

# MA4EXP950H1-1277T



**Silicon Double Balanced HMIC Mixer**  
850 - 1050 MHz

M/A-COM Products  
Rev. V3

## Features

- + 35 dBm Typical Input IP3
- 8.3 dB Typical Conversion Loss
- + 15 to + 19 dBm LO Drive
- Fully Balanced Passive Mixer
- NO External Matching Required
- Low Cost Miniature Plastic MLP Package
- RoHS\* Compliant with 260 °C. Reflow Capability
- 100% MATTE Tin Plating

## Description and Applications

M/A-COM's MA4EXP950H1-1277T is a silicon monolithic 850-1050 MHz, high barrier, double balanced mixer in a low cost, miniature surface mount FQFP-N 3mm Square, 16 lead plastic 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 to produce a compact device.

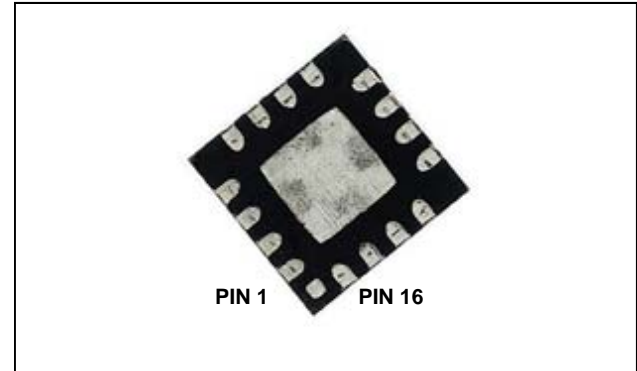
These mixers are well suited for GSM and CDMA cellular basestation infrastructure applications where small size and high performance is required. Typical applications include frequency conversion, modulation, and demodulation in wireless receivers and transmitters.

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

Parameter	Maximum Ratings
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C
Incident LO Power	+20 dBm C.W.
Incident RF Power	+20 dBm C.W.
Soldering Temperature	+260 °C

1. Exceeding these limits may cause permanent damage.
2. Please refer to application note M538 for surface mounting instructions.

## MLP 3mm Package (Circuit Side View)



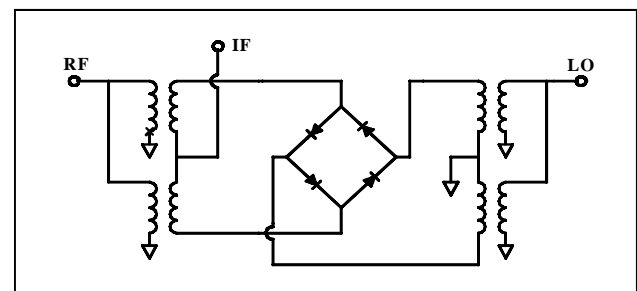
## PIN Configuration

PIN	Function	PIN	Function
1	N/C	9	N/C
2	N/C	10	RF
3	LO	11	N/C
4	N/C	12	N/C
5	N/C	13	N/C
6	N/C	14	IF
7	N/C	15	N/C
8	N/C	16	N/C

## Ordering Information

Part Number	Package
MA4EXP950H1-1277T	Tape and Reel
MAMX-090950-000SMB	Sample Test Boards

## Mixer Schematic



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

**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.macomtech.com](http://www.macomtech.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.

# MA4EXP950H1-1277T



Silicon Double Balanced HMIC Mixer  
850 - 1050 MHz

M/A-COM Products  
Rev. V3

## Electrical Specifications $T_A = 25\text{ }^\circ\text{C}$

Parameter	Frequency Range	Test Conditions	Units	Min.	Avg.	Max.
Conversion Loss	850 MHz 850-1050 MHz	LO Drive = +19 dBm RF = -10 dBm, IF = 60 MHz	dB	- -	8.1 8.3	9.5 9.5
L - R Isolation	850 MHz 850-1050 MHz	LO Drive = +17 dBm RF Level = -10 dBm	dB	- -	58.0 55.0	- -
L - I Isolation	850 MHz 850-1050 MHz	LO Drive = +17 dBm RF Level = -10 dBm	dB	- -	49.0 44.0	- -
R - I Isolation	850 MHz 850-1050 MHz	LO Drive = +17 dBm RF Level = -10 dBm	dB	- -	30.0 28.0	- -
RF VSWR	850 MHz 850-1050 MHz	LO Drive = +17 dBm RF Level = -10 dBm	Ratio	- -	1.50:1 2.20:1	- -
IF VSWR	DC - 500 MHz	LO Drive = +17 dBm RF Level = -10 dBm	Ratio	- -	1.70:1	-
LO VSWR	850 MHz 850-1050 MHz	LO Drive = +17 dBm RF Level = -10 dBm	Ratio	- -	2.1:1 1.7:1	
Input IP3	850 MHz 850-1050 MHz	LO Drive = +19 dBm RF = -10 dBm, IF = 60 MHz	dBm	- -	32.0 33.0	- -
Input 1 dB Compression	850 MHz 850-1050 MHz	LO Drive = +17 dBm IF = 60 MHz	dBm	- -	12.1 12.7	- -
IF1 dB Bandwidth	DC-200 MHz	LO = 850 MHz @ +17dBm	MHz	0	-	200

