

**Silicon Double Balanced
HMIC Mixer 2300 - 2800 MHz**

**MA4EXP240L-1277
V2**

Features

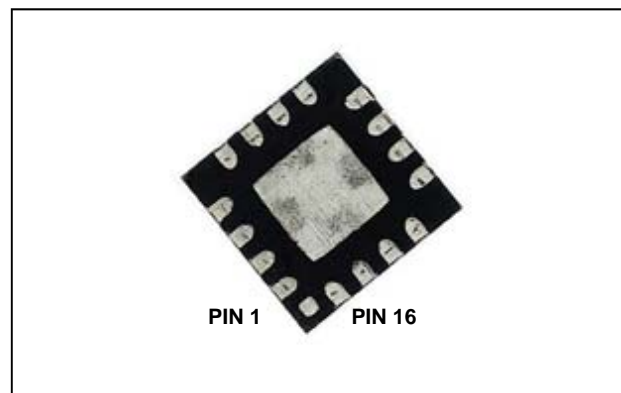
- + 18 dBm Typical Input IP3
- 8.3 dB Typical Conversion Loss
- + 5 to + 9 dBm LO Drive
- Fully Balanced Passive Mixer
- NO External Matching Required
- Low Cost Miniature Plastic MLP Package
- Lead Free (RoHS Compliant) with 260 °C Reflow Capability
- 100 % MATTE Tin Plating

Description and Applications

M/A-COM's MA4EXP240L-1277 is a silicon monolithic 2300-2800 MHz, low 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 low barrier silicon schottky barrier diodes to produce a compact device.

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

**MLP 3mm Package
(Circuit Side View)**



PIN Configuration¹

| 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 |

1. Package bottom is electrical ground

Ordering Information

| Part Number | Package |
|------------------|---------------|
| MA4EXP240L-1277T | Tape and Reel |

