

**Silicon Double Balanced  
HMIC Mixer 2300 - 2800 MHz**

**MA4EXP240L-1277  
V2**

**Features**

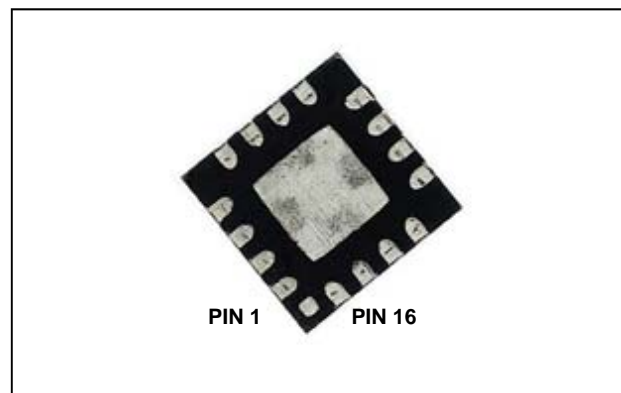
- + 18 dBm Typical Input IP3
- 8.3 dB Typical Conversion Loss
- + 5 to + 9 dBm LO Drive
- Fully Balanced Passive Mixer
- NO External Matching Required
- Low Cost Miniature Plastic MLP Package
- Lead Free ( RoHS Compliant ) with 260 °C Reflow Capability
- 100 % MATTE Tin Plating

**Description and Applications**

M/A-COM's MA4EXP240L-1277 is a silicon monolithic 2300-2800 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.

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

**MLP 3mm Package  
(Circuit Side View)**



**PIN Configuration<sup>1</sup>**

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

1. Package bottom is electrical ground

**Ordering Information**

Part Number	Package
MA4EXP240L-1277T	Tape and Reel

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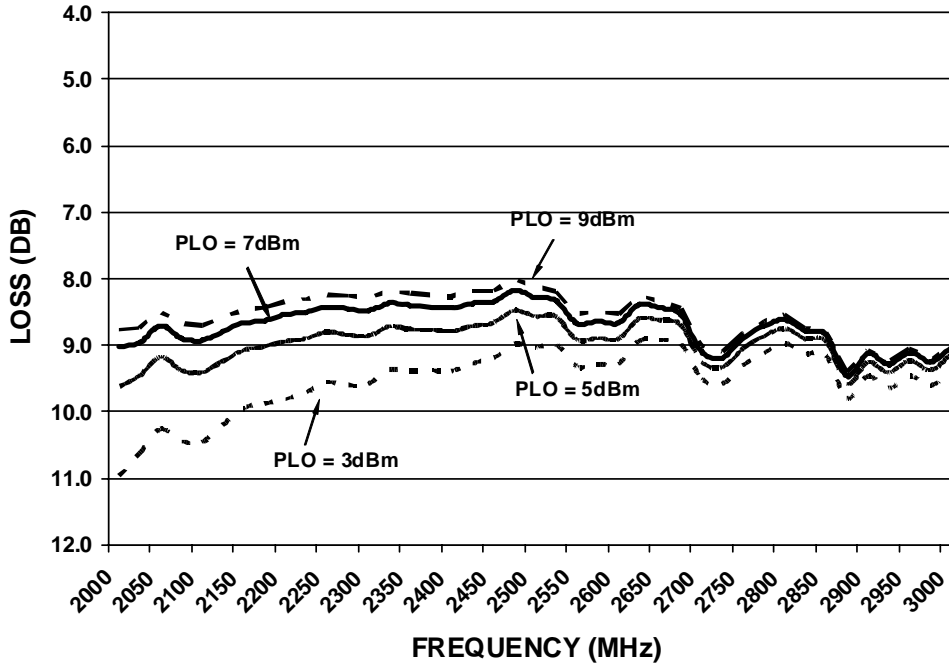
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**Electrical Specifications @ +25 °C**

