

# E-Series HMIC Double Balanced Mixer

## 1400 - 2000 MHz

# EMD40-1800L

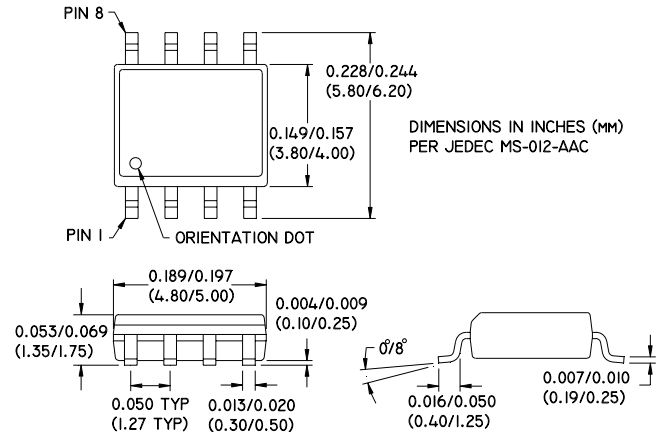
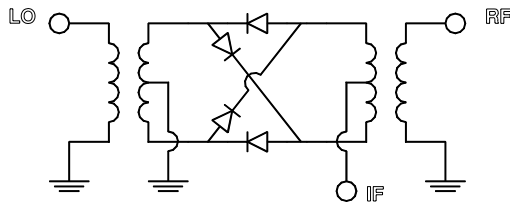
### Features

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

### Description

M/A-COM's EMD40-1800L 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 JDC (1500MHz), DCS (1800MHz) and PCS (1900MHz).

### Schematic



### Pin Configuration

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

### Ordering Information

| Part Number   | Packaging     |
|---------------|---------------|
| EMD40-1800L   | Tube          |
| EMD40-1800LTR | Tape and Reel |

### Specifications @ 25°C

| Frequency Range              | 1400 - 2000 MHz |                 |                  |
|------------------------------|-----------------|-----------------|------------------|
| <b>Conversion Loss</b>       | <b>Maximum</b>  | <b>Mean (x)</b> | <b>Sigma (σ)</b> |
| 1400 - 1700 MHz              | 8.0 dB          | 6.80 dB         | 0.27             |
| 1700 - 2000 MHz              | 9.5 dB          | 7.90 dB         | 0.26             |
| <b>L - R Isolation</b>       | <b>Minimum</b>  | <b>Typical</b>  |                  |
| 1400 - 1700 MHz              | 28.0 dB         | 33.5 dB         |                  |
| 1700 - 2000 MHz              | 25.0 dB         | 28.8 dB         |                  |
| <b>L - I Isolation</b>       | <b>Minimum</b>  | <b>Typical</b>  |                  |
| 1400 - 1700 MHz              | 23.0 dB         | 27.2 dB         |                  |
| 1700 - 2000 MHz              | 23.0 dB         | 27.0 dB         |                  |
| <b>LO VSWR</b>               | <b>Maximum</b>  | <b>Typical</b>  |                  |
| 1400 - 1700 MHz              | 3.20            | 2.66            |                  |
| 1700 - 2000 MHz              | 2.90            | 2.41            |                  |
| <b>RF VSWR</b>               | <b>Maximum</b>  | <b>Typical</b>  |                  |
| 1400 - 1700 MHz              | 3.00            | 1.75            |                  |
| 1700 - 2000 MHz              | 2.70            | 1.71            |                  |
| <b>IF VSWR</b>               | <b>Maximum</b>  | <b>Typical</b>  |                  |
| DC - 400 MHz                 | 1.80            | 1.40            |                  |
| <b>Input IP3</b>             | <b>Minimum</b>  | <b>Typical</b>  |                  |
| 1400 - 1700 MHz              | 8.0 dBm         | 11.0 dBm        |                  |
| 1700 - 2000 MHz              | 10.0 dBm        | 14.2 dBm        |                  |
| <b>IF 1.0 dB Bandwidth</b>   | DC - 500MHz     |                 |                  |
| <b>Input 1dB Compression</b> | +1.0 dBm        |                 |                  |

