MD-161

Termination Insensitive Mixer, 1 - 500 MHz

Rev. V3

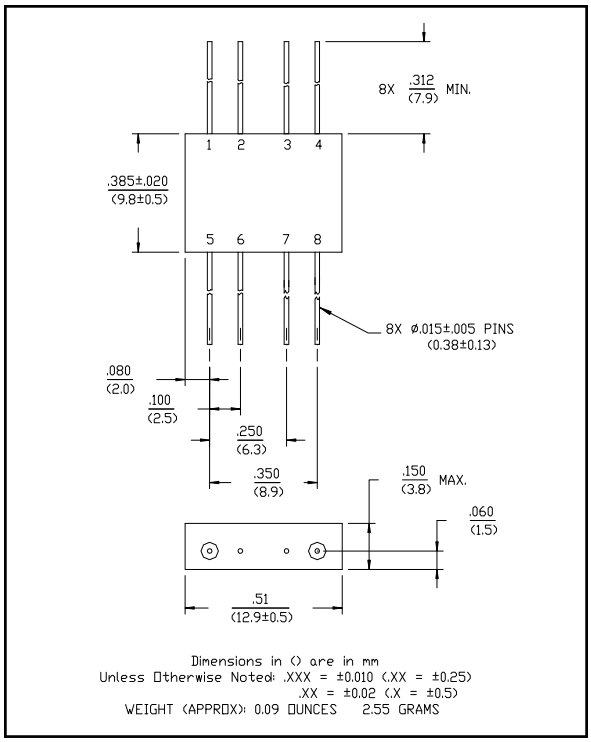
Features

- Third Order Intermodulation Ratio is Insensitive to Port Mismatches
- Conversion Loss: 6dB 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.

FP-2



Pin Configuration

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

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• **India** Tel: +91.80.4155721 • **China** Tel: +86.21.2407.1588
Visit www.macomtech.com for additional data sheets and product information.

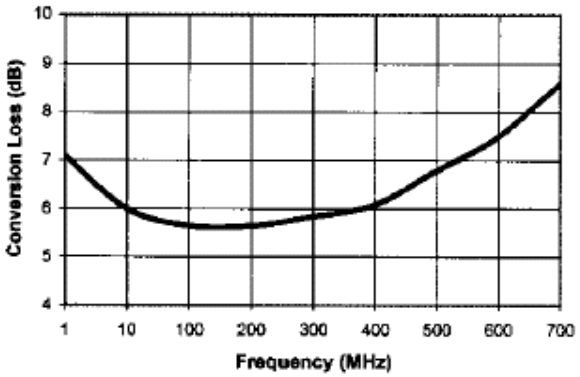
Electrical Specifications[1]: T_A = -55°C to +85°C

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	1 - 500 MHz	dB	25	—	—
	LO to IF	1 - 500 MHz	dB	30	—	—
	RF to IF	1 - 300 MHz 300 - 500 MHz	dB dB	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 a –10 dBm input, each tone 60 MHz IF	100 MHz 500 MHz	dB dB	— —	50 55	— —
3rd Order Intermodulation Ratio Degradation	@ IF VSWR 3:1	—	dB	—	3	—

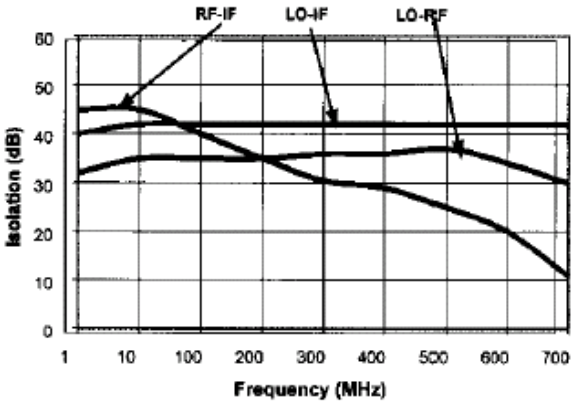
1. All specifications apply when operated at +13 dBm available LO power with 50 Ohm source and load impedance.
This product contains elements protected by United States Patent Number 4,224,572.

