



# THE DATASHEET OF MDS-169-PIN



# Termination Insensitive Mixer

## 1 MHz - 3.5 GHz



**MDx-169**  
Rev. V8

### Features

- Intermodulation Ratio is Insensitive to Port Mismatches
- VSWR: <2.0:1 Midband
- Isolation: 35 dB Midband
- Impedance: 50  $\Omega$  Nominal
- Input Power: 350 mW Max. @ 25°C, Derated to 85°C @ 3.2 mW/°C
- LO Power: 24 dBm Max.
- MIL-STD-883 Screening Available

### Applications

- Aerospace & Defense
- ISM

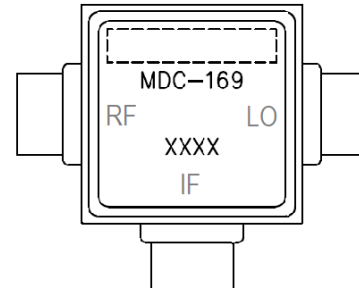
### Description

The unique design of the termination insensitive mixer (TIM) enables it to apply high reverse voltage to diodes during their “off” phase, in the LO cycle. This allows for higher power level performance with minimum distortion. In addition the TIM has internal loads that provide a good match and also absorb mixer generated LO frequency terms. Combined, these features give the mixer its insensitivity to external mismatches, plus superior VSWR.

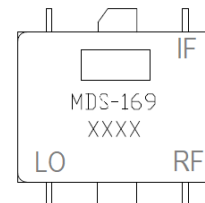
### Ordering Information

Part Number	Package
MDC-169-SMA	C-7
MDS-169-PIN	SF-1
MD-169-PIN	FP-2

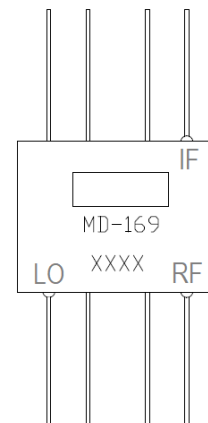
### C-7 (MDC-169)



### SF-1 (MDS-169)<sup>1</sup>



### FP-2 (MD-169)<sup>1</sup>



1. All pins not marked are ground pins.

# Termination Insensitive Mixer

## 1 MHz - 3.5 GHz



MDx-169

Rev. V8

### Electrical Specifications<sup>2</sup>:

Freq. RF & LO Ports = 0.001 - 3.5 GHz, IF Port = 5 - 1500 MHz, T<sub>A</sub> = -55°C to +85°C

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Conversion Loss <sup>3</sup>	LO @ +10 dBm, IF @ 60 MHz 5 - 1000 MHz 1000 - 3000 MHz 1 - 3500 MHz	dB	—	—	7 9 10
Isolation	LO to RF & LO to IF 5 - 1000 MHz 1 - 3500 MHz  RF to IF 10 - 500 MHz 1 - 3000 MHz 1 - 3500 MHz	dB	30 20  30 20 18	—	—
RF Input	1 dB Compression 1 dB Desensitization	dBm	—	7 5	—
SSB Noise Figure	—	dB	Within 1 dB of Conversion Loss Max.		
Typical Two-Tone IM Ratio	P <sub>IN</sub> = -10 dBm per tone, IF = 60 MHz 10 MHz 500 MHz 3000 MHz	dB	—	55 58 56	—
3rd Order Intermodulation Ratio Degradation	@ IF VSWR 3:1	dB	—	3	—

2. All specifications apply when operated at 10 dBm available LO power with 50 Ω source and load impedance.

3. For MDC-169, add 1 dB to conversion loss.

### Absolute Maximum Ratings (MDS-169)<sup>4</sup>

Parameter	Absolute Maximum
Total Power	350 mW Derated at 85°C @ 3.2 mW/°C
LO Power	24 dBm

