MD-160

Termination Insensitive Mixer, 1 - 1500 MHz

Rev. V3

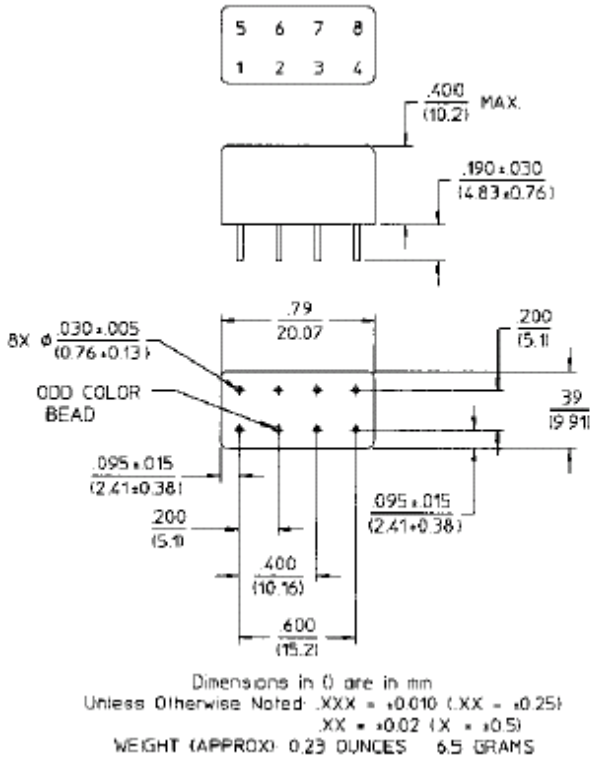
Features

- Third Order Intermodulation Ratio is Insensitive to Port Mismatches
- Conversion Loss: 7 dB Typical Midband
- VSWR: Typically Less than 1.5:1 @ Midband
- Impedance: 50 Ohms Nominal
- Maximum Input Power: 350 mW Max @ 25°C, Derated to 85°C @ 3.5 mW/°C
- 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.

RH-3



Pin Configuration

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

* P3 and P7 are connected together to make IF Port.

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

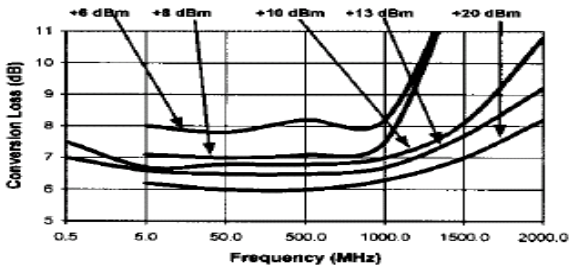
Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Frequency Range	RF, LO Ports IF Port (3 dB BW)	1 - 1500 1 - 1000	MHz MHz	— —	— —	— —
Conversion Loss [2]		5 - 1000 MHz 1 - 1500 MHz	dB dB	— —	— —	7.5 9.0
Isolation	LO to RF	1 - 5 MHz 5 - 500 MHz 500 - 1500 MHz	dB dB dB	20 28 25	— — —	— — —
	LO to IF	1 - 5 MHz 5 - 500 MHz 500 - 1500 MHz	dB dB dB	20 28 17	— — —	— — —
	RF to IF	1 - 5 MHz 5 - 500 MHz 500 - 1500 MHz	dB dB dB	20 25 17	— — —	— — —
RF Input	1 dB Compression[3] 1 dB Desensitization[3]	— —	dBm dBm	— —	+15 +13	— —
SSB Noise Figure	Within 1 dB of Conversion Loss Max	—	—	—	—	—
3rd Order Input Intercept	P_{LO} +13 dBm P_{LO} +20 dBm	15 MHz 500 MHz 1000 MHz 15 MHz 500 MHz 1000 MHz	dBm dBm dBm dBm dBm dBm	— — — — — —	+18 +20 +19 +23 +25 +25	— — — — — —
3rd Order Intercept Degradation	@ IF VSWR 3.0:1	—	dB	—	3	—

1. All specifications apply when operated at +13 dBm available LO power with 50 Ohm source and load impedance.
2. For IF Frequencies of 5 - 1000 MHz and RF of –10 dBm or less.
3. These characteristics apply @ 25 dBm LO power.

