

MA4EXP950H1-1277T



Silicon Double Balanced HMIC Mixer 850 - 1050 MHz

M/A-COM Products
Rev. V3

Features

- + 35 dBm Typical Input IP3
- 8.3 dB Typical Conversion Loss
- + 15 to + 19 dBm LO Drive
- Fully Balanced Passive Mixer
- NO External Matching Required
- Low Cost Miniature Plastic MLP Package
- RoHS* Compliant with 260 °C. Reflow Capability
- 100% MATTE Tin Plating

Description and Applications

M/A-COM's MA4EXP950H1-1277T is a silicon monolithic 850-1050 MHz, high barrier, double balanced mixer in a low cost, miniature surface mount FQFP-N 3mm Square, 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 high barrier silicon schottky barrier diodes to produce a compact device.

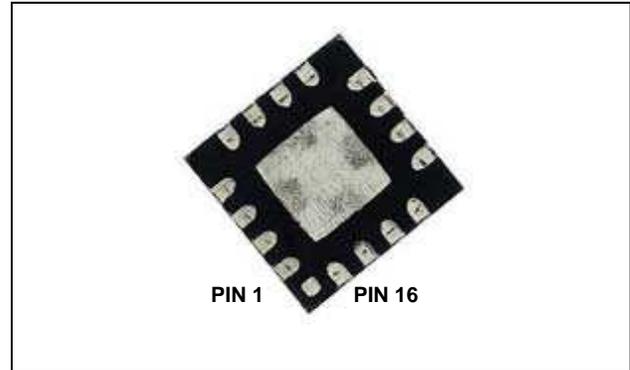
These mixers are well suited for GSM and CDMA cellular basestation infrastructure applications where small size and high performance is required. Typical applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

Absolute Maximum Ratings ^{1,2}

| Parameter | Maximum Ratings |
|-----------------------|-------------------|
| Operating Temperature | -40 °C to +85 °C |
| Storage Temperature | -65 °C to +150 °C |
| Incident LO Power | +20 dBm C.W. |
| Incident RF Power | +20 dBm C.W. |
| Soldering Temperature | +260 °C |

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

MLP 3mm Package (Circuit Side View)



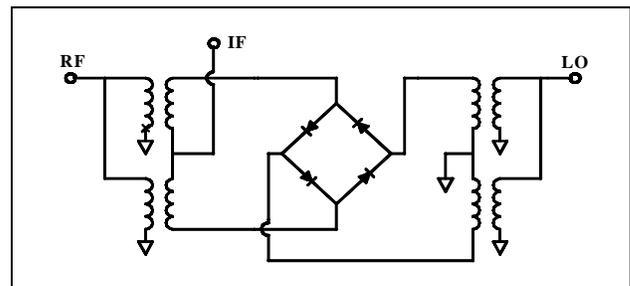
PIN Configuration

| PIN | Function | PIN | Function |
|-----|----------|-----|----------|
| 1 | N/C | 9 | N/C |
| 2 | N/C | 10 | RF |
| 3 | LO | 11 | N/C |
| 4 | N/C | 12 | N/C |
| 5 | N/C | 13 | N/C |
| 6 | N/C | 14 | IF |
| 7 | N/C | 15 | N/C |
| 8 | N/C | 16 | N/C |

Ordering Information

| Part Number | Package |
|--------------------|--------------------|
| MA4EXP950H1-1277T | Tape and Reel |
| MAMX-090950-000SMB | Sample Test Boards |

Mixer Schematic



* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

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- North America Tel: 800.366.2266
- Europe Tel: +353.21.244.6400
- India Tel: +91.80.43537383
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Visit www.macomtech.com for additional data sheets and product information.

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Electrical Specifications $T_A = 25\text{ }^\circ\text{C}$

| Parameter | Frequency Range | Test Conditions | Units | Min. | Avg. | Max. |
|------------------------|-------------------------|---|-------|--------|------------------|------------|
| Conversion Loss | 850 MHz 850-1050 MHz | LO Drive = +19 dBm RF = -10 dBm, IF = 60 MHz | dB | - - | 8.1 8.3 | 9.5 9.5 |
| L - R Isolation | 850 MHz 850-1050 MHz | LO Drive = +17 dBm RF Level = -10 dBm | dB | - - | 58.0 55.0 | - - |
| L - I Isolation | 850 MHz 850-1050 MHz | LO Drive = +17 dBm RF Level = -10 dBm | dB | - - | 49.0 44.0 | - - |
| R - I Isolation | 850 MHz 850-1050 MHz | LO Drive = +17 dBm RF Level = -10 dBm | dB | - - | 30.0 28.0 | - - |
| RF VSWR | 850 MHz 850-1050 MHz | LO Drive = +17 dBm RF Level = -10 dBm | Ratio | - - | 1.50:1 2.20:1 | - - |
| IF VSWR | DC - 500 MHz | LO Drive = +17 dBm RF Level = -10 dBm | Ratio | - - | 1.70:1 | - |
| LO VSWR | 850 MHz 850-1050 MHz | LO Drive = +17 dBm RF Level = -10 dBm | Ratio | - - | 2.1:1 1.7:1 | |
| Input IP3 | 850 MHz 850-1050 MHz | LO Drive = +19 dBm RF = -10 dBm, IF = 60 MHz | dBm | - - | 32.0 33.0 | - - |
| Input 1 dB Compression | 850 MHz 850-1050 MHz | LO Drive = +17 dBm IF = 60 MHz | dBm | - - | 12.1 12.7 | - - |
| IF1 dB Bandwidth | DC-200 MHz | LO = 850 MHz @ +17dBm | MHz | 0 | - | 200 |