4. Operation of this device above any one of these parameters may cause permanent damage.

# Termination Insensitive Mixer

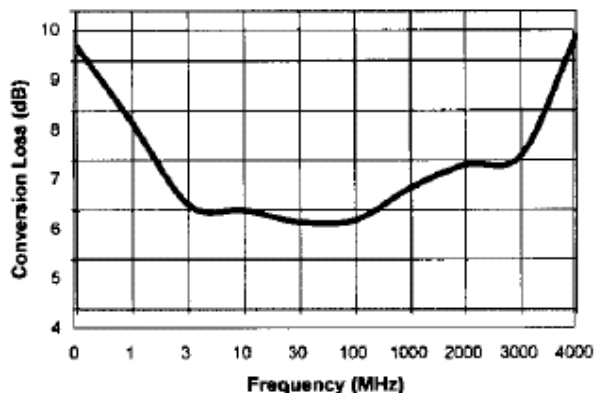
## 1 MHz - 3.5 GHz



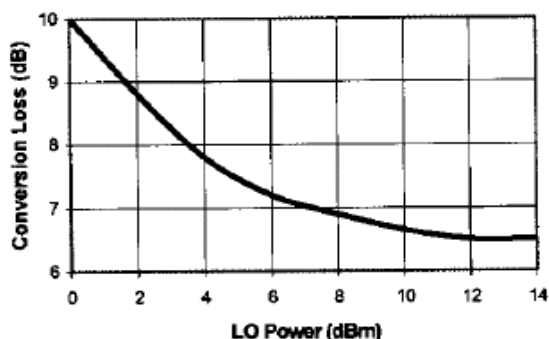
MDx-169  
Rev. V8

### Typical Performance Curves

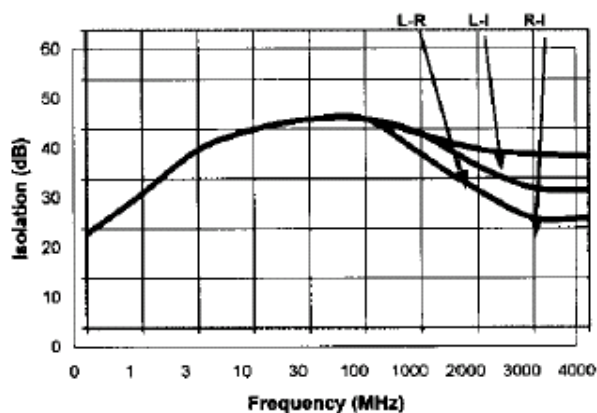
**Conversion Loss - LO @ +10 dBm, IF @ 60 MHz**



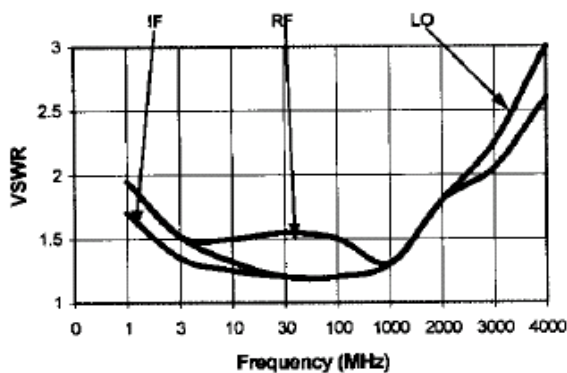
**Conversion Loss vs. LO Power - RF @ 2000 MHz -10 dBm, IF @ 60 MHz**



