

**Termination-Insensitive Biasable Mixer,  
1 - 6 GHz**

**MDC-163  
V3**

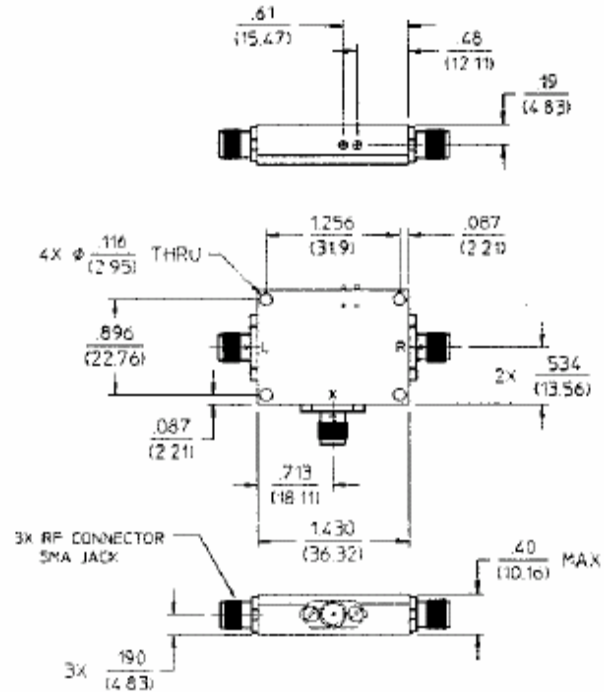
**Features**

- LO Drive: 0 dBm
- Intermodulation Ratio Insensitive to IF Ports Mismatches
- Conversion Loss: 7 dB Typical Midband
- Impedance: 50 Ohms Nominal
- Maximum Input Power: 500 mW max. @ 25°C, Derated 6.4 mW/°C
- Low Power: +24 dBm Max.
- DC Bias: +5, -5 VDC @12 mA each
- 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. Applied bias allows this mixer to perform at low LO power levels.

**C-2**



Dimensions in 11 are in mm  
Unless Otherwise Noted: XXX = +0.010 (X = +0.25)  
.XX = +0.02 (X = +0.5)  
WEIGHT APPROX. 12 OUNCES 34 GRAMS

**Termination-Insensitive Biasable Mixer,  
1 - 6 GHz**

**MDC-163  
V3**

**Electrical Specifications<sup>1</sup>: T<sub>A</sub> = -55°C to +85°C**

Parameter	Test Conditions	Frequency	Units	Min	Typ	Max
Frequency Range	RF, LO Ports IF Port	1 - 6 10 - 2000	GHz MHz	— —	— —	— —
Conversion Loss <sup>2</sup>		1 - 3 GHz 1 - 6 GHz	dB dB	— —	— —	9.0 10.5
Isolation	LO to RF	1 - 2 GHz 2 - 6 GHz	dB dB	10 13	— —	— —
	LO to IF	1 - 6 GHz	dB	13	—	—
	RF to IF	1 - 6 GHz	dB	15	—	—
RF Input	1 dB Compression 1 dB Desensitization	— —	dBm dBm	— —	-2 -6	— —
SSB Noise Figure	Within 1 dB of Conversion Loss Max.	—	—	—	—	—
3rd Order Input Intercept		2.0 GHz 4.0 GHz 6.0 GHz	dBm dBm dBm	— — —	7.0 8.0 5.0	— — —
	3rd Order Intercept Degradation	@ IF Termination VSWR 3:1	—	dB	—	1.5

1. All specifications apply when operated at +0 dBm available LO power with 50 ohm source and load impedance.
2. For IF frequencies of 10 - 500 MHz and an RF of -10 dBm or lower.
3. Independent of sum frequency match.

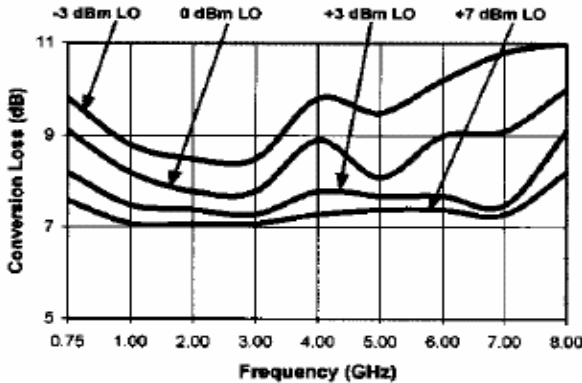
This product contains elements protected by United States Patent Number 4,224,572

