

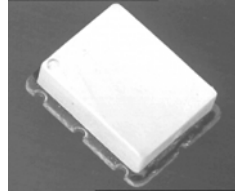
# E-Series Surface Mount Mixer

## 80 – 2500 MHz



### Features

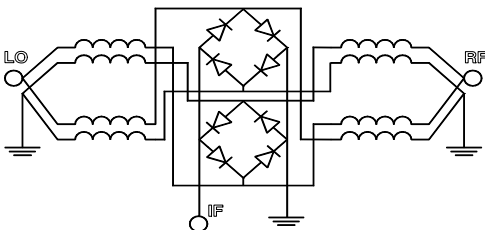
- LO Power +10 dBm
- Up to +5 dBm RF
- Surface Mount



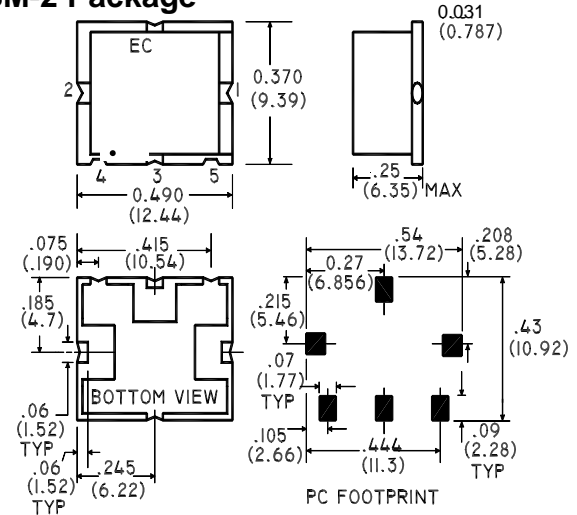
### Description

M/A-COM's ESMD-C50L is a Low Cost, Low Drive, Passive Double Double Balanced Mixer. Constructed using very broad band ferrite balun transformers and matched silicon schottky diodes, it's performance is especially suited to high dynamic range receivers. Given it's high 1dB compression point, the ESMD-C50L is also suitable for Transmitter upconversion at any frequency up to 2.5GHz.

### Schematic



### SM-2 Package



| Part Number | Packaging     |
|-------------|---------------|
| ESMD-C50L   | Tube          |
| ESMD-C50LTR | Tape and Reel |

### Electrical Specifications @ +25°C

| Parameter                           | Units           | Minimum | Typical | Maximum | Mean (x) | Sigma (σ) |
|-------------------------------------|-----------------|---------|---------|---------|----------|-----------|
| Frequency Range                     | 80 - 2500 MHz   | —       | —       | —       | —        | —         |
| IF 1.0 dB Bandwidth = DC - 1000 MHz | —               | —       | —       | —       | —        | —         |
| Conversion Loss                     | 80 - 1000 MHz   | —       | —       | 7.8     | 6.45     | 0.10      |
|                                     | 1000 - 2500 MHz | —       | —       | 9.0     | 7.73     | 0.14      |
| L - R Isolation                     | 80 - 1000 MHz   | 25.0    | 33.5    | —       | —        | —         |
|                                     | 1000 - 2500 MHz | 21.0    | 30.4    | —       | —        | —         |
| L - I Isolation                     | 80 - 1000 MHz   | 25.0    | 30.2    | —       | —        | —         |
|                                     | 1000 - 2500 MHz | 13.0    | 19.1    | —       | —        | —         |
| R - I Isolation                     | 80 - 1000 MHz   | 22.0    | 26.6    | —       | —        | —         |
|                                     | 1000 - 2500 MHz | 18.0    | 22.9    | —       | —        | —         |
| LO VSWR                             | 80 - 1000 MHz   | —       | 1.55    | 2.0     | —        | —         |
|                                     | 1000 - 2500 MHz | —       | 1.38    | 2.0     | —        | —         |
| RF VSWR                             | 80 - 1000 MHz   | —       | 1.42    | 1.8     | —        | —         |
|                                     | 1000 - 2500 MHz | —       | 1.85    | 2.4     | —        | —         |
| IF VSWR                             | DC - 600 MHz    | —       | 1.41    | 1.8     | —        | —         |
| Input IP3                           | 200 - 1000 MHz  | 17.0    | 21.5    | —       | —        | —         |
|                                     | 1000 - 2500 MHz | 14.0    | 19.82   | —       | —        | —         |
| Input 1dB Compression               | dBm             | —       | +5.0    | —       | —        | —         |

Test Conditions: LO Drive = +10dBm, IF frequency = 70MHz. Mean and Sigma calculated at 900MHz & 1800MHz.

