

# MA4EX950H1-1225T



Silicon Double Balanced HMIC Mixer  
700 - 1200 MHz

M/A-COM Products  
Rev. V3

## Features

- 7.0 dB Typical Conversion Loss
- +13 to +17 dBm LO Drive
- HMIC IC Process
- Silicon High Barrier Schottky Barrier Diodes
- DC - 400 MHz IF Bandwidth
- Low Cost Miniature Plastic Package
- RoHS\* Compliant with 260°C Reflow Capability
- 100% Matte Tin Plating

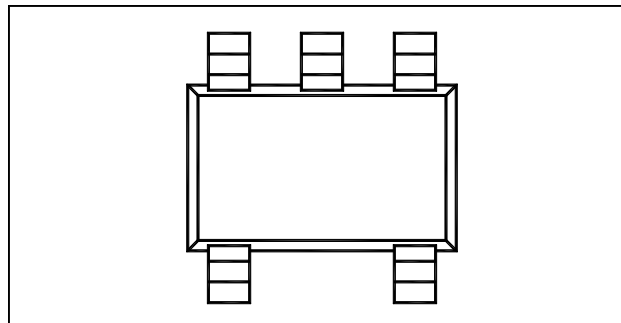
## Description

M/A-COM's MA4EX950H1-1225T is a silicon monolithic 700 - 1200 MHz, high barrier, double balanced mixer in a low cost miniature surface mount SOT25 package. The die uses M/A-COM's unique HMIC silicon/glass process to realize low loss passive elements while retaining the advantages of high barrier silicon Schottky barrier diodes.

## Applications

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

## Package Outline



## PIN Configuration

PIN	Function	PIN	Function
1	RF	4	Gnd
2	Gnd	5	IF
3	LO		

## Ordering Information

Model No.	Package
MA4EX950H1-1225T	Tape and Reel
MAMX-000950-000SMB	Sample Test Board

## Electrical Specifications @ 25°C

Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	800 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF = -10 dBm, IF = 60 MHz	dB	—	6.6	7.5
			dB	—	8.1	10.5
L - R Isolation	800 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF Level = -10 dBm	dB	—	27.5	—
			dB	—	23.0	—
L - I Isolation	800 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF Level = -10 dBm	dB	—	28.5	—
			dB	—	28.5	—
R - I Isolation	800 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF Level = -10 dBm	dB	—	25.0	—
			dB	—	22.5	—
RF VSWR	800 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF Level = -10 dBm	Ratio	—	1.20:1	—
			Ratio	—	1.50:1	—
IF VSWR	DC - 400 MHz	LO Drive = +15 dBm RF Level = -10 dBm	Ratio	—	1.55:1	—
Input IP3	850 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF = -5 dBm, IF = 60 MHz	dBm	21.0	23.8	—
			dBm	20.0	25.0	—
Input 1 dB Compression	850 MHz 0.7 - 1.2 GHz	LO Drive = +15 dBm RF = -5 dBm, IF = 60 MHz	dBm	—	8.3	—
			dBm	—	9.1	—
IF 1 dB Bandwidth	DC - 400 MHz	LO = 850 MHz @ +15 dBm	MHz	0	—	400

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

**PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

• **North America** Tel: 800.366.2266 • **Europe** Tel: +353.21.244.6400  
• **India** Tel: +91.80.43537383 • **China** Tel: +86.21.2407.1588  
Visit [www.macontech.com](http://www.macontech.com) for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

