



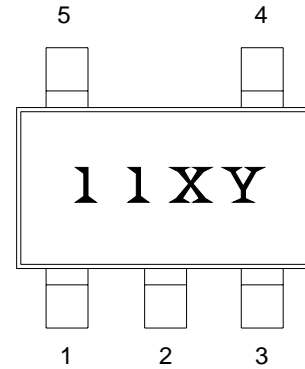
Silicon Double Balanced HMIC™ Mixer 1700 - 2500 MHz



Features

- Low Cost Miniature Plastic Package
- Low Conversion Loss:
 - 6.4 dB at 2100 MHz
 - 7.4 dB at 2400 MHz
- +3 to +7 dBm LO Drive
- HMIC™ Process
- Silicon Low Barrier Schottky Diodes
- DC -400 MHz IF Bandwidth

SOT-25 Outline



Description

M/A-COM's MA4EX240L-1225 is a silicon monolithic 1700 - 2500 MHz double balanced mixer in a low cost miniature surface mount SOT-25 package. The dies uses M/A-COM's unique HMIC™ silicon/glass process to achieve low loss passive elements while retaining the advantages of low barrier silicon Schottky diodes.

Applications

These mixers are well suited for high volume wireless applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in wireless LAN and other data applications in the 2.4 GHz 15M band.

Pin Configuration

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

Ordering Information

| Model No. | Package |
|-----------------|---------------|
| MA4EX240L-1225 | Bulk |
| MA4EX240L-1225T | Tape and Reel |

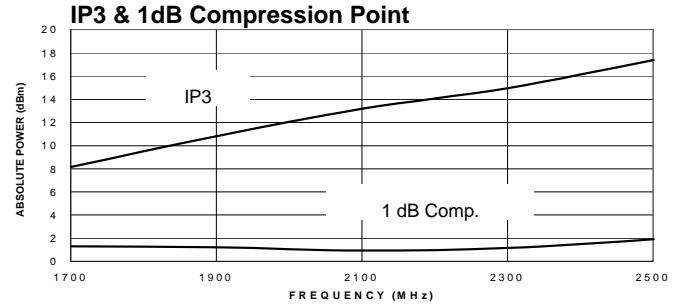
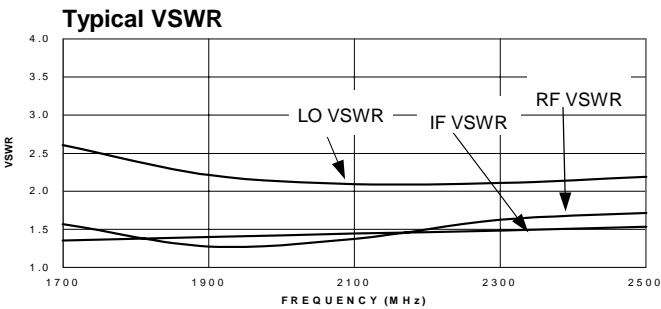
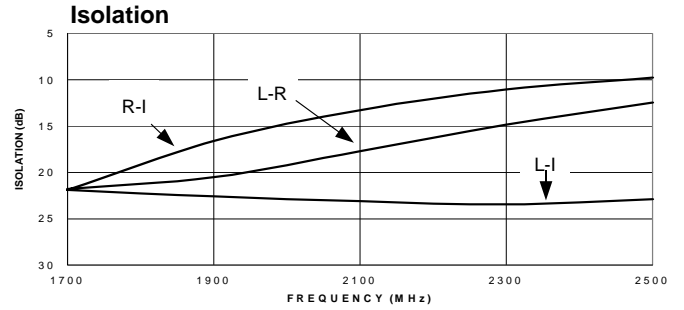
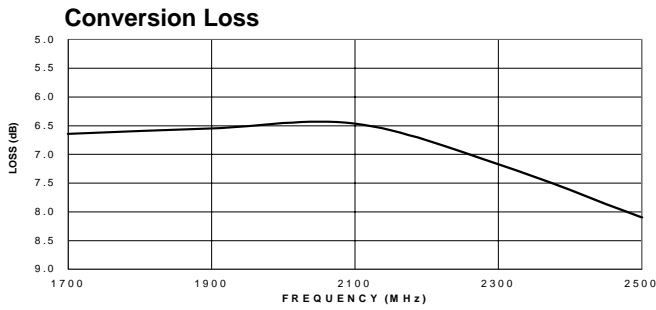
Electrical Specifications @ +25°C

