

Silicon Double Balanced HMIC™ Mixer, 700 - 1200 MHz

V 2.00

MA4EX950M-1225T

Features

- SOT-25 Low Cost Miniature Plastic Package
- 7.0 dB Typical Conversion Loss
- +7 to +13 dBm LO Drive
- HMIC™ Patented Process
- Silicon Medium Barrier Schottky Diodes
- DC - 400 MHz IF Bandwidth

Description

M/A-COM's MA4EX950M-1225T 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 medium barrier silicon Schottky diodes.

Applications

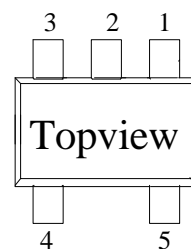
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

Absolute Maximum Ratings¹

| Parameter | Absolute Maximum |
|-----------------------|------------------------|
| Operating Temperature | -65 °C to +125 °C |
| Storage Temperature | -65 °C to +150 °C |
| Incident LO Power | +20 dBm |
| Incident RF Power | +20 dBm |
| Mounting Temperature | +235 °C for 10 seconds |

1. Exceeding these limits may cause permanent damage.

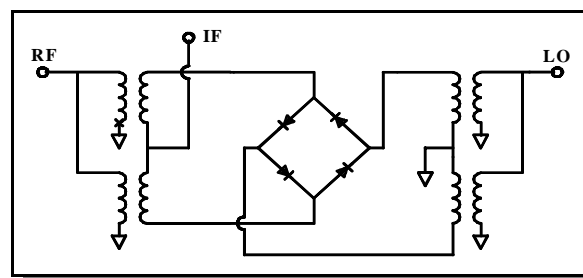
SOT-25 Package Outline (Topview)



PIN Configuration

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

Functional Schematic

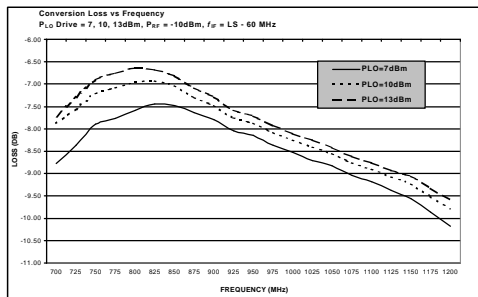


Electrical Specifications: $T_A = +25\text{ }^\circ\text{C}$

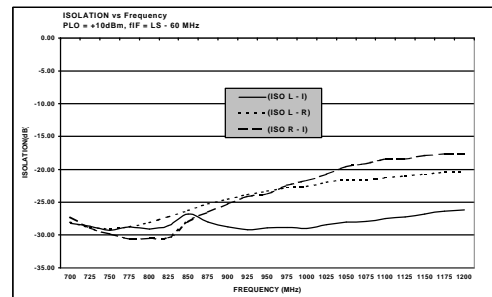
| Parameter | Frequency Range | Test Conditions | Units | Min. | Typ. | Max. |
|------------------------|------------------------|---|-------|--------------|----------------|-------------|
| Conversion Loss | 850 MHz 0.7—1.2 GHz | LO Drive = +10 dBm RF = -10 dBm, IF = 60 MHz | dB | | 7.0 8.1 | 8.0 10.5 |
| L - R Isolation | 850 MHz 0.7—1.2 GHz | LO Drive = +5 dBm RF Level = -10 dBm | dB | | 26.0 20.5 | |
| L - I Isolation | 850 MHz 0.7—1.2 GHz | LO Drive = +5 dBm RF Level = -10 dBm | dB | | 26.5 27.0 | |
| R - I Isolation | 850 MHz 0.7—1.2 GHz | LO Drive = +5 dBm RF Level = -10 dBm | dB | | 27.5 24.0 | |
| LO VSWR | 850 MHz 0.7—1.2 GHz | LO Drive = +5 dBm RF Level = -10 dBm | | | 1.8:1 1.8:1 | - - |
| RF VSWR | 850 MHz 0.7—1.2 GHz | LO Drive = +5 dBm RF Level = -10 dBm | | | 1.6:1 2.5:1 | - - |
| IF VSWR | DC - 400 MHz | LO Drive = +5 dBm RF Level = -10 dBm | | | 1.05:1 | - |
| Input IP3 | 850 MHz 0.7—1.2 GHz | LO Drive = +3 → +7 dBm RF = -10 dBm, IF = 60 MHz | dBm | 18.5 13.0 | 20.5 18.0 | |
| Input 1 dB Compression | 850 MHz 0.7—1.2 GHz | LO Drive = +3 → +7 dBm RF = -10 dBm, IF = 60 MHz | dBm | | 4.3 5.6 | |
| IF 1 dB Bandwidth | DC - 400 MHz | LO = 4650 MHz @ =5 dBm | MHz | 0 | | 400.0 |

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

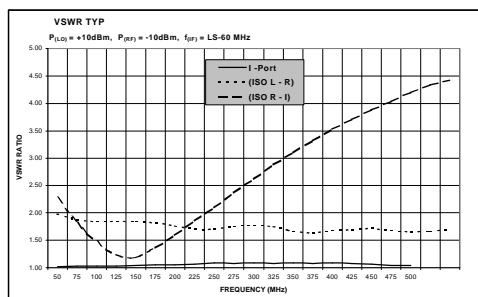
Conversion Loss



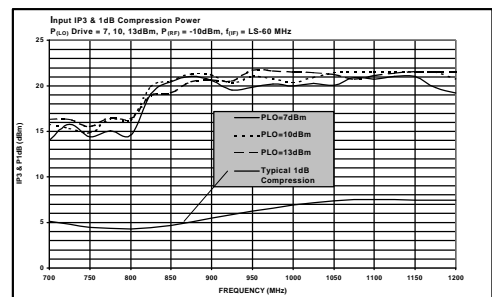
Isolation



RF and IF VSWR



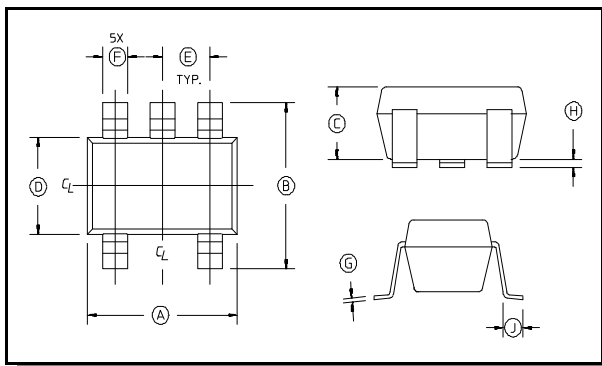
Third Order Intercept and Input 1 dB Compression Power



Specifications subject to change without notice.

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

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

SOT-25 Package Outline^{1,2}

1. Dimensions do not include mold flash, protrusion or gate burrs which shall not exceed 0.0098 in (.25mm) per side.
2. Lead Coplanarity is 0.003 (0.08) max.

SOT-25 Dimensions

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

Ordering Information

| Part Number | Package |
|-----------------|---------------|
| MA4EX950M-1225T | Tape and Reel |

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