

## High Level Termination Insensitive Mixer, 1 - 3500 MHz

Rev. V4

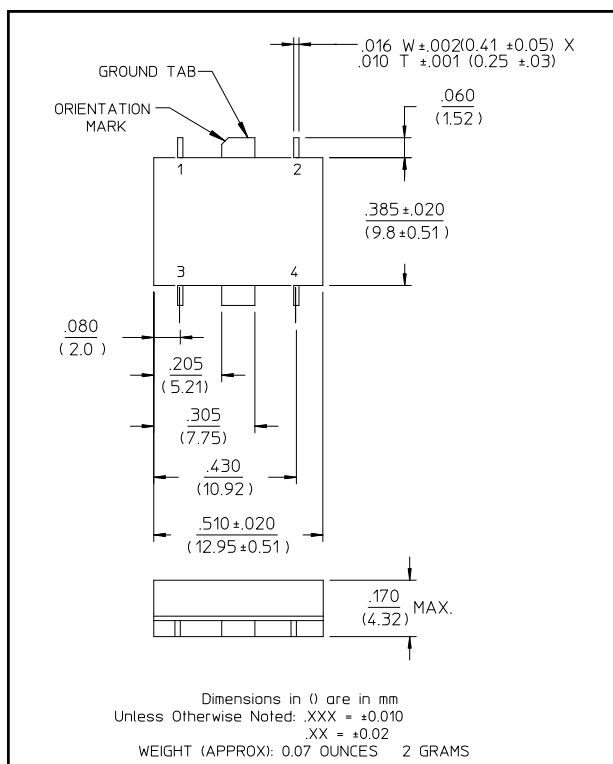
### Features

- Operates Over Full PCN/PCS/PHS/MSS Bands
- Low Conversion Loss
- Fully Hermetic Package
- Intermodulation Ratio Insensitive to System Mismatches
- VSWR: <2.0:1 Typical Midband
- Isolation: 35 dB Typical Midband
- High IIP<sub>3</sub> (+28 dBm Typical 1-3500 MHz)

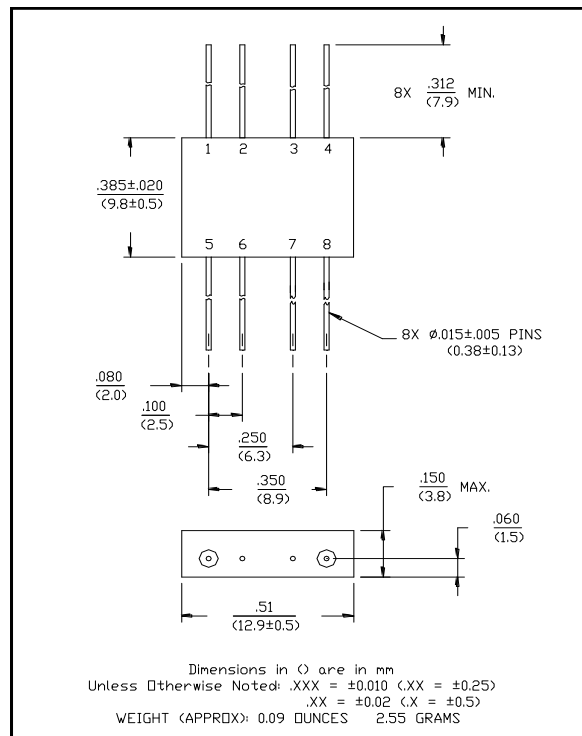
### Description

M/A-COM's MD-189 and MDS-189 are high level termination insensitive mixers. These devices are packaged in 8-lead flatpack and SMT packages. These mixers offer consistent and repeatable flat intermodulation performance and flat conversion loss with low spurious signal generation independent of system mismatch from 1 to 3500 MHz. The MD-189 and MDS-189 are ideally suited for RF/IF communications applications requiring high intercept point performance.

