

Silicon Double Balanced HMIC™ Mixer, 1700 - 2500 MHz

MA4EX240H-1225

Features

- Low Cost Miniature Plastic Package
- 6.5 dB Typical Conversion Loss at 2100 MHz
- 6.0 dB Typical Conversion Loss at 2400 MHz
- +13 to +17 dBm LO Drive
- HMIC™ Patented Process
- Silicon Low Barrier Schottky Diodes
- DC - 500 MHz IF Bandwidth

Description

M/A-COM's MA4EX240H-1225 is a silicon monolithic 1700-2500 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

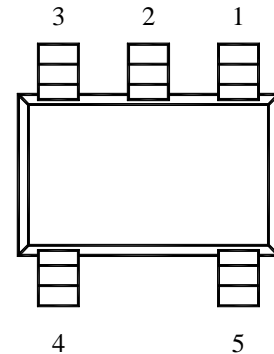
These mixers are well suited for high volume WLAN and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in both portable cellular and base station applications.

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.

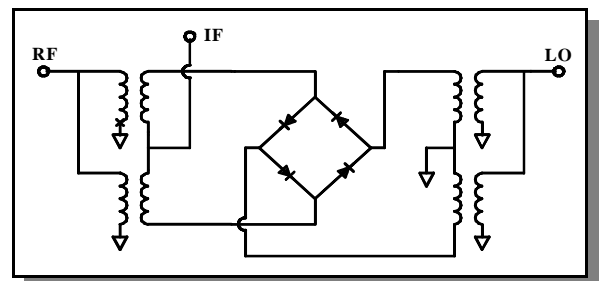
Package Outline



PIN Configuration

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

Functional Schematic



Electrical Specifications: @ + 25 °C

| Parameter | Frequency Range | Test Conditions | Units | Min. | Typ. | Max. |
|------------------------|-----------------|---|-------|------|-------|-------|
| Conversion Loss | 2100 MHz | LO Drive = +5 dBm | dB | | 5.4 | 6.0 |
| | 1700-2500 MHz | RF = -10 dBm, IF = 60 MHz | dB | | 6.0 | 7.0 |
| L - R Isolation | 2100 MHz | LO Drive = +5 dBm | dB | | 17.0 | |
| | 1700-2500 MHz | RF Level = -10 dBm | dB | | 16.0 | |
| L - I Isolation | 2100 MHz | LO Drive = +5 dBm | dB | | 21.0 | |
| | 1700-2500 MHz | RF Level = -10 dBm | dB | | 21.0 | |
| R - I Isolation | 2100 MHz | LO Drive = +5 dBm | dB | | 13.0 | |
| | 1700-2500 MHz | RF Level = -10 dBm | dB | | 14.0 | |
| RF VSWR | 2100 MHz | LO Drive = +5 dBm | | | 1.3:1 | |
| | 1700-2500 MHz | RF Level = -10 dBm | | | 1.9:1 | |
| IF VSWR | DC - 400 MHz | LO Drive = +5 dBm RF Level = -10 dBm | | | 1.8:1 | |
| Input IP3 | 2100 MHz | LO Drive = +5 dBm | dBm | 13.8 | +18.1 | |
| | 1700-2500 MHz | IF = 60 MHz | dBm | 13.8 | +21.0 | |
| Input 1 dB Compression | 2100 MHz | LO Drive = +5 dBm | dBm | | +8.5 | |
| | 1700-2500 MHz | IF = 60 MHz | dBm | | +8.7 | |
| IF 1 dB Bandwidth | | | MHz | 0 | | 500.0 |

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. MA-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