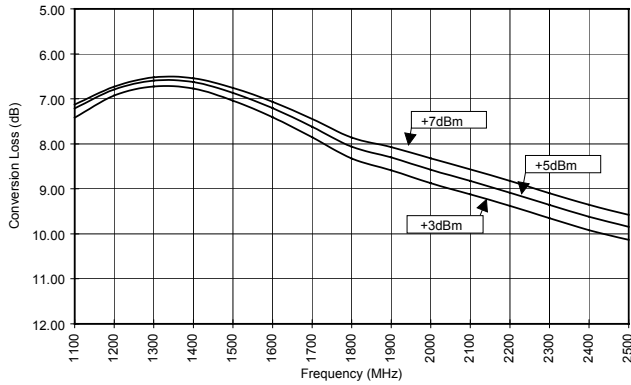
Test conditions: LO drive = +7dBm, IF frequency = 60MHz. Mean and sigma calculated at 1500MHz and 1800MHz.

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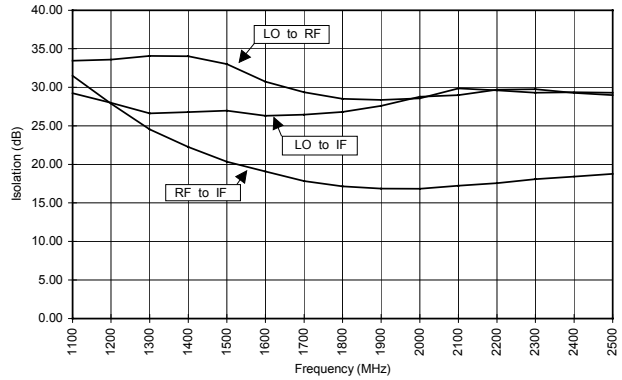
Specifications Subject to Change Without Notice

## Typical Performance Over Extended Bandwidth (1100MHz - 2500MHz)

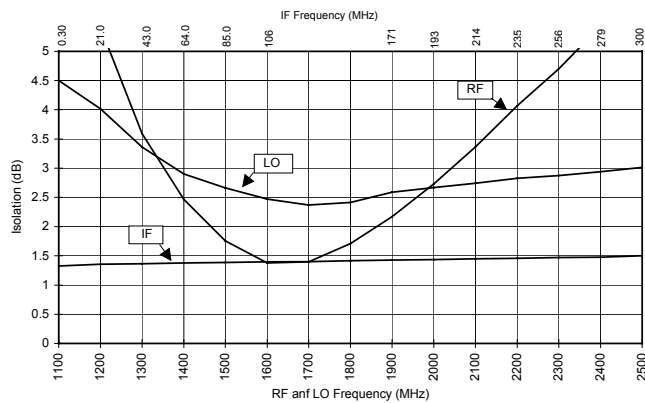
### Conversion Loss



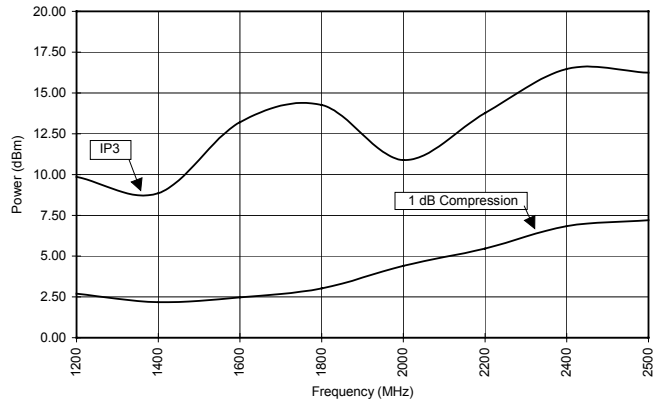
### Isolation



### 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                   | 17 | 16 | 11 | 41 | X                   | 17 | 16 | 11 | 40 |
| 1      | 12                  | 0  | 29 | 36 | 44 | 10                  | 0  | 25 | 14 | 32 |
| 2      | 47                  | 39 | 60 | 44 | 43 | 47                  | 38 | 53 | 40 | 58 |
| 3      | 54                  | 58 | 55 | 45 | 57 | 53                  | 51 | 57 | 52 | 49 |
| 4      | 79                  | 66 | 63 | 70 | 72 | 79                  | 61 | 62 | 61 | 64 |
|        | 0                   | 1  | 2  | 3  | 4  | 0                   | 1  | 2  | 3  | 4  |

LO (m)

RF = 1842.5 MHz, -5dBm  
LO = 1772.5 MHz, +7dBm

## 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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