

Silicon Double Balanced HMIC™ Mixer, 700 - 1200 MHz

MA4EX950H-1225

Features

- Low Cost Miniature Plastic Package
- 7.0 dB Typical Conversion Loss
- +13 to +17 dBm LO Drive
- HMIC™ IC Process
- Silicon High Barrier Schottky Diodes
- DC - 1050 MHz IF Bandwidth

Description

M/A-COM's MA4EX950H-1225 is a silicon monolithic 700-1200 MHz double balanced mixer in a low cost miniature surface mount SOT-25 package. The die uses M/A-COM's unique HMIC™ silicon/glass process to achieve low loss passive elements while retaining the advantages of high barrier silicon Schottky diodes.

Applications

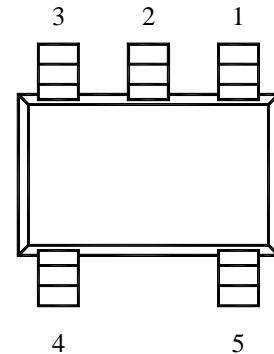
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

Absolute Maximum Ratings¹

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

1. Exceeding these limits may cause permanent damage.

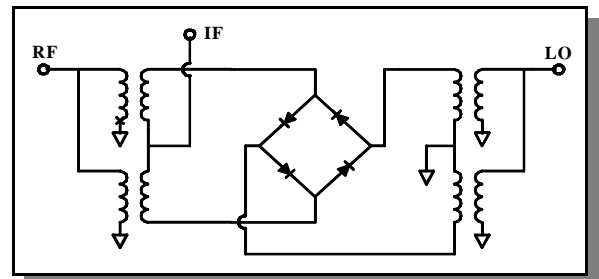
Package Outline



PIN Configuration

| PIN | Function | PIN | Function |
|-----|----------|-----|----------|
| 1 | RF | 4 | GND |
| 2 | GND | 5 | IF |
| 3 | LO | | |

Functional Schematic



Electrical Specifications: @ + 25 °C

| Parameter | Frequency Range | Test Conditions | Units | Min. | Typ. | Max. |
|------------------------|------------------------|---|-------|--------------|------------------|-------------|
| Conversion Loss | 800 MHz 0.7-1.2 GHz | LO Drive = +15 dBm RF = -10 dBm, IF = 60 MHz | dB | | 6.6 8.1 | 7.5 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 | | | 1.20:1 1.50:1 | |
| IF VSWR | DC - 400 MHz | LO Drive = +15 dBm RF Level = -10 dBm | | | 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 20.0 | 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 9.1 | |
| IF 1 dB Bandwidth | DC - 400 MHz | LO = 850 MHz @ +15 dBm | MHz | | | 400 |

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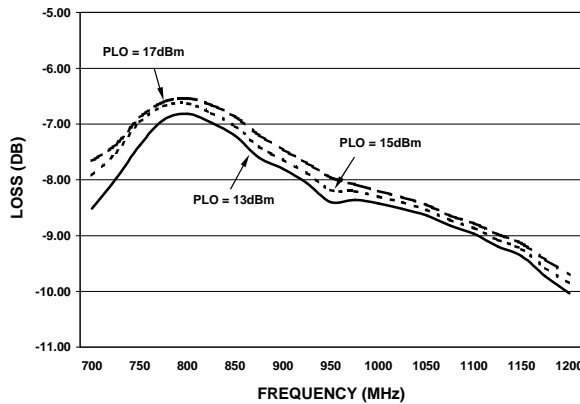
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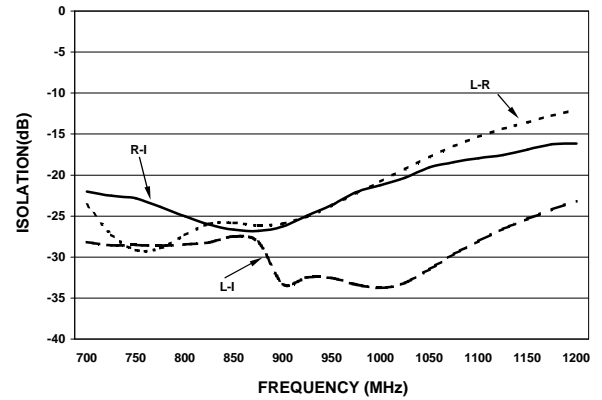
M/A-COM

