



M/A-COM

# Silicon Double Balanced HMIC™ Mixer 1700 - 2500 MHz



## Features

- Low Cost Miniature Plastic Package
- Low Conversion Loss:
  - 6.4 dB at 2100 MHz
  - 7.4 dB at 2400 MHz
- +3 to +7 dBm LO Drive
- HMIC™ Process
- Silicon Low Barrier Schottky Diodes
- DC -400 MHz IF Bandwidth

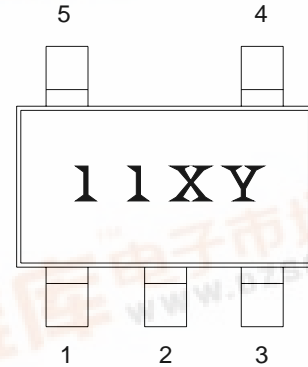
## Description

M/A-COM's MA4EX240L-1225 is a silicon monolithic 1700 - 2500 MHz double balanced mixer in a low cost miniature surface mount SOT-25 package. The dies uses M/A-COM's unique HMIC™ silicon/glass process to achieve low loss passive elements while retaining the advantages of low barrier silicon Schottky diodes.

## Applications

These mixers are well suited for high volume wireless applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in wireless LAN and other data applications in the 2.4 GHz 15M band.

## SOT-25 Outline



## Pin Configuration

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

## Ordering Information

Model No.	Package
MA4EX240L-1225	Bulk
MA4EX240L-1225T	Tape and Reel

## Electrical Specifications @ +25°C

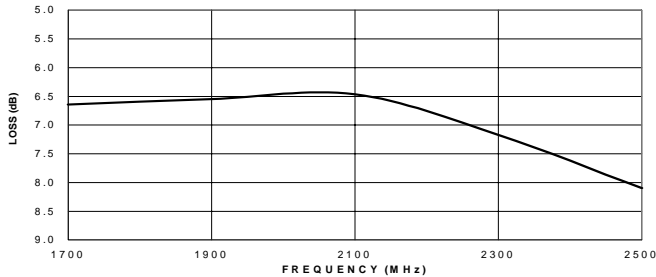
Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	2100 MHz	LO Drive = +5 dBm, $f_{LO} = f_{RF} + f_{IF}$	dB	—	6.4	8.2
	1700-2500 MHz	RF = -10 dBm, IF = 60 MHz	dB	—	7.0	9.5
L - R Isolation	2100 MHz	LO Drive = +5 dBm	dB	14	17.5	—
	1700-2500 MHz	RF Level = -10 dBm	dB	—	14	—
L - I Isolation	2100 MHz	LO Drive = +5 dBm	dB	—	23	—
	1700-2500 MHz	RF Level = -10 dBm	dB	—	23	—
R - I Isolation	2100 MHz	LO Drive = +5 dBm	dB	—	13.5	—
	1700-2500 MHz	RF Level = -10 dBm	dB	—	13	—
LO VSWR	2100 MHz	LO Drive = +5 dBm	—	—	2.1	—
	1700-2500 MHz	RF Level = -10 dBm	—	—	2.1	—
RF VSWR	2100 MHz	LO Drive = +5 dBm	—	—	1.3	—
	1700-2500 MHz	RF Level = -10 dBm	—	—	2.0	—
IF VSWR	DC - 500 MHz	LO Drive = +5 dBm	—	—	1.3	—
		IF Level = -10 dBm	—	—	—	—
Input IP3	2100 MHz	LO Drive = +5 dBm, $f_{RL} = f_{LO} - f_{IF}$	dBm	+10	+13.0	—
	1700-2500 MHz	IF = 60 MHz	dBm	+8	+12.0	—
Input 1 dB Compression	2100 MHz	LO Drive = +5 dBm	dBm	—	+1.0	—
	1700-2500 MHz	IF = 60 MHz	dBm	—	+1.0	—
IF 1 dB Bandwidth	0-400 MHz	LO = 2050 MHz @ +5 dBm	MHz	—	400	—



