

# MA4EXP950L-1277T



Silicon Double Balanced HMIC Mixer  
850 – 1050 MHz

Rev. V2

## Features

- + 21 dBm Typical Input IP3
- 8.3 dB Typical Conversion Loss
- + 5 to + 10 dBm LO Drive
- Fully Balanced Passive Mixer
- NO External Matching Required
- Low Cost Miniature Plastic MLP Package

## Description

M/A-COM's MA4EXP950L-1277 is a silicon monolithic 850-1050 MHz, low 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 low barrier silicon schottky barrier diodes to produce a compact device.

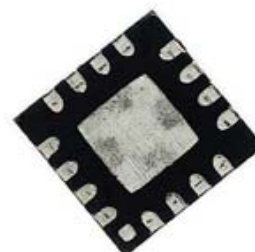
## Applications

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

## Electrical Specifications @ +25°C

Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz	dB	-	8.2 8.5	8.9 9.5
L - R Isolation	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF Level = -10 dBm	dB	-	65 62	-
L - I Isolation	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF Level = -10 dBm	dB	-	46 46	-
R - I Isolation	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF Level = -10 dBm	dB	-	23 23	-
LO VSWR	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF Level = -10 dBm	Ratio	-	1.5:1 1.5:1	-
RF VSWR	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF Level = -10 dBm	Ratio	-	1.3:1 1.5:1	-
IF VSWR	DC - 400 MHz	LO Drive = +7 dBm IF Level = -10 dBm	Ratio	-	1.5:1	-
Input IP3	900 MHz 850-1050 MHz	LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz	dBm	17.8 16.9	21.0 20.5	-
Input 1dB Compression	850-1050 MHz	LO Drive = +7 dBm, IF = 60 MHz	dBm	-	4.3	-
IF 1 dB Bandwidth	DC - 400 MHz	LO = 900 MHz @ +7dBm	MHz	0	-	400

## MLP 3mm Package - Circuit Side View



PIN 1      PIN 16

## PIN CONFIGURATION (Center Area is Ground)

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

Model No.	Package
MA4EXP950L-1277T	Tape and Reel

**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions 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 Technology Solutions 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.