### SF-1 (MDS-189)



### FP-2 (MD-189)



### Pin Configuration (MD-189)

Pin No.	Function	Pin No.	Function
1	GND	5	LO
2	GND	6	GND
3	GND	7	GND
4	IF	8	RF

### Pin Configuration (MDS-189)

Pin No.	Function	Pin No.	Function
1	GND	3	LO
2	IF	4	RF

### Absolute Maximum Ratings<sup>1</sup>

Parameter	Absolute Maximum
Max Input Power <sup>2</sup> Total Power	0.5W Derated to 85°C @ 3.2 mW/°C
LO Power	+27 dBm

1. Operation of this device above any one of these parameters may cause permanent damage.
2. Ambient Temperature (T<sub>A</sub>) = +25°C

## High Level Termination Insensitive Mixer, 1 - 3500 MHz

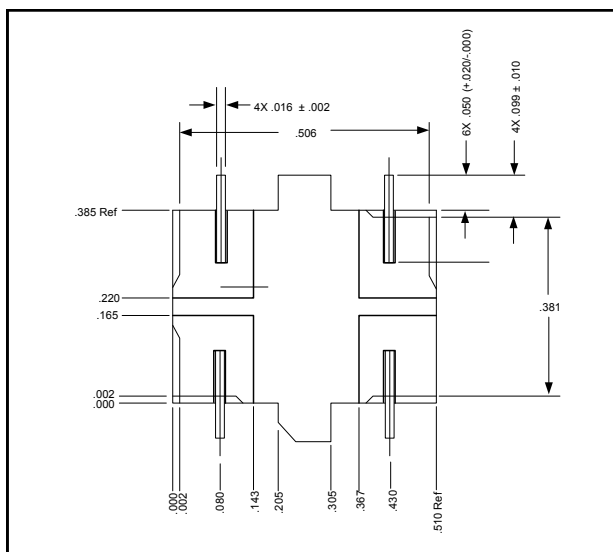
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Electrical Specifications<sup>1</sup>:  $T_A = -55^\circ\text{C}$  to  $+85^\circ\text{C}$

Frequency: RF, LO Ports = 1-3500 MHz, IF Port = 5-1500 MHz

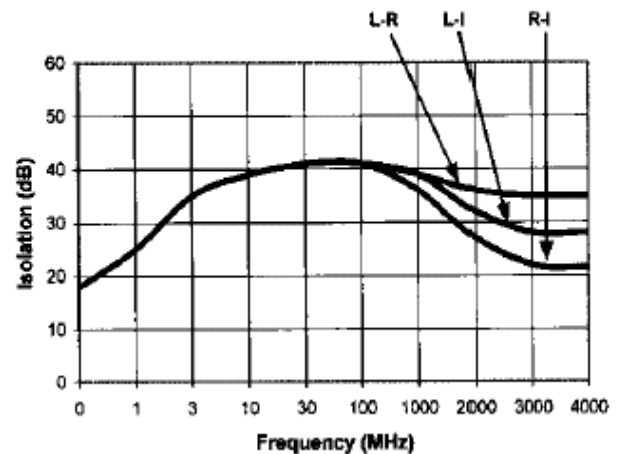
Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Conversion Loss	LO @ 23 dBm IF @ 60 MHz	5 - 1000 MHz	dB	—	6.5	7.0
		1000 - 3000 MHz	dB	—	7.5	8.5
		1 - 3500 MHz	dB	—	8.0	9.5
Isolation	LO to RF	1 - 2000 MHz	dB	30	35	—
		2000 - 3500 MHz	dB	25	30	—
	LO to IF	1 - 2000 MHz	dB	25	30	—
		2000 - 3500 MHz	dB	20	25	—
	RF to IF	10 - 500 MHz	dB	30	35	—
		1 - 3500 MHz	dB	15	20	—
Input Compression (1 dB)	LO @ 23 dBm IF @ 60 MHz	—	—	—	+20	—
IIP <sub>3</sub>	LO @ 23 dBm IF @ 60 MHz	—	dBm	—	+28	—
Desensitivity (1dB)	LO @ 23 dBm IF @ 60 MHz	—	dBm	—	+17	—
		—	dBm	—	—	—
SSB Noise Figure	LO @ 23 dBm IF @ 60 MHz Within 1 dB of Conversion Loss Max	—	—	—	—	—

