

Termination Insensitive Mixer, 1 - 1500 MHz

Rev. V3

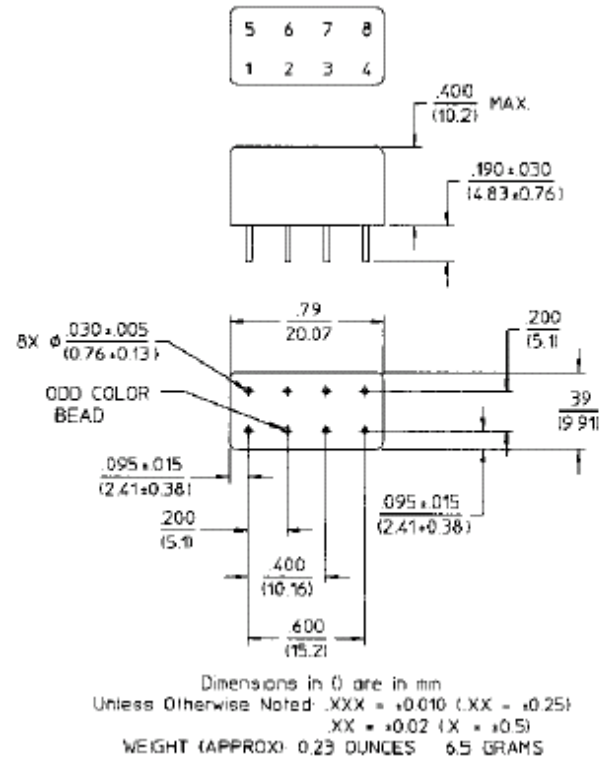
Features

- 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.

Electrical Specifications¹: 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 | dB | 20 | — | — |
| | | 5 - 500 MHz | dB | 28 | — | — |
| | | 500 - 1500 MHz | dB | 25 | — | — |
| | LO to IF | 1 - 5 MHz | dB | 20 | — | — |
| | | 5 - 500 MHz | dB | 28 | — | — |
| | | 500 - 1500 MHz | dB | 17 | — | — |
| RF to IF | 1 - 5 MHz | dB | 20 | — | — | |
| | 5 - 500 MHz | dB | 25 | — | — | |
| | 500 - 1500 MHz | dB | 17 | — | — | |
| RF Input | 1 dB Compression ³ 1 dB Desensitization ³ | — | dBm | — | +15 | — |
| | | — | dBm | — | +13 | — |
| SSB Noise Figure | Within 1 dB of Conversion Loss Max | — | — | — | — | — |
| 3rd Order Input Intercept | P _{LO} +13 dBm | 15 MHz | dBm | — | +18 | — |
| | | 500 MHz | dBm | — | +20 | — |
| | | 1000 MHz | dBm | — | +19 | — |
| | P _{LO} +20 dBm | 15 MHz | dBm | — | +23 | — |
| | | 500 MHz | dBm | — | +25 | — |
| | | 1000 MHz | dBm | — | +25 | — |
| 3rd Order Intercept Degradation | @ IF VSWR 3.0:1 | — | dB | — | 3 | — |

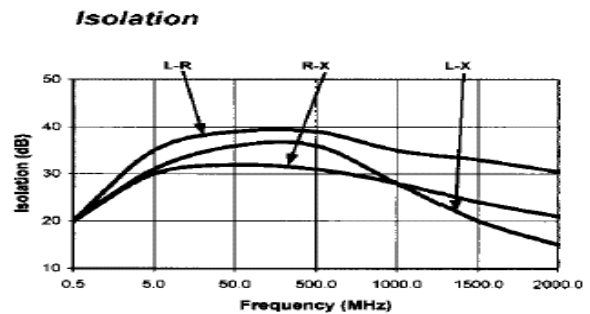
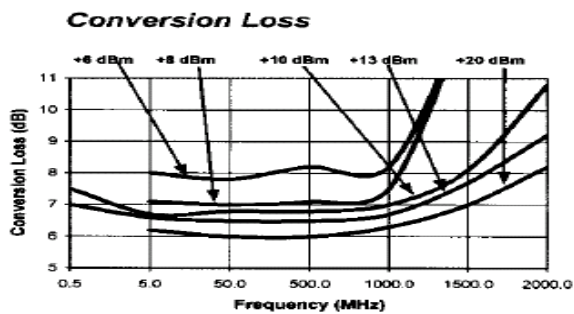
1. All specifications apply when operated at +13 dBm available LO power with 50 Ohm source and load impedance.

