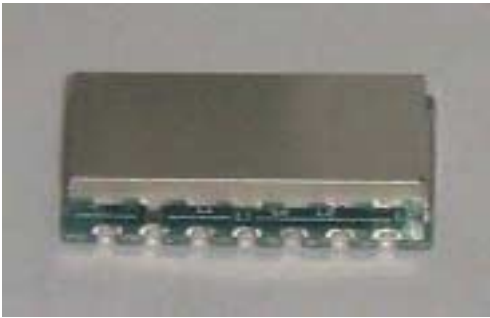


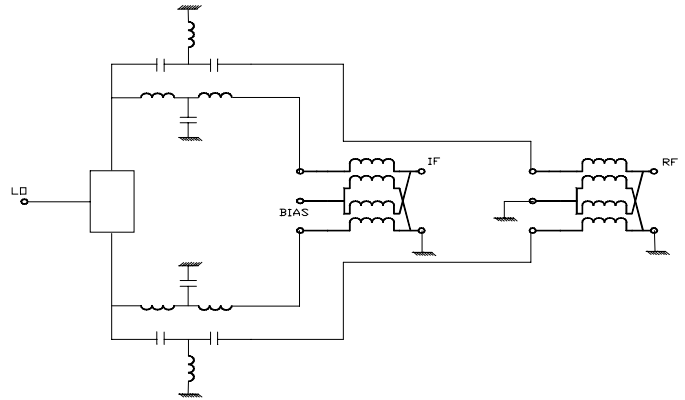
E-Series Surface Mount Mixer

2110-2170 MHz

EFM-2100



Functional Schematic



Features

- LO Power +13 dBm
- +22dB compression Point
- Surface Mount
- +32dBm IIP3
- Up and Down Converting

Description

M/A Com's EFM-2100 uses a novel, patent pending design to achieve very high linearity at low LO drive levels. Typically IP3 performance is +32dBm with an LO drive level of just +13dBm. The mixer combines PHEMT devices and carefully matched transformers in a surface mount package which can be used for both up and down converting. It is ideally suited for wireless

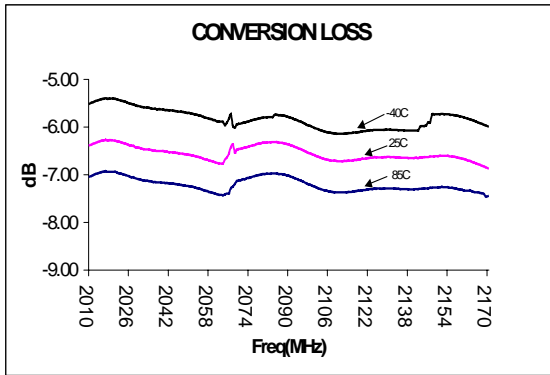
Electrical Specifications

| | Test Conditions | Units | Min. | Typ. | Max. |
|-----------------------|---|-------------------|-------------|-------------|-------------|
| Frequency Range | RF 2100 - 2170 LO 1650 - 2070 IF 100-500 DC bias +3V ±0.3V | MHz MHz MHz | — — — | — — — | — — — |
| Conversion Loss | 2110-2170 MHz | dB | — | 8.5 | 10.0 |
| L-R Isolation | 1650-2070 MHz | dB | 10.0 | 16.0 | — |
| L- I Isolation | 1650-2070 MHz | dB | 20.0 | 25.0 | — |
| R-I Isolation | 2110-2170 MHz | dB | 25 | 35 | — |
| LO VSWR | 1650-2070 MHz | — | — | 2.5 | — |
| RF VSWR | 2110-2170 MHz | — | — | 2.8 | — |
| IF VSWR | 100-500 MHz | — | — | 1.8 | — |
| Input IIP3 | Up Converting | dBm | 30.0 | 34.0 | — |
| Input IIP3 | Down Converting | dBm | 30.0 | 34.0 | — |
| Input IdB Compression | — | dBm | — | +22.0 | — |

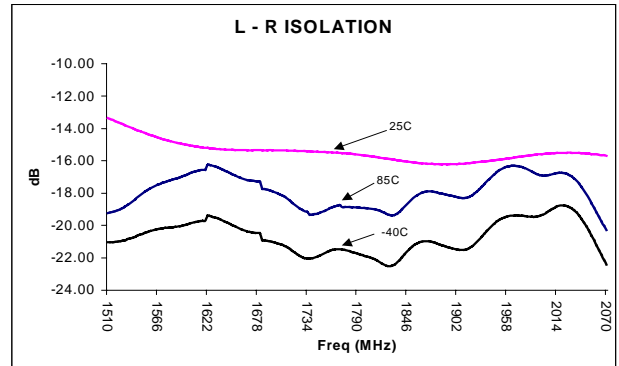
Note: Specifications subject to change without notice.

