

E-Series HMIC Double Balanced Mixer

700 - 1400 MHz

EMD40-900L

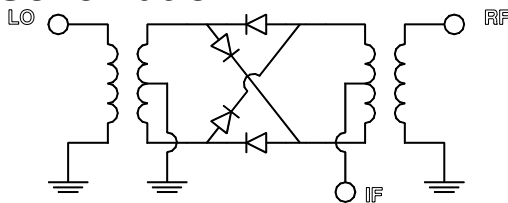
Features

- * SOIC-8 package
- * IC process
- * Low profile
- * LO Drive +3dBm to +7dBm

Description

M/A-COM's EMD40-900L is a passive double balanced mixer in a low cost, surface mount SOIC-8 package. Fabricated using a mature silicon process (HMIC), it is ideally suited for high volume cellular and wireless applications. Typical applications include frequency up/down conversion, modulation and demodulation in GSM, AMPS, DAMPS and JDC frequencies.

Schematic

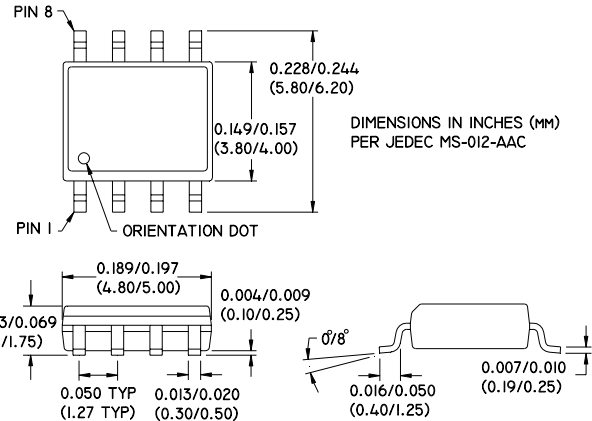


Specifications @ 25°C

| Frequency Range | 700 - 1400 MHz | | |
|------------------------------|----------------|-----------------|------------------|
| Conversion Loss | Maximum | Mean (x) | Sigma (σ) |
| 700 - 800 MHz | 9.5 dB | 6.40 dB | .24 |
| 800 - 1000 MHz | 8.0 dB | 6.09 dB | .08 |
| 1000 - 1250 MHz | 10.5 dB | 9.02 dB | .21 |
| 1250 - 1400 MHz | 12.0 dB | 11.02 dB | .21 |
| L - R Isolation | Minimum | Typical | |
| 700 - 1000 MHz | 26.0 dB | 34.2 dB | |
| 1000 - 1400 MHz | 24.0 dB | 30.3 dB | |
| L - I Isolation | Minimum | Typical | |
| 700 - 1000 MHz | 24.0 dB | 28.5 dB | |
| 1000 - 1400 MHz | 21.0 dB | 26.5 dB | |
| LO VSWR | Maximum | Typical | |
| 700 - 1000 MHz | 2.30 | 1.90 | |
| 1000 - 1400 MHz | 5.00 | 2.82 | |
| RF VSWR | Maximum | Typical | |
| 700 - 1000 MHz | 2.60 | 1.43 | |
| 1000 - 1400 MHz | 4.40 | 3.35 | |
| IF VSWR | Maximum | Typical | |
| DC - 400 MHz | 1.80 | 1.20 | |
| Input IP3 | Minimum | Typical | |
| 700 - 1000 MHz | 9.0 dBm | 13.0 dBm | |
| 1000 - 1400 MHz | 10.5 dBm | 15.2 dBm | |
| IF 1.0 dB Bandwidth | DC - 500MHz | | |
| Input 1dB Compression | +1.0 dBm | | |

Test conditions: LO drive = +7dBm, IF frequency = 60MHz. Mean and sigma, calculated at 750MHz, 850MHz and 1200MHz, represent typical variation within a wafer. S1231E

Specifications Subject to Change Without Notice



Pin Configuration

| Pin | Function | Pin | Function |
|-----|----------|-----|----------|
| 1 | GND | 5 | LO |
| 2 | GND | 6 | GND |
| 3 | GND | 7 | GND |
| 4 | IF | 8 | RF |

NOTE: LO and RF ports may be interchanged with a slight degradation in electrical performance.