# MA4EXP950L-1277T

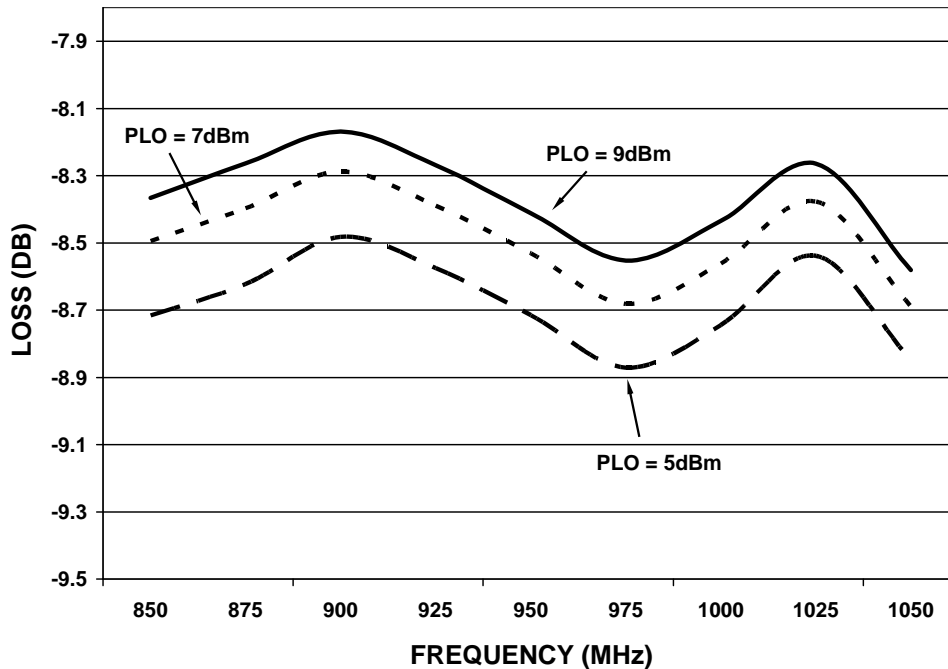


Silicon Double Balanced HMIC Mixer  
850 – 1050 MHz

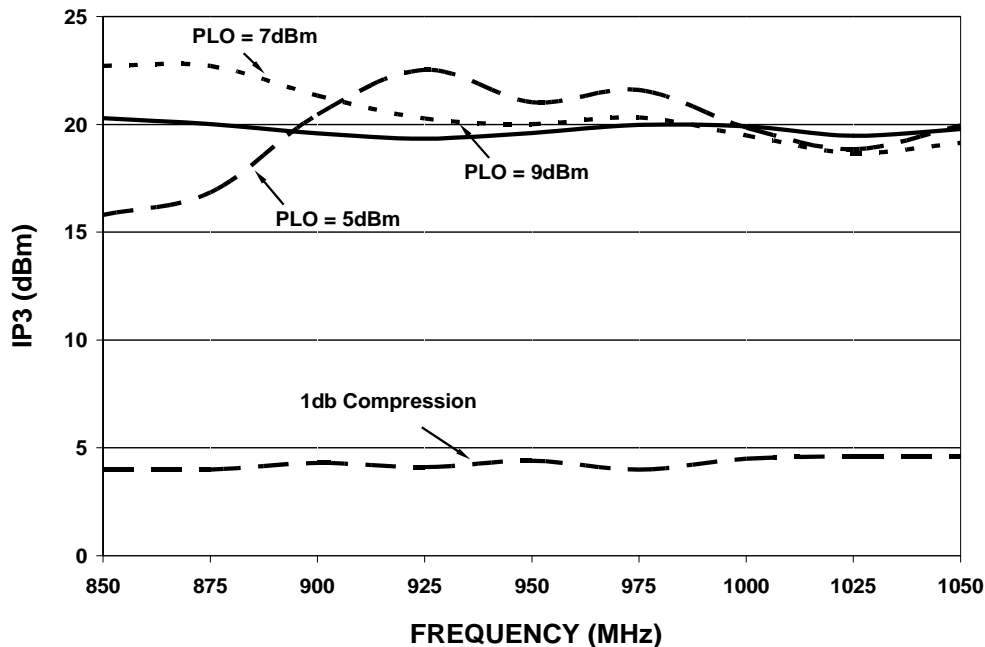
Rev. V2

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

## Conversion Loss



## Input IP3 and P1dB



**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions 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 Technology Solutions 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.

