

**Silicon Double Balanced HMIC™ Mixer**  
**1300 - 1900 MHz**

**MA4EX180M-1225T**  
**V2**

**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.

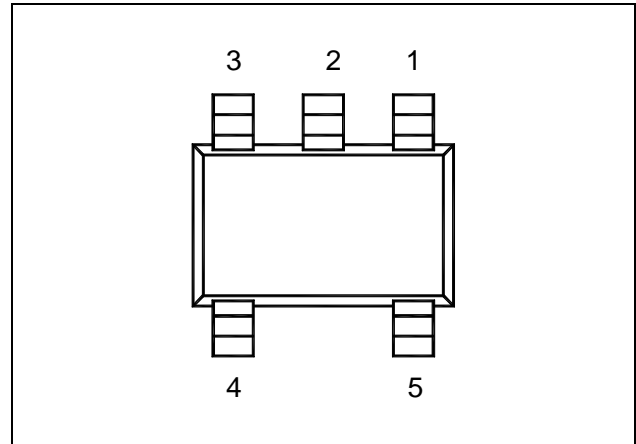
These mixers are well suited for high volume wireless and cellular applications where small size and repeatability are required. Typical applications include frequency conversion, modulation, and demodulation for receivers and transmitters in both portable cellular and base station applications.

**Absolute Maximum Ratings<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
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)**



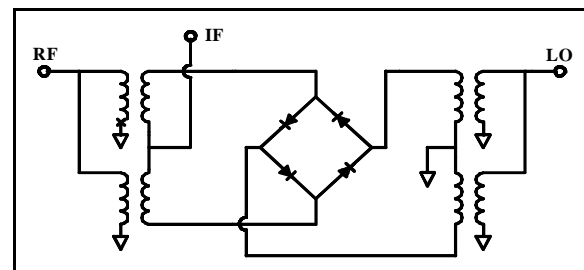
**PIN Configuration**

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**



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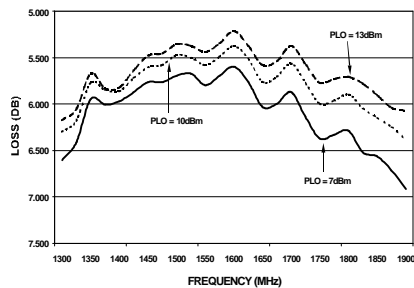
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**Electrical Specifications @ +25 °C**

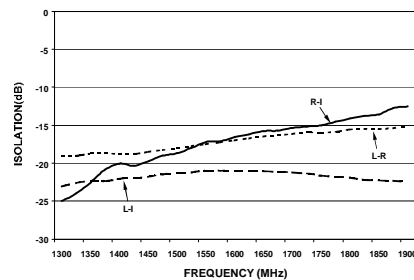
Parameter	Frequency Range	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss	1550 MHz 1300-1900 MHz	LO Drive = +10 dBm	dB		6.4	7.0
		RF = -10 dBm, IF = 60 MHz	dB		7.7	9.0
L - R Isolation	1550 MHz 1300-1900 MHz	LO Drive = +10 dBm	dB		17.0	
		RF Level = -10 dBm	dB		17.0	
L - I Isolation	1550 MHz 1300-1900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

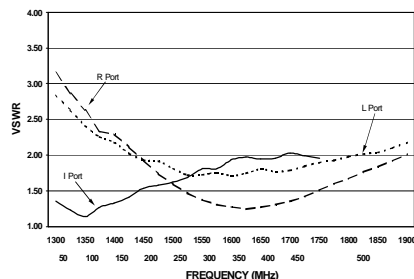
**Conversion Loss**



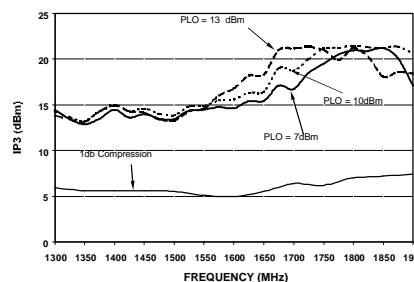
**Isolation**



**IF VSWR**



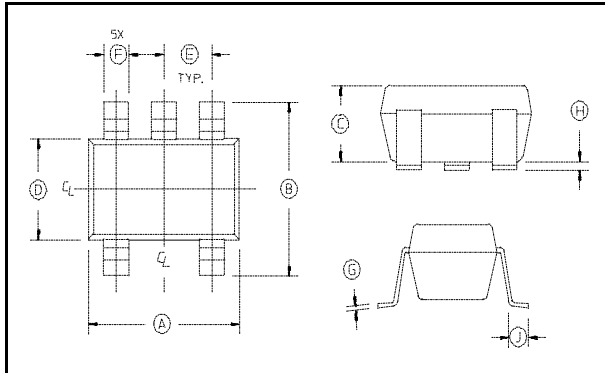
**Input IP3 & 1 dB Compression Point**



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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.