| Parameter | Frequency Range | Test Conditions | Units | Min. | Typ. | Max. |
|------------------------|-----------------|---|-------|------|-------|------|
| Conversion Loss | 2100 MHz | LO Drive = +5 dBm, $f_{LO} = f_{RF} + f_{IF}$ | dB | — | 6.4 | 8.2 |
| | 1700-2500 MHz | RF = -10 dBm, IF = 60 MHz | dB | — | 7.0 | 9.5 |
| L - R Isolation | 2100 MHz | LO Drive = +5 dBm | dB | 14 | 17.5 | — |
| | 1700-2500 MHz | RF Level = -10 dBm | dB | — | 14 | — |
| L - I Isolation | 2100 MHz | LO Drive = +5 dBm | dB | — | 23 | — |
| | 1700-2500 MHz | RF Level = -10 dBm | dB | — | 23 | — |
| R - I Isolation | 2100 MHz | LO Drive = +5 dBm | dB | — | 13.5 | — |
| | 1700-2500 MHz | RF Level = -10 dBm | dB | — | 13 | — |
| LO VSWR | 2100 MHz | LO Drive = +5 dBm | — | — | 2.1 | — |
| | 1700-2500 MHz | RF Level = -10 dBm | — | — | 2.1 | — |
| RF VSWR | 2100 MHz | LO Drive = +5 dBm | — | — | 1.3 | — |
| | 1700-2500 MHz | RF Level = -10 dBm | — | — | 2.0 | — |
| IF VSWR | DC - 500 MHz | LO Drive = +5 dBm | — | — | 1.3 | — |
| | | IF Level = -10 dBm | — | — | — | — |
| Input IP3 | 2100 MHz | LO Drive = +5 dBm, $f_{RL} = f_{LO} - f_{IF}$ | dBm | +10 | +13.0 | — |
| | 1700-2500 MHz | IF = 60 MHz | dBm | +8 | +12.0 | — |
| Input 1 dB Compression | 2100 MHz | LO Drive = +5 dBm | dBm | — | +1.0 | — |
| | 1700-2500 MHz | IF = 60 MHz | dBm | — | +1.0 | — |
| IF 1 dB Bandwidth | 0-400 MHz | LO = 2050 MHz @ +5 dBm | MHz | — | 400 | — |



Typical Performance Curves

(LO Drive = +5 dBm, RF = -10 dBm, IF = 60 MHz)

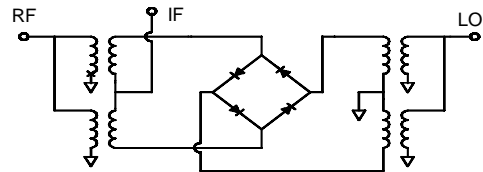


Absolute Maximum Rating¹

| 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 |

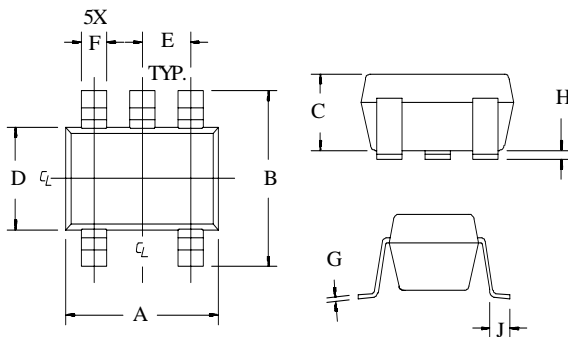
1. Exceeding these limits may cause permanent damage.

Schematic



Case Style

SOT-25



SOT-25^{1,2}

| DIM | INCHES | | MILLIMETERS | |
|-----|-------------|--------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.1103 | 0.1181 | 2.8 | 3.10 |
| B | 0.1023 | 0.1181 | 2.6 | 3.00 |
| C | 0.0355 | 0.0512 | 0.9 | 1.30 |
| D | 0.0591 | 0.0669 | 1.5 | 1.7 |
| E | 0.0374 Typ. | | 0.95 Typ. | |
| F | 0.0138 | 0.0197 | 0.35 | 0.5 |
| G | 0.0031 | 0.0079 | 0.08 | 0.20 |
| H | 0.0020 | 0.0059 | 0.05 | 0.15 |
| J | 0.0138 | 0.0216 | 0.35 | 0.55 |

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