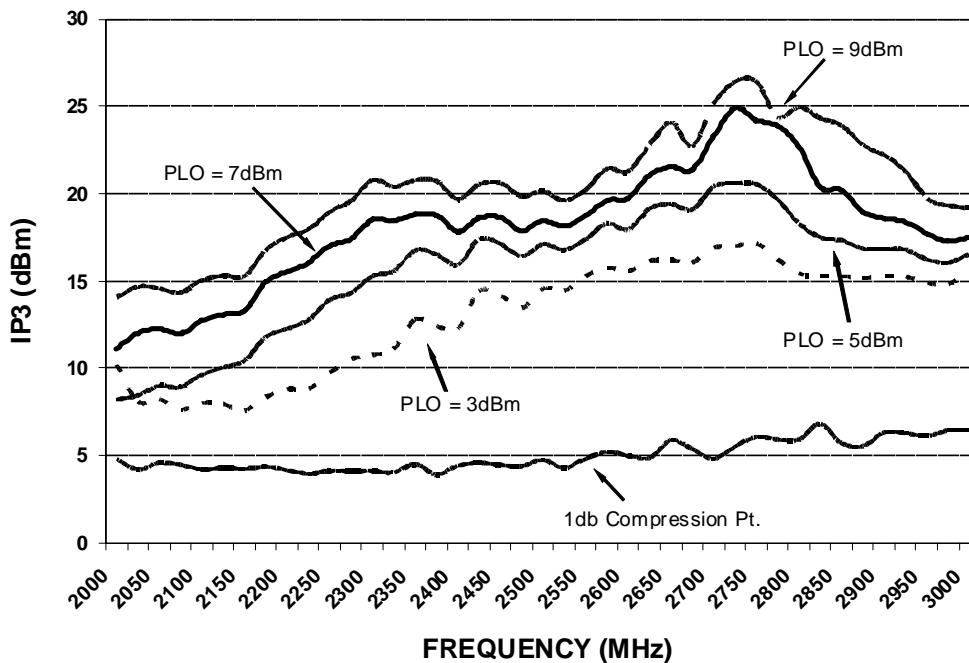
Parameter	Frequency	Test Conditions	Units	Min.	Avg.	Max.
Conversion Loss	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz	dB	- -	8.3 8.5	9.8 10.5
L - R Isolation	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF Level = -10 dBm	dB	- -	51.0 51.0	- -
L - I Isolation	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF Level = -10 dBm	dB	- -	42.0 39.0	- -
R - I Isolation	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF Level = -10 dBm	dB	- -	23.0 23.0	- -
LO VSWR	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF Level = -10 dBm	Ratio		2.0:1 1.9:1	
RF VSWR	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF Level = -10 dBm	Ratio	- -	1.6:1 1.7:1	- -
IF VSWR	DC - 200 MHz	LO Drive = +7 dBm RF Level = -10 dBm	Ratio	- -	1.5:1 -	- -
Input IP3	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm RF = -10 dBm, IF = 60 MHz	dBm	15 -	18.4 20.3	- -
Input 1 dB Compression	2500 MHz 2300-2800 MHz	LO Drive = +7 dBm IF = 60 MHz	dBm	- -	4.8 4.9	- -