V2.00 S 1253 E

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### Absolute Maximum Ratings

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

### Pin Configuration

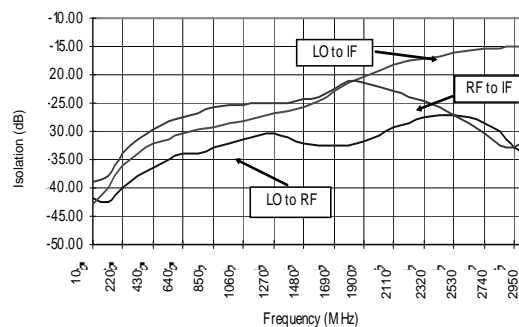
| Function | Pin No. |
|----------|---------|
| RF       | 1       |
| LO       | 2       |
| IF       | 3       |
| Ground   | 4,5,6   |

### Typical Performance @ +25°C

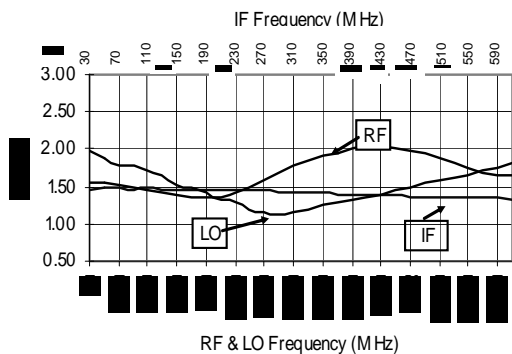
#### Conversion Loss



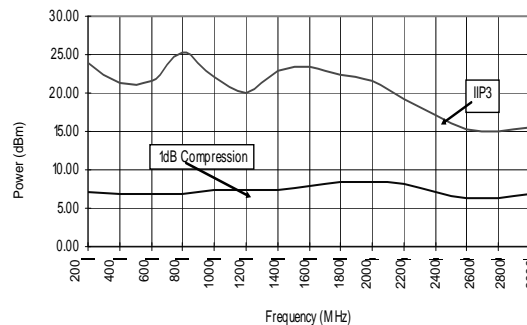
#### Isolation



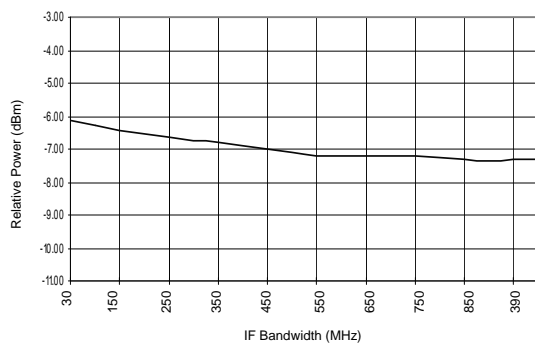
#### VSWR



#### IIP3 & 1dB Compression



#### IF Bandwidth



Note: Conversion Loss measured with fixed IF frequency of 70MHz.  
All measurements made with input power of +10 dBm.

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**Spurious Table: 1800MHz**

(In dBc below IF, assuming down conversion)

|    |     | nf <sub>LO</sub> - mf <sub>RF</sub> |    |    |    |    |    |
|----|-----|-------------------------------------|----|----|----|----|----|
| RF | 0   | X                                   | -2 | 26 | 25 | 32 |    |
|    | 1   | 21                                  | 0  | 36 | 18 | 50 |    |
|    | 2   | 54                                  | 56 | 51 | 46 | 60 |    |
|    | (n) | 3                                   | 69 | 64 | 67 | 65 | 62 |
|    |     | 4                                   | 82 | 84 | 84 | 82 | 83 |
|    |     | 0                                   | 1  | 2  | 3  | 4  |    |

LO (m)

RF = 1842.50 MHz, -5dBm  
 LO = 1772.50 MHz, +10dBm  
 IF = 70 MHz

**Spurious Table: 900MHz**

(In dBc below IF, assuming down conversion)

|    |     | nf <sub>LO</sub> - mf <sub>RF</sub> |    |    |    |    |    |
|----|-----|-------------------------------------|----|----|----|----|----|
| RF | 0   | X                                   | 9  | 22 | 23 | 32 |    |
|    | 1   | 18                                  | 0  | 36 | 12 | 36 |    |
|    | 2   | 53                                  | 49 | 59 | 49 | 51 |    |
|    | (n) | 3                                   | 65 | 59 | 63 | 65 | 64 |
|    |     | 4                                   | 84 | 8  | 83 | 83 | 82 |
|    |     | 0                                   | 1  | 2  | 3  | 4  |    |

LO (m)

RF = 970 MHz, -5dBm  
 LO = 900 MHz, +10dBm  
 IF = 70 MHz

**Spurious Table: 1900MHz**

(In dBc below IF, assuming down conversion)

|    |     | nf <sub>LO</sub> - mf <sub>RF</sub> |    |    |    |    |    |
|----|-----|-------------------------------------|----|----|----|----|----|
| RF | 0   | X                                   | -4 | 22 | 23 | 29 |    |
|    | 1   | 21                                  | 0  | 27 | 13 | 41 |    |
|    | 2   | 28                                  | 36 | 22 | 44 | 42 |    |
|    | (n) | 3                                   | 33 | 31 | 35 | 35 | 37 |
|    |     | 4                                   | 49 | 51 | 3  | 51 | 52 |
|    |     | 0                                   | 1  | 2  | 3  | 4  |    |

LO (m)

RF = 1960 MHz, -5dBm  
 LO = 1890 MHz, +10dBm  
 IF = 70 MHz

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