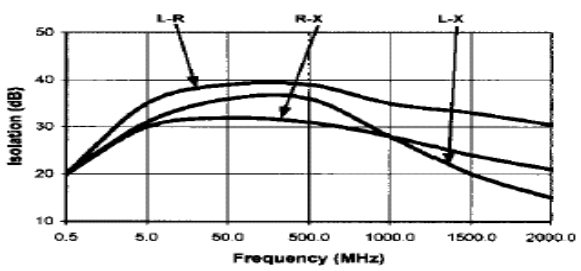
This product contains elements protected by United States Patent Number 4,224,572.

Typical Performance Curves

Conversion Loss



Isolation



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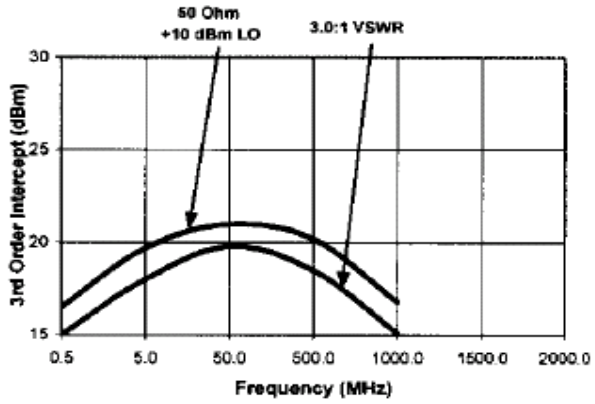
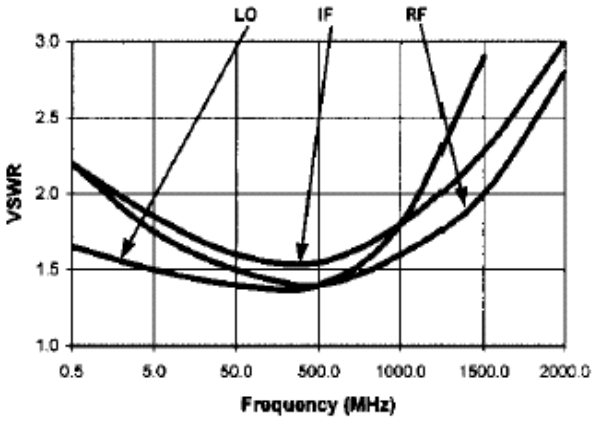
Typical Performance Curves

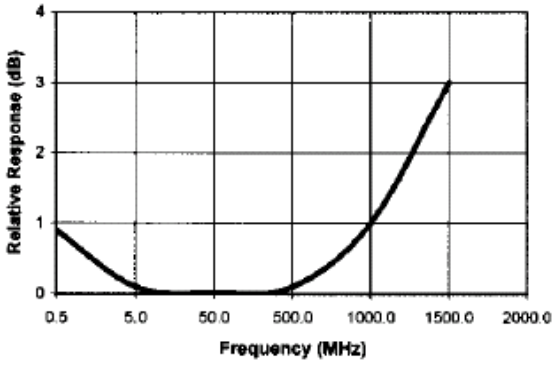
3rd Order intercept vs. IF Port Termination



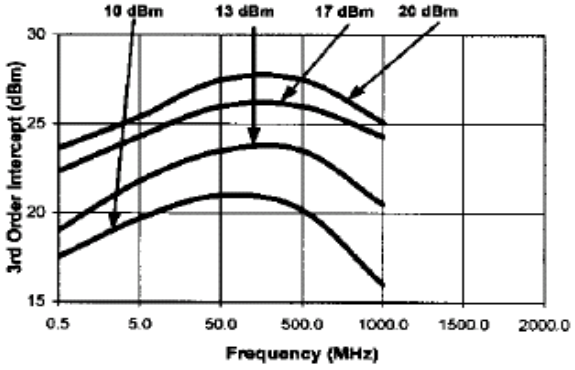
VSWR



IF Port Response



3rd Order Intercept



Ordering Information

Part Number	Package
MD-160 PIN	RH-3

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