

Termination-Insensitive Mixer, 1 - 500 MHz

MD-161

Features

- Third Order Intermodulation Ratio is Insensitive to Port Mismatches
- Conversion Loss: 6 dB Typical Midband
- DC Coupled IF Port
- High Level Phase Detector
- Impedance: 50 Ohms Nominal
- Maximum Input Power: 350 mW max. @ 25°C, Derated to 85°C @ 3.2 mW/°C
- LO Power +24 dBm Max.
- IF Port Current: 50 mA Max.
- MIL-STD-883 Screening Available

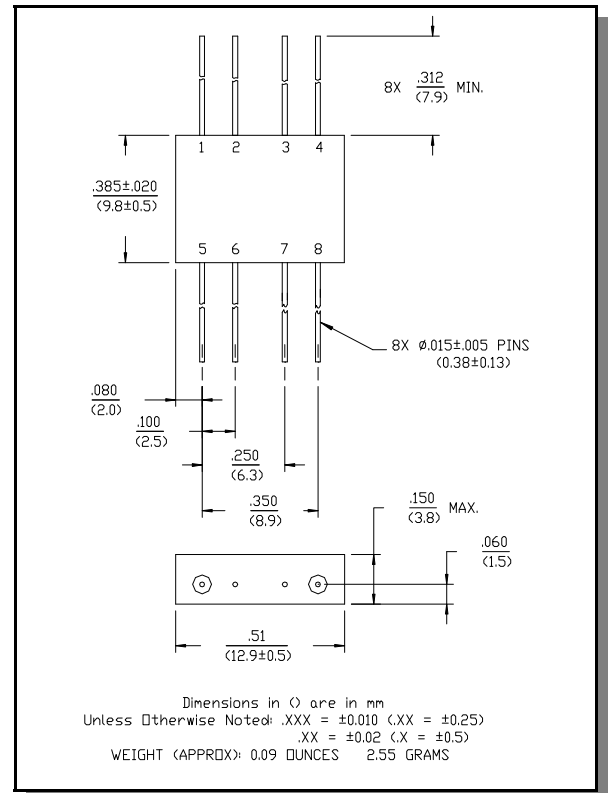
Description

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.

Pin Configuration

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

FP-2



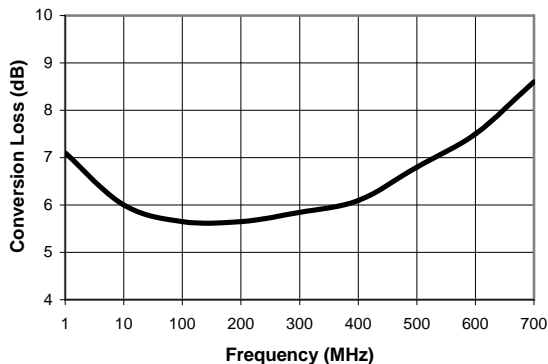
Electrical Specifications¹: T_A = -55°C to +85°C

| Parameter | Test Conditions | Frequency | Units | Min | Typ | Max |
|---|--|--|----------------------|----------------------|------------------|------------------|
| Frequency Range | RF, LO Ports IF Port | 1 - 500 DC - 500 | MHz MHz | — — | — — | — — |
| Conversion Loss | | 5 - 300 MHz 1 - 500 MHz | dB dB | — — | — — | 7 8 |
| Isolation | LO to RF LO to IF RF to IF | 1 - 500 MHz 1 - 500 MHz 1 - 300 MHz 300 - 500 MHz | dB dB dB dB | 25 30 20 17 | — — — — | — — — — |
| DC Polarity | Positive | — | — | — | — | — |
| DC Offset | — | — | mV | — | ≤5 | — |
| RF Input | 1 dB Compression 1 dB Desensitization | | dBm dBm | — — | +10 +7 | — — |
| SSB Noise Figure | Within 1 dB of Conversion Loss Max. | — | — | — | — | — |
| Typical Two Tone IM Ratio | With -10 dBm input, each tone and 60 MHz IF | 100 MHz 500 MHz | dB dB | — — | 50 55 | — — |
| 3rd Order Intermodulation Ratio Degradation | @ IF VSWR 3:1 | | dB | — | 3 | — |

