E-Series Surface Mount Mixer
1850 – 1980 MHz

EFM-1900
V2

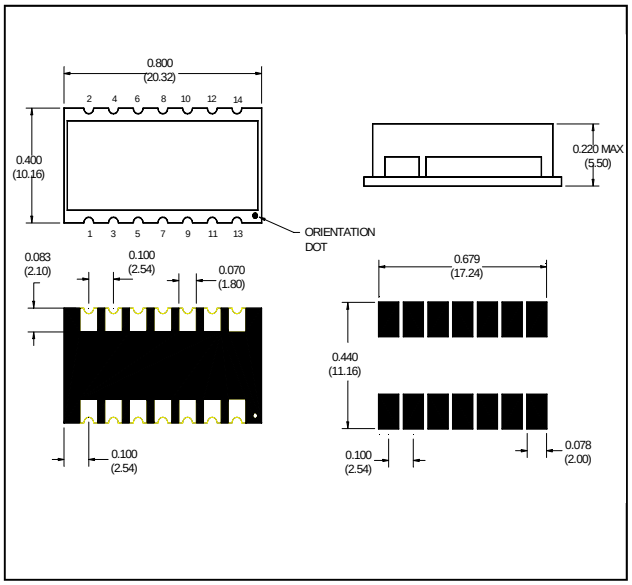
Features

- LO Power +13 dBm
- +22dB Compression Point
- Surface Mount
- +32dBm IIP3
- Up and Down converting
- Tape and reel packaging available

Description

M/A Com's EFM-1900 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 applications where high linearity is required. Parts are packaged in tape & reel.

SM - 106 - Non Hermetic Package



Electrical Specifications: T_A = 25°C, Z_0 = 50Ω [1]

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
RF Frequency	DC bias 3V ± 0.3V	1850 - 1980	MHz	—	—	—
LO Frequency	DC bias 3V ± 0.3V	1350 - 1880	MHz	—	—	—
IF Frequency	DC bias 3V ± 0.3V	100 - 500	MHz	—	—	—
Conversion Loss	—	1850 - 1980	dB	-	7.5	9.5
Isolation	LO to RF	1350 - 1880	dB	15.0	19.0	—
Isolation	LO to IF	1350 - 1880	dB	22.0	28.0	—
Isolation	RF to IF	1350 - 1880	dB	25.0	35.0	—
VSWR	LO	1350 - 1880	—	—	3.8	—
VSWR	RF	1850 - 1980	—	—	3.5	—

Ordering Information

Part Number	Package
EFM-1900TR	Tape and Reel (300 piece Reel)

- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

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

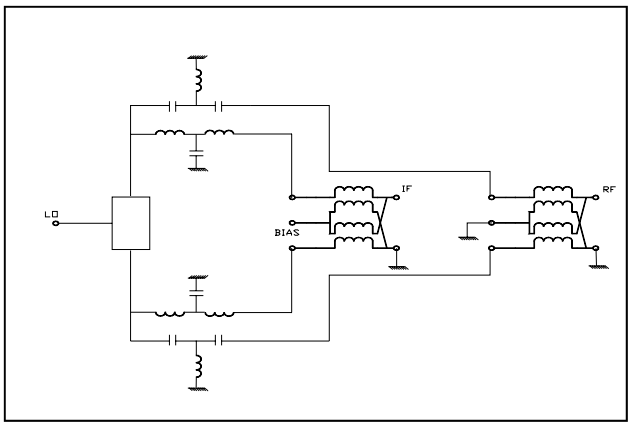
Electrical Specifications: T_A = 25°C, Z_0 = 50Ω [1]

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
IF VSWR	—	100 - 500	—	—	1.8	—
Input IP3	—	—	dBm	28.0	32.0	—
Input 1dB Compression	—	1850 - 1980	dBm	—	22.0	—

Pin Configuration

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

Schematic



Absolute Maximum Ratings [1]

Parameter	Absolute Maximum
Max RF Power	200 mW
Peak IF Current	40 mA
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +125°C
ESD Rating	Zero

1. Operation of this device above any one of these parameters may cause permanent damage.

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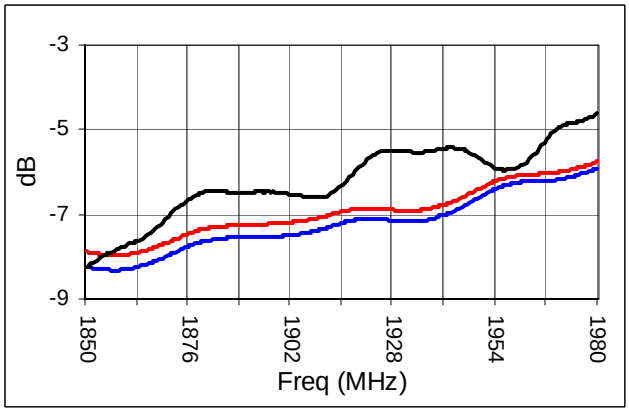
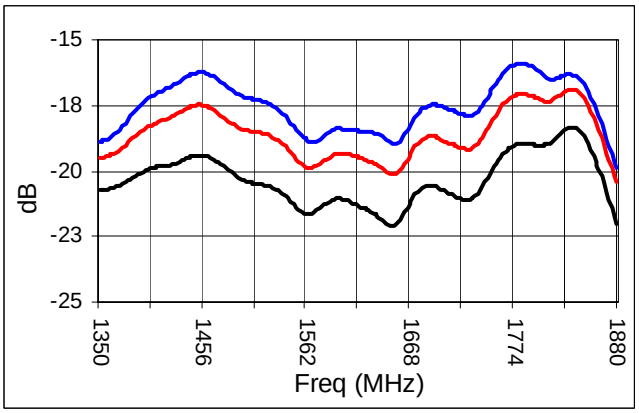
Typical Performance Curves