**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.macomtech.com](http://www.macomtech.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.*

# MA4EXP950H1-1277T

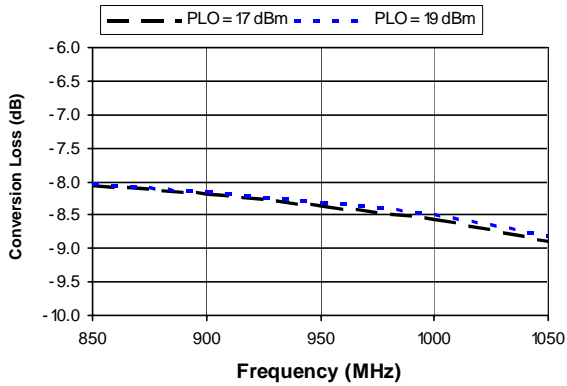


Silicon Double Balanced HMIC Mixer  
850 - 1050 MHz

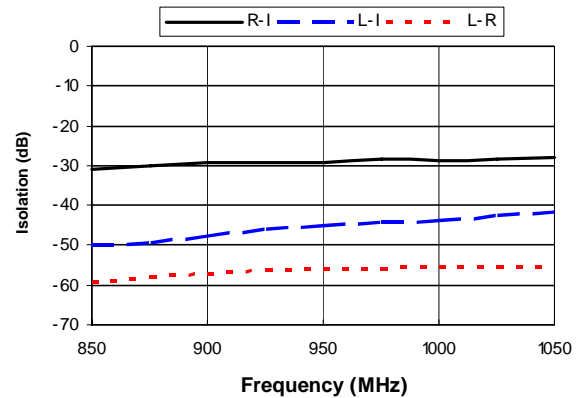
M/A-COM Products  
Rev. V3

## Typical Performance Curves (LO Drive = +17 dBm, RF = -10 dBm, IF = 60 MHz)

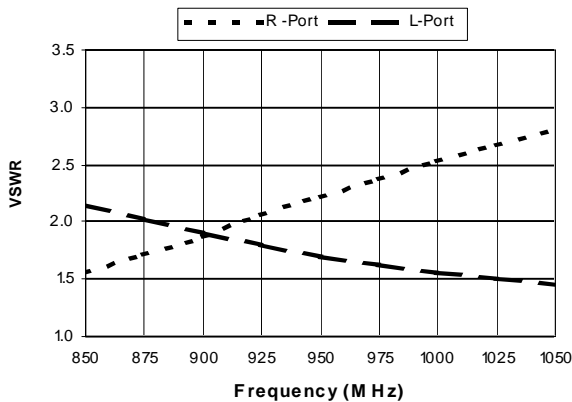
### Conversion Loss



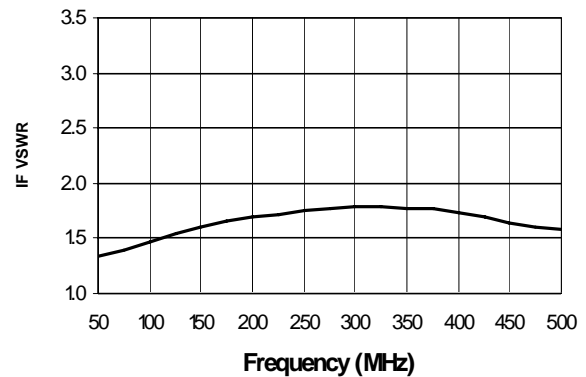
### Isolation



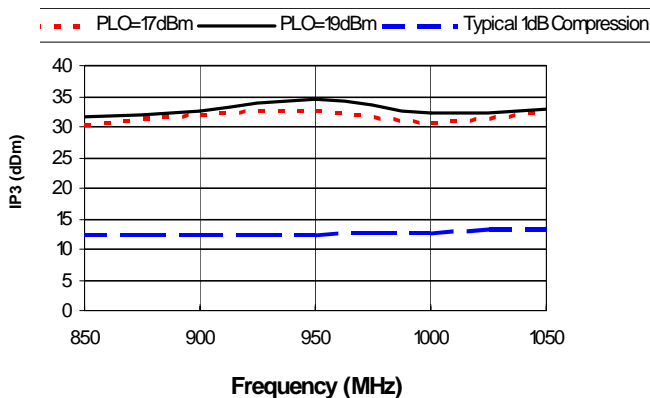
### RF VSWR



### IF VSWR



### Input IP3 and 1 dB Compression Point



**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.macomtech.com](http://www.macomtech.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.

