Silicon Double Balanced HMIC™ Mixer, 3500 - 4500 MHz

MA4EXP400H-1277T V2

Features

- + 24 dBm Typical Input IP3
- 7.7 dB Typical Conversion Loss
- + 13 to + 19 dBm LO Drive
- Fully Balanced Passive Mixer
- NO External Matching Required
- Low Cost Miniature Plastic 3mm MLP Package

Description and Applications

M/A-COM's MA4EXP400H-1277T is a silicon monolithic 3500-4500 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.

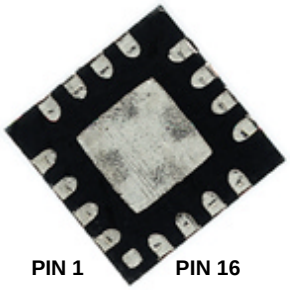
These mixers are well suited for wideband applications where small size and high performance are required. Typical applications include frequency conversion, modulation, and demodulation in receivers and transmitters.

Absolute Maximum Ratings[1]

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.

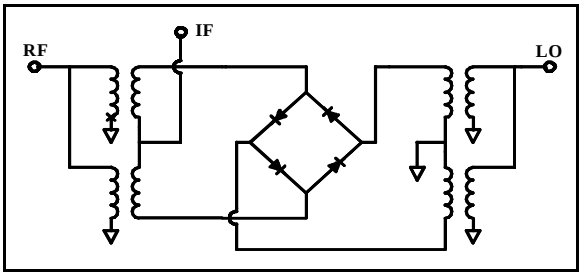
MLP 3mm Package (Circuit Side View)



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

Mixer Schematic



- **North America** Tel: 800.366.2266 / Fax: 978.366.2266
- **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300
- **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298

Visit www.macom.com for additional data sheets and product information.

Electrical Specifications @ +25 °C

Parameter	Frequency Range	Test Conditions	Units	Min.	Avg.	Max.
Conversion Loss	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF = -10 dBm, IF = 60 MHz	dB	- -	7.7 8.0	8.7 9.5
L - R Isolation	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF Level = -10 dBm	dB	- -	44.0 43.0	- -
L - I Isolation	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF Level = -10 dBmm	dB	- -	29.0 29.0	- -
R - I Isolation	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF Level = -10 dBm	dB	- -	21.0 21.0	- -
LO VSWR	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF Level = -10 dBm	Ratio		1.7:1 1.7:1	
RF VSWR	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF Level = -10 dBm	Ratio	- -	2.0:1 1.9:1	- -
IF VSWR	DC - 2000 MHz	LO Drive = +17 dBm IF Level = -10 dBm	Ratio	- -	1.6:1 -	-
Input IP3	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm RF = -10 dBm, IF = 60 MHz	dBm	20 -	24.5 24.3	- -
Input 1 dB Compression	4000 MHz 3500-4500 MHz	LO Drive = +17 dBm IF = 60 MHz	dBm	- -	13.0 13.0	- -