Typical Performance over Operating Temperatures

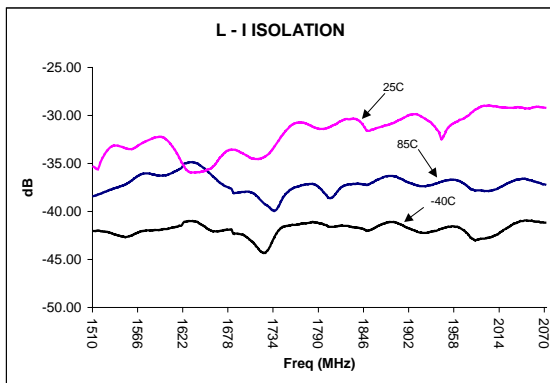
Conversion Loss



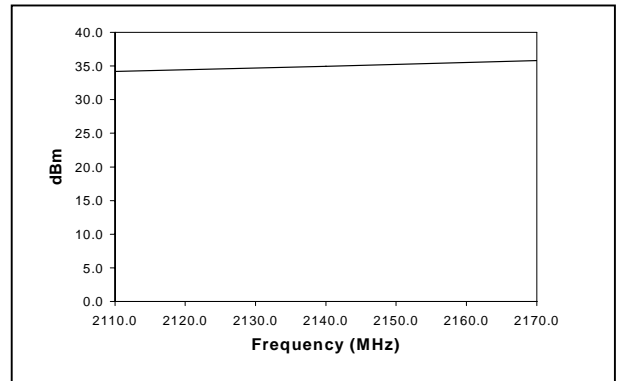
L - R Isolation



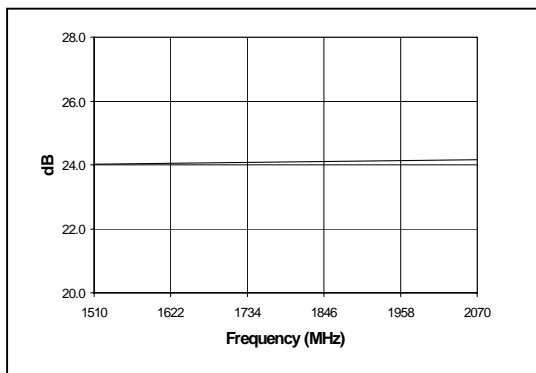
L - I Isolation



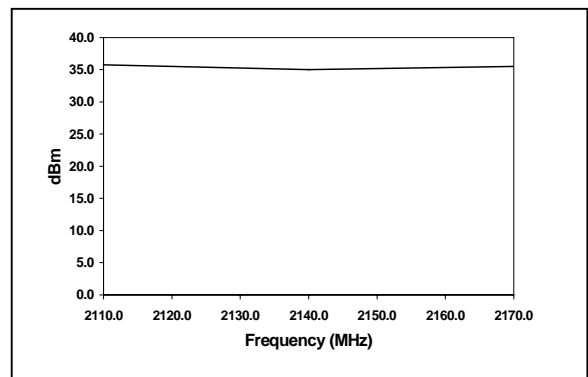
IIP3 Up- Converting



1dB compression Point



IIP3 Down-Converting



V1.01

Specifications subject to change without notice.

■ North America: Tel. (800) 366-2266, Fax (800) 618-8883
 ■ Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
 ■ Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

Visit www.macom.com for additional data sheets and product information.