Typical Performance Curves

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

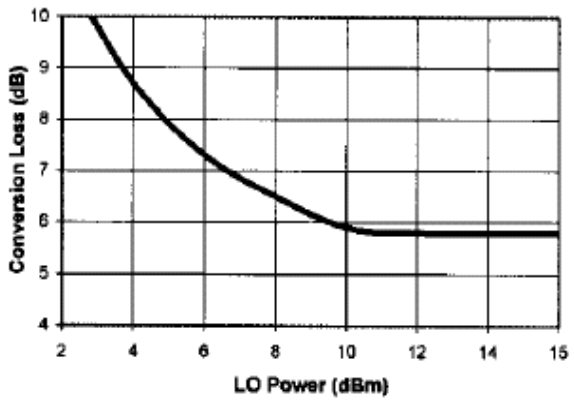


Isolation

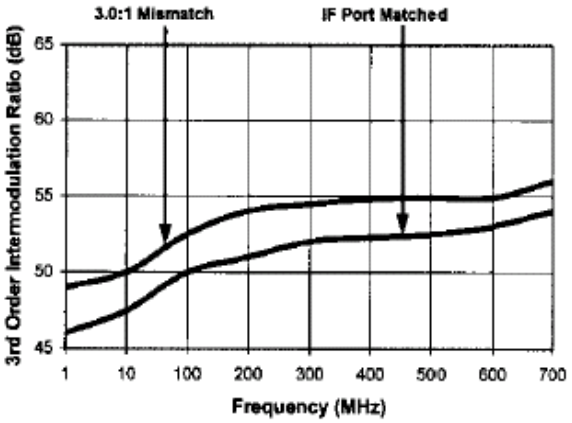


Typical Performance Curves

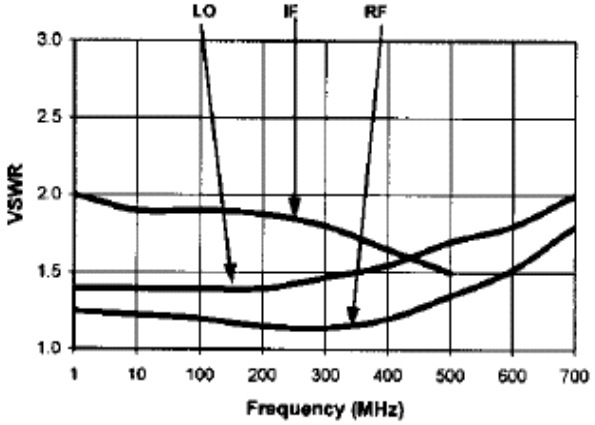
Conversion Loss vs. LO Power (RF @ 300 MHz, IF @ 50 MHz)



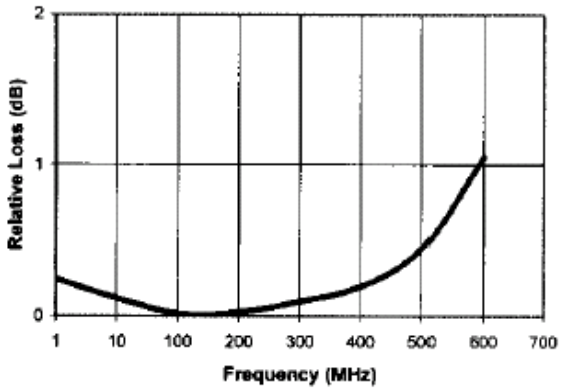
3rd Order IM Ratio (LO @ +13 dBm, RF @ -10 dBm)



VSWR



IF Port Response



Ordering Information

Part Number	Package
MD-161 PIN	FP-2