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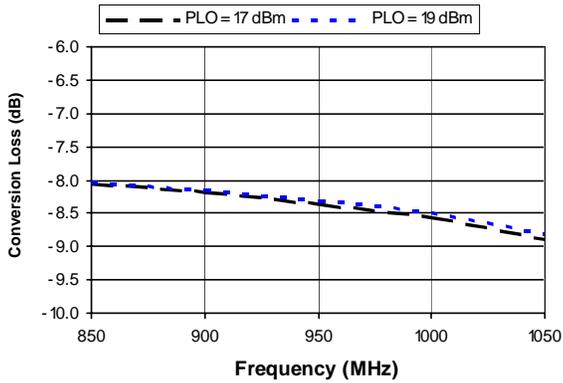


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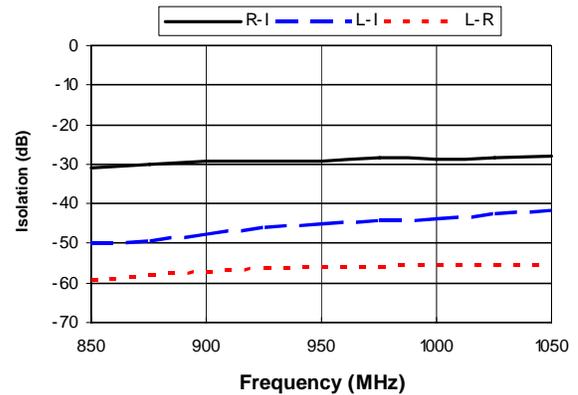
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Typical Performance Curves (LO Drive = +17 dBm, RF = -10 dBm, IF = 60 MHz)

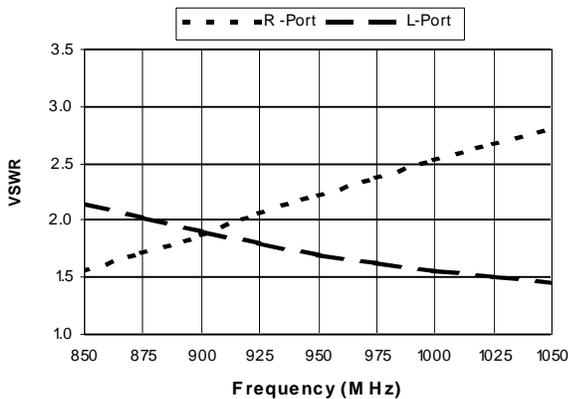
Conversion Loss



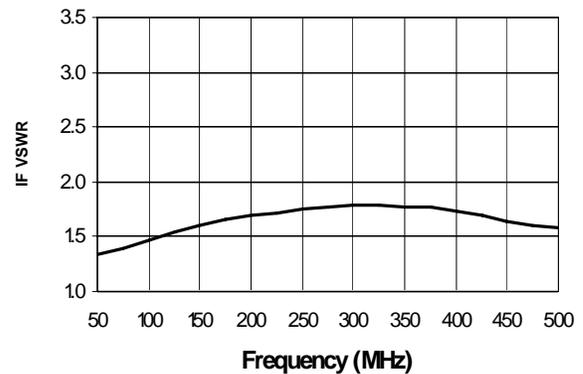
Isolation



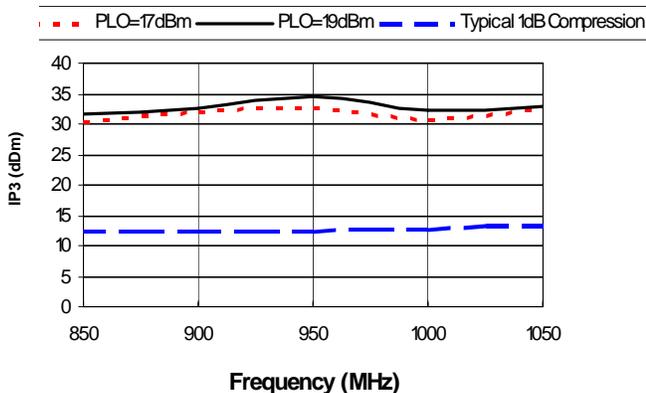
RF VSWR



IF VSWR



Input IP3 and 1 dB Compression Point



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