Silicon Double Balanced HMIC™ Mixer, 1300 - 1900 MHz

V 2.00

MA4EX180H-1225T

Features

- SOT-25 Low Cost Miniature Plastic Package
- 6.5 dB Typical Conversion Loss at 1550 MHz
- 7.6 dB Typical Conversion Loss at 1800 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 MA4EX180H-1225T is a silicon monolithic 1300-1900 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

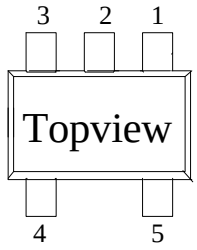
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in both portable cellular and base station applications.

Absolute Maximum Ratings[1]

Parameter	Absolute Maximum
Operating Temperature	-65 °C to +125 °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.

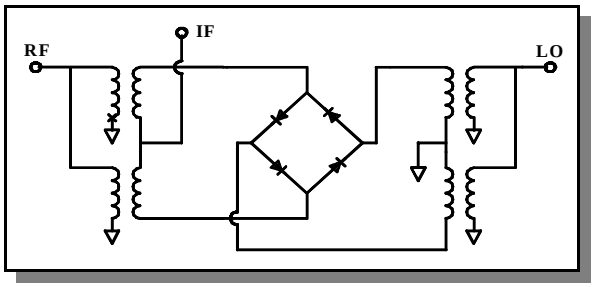
SOT-25 Package Outline (Topview)



PIN Configuration

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

Functional Schematic

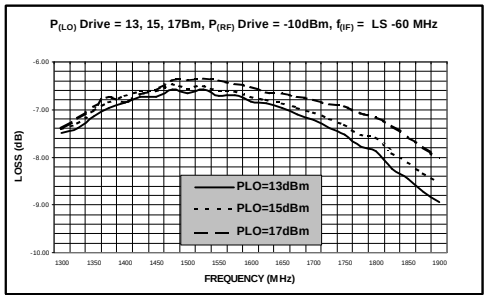


Electrical Specifications: T_A = + 25 °C

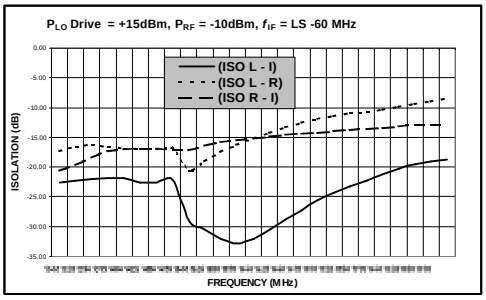
Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm RF = -10 dBm, IF = 60 MHz	dB dB		6.5 7.5	7.5 9.5
L - R Isolation	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm RF Level = -10 dBm	dB dB		27.0 18.6	
L - I Isolation	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm RF Level = -10 dBm	dB dB		28.9 24.0	
R - I Isolation	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm RF Level = -10 dBm	dB dB		15.8 16.9	
RF VSWR	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm RF Level = -10 dBm			1.4:1 2.1:1	
IF VSWR	DC - 500 MHz	LO Drive = +15 dBm RF Level = -10 dBm			1.5:1	
Input IP3	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm IF = 60 MHz	dBm dBm	19.5 17.5	23.0 22.0	
Input 1 dB Compression	1550 MHz 1300-1900 MHz	LO Drive = +15 dBm IF = 60 MHz	dBm dBm	7.5 7.5	8.5 9.5	
IF 1 dB Bandwidth			MHz	0	500.0	

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

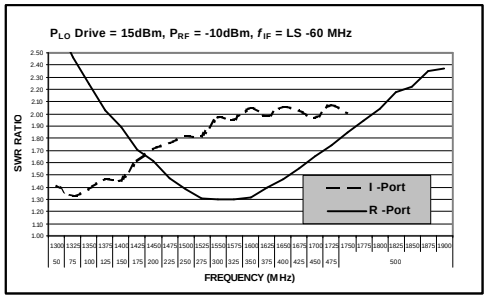
Conversion Loss



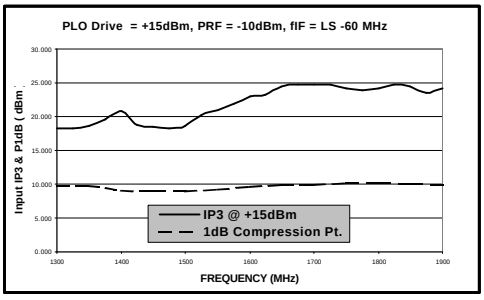
Isolation



RF and IF VSWR



Third Order Intercept and Input 1 dB Compression Power



Specifications subject to change without notice.

- **North America:** Tel. (800) 366-2266
- **Asia/Pacific:** Tel.+81-44-844-8296, Fax +81-44-844-8298
- **Europe:** Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

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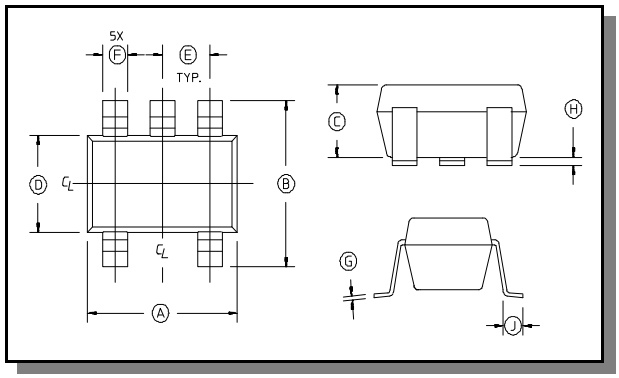
Visit www.macom.com for additional data sheets and product information.

SOT-25 Package Outline[1,2]



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

SOT-25 Dimensions

Dim	Inches		Millimeters	
	Min.	Max.	Min.	Max.
A		.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.	

Ordering Information

Part Number	Package
MA4EX180H-1225T	Tape and Reel

- **North America:** Tel. (800) 366-2266
- **Asia/Pacific:** Tel.+81-44-844-8296, Fax +81-44-844-8298
- **Europe:** Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

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