Silicon Double Balanced HMIC Mixer
700 - 1200 MHz

Features
- 7.0 dB Typical Conversion Loss
- +13 to +17 dBm LO Drive
- HMIC IC Process
- Silicon High Barrier Schottky Barrier Diodes
- DC - 400 MHz IF Bandwidth
- Low Cost Miniature Plastic Package
- RoHS* Compliant with 260°C Reflow Capability
- 100% Matte Tin Plating

Description
M/A-COM’s MA4EX950H1-1225T is a silicon monolithic 700 - 1200 MHz, high barrier, double balanced mixer in a low cost miniature surface mount SOT25 package. The die uses M/A-COM’s unique HMIC silicon/glass process to realize low loss passive elements while retaining the advantages of high barrier silicon Schottky barrier diodes.

Applications
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical Applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

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>
</tr>
</thead>
</table>
| Conversion Loss       | 800 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF = -10 dBm, IF = 60 MHz | dB     | 6.6   | 8.1   | 10.5  |
| L - R Isolation       | 800 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF Level = -10 dBm | dB     | 27.5  | 23.0  | —     |
| L - I Isolation       | 800 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF Level = -10 dBm | dB     | 28.5  | 28.5  | —     |
| R - I Isolation       | 800 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF Level = -10 dBm | dB     | 25.0  | 22.5  | —     |
| RF VSWR               | 800 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF Level = -10 dBm | Ratio  | 1.20:1| —     | —     |
| IF VSWR               | DC - 400 MHz          | LO Drive = +15 dBm
RF Level = -10 dBm | Ratio  | 1.55:1| —     | —     |
| Input IP3             | 850 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF = -5 dBm, IF = 60 MHz | dBm    | 21.0  | 23.8  | 25.0  |
| Input 1 dB Compression| 850 MHz
0.7 - 1.2 GHz        | LO Drive = +15 dBm
RF = -5 dBm, IF = 60 MHz | dBm    | 8.3   | —     | —     |
| IF 1 dB Bandwidth     | DC - 400 MHz          | LO = 850 MHz @ +15 dBm | MHz    | 0     | —     | 400   |

For further information and support please visit:
https://www.macom.com/support
Absolute Maximum Ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Maximum Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>-40°C to +85°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>
</tbody>
</table>

1. Exceeding these limits may cause permanent damage.

Conversion Loss

Isolation

VSWR

Input IP3 & 1 dB Compression
Case Styles

SOT-25

<table>
<thead>
<tr>
<th></th>
<th>INCHES</th>
<th>MILLIMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIM</td>
<td>MIN</td>
<td>MAX</td>
</tr>
<tr>
<td>A</td>
<td>0.106</td>
<td>0.122</td>
</tr>
<tr>
<td>B</td>
<td>0.100</td>
<td>0.118</td>
</tr>
<tr>
<td>C</td>
<td>-</td>
<td>0.051</td>
</tr>
<tr>
<td>D</td>
<td>.063 REF.</td>
<td>1.60 REF.</td>
</tr>
<tr>
<td>E</td>
<td>0.032</td>
<td>0.043</td>
</tr>
<tr>
<td>F</td>
<td>0.014</td>
<td>0.020</td>
</tr>
<tr>
<td>G</td>
<td>0.003</td>
<td>-</td>
</tr>
<tr>
<td>H</td>
<td>0.000</td>
<td>0.006</td>
</tr>
<tr>
<td>J</td>
<td>0.018 REF.</td>
<td>0.45 REF.</td>
</tr>
</tbody>
</table>

Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-25 package. Solder paste containing flux should be screened onto the pads to a thickness of 0.005-0.007 inches. The plastic package is placed in position, firmly adhering to the solder paste.

Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275 °C and the body temperature does not exceed +260 °C for the RoHS compliant devices.

Please refer to Application Note M538 for surface mounting instructions.