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

*Conversion Loss*

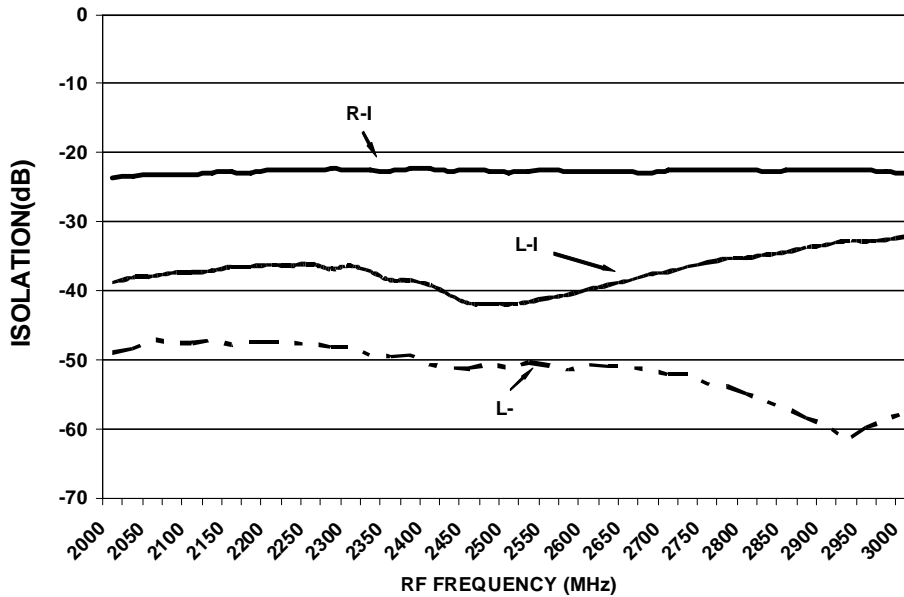


*Input IP3*

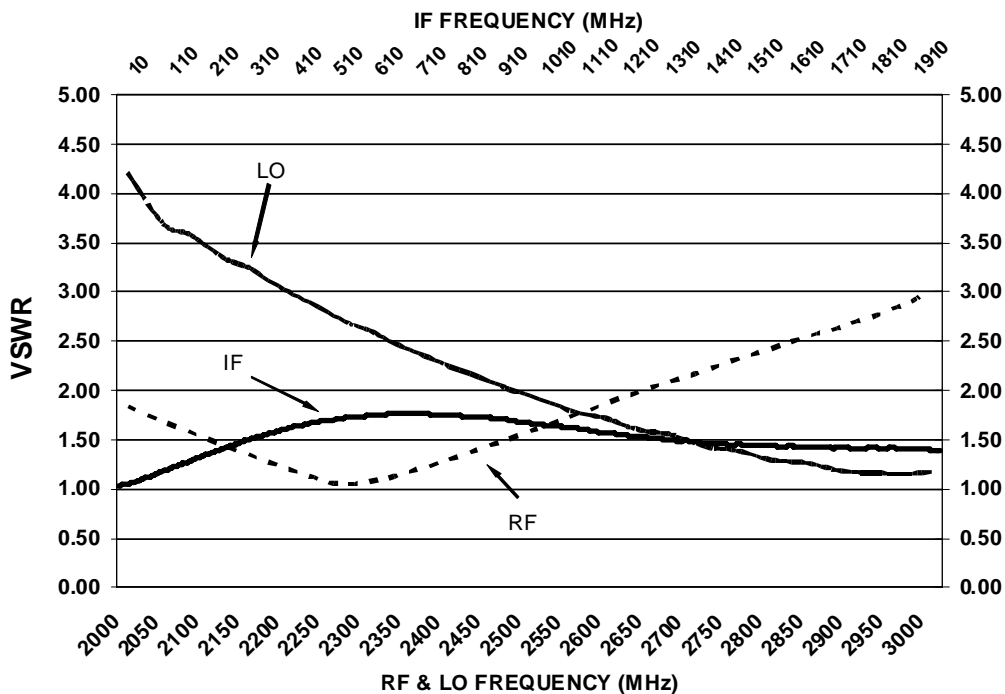


**Typical Performance Curves (LO Drive = +5/+7/+9 dBm, RF = -10 dBm, IF = 60 MHz)**

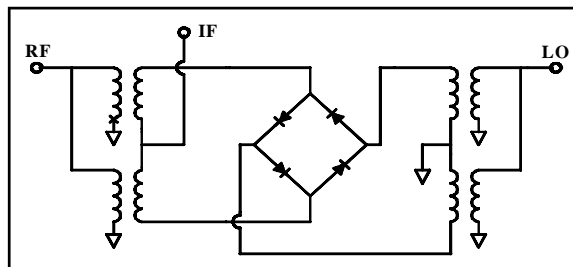
*Isolation ( LO Drive= +7dbm, RF= -10dBm)*



