

M/A-COM Low Cost Silicon Double Balanced HMIC™ Mixer 3.0 - 4.0 GHz

Features

- 7.5 dB Typical Conversion Loss
- +3 to +7 dBm LO Drive
- HMIC™ IC Process
- Silicon Low Barrier Schottky Diode
- DC – 1050 MHz IF Bandwidth
- Low Cost Miniature Plastic Package

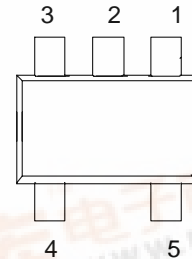
Description

M/A-COM's MA4EX370L-1225 is a silicon monolithic 3.0 to 4.0 GHz double balanced mixer in a low cost miniature surface mount SOT-25 package. The die 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 and cellular applications where small size and repeatability are required. Typical applications include frequency conversion,

SOT-25 Outline



Pin Configuration

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

Ordering Information

Model No.	Package
MA4EX370L-1225T	Tape and Reel

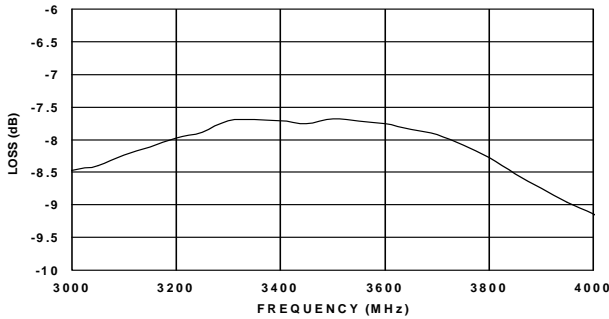
Electrical Specifications @ +25°C

Parameter	Frequency Range	Test Conditions	Units	Typ.	Max.
Conversion Loss	3700 MHz 3.0 - 4.0 GHz	LO Drive = +3→+7 dBm RF = -10 dBm, IF = 60 MHz	dB	7.5 8.5	8.5 10.5
L - R Isolation	3700 MHz 3.0 - 4.0 GHz	LO Drive = +5 dBm RF Level = -10 dBm	dB	12.0 14.0	—
L - I Isolation	3700 MHz 3.0 - 4.0 GHz	LO Drive = +5 dBm RF Level = -10 dBm	dB	21.0 20.0	—
R - I Isolation	3700 MHz 3.0 - 4.0 GHz	LO Drive = +5 dBm RF Level = -10 dBm	dB	9.3 9.0	—
LO VSWR	3700 MHz 3.0 - 4.0 GHz	LO Drive = +5 dBm RF Level = -10 dBm		2.8 3.0	—
RF VSWR	3700 MHz 3.0 - 4.0 GHz	LO Drive = +5 dBm RF Level = -10 dBm		1.7 3.4	—
IF VSWR	DC - 1050 MHz	LO Drive = +5 dBm IF Level = -10 dBm		1.9 —	—
Input IP3	3700 MHz 3.0 - 4.0 GHz	LO Drive = +3→+7 dBm RF = -10 dBm, IF = 60 MHz	dBm	7.5 7.5	—
Input 1 dB Compression	3700 MHz 3.0 - 4.0 GHz	LO Drive = +3→+7 dBm RF = -10 dBm, IF = 60 MHz	dBm	+0.7 +2.0	—
IF 1 dB Bandwidth	DC - 1050 MHz	LO = 3650 MHz @+5dBm	MHz	—	—

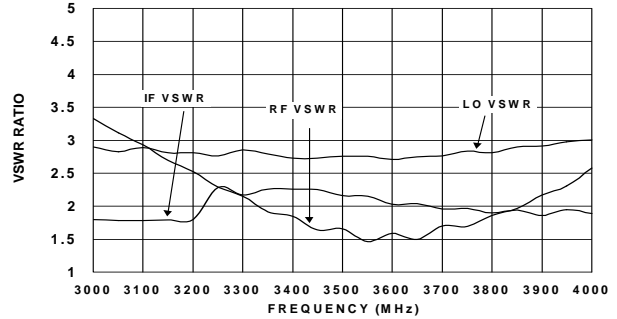


Typical Performance Curves

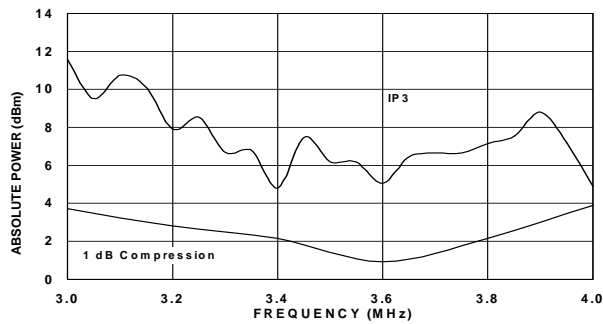
Conversion Loss



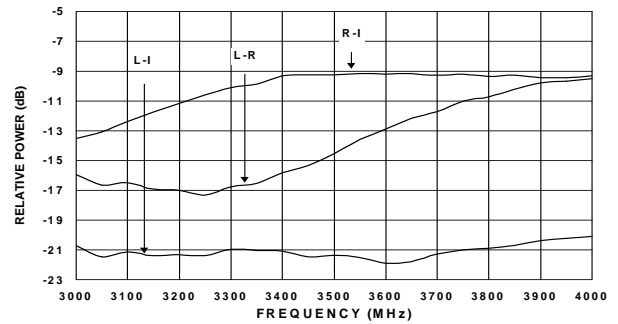
Typical VSWR



IP3 & 1 dB Compression



Isolation

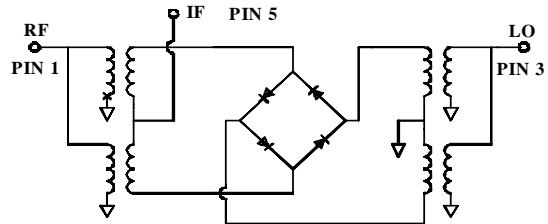


Absolute Maximum Rating¹

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

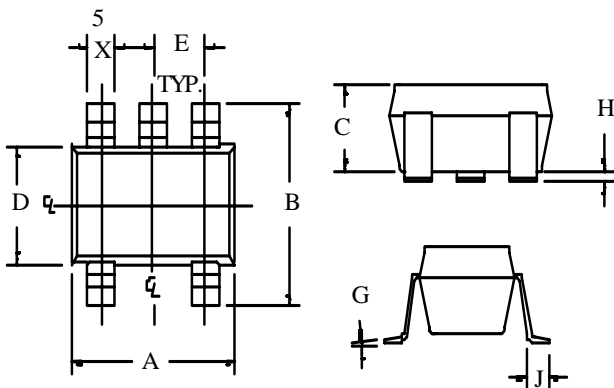
1. Exceeding these limits may cause permanent damage.

Schematic



Case Style

SOT-25



SOT-25^{1,2}

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1103	0.1181	2.80	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	1.70
E	0.0374 Typ.		0.95 Typ.	
F	0.0138	0.0197	0.35	0.50
G	0.0031	0.0079	0.08	0.2
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 (0.25mm) per side.
- Lead Coplanarity is 0.003 (0.08) max.