

**E-Series Surface Mount Mixer**  
810 – 1000 MHz

**EFM-900**  
**V2**

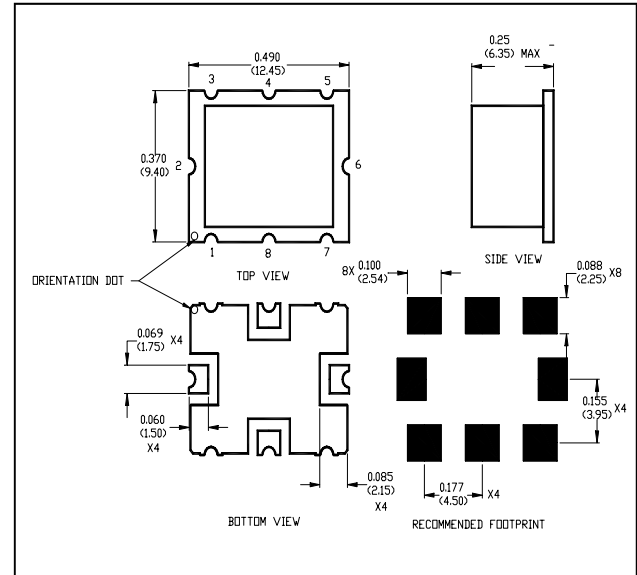
**Features**

- LO Power +13 dBm
- +22dB Compression Point
- +30dBm IIP3
- +32 dBm IIP3 Down Converting
- Surface Mount
- Up and Down converting
- Tape and reel packaging available

**Description**

M/A Com's EFM-900 uses a novel, patent pending design to achieve very high linearity at low LO drive levels. Typically IP3 performance is +30dBm 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 - 108 - Non Hermetic Package**



**Electrical Specifications:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50\Omega$ <sup>1</sup>**

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
RF Frequency	DC bias 6V ± 0.3V	810 - 1000	MHz	—	—	—
LO Frequency	DC bias 6V ± 0.3V	700 - 1000	MHz	—	—	—
IF Frequency	DC bias 6V ± 0.3V	10 - 100	MHz	—	—	—
Conversion Loss	—	810 - 1000	dB	-	8.5	9.5
Isolation	LO to RF	700 - 1000	dB	18.0	22.0	—
Isolation	LO to IF	700 - 1000	dB	25.0	33.0	—
Isolation	RF to IF	810 - 1000	dB	30.0	37.0	—
VSWR	LO	700 - 1000	—	—	1.8	—
VSWR	RF	810 - 1000	—	—	3.5	—

**Ordering Information**

Part Number	Package
EFM-900TR	Tape and Reel (500 piece Reel)

<sup>1</sup>

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Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

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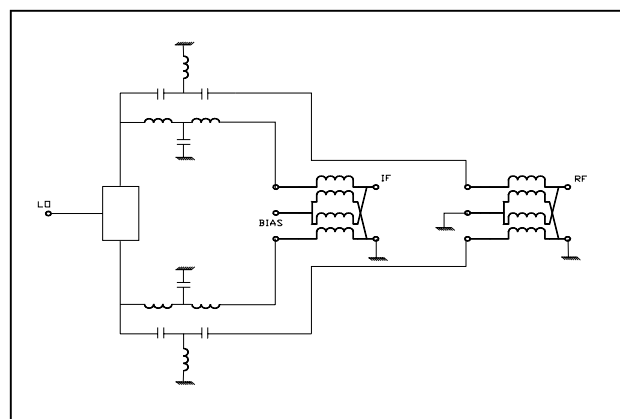
**Electrical Specifications:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50\Omega$  <sup>1</sup>**

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
IF VSWR	—	10 - 100	—	—	1.4	—
Input IP3	Up Converting	810 - 1000	dBm	30.0	32.0	—
Input IP3	Down Converting	810 - 1000	dBm	28.0	32.0	—
Input 1dB Compression	—	810 - 1000	dBm	—	22.0	—

**Pin Configuration**

Pin No.	Function
1	Ground
2	LO
3	Ground
4	IF
5	Ground
6	RF
7	Ground
8	Bias

**Schematic**



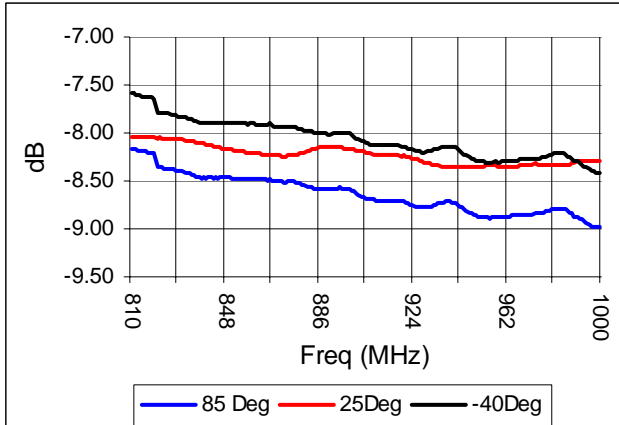
**Absolute Maximum Ratings <sup>1</sup>**

