### Silicon Double Balanced HMIC Mixer 700-1400 MHz

### Features

- + 3 to + 7 dBm •
- Fully Balanced Passive Mixer •
- NO External Matching Required •
- Low Cost Surface Mount Package
- RoHS\* Compliant with 260 °C Reflow • Capability
- 100% Matte Tin Plating •

# Description

M/A-COM's MAMX-000900-1061LT is a silicon monolithic 700-1400 MHz , low barrier, double balanced mixer in a low cost surface mount SOIC-8 package. The die uses M/A-COM's unique HMIC silicon/glass process to realize low loss passive elements while retaining the advantages of low barrier silicon Schottky barrier diodes to produce a compact device.

# **Applications**

These mixers are well suited for applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

## **Ordering Information**

Model No.	Package			
MAMX-000900-1061LT	Tape and Reel			

#### Absolute Maximum Ratings <sup>1,2</sup>

Parameter	Maximum Rating			
Operating Temperature	-40°C to +85°C			
Storage Temperature	-65°C to 125°C			
Incident LO Power	+17 dBm			
Incident RF Power	+17 dBm			
Soldering Temperature	+260°C max.			

1. Exceeding these limits may cause permanent damage.

2. Please refer to application note M538 for surface mounting instructions

\* Restrictions on Hazardous Substances, European Union Directive 2002/95/EC.

<sup>0.228/0.244</sup> (5.80/6.20)DIMENSIONS IN INCHES (MM) 0.149/0.157 PER JEDEC MS-012-AAC (3.80/4.00) PIN I ORIENTATION DOT



### **Pin Configuration**

SOIC-8 Package

PIN 8

PIN	Function	PIN	Function
1	GND	5	LO
2	GND	6	GND
3	GND	7	GND
4	IF	8	RF

### Schematic

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# Silicon Double Balanced HMIC Mixer 700—1400 MHz

Rev. V1

### **Electrical Specifications @ 25°C**

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Parameter	Frequency Range	Test Conditions	Units	Min.	Тур.	Max.
Conversion Loss	700-800 MHz 800-1000 MHz 1000-1250 MHz 1250-1400 MHz	LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz	dB	-	6.7 6.0 7.2 9.2	9.5 8.0 10.5 12.0
L - R Isolation	700-1000 MHz 1000-1400 MHz	LO Drive = +7 dBm	dB	26 24	37.6 32.1	-
L - I Isolation	700-1000 MHz 1000-1400 MHz	LO Drive = +7 dBm	dB	24 21	36.4 32.1	-
LO VSWR	700-1000 MHz 1000-1400 MHz	LO Drive = +7 dBm RF Level = - 10 dBm	Ratio	-	1.7:1 2.3:1	-
RF VSWR	700-1000 MHz 1000-1400 MHz	LO Drive = +7 dBm RF Level = - 10 dBm	Ratio	-	1.5:1 2.4:1	-
IF VSWR	DC - 400 MHz	LO Drive = +7 dBm IF Level = - 10 dBm	Ratio	-	1.5:1	-
Input IP3	700-1000 MHz 1000-1400 MHz	LO Drive = +7 dBm RF = - 10 dBm, IF = 60 MHz	dBm	9.0 10.5	14.1 16.1	-
Input 1 dB Com- pression	700-1000 MHz 1000-1400 MHz	LO Drive = +7 dBm IF = 60 MHz	dBm	-	1.9 3.0	-

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### Typical Performance Curves (LO Drive= +5/+7/+9dbm, RF= -10dBm, IF= 60MHz)

#### **Conversion Loss**



Input IP3



Technology

#### Isolation( LO Drive= +7dbm, RF= -10dBm)



VSWR( LO Drive= +7dbm, RF= -10dBm, IF=-10dBm)



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#### Spurious Table (in dBc below IF)

		nflo+mfRF								
LO (n)	-4	-	-	-	-	-	-	-	-	-
	-3	-	-	-	-	-	-	-	-	77
	-2	-	-	-	-	-	-	-	60	80
	-1	-	-	-	-	-	-	44	66	77
	0	-	-	-	-	-	16	61	61	95
	1	-	-	-	0	13	2	42	78	89
	2	-	-	55	27	15	27	71	72	87
	3	-	58	45	13	6	36	51	65	91
	4	80	57	61	31	36	39	60	71	94
		-4	-3	-2	-1	0	1	2	3	4
						RF (m)				

RF=920MHz LO=980MHz

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