## Features

- Over Two-Decade Frequency Range
- Conversion Loss: 6 dB Typical Midband
- LO-RFIsolation: 40 dB Typical Midband
- Fully Hermetic Package
- Impedance: 50 Ohms Nominal
- Maximum Input Power: 300 mW Max, Derated to $85^{\circ} \mathrm{C} @ 3.2 \mathrm{~mW} /{ }^{\circ} \mathrm{C}$
- IF 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 (MDS-149)



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FP-2 (MD-149)


Pin Configuration (MD-149)

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

Pin Configuration (MDS-149)

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

Electrical Specifications ${ }^{1}: \mathrm{T}_{\mathrm{A}}=-55^{\circ} \mathrm{C}$ to $+85^{\circ} \mathrm{C}$

| Parameter | Test Conditions | Frequency | Units | Min | Typ | Max |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Frequency Range | RF，LO Ports IF Port | $\begin{aligned} & 10-1500 \\ & D C-1500 \end{aligned}$ | $\begin{aligned} & \mathrm{MHz} \\ & \mathrm{MHz} \end{aligned}$ | － | － | － |
| Conversion Loss |  | $\begin{gathered} 10-1000 \mathrm{MHz} \\ 1000-1500 \mathrm{MHz} \end{gathered}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \end{aligned}$ | 二 | - | $\begin{aligned} & 7.5 \\ & 10 \end{aligned}$ |
| Isolation | LO to RF | $\begin{gathered} 10-100 \mathrm{MHz} \\ 100-1000 \mathrm{MHz} \\ 1000-1500 \mathrm{MHz} \end{gathered}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \\ & \mathrm{~dB} \end{aligned}$ | $\begin{aligned} & 35 \\ & 30 \\ & 20 \end{aligned}$ | 二 | 二 |
|  | LO to IF | $\begin{gathered} 10-100 \mathrm{MHz} \\ 100-1000 \mathrm{MHz} \\ 1000-1500 \mathrm{MHz} \end{gathered}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \\ & \mathrm{~dB} \end{aligned}$ | $\begin{aligned} & 35 \\ & 20 \\ & 12 \end{aligned}$ | － | － |
|  | RF to IF | $\begin{gathered} 10-100 \mathrm{MHz} \\ 100-1000 \mathrm{MHz} \\ 1000-1500 \mathrm{MHz} \end{gathered}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \\ & \mathrm{~dB} \end{aligned}$ | $\begin{gathered} 30 \\ 18 \\ 8 \end{gathered}$ | 二 | 二 |
| DC Polarity | Negative | － | － | － | － | － |
| DC Offset | － | － | mV | － | $\leq 4$ | － |
| RF Input | 1 dB Compression 1 dB Desensitization | - | $\begin{aligned} & \mathrm{dBm} \\ & \mathrm{dBm} \end{aligned}$ | - | $\begin{gathered} 0 \\ -2.0 \end{gathered}$ | － |
| 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 | $\begin{gathered} 100-500 \mathrm{MHz} \\ 500-1000 \mathrm{MHz} \\ 1000-1500 \mathrm{MHz} \end{gathered}$ | $\begin{aligned} & \mathrm{dB} \\ & \mathrm{~dB} \\ & \mathrm{~dB} \end{aligned}$ | 二 | $\begin{aligned} & 48 \\ & 43 \\ & 35 \end{aligned}$ | 二 |

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

## Bottom View of SF－1



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## Typical Performance Curves

Conversion Loss（IF $=5 \mathrm{MHz}$ ， $R F=-5 \mathrm{dBm}, L O=+7 \mathrm{dBm})$

－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
Visit www．macom．com for additional data sheets and product information．

## Typical Performance Curves

Isolation


Conversion Loss vs. LO Power (RF = $1450 \mathrm{MHz},-10 \mathrm{dBm}, \mathrm{LO}=1500 \mathrm{MHz}$ )


## Ordering Information

| Part Number | Package |
| :---: | :---: |
| MD-149 PIN | FP-2 |
| MDS-149 PIN | SF-1 |