### Bottom View of SF-1



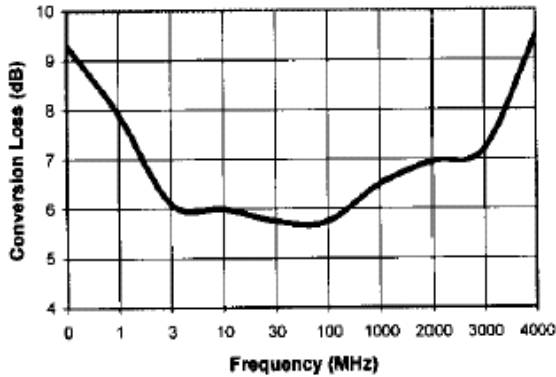
### Typical Performance Curves

#### Isolation - Input +23 dBm

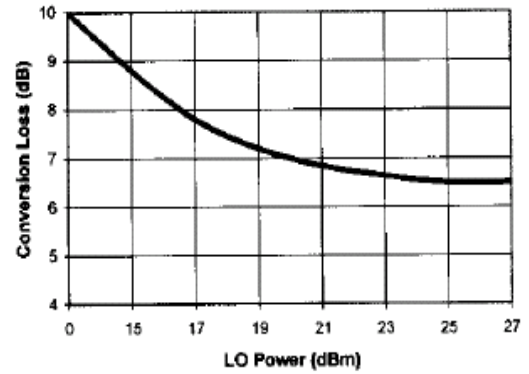


## Typical Performance Curves

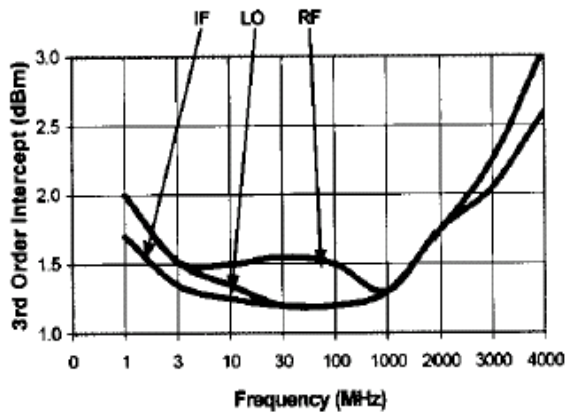
Conversion Loss - LO @ +23 dBm,  
IF @ 60 MHz



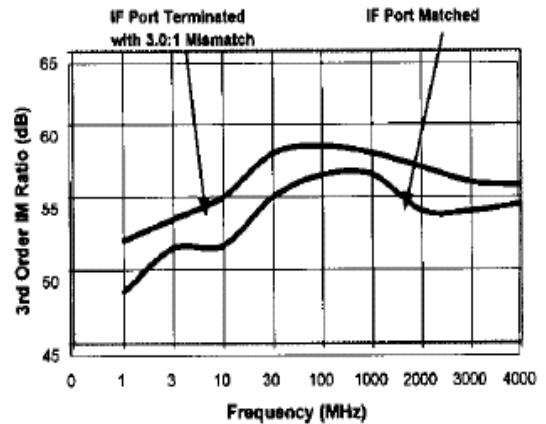
Conversion Loss vs. LO Power -  
RF @ 2000 MHz 0 dBm, IF @ 60 MHz



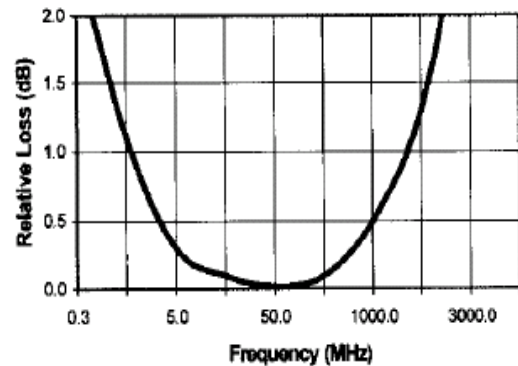
VSWR



3rd Order IM Ratio - LO @ +23 dBm,



IF Port Response



## Ordering Information

Part Number	Package
MD-189 PIN	FP-2
MDS-189 PIN	SF-1