</th>
<th>PIN</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/C</td>
<td>9</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>N/C</td>
<td>10</td>
<td>RF</td>
</tr>
<tr>
<td>3</td>
<td>LO</td>
<td>11</td>
<td>N/C</td>
</tr>
<tr>
<td>4</td>
<td>N/C</td>
<td>12</td>
<td>N/C</td>
</tr>
<tr>
<td>5</td>
<td>N/C</td>
<td>13</td>
<td>N/C</td>
</tr>
<tr>
<td>6</td>
<td>N/C</td>
<td>14</td>
<td>IF</td>
</tr>
<tr>
<td>7</td>
<td>N/C</td>
<td>15</td>
<td>N/C</td>
</tr>
<tr>
<td>8</td>
<td>N/C</td>
<td>16</td>
<td>N/C</td>
</tr>
</tbody>
</table>

3. Center area is ground

Schematic

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

For further information and support please visit: https://www.macom.com/support
## Electrical Specifications @ 25°C

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Frequency Range</th>
<th>Test Conditions</th>
<th>Units</th>
<th>Min.</th>
<th>Typ.</th>
<th>Max.</th>
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</thead>
<tbody>
<tr>
<td>Conversion Loss</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF = -10 dBm, IF = 60 MHz</td>
<td>dB</td>
<td>8.2</td>
<td>8.5</td>
<td>8.9</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>dB</td>
<td>—</td>
<td>—</td>
<td>9.5</td>
</tr>
<tr>
<td>L - R Isolation</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF Level = -10 dBm</td>
<td>dB</td>
<td>65</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>dB</td>
<td>62</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>L - I Isolation</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF Level = -10 dBm</td>
<td>dB</td>
<td>46</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>dB</td>
<td>46</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>R - I Isolation</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF Level = -10 dBm</td>
<td>dB</td>
<td>23</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>dB</td>
<td>23</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>LO VSWR</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF Level = -10 dBm</td>
<td>Ratio</td>
<td>1.5:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>Ratio</td>
<td>1.5:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>RF VSWR</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF Level = -10 dBm</td>
<td>Ratio</td>
<td>1.3:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>Ratio</td>
<td>1.5:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>IF VSWR</td>
<td>DC - 400 MHz</td>
<td>LO Drive = +7 dBm, RF Level = -10 dBm</td>
<td>Ratio</td>
<td>1.5:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ratio</td>
<td>1.5:1</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Input IP3</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, RF = -10 dBm, IF = 60 MHz</td>
<td>dBm</td>
<td>17.8</td>
<td>21.0</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>dBm</td>
<td>16.9</td>
<td>20.5</td>
<td>—</td>
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<tr>
<td>Input 1 dB Compression</td>
<td>900 MHz</td>
<td>LO Drive = +7 dBm, IF = 60 MHz</td>
<td>dBm</td>
<td>4.3</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>850 - 1050 MHz</td>
<td></td>
<td>dBm</td>
<td>4.3</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>IF 1 dB Bandwidth</td>
<td>DC - 400 MHz</td>
<td>LO = 900 MHz @ +7 dBm</td>
<td>MHz</td>
<td>0</td>
<td>—</td>
<td>400</td>
</tr>
</tbody>
</table>
Silicon Double Balanced HMIC Mixer
850 - 1050 MHz

Typical Performance Curves

Conversion Loss vs. Frequency
LO Drive = +5/+7/+9 dBm, RF = -10 dBm, IF = 60 MHz

Input 1 dB & P1dB vs. Frequency
LO Drive = +5/+7/+9 dBm, RF = -10 dBm, IF = 60 MHz

VSWR vs. Frequency
LO Drive = +7 dBm, RF = -10 dBm, IF = 60 MHz

Isolation vs. Frequency
LO Drive = +7 dBm, RF = -10 dBm

For further information and support please visit:
https://www.macom.com/support
MAMX-090950-1277LT Outline
3mm FQFP - 16 Lead Saw Singulated

NOTES:
2. 0.008 INCH MINIMUM FEATURE SIZE.
3. ALL DIMENSIONS SHOWN IN MILLIMETERS.
4. DRAWING CONFORMS TO MIL-PRF-38535.
5. FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION, SEE DRAWING SHEET 1.
6. FOR PCB FOOTPRINT INFORMATION, SEE DRAWING SHEET 1.
7. ALL DIMENSIONS IN MILLIMETERS.
8. MATERIAL: 300 series stainless steel.
9. DRAWING CONFORMS TO MIL-PRF-38535.
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