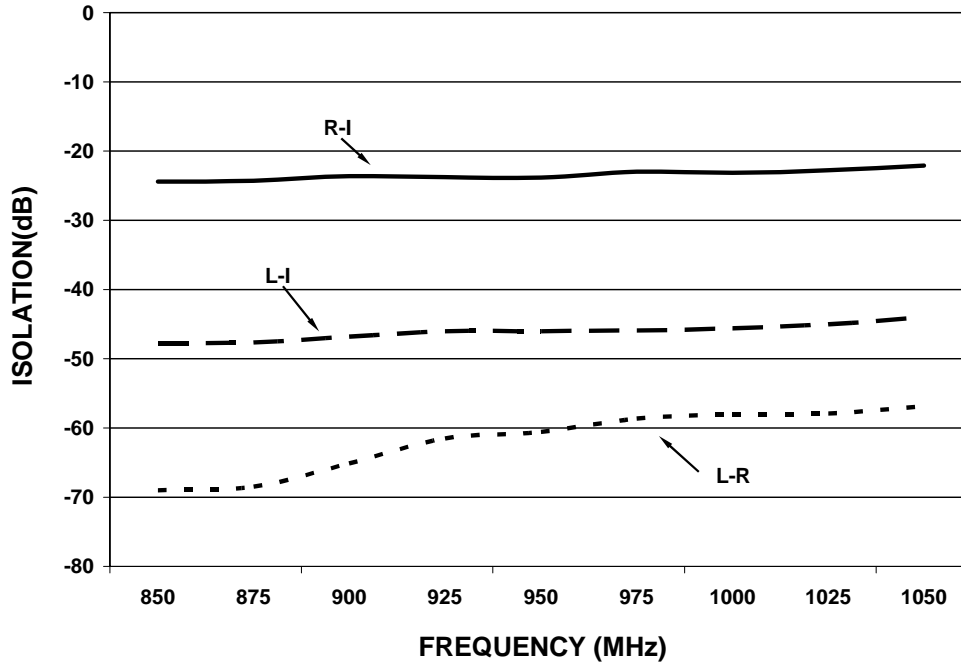
# MA4EXP950L-1277T



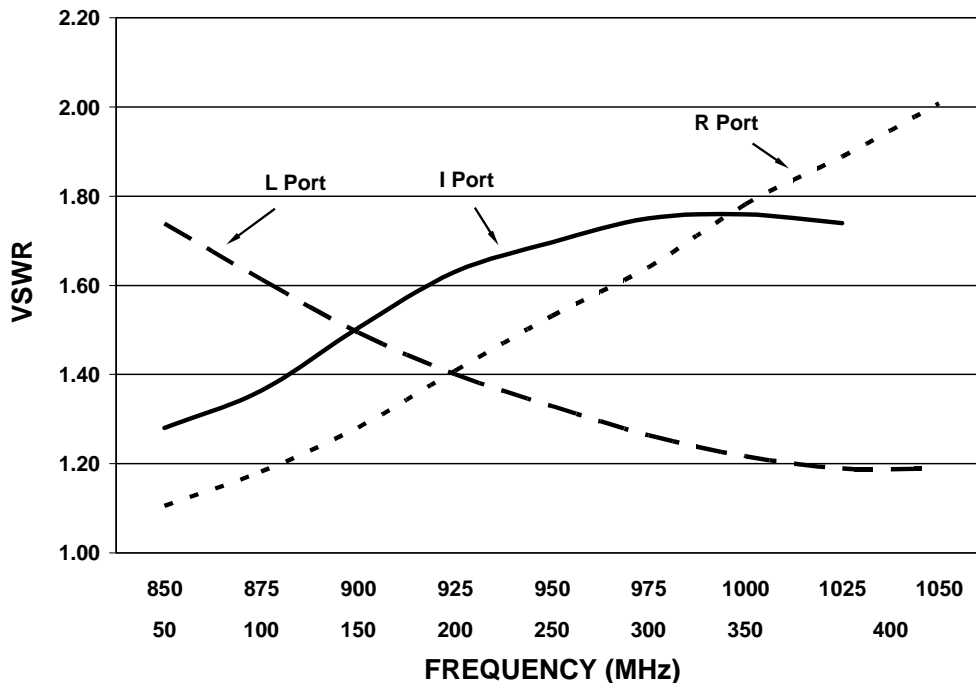
Silicon Double Balanced HMIC Mixer  
850 – 1050 MHz

Rev. V2

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



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



**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions 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 Technology Solutions 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.

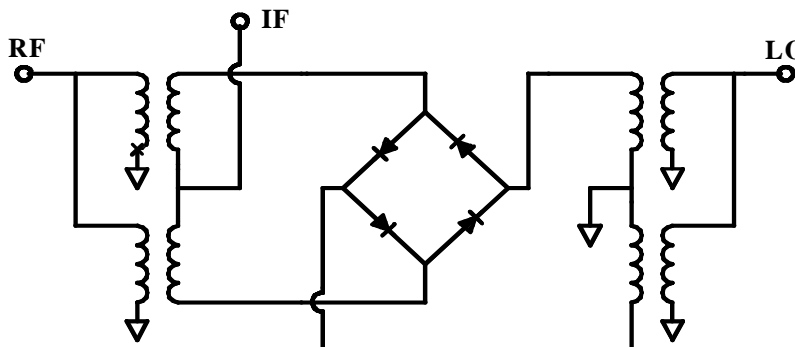
M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