2. For IF Frequencies of 5 - 1000 MHz and RF of -10 dBm or less.

3. These characteristics apply @ 25 dBm LO power.

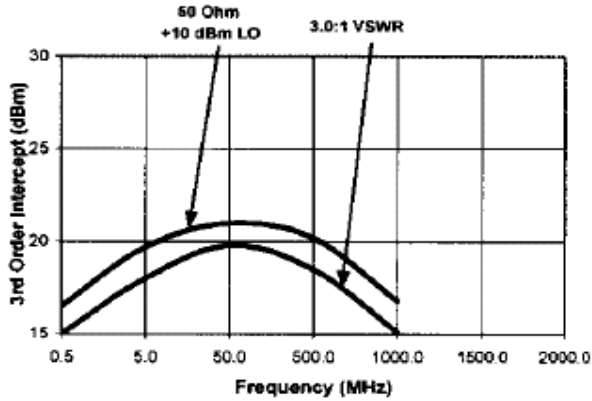
This product contains elements protected by United States Patent Number 4,224,572.

Typical Performance Curves

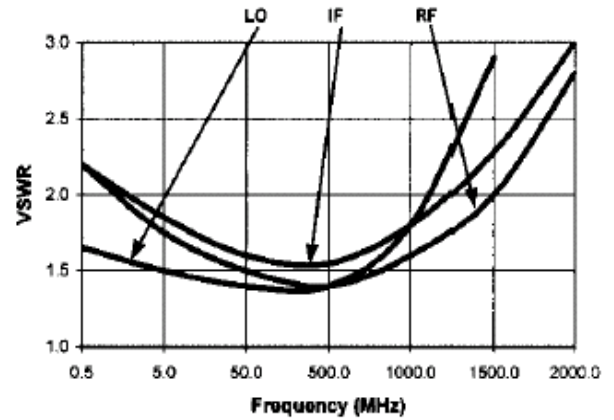


Typical Performance Curves

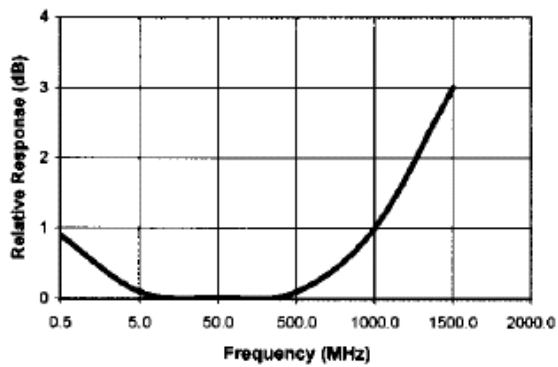
3rd Order intercept vs. IF Port Termination



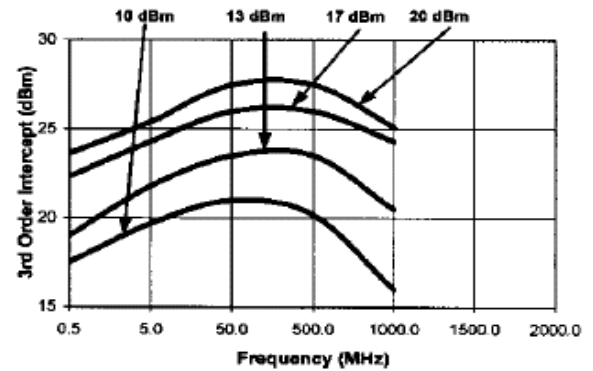
VSWR



IF Port Response



3rd Order Intercept



Ordering Information

| Part Number | Package |
|-------------|---------|
| MD-160 PIN | RH-3 |

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