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



**Mixer Schematic**



**Absolute Maximum Ratings<sup>1</sup>**

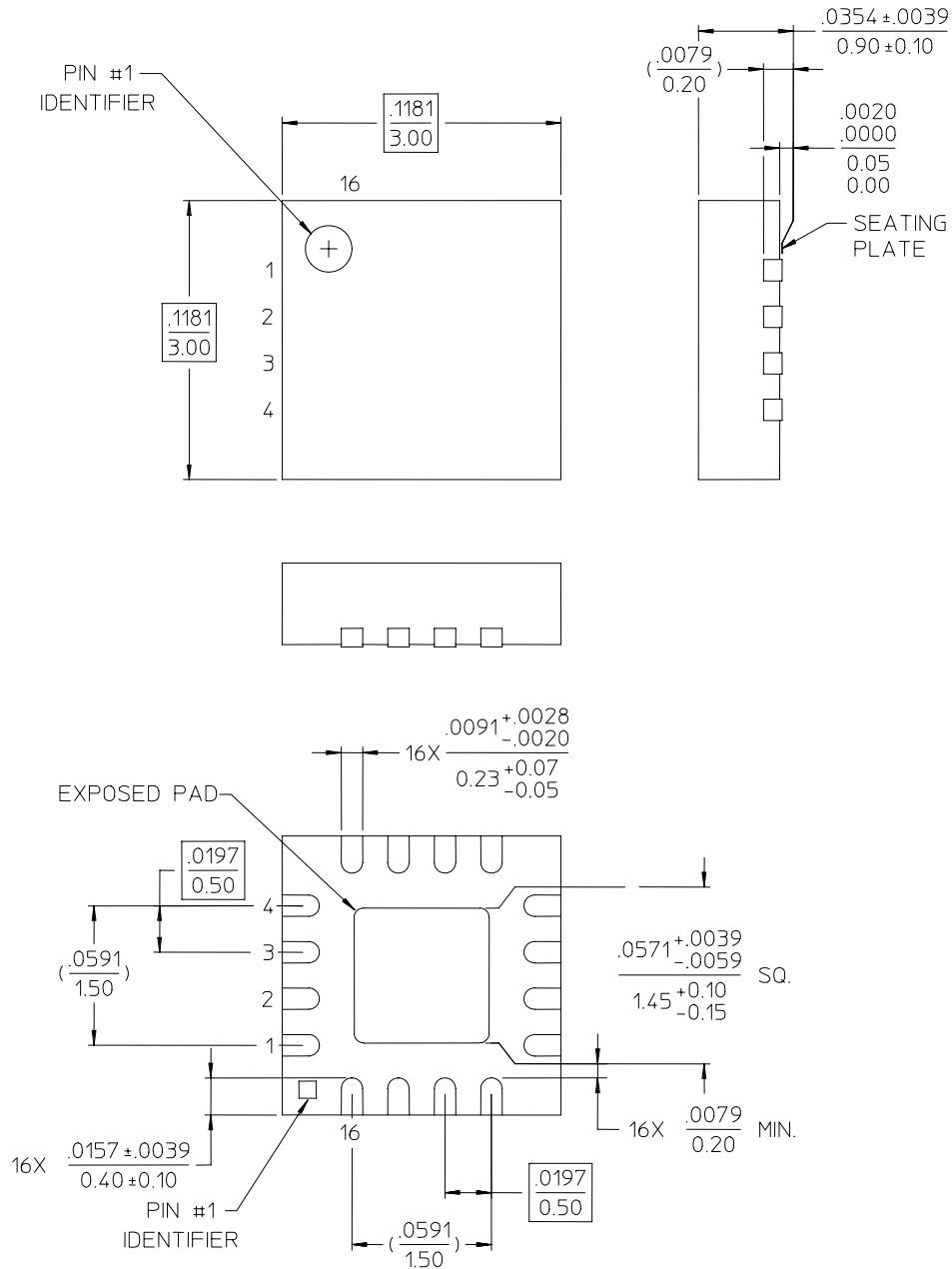
Parameter	Maximum Ratings
Operating Temperature	-40 °C to +85 °C
Storage Temperature	-65 °C to +150 °C
Incident LO Power	+20 dBm C.W.
Incident RF Power	+20 dBm C.W.
Soldering Temperature	+260 °C max

1. Exceeding these limits may cause permanent damage.

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**MA4EXP240L-1277 Outline – 3mm FQFP-N 16 Lead Saw Singulated**



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