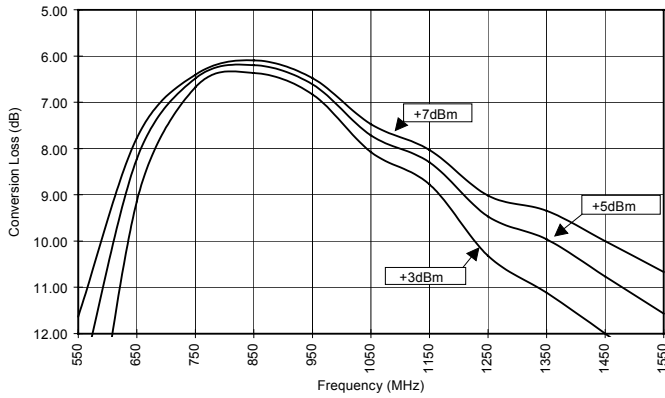
Ordering Information

| Part Number | Packaging |
|--------------|---------------|
| EMD40-900L | Tube |
| EMD40-900LTR | Tape and Reel |

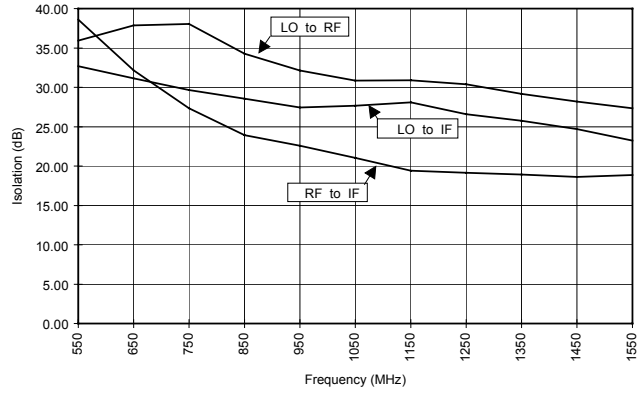


Typical Performance Over Extended Bandwidth

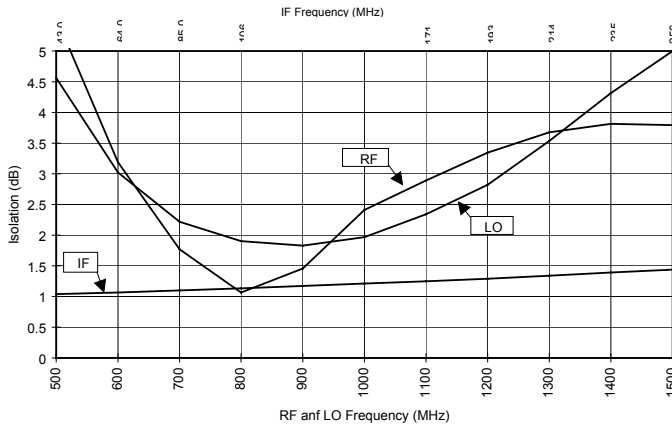
Conversion Loss



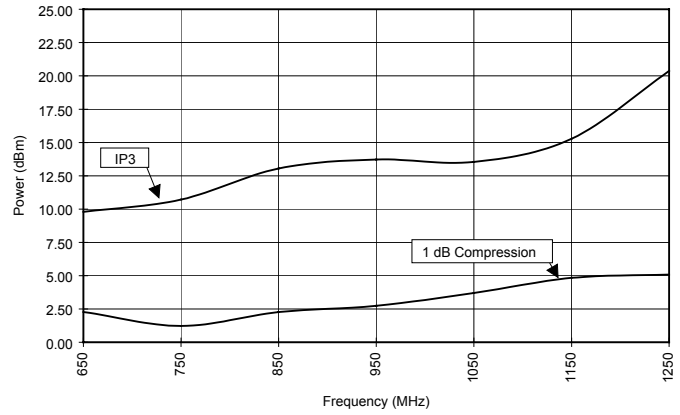
Isolation



VSWR



IP3 and 1dB Compression



Note: Conversion loss measured with fixed IF frequency of 60MHz. All measurements made with input power of +7dBm.

Spurious Table

(In dBc below IF, assuming down conversion)

| RF (n) | $nf_{LO} + mf_{RF}$ | | | | | $nf_{LO} - mf_{RF}$ | | | | |
|--------|---------------------|----|----|----|----|---------------------|----|----|----|----|
| | 0 | 1 | 2 | 3 | 4 | 0 | 1 | 2 | 3 | 4 |
| 0 | X | 2 | 16 | 8 | 27 | X | 2 | 16 | 8 | 27 |
| 1 | 24 | 0 | 19 | 29 | 36 | 24 | 0 | 43 | 14 | 26 |
| 2 | 63 | 38 | 51 | 46 | 51 | 63 | 34 | 46 | 37 | 51 |
| 3 | 57 | 72 | 58 | 61 | 61 | 57 | 56 | 75 | 55 | 73 |
| 4 | 75 | 76 | 76 | 75 | 72 | 79 | 72 | 74 | 73 | 70 |
| | 0 | 1 | 2 | 3 | 4 | 0 | 1 | 2 | 3 | 4 |

LO (m)

RF = 970 MHz, -10dBm

LO = 900 MHz, +7dBm

S 1231 E

Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|-------------------------|------------------|
| RF Input Power | +17dBm |
| LO Drive Power | +17dBm |
| Operating/Storage Temp. | -40°C to +85°C |

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