Typical Performance Curves (LO Drive = +15 dBm, RF = -10 dBm, IF = 60 MHz)

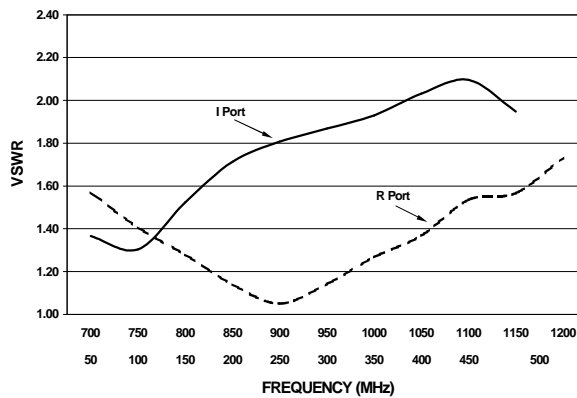
Conversion Loss



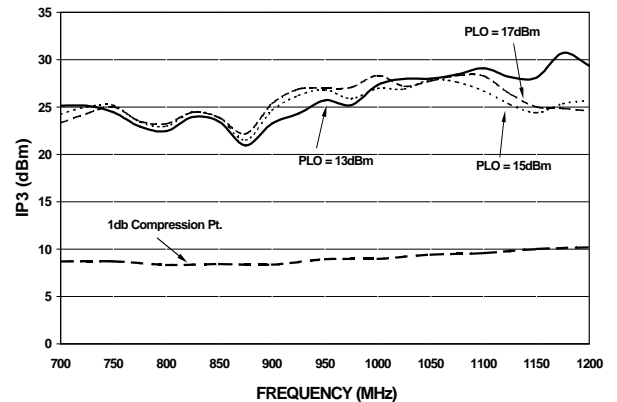
Isolation



VSWR



Input IP3 & 1 dB Compression Point

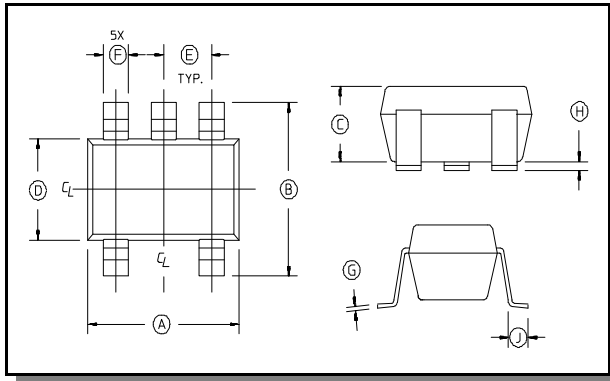


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Case Style - SOT-25



SOT-25 Dimensions

| Dim | Inches | | Millimeters | |
|-----|-----------|------|-------------|------|
| | Min. | Max. | Min. | Max. |
| A | .106 | .122 | 2.70 | 3.10 |
| B | .100 | .118 | 2.54 | 3.00 |
| C | — | .051 | — | 1.30 |
| D | .063 REF. | | 1.60 REF. | |
| E | .032 | .043 | .80 | 1.10 |
| F | .014 | .020 | .35 | .50 |
| G | .003 | — | .08 | — |
| H | .000 | .006 | .00 | .15 |
| J | .018 REF. | | .45 REF. | |

Notes: 1. Leads Coplanarity should be 0.003 (0.08) max.

Ordering Information

| Part Number | Package |
|-----------------|---------------|
| MA4EX950H-1225 | Tube |
| MA4EX950H-1225T | Tape and Reel |

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