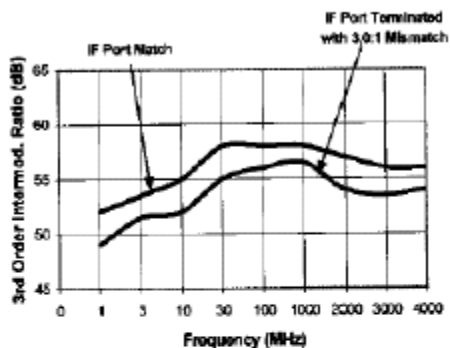
**Isolation - Input +10 dBm**



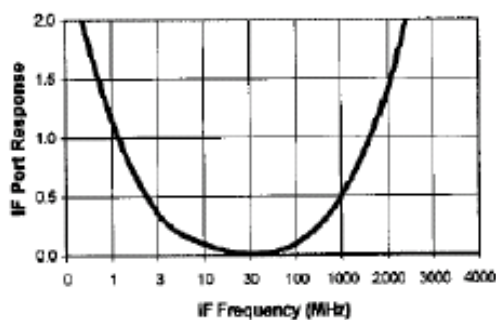
**VSWR**



**3rd Order IM Ratio - LO @ +10 dBm,**



**IF Port Response**

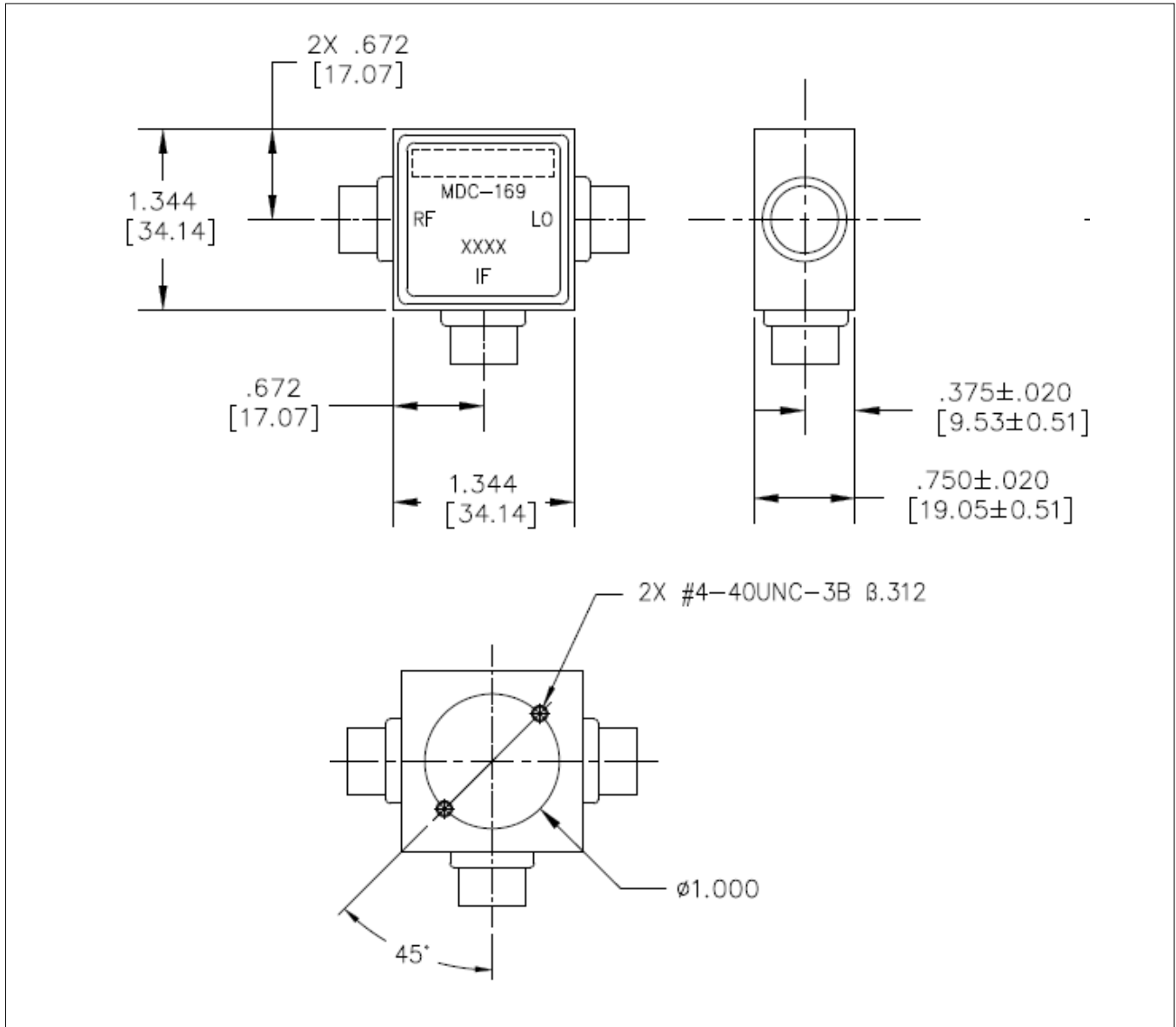


# Termination Insensitive Mixer 1 MHz - 3.5 GHz



MDx-169  
Rev. V8

## C-7 (MDC-169)

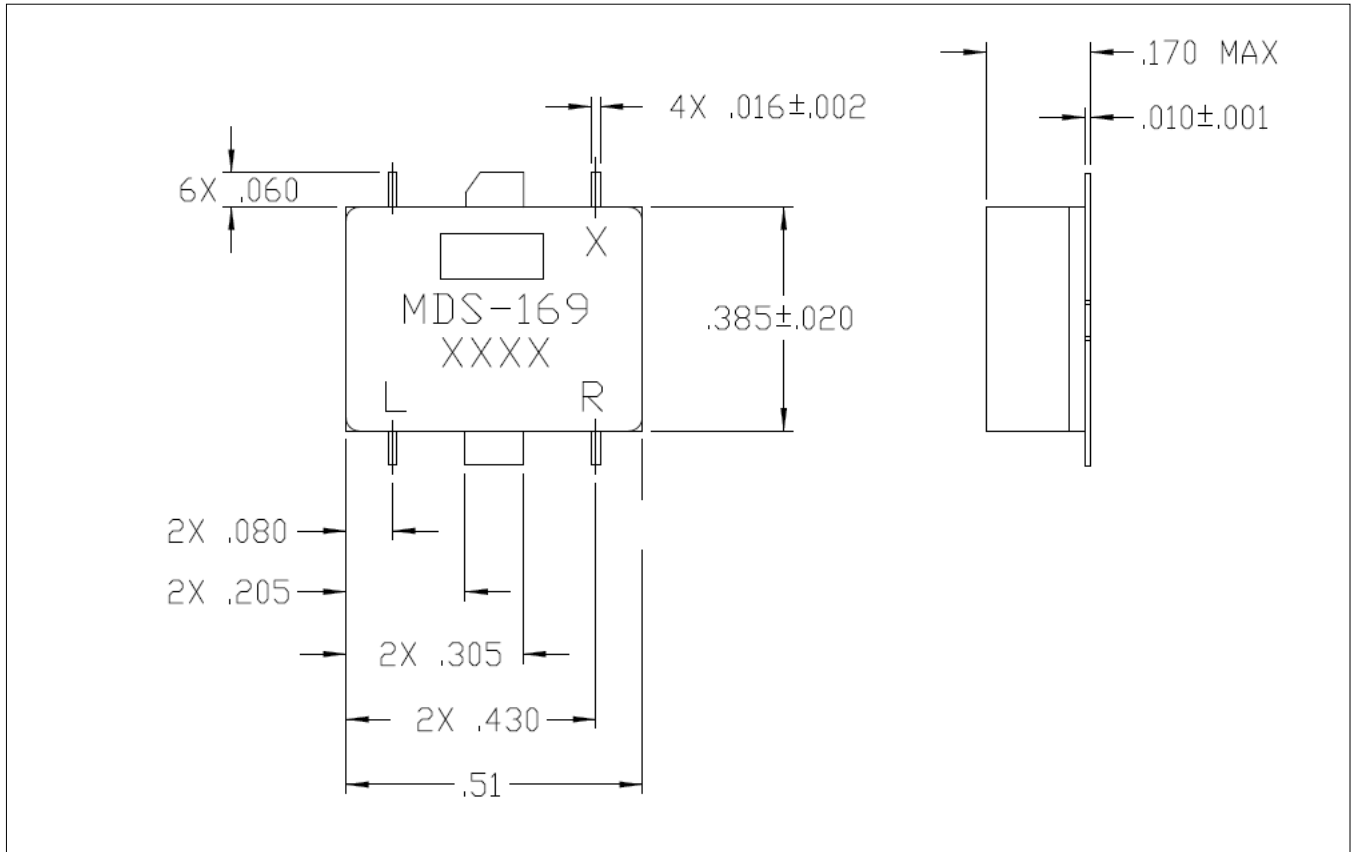


# Termination Insensitive Mixer 1 MHz - 3.5 GHz

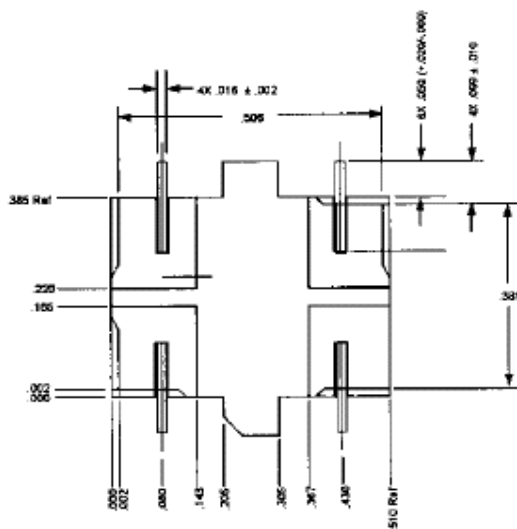


**MDx-169**  
Rev. V8

## SF-1 (MDS-169)<sup>1</sup>



## Bottom View of SF-1

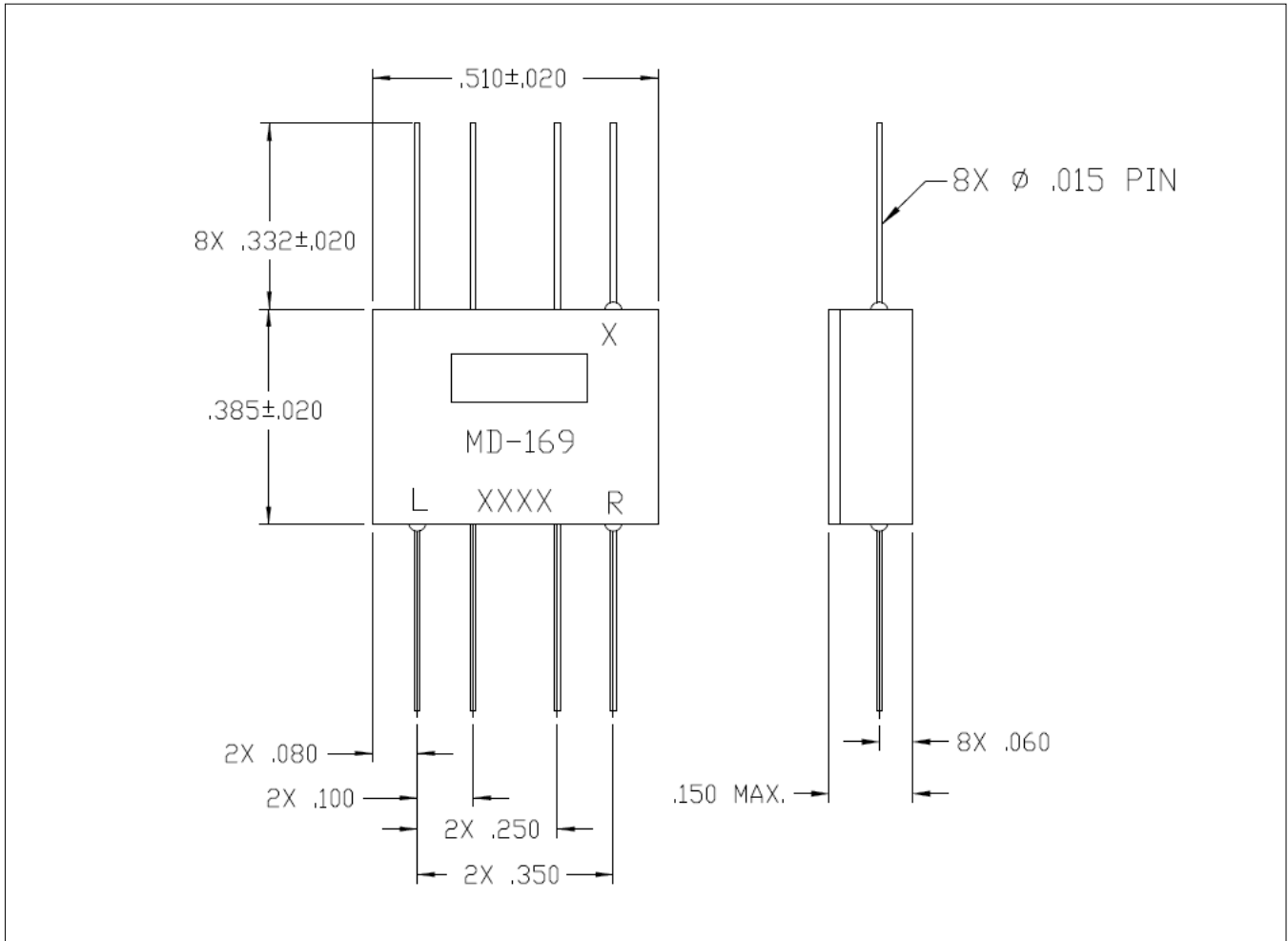


# Termination Insensitive Mixer 1 MHz - 3.5 GHz



MDx-169  
Rev. V8

## FP-2 (MD-169)<sup>1</sup>



# Termination Insensitive Mixer

## 1 MHz - 3.5 GHz



**MDx-169**  
Rev. V8

