

MA4EX1810M-1225T

Silicon Double Balanced HMIC™ Mixer 1300 - 1900 MHz

Rev. VP

Features

- Low Cost Miniature Plastic Package
- 5.5 dB Typical Conversion Loss at 1550 MHz
- 6.0 dB Typical Conversion Loss at 1800 MHz
- +7 to +13 dBm LO Drive
- HMIC™ Patented Process
- Silicon Medium Barrier Schottky Diodes
- DC - 500 MHz IF Bandwidth
- Lead Free (RoHS Compliant) Equivalent Available With 260 Deg.C. Reflow Capability

Description and Applications

M/A-COM's MA4EX180M-1225T is a silicon monolithic 1300-1900 MHz, medium barrier, 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 medium barrier silicon Schottky diodes.

This part is offered with Sn/Pb plating, as well as with 100 % matte Sn plating on the RoHS compliant part number.

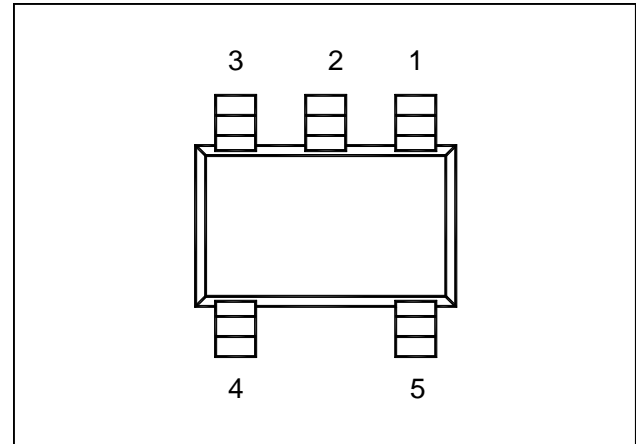
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in both portable cellular and base station applications.

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
Soldering Temperature (Standard Part Number)	+235 Deg C.
Solder Temperature (RoHS Compliant Part Number)	+260 Deg C.

1. Exceeding these limits may cause permanent damage.

Package Outline (Topview)



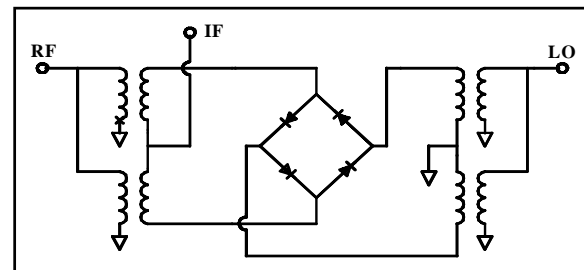
PIN Configuration

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

Ordering Information

Standard Part Number	RoHS Compliant Part Number	Package
MA4EX180M-1225T	MA4EX180M1-1225T	Tape and Reel

Functional Schematic

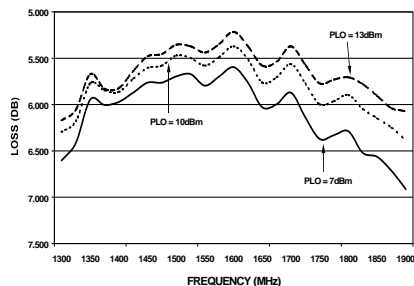


Electrical Specifications @ +25 °C

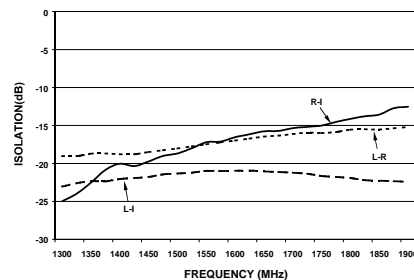
Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	1550 MHz	LO Drive = +10 dBm	dB		6.4	7.0
	1300-1900 MHz	RF = -10 dBm, IF = 60 MHz	dB		7.7	9.0
L - R Isolation	1550 MHz	LO Drive = +10 dBm	dB		17.0	
	1300-1900 MHz	RF Level = -10 dBm	dB		17.0	
L - I Isolation	1550 MHz	LO Drive = +10 dBm	dB		21.0	
	1300-1900 MHz	RF Level = -10 dBm	dB		22.0	
R - I Isolation	1550 MHz	LO Drive = +10 dBm	dB		16.5	
	1300-1900 MHz	RF Level = -10 dBm	dB		17.0	
LO VSWR	1550 MHz	LO Drive = +10 dBm			1.7:1	
	1300-1900 MHz	RF Level = -10 dBm			2.0:1	
RF VSWR	1550 MHz	LO Drive = +10 dBm			1.3:1	
	1300-1900 MHz	RF Level = -10 dBm			1.6:1	
IF VSWR	DC - 500 MHz	LO Drive = +10 dBm RF Level = -10 dBm			1.5:1	
Input IP3	1550 MHz	LO Drive = +10 dBm	dBm	12.5	15.0	
	1300-1900 MHz	IF = 60 MHz	dBm	12.0	17.0	
Input 1 dB Compression	1550 MHz	LO Drive = +10 dBm	dBm		5.0	
	1300-1900 MHz	IF = 60 MHz	dBm		6.0	
IF 1 dB Bandwidth			MHz	0		500

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

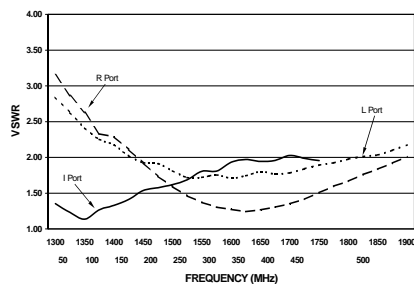
Conversion Loss



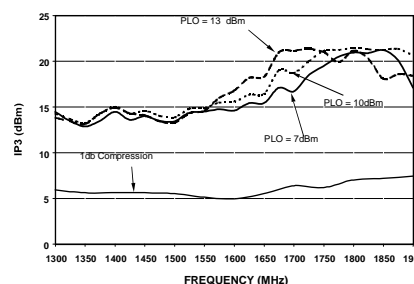
Isolation



IF VSWR



Input IP3 & 1 dB Compression Point



ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed.
PRELIMINARY: Data Sheets contain information regarding a product M/A-COM Technology Solutions has under development. Performance is based on engineering tests. Specifications are typical. Mechanical outline has been fixed. Engineering samples and/or test data may be available. Commitment to produce in volume is not guaranteed.

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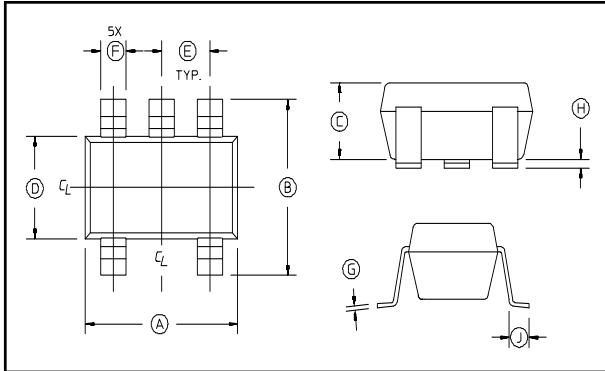
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1300 - 1900 MHz

Rev. VP

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.