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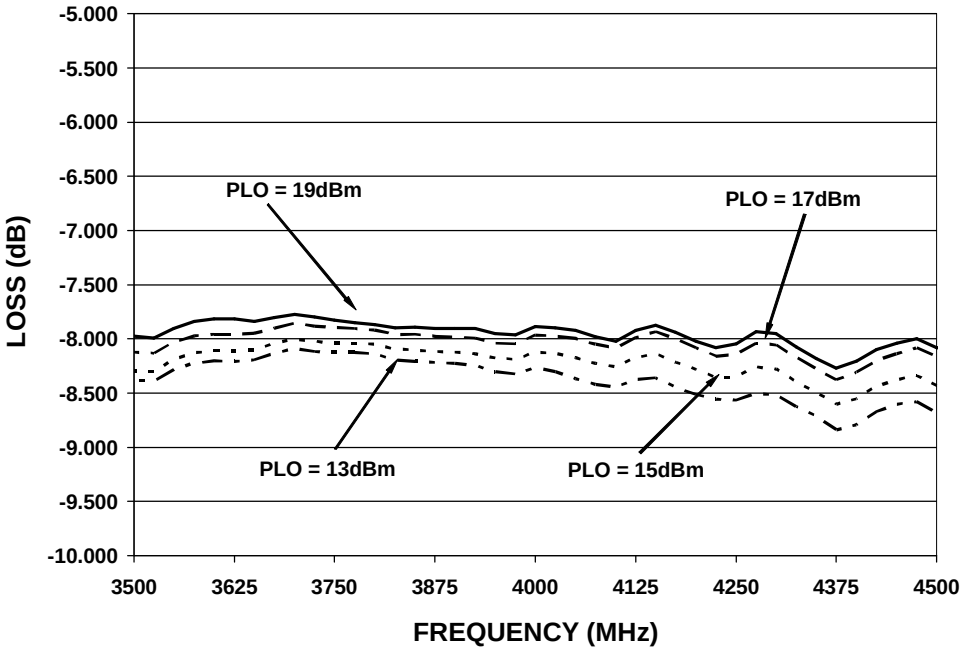
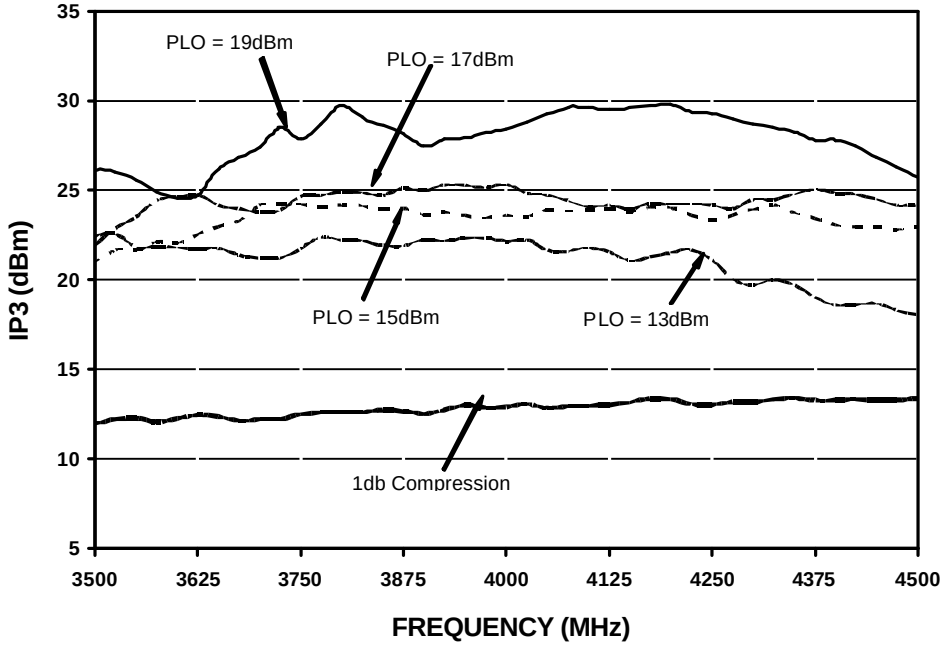
Typical Performance Curves (LO Drive = +13/+15/+17/+19 dBm, RF = -10 dBm, IF = 60 MHz)

