

## Surface Mount Double-Balanced Mixer, 200 KHz - 200 MHz

Rev. V4

### Features

- Fully Hermetic Package
- Three Decade Coverage
- 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

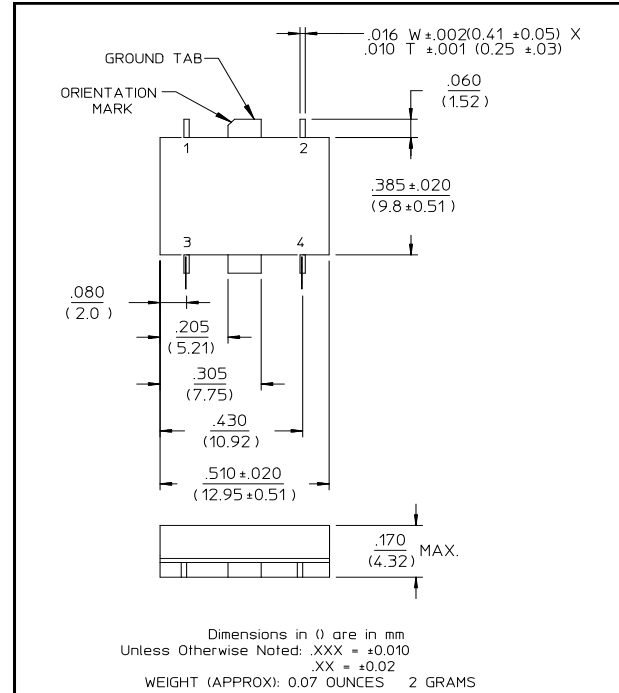
### Description

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.

### Pin Configuration

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

### SF-1



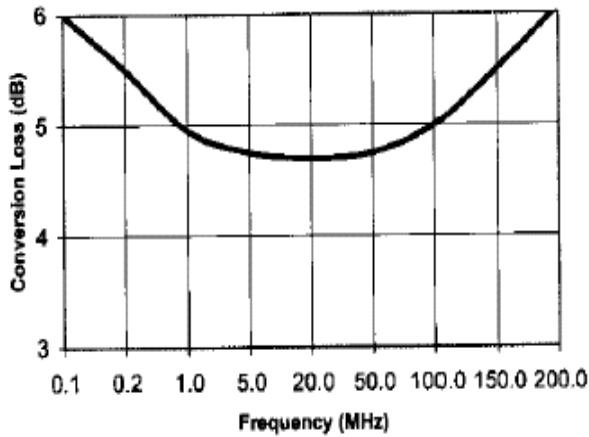
### Electrical Specifications<sup>1</sup>: T<sub>A</sub> = -55°C to +85°C

| Parameter                    | Test Conditions   | Frequency                      | Units      | Min      | Typ      | Max        |
|------------------------------|---|--------------------------------|------------|----------|----------|------------|
| Frequency Range              | RF, LO Ports<br>IF Port                                   | 0.2 - 200<br>DC - 200          | MHz<br>MHz | —        | —        | —          |
| Conversion Loss              |   | 0.2 - 50 MHz<br>50 - 200 MHz   | dB<br>dB   | —<br>—   | —<br>—   | 6.0<br>7.5 |
| Isolation                    | LO to RF  | 0.2 - 50 MHz<br>50 - 200 MHz   | dB<br>dB   | 35<br>30 | —<br>—   | —<br>—     |
|                              | LO to IF  | 0.2 - 50 MHz<br>50 - 200 MHz   | dB<br>dB   | 35<br>25 | —<br>—   | —<br>—     |
|                              | RF to IF  | 0.2 - 50 MHz<br>50 - 200 MHz   | dB<br>dB   | 25<br>20 | —<br>—   | —<br>—     |
| DC Polarity                  | Negative  | —                              | —          | —        | —        | —          |
| DC Offset                    | —   | —                              | mV         | —        | ≤3       | —          |
| RF Input <sup>2</sup>        | 1 dB Compression<br>1 dB Desensitization                  | —<br>—                         | dBm<br>dBm | —<br>—   | +2<br>0  | —<br>—     |
| SSB Noise Figure             | Within 1 dB of Conversion Loss<br>Max                     | —                              | —          | —        | —        | —          |
| Typical Two-Tone IM<br>Ratio | with a -10 dBm input, each input,<br>25 MHz and 35 MHz IF | 100 - 200 MHz<br>200 - 300 MHz | dB<br>dB   | —<br>—   | 50<br>36 | —<br>—     |