Silicon Double Balanced
HMIC Mixer 2300 - 2800 MHz

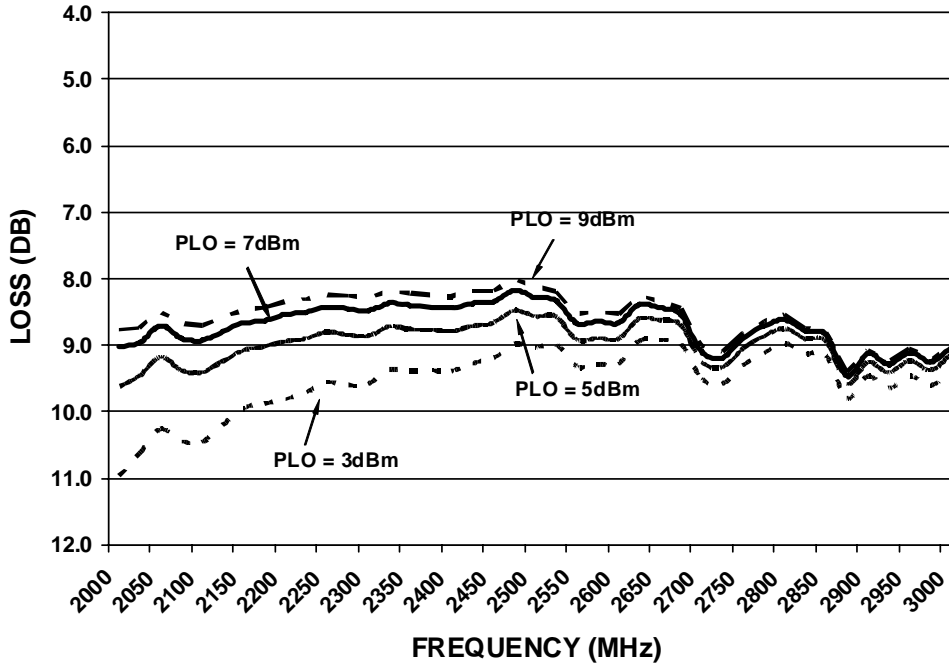
MA4EXP240L-1277
V2

Electrical Specifications @ +25 °C

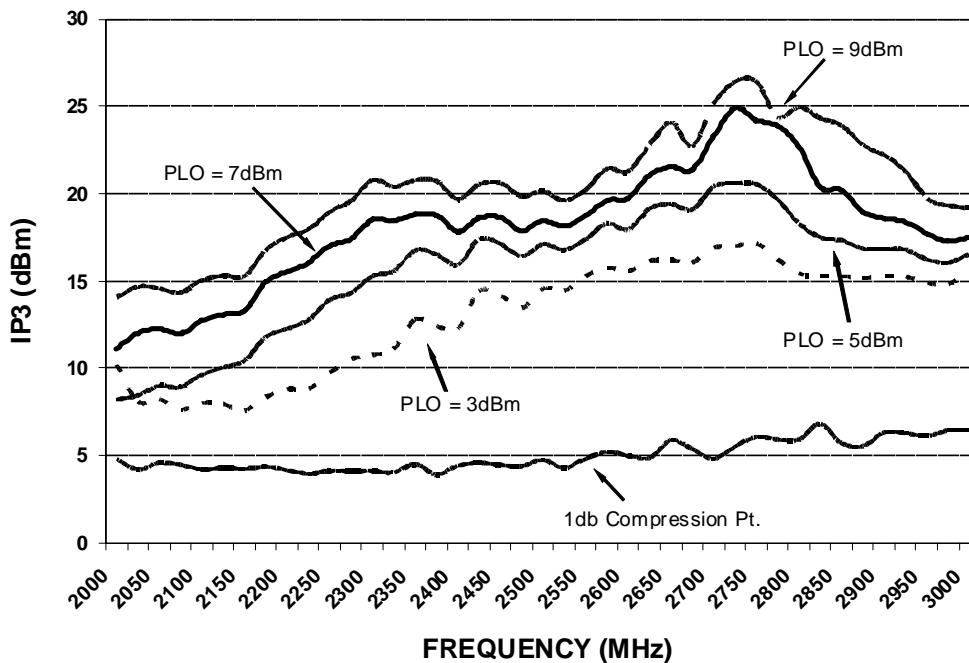
| Parameter | Frequency | Test Conditions | Units | Min. | Avg. | Max. |
|------------------------|---------------------------|--|-------|---------|----------------|-------------|
| Conversion Loss | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz | dB | - - | 8.3 8.5 | 9.8 10.5 |
| L - R Isolation | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF Level = -10 dBm | dB | - - | 51.0 51.0 | - - |
| L - I Isolation | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF Level = -10 dBm | dB | - - | 42.0 39.0 | - - |
| R - I Isolation | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF Level = -10 dBm | dB | - - | 23.0 23.0 | - - |
| LO VSWR | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF Level = -10 dBm | Ratio | | 2.0:1 1.9:1 | |
| RF VSWR | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF Level = -10 dBm | Ratio | - - | 1.6:1 1.7:1 | - - |
| IF VSWR | DC - 200 MHz | LO Drive = +7 dBm RF Level = -10 dBm | Ratio | - - | 1.5:1 - | - - |
| Input IP3 | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz | dBm | 15 - | 18.4 20.3 | - - |
| Input 1 dB Compression | 2500 MHz 2300-2800 MHz | LO Drive = +7 dBm IF = 60 MHz | dBm | - - | 4.8 4.9 | - - |

Typical Performance Curves (LO Drive = +5/+7/+9 dBm, RF = -10 dBm, IF = 60 MHz)