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

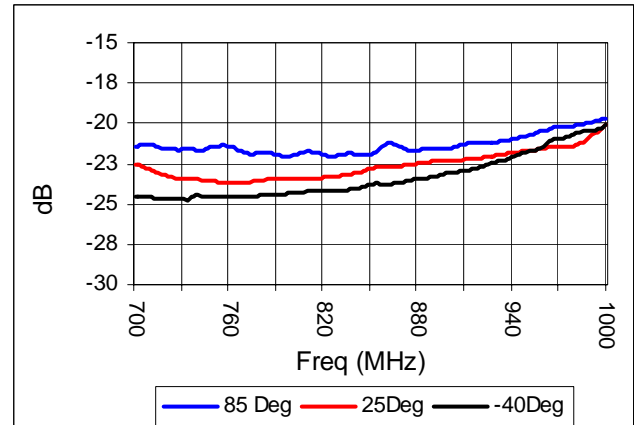
1. Operation of this device above any one of these parameters may cause permanent damage.

**Typical Performance Curves**

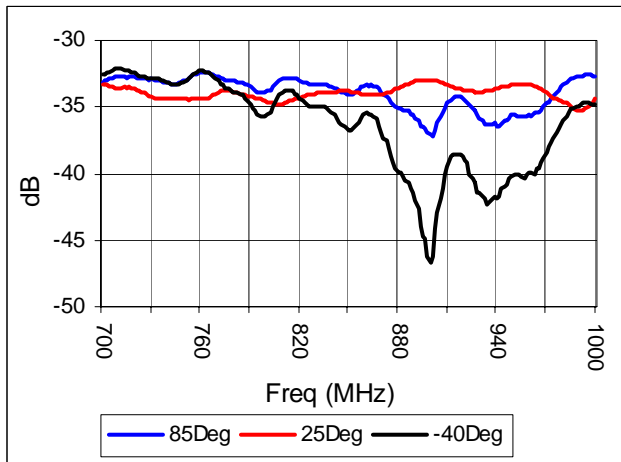
**Conversion Loss**



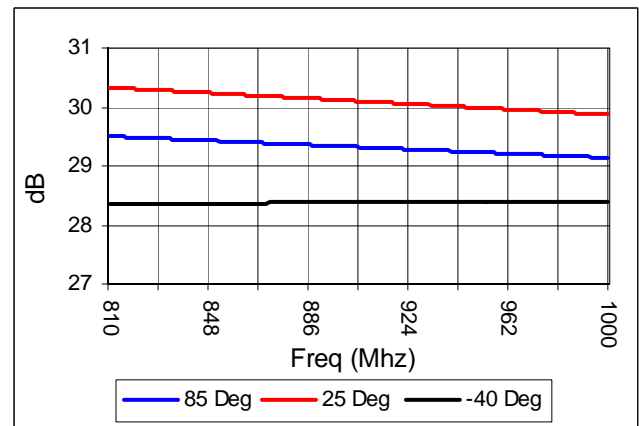
**LO - RF Isolation**



**LO-IF Isolation**



**IIP3**



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**Spurious Table: 810MHz**

(In dBc below IF, assuming down conversion)

		nf <sub>LO</sub> - mf <sub>RF</sub>					
		0	X	27	32	32	45
		1	25	0	53	43	59
RF	2	77	77	54	77	77	77
(n)	3	77	77	77	77	77	77
	4	77	77	77	77	77	77
		0	1	2	3	4	

LO (m)

RF = 810 MHz, -5dBm  
LO = 800 MHz, +13dBm  
IF = 10 MHz

**Spurious Table: 810MHz**

(In dBc below IF, assuming down conversion)

		nf <sub>LO</sub> - mf <sub>RF</sub>					
		0	X	29	32	30	37
		1	25	0	35	48	48
RF	2	77	77	58	73	77	77
(n)	3	77	77	77	77	77	77
	4	77	77	77	77	77	77
		0	1	2	3	4	

LO (m)

RF = 810 MHz, 0dBm  
LO = 710 MHz, +13dBm  
IF = 100 MHz

**Spurious Table: 1000MHz**

(In dBc below IF, assuming down conversion)

		nf <sub>LO</sub> - mf <sub>RF</sub>					
		0	X	19	23	26	34
		1	29	0	48	43	52
RF	2	77	77	53	77	77	77
(n)	3	77	77	77	70	77	77
	4	77	77	77	77	77	77
		0	1	2	3	4	

LO (m)

RF = 1000 MHz, 0dBm  
LO = 990 MHz, +13dBm  
IF = 10 MHz

**Spurious Table: 1000MHz**

(In dBc below IF, assuming down conversion)

		nf <sub>LO</sub> - mf <sub>RF</sub>					
		0	X	20	25	27	33
		1	28	0	45	43	53
RF	2	77	77	52	77	77	77
(n)	3	77	77	77	77	77	77
	4	77	77	77	77	77	77
		0	1	2	3	4	

LO (m)

RF = 1000 MHz, 0dBm  
LO = 900 MHz, +13dBm  
IF = 100 MHz