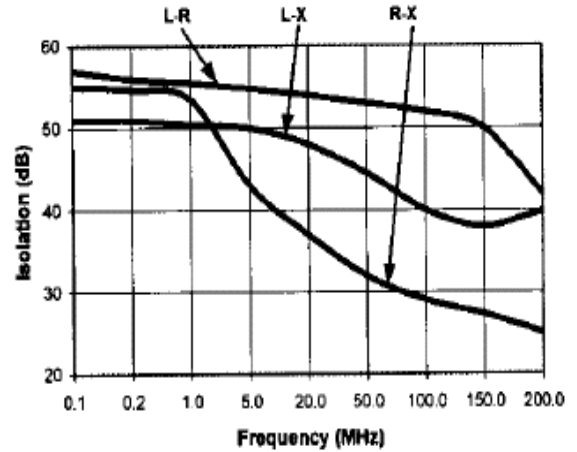
1. All specifications apply when operated at +7 dBm available LO power with 50 ohm source and load impedance.
2. Measured at 100 MHz.

## Typical Performance Curves

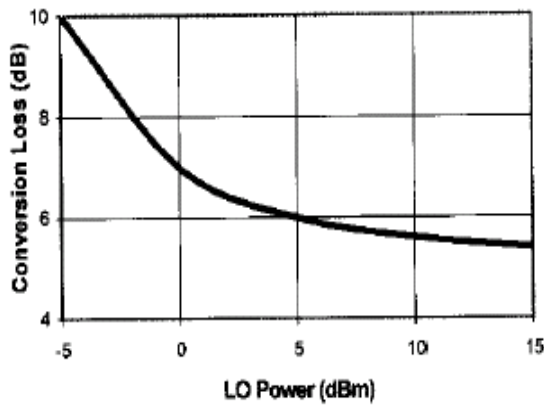
**Conversion Loss**



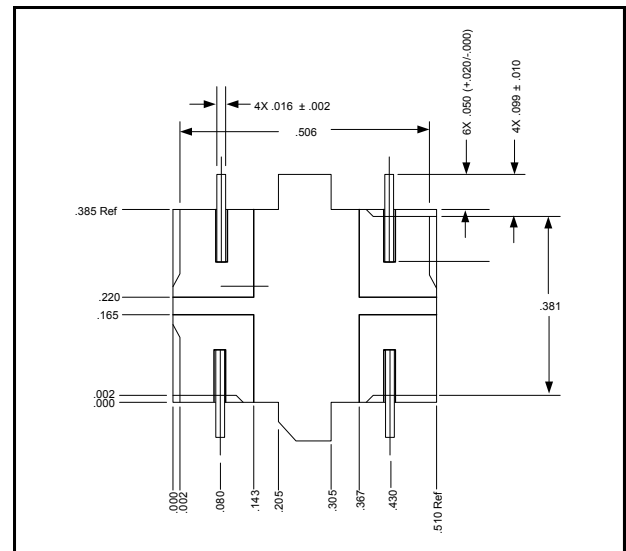
**Isolation**



**Conversion Loss vs. LO Power**



**Bottom View of SF-1**



## Ordering Information

| Part Number | Package |
|-------------|---------|
| MDS-222 PIN | SF-1    |

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