

Silicon Double Balanced HMIC™ Mixer, 1700 - 2300 MHz

MA4EX190H-1225

Features

- Low Cost Miniature Plastic Package
- High IP3 : 28 dbm Typical
- 6.6 dB Typical Conversion Loss at 1900 MHz
- 7.5 dB Typical Conversion Loss at 2200 MHz
- +13 to +17 dBm LO Drive
- HMIC™ Patented Process
- Silicon High Barrier Schottky Diodes
- DC - 500 MHz IF Bandwidth

Description

M/A-COM's MA4EX190H-1225 is a silicon monolithic 1700-2300 MHz 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 high barrier silicon Schottky diodes.

Applications

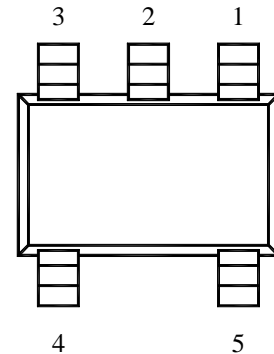
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in both portable cellular and base station applications.

Absolute Maximum Ratings¹

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.

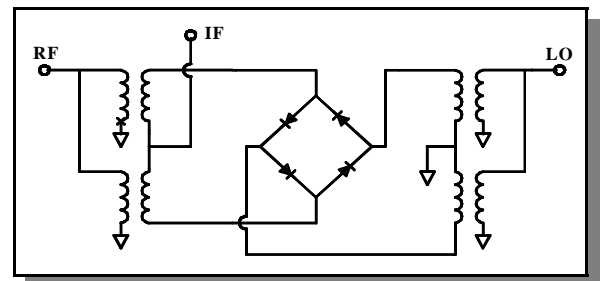
Package Outline



PIN Configuration

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

Functional Schematic

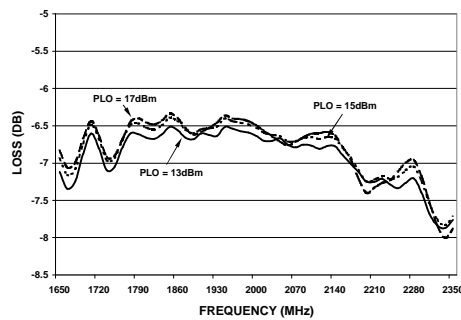


Electrical Specifications: @ + 25 °C

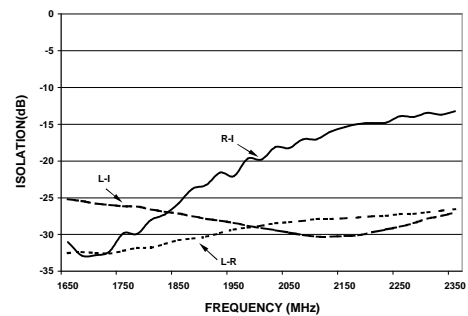
Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	1900 MHz	LO Drive = +15 dBm	dB		6.6	7.0
	1700-2300 MHz	RF = -10 dBm, IF = 60 MHz	dB		6.7	8.0
L - R Isolation	1900 MHz	LO Drive = +15 dBm	dB		30.0	
	1700-2300 MHz	RF Level = -10 dBm	dB		30.0	
L - I Isolation	1900 MHz	LO Drive = +15 dBm	dB		28.0	
	1700-2300 MHz	RF Level = -10 dBm	dB		28.0	
R - I Isolation	1900 MHz	LO Drive = +15 dBm	dB		23.0	
	1700-2300 MHz	RF Level = -10 dBm	dB		20.0	
RF VSWR	1900 MHz	LO Drive = +15 dBm			1.10:1	
	1700-2300 MHz	RF Level = -10 dBm			1.20:1	
IF VSWR	DC - 500 MHz	LO Drive = +15 dBm RF Level = -10 dBm			1.40:1	
Input IP3	1900 MHz	LO Drive = +17 dBm	dBm	25.0	29.0	
	1850-2300 MHz	IF = 60 MHz	dBm	25.0	28.0	
Input 1 dB Compression	1900 MHz	LO Drive = +17 dBm	dBm		10.5	
	1700-2300 MHz	IF = 60 MHz	dBm		10.5	
IF 1 dB Bandwidth			MHz	0	500.0	

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

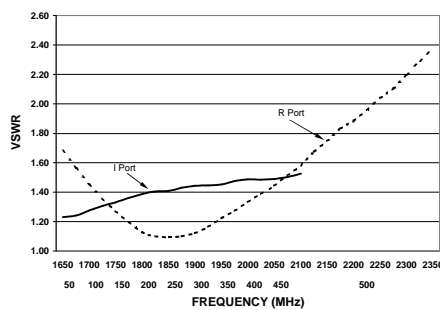
Conversion Loss



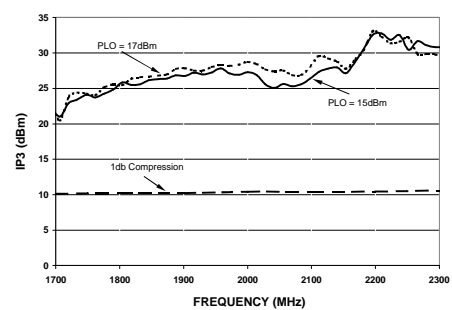
Isolation



VSWR



Input IP3 & 1 dB Compression Point

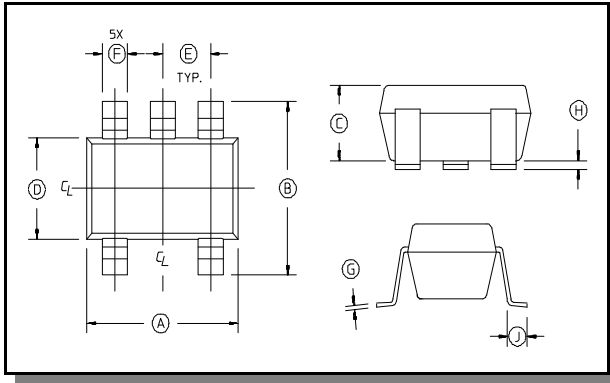


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Case Style - SOT-25



SOT-25 Dimensions

Dim	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A	.106	.122	2.70	3.10
B	.100	.118	2.54	3.00
C	—	.051	—	1.30
D	.063 REF.		1.60 REF.	
E	.032	.043	.80	1.10
F	.014	.020	.35	.50
G	.003	—	.08	—
H	.000	.006	.00	.15
J	.018 REF.		.45 REF.	

Notes: 1. Leads Coplanarity should be 0.003 (0.08) max.

Ordering Information

Part Number	Package
MA4EX190H-1225	Tube
MA4EX190H-1225T	Tape and Reel

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