Absolute Maximum Ratings

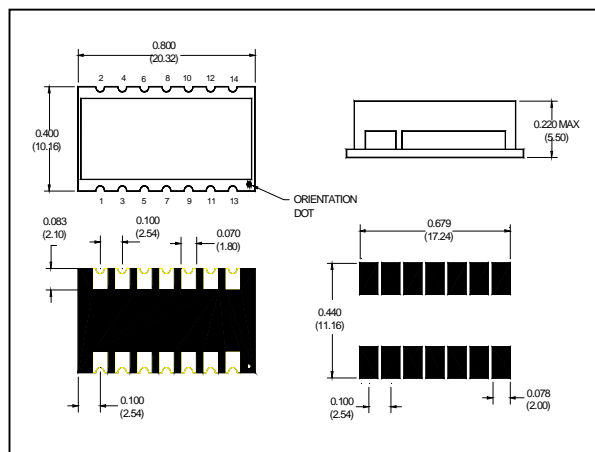
| Parameter | Absolute Maximum |
|-----------------------|--------------------|
| RF Power | 200 mW |
| Peak IF Current | 40 mA |
| Storage Temperature | -40 ° C to +85 ° C |
| Operating Temperature | -40 ° C to +85 ° C |
| ESD Rating | Zero |

Functional Configuration

| Function | Pin No. |
|-------------|------------------------|
| LO | 9 |
| RF | 2 |
| IF | 14 |
| Ground | 1,3,4,5,6,7,8,10,11,12 |
| Case Ground | - |
| Bias | 13 |

SM-106 Package

Note: Non Hermetic Package



V1.01

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Spurious Table: 2100MHz

(In dBc below IF, assuming down conversion)

| | | n _{f_{LO}} - m _{f_{RF}} | | | | | |
|-----|---|---|----|----|----|----|--|
| | 0 | X | 9 | 17 | 22 | 30 | |
| | 1 | 35 | 0 | 37 | 57 | 45 | |
| RF | 2 | 77 | 77 | 56 | 77 | 77 | |
| (n) | 3 | 77 | 77 | 77 | 70 | 77 | |
| | 4 | 77 | 77 | 77 | 77 | 77 | |
| | | 0 | 1 | 2 | 3 | 4 | |

LO (m)

RF = 2110 MHz, 0dBm
 LO = 2010 MHz, +13dBm
 IF = 100 MHz

Spurious Table: 2100MHz

(In dBc below IF, assuming down conversion)

| | | n _{f_{LO}} - m _{f_{RF}} | | | | | |
|-----|---|---|----|----|----|----|--|
| | 0 | X | 8 | 12 | 10 | 23 | |
| | 1 | 25 | 0 | 28 | 59 | 61 | |
| RF | 2 | 77 | 77 | 62 | 52 | 77 | |
| (n) | 3 | 77 | 77 | 77 | 77 | 70 | |
| | 4 | 77 | 77 | 77 | 77 | 77 | |
| | | 0 | 1 | 2 | 3 | 4 | |

LO (m)

RF = 2100 MHz, 0dBm
 LO = 1610 MHz, +13dBm
 IF = 500 MHz

Spurious Table: 2170MHz

(In dBc below IF, assuming down conversion)

| | | n _{f_{LO}} - m _{f_{RF}} | | | | | |
|-----|---|---|----|----|----|----|--|
| | 0 | X | 10 | 13 | 22 | 32 | |
| | 1 | 33 | 0 | 45 | 59 | 47 | |
| RF | 2 | 70 | 77 | 48 | 74 | 69 | |
| (n) | 3 | 71 | 77 | 77 | 66 | 77 | |
| | 4 | 77 | 77 | 77 | 77 | 77 | |
| | | 0 | 1 | 2 | 3 | 4 | |

LO (m)

RF = 2170 MHz, 0dBm
 LO = 2070 MHz, +13dBm
 IF = 100 MHz

Spurious Table: 2170MHz

(In dBc below IF, assuming down conversion)

| | | n _{f_{LO}} - m _{f_{RF}} | | | | | |
|-----|---|---|----|----|----|----|--|
| | 0 | X | 10 | 12 | 16 | 17 | |
| | 1 | 34 | 0 | 39 | 54 | 65 | |
| RF | 2 | 73 | 77 | 65 | 60 | 77 | |
| (n) | 3 | 77 | 77 | 77 | 77 | 77 | |
| | 4 | 77 | 77 | 77 | 77 | 77 | |
| | | 0 | 1 | 2 | 3 | 4 | |

LO (m)

RF = 2170 MHz, 0dBm
 LO = 1670 MHz, +13dBm
 IF = 500 MHz

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