MACOM Technology Solutions Inc. ("MACOM"). All rights reserved.

These materials are provided in connection with MACOM's products as a service to its customers and may be used for informational purposes only. Except as provided in its Terms and Conditions of Sale or any separate agreement, MACOM assumes no liability or responsibility whatsoever, including for (i) errors or omissions in these materials; (ii) failure to update these materials; or (iii) conflicts or incompatibilities arising from future changes to specifications and product descriptions, which MACOM may make at any time, without notice. These materials grant no license, express or implied, to any intellectual property rights.

THESE MATERIALS ARE PROVIDED "AS IS" WITH NO WARRANTY OR LIABILITY, EXPRESS OR IMPLIED, RELATING TO SALE AND/OR USE OF MACOM PRODUCTS INCLUDING FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, INFRINGEMENT OF INTELLECTUAL PROPERTY RIGHT, ACCURACY OR COMPLETENESS, OR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM USE OF THESE MATERIALS.

MACOM products are not intended for use in medical, lifesaving or life sustaining applications. MACOM customers using or selling MACOM products for use in such applications do so at their own risk and agree to fully indemnify MACOM for any damages resulting from such improper use or sale.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View MDS-169-PIN on WIN SOURCE](#)
- ⊖ [M/A-Com Technology Solutions Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management