# MA4EX950H1-1225T



Silicon Double Balanced HMIC Mixer  
700 - 1200 MHz

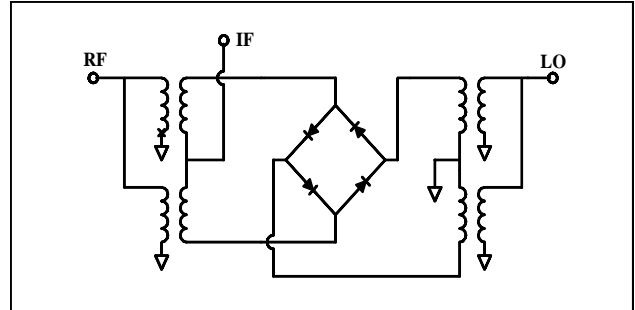
M/A-COM Products  
Rev. V3

## Absolute Maximum Ratings

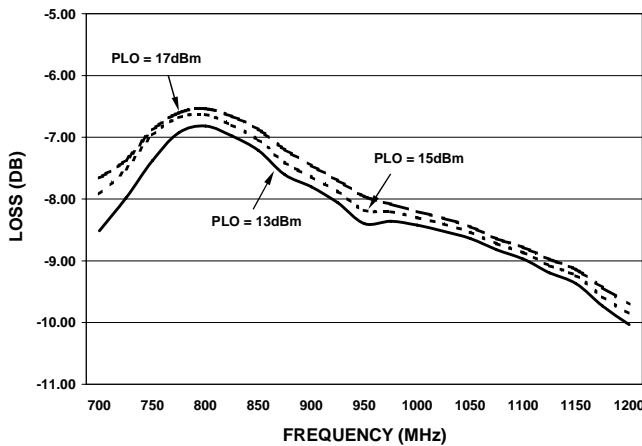
Parameter	Maximum Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Incident LO Power	+20 dBm
Incident RF Power	+20 dBm

1. Exceeding these limits may cause permanent damage.

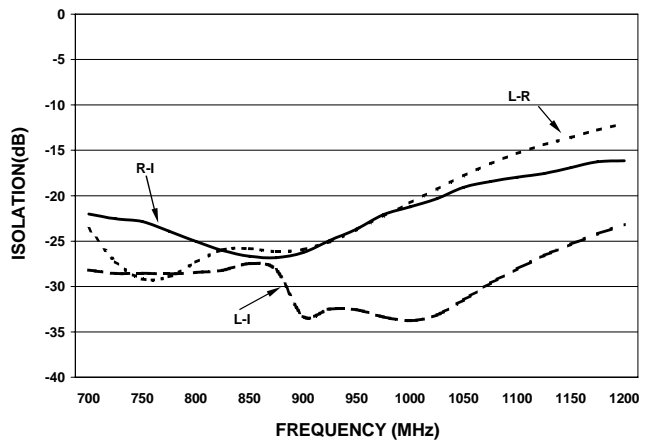
## Schematic



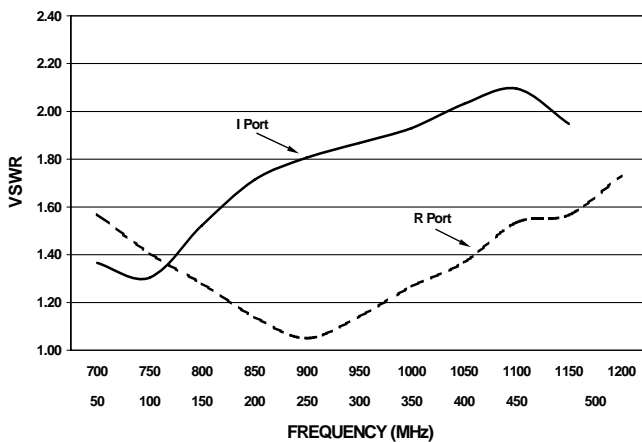
## Conversion Loss



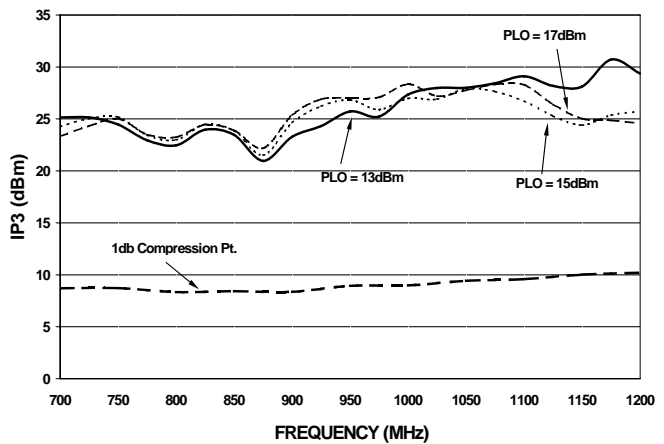
## Isolation



## VSWR



## Input IP3 & 1 dB Compression



**ADVANCED:** Data Sheets contain information regarding a product M/A-COM is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

**PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

• North America Tel: 800.366.2266 • Europe Tel: +353.21.244.6400  
 • India Tel: +91.80.43537383 • China Tel: +86.21.2407.1588  
 Visit [www.macontech.com](http://www.macontech.com) for additional data sheets and product information.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

# MA4EX950H1-1225T



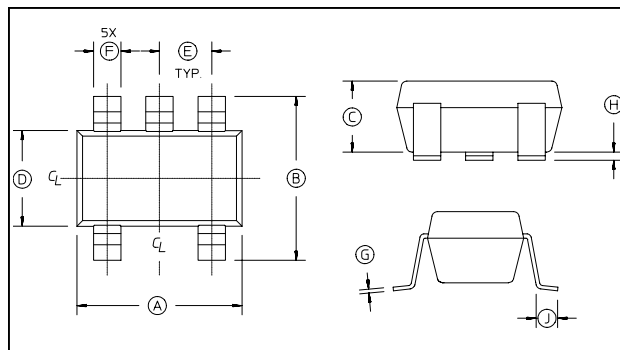
Silicon Double Balanced HMIC Mixer  
700 - 1200 MHz

M/A-COM Products  
Rev. V3

## Case Styles

### SOT-25

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.106	0.122	2.70	3.10
B	0.100	0.118	2.54	3.00
C	-	0.051	-	1.30
D	.063 REF.		1.60 REF.	
E	0.032	0.043	0.80	1.10
F	0.014	0.020	0.35	0.50
G	0.003	-	0.08	-
H	0.000	0.006	0.00	0.15
J	0.018 REF.		0.45 REF.	



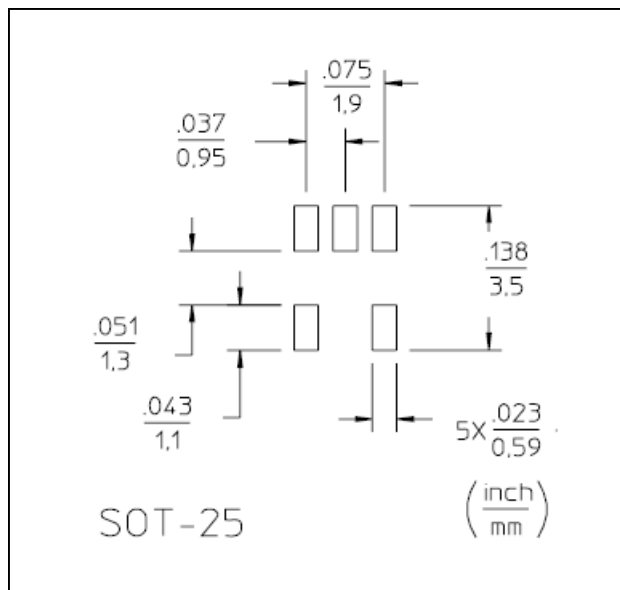
2. Leads Coplanarity should be 0.003 (0.08) max.

## Mounting Information

The illustration indicates the recommended mounting pad configuration for the SOT-25 package. Solder paste containing flux should be screened onto the pads to a thickness of 0.005- 0.007 inches. The plastic package is placed in position, firmly adhering to the solder paste.

Permanent attachment is performed by a reflow soldering procedure during which the tab temperature does not exceed +275 °C and the body temperature does not exceed +260 °C for the RoHS compliant devices.

Please refer to Application Note M538 for surface mounting instructions.



**ADVANCED:** Data Sheets contain information regarding a product M/A-COM is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.

**PRELIMINARY:** Data Sheets contain information regarding a product M/A-COM has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

• North America Tel: 800.366.2266 • Europe Tel: +353.21.244.6400  
• India Tel: +91.80.43537383 • China Tel: +86.21.2407.1588

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

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.