Conversion Loss



Input IP3



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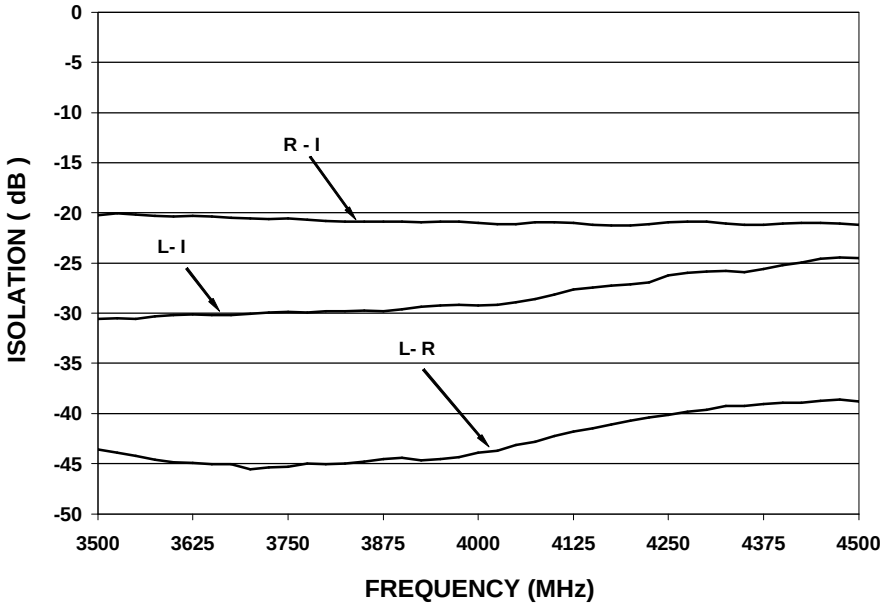
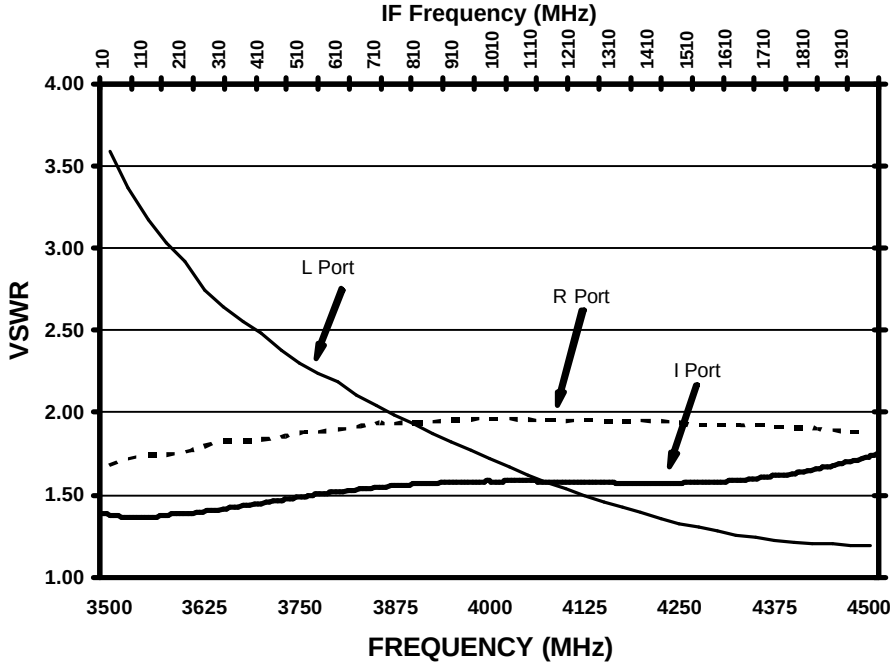
Isolation



VSWR



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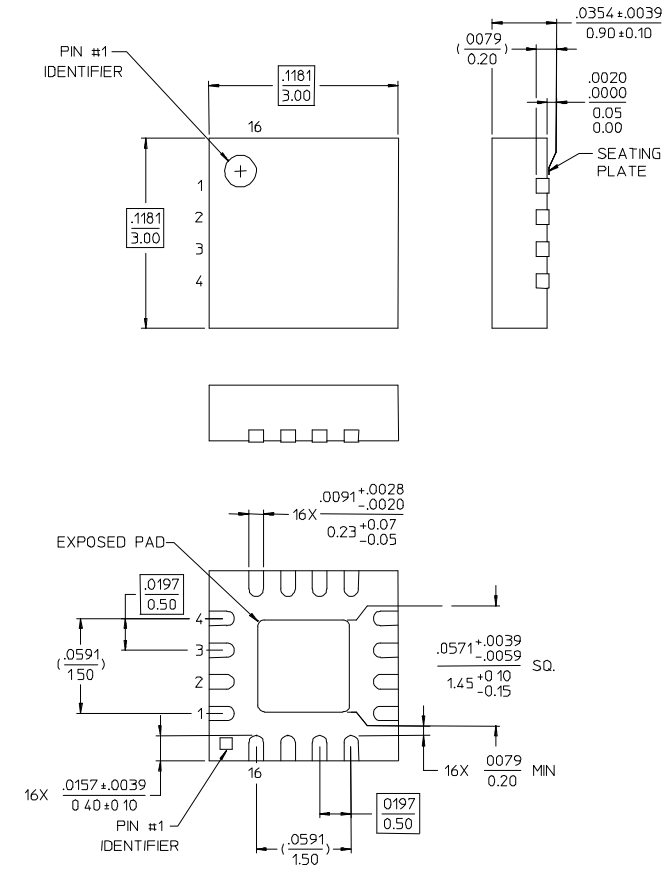
MA4EXP400H-1277T Outline - 3mm FQFP-N 16 Lead Saw Singulated



NOTES: 1. REFERENCE JEDEC MO-220, VAR. VEED-1 FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. REFERENCE S2083 APPLICATION NOTE FOR PCB FOOTPRINT INFORMATION.
3. ALL DIMENSIONS SHOWN AS INCHES/MM

Ordering Information

Part Number	Package
MA4EXP400H-1277T	Tape and Reel

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