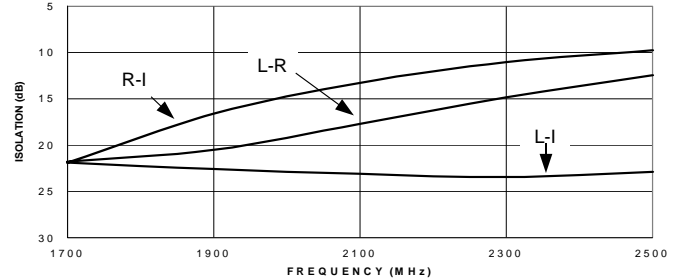
### Typical Performance Curves

(LO Drive = +5 dBm, RF = -10 dBm, IF = 60 MHz)

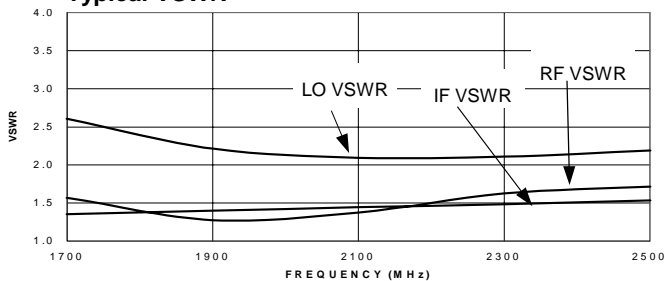
Conversion Loss



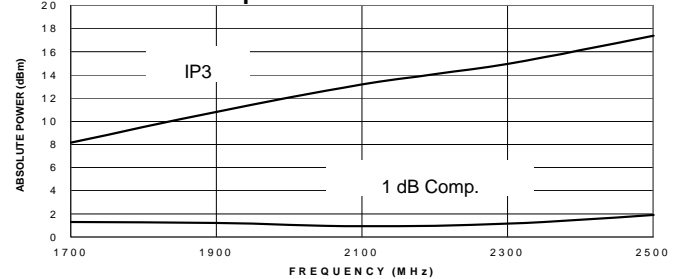
Isolation



Typical VSWR



IP3 & 1dB Compression Point

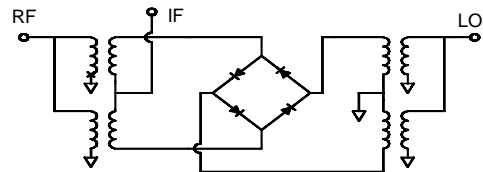


### Absolute Maximum Rating<sup>1</sup>

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

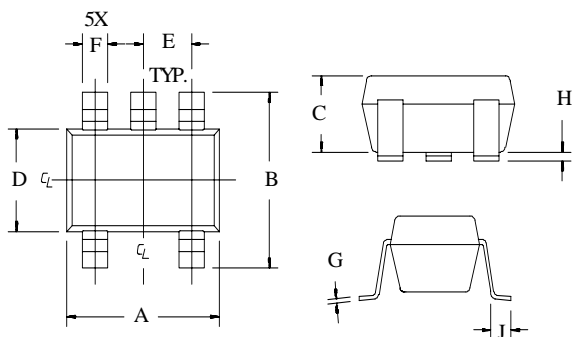
1. Exceeding these limits may cause permanent damage.

### Schematic



### Case Style

#### SOT-25



#### SOT-25<sup>1,2</sup>

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1103	0.1181	2.8	3.10
B	0.1023	0.1181	2.6	3.00
C	0.0355	0.0512	0.9	1.30
D	0.0591	0.0669	1.5	1.7
E	0.0374 Typ.		0.95 Typ.	
F	0.0138	0.0197	0.35	0.5
G	0.0031	0.0079	0.08	0.20
H	0.0020	0.0059	0.05	0.15
J	0.0138	0.0216	0.35	0.55

- Dimensions do not include mold flash, protrusion or gate burrs which shall not exceed 0.0098 in (.25mm) per side.
- Lead Coplanarity is 0.003 (0.08) max.