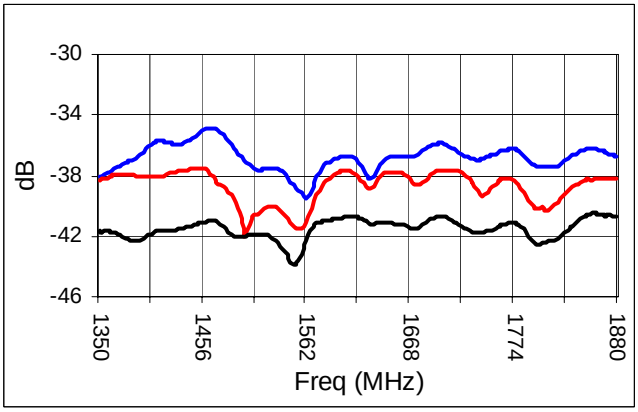
Conversion Loss



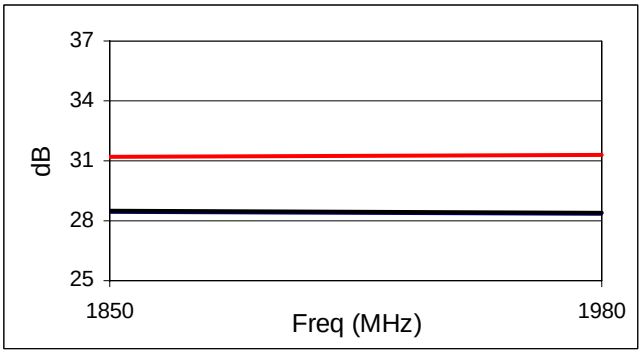
LO - RF Isolation



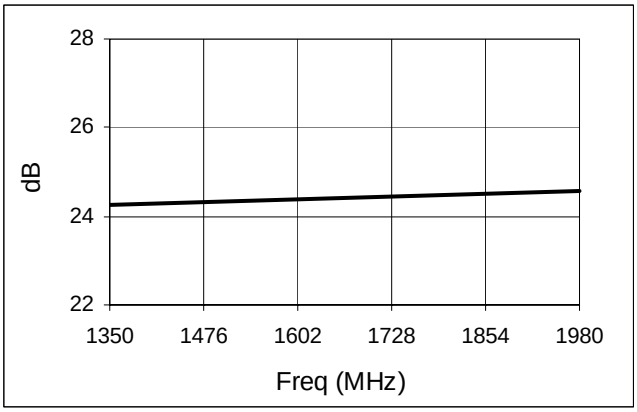
LO—IF Isolation



IIP3



1 dB Compression Point



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Spurious Table: 1850MHz

(In dBc below IF, assuming down conversion)

		nf_{LO} - mf_{RF}				
	0	X	16	8	16	16
	1	26	0	42	47	58
RF	2	67	77	55	77	77
(n)	3	77	77	77	77	77
	4	77	77	77	77	77
		0	1	2	3	4
		LO (m)				

RF = 1850 MHz, 0dBm
LO = 1750 MHz, +13dBm
IF = 100 MHz

Spurious Table: 1850MHz

(In dBc below IF, assuming down conversion)

		nf_{LO} - mf_{RF}				
	0	X	13	29	27	25
	1	27	0	17	58	45
RF	2	58	77	53	49	74
(n)	3	77	77	77	77	70
	4	77	77	77	77	77
		0	1	2	3	4
		LO (m)				

RF = 1850 MHz, 0dBm
LO = 1350 MHz, +13dBm
IF = 500 MHz

Spurious Table: 1980MHz

(In dBc below IF, assuming down conversion)

		nf_{LO} - mf_{RF}				
	0	X	9	25	34	17
	1	30	0	55	62	60
RF	2	77	69	66	74	77
(n)	3	77	77	77	77	77
	4	77	77	77	77	77
		0	1	2	3	4
		LO (m)				

RF = 1980 MHz, 0dBm
LO = 1880 MHz, +13dBm
IF = 100 MHz

Spurious Table: 1980MHz

(In dBc below IF, assuming down conversion)

		nf_{LO} - mf_{RF}				
	0	X	12	18	14	25
	1	30	0	21	59	58
RF	2	70	77	66	60	75
(n)	3	77	77	77	77	77
	4	77	77	77	77	77
		0	1	2	3	4
		LO (m)				

RF = 1980 MHz, 0dBm
LO = 1480 MHz, +13dBm
IF = 500 MHz

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