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

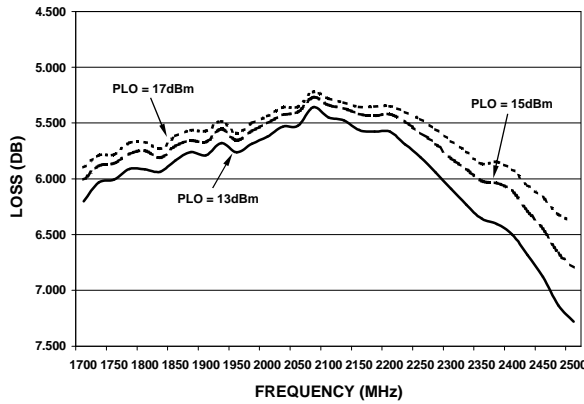
- North America: Tel. (800) 366-2266 2
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

tyco / Electronics

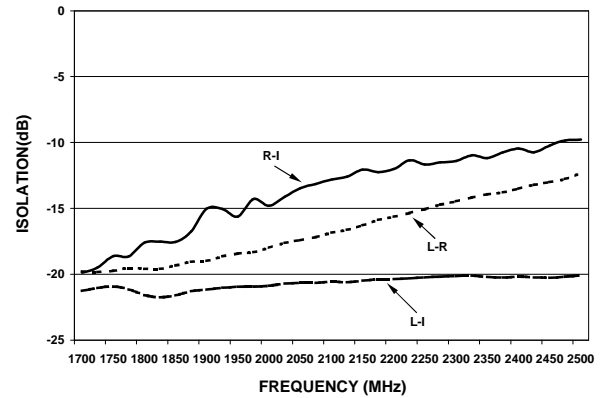
M/A-COM

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

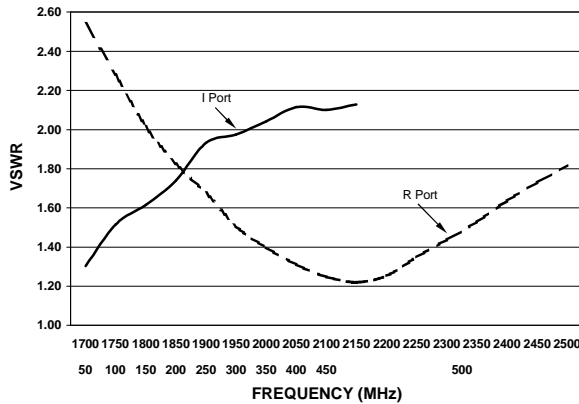
Conversion Loss



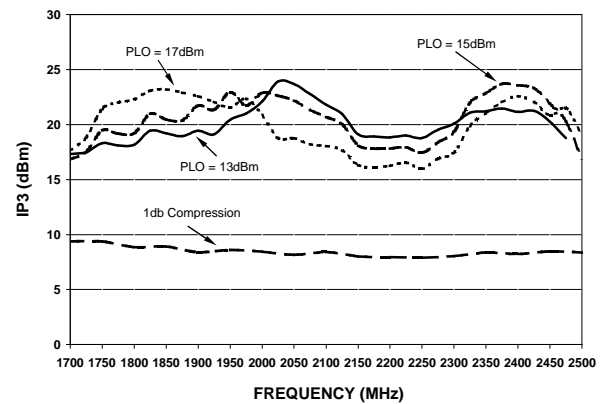
Isolation



VSWR



Input IP3 & 1 dB Compression Point

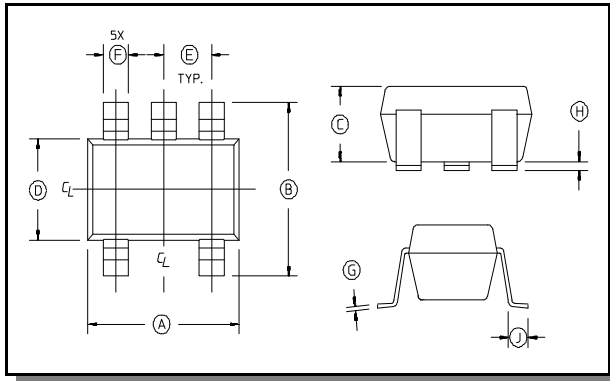


M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. MA-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

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

- 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

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 |
|-----------------|---------------|
| MA4EX240H-1225 | Tube |
| MA4EX240H-1225T | Tape and Reel |

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. MA-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

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

- 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