Conversion Loss

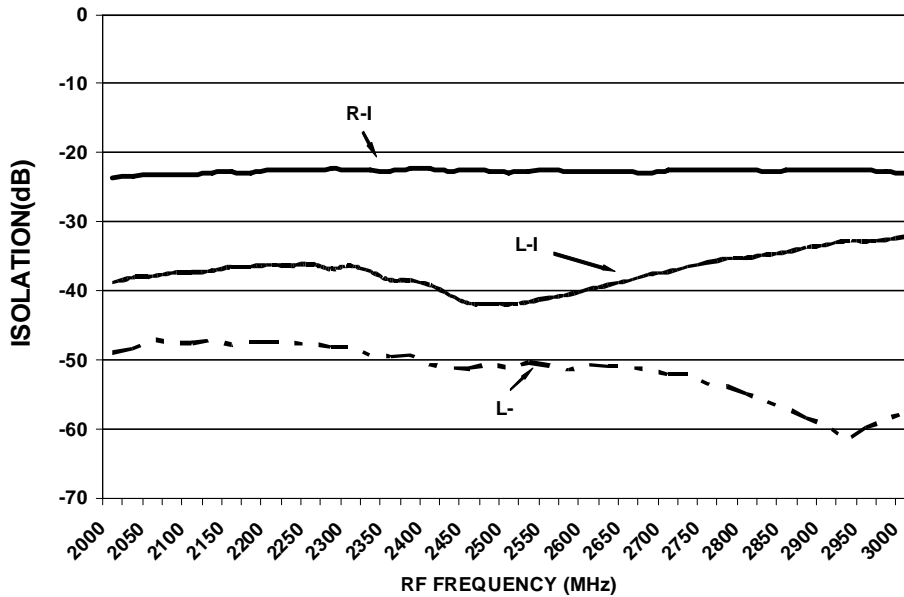


Input IP3

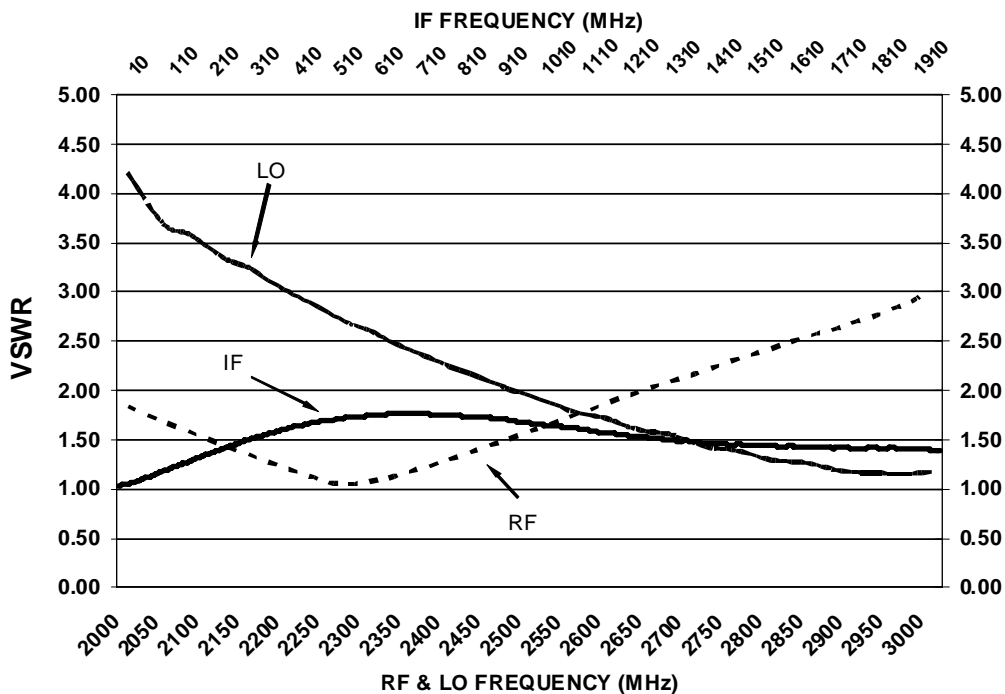


Typical Performance Curves (LO Drive = +5/+7/+9 dBm, RF = -10 dBm, IF = 60 MHz)

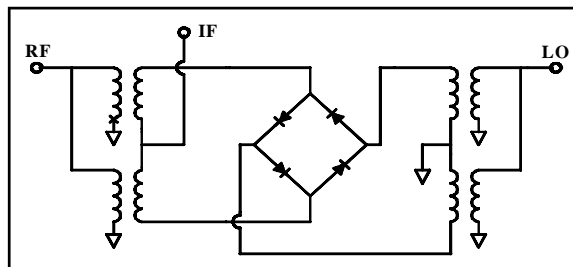
Isolation (LO Drive= +7dbm, RF= -10dBm)



VSWR (LO Drive= +7dbm, RF= -10dBm, IF=10dBm)