# MA4EXP950L-1277T

Silicon Double Balanced HMIC Mixer  
850 – 1050 MHz

Rev. V2

## Mixer Schematic



## Absolute Maximum Ratings<sup>1</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.

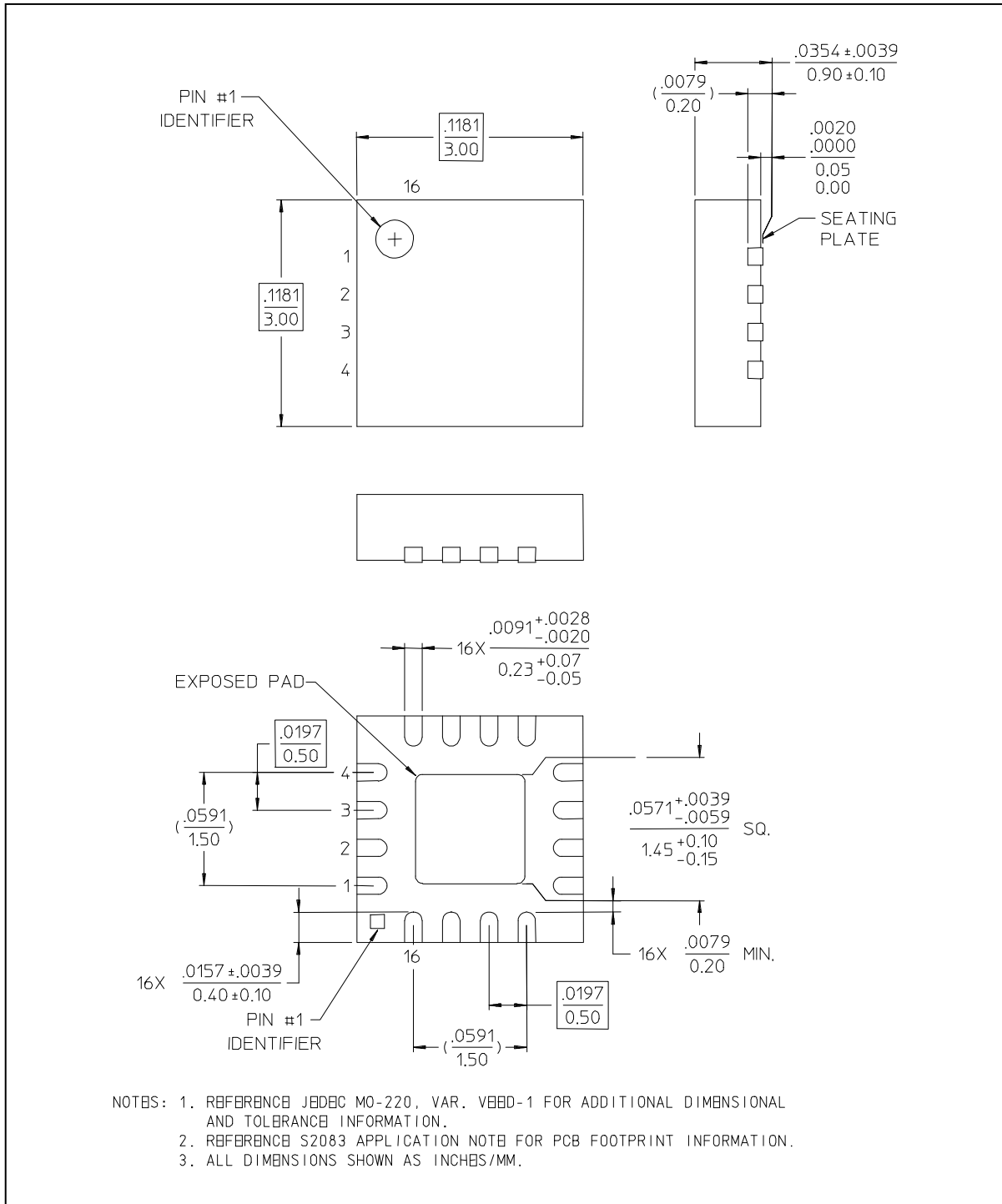
1. Exceeding these limits may cause permanent damage.

# MA4EXP950L-1277T

Silicon Double Balanced HMIC Mixer  
850 – 1050 MHz

Rev. V2

## MA4EXP190H-1277 Outline – 3mm FQFP-N 16 Lead Saw Singulated



**ADVANCED:** Data Sheets contain information regarding a product M/A-COM Technology Solutions 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 Technology Solutions 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.