**Termination-Insensitive Biasable Mixer,  
1 - 6 GHz**

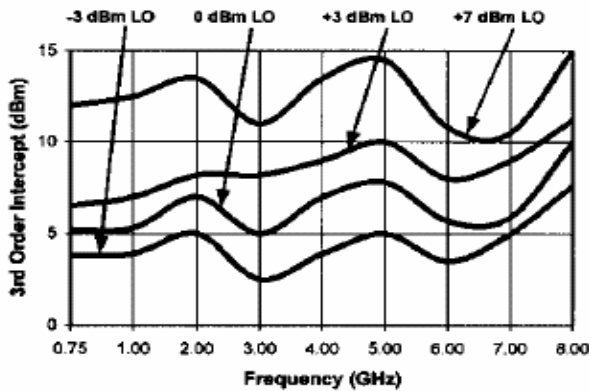
**MDC-163  
V3**

**Typical Performance Curves**

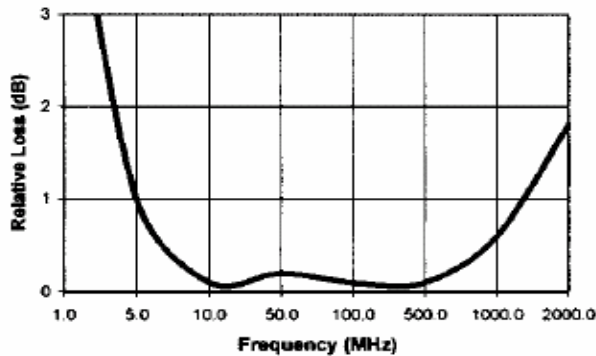
**Conversion Loss**



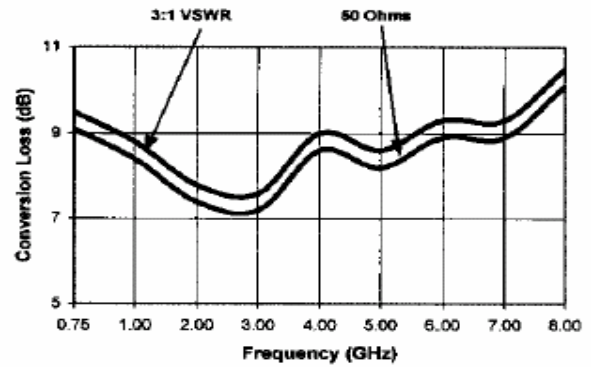
**3rd Order Intercept**



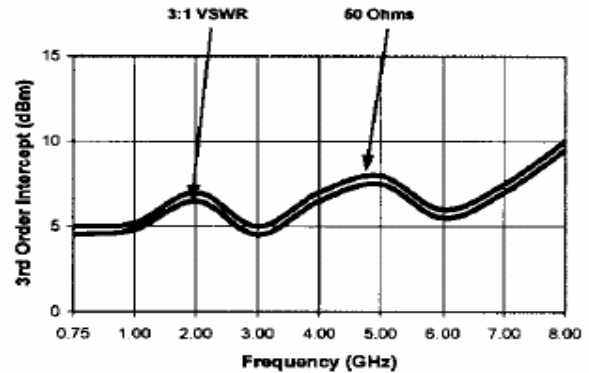
**IF Port Response**



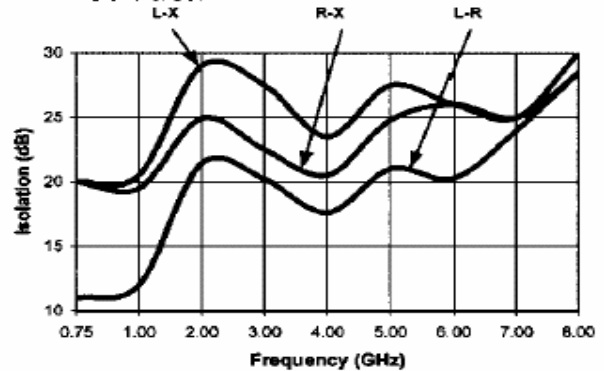
**Conversion Loss vs. IF Port Termination<sup>3</sup>**



**3rd Order Intercept vs. IF Port Termination<sup>3</sup>**



**Isolation**



**Ordering Information**

Part Number	Package
MDC-163 SMA	C-2

M/A-COM Inc. and its affiliates reserve the right to make changes to the product(s) or information contained herein without notice. M/A-COM makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does M/A-COM assume any liability whatsoever arising out of the use or application of any product(s) or information.

• **North America** Tel: 800.366.2266 / Fax: 978.366.2266  
 • **Europe** Tel: 44.1908.574.200 / Fax: 44.1908.574.300  
 • **Asia/Pacific** Tel: 81.44.844.8296 / Fax: 81.44.844.8298