Mixer Schematic



Absolute Maximum Ratings¹

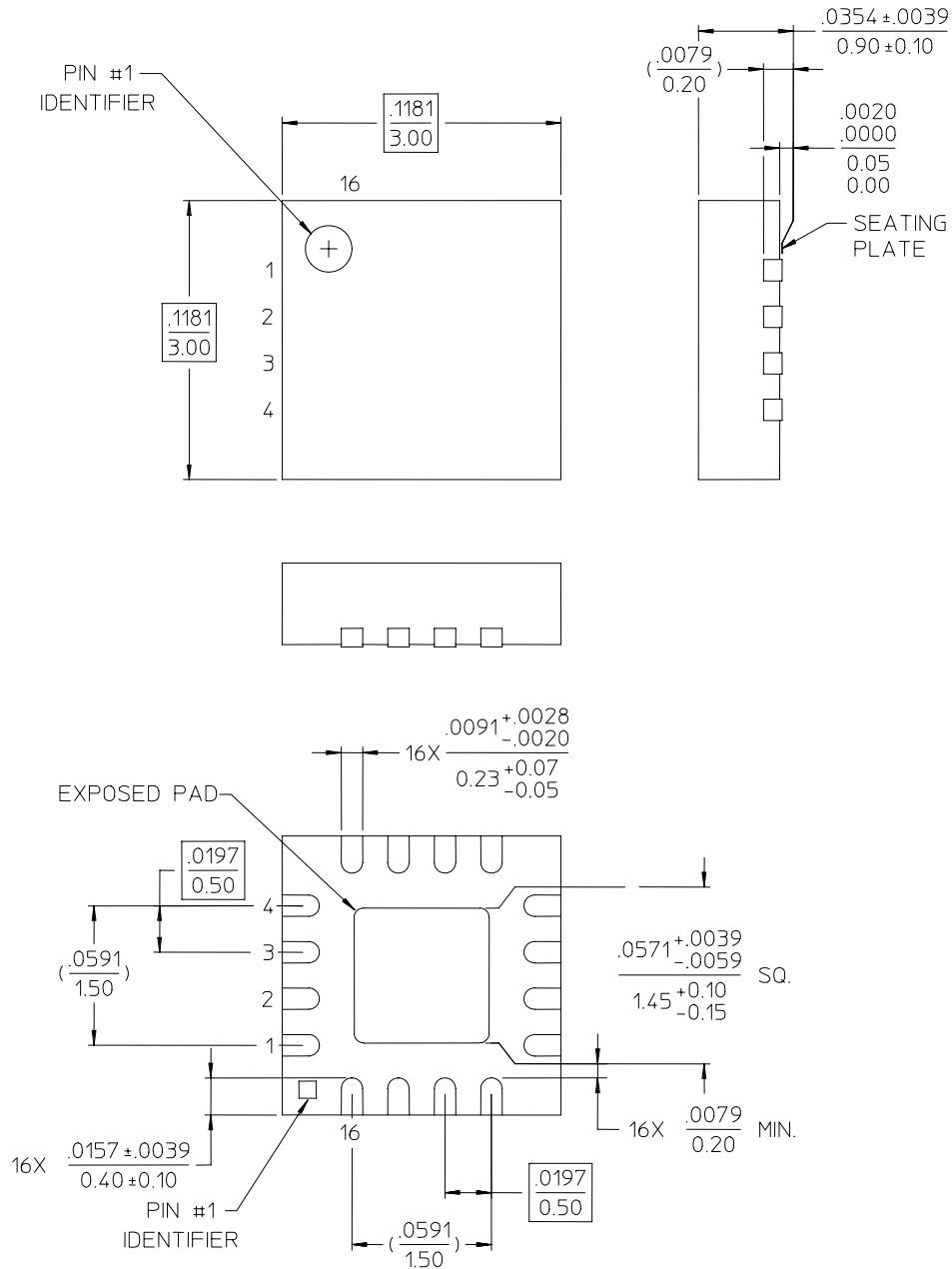
| Parameter | Maximum Ratings |
|-----------------------|-------------------|
| Operating Temperature | -40 °C to +85 °C |
| Storage Temperature | -65 °C to +150 °C |
| Incident LO Power | +20 dBm C.W. |
| Incident RF Power | +20 dBm C.W. |
| Soldering Temperature | +260 °C max |

1. Exceeding these limits may cause permanent damage.

**Silicon Double Balanced
HMIC Mixer 2300 - 2800 MHz**

**MA4EXP240L-1277
V2**

MA4EXP240L-1277 Outline – 3mm FQFP-N 16 Lead Saw Singulated



- NOTES: 1. RBFBRNCSB JEDEC MO-220, VAR. VBBD-1 FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. RBFBRNCSB S2083 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION.
3. ALL DIMENSIONS SHOWN AS INCHES/MM.