

**E-Series HMIC Double Balanced Surface Mount Mixer**  
700 – 1400 MHz

**EMD40-900L**  
**V1**

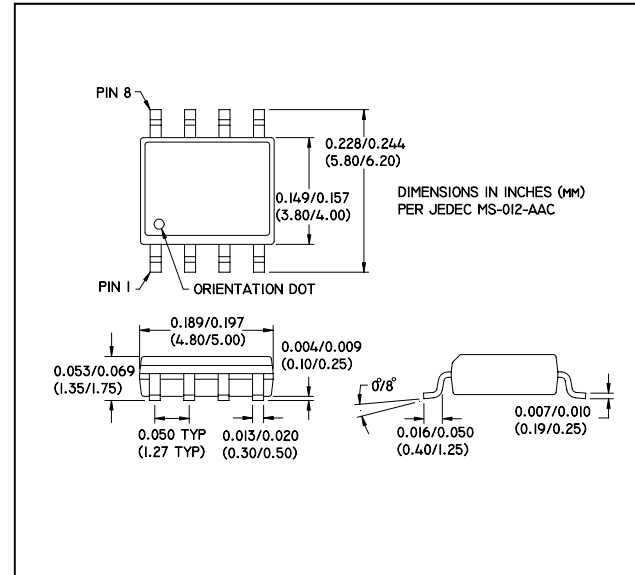
**Features**

- LO Power +3 dBm to +7 dBm
- Up to +1 dBm RF
- IC Process
- Low Profile
- Surface Mount
- Tape and reel packaging available

**Description**

M/A-COM's EMD40-900L 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 GSM, AMPS, DAMPS and JDC frequencies. Parts are packaged in tape & reel.

**SOIC — 8 Package**



**Electrical Specifications:  $T_A = 25^\circ\text{C}$ ,  $Z_0 = 50\Omega$ <sup>1</sup>, LO = +7 dBm**

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Frequency	—	700 - 1400	MHz	—	—	—
Conversion Loss	—	700 - 800	dB	—	—	9.5
		800 - 1000	dB	—	—	8.0
		1000 - 1250	dB	—	—	10.5
		1250 - 1400	dB	—	—	12.0
Isolation	LO to RF	700 - 1000	dB	26.0	34.2	—
		1000 - 1400	dB	24.0	30.3	—
Isolation	LO to IF	700 - 1000	dB	24.0	28.5	—
		1000 - 1400	dB	21.0	26.5	—
VSWR	LO	700 - 1000	dB	—	1.90	2.30
		1000 - 1400	dB	—	2.82	5.00
VSWR	RF	700 - 1000	dB	—	1.43	2.60
		1000 - 1400	dB	—	3.35	4.40
VSWR	IF	DC - 400	dB	—	1.20	1.80
				—	—	—
Input IP3	—	700 - 1000	dBm	9.0	13.0	—
		1000 - 1400	dBm	10.5	15.2	—
Input 1 dB Compression	—	DC - 500	dBm	—	—	1

Part Number	Package
EMD40-900LTR	Tape and Reel (2000 piece Reel)

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**Pin Configuration**

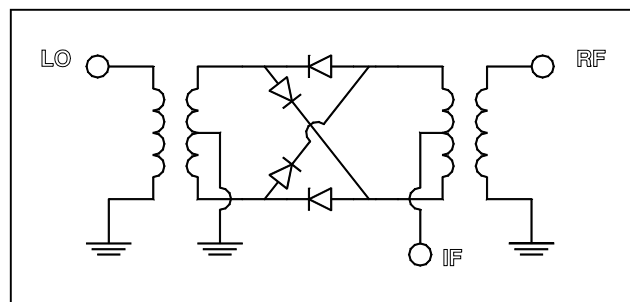
Pin No.	Function
1	Ground
2	Ground
3	Ground
4	IF
5	LO
6	Ground
7	Ground
8	RF

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

Parameter	Absolute Maximum
Max RF Input Power	+17 dBm
LO Drive Power	+17 dBm
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +125°C

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

**Schematic**



**Spurious table (In dBc below IF, assuming down conversion)**

RF (n)	0	nf <sub>LO</sub> + mf <sub>RF</sub>					nf <sub>LO</sub> - mf <sub>RF</sub>				
		X	2	16	8	27	X	2	16	8	27
1	24	0	19	29	36	24	0	43	14	26	
2	63	38	51	46	51	63	34	46	37	51	
3	57	72	58	61	61	57	56	75	55	73	
4	75	76	76	75	72	79	72	74	73	70	
	0	1	2	3	4	0	1	2	3	4	
LO (m)											

