MD- / MDS-189

High Level Termination Insensitive Mixer, 1 - 3500 MHz

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 IIP₃ (+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)



1

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.

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 Ratings¹

Parameter	Absolute Maximum
Max Input Power ² 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 nay cause permanent damage.

2. Ambient Temperature $(T_A) = +25^{\circ}C$

North America Tel: 800.366.2266
 Europe Tel: +353.21.244.6400
 India Tel: +91.80.4155721
 China Tel: +86.21.2407.1588

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

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.



Rev. V4

MD- / MDS-189



High Level Termination Insensitive Mixer, 1 - 3500 MHz

Electrical Specifications¹: $T_A = -55^{\circ}C$ to $+85^{\circ}C$ Frequency: RF, LO Ports = 1-3500 MHz, IF Port = 5-1500 MHz

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

Bottom View of SF-1

2



Typical Performance Curves

Isolation - Input +23 dBm



ADVANCED: Data Sheets contain information regarding a product M/A-COM Technology Solutions • North America Tel: 800.366.2266 • Europe Tel: +353.21.244.6400 is considering for development. Performance is based on target specifications, simulated results, and/or prototype measurements. Commitment to develop is not guaranteed. • India Tel: +91.80.4155721 • China Tel: +86.21.2407.1588

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

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. M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make Commitment to produce in volume is not guaranteed.

changes to the product(s) or information contained herein without notice.

Rev. V4

MD- / MDS-189

Technology Solutions

High Level Termination Insensitive Mixer, 1 - 3500 MHz

Typical Performance Curves

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



VSWR



Ordering Information

3

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

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



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



IF Port Response



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.

- North America Tel: 800.366.2266
 Europe Tel: +353.21.244.6400
 India Tel: +91.80.4155721
 China Tel: +86.21.2407.1588
- Visit www.macomtech.com for additional data sheets and product information.

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.

M/A-COM Technology Solutions Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice.

Rev. V4