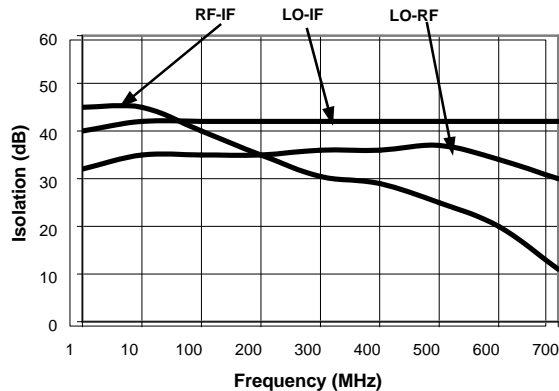
1. All specifications apply when operated at +13 dBm available LO power with 50 ohm source and load impedance.

Typical Performance Curves

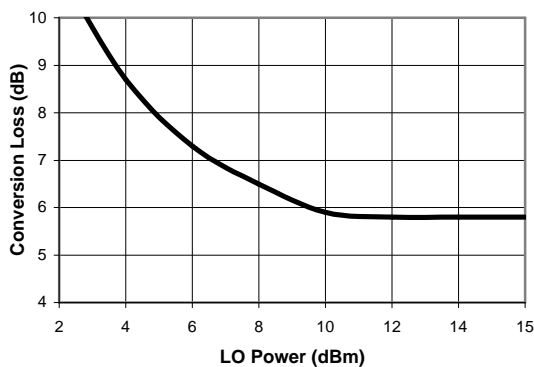
Conversion Loss (LO @ +13 dBm, IF @ 50 MHz)



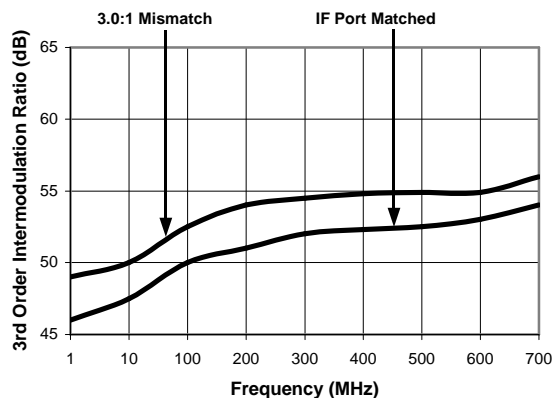
Isolation



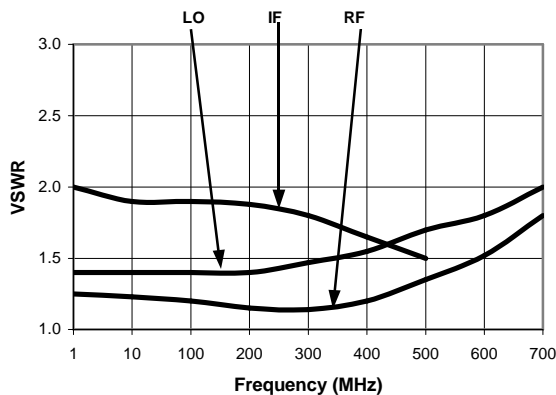
Conversion Loss vs. LO Power (RF @ 300 MHz, IF @ 50 MHz)



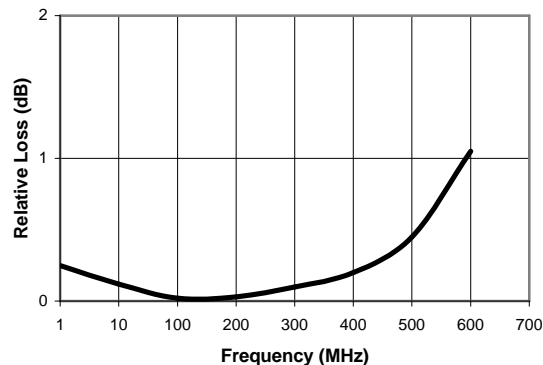
3rd Order IM Ratio (LO @ +13 dBm, RF @ -10 dBm)



VSWR



IF Port Response



Specifications subject to change without notice.

- North America: Tel. (800) 366-2266
- Asia/Pacific: Tel.+81-44-844-8296, Fax +81-44-844-8298
- Europe: Tel. +44 (1344) 869 595, Fax+44 (1344) 300 020

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

Ordering Information

| Part Number | Package |
|-------------|---------|
| MD-161 PIN | FP-2 |

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