

**Surface Mount Double-Balanced Mixer,  
10 - 500 MHz**

**MDS-223  
V4**

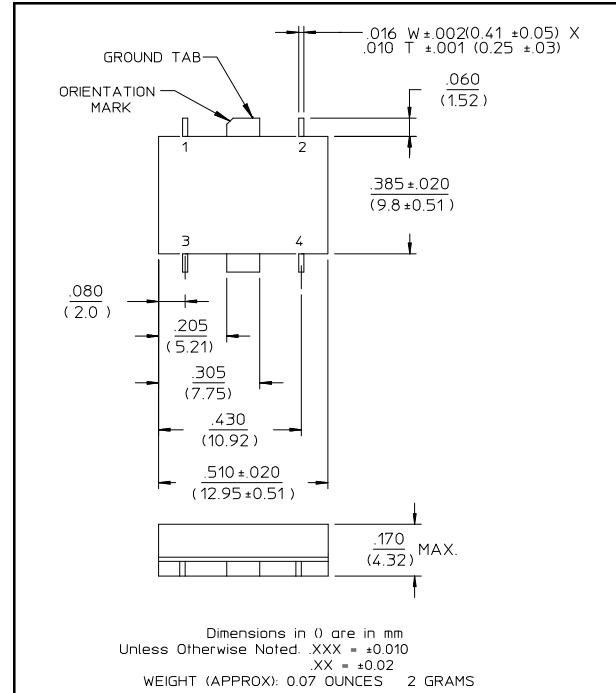
**Features**

- Fully Hermetic Package
- Low Cost
- Conversion Loss: 7 dB Typical Midband
- Impedance: 50 Ohms Nominal
- Maximum Input Power: 400 mW Max, Derated to 85°C @ 3.2 mW/°C
- X Port Current: 50 mA Max.
- MIL-STD-883 Screening Available

**Description**

Transformers convert the LO and RF paths to balanced lines connecting to a medium barrier, Schottky diode ring quad. These transformers help provide excellent isolation between ports. Conversion loss is low. The direct connection of the IF port to the diode quad allows these mixers to be used as phase detectors and bi-phase modulators.

**SF-1**



**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	10 - 500 DC - 500	MHz MHz	—	—	—
Conversion Loss		5 - 150 MHz 150 - 500 MHz	dB dB	— —	— —	7.0 9.0
Isolation	LO to RF	5 - 150 MHz 150 - 500 MHz	dB dB	40 35	— —	— —
	LO to IF	5 - 150 MHz 150 - 500 MHz	dB dB	35 25	— —	— —
	RF to IF	5 - 150 MHz 150 - 500 MHz	dB dB	25 20	— —	— —
DC Polarity	Negative	—	—	—	—	—
DC Offset	—	—	mV	—	≤1	—
RF Input	1 dB Compression 1 dB Desensitization	—	dBm	—	+2.5	—
		—	dBm	—	0	—
SSB Noise Figure	Within 1 dB of Conversion Loss Max	—	—	—	—	—
Typical Two-Tone IM Ratio	with a -10 dBm input, each input, 25 MHz and 35 MHz IF	100 - 350 MHz	dB	—	55	—
		350 - 500 MHz	dB	—	40	—

1. All specifications apply when operated at +7 dBm available LO power with 50 ohm source and load impedance.

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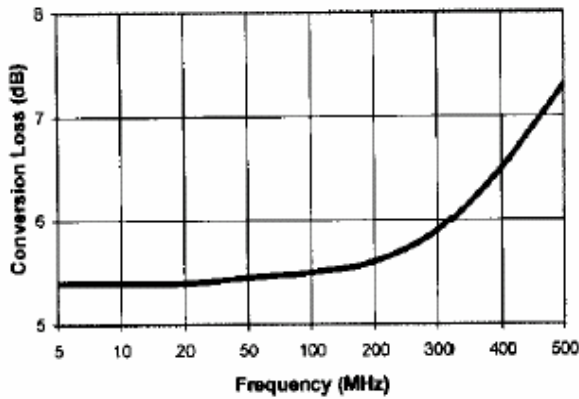
Visit [www.macom.com](http://www.macom.com) for additional data sheets and product information.

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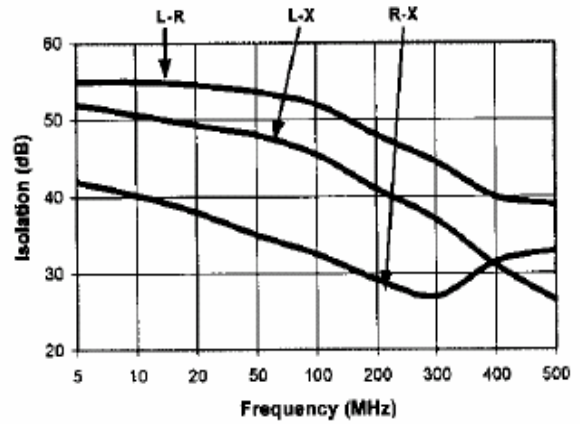
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**Typical Performance Curves**

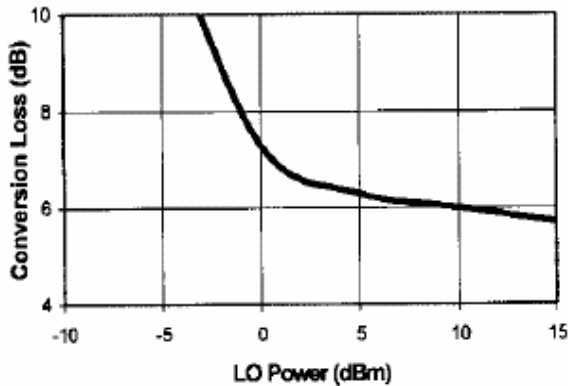
**Conversion Loss (LO = +7 dBm,  
RF = -5 dBm, IF = 5 MHz)**



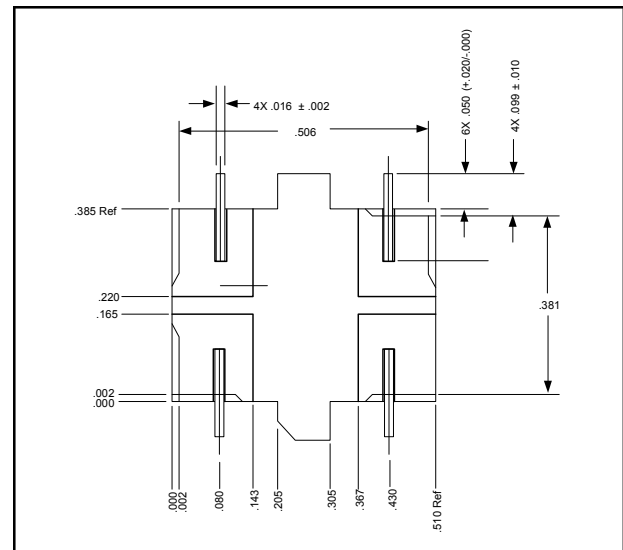
**Isolation (Input = +7 dBm)**



**Conversion Loss vs. LO Power  
(RF = 200 MHz, RF = 140 MHz @  
-10 dBm, IF = 60 MHz)**



**Bottom View of SF-1**



**Ordering Information**

Part Number	Package
MDS-223 PIN	SF-1

**Pin Configuration**

Pin No.	Function	Pin No.	Function
1	GND	3	LO
2	IF	4	RF