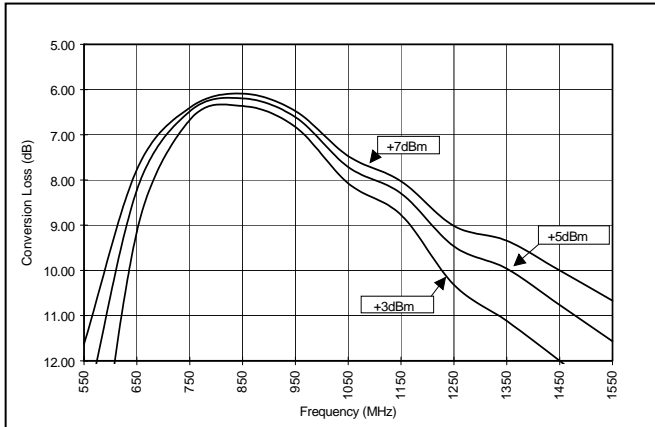
RF = 970 MHz, -10dBm  
LO = 900 MHz, +7dBm

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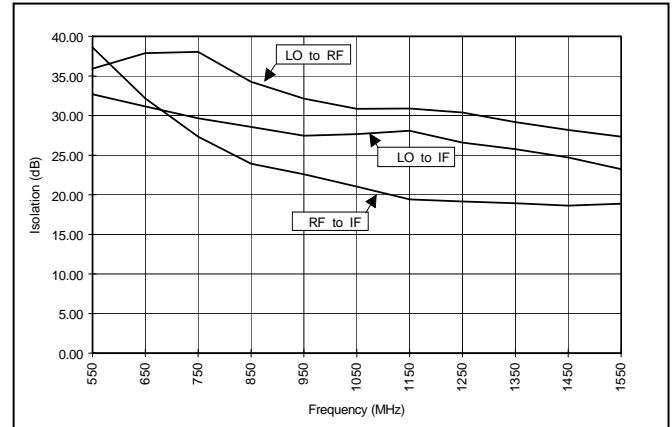
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**Typical Performance Curves - Over an extended bandwidth**

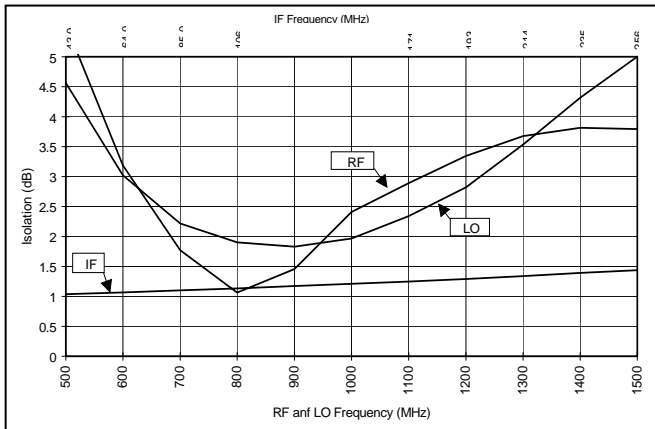
**Conversion Loss**



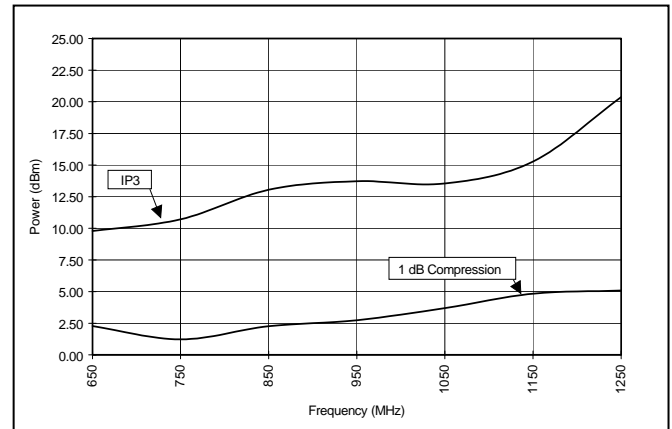
**Isolation**



**VSWR**



**IP3 & 1 dB Compression**



Conversion Loss measured with fixed IF frequency of 60